

## Appendix to *Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands*

### Appendix 3: Descriptions of Map Units

All 191 Map Units identified by this project are described below. Each profile includes:

**Sample Sites:** no. of sites assigned to the Unit.

**Area Extant:** estimated current extant area.

**Estimated % remaining:** bounded estimate of what proportion of the Unit's original (pre-clearing) extent now remains extant.

**Area in conservation reserves:** estimated extant area within conservation reserves.

**Estimated % of pre-clearing area in conservation reserves:** bounded estimate of what proportion of the Unit's original pre-clearing extent now survives within conservation reserves.

**No. Taxa (total / unique):** no. of plant taxa recorded from sample sites assigned to this Unit, and no. of taxa recorded only from these sites.

**No. Taxa per Plot ( $\pm$ sd):** average (and standard deviation) no. of plant taxa recorded from sample sites assigned to this Map Unit.

**Class:** indicates which vegetation class the Map Unit is considered to be part of, within the statewide classification of Keith (2004).

**Related TEC:** Notes any relationship with an ecological community listed under the NSW *Threatened Species Conservation Act* (TSC) or the Commonwealth *Environment Protection & Biodiversity Conservation Act* (EPBC); also highlights 7 Units likely to be Protected Marine Vegetation under the *Fisheries Management Act*.

Each profile also includes notes on habitat and structural characteristics, a floristic summary, and tables of **positive diagnostic species**, constant species and other tree species. The positive diagnostic species table for each Map Unit lists all plant taxa that occur more frequently among the samples assigned to that unit than they do among all the remaining samples in the data set. Constant species occur frequently in the map unit but also occur frequently in other map units. The following data is given for each taxon:

- **C/A** - Cover/Abundance<sup>1</sup> within the map unit (50 percentile): the median cover/abundance score recorded for the species in sites representing the map unit (absences excluded);
- **Freq** - Frequency within the map unit: the number of samples of the map unit in which the species was recorded, divided by the total number of samples assigned to that map unit;
- **C/A O** - Cover/Abundance<sup>1</sup> in Other map units (50 percentile): the median cover/abundance score recorded for the species in samples of all other map units (absences excluded);
- **Freq O** - Frequency (%) within Other map units: the number of samples assigned to all other map units in which the species was recorded, divided by the total number of samples assigned to other map units;

#### <sup>1</sup>Cover/abundance scores:

1 = Rare, few individuals present AND cover < 5%

2 = Uncommon AND cover < 5%

3 = Common AND cover < 5%

4 = (Very Abundant AND cover < 5%) OR (5% ≤ cover < 20%)

5 = (20% ≤ cover < 50%)

6 = (50% ≤ cover < 75%)

7 = (75% ≤ cover ≤ 100%)

#### Procedure for using positive diagnostic species for the identification of Map Units

This procedure is based on the probability of sampling positive diagnostic species that occur more frequently within the target unit than in all survey sites combined. The minimum expected number of positive diagnostic species was calculated for each map unit based on the available survey data. New plots may belong to any candidate map unit for which counts of diagnostic species exceed this minimum number, although these inferences are subject to 5% statistical error rate (i.e. one out of 20 inferences will be incorrect). Conversely, the presence of fewer than the minimum expected number of positive diagnostic species may be considered evidence that the sample plot does not belong to the map unit under consideration, subject to 5% statistical errors. If applied correctly, this procedure will narrow the identification of a stand of vegetation to a few plausible alternative units. If a sample plot contains the minimum expected number of positive diagnostic species for more than one map unit, the number of species by which the minimum was exceeded may be used to assess the closeness of the match to each of the possible candidates.

The map unit identification procedure assumes that all vascular plant species within the sample plots were recorded and correctly identified, that the list of positive diagnostic species is based on a comprehensive random sample of each map unit, and that the identification samples are randomly selected from within the same study area and use the same plot size (0.04 ha) as the original samples. Occurrences of droughts and the time since fire may influence whether all vascular species can be recorded in samples of particular communities. The procedure cannot be reliably applied to samples that do not contain more than a specified minimum number of species (species-poor sites can not be tested).

The following steps are required for sampling diagnostic species.

- Determine the location of test plots using a random selection procedure. For example: define a grid then consult a table of random numbers to obtain coordinates for the location of the plots.
- Mark out a search area of 0.04 ha (20 x 20 m is convenient) and record all vascular plant species with stems rooted within or overhanging the search area.
- Compile a shortlist of possible map unit types by comparing the vegetation structure and physical characteristics of the site with the descriptions contained in Appendix 3. The species composition of the test plot will be compared with each of these map unit types.
- Count the number of **native** species occurring within the test plot. A minimum species count has been specified for each map unit type and is given in the diagnostic species table caption. The test can not be applied unless the test plot contains the minimum number of species specified for the map unit under consideration.
- Considering each of the candidate map unit types in turn, consult the list of positive diagnostic species and count the number that were found in the test plot. The minimum expected number of positive diagnostic species has been specified for each map unit and is located in the diagnostic species table caption. If the test plot contains the minimum number of positive diagnostic species ('pass' result) then it is a plausible match for that map unit. A 'pass' result may be obtained for more than one of the candidate communities. In such cases the number of species by which the minimum was exceeded may be used to assess the closeness of the match to each of the possible candidates. A 'fail' result (the test plot contains fewer diagnostic species than the expected minimum) does not exclude the possibility that the test plot is a match, however the fewer positive species recorded, the less likely it is that the map unit is a match (see discussion).

### Map unit area figures

Note that extant area and reserved area figures have been rounded (to nearest 10 or 100 ha, depending on map unit) to reflect that the map is not accurate to the hectare. Percentages of remaining and reserved vegetation are given as bounded estimates to recognise uncertainties in classification and mapping, particularly estimated extents based on reconstructed pre-clearing vegetation patterns.

Current boundaries of the following areas were used to calculate reservation figures; National Parks, Nature Reserves and State Conservation Areas under the NSW *National Parks and Wildlife Act* 1994, Flora Reserves under the *Forestry Act* 1912, and National Parks under the Commonwealth *National Parks and Wildlife Conservation Act* 1975.

### Vegetation structure tables

Vegetation structure data has been summarised for each map unit from all classified sites. Sites came from a variety of sources, consequently:

- Not all classified sites in each map unit had structure data recorded;
- it was assumed that interpretation of strata was reasonably consistent between surveys/observers, and that all surveys recorded % cover in the same way.

For sites where multiple components were noted within a stratum (e.g. 2 groundcover layers, 2 shrub layers), the figures used for that stratum were maximum heights of the component layers, and summed % cover (as overlap could not be dealt with).

Vegetation structure tables contain the following:

**n** = total number of samples of this map unit with structure data recorded;

**Frequency** = the proportion of samples from which each stratum was recorded;

**Height** = mean recorded maximum height of each stratum (with standard deviation)

**Cover** = mean recorded % projected foliage cover of stratum (with standard deviation).



**RF e1: Southeast Dry Rainforest**

Plate e1. Southeast Dry Rainforest (Map Unit e1) occupying a steep rocky hillside on Warrigal range north of Brogo. *Eucalyptus bosistoana* rises above *Ficus rubiginosa* emerging from a rock face covered with *Pyrrosia rupestris*.

Sample Sites: 23

Area Extant (ha): 270

Estimated % remaining: 40-55%

Area in conservation reserves (ha): 100

Estimated % of pre-clearing area in conservation reserves: 15-30%

No. Taxa (total / unique): 173 / 0

No. Taxa per Plot ( $\pm$ sd): 27 (10.7)

Class: Dry Rainforests

Related TEC: Dry Rainforest of the South East Forests EEC (TSC)

Southeast Dry Rainforest is equivalent to Dry Rainforest (unit 1) described by Keith & Bedward (1999). It comprises a closed forest restricted to small patches generally less than 10 ha, usually on steep upper granite slopes or heads of gullies facing north at 200 - 400 m elevation. These patches occur between Cobargo and Bega, south of Candelo and in the upper Towamba valley. Generally these are fragmented landscapes on hilly fringes of grazing districts, although significant stands occur from Reedy Creek to Mt Pericoe in Coolangubra National Park. Dry Rainforest is likely to be highly sensitive to fire because some of the dominant trees may be killed when burnt. Re-establishment relies upon seed dispersed by birds from unburnt sites. The understorey may be adversely affected by grazing (cattle, sheep and rabbits) in rural districts. Some of these stands may also be affected by small-scale clearing. This assemblage appears to be unique to the region, since *F. rubiginosa* reaches its southern limit here (Keith *et al.* 1999) and similarly restricted dry rainforests further north differ compositionally, particularly in the dominance of *Backhousia myrtifolia* (Austin 1978, Helman 1983). In East Gippsland, Woodgate *et al.* (1994) described a dry rainforest assemblage (Ecological Vegetation Class 34) dominated by *P. undulatum* with *Acmena smithii* and similar understorey elements to those recorded in Eden. Only 11 ha of this unit were mapped in the East Gippsland region.

**Floristic Summary:**

**Trees:** *Brachychiton populneus* subsp. *populneus*, *Ficus rubiginosa*, *Pittosporum undulatum* **Shrubs:** *Beyeria lasiocarpa*, *Celastrus australis*, *Hymenanthera dentata* **Climbers:** *Clematis glycinoides* var. *glycinoides*, *Eustrephus latifolius*, *Geitonoplesium cymosum*, *Marsdenia rostrata* **Groundcover:** *Asplenium flabellifolium*, *Dichondra* spp., *Oplismenus imbecillis*, *Pellaea falcata*, *Urtica incisa*

**Vegetation structure:**

Stratum	Frequenc y (n=13)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	69	20 (10.1)	26.9 (36.6)
Small tree	85	11.5 (2.6)	59.3 (31.9)
Shrub	92	2.1 (1.2)	16.9 (14)
Ground cover	92	0.4 (0.2)	8.7 (4.9)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 9 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 18 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 9 positive diagnostic species.

**Positive Diagnostic Species:**

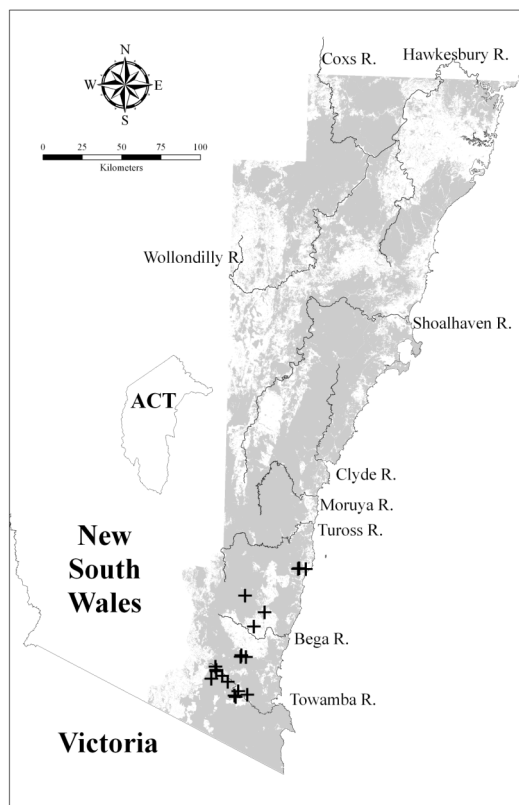
Species	C/A	Freq	C/A O	Freq O
<i>Acacia maidenii</i>	1(1-2)	30	1(1-1)	3
<i>Acacia mearnsii</i>	1(1-2)	35	1(1-2)	7
<i>Alectryon subcinereus</i>	1(1-1)	35	1(1-1)	2
<i>Asplenium flabellifolium</i>	1(1-1)	61	1(1-1)	11
<i>Beyeria lasiocarpa</i>	3(2-4)	43	1(1-2)	1
<i>Brachychiton populneus</i> subsp. <i>populneus</i>	1(1-2)	65	1(1-1)	3
<i>Cassinia trinerva</i>	1(1-2)	26	1(1-1)	3
<i>Celastrus australis</i>	1(1-2)	48	1(1-1)	2
<i>Claoxylon australe</i>	1(1-1)	22	1(1-2)	3
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	57	1(1-1)	10
<i>Dendrobium speciosum</i>	1(1-1)	26	1(1-1)	1
<i>Dichondra</i> spp.	1(1-1)	57	1(1-2)	25
<i>Einadia nutans</i>	1(1-2)	22	1(1-1)	3
<i>Eucalyptus bosistoana</i>	1(1-2)	30	1(1-2)	3
<i>Eustrephus latifolius</i>	1(1-1)	52	1(1-1)	19
<i>Ficus rubiginosa</i>	3(1-5)	70	1(1-1)	1
<i>Geitonoplesium cymosum</i>	1(1-1)	83	1(1-1)	16
<i>Hymenanthera dentata</i>	1(1-1)	83	1(1-1)	6
<i>Marsdenia flavesceus</i>	1(1-1)	30	1(1-2)	2
<i>Marsdenia rostrata</i>	1(1-2)	52	1(1-2)	12
<i>Notelaea venosa</i>	1(1-2)	35	1(1-1)	12
<i>Notodanthonia longifolia</i>	1(1-1)	26	1(1-2)	5
<i>Oplismenus imbecillis</i>	1(1-1)	48	1(1-2)	14
<i>Pellaea falcata</i>	1(1-1)	91	1(1-2)	10
<i>Pimelea axiflora</i>	1(1-1)	22	1(1-1)	3
<i>Pittosporum undulatum</i>	1(1-2)	57	1(1-1)	14
<i>Plectranthus graveolens</i>	1(1-2)	22	1(1-1)	1
<i>Plectranthus parviflorus</i>	1(1-2)	39	1(1-1)	8
<i>Pyrrosia rupestris</i>	1(1-1)	26	1(1-2)	6
<i>Sarcopetalum harveyanum</i>	1(1-1)	39	1(1-1)	4
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	39	1(1-1)	7
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	39	1(1-1)	7
<i>Urtica incisa</i>	1(1-1)	61	1(1-1)	5

**Constant Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Pandorea pandorana</i>	1(1-1)	39	1(1-1)	18

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus agglomerata</i>	1(1-1)	4	2(1-3)	7
<i>Eucalyptus cypellocarpa</i>	1(1-1)	4	2(1-2)	10
<i>Eucalyptus elata</i>	2(2-2)	9	2(1-3)	5
<i>Eucalyptus globoidea</i>	1(1-1)	4	2(1-2)	12
<i>Eucalyptus maidenii</i>	2(1-2)	17	2(1-2)	2
<i>Eucalyptus melliodora</i>	2(2-2)	4	1(1-3)	2
<i>Eucalyptus muelleriana</i>	1(1-1)	4	2(1-2)	6
<i>Eucalyptus obliqua</i>	1(1-1)	4	2(1-3)	4
<i>Eucalyptus polyanthemos</i> subsp. <i>tarda</i>	2(2-2)	4	1(1-2)	<1
<i>Eucalyptus polyanthemos</i> subsp. <i>vestita</i>	1(1-1)	9	1(1-1)	<1
<i>Eucalyptus saligna</i> X <i>botryoides</i>	2(2-2)	4	2(1-3)	2
<i>Eucalyptus sieberi</i>	1(1-1)	4	2(1-3)	16
<i>Eucalyptus smithii</i>	1(1-1)	9	1(1-2)	2
<i>Eucalyptus tereticornis</i>	2(1-2)	17	2(1-3)	7



Locations of survey sites allocated to RF e1. Grey shading indicates extant native vegetation cover within the study area.

**DSF e3: Rocky Tops Dry Scrub Forest**

Plate e3. Rocky Tops Dry Scrub Forest (Map Unit e3) with *Eucalyptus elata* and *E. sieberi* over a prominent shrub stratum of *Eriostemon trachyphyllus*, *Dodonaea viscosa* and *Olearia iodochroma* on the eastern upper slope of Big Jack Mountain, Coolangubra section of South East Forests National Park.

Sample Sites: 18  
 Area Extant (ha): 1300  
 Estimated % remaining: >95%  
 Area in conservation reserves (ha): 1200  
 Estimated % of pre-clearing area in conservation reserves: 80-90%  
 No. Taxa (total / unique): 147 / 1  
 No. Taxa per Plot ( $\pm$ sd): 25.3 (9.0)  
 Class: South East Dry Sclerophyll Forests  
 Related TEC: n/a

Rocky Tops Dry Scrub Forest is equivalent to a combination of two units described by Keith & Bedward (1999): Myanba Dry Scrub Forest (unit 2) and Rocky Tops Dry Scrub Forest (unit 3). It comprises an open *Eucalyptus* forest with a tall scrubby understorey and occasional rainforest elements. Groundcover is generally sparse, but large rocks may be covered with *Dendrobium* spp. Small trees and shrubs may be arranged in one or two strata accounting for more than 50% cover. Typical habitat includes rocky slopes and ridgelines on granitoids and metasediments at intermediate elevations. Certain disturbance regimes that include frequent fire and logging may reduce diversity of the understorey. Although this assemblage may be restricted locally, stands are scattered over a wide distribution from Burragat Peak to Mt Imlay with an outlying stand on the slopes of Big Jack Mountain. Its occurrence seems unique to the region, with no similar assemblages known from adjacent regions (Austin 1978, Woodgate *et al.* 1994). The most similar assemblage nearby appears to be a variant of Rocky Outcrop Scrub (Ecological Vegetation Class 27 described by Woodgate *et al.* 1994) in gorges of East Gippsland (e.g. Snowy River, Brodribb River). Although this vegetation is dominated by *E. smithii* with *E. elata*, it lacks most of the sub-dominant trees and understorey species, particularly the mesic elements, recorded in the Eden region.

**Floristic Summary:**

**Trees:** *Acacia falciformis*, *Eucalyptus smithii*, *Exocarpos cupressiformis*, *Pittosporum undulatum* **Shrubs:** *Beyeria lasiocarpa*, *Cassinia longifolia*, *Cassinia trinerva*, *Notelaea venosa*, *Pomaderris cinerea* **Climbers:** *Geitonoplesium cymosum* **Groundcover:** *Asplenium flabellifolium*, *Lepidosperma laterale*, *Notodanthonia longifolia*

**Vegetation structure:**

Stratum	Frequency (n=8)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	17.6 (5)	16 (9.5)
Small tree	75	9 (1.7)	26.7 (14.7)
Shrub	75	3 (0.6)	34.2 (23.8)
Ground cover	88	0.5 (0.2)	7.4 (6.5)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 6 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 18 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 6 positive diagnostic species.

**Positive Diagnostic Species**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-2)	72	1(1-2)	10
<i>Asplenium flabellifolium</i>	1(1-1)	50	1(1-1)	12
<i>Beyeria lasiocarpa</i>	2(1-3)	94	1(1-2)	1
<i>Cassinia longifolia</i>	1(1-1)	56	1(1-2)	6
<i>Cassinia trinerva</i>	1(1-2)	61	1(1-1)	3
<i>Commersonia fraseri</i>	2(1-3)	22	1(1-1)	1
<i>Correa reflexa</i>	1(1-1)	28	1(1-1)	5
<i>Dendrobium speciosum</i>	1(1-1)	39	1(1-1)	1
<i>Dendrobium striolatum</i>	1(1-1)	28	1(1-1)	<1
<i>Eucalyptus smithii</i>	1(1-2)	72	1(1-2)	2
<i>Exocarpos cupressiformis</i>	1(1-2)	50	1(1-1)	5
<i>Geitonoplesium cymosum</i>	1(1-1)	56	1(1-1)	16
<i>Hakea macraeana</i>	1(1-2)	28	1(1-1)	1
<i>Kunzea ambigua</i>	2(1-3)	28	1(1-2)	4
<i>Lepidosperma urophorum</i>	1(1-1)	28	1(1-2)	7
<i>Notelaea venosa</i>	1(1-2)	89	1(1-1)	12
<i>Notodanthonia longifolia</i>	1(1-1)	50	1(1-2)	5
<i>Philotheca trachyphylla</i>	1(1-1)	33	1(1-1)	<1
<i>Pittosporum undulatum</i>	1(1-1)	67	1(1-1)	14
<i>Plectranthus graveolens</i>	1(1-2)	33	1(1-1)	1
<i>Pomaderris cinerea</i>	2(1-2)	44	1(1-2)	1
<i>Prostanthera lasianthos</i>	1(1-1)	28	1(1-1)	2

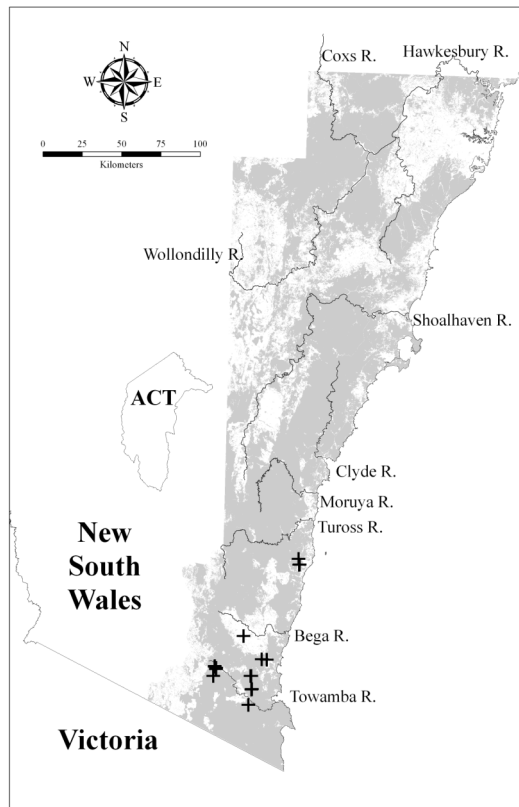
**Constant Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Lepidosperma laterale</i>	1(1-1)	44	1(1-1)	29
<i>Pandorea pandorana</i>	1(1-1)	39	1(1-1)	18

**Other tree species occurring less frequently in this community:**

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus agglomerata</i>	2(1-2)	28	2(1-3)	7
<i>Eucalyptus bosistoana</i>	1(1-1)	11	1(1-2)	3
<i>Eucalyptus cypellocarpa</i>	1(1-1)	11	2(1-2)	10
<i>Eucalyptus elata</i>	1(1-2)	17	2(1-3)	5
<i>Eucalyptus maidenii</i>	2(2-2)	6	2(1-2)	2
<i>Eucalyptus muelleriana</i>	1(1-1)	11	2(1-2)	6
<i>Eucalyptus polyanthemos</i> subsp. <i>tarda</i>	1(1-1)	17	1(1-2)	<1
<i>Eucalyptus sieberi</i>	1(1-1)	11	2(1-3)	16





Locations of survey sites allocated to DSF e3. Grey shading indicates extant native vegetation cover within the study area.

#### DSF e4: Brogo Shrub Forest



Plate e4. Brogo Shrub Forest (Map Unit e4) dominated by *Acacia silvestris* with *Eriostemon trachyphyllus* and scant groundcover, off Bourkes Road, eastern Wadbilliga National Park.

Sample Sites: 14  
 Area Extant (ha): 5900  
 Estimated % remaining: >90%  
 Area in conservation reserves (ha): 4300  
 Estimated % of pre-clearing area in conservation reserves: 70-80%  
 No. Taxa (total / unique): 66 / 0  
 No. Taxa per Plot ( $\pm$ sd): 11.3 (7.7)  
 Class: Southern Wattle Dry Sclerophyll Forests  
 Related TEC: n/a

Brogo Shrub Forest is equivalent to Acacia Scrub (unit 4) described by Keith & Bedward (1999) and is dominated by a dense canopy of *Acacia silvestris*, rarely with *A. mearnsii*, ca. 15 m tall. The understorey is sparse and species-poor with minimal groundcover. This assemblage occurs in small to moderate-sized patches at moderate elevations in steep gorges on metasediments in the Brogo River and Desert Creek catchments, north to Wandella State Forest. Most stands are represented in Wadbilliga and Bemboka National Parks, although small stands occur on private and leasehold land at Brogo Pass and Alsops Creek gorge. Brogo Shrub Forest is likely to be eliminated under frequent fire regimes because the dominant species is killed by fire and re-establishment is dependent on a soil seed bank which may take some years for post-fire replenishment. However, Brogo Shrub Forest is unlikely to be readily flammable under moderate fire weather conditions. Long fire-free intervals may also be detrimental as standing plants and seed banks senesce. A large living individual of *A. silvestris* has been aged by ring counts in excess of 100 years (Clayton-Greene and Wimbush 1988). Regeneration of Brogo Shrub Forest is apparently dependent on occasional, high intensity fires. Related scrubs are found in the Snowy River gorge to the south west (Clayton-Greene and Wimbush 1988, Forbes *et al.* 1982, Woodgate *et al.* 1994, Ecological Vegetation Class 27). Although these assemblages share *A. silvestris* and *Philotheca trachyphylla* with Brogo Shrub Forest, they lack *Pomaderris brogoensis* and include several additional *Acacia* spp. and other minor shrub species.

#### Floristic Summary:

**Trees:** *Acacia silvestris*, *Eucalyptus smithii* **Shrubs:** *Beyeria lasiocarpa*, *Cassinia trinerva*, *Notelaea venosa*, *Philotheca trachyphylla* **Groundcover:** *Plectranthus parviflorus*

#### Vegetation structure:

Stratum	Frequency (n=3)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	15.3 (4.6)	65 (5)
Small tree	100	7 (1)	36.7 (5.8)
Shrub	67	1.3 (0.4)	21 (26.9)
Ground cover	33	0.5 (-)	1 (-)

#### Diagnostic Species:

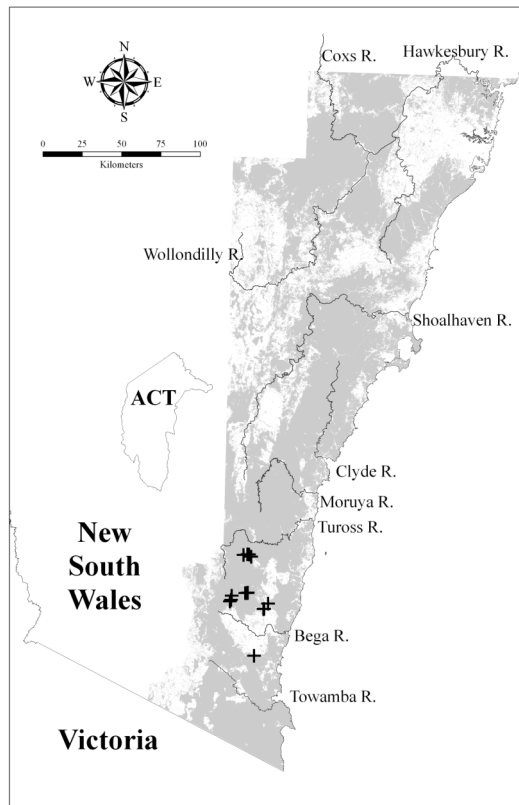
A 0.04 ha plot located in this Map Unit is expected to contain at least 2 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 5 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 2 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia silvestris</i>	1(1-3)	93	1(1-2)	<1
<i>Beyeria lasiocarpa</i>	1(1-1)	71	1(1-2)	1
<i>Cassinia trinerva</i>	1(1-1)	43	1(1-1)	3
<i>Eriostemon australasius</i>	1(1-1)	21	1(1-1)	3
<i>Eucalyptus smithii</i>	1(1-1)	71	2(1-2)	2
<i>Ficus rubiginosa</i>	1(1-1)	29	1(1-2)	1
<i>Notelaea venosa</i>	1(1-1)	64	1(1-1)	12
<i>Passiflora cinnabarina</i>	1(1-1)	21	1(1-1)	1
<i>Philotheca trachyphylla</i>	1(1-2)	71	1(1-1)	<1
<i>Plectranthus parviflorus</i>	1(1-1)	43	1(1-1)	8
<i>Pomaderris brogoensis</i>	1(1-3)	36	1(1-1)	<1

#### Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus muelleriana</i>	1(1-1)	7	2(1-2)	6
<i>Eucalyptus sieberi</i>	1(1-1)	7	2(1-3)	16



Locations of survey sites allocated to DSF e4. Grey shading indicates extant native vegetation cover within the study area.

### RF e6e7: Southeast Warm Temperate Rainforest



Plate e6e7. Southeast Warm Temperate Rainforest (Map Unit e6e7) at Mount Waalimma following a recent tree fall. The remnants of the canopy dominated by *Acmena smithii* and *Pittosporum undulatum* are visible in the background with abundant *Cyathea australis* in the foreground.

Sample Sites: 88

Area Extant (ha): 9500

Estimated % remaining: >90%

Area in conservation reserves (ha): 5200

Estimated % of pre-clearing area in conservation reserves: 50-60%

No. Taxa (total / unique): 229 / 0

No. Taxa per Plot ( $\pm$ sd): 35.0 (12.6)



Class: Southern Warm Temperate Rainforests  
Related TEC: n/a

Southeast Warm Temperate Rainforest is equivalent to a combination of two units described by Keith & Bedward (1999): Coastal Warm Temperate Rainforest (unit 6) and Hinterland Warm Temperate Rainforest (unit 7). It is characterised by a dense canopy exceeding 15 m in height with emergent eucalypts over 20 m and numerous lianas and sporadic epiphytes. Shrub and tree fern species make up a prominent substratum 4 m tall, while the groundcover is more variable and dominated by ferns. The groundcover is often more developed in southern stands. Southeast Warm Temperate Rainforest is restricted to steep sheltered gullies on metasedimentary substrates of the coastal ranges usually below 700 m elevation. At higher elevations on the escarpment this unit grades into Southeast Cool Temperate Rainforest. A notable example occurs at Werrinook. Although small (usually <20 ha), the stands are numerous and almost all occur in conservation reserves or State Forests. The topographically restricted distribution of rainforest patches reflects their susceptibility to fires. Although *A. smithii* and some other species are capable of post-fire coppicing (Ashton and Frankenberg 1976), observations by Floyd (1990) indicate that post-fire recovery of both composition and structure is slow and that the resilience of these rainforests to repeated fires is likely to be poor. Diversity decreases with increasing latitude and altitude (Floyd 1990). Numerous species reach their southern limit within the region, particularly north of Bega (Keith 1990, Keith & Ashby 1992). To the south, similar forests are found at low elevations in East Gippsland (Ecological Vegetation Class 32, Woodgate *et al.* 1994) and Wilsons Promontory (Floyd 1990), as well as in gullies below Erinundra Plateau, the Howe and Murrungowar Ranges in East Gippsland, but these total less than 300 ha (Ecological Vegetation Class 33, Woodgate *et al.* 1994).

#### Floristic Summary:

**Trees:** *Acmena smithii*, *Cyathea australis*, *Dicksonia antarctica*, *Pittosporum undulatum* **Shrubs:** *Coprosma quadrifida*, *Eupomatia laurina*, *Notelaea venosa*, *Rapanea howittiana* **Climbers:** *Aphanopetalum resinosum*, *Cissus hypoglaucula*, *Eustrephus latifolius*, *Marsdenia rostrata*, *Morinda jasminoides*, *Pandorea pandorana*, *Sarcopetalum harveyanum*, *Smilax australis* **Groundcover:** *Asplenium flabellifolium*, *Blechnum cartilagineum*, *Doodia aspera*, *Fieldia australis*, *Lastreopsis microsora* subsp. *Microsora*, *Microsorium scandens*, *Oplismenus imbecillis*, *Pellaea falcata*, *Polystichum proliferum*, *Pteris umbrosa*, *Pyrrosia rupestris*, *Stellaria flaccida*, *Urtica incisa*

#### Vegetation structure:

Stratum	Frequency (n=28)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	7	32.5 (3.5)	5.5 (2.1)
Tree canopy	46	24.6 (13.4)	38.7 (33.7)
Small tree	100	13.8 (7.2)	59.8 (27.7)
Shrub	71	3.9 (1.2)	30.2 (23.3)
Ground cover	96	0.8 (0.3)	56.7 (23.4)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 23 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 25 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 23 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia melanoxylon</i>	1(1-2)	20	1(1-1)	6
<i>Acacia silvestris</i>	1(1-2)	6	1(1-2)	<1
<i>Acacia subporosa</i>	1(1-2)	7	1(1-2)	<1
<i>Acmena smithii</i>	3(3-3)	97	1(1-3)	8
<i>Acronychia oblongifolia</i>	1(1-3)	10	1(1-3)	1
<i>Adiantum formosum</i>	2(1-3)	25	2(1-3)	3
<i>Adiantum hispidulum</i>	1(1-1)	11	1(1-1)	2
<i>Alectryon subdentatus forma subdentatus</i>	1(1-2)	10	1(1-2)	1
<i>Aphanopetalum resinosum</i>	3(2-3)	47	1(1-3)	3
<i>Arthropteris tenella</i>	2(1-3)	15	1(1-2)	2
<i>Asplenium australasicum forma australasicum</i>	2(1-3)	25	1(1-2)	2
<i>Asplenium flabellifolium</i>	1(1-2)	70	1(1-1)	11
<i>Australina pusilla</i>	1(1-2)	32	1(1-2)	1

<i>Austrocynoglossum latifolium</i>	1(1-1)	9	1(1-1)	1
<i>Backhousia myrtifolia</i>	2(1-3)	17	2(1-3)	5
<i>Bedfordia arborescens</i>	1(1-1)	31	1(1-2)	3
<i>Beyeria lasiocarpa</i>	1(1-1)	9	1(1-2)	1
<i>Blechnum cartilagineum</i>	1(1-2)	50	1(1-2)	11
<i>Blechnum patersonii</i> subsp. <i>patersonii</i>	1(1-2)	27	1(1-2)	2
<i>Blechnum watsii</i>	1(1-1)	9	1(1-2)	2
<i>Breynia oblongifolia</i>	1(1-2)	25	1(1-1)	12
<i>Cassinia trinerva</i>	1(1-1)	17	1(1-1)	3
<i>Celastrus australis</i>	1(1-2)	22	1(1-1)	2
<i>Cissus hypoglauca</i>	2(1-3)	67	1(1-2)	9
<i>Claoxylon australe</i>	2(1-3)	31	1(1-2)	3
<i>Coprosma quadrifida</i>	1(1-1)	64	1(1-1)	9
<i>Cyathea australis</i>	1(1-2)	81	1(1-1)	8
<i>Dendrocide excelsa</i>	2(1-3)	15	2(1-3)	1
<i>Dennstaedtia davallioides</i>	1(1-2)	16	1(1-2)	1
<i>Dicksonia antarctica</i>	2(1-3)	60	1(1-3)	3
<i>Diplazium australe</i>	2(1-2)	35	1(1-2)	1
<i>Doodia aspera</i>	1(1-2)	57	1(1-2)	11
<i>Doryphora sassafras</i>	3(2-3)	25	3(1-3)	3
<i>Ehretia acuminata</i> var. <i>acuminata</i>	1(1-1)	8	1(1-1)	1
<i>Elaeocarpus reticulatus</i>	1(1-1)	27	1(1-1)	12
<i>Eucryphia moorei</i>	2(1-2)	10	3(2-3)	1
<i>Eupomatia laurina</i>	2(1-2)	50	1(1-2)	3
<i>Eustrephus latifolius</i>	1(1-1)	45	1(1-1)	19
<i>Ficus coronata</i>	1(1-2)	26	1(1-2)	3
<i>Ficus rubiginosa</i>	1(1-1)	8	1(1-2)	1
<i>Fieldia australis</i>	2(1-3)	45	1(1-3)	2
<i>Gahnia melanocarpa</i>	1(1-1)	17	1(1-1)	5
<i>Geitonoplesium cymosum</i>	1(1-1)	40	1(1-1)	16
<i>Geranium homeanum</i>	1(1-2)	15	1(1-1)	3
<i>Hedycarya angustifolia</i>	1(1-3)	30	1(1-2)	3
<i>Hymenanthera dentata</i>	1(1-2)	31	1(1-1)	6
<i>Hymenophyllum cupressiforme</i>	1(1-1)	11	1(1-1)	1
<i>Hypolepis glandulifera</i>	1(1-2)	10	1(1-1)	1
<i>Lastreopsis acuminata</i>	2(1-3)	19	1(1-2)	2
<i>Lastreopsis decomposita</i>	2(1-2)	28	2(1-3)	3
<i>Lastreopsis microsora</i> subsp. <i>microsora</i>	2(2-3)	70	2(1-3)	3
<i>Marsdenia flavescens</i>	2(1-3)	23	1(1-1)	2
<i>Marsdenia rostrata</i>	2(1-2)	92	1(1-2)	11
<i>Microsorium pustulatum</i>	1(1-1)	14	1(1-2)	1
<i>Microsorium scandens</i>	3(1-3)	75	2(1-3)	3
<i>Morinda jasminoides</i>	2(1-3)	70	1(1-2)	9
<i>Notelaea venosa</i>	1(1-1)	52	1(1-1)	11
<i>Olearia argophylla</i>	1(1-1)	40	1(1-2)	3
<i>Omalanthus populifolius</i>	1(1-1)	6	1(1-1)	1

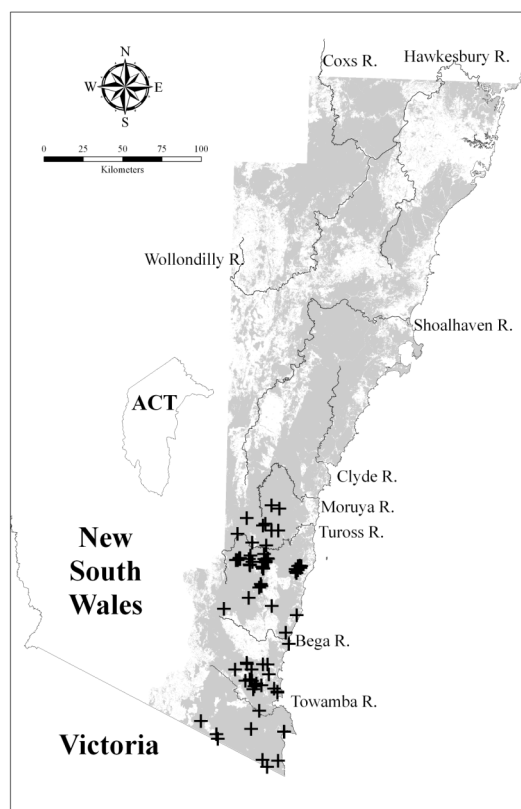
<i>Oplismenus imbecillis</i>	1(1-1)	52	1(1-2)	14
<i>Pandorea pandorana</i>	2(1-2)	88	1(1-1)	18
<i>Parsonsia brownii</i>	1(1-1)	10	1(1-2)	2
<i>Pellaea falcata</i>	1(1-2)	57	1(1-1)	10
<i>Pellaea nana</i>	1(1-1)	7	1(1-1)	2
<i>Pittosporum undulatum</i>	1(1-1)	65	1(1-1)	14
<i>Plectorrhiza tridentata</i>	1(1-1)	9	1(1-2)	1
<i>Plectranthus parviflorus</i>	2(1-2)	34	1(1-1)	7
<i>Polyphlebium venosum</i>	1(1-2)	16	2(1-3)	1
<i>Polyscias murrayi</i>	1(1-2)	19	1(1-1)	1
<i>Polystichum proliferum</i>	2(1-2)	42	1(1-2)	3
<i>Pomaderris aspera</i>	1(1-1)	33	1(1-2)	4
<i>Pomaderris cinerea</i>	1(1-2)	14	1(1-2)	1
<i>Prostanthera lasianthos</i>	1(1-1)	13	1(1-1)	2
<i>Pteris tremula</i>	1(1-1)	8	1(1-1)	1
<i>Pteris umbrosa</i>	3(1-3)	55	2(1-3)	1
<i>Pyrrosia rupestris</i>	2(1-3)	65	1(1-2)	6
<i>Rapanea howittiana</i>	1(1-1)	52	1(1-1)	5
<i>Ripogonum album</i>	1(1-2)	9	1(1-2)	1
<i>Rubus moluccanus</i> var. <i>trilobus</i>	1(1-1)	31	1(1-1)	2
<i>Rubus rosifolius</i>	1(1-1)	39	1(1-1)	2
<i>Sambucus australasica</i>	1(1-1)	17	1(1-1)	1
<i>Sarcochilus falcatus</i>	2(1-2)	9	1(1-1)	1
<i>Sarcopetalum harveyanum</i>	1(1-1)	47	1(1-1)	4
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-2)	28	1(1-1)	7
<i>Smilax australis</i>	2(1-2)	89	1(1-1)	15
<i>Solanum aviculare</i>	1(1-1)	10	1(1-1)	1
<i>Solanum pungetium</i>	1(1-1)	28	1(1-1)	5
<i>Stellaria flaccida</i>	1(1-2)	49	1(1-1)	10
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	20	1(1-1)	7
<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	2(2-2)	28	1(1-2)	7
<i>Tmesipteris parva</i>	1(1-2)	18	1(1-1)	<1
<i>Tylophora barbata</i>	1(1-1)	32	1(1-1)	17
<i>Urtica incisa</i>	1(1-1)	47	1(1-1)	4

Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Clematis aristata</i>	1(1-2)	32	1(1-1)	20

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus bosistoana</i>	1(1-1)	2	1(1-2)	3
<i>Eucalyptus cypellocarpa</i>	1(1-2)	7	2(1-2)	10
<i>Eucalyptus elata</i>	2(1-2)	2	2(1-3)	5
<i>Eucalyptus fastigata</i>	2(2-2)	7	2(1-3)	6
<i>Eucalyptus longifolia</i>	1(1-1)	1	1(1-2)	2
<i>Eucalyptus maidenii</i>	1(1-1)	1	2(1-2)	2
<i>Eucalyptus muelleriana</i>	1(1-2)	5	2(1-2)	6
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	1	2(1-3)	6
<i>Eucalyptus smithii</i>	1(1-1)	2	1(1-2)	2



Locations of survey sites allocated to RF e6e7. Grey shading indicates extant native vegetation cover within the study area.

**WSF e9: Southeast High Mountain Wet Layered Forest**

Plate e9. Southeast High Mountain Wet Layered Forest (Map Unit e9) with *Eucalyptus nitens* emergent over a subcanopy of *Acacia dealbata* and *Prostanthera lasianthos* on Obliqua Road in Glenbog State Forest.

Sample Sites: 12  
 Area Extant (ha): 1800  
 Estimated % remaining: 75-85%  
 Area in conservation reserves (ha): 1600  
 Estimated % of pre-clearing area in conservation reserves: 65-75%  
 No. Taxa (total / unique): 76 / 0  
 No. Taxa per Plot ( $\pm$ sd): 21.0 (5.4)  
 Class: Southern Escarpment Wet Sclerophyll Forests  
 Related TEC: n/a

Southeast High Mountain Wet Layered Forest is equivalent to High Mountain Wet Layered Forest (Unit 9) described by Keith & Bedward (1999). This unit is characterised by a tall *Eucalyptus* dominated canopy typically over 40m in height and occasionally exceeding 60m. A distinctive dense subcanopy of small trees ca. 10m tall is also present with occasional vines and an understorey ca. 3m tall. The groundcover comprises scattered clumps of *Polystichum proliferum* and *Gahnia sieberiana* amongst typically dense leaf litter. These magnificent forests are scattered along the highest parts of the escarpment range above 850 m elevation, mainly on granitoid geology. Although the northern stands in the Brown Mountain - upper Tantawangalo area have been fragmented by recent logging, some of these are now reserved from further logging. In the south, a stand near the Victorian border was partially cleared for pine plantations in the 1970's (about one-fifth of the total area) and the remainder was burnt by an intense crown fire in 1983. Similar forests have been described on Erinundra Plateau in East Gippsland (Community 8.1, Forbes *et al.* 1982), but some differences are apparent including rainforest elements such as *Atherosperma moschatum* in the subcanopy and a greater frequency of shrubs (e.g. *Telopea oreades*) in the understorey. Although no detailed studies have been carried out on the dynamics of High Mountain Layered Wet Forest, it is likely that Ashton's (1981) stand-replacing fire model accurately describes vegetation change in relation to recurring disturbance (see also Noble and Slatyer 1981). The existence of stands dominated by *Acacia dealbata* south of Brown Mountain is consistent with the prior elimination of eucalypts as proposed in a pathway of Ashton's (1981) model that entails frequent fires. Although such fire regimes potentially threaten all reserved stands of Mountain Layered Wet Forest, these threats are likely to be amplified in stands that remain in production because they are subject to additional disturbances including tree-felling and management fires. Dense and rapid vegetative recovery of ferns that follows logging and regeneration burns may also suppress establishment of seedlings, reducing the diversity of woody species including trees.

**Floristic Summary:**

**Trees:** *Acacia dealbata*, *Bedfordia arborescens*, *Dicksonia antarctica*, *Eucalyptus fastigata*, *Eucalyptus nitens*  
**Shrubs:** *Coprosma quadrifida*, *Gahnia sieberiana*, *Olearia argophylla*, *Prostanthera lasianthos*, *Tasmannia lanceolata* **Climbers:** *Clematis aristata*, *Parsonsia brownii* **Groundcover:** *Australina pusilla*, *Blechnum watsii*, *Histiopteris incisa*, *Hydrocotyle peduncularis*, *Poa ensiformis*, *Polystichum proliferum*, *Pteridium esculentum*, *Stellaria flaccida*, *Viola hederacea*

**Vegetation structure:**

Stratum	Frequency (n=10)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	43 (10.9)	45 (13.9)
Small tree	100	9.8 (5.7)	45.5 (25.5)
Shrub	80	2.7 (1.2)	25.4 (16.9)
Ground cover	100	0.8 (0.5)	35.1 (27.8)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 9 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 17 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 9 positive diagnostic species.

**Positive Diagnostic Species:**

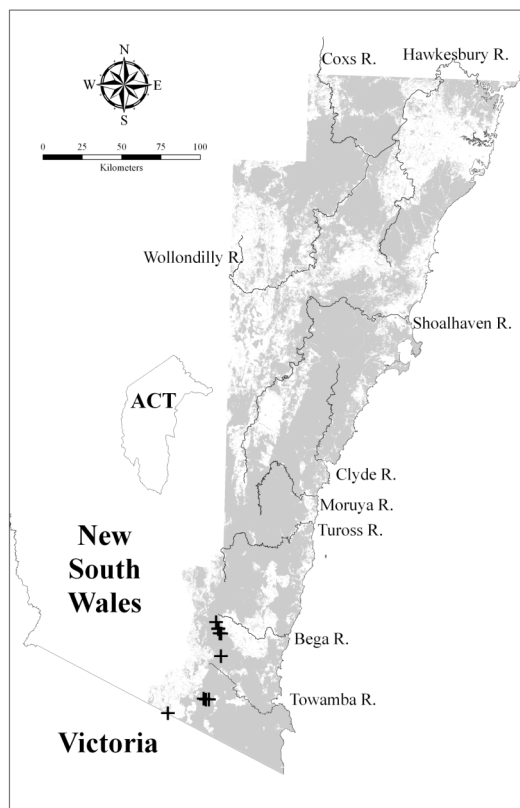
Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	2(2-3)	92	1(1-2)	5
<i>Australina pusilla</i>	1(1-2)	42	1(1-2)	2
<i>Bedfordia arborescens</i>	1(1-1)	50	1(1-2)	3
<i>Blechnum nudum</i>	1(1-2)	25	1(1-2)	3
<i>Blechnum wattsii</i>	3(2-3)	42	1(1-2)	2
<i>Clematis aristata</i>	1(1-1)	75	1(1-1)	20
<i>Coprosma quadrifida</i>	1(1-2)	58	1(1-1)	10
<i>Dicksonia antarctica</i>	2(1-3)	92	1(1-3)	4
<i>Eucalyptus fastigata</i>	2(2-4)	58	2(1-3)	6
<i>Eucalyptus nitens</i>	3(2-3)	67	2(1-3)	<1
<i>Gahnia sieberiana</i>	1(1-2)	75	1(1-1)	4
<i>Histiopteris incisa</i>	1(1-1)	50	1(1-1)	1
<i>Hydrocotyle peduncularis</i>	1(1-1)	42	1(1-1)	9
<i>Olearia argophylla</i>	3(2-3)	92	1(1-2)	3
<i>Olearia phlogopappa</i>	1(1-2)	25	1(1-1)	<1
<i>Olearia stellulata</i>	2(1-2)	25	1(1-1)	1
<i>Parsonsia brownii</i>	1(1-2)	58	1(1-2)	2
<i>Persoonia silvatica</i>	2(1-2)	33	1(1-1)	2
<i>Pittosporum bicolor</i>	1(1-1)	33	1(1-1)	<1
<i>Poa ensiformis</i>	1(1-2)	42	1(1-2)	2
<i>Polystichum proliferum</i>	2(1-3)	83	1(1-2)	4
<i>Pomaderris aspera</i>	1(1-2)	33	1(1-2)	5
<i>Prostanthera lasianthos</i>	2(1-2)	67	1(1-1)	2
<i>Stellaria flaccida</i>	1(1-1)	50	1(1-1)	11
<i>Tasmannia lanceolata</i>	2(1-2)	50	1(1-2)	1

**Constant:**

Species	C/A	Freq	C/A O	Freq O
<i>Microlaena stipoides</i>	1(1-1)	33	1(1-2)	36
<i>Pteridium esculentum</i>	1(1-1)	42	1(1-2)	37
<i>Smilax australis</i>	1(1-1)	33	1(1-1)	16
<i>Viola hederacea</i>	1(1-1)	42	1(1-1)	22

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus badjensis</i>	2(2-2)	17	2(1-3)	<1
<i>Eucalyptus elata</i>	2(2-2)	8	2(1-3)	5
<i>Eucalyptus fraxinoides</i>	3(3-3)	8	2(1-3)	1
<i>Eucalyptus obliqua</i>	1(1-1)	8	2(1-3)	4



Locations of survey sites allocated to WSF e9. Grey shading indicates extant native vegetation cover within the study area.

**WSF e10: Southeast Mountain Wet Layered Forest**

Plate e10. Southeast Mountain Wet Layered Forest (Map Unit e10) dominated by *Eucalyptus fastigata* with a sub canopy of *Bedfordia arborescens* on the watershed between Wog Wog River and Basin Creek, Coolangubra section, South East Forests National Park.

Sample Sites: 100

Area Extant (ha): 17500

Estimated % remaining: 85-95%

Area in conservation reserves (ha): 9900

Estimated % of pre-clearing area in conservation reserves: 45-55%

No. Taxa (total / unique): 290 / 1

No. Taxa per Plot ( $\pm$ sd): 30.3 (13.8)

Class: Southern Escarpment Wet Sclerophyll Forests

Related TEC: n/a

Southeast Mountain Wet Layered Forest is equivalent to Mountain Wet Layered Forest (unit 10) described by Keith & Bedward (1999). Although it is structurally similar to the preceding assemblage (Map Unit WSF e9), these forests exceeding 35 m in height are usually dominated by pure stands of *Eucalyptus fastigata* or may have a minor component of *E. cypellocarpa*. Subcanopy species typically reach a height of 10 m in high densities. The understorey is dominated by *Dicksonia antarctica* with *Coprosma quadrifida* while the groundcover comprises ferns and scattered herbs. A variety of climbing species are also common. Southeast Mountain Wet Layered Forest typically occurs in large stands on moist granitoid slopes at 600-1000 m elevation (generally lower than Map Unit 9), although small unusual stands occur on metasediments and at lower elevation in sheltered gullies. The major stands occur on the escarpment range between Brown Mountain and the upper Tantawangalo Creek area, at Mt Darragh, in the upper Wog Wog River and on Egan Peaks. Scattered occurrences occur along the Kybean Range and as far north as Clyde Mountain. A similar model of vegetation dynamics is likely to apply to Mountain Wet Layered Forests as described previously for layered forests at higher elevation (Map Unit WSF e9). Frequent disturbance regimes are therefore likely to entail similar adverse ecological consequences. Similar assemblages have not been explicitly described in adjacent regions. However, such vegetation may exist within wet sclerophyll complexes on Erinundra and Nunniong Plateaux in East Gippsland (Woodgate *et al.* 1994). For example, Southeast Mountain Wet Layered Forest in Eden shares some features of East Gippsland Community 8.1 and other features of 8.2 described by Forbes *et al.* (1982).

**Floristic Summary:**

**Trees:** *Acacia dealbata*, *Bedfordia arborescens*, *Cyathea australis*, *Dicksonia antarctica*, *Eucalyptus fastigata*

**Shrubs:** *Coprosma quadrifida*, *Olearia argophylla*, *Pomaderris aspera* **Climbers:** *Clematis aristata*, *Smilax australis*

**Groundcover:** *Blechnum nudum*, *Dianella tasmanica*, *Geranium potentilloides*, *Polystichum proliferum*, *Pteridium esculentum*, *Stellaria flaccida*, *Viola hederacea*



**Vegetation structure:**

Stratum	Frequency (n=49)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	96	34.5 (7.8)	37 (18.7)
Small tree	98	10.8 (4.4)	52.6 (27.8)
Shrub	67	2.6 (1.5)	25.8 (21.7)
Ground cover	100	0.7 (0.3)	41.5 (23.1)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 14 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 19 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 14 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	2(1-3)	41	1(1-2)	5
<i>Acacia melanoxylon</i>	1(1-2)	39	1(1-1)	6
<i>Acaena novae-zelandiae</i>	1(1-1)	23	1(1-1)	7
<i>Australina pusilla</i>	1(1-1)	13	1(1-2)	1
<i>Bedfordia arborescens</i>	2(2-3)	73	1(1-2)	3
<i>Blechnum nudum</i>	2(1-3)	50	1(1-2)	3
<i>Blechnum wattsii</i>	1(1-2)	24	1(1-2)	2
<i>Carex appressa</i>	1(1-1)	12	1(1-1)	4
<i>Clematis aristata</i>	1(1-1)	72	1(1-1)	19
<i>Coprosma quadrifida</i>	1(1-1)	82	1(1-1)	9
<i>Cyathea australis</i>	1(1-2)	45	1(1-1)	8
<i>Deyeuxia gunniana</i>	1(1-1)	4	1(1-1)	<1
<i>Deyeuxia monticola</i>	1(1-1)	6	1(1-1)	1
<i>Dianella tasmanica</i>	1(1-1)	43	1(1-1)	7
<i>Dicksonia antarctica</i>	1(1-2)	52	1(1-3)	3
<i>Dryophila cyanocarpa</i>	1(1-1)	8	1(1-1)	<1
<i>Elaeocarpus holopetalus</i>	1(1-2)	11	1(1-1)	<1
<i>Eucalyptus badjensis</i>	2(1-3)	5	2(1-2)	<1
<i>Eucalyptus cypellocarpa</i>	2(1-2)	39	2(1-2)	10
<i>Eucalyptus fastigata</i>	3(2-3)	93	2(1-3)	5
<i>Eucalyptus fraxinoides</i>	2(1-2)	8	2(1-3)	1
<i>Eucalyptus nitens</i>	2(2-3)	5	2(1-3)	<1
<i>Fieldia australis</i>	1(1-1)	16	2(1-3)	2
<i>Gahnia sieberiana</i>	1(1-2)	16	1(1-1)	4
<i>Galium propinquum</i>	1(1-1)	20	1(1-1)	7
<i>Geranium homeanum</i>	1(1-1)	15	1(1-1)	3
<i>Geranium potentilloides</i>	1(1-1)	50	1(1-1)	5
<i>Goodia lotifolia</i>	1(1-1)	10	1(1-1)	2
<i>Hakea eriantha</i>	1(1-1)	9	1(1-1)	2
<i>Hedycarya angustifolia</i>	1(1-1)	24	1(1-3)	4
<i>Hierochloe rariflora</i>	1(1-1)	14	1(1-2)	4
<i>Histiopteris incisa</i>	1(1-1)	12	1(1-1)	1
<i>Hydrocotyle peduncularis</i>	1(1-1)	39	1(1-1)	8

<i>Hymenophyllum cupressiforme</i>	1(1-1)	7	1(1-1)	1
<i>Isolepis inundata</i>	1(1-1)	8	1(1-1)	1
<i>Juncus thompsonianus</i>	1(1-1)	4	1(1-1)	<1
<i>Lagenifera stipitata</i>	1(1-1)	37	1(1-1)	14
<i>Leptinella filicula</i>	1(1-1)	17	1(1-1)	<1
<i>Lomatia fraseri</i>	1(1-2)	12	1(1-1)	1
<i>Lomatia myricoides</i>	1(1-1)	17	1(1-1)	4
<i>Luzula flaccida</i>	1(1-1)	17	1(1-1)	4
<i>Microsorium pustulatum</i>	1(1-1)	9	1(1-2)	1
<i>Olearia argophylla</i>	2(1-2)	80	1(1-1)	2
<i>Olearia megalophylla</i>	1(1-1)	4	1(1-1)	<1
<i>Olearia phlogopappa</i>	1(1-2)	8	1(1-1)	<1
<i>Olearia stellulata</i>	1(1-1)	20	1(1-1)	1
<i>Parsonsia brownii</i>	1(1-1)	17	1(1-2)	1
<i>Pimelea axiflora</i>	1(1-1)	28	1(1-1)	3
<i>Pimelea ligustrina</i>	1(1-1)	21	1(1-1)	1
<i>Pittosporum bicolor</i>	1(1-1)	7	1(1-1)	<1
<i>Poa ensiformis</i>	1(1-1)	27	1(1-2)	2
<i>Poa meionectes</i>	1(1-1)	31	1(1-2)	16
<i>Polystichum proliferum</i>	1(1-2)	74	1(1-2)	3
<i>Pomaderris aspera</i>	2(1-2)	83	1(1-1)	4
<i>Prostanthera lasianthos</i>	1(1-1)	25	1(1-1)	2
<i>Pteridium esculentum</i>	1(1-2)	71	1(1-2)	37
<i>Ranunculus plebeius</i>	1(1-1)	18	1(1-1)	1
<i>Sambucus australasica</i>	1(1-1)	8	1(1-1)	1
<i>Sambucus gaudichaudiana</i>	1(1-1)	6	1(1-1)	<1
<i>Senecio linearifolius</i>	1(1-1)	30	1(1-1)	8
<i>Smilax australis</i>	1(1-1)	72	1(1-1)	16
<i>Stellaria flaccida</i>	1(1-1)	69	1(1-1)	10
<i>Tasmannia lanceolata</i>	1(1-2)	32	1(1-1)	1
<i>Tetrarrhena juncea</i>	1(1-1)	17	1(1-2)	5
<i>Tylophora barbata</i>	1(1-1)	39	1(1-1)	16
<i>Urtica incisa</i>	1(1-1)	31	1(1-1)	5
<i>Veronica calycina</i>	1(1-1)	26	1(1-1)	6
<i>Veronica notabilis</i>	1(1-1)	22	1(1-1)	<1
<i>Viola hederacea</i>	1(1-1)	74	1(1-1)	21
<i>Xerochrysum bracteatum</i>	1(1-1)	13	1(1-1)	2

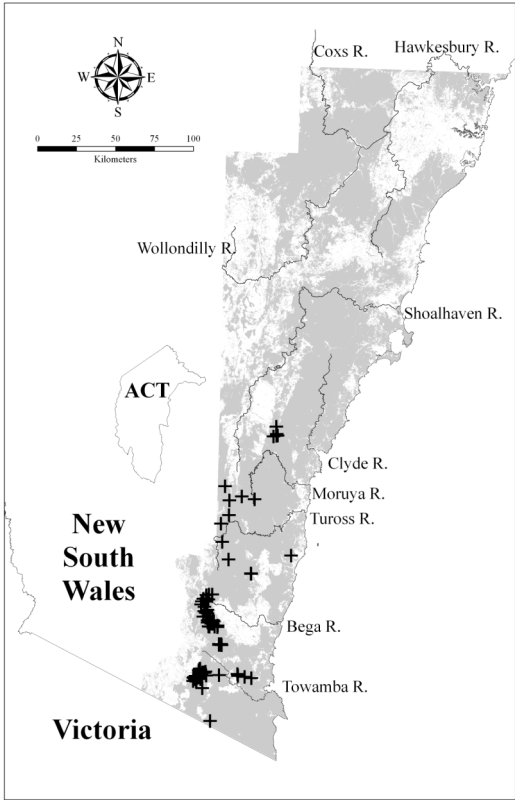
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Microlaena stipoides</i>	1(1-1)	39	1(1-2)	36

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	1	1(1-2)	9
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-1)	1	1(1-2)	3
<i>Eucalyptus elata</i>	1(1-1)	4	2(1-3)	5

<i>Eucalyptus maidenii</i>	1(1-1)	1	2(1-2)	2
<i>Eucalyptus obliqua</i>	1(1-1)	10	2(1-3)	4
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-2)	5	2(1-3)	6
<i>Eucalyptus smithii</i>	1(1-1)	2	1(1-2)	2
<i>Eucalyptus viminalis</i>	2(1-3)	4	2(1-3)	5



Locations of survey sites allocated to WSF e10. Grey shading indicates extant native vegetation cover within the study area.

**WSF e11: Tantawangalo Wet Shrub Forest**



Plate e11. Tantawangalo Wet Shrub Forest (Map Unit e11) dominated by *Eucalyptus cypellocarpa* with *E. fastigata* over an open stratum of *Bedfordia arborescens*, *Exocarpos strictus* and *Olearia argophylla* on Robinsons Road in the upper Tantawangalo Creek catchment, Tantawangalo section of South East Forests National Park.

Sample Sites: 23  
 Area Extant (ha): 800  
 Estimated % remaining: >95%  
 Area in conservation reserves (ha): 740  
 Estimated % of pre-clearing area in conservation reserves: >90%  
 No. Taxa (total / unique): 110 / 0  
 No. Taxa per Plot ( $\pm$ sd): 29.4 (5.7)  
 Class: Southern Escarpment Wet Sclerophyll Forests  
 Related TEC: n/a

Tantawangalo Wet Shrub Forest is equivalent to unit 11 of the same name described by Keith & Bedward (1999). This tall forest is characterised by a prominent and diverse shrub stratum that distinguishes it from other wet eucalypt forest assemblages. The understorey is dominated by tree ferns and shrubs, often tangled with a variety of climbing species. The groundcover is dominated by graminoids and lilioids. This distinctive forest assemblage is restricted to the upper Tantawangalo Creek area on moderate granitoid slopes at 800 - 1000 m elevation. Almost all occurrences are represented within Southeast Forests National Park. While there are no immediate threats, diversity of the shrubby understorey may be reduced if fire frequency increases significantly in future. There are apparently no similar forest assemblages outside the Eden region (Costin 1954, Austin 1978, Forbes *et al.* 1982, Woodgate *et al.* 1994).

#### Floristic Summary:

**Trees:** *Acacia melanoxylon*, *Bedfordia arborescens*, *Elaeocarpus holopetalus*, *Eucalyptus cypellocarpa*, *Eucalyptus fastigata*, *Eucalyptus obliqua*, *Exocarpos strictus* **Shrubs:** *Bursaria spinosa*, *Coprosma quadrifida*, *Gahnia sieberiana*, *Hakea eriantha*, *Leucopogon lanceolatus* var. *lanceolatus*, *Olearia argophylla*, *Pomaderris aspera*, *Tasmannia lanceolata* **Climbers:** *Billardiera scandens*, *Clematis aristata*, *Smilax australis*, *Tylophora barbata* **Groundcover:** *Dianella tasmanica*, *Gonocarpus teucroides*, *Goodenia ovata*, *Hierochloa rariflora*, *Hydrocotyle laxiflora*, *Lepidosperma laterale*, *Lomandra longifolia*, *Poa meionectes*, *Pteridium esculentum*, *Viola hederacea*

#### Vegetation structure:

Stratum	Frequency (n=19)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	19 (-)	37.7 (9.8)
Small tree	89	4 (-)	18.1 (10.7)
Shrub	95	- (-)	32.7 (13)
Ground cover	100	1 (-)	24.9 (7)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 19 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 25 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 19 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	1(1-1)	26	1(1-2)	5
<i>Acacia melanoxylon</i>	3(2-3)	61	1(1-1)	6
<i>Bedfordia arborescens</i>	2(1-3)	52	1(1-2)	3
<i>Billardiera scandens</i>	1(1-1)	70	1(1-1)	27
<i>Blechnum wattsii</i>	1(1-2)	22	1(1-2)	2
<i>Bursaria spinosa</i>	1(1-2)	43	1(1-2)	14
<i>Clematis aristata</i>	1(1-1)	87	1(1-1)	20
<i>Comesperma volubile</i>	1(1-1)	26	1(1-1)	2
<i>Coprosma quadrifida</i>	1(1-1)	78	1(1-1)	9
<i>Cyathea australis</i>	1(1-1)	35	1(1-2)	8
<i>Dianella tasmanica</i>	1(1-1)	74	1(1-1)	7
<i>Dryophila cyanocarpa</i>	1(1-1)	39	1(1-1)	<1
<i>Elaeocarpus holopetalus</i>	1(1-1)	43	1(1-2)	<1
<i>Eucalyptus cypellocarpa</i>	2(2-3)	91	2(1-2)	10

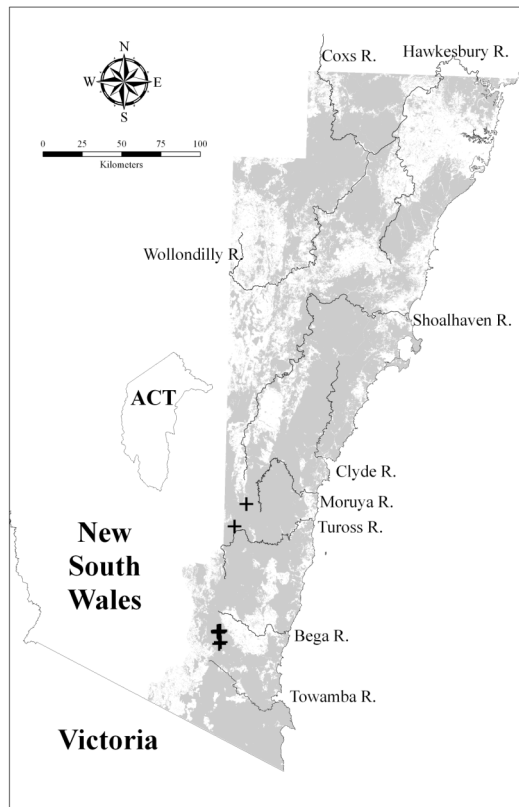
<i>Eucalyptus elata</i>	2(1-2)	26	2(1-3)	5
<i>Eucalyptus fastigata</i>	3(2-3)	87	2(1-3)	6
<i>Eucalyptus obliqua</i>	3(2-3)	83	2(1-3)	4
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-2)	26	2(1-3)	6
<i>Exocarpos strictus</i>	1(1-1)	57	1(1-1)	9
<i>Gahnia sieberiana</i>	2(1-2)	61	1(1-1)	4
<i>Galium propinquum</i>	1(1-1)	39	1(1-1)	7
<i>Geranium homeanum</i>	1(1-1)	39	1(1-1)	3
<i>Gonocarpus teucrioides</i>	1(1-1)	65	1(1-1)	17
<i>Goodenia ovata</i>	1(1-2)	61	1(1-1)	7
<i>Hakea eriantha</i>	1(1-2)	70	1(1-1)	2
<i>Hierochloe rariflora</i>	1(1-1)	43	1(1-2)	4
<i>Hydrocotyle laxiflora</i>	1(1-1)	48	1(1-1)	15
<i>Lagenifera stipitata</i>	1(1-1)	39	1(1-1)	14
<i>Lepidosperma laterale</i>	1(1-2)	70	1(1-1)	28
<i>Lepidosperma urophorum</i>	1(1-1)	26	1(1-2)	7
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	65	1(1-1)	23
<i>Lomandra longifolia</i>	1(1-1)	87	1(1-1)	44
<i>Olearia argophylla</i>	1(1-1)	61	1(1-2)	3
<i>Persoonia silvatica</i>	1(1-1)	22	1(1-1)	2
<i>Pimelea ligustrina</i>	1(1-1)	26	1(1-1)	1
<i>Poa meionectes</i>	1(1-1)	57	1(1-2)	16
<i>Pomaderris aspera</i>	2(1-2)	57	1(1-2)	5
<i>Prostanthera lasianthos</i>	1(1-1)	26	1(1-1)	2
<i>Pteridium esculentum</i>	1(1-1)	100	1(1-2)	37
<i>Smilax australis</i>	1(1-1)	83	1(1-1)	16
<i>Tasmania lanceolata</i>	2(1-2)	83	1(1-1)	1
<i>Tylophora barbata</i>	1(1-1)	65	1(1-1)	17
<i>Veronica calycina</i>	1(1-1)	35	1(1-1)	6
<i>Viola hederacea</i>	1(1-1)	91	1(1-1)	22

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Poranthera microphylla</i>	1(1-1)	35	1(1-1)	15

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus sieberi</i>	2(2-4)	13	2(1-3)	16



Locations of survey sites allocated to WSF e11. Grey shading indicates extant native vegetation cover within the study area.

### WSF e12: Mountain Wet Fern Forest



Plate e12. Mountain Wet Fern Forest (Map Unit e12) dominated by *Eucalyptus fastigata* with a dense groundcover of *Blechnum nudum* near Mt Darragh, Tantawangalo section of South East Forests National Park.

Sample Sites: 95

Area Extant (ha): 48300

Estimated % remaining: >95%

Area in conservation reserves (ha): 36300  
 Estimated % of pre-clearing area in conservation reserves: 70-80%  
 No. Taxa (total / unique): 316 / 1  
 No. Taxa per Plot ( $\pm$ sd): 32.4 (11.1)  
 Class: Southern Escarpment Wet Sclerophyll Forests  
 Related TEC: n/a

Mountain Wet Fern Forest is equivalent to unit 12 of the same name described by Keith & Bedward (1999) and WSF70 (Southern Ranges Wet Forest) described by Tindall *et al.* (2004). This tall *Eucalyptus* forest typically exceeds 32 m in height and has an understorey of scattered shrubs and groundcover dominated by ferns. Tree ferns and tall mesic shrubs sometimes form an open stratum ca. 10 m tall while a variety of herb and vine species are also found amongst the groundcover of ferns. Mountain Wet Fern Forest occurs south of Clyde Mountain on steep sheltered granitoid slopes at 450 - 1200 m elevation on the escarpment range and outlying mountains such as Egan Peaks, Mt Poole and Deua National Park. Mountain Wet Fern Forest is most similar to Southeast Mountain Wet Layered Forest (Map Unit WSFe10), but differs in the presence of minor tree species and greater abundance of *E. cypellocarpa*, its more open subcanopy and in the composition and greater diversity of its understorey. The diversity of this assemblage may be affected by regimes of frequent and/or intense disturbances (i.e. fires and logging). Dense and rapid vegetative recovery of ferns that follows logging and regeneration burns may suppress establishment of seedlings, reducing the diversity of woody species including trees. Frequent burning is likely to exacerbate this effect, although these threats are not ubiquitous in Mountain Wet Fern Forest, since about two-thirds of its extent is represented within conservation reserves. Similar assemblages may exist in the wet forest complex of East Gippsland (Ecological Vegetation Class 30, Woodgate *et al.* 1994), but this needs further investigation.

#### Floristic Summary:

**Trees:** *Bedfordia arborescens*, *Cyathea australis*, *Eucalyptus cypellocarpa*, *Eucalyptus fastigata* **Shrubs:** *Coprosma quadrifida*, *Leucopogon lanceolatus* var. *lanceolatus* **Climbers:** *Clematis aristata*, *Smilax australis*, *Tylophora barbata* **Groundcover:** *Blechnum cartilagineum*, *Calochlaena dubia*, *Geranium potentilloides*, *Goodenia ovata*, *Hierochloe rariflora*, *Lagenifera stipitata*, *Pteridium esculentum*, *Stellaria flaccida*, *Viola hederacea*

#### Vegetation structure:

Stratum	Frequency (n=61)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	32.8 (6.4)	37.8 (16.7)
Small tree	85	10.3 (6.9)	29.4 (23.8)
Shrub	62	2.8 (1.5)	21.8 (18.9)
Ground cover	100	1 (0.3)	52.1 (30.4)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 14 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 24 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 14 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-1)	29	1(1-2)	10
<i>Acacia melanoxylon</i>	1(1-2)	23	1(1-1)	6
<i>Bedfordia arborescens</i>	1(1-3)	43	1(1-2)	3
<i>Blechnum cartilagineum</i>	2(1-3)	48	1(1-2)	11
<i>Blechnum nudum</i>	2(2-4)	37	1(1-2)	3
<i>Blechnum wattsii</i>	1(1-2)	7	1(1-2)	2
<i>Calochlaena dubia</i>	1(1-3)	43	1(1-3)	9
<i>Carex appressa</i>	1(1-1)	15	1(1-1)	4
<i>Clematis aristata</i>	1(1-1)	73	1(1-1)	19
<i>Coprosma quadrifida</i>	1(1-1)	68	1(1-1)	9
<i>Cyathea australis</i>	1(1-2)	67	1(1-1)	8
<i>Dianella tasmanica</i>	1(1-1)	36	1(1-1)	7
<i>Dichelachne rara</i>	1(1-1)	15	1(1-1)	4
<i>Dicksonia antarctica</i>	1(1-2)	24	2(1-3)	4



<i>Eucalyptus cypellocarpa</i>	2(2-2)	86	2(1-2)	9
<i>Eucalyptus elata</i>	1(1-2)	28	2(1-3)	5
<i>Eucalyptus fastigata</i>	2(2-3)	79	2(1-3)	5
<i>Eucalyptus obliqua</i>	1(1-2)	35	2(1-3)	4
<i>Eustrephus latifolius</i>	1(1-1)	37	1(1-1)	19
<i>Galium binifolium</i>	1(1-1)	11	1(1-1)	3
<i>Geranium potentilloides</i>	1(1-1)	45	1(1-1)	5
<i>Goodenia ovata</i>	1(1-1)	41	1(1-1)	7
<i>Goodia lotifolia</i>	1(1-1)	34	1(1-1)	2
<i>Hakea eriantha</i>	1(1-2)	14	1(1-1)	2
<i>Hedycarya angustifolia</i>	1(1-1)	24	1(1-3)	4
<i>Helichrysum elatum</i>	1(1-1)	12	1(1-1)	2
<i>Hierochloe rariflora</i>	1(1-2)	44	1(1-2)	3
<i>Hydrocotyle geraniifolia</i>	1(1-2)	17	1(1-1)	2
<i>Hydrocotyle peduncularis</i>	1(1-1)	29	1(1-1)	8
<i>Isolepis inundata</i>	1(1-1)	8	1(1-1)	1
<i>Lagenifera stipitata</i>	1(1-1)	47	1(1-1)	14
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	58	1(1-1)	23
<i>Luzula flaccida</i>	1(1-1)	12	1(1-1)	4
<i>Olearia argophylla</i>	1(1-2)	22	1(1-2)	3
<i>Oxalis chnoodes</i>	1(1-1)	7	1(1-1)	1
<i>Pimelea axiflora</i>	1(1-1)	37	1(1-1)	3
<i>Pimelea ligustrina</i>	1(1-1)	11	1(1-1)	1
<i>Poa ensiformis</i>	1(1-1)	17	1(1-2)	2
<i>Poa meionectes</i>	1(1-2)	39	1(1-2)	16
<i>Poa tenera</i>	1(1-1)	5	1(1-2)	<1
<i>Polystichum proliferum</i>	1(1-1)	21	1(1-2)	3
<i>Pomaderris aspera</i>	1(1-1)	35	1(1-2)	4
<i>Poranthera microphylla</i>	1(1-1)	37	1(1-1)	15
<i>Prostanthera lasianthos</i>	1(1-1)	11	1(1-1)	2
<i>Pteridium esculentum</i>	1(1-2)	97	1(1-2)	36
<i>Rubus rosifolius</i>	1(1-1)	12	1(1-1)	3
<i>Schelhammera undulata</i>	1(1-1)	32	1(1-1)	7
<i>Senecio linearifolius</i>	1(1-1)	37	1(1-1)	8
<i>Smilax australis</i>	1(1-1)	86	1(1-1)	15
<i>Stellaria flaccida</i>	1(1-1)	77	1(1-1)	10
<i>Sticherus lobatus</i>	1(1-2)	9	1(1-3)	1
<i>Tasmania lanceolata</i>	1(1-1)	8	1(1-2)	1
<i>Tetrarrhena juncea</i>	1(1-2)	26	1(1-2)	5
<i>Tylophora barbata</i>	1(1-1)	83	1(1-1)	16
<i>Veronica calycina</i>	1(1-1)	19	1(1-1)	6
<i>Veronica notabilis</i>	1(1-1)	11	1(1-1)	1
<i>Viola hederacea</i>	1(1-1)	84	1(1-1)	21

Constant:

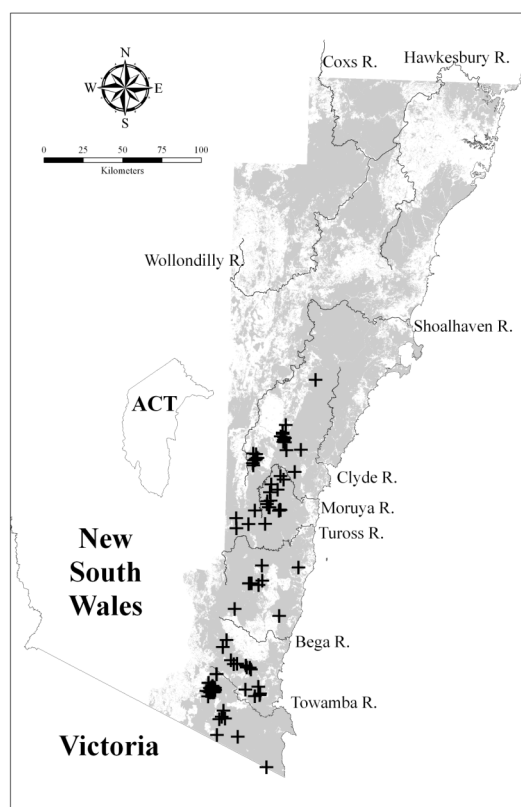
Species	C/A	Freq	C/A O	Freq O
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<i>Billardiera scandens</i>	1(1-1)	37	1(1-1)	27
<i>Desmodium varians</i>	1(1-1)	31	1(1-1)	21
<i>Glycine clandestina</i>	1(1-1)	38	1(1-1)	26
<i>Lomandra longifolia</i>	1(1-1)	37	1(1-1)	44

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	1	1(1-2)	9
<i>Eucalyptus agglomerata</i>	1(1-1)	2	2(1-3)	8
<i>Eucalyptus angophoroides</i>	1(1-1)	1	1(1-2)	1
<i>Eucalyptus croajingolensis</i>	1(1-1)	1	2(1-3)	<1
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-1)	1	1(1-2)	3
<i>Eucalyptus fraxinoides</i>	2(1-2)	4	2(1-3)	1
<i>Eucalyptus globoidea</i>	1(1-1)	8	2(1-2)	12
<i>Eucalyptus maidenii</i>	1(1-1)	2	2(1-2)	2
<i>Eucalyptus muelleriana</i>	1(1-3)	9	2(1-2)	6
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-2)	8	2(1-3)	6
<i>Eucalyptus sieberi</i>	1(1-1)	13	2(1-3)	16
<i>Eucalyptus smithii</i>	1(1-1)	4	1(1-2)	2
<i>Eucalyptus viminalis</i>	2(1-2)	3	2(1-3)	5



Locations of survey sites allocated to WSF e12. Grey shading indicates extant native vegetation cover within the study area.

**WSF e13: Southeast Hinterland Wet Fern Forest**

Plate e13. Southeast Hinterland Wet Fern Forest (Map Unit e13) dominated by *Eucalyptus cypellocarpa* with a dense groundcover of *Calochlaena dubia* in the upper New England Creek catchment, Murrabrine section of Wadbilliga National Park.

Sample Sites: 65

Area Extant (ha): 26900

Estimated % remaining: >90%

Area in conservation reserves (ha): 14600

Estimated % of pre-clearing area in conservation reserves: 45-55%

No. Taxa (total / unique): 303 / 0

No. Taxa per Plot ( $\pm$ sd): 38.4 (12.1)

Class: South Coast Wet Sclerophyll Forests

Related TEC: n/a

Southeast Hinterland Wet Fern Forest is equivalent to Hinterland Wet Fern Forest (unit 13) described by Keith & Bedward (1999) and comprises a diverse mesic assemblage dominated by *Eucalyptus* species over 30 m tall. One or two open strata of shrubs *ca.* 2 - 9 m tall may be present and the dense groundcover is dominated by ferns. A variety of herbs and vines are also commonly found growing amongst the large clumps of ferns. Hinterland Wet Fern Forest is widespread in gullies and moist sheltered slopes in relatively large stands below 800 m elevation. In the higher part of its altitudinal range it is replaced by Mountain Wet Fern Forest (Map Unit WSFe12) or Southeast Mountain Wet Herb Forest (Map Unit WSFe15) which differ in their understorey composition and greater abundance of *E. fastigata*. Although most extensive on granitoid substrates of the escarpment and hinterland, it is also common on metasediments, particularly on central parts of the coastal range west of Merimbula. Restricted stands occur in coastal gullies in the Nadgee area. Clearing is a potential threat over the 8 000 ha of Hinterland Wet Fern Forest that occur on private land. Logging may also threaten the diversity of woody species including trees where dense and rapid vegetative recovery of ferns after regeneration burns suppresses establishment of seedlings. Frequent burning is likely to exacerbate pressure on populations of woody species, especially in combination with logging or partial clearing activities. However, the threats posed by clearing, logging and frequent burning are not ubiquitous in Southeast Hinterland Wet Fern Forest, since about half of its extent is represented within conservation reserves. A similar assemblage has been described in East Gippsland (Community 13.2, Forbes *et al.* 1982) within the extensive damp forest complex (Ecological vegetation Class 29, Woodgate *et al.* 1994).

**Floristic Summary:**

**Trees:** *Acacia falciformis*, *Eucalyptus cypellocarpa*, *Eucalyptus muelleriana* **Shrubs:** *Coprosma quadrifida*, *Indigofera australis*, *Pimelea axiflora*, *Pomaderris aspera*, *Senecio linearifolius* **Climbers:** *Eustrephus latifolius*, *Rubus parvifolius*, *Smilax australis*, *Tylophora barbata* **Groundcover:** *Adiantum aethiopicum*, *Blechnum cartilagineum*, *Calochlaena dubia*, *Desmodium varians*, *Doodia aspera*, *Echinopogon ovatus*, *Geranium potentilloides*, *Glycine clandestina*, *Hydrocotyle peduncularis*, *Lagenifera stipitata*, *Lomandra longifolia*, *Oplismenus imbecillis*, *Poa meionectes*, *Pteridium esculentum*, *Schellhammera undulata*, *Stellaria flaccida*, *Viola hederacea*

**Vegetation structure:**

Stratum	Frequency (n=37)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	32.3 (6.5)	34.3 (14.4)
Small tree	84	10.2 (5.9)	28.9 (16.3)
Shrub	86	2.3 (1.6)	21.1 (18.1)
Ground cover	100	0.8 (0.4)	61.1 (28.6)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 18 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 29 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 18 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia cognata</i>	2(1-2)	17	1(1-2)	1
<i>Acacia falciformis</i>	1(1-2)	43	1(1-2)	10
<i>Acacia mearnsii</i>	1(1-2)	22	1(1-2)	7
<i>Acacia melanoxylon</i>	1(1-2)	29	1(1-1)	6
<i>Adiantum aethiopicum</i>	1(1-1)	42	1(1-2)	9
<i>Babingtonia pluriflora</i>	1(1-2)	17	1(1-1)	1
<i>Bedfordia arborescens</i>	1(1-2)	23	1(1-2)	3
<i>Blechnum cartilagineum</i>	1(1-2)	68	1(1-2)	11
<i>Blechnum nudum</i>	1(1-2)	12	1(1-2)	3
<i>Calochlaena dubia</i>	3(1-4)	69	1(1-3)	9
<i>Carex appressa</i>	1(1-1)	18	1(1-1)	4
<i>Cassinia aculeata</i>	1(1-1)	34	1(1-1)	6
<i>Cassinia longifolia</i>	1(1-2)	18	1(1-2)	6
<i>Clematis aristata</i>	1(1-1)	37	1(1-1)	20
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	32	1(1-1)	10
<i>Coprosma quadrifida</i>	1(1-1)	42	1(1-1)	9
<i>Cyathea australis</i>	1(1-1)	25	1(1-2)	8
<i>Desmodium varians</i>	1(1-1)	65	1(1-1)	21
<i>Dianella tasmanica</i>	1(1-1)	22	1(1-1)	7
<i>Doodia aspera</i>	1(1-2)	75	1(1-2)	11
<i>Echinopogon ovatus</i>	1(1-1)	46	1(1-1)	14
<i>Elaeocarpus reticulatus</i>	1(1-1)	28	1(1-1)	12
<i>Eucalyptus cypellocarpa</i>	2(2-2)	86	2(1-2)	9
<i>Eucalyptus elata</i>	2(1-2)	38	2(1-3)	5
<i>Eucalyptus muelleriana</i>	2(1-2)	46	2(1-2)	6
<i>Euchiton gymnocephalus</i>	1(1-1)	22	1(1-1)	7
<i>Eustrephus latifolius</i>	1(1-1)	55	1(1-1)	19
<i>Exocarpos strictus</i>	1(1-1)	29	1(1-1)	9
<i>Gahnia melanocarpa</i>	1(1-1)	25	1(1-1)	5
<i>Geitonoplesium cymosum</i>	1(1-1)	35	1(1-1)	16
<i>Geranium potentilloides</i>	1(1-1)	51	1(1-1)	5
<i>Glycine clandestina</i>	1(1-1)	66	1(1-1)	26
<i>Goodenia ovata</i>	1(1-1)	32	1(1-1)	7

<i>Goodia lotifolia</i>	1(1-1)	29	1(1-1)	2
<i>Helichrysum elatum</i>	1(1-1)	12	1(1-1)	2
<i>Hibbertia dentata</i>	1(1-1)	37	1(1-1)	6
<i>Hierochloe rariflora</i>	1(1-2)	15	1(1-2)	4
<i>Hydrocotyle peduncularis</i>	1(1-1)	40	1(1-1)	8
<i>Indigofera australis</i>	1(1-2)	63	1(1-1)	9
<i>Lagenifera stipitata</i>	1(1-1)	40	1(1-1)	14
<i>Libertia paniculata</i>	1(1-1)	23	1(1-1)	2
<i>Luzula flaccida</i>	1(1-1)	12	1(1-1)	4
<i>Marsdenia rostrata</i>	1(1-1)	26	1(1-2)	12
<i>Notelaea venosa</i>	1(1-1)	26	1(1-1)	12
<i>Oplismenus imbecillis</i>	1(1-2)	45	1(1-2)	14
<i>Phyllanthus gunnii</i>	1(1-1)	9	1(1-1)	2
<i>Pimelea axiflora</i>	1(1-1)	42	1(1-1)	3
<i>Plantago debilis</i>	1(1-1)	28	1(1-1)	7
<i>Poa ensiformis</i>	1(1-2)	12	1(1-2)	2
<i>Poa meionectes</i>	1(1-2)	63	1(1-2)	16
<i>Pomaderris aspera</i>	2(1-2)	49	1(1-2)	4
<i>Prostanthera lasianthos</i>	1(1-2)	26	1(1-1)	2
<i>Pteridium esculentum</i>	1(1-2)	78	1(1-2)	37
<i>Ranunculus plebeius</i>	1(1-1)	9	1(1-1)	1
<i>Rapanea howittiana</i>	1(1-1)	15	1(1-1)	5
<i>Rubus parvifolius</i>	1(1-1)	62	1(1-1)	9
<i>Schelhammera undulata</i>	1(1-1)	49	1(1-1)	7
<i>Senecio linearifolius</i>	1(1-1)	55	1(1-1)	8
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	25	1(1-1)	7
<i>Smilax australis</i>	1(1-1)	57	1(1-1)	16
<i>Stellaria flaccida</i>	1(1-1)	58	1(1-1)	10
<i>Tetrarrhena juncea</i>	2(1-2)	17	1(1-2)	5
<i>Tylophora barbata</i>	1(1-1)	86	1(1-1)	16
<i>Veronica calycina</i>	1(1-1)	17	1(1-1)	6
<i>Viola hederacea</i>	1(1-1)	75	1(1-1)	21

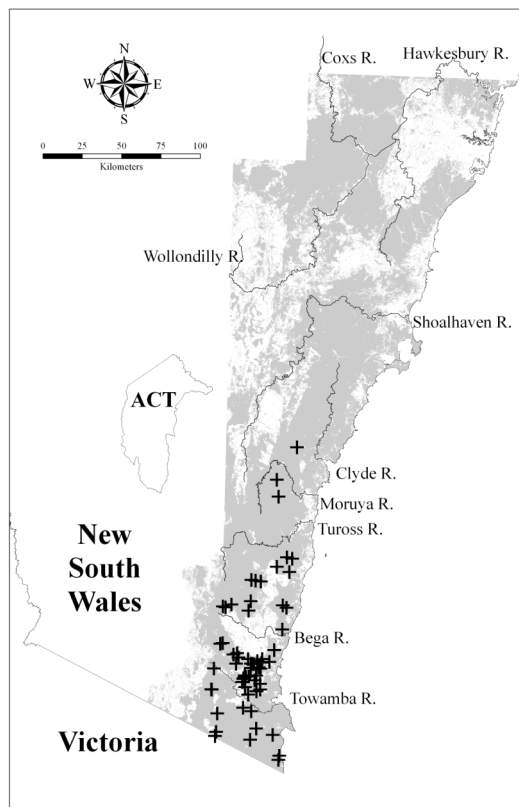
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Dichondra</i> spp.	1(1-1)	34	1(1-2)	25
<i>Lomandra longifolia</i>	1(1-1)	49	1(1-1)	44
<i>Microlaena stipoides</i>	1(1-1)	31	1(1-2)	36

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-2)	17	1(1-2)	9
<i>Corymbia gummifera</i>	2(1-2)	6	2(1-2)	16
<i>Eucalyptus agglomerata</i>	2(1-2)	5	2(1-3)	7
<i>Eucalyptus angophoroides</i>	2(1-2)	3	1(1-2)	1
<i>Eucalyptus baueriana</i>	2(2-2)	2	2(1-2)	1
<i>Eucalyptus bosistoana</i>	1(1-1)	6	1(1-2)	3

<i>Eucalyptus botryoides</i>	2(1-2)	3	2(1-3)	3
<i>Eucalyptus fastigata</i>	2(1-3)	9	2(1-3)	6
<i>Eucalyptus fraxinoides</i>	2(2-2)	2	2(1-3)	1
<i>Eucalyptus globoidea</i>	1(1-2)	17	2(1-2)	12
<i>Eucalyptus maidenii</i>	1(1-2)	5	2(1-2)	2
<i>Eucalyptus obliqua</i>	2(1-3)	12	2(1-3)	4
<i>Eucalyptus sieberi</i>	2(1-3)	9	2(1-3)	16
<i>Eucalyptus smithii</i>	2(2-2)	2	1(1-2)	2
<i>Eucalyptus viminalis</i>	1(1-3)	6	2(1-3)	5



Locations of survey sites allocated to WSF e13. Grey shading indicates extant native vegetation cover within the study area.

**WSF e14: Southeast Hinterland Wet Shrub Forest**

Plate e14. Southeast Hinterland Wet Shrub Forest (Map Unit e14) dominated by *Eucalyptus muelleriana*, *E. cypellocarpa* and *E. elata* with *Acacia falciformis*, *A. mearnsii* and *Elaeocarpus reticulatus* at Sugarloaf Road, Yowaka\_NPAGEt.

Sample Sites: 46

Area Extant (ha): 25500

Estimated % remaining: >90%

Area in conservation reserves (ha): 9600

Estimated % of pre-clearing area in conservation reserves: 30-40%

No. Taxa (total / unique): 237 / 0

No. Taxa per Plot ( $\pm$ sd): 34.0 (9.8)

Class: South Coast Wet Sclerophyll Forests

Related TEC: n/a

Southeast Hinterland Wet Shrub Forest is equivalent to Hinterland Wet Shrub Forest (unit 14) described by Keith & Bedward (1999). This unit comprises a tall *Eucalyptus* forest frequently exceeding 30 m in height. The understorey includes prominent strata of small trees and shrubs ca. 3 - 9 m tall and the groundcover is dominated by forbs and grasses. Vines are also present growing amongst the groundcover and shrubs. Hinterland Wet Shrub Forest is widespread in gullies and steep moist sheltered slopes below 500 m elevation predominantly on metasediments of the coastal ranges. Outlying stands occur on granitoid substrates in the south-west hinterland near Mt Waalimma and Mt Poole and at Mount Dromedary on volcanic substrates in the north. Where Southeast Hinterland Wet Shrub Forest co-occurs with Southeast Hinterland Wet Fern Forest (Map Unit WSFe13), the latter generally occupies more mesic sites. Distinguishing features include the dominance of *E. muelleriana*, a more diverse tall shrub stratum and lack of fern swards in the understorey of Southeast Hinterland Wet Shrub Forest. Clearing is a potential threat over the 3 800 ha of this unit that occurs on private land. Outside reserves, logging in combination with frequent burning may threaten the diversity of the understorey by interrupting life-history processes of woody species. In the most similar assemblage described in East Gippsland (Community 13.1, Forbes et al. 1982), *E. obliqua* is equally as frequent as *E. muelleriana* and neither are as frequent as *E. cypellocarpa*. As well, some understorey differences exist. For example elements common in the Eden assemblage such as *Acacia cognata* are infrequent in the East Gippsland community.

**Floristic Summary:**

**Trees:** *Acacia cognata*, *Elaeocarpus reticulatus*, *Eucalyptus cypellocarpa*, *Eucalyptus muelleriana* **Shrubs:** *Goodia lotifolia*, *Leucopogon lanceolatus* var. *lanceolatus*, *Notelaea venosa* **Climbers:** *Billardiera scandens*, *Clematis aristata*, *Eustrephus latifolius*, *Hibbertia dentata*, *Pandorea pandorana*, *Smilax australis*, *Tylophora barbata* **Groundcover:** *Dianella caerulea*, *Gonocarpus teucrioides*, *Goodenia ovata*, *Hierochloa rariflora*, *Lomandra longifolia*, *Poa meionectes*, *Pteridium esculentum*, *Schellhammera undulata*, *Senecio velleioides*, *Tetrarrhena juncea*, *Viola hederacea*

**Vegetation structure:**

Stratum	Frequency (n=24)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	31.2 (6.9)	37.4 (11.2)
Small tree	71	9.5 (3.1)	27.6 (20.3)
Shrub	88	2.8 (1.8)	29.4 (16)
Ground cover	100	0.8 (0.4)	53 (26.6)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 16 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 26 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 16 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia cognata</i>	3(2-3)	50	1(1-2)	1
<i>Acacia falciformis</i>	1(1-2)	33	1(1-2)	10
<i>Acacia longifolia</i>	2(1-3)	39	1(1-2)	9
<i>Babingtonia pluriflora</i>	1(1-1)	17	1(1-2)	1
<i>Bedfordia arborescens</i>	1(1-1)	28	1(1-2)	3
<i>Billardiera scandens</i>	1(1-1)	65	1(1-1)	27
<i>Blechnum cartilagineum</i>	1(1-2)	39	1(1-2)	11
<i>Calochlaena dubia</i>	3(2-3)	37	1(1-3)	9
<i>Cassinia longifolia</i>	1(1-2)	30	1(1-2)	6
<i>Clematis aristata</i>	1(1-1)	65	1(1-1)	20
<i>Comesperma volubile</i>	1(1-1)	26	1(1-1)	2
<i>Coprosma quadrifida</i>	1(1-1)	33	1(1-1)	9
<i>Cyathea australis</i>	1(1-1)	35	1(1-2)	8
<i>Dianella caerulea</i>	1(1-1)	54	1(1-1)	28
<i>Dianella tasmanica</i>	1(1-1)	33	1(1-1)	7
<i>Elaeocarpus reticulatus</i>	1(1-1)	54	1(1-1)	12
<i>Eucalyptus cypellocarpa</i>	2(1-2)	93	2(1-2)	10
<i>Eucalyptus elata</i>	1(1-2)	30	2(1-3)	5
<i>Eucalyptus muelleriana</i>	2(2-3)	89	2(1-2)	6
<i>Eucalyptus obliqua</i>	2(1-3)	26	2(1-3)	4
<i>Eucalyptus sieberi</i>	1(1-2)	39	2(1-3)	16
<i>Eustrephus latifolius</i>	1(1-1)	46	1(1-1)	19
<i>Exocarpos strictus</i>	1(1-1)	35	1(1-1)	9
<i>Gonocarpus teucroides</i>	1(1-1)	65	1(1-1)	17
<i>Goodenia ovata</i>	1(1-1)	70	1(1-1)	7
<i>Goodia lotifolia</i>	1(1-2)	43	1(1-1)	2
<i>Hibbertia dentata</i>	1(1-1)	54	1(1-1)	6
<i>Hierochloe rariflora</i>	2(1-3)	48	1(1-2)	4
<i>Hydrocotyle geraniifolia</i>	1(1-1)	20	1(1-1)	2
<i>Hydrocotyle peduncularis</i>	1(1-1)	24	1(1-1)	9
<i>Kennedia rubicunda</i>	1(1-1)	20	1(1-1)	6
<i>Lagenifera stipitata</i>	1(1-1)	35	1(1-1)	14
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	83	1(1-1)	23

<i>Notelaea venosa</i>	1(1-1)	57	1(1-1)	12
<i>Ozothamnus cuneifolius</i>	1(1-1)	39	1(1-1)	1
<i>Pandorea pandorana</i>	1(1-1)	43	1(1-1)	18
<i>Pimelea axiflora</i>	1(1-2)	24	1(1-1)	3
<i>Poa meionectes</i>	1(1-1)	83	1(1-2)	16
<i>Pteridium esculentum</i>	1(1-2)	89	1(1-2)	37
<i>Pultenaea daphnoides</i>	1(1-2)	20	1(1-1)	4
<i>Schelhammera undulata</i>	1(1-1)	46	1(1-1)	7
<i>Senecio linearifolius</i>	1(1-1)	37	1(1-1)	8
<i>Senecio velleioides</i>	1(1-1)	41	1(1-1)	1
<i>Smilax australis</i>	1(1-1)	52	1(1-1)	16
<i>Tetrarrhena juncea</i>	2(1-2)	65	1(1-2)	5
<i>Tylophora barbata</i>	1(1-1)	78	1(1-1)	16
<i>Viola hederacea</i>	1(1-1)	83	1(1-1)	21

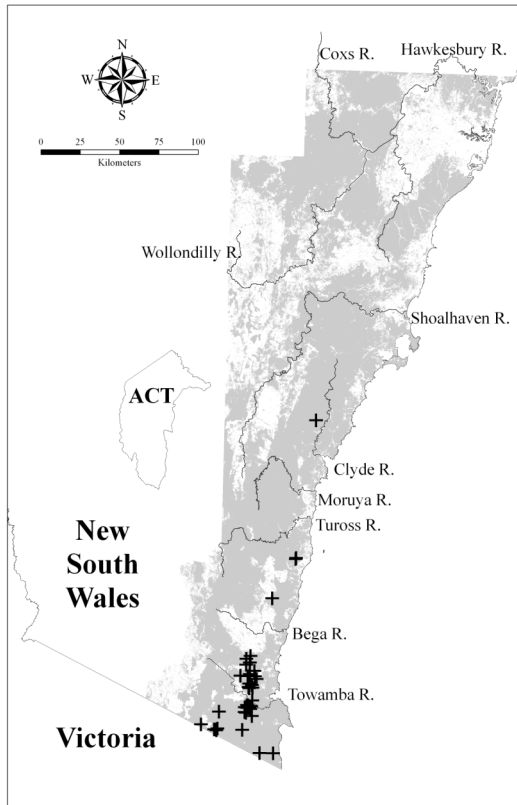
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Lepidosperma laterale</i>	1(1-1)	39	1(1-1)	29
<i>Lomandra longifolia</i>	1(1-1)	57	1(1-1)	44
<i>Persoonia linearis</i>	1(1-1)	37	1(1-1)	29

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	2(2-2)	7	1(1-2)	9
<i>Eucalyptus agglomerata</i>	2(2-2)	2	2(1-3)	7
<i>Eucalyptus baueriana</i>	2(2-2)	2	2(1-2)	1
<i>Eucalyptus fastigata</i>	1(1-1)	4	2(1-3)	6
<i>Eucalyptus fraxinoides</i>	2(2-2)	2	2(1-3)	1
<i>Eucalyptus globoidea</i>	2(1-2)	11	2(1-2)	12
<i>Eucalyptus maidenii</i>	1(1-1)	2	2(1-2)	2
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-2)	9	2(1-3)	6
<i>Eucalyptus smithii</i>	2(1-2)	7	1(1-2)	2





Locations of survey sites allocated to WSF e14. Grey shading indicates extant native vegetation cover within the study area.

### WSF e15: Southeast Mountain Wet Herb Forest



Plate e15. Southeast Mountain Wet Herb Forest (Map Unit e15) dominated by *Eucalyptus obliqua* and *E. cypellocarpa* with scattered *Calochlaena dubia*, *Doodia aspera* and forbs on the watershed between Wog Wog River and Basin Creek, Coolangubra section of South East Forests National Park.

Sample Sites: 139

Area Extant (ha): 29800

Estimated % remaining: 70-80%

Area in conservation reserves (ha): 15900

Estimated % of pre-clearing area in conservation reserves: 35-45%

No. Taxa (total / unique): 327 / 1

No. Taxa per Plot ( $\pm$ sd): 33.8 (10.9)

Class: Southern Escarpment Wet Sclerophyll Forests  
Related TEC: n/a

Southeast Mountain Wet Herb Forest is equivalent to Mountain Wet Herb Forest (unit 15) described by Keith & Bedward (1999), and comprises a tall *Eucalyptus* forest approximately 32 m in height. The diverse understorey comprises an open stratum of shrubs up to 2.5 m tall and a well developed groundcover of forbs, grasses and graminoids with scattered ferns and vines. Southeast Mountain Wet Herb Forest is widespread in large stands on moist sheltered granitoid slopes above 500 m elevation on the tableland range south from the upper Tantawangalo Creek catchment. The abundance of *E. obliqua* and prevalence of herbs in a mixed understorey with ferns and shrubs distinguish Southeast Mountain Wet Herb Forest from other wet forest assemblages. Approximately one-quarter of this extensive unit has been cleared for pine plantations in the upper Genoa River area and a further 3 800 ha are potentially threatened by clearing on private land. Outside reserves, logging in combination with frequent burning may threaten the diversity of the understorey by interrupting life-history processes of woody species. Nevertheless, large stands of Mountain Wet Herb Forest are protected from these disturbance regimes in reserves. Although unlikely to extend further north of the Eden region, a similar assemblage which has a greater abundance of tall shrubs has been described in East Gippsland (Community 8.2, Forbes *et al.* 1982) within the extensive wet forest complex (Ecological vegetation Class 30, Woodgate *et al.* 1994).

#### Floristic Summary:

**Trees:** *Acacia dealbata*, *Eucalyptus cypellocarpa*, *Eucalyptus obliqua* **Shrubs:** *Coprosma quadrifida*, *Exocarpos strictus*, *Leucopogon lanceolatus* var. *lanceolatus* **Climbers:** *Billardiera scandens*, *Clematis aristata*, *Tylophora barbata* **Groundcover:** *Dianella tasmanica*, *Geranium potentilloides*, *Gonocarpus teucroides*, *Helichrysum scorpioides*, *Hierochloa rariflora*, *Lagenifera stipitata*, *Lomandra longifolia*, *Poa meionectes*, *Poranthera microphylla*, *Pteridium esculentum*, *Senecio prenanthoides*, *Veronica calycina*, *Viola hederacea*

#### Vegetation structure:

Stratum	Frequency (n=98)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	32.4 (6.2)	42.4 (13.1)
Small tree	45	8.3 (4.7)	20 (15.6)
Shrub	99	2.4 (1.3)	23 (19)
Ground cover	100	0.7 (0.3)	46 (25.8)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 25 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia cognata</i>	1(1-2)	7	2(1-2)	1
<i>Acacia dealbata</i>	1(1-2)	43	1(1-2)	5
<i>Acacia longifolia</i>	1(1-2)	27	1(1-2)	9
<i>Acacia mucronata</i> subsp. <i>longifolia</i>	1(1-1)	14	1(1-2)	1
<i>Acrotriche leucocarpa</i>	1(1-1)	2	1(1-1)	<1
<i>Asperula gunnii</i>	1(1-1)	8	1(1-1)	<1
<i>Asperula scoparia</i>	1(1-1)	24	1(1-1)	2
<i>Bedfordia arborescens</i>	2(1-2)	33	1(1-2)	3
<i>Billardiera scandens</i>	1(1-1)	53	1(1-1)	27
<i>Blechnum nudum</i>	1(1-4)	9	1(1-2)	3
<i>Blechnum wattsii</i>	1(1-2)	6	1(1-2)	2
<i>Calochlaena dubia</i>	2(1-3)	17	1(1-3)	9
<i>Carex breviculmis</i>	1(1-1)	20	1(1-1)	4
<i>Cassinia aculeata</i>	1(1-1)	14	1(1-1)	6
<i>Clematis aristata</i>	1(1-1)	71	1(1-1)	19
<i>Comesperma volubile</i>	1(1-1)	12	1(1-1)	2

<i>Coprosma hirtella</i>	1(1-1)	9	1(1-1)	1
<i>Coprosma quadrifida</i>	1(1-1)	63	1(1-1)	9
<i>Cyathea australis</i>	1(1-1)	20	1(1-2)	8
<i>Deyeuxia monticola</i>	1(1-1)	4	1(1-1)	1
<i>Dianella tasmanica</i>	1(1-1)	69	1(1-1)	7
<i>Dichelachne rara</i>	1(1-1)	12	1(1-1)	4
<i>Diplarrena moraea</i>	1(1-1)	4	1(1-1)	<1
<i>Drymophila cyanocarpa</i>	1(1-1)	4	1(1-1)	<1
<i>Epacris impressa</i>	1(1-1)	27	1(1-1)	4
<i>Eucalyptus cypellocarpa</i>	2(2-2)	83	2(1-2)	9
<i>Eucalyptus elata</i>	2(1-2)	14	2(1-3)	5
<i>Eucalyptus fastigata</i>	2(1-2)	20	2(2-3)	6
<i>Eucalyptus globoidea</i>	1(1-2)	30	2(1-2)	11
<i>Eucalyptus obliqua</i>	2(2-3)	89	2(1-2)	3
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-2)	17	2(1-3)	6
<i>Eucalyptus sieberi</i>	1(1-2)	32	2(1-3)	16
<i>Euchiton involucratus</i>	1(1-1)	6	1(1-1)	1
<i>Exocarpos strictus</i>	1(1-1)	49	1(1-1)	9
<i>Geranium potentilloides</i>	1(1-1)	55	1(1-1)	5
<i>Gonocarpus tetragynus</i>	1(1-1)	33	1(1-1)	20
<i>Gonocarpus teucroides</i>	1(1-1)	45	1(1-1)	17
<i>Goodenia ovata</i>	1(1-2)	16	1(1-1)	7
<i>Goodia lotifolia</i>	1(1-1)	36	1(1-1)	2
<i>Grevillea victoriae</i> subsp. <i>nivalis</i>	2(1-4)	2	1(1-2)	<1
<i>Hakea eriantha</i>	1(1-1)	20	1(1-1)	2
<i>Helichrysum scorpioides</i>	1(1-1)	42	1(1-1)	7
<i>Hierochloe rariflora</i>	2(1-2)	57	1(1-2)	3
<i>Hydrocotyle peduncularis</i>	1(1-1)	40	1(1-1)	8
<i>Hypericum gramineum</i>	1(1-1)	27	1(1-1)	16
<i>Lagenifera stipitata</i>	1(1-1)	72	1(1-1)	13
<i>Leptostigma reptans</i>	1(1-1)	4	1(1-1)	<1
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	89	1(1-1)	23
<i>Lomandra longifolia</i>	1(1-1)	81	1(1-1)	43
<i>Lomatia fraseri</i>	1(1-1)	6	1(1-1)	1
<i>Lomatia myricoides</i>	1(1-1)	27	1(1-1)	4
<i>Luzula flaccida</i>	1(1-1)	26	1(1-1)	3
<i>Myosotis australis</i>	1(1-1)	2	1(1-1)	<1
<i>Olearia erubescens</i>	1(1-1)	17	1(1-1)	2
<i>Olearia megalophylla</i>	1(1-1)	8	1(1-1)	<1
<i>Olearia stellulata</i>	1(1-1)	14	1(1-1)	1
<i>Oxalis perennans</i>	1(1-1)	25	1(1-1)	13
<i>Oxylobium arborescens</i>	1(1-3)	2	1(1-2)	<1
<i>Ozothamnus cuneifolius</i>	1(1-2)	14	1(1-1)	1
<i>Pelargonium inodorum</i>	1(1-1)	3	1(1-1)	1
<i>Persoonia brevifolia</i>	1(1-1)	2	1(1-1)	<1
<i>Persoonia confertiflora</i>	1(1-1)	2	1(1-1)	<1

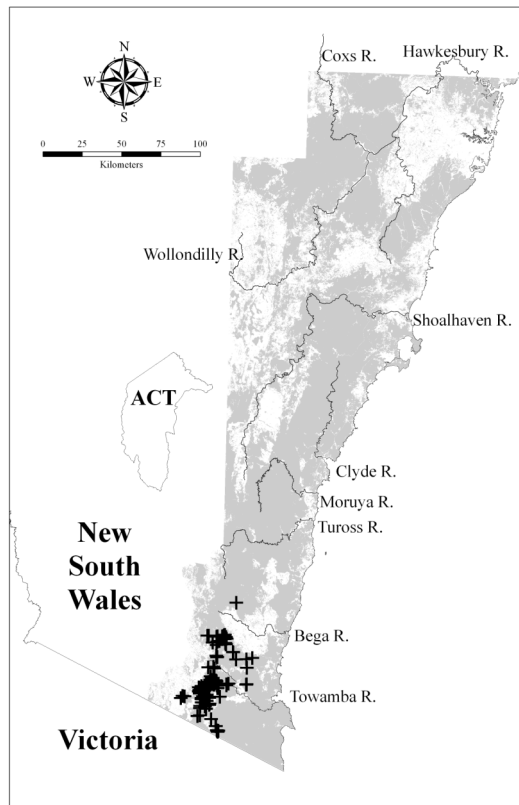
<i>Persoonia sylvatica</i>	2(1-2)	7	1(1-1)	2
<i>Pimelea axiflora</i>	1(1-1)	17	1(1-1)	3
<i>Poa ensiformis</i>	1(1-1)	15	1(1-2)	2
<i>Poa meionectes</i>	2(1-2)	92	1(1-2)	15
<i>Polystichum proliferum</i>	1(1-1)	12	1(1-2)	4
<i>Pomaderris aspera</i>	1(1-1)	14	1(1-2)	5
<i>Poranthera microphylla</i>	1(1-1)	53	1(1-1)	15
<i>Pteridium esculentum</i>	2(1-2)	94	1(1-2)	36
<i>Ranunculus plebeius</i>	1(1-1)	11	1(1-1)	1
<i>Senecio linearifolius</i>	1(1-1)	33	1(1-1)	8
<i>Senecio prenanthoides</i>	1(1-1)	43	1(1-1)	8
<i>Smilax australis</i>	1(1-1)	32	1(1-1)	16
<i>Stellaria flaccida</i>	1(1-1)	37	1(1-1)	10
<i>Stellaria pungens</i>	1(1-1)	19	1(1-2)	6
<i>Telopea oreades</i>	1(1-2)	5	1(1-2)	<1
<i>Tetrarrhena juncea</i>	1(1-1)	31	1(1-2)	4
<i>Tylophora barbata</i>	1(1-1)	48	1(1-1)	16
<i>Veronica calycina</i>	1(1-1)	42	1(1-1)	5
<i>Viola hederacea</i>	1(1-1)	96	1(1-1)	21

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Dianella caerulea</i>	1(1-1)	32	1(1-1)	28
<i>Lepidosperma laterale</i>	1(1-1)	35	1(1-1)	28
<i>Microlaena stipoides</i>	1(1-1)	34	1(1-2)	36

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus angophoroides</i>	1(1-1)	1	1(1-2)	1
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	2(2-2)	1	1(1-2)	3
<i>Eucalyptus dives</i>	1(1-1)	1	2(1-3)	4
<i>Eucalyptus fraxinoides</i>	2(2-3)	4	2(1-3)	1
<i>Eucalyptus maidenii</i>	2(2-2)	1	2(1-2)	2
<i>Eucalyptus muelleriana</i>	2(1-2)	5	2(1-2)	6
<i>Eucalyptus nitens</i>	3(3-3)	1	2(1-3)	<1
<i>Eucalyptus smithii</i>	3(2-3)	1	1(1-2)	2
<i>Eucalyptus viminalis</i>	1(1-2)	2	2(1-3)	5



Locations of survey sites allocated to WSF e15. Grey shading indicates extant native vegetation cover within the study area.

### FoW e17: Southeast Flats Swamp Forest



Plate e17. Southeast Flats Swamp Forest (Map Unit e17) dominated by *Eucalyptus viminalis* with a continuous groundcover of *Pteridium esculentum*, *Poa labillardieri* and *Gahnia sieberi* near Waratah Creek, Coolangubra section of South East Forests National Park.

Sample Sites: 28

Area Extant (ha): 3900

Estimated % remaining: 80-90%

Area in conservation reserves (ha): 1500

Estimated % of pre-clearing area in conservation reserves: 20-35%

No. Taxa (total / unique): 255 / 2

No. Taxa per Plot ( $\pm$ sd): 38.6 (11.5)

Class: Temperate Swamp Forests  
Related TEC: n/a

Southeast Flats Swamp Forest relates most closely to Eden Hinterland Swamp Forest (unit 17) described by Keith & Bedward (1999), however the original description has been revised following the inclusion of samples formerly assigned to unit 58 (Swamp Forest). This tall *Eucalyptus* forest frequently exceeds 30 m in height. Scattered small trees or shrubs 3 -17 m tall overtop a continuous and diverse groundcover comprising forbs, ferns, grasses and graminoids. Southeast Flats Swamp Forest occupies gentle granitoid slopes (typically <5°) in open valleys, usually around low-order drainage lines. Individual stands are comparatively small because of their topographically restricted habitat, and occur in dry, low-relief, low-rainfall areas to the east and west of the escarpment range south of the Bega Valley. Approximately one-fifth of its extent has been cleared for pastoralism and more than half of the remainder occurs on private land or State Forest under grazing lease. Their gentle topography and comparatively rich deep soils predispose these stands to clearing and/or loss of groundcover diversity through grazing and weed invasion. Sedimentation associated with logging and feral pig rooting also pose threats to soils and the rich ground flora. While analogous habitats exist in East Gippsland, the majority of these apparently do not support similar species assemblages. Forbes *et al.* (1982) described a potentially similar stand beside the Genoa River at Wangarabell (part of Community 13.3). However, dry fertile colluvial flats in East Gippsland typically support herb-rich forest dominated by *E. melliodora*, *E. angophoroides*, *E. bosistoana* and *E. pseudoglobulus* in various combinations with qualitatively different shrub and groundcover species (Ecological Vegetation Class 23, Woodgate *et al.* 1994).

#### Floristic Summary:

**Trees:** *Acacia melanoxylon*, *Eucalyptus ovata*, *Eucalyptus viminalis* **Shrubs:** *Leptospermum continentale* **Climbers:** **Groundcover:** *Acaena novae-zelandiae*, *Asperula scoparia*, *Blechnum nudum*, *Carex appressa*, *Dichondra* spp., *Euchiton gymnocephalus*, *Geranium potentilloides*, *Glycine clandestina*, *Gratiola peruviana*, *Hydrocotyle peduncularis*, *Lagenifera stipitata*, *Lomandra longifolia*, *Microlaena stipoides*, *Poa meionectes*, *Poa labillardierei* var. *labillardierei*, *Pteridium esculentum*, *Ranunculus plebeius*, *Senecio prenanthoides*, *Stellaria pungens*, *Viola hederacea*

#### Vegetation structure:

Stratum	Frequency (n=13)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	27.2 (8.6)	22.3 (14.7)
Small tree	54	9.7 (3.5)	8.4 (4.9)
Shrub	85	2.6 (1.1)	17.9 (12)
Ground cover	100	0.7 (0.4)	81.2 (16.5)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 15 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 29 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 15 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	1(1-1)	36	1(1-2)	5
<i>Acacia mearnsii</i>	1(1-2)	25	1(1-2)	7
<i>Acacia melanoxylon</i>	1(1-1)	54	1(1-1)	6
<i>Acacia mucronata</i> subsp. <i>longifolia</i>	1(1-1)	25	1(1-2)	1
<i>Acaena novae-zelandiae</i>	1(1-1)	71	1(1-1)	7
<i>Asperula gunnii</i>	1(1-1)	21	1(1-1)	<1
<i>Asperula scoparia</i>	1(1-1)	50	1(1-1)	2
<i>Banksia marginata</i>	1(1-1)	29	1(1-1)	3
<i>Blechnum nudum</i>	1(1-1)	43	1(1-2)	3
<i>Carex appressa</i>	1(1-2)	57	1(1-1)	4
<i>Carex breviculmis</i>	1(1-1)	29	1(1-1)	4
<i>Cassinia aculeata</i>	1(1-1)	25	1(1-1)	6
<i>Coprosma quadrifida</i>	1(1-1)	32	1(1-1)	10
<i>Cyperus lucidus</i>	2(1-2)	36	1(1-1)	1
<i>Deyeuxia quadriseta</i>	1(1-1)	21	1(1-1)	2

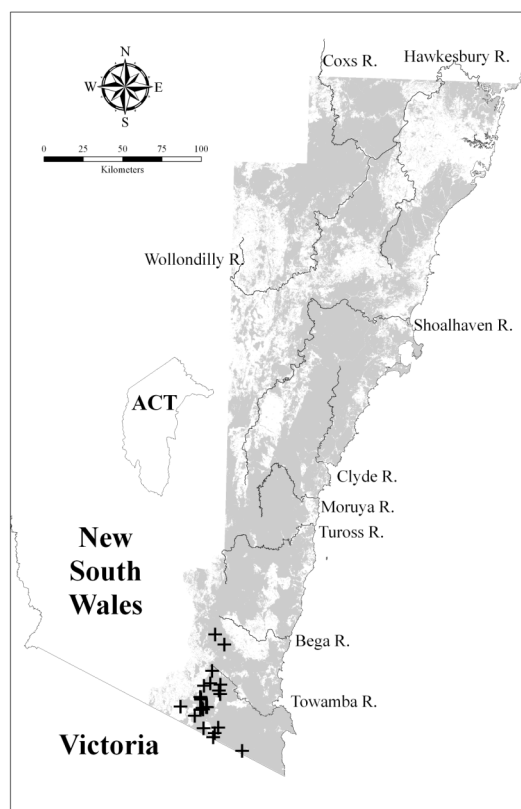
<i>Dianella tasmanica</i>	1(1-1)	36	1(1-1)	7
<i>Dichelachne rara</i>	1(1-1)	21	1(1-1)	5
<i>Dichondra</i> spp.	1(1-1)	71	1(1-2)	25
<i>Eucalyptus ovata</i>	2(1-2)	75	2(1-3)	1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-2)	32	2(1-3)	6
<i>Eucalyptus viminalis</i>	2(2-2)	68	2(1-3)	4
<i>Euchiton gymnocephalus</i>	1(1-1)	54	1(1-1)	7
<i>Exocarpos strictus</i>	1(1-1)	36	1(1-1)	9
<i>Gahnia sieberiana</i>	1(1-1)	29	1(1-1)	5
<i>Galium propinquum</i>	1(1-1)	25	1(1-1)	7
<i>Geranium neglectum</i>	1(1-1)	21	1(1-1)	1
<i>Geranium potentilloides</i>	1(1-1)	57	1(1-1)	5
<i>Glycine clandestina</i>	1(1-1)	61	1(1-1)	26
<i>Gratiola peruviana</i>	1(1-1)	54	1(1-1)	1
<i>Helichrysum scorpioides</i>	1(1-1)	36	1(1-1)	7
<i>Hydrocotyle peduncularis</i>	1(1-1)	57	1(1-1)	9
<i>Hydrocotyle tripartita</i>	1(1-1)	39	1(1-1)	1
<i>Hypericum gramineum</i>	1(1-1)	39	1(1-1)	16
<i>Hypericum japonicum</i>	1(1-1)	39	1(1-1)	2
<i>Kunzea ericoides</i>	1(1-3)	32	1(1-2)	2
<i>Lagenifera stipitata</i>	1(1-1)	57	1(1-1)	14
<i>Leptospermum continentale</i>	1(1-1)	50	1(1-1)	3
<i>Leptostigma reptans</i>	1(1-1)	32	1(1-1)	<1
<i>Lomandra longifolia</i>	3(2-4)	93	1(1-1)	44
<i>Poa ensiformis</i>	1(1-2)	21	1(1-2)	2
<i>Poa labillardierei</i> var. <i>labillardierei</i>	2(1-3)	43	1(1-2)	12
<i>Poa meionectes</i>	1(1-1)	54	1(1-2)	16
<i>Pteridium esculentum</i>	1(1-2)	64	1(1-2)	37
<i>Ranunculus plebeius</i>	1(1-1)	57	1(1-1)	1
<i>Rubus parvifolius</i>	1(1-1)	29	1(1-1)	9
<i>Rumex brownii</i>	1(1-1)	21	1(1-1)	5
<i>Senecio prenanthoides</i>	1(1-1)	46	1(1-1)	8
<i>Stellaria pungens</i>	1(1-1)	43	1(1-1)	6
<i>Viola hederacea</i>	1(1-1)	71	1(1-1)	22

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Desmodium varians</i>	1(1-1)	36	1(1-1)	21
<i>Gonocarpus tetragynus</i>	1(1-1)	39	1(1-1)	20
<i>Microlaena stipoides</i>	1(1-1)	46	1(1-2)	36
<i>Oxalis perennans</i>	1(1-1)	32	1(1-1)	13

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	2(2-2)	4	1(1-2)	9
<i>Eucalyptus angophoroides</i>	1(1-2)	11	1(1-2)	1
<i>Eucalyptus considaniana</i>	1(1-1)	4	2(1-2)	2
<i>Eucalyptus cypellocarpa</i>	1(1-3)	25	2(1-2)	10
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-1)	7	1(1-2)	3
<i>Eucalyptus elata</i>	3(2-3)	7	2(1-3)	5
<i>Eucalyptus fastigata</i>	1(1-1)	7	2(1-3)	6
<i>Eucalyptus globoidea</i>	1(1-2)	25	2(1-2)	12
<i>Eucalyptus muelleriana</i>	2(2-2)	4	2(1-2)	6
<i>Eucalyptus obliqua</i>	1(1-1)	14	2(1-3)	4
<i>Eucalyptus pauciflora</i>	1(1-1)	4	1(1-2)	3
<i>Eucalyptus sieberi</i>	1(1-1)	4	2(1-3)	16



Locations of survey sites allocated to FoW e17. Grey shading indicates extant native vegetation cover within the study area.



**GW e18: Brogo Wet Vine Forest**

Plate e18. Brogo Wet Vine Forest (Map Unit e18) dominated by *Eucalyptus tereticornis*, *E. bosistoana* and *E. maidenii* with scattered *Hymenanthera dentata*, *Pittosporum undulatum* and *Ficus rubiginosa* on Warrigal Range Bush Heritage Property, north of Brogo.

Sample Sites: 28

Area Extant (ha): 5200

Estimated % remaining: 50-65%

Area in conservation reserves (ha): 1400

Estimated % of pre-clearing area in conservation reserves: 10-20%

No. Taxa (total / unique): 217 / 1

No. Taxa per Plot ( $\pm$ sd): 44.3 (9.5)

Class: Coastal Valley Grassy Woodlands

Related TEC: Brogo Wet Vine Forest EEC (TSC)

Brogo Wet Vine Forest is equivalent to map unit 18 of the same name described by Keith & Bedward (1999), although the description has been updated to cover an expanded range. This *Eucalyptus* forest typically reaches a height of around 20 m and may occasionally feature rainforest elements up to 10 m tall. There is a diverse open stratum of shrubs and the species-rich groundcover is composed of large forbs emerging from a diverse matrix of smaller forbs and small ferns, grasses and graminoids. A diverse array of vines and twiners is interspersed amongst the groundcover and shrub stratum. Brogo Wet Vine Forest occurs on steep hilly terrain in the Brogo -Bega area at 100 - 300 m elevation, usually on granitoid substrates, but sometimes on outcrops of Ordovician mudstones near Bega. There are also stands in the Candelo - Myrtle Mountain area. This diverse assemblage is part of a complex of grassy ecosystems (Map Units 18-21) in the Bega valley and associated rainshadow areas. Occurring in the most elevated and wettest parts of the valley, it is distinguished from other assemblages by the dominance of *E. tereticornis* and the abundance of mesophyll shrubs and vines in the understorey. No similar assemblages have been described in adjacent regions (Austin 1978, Woodgate *et al.* 1994). Nearly half of this map unit has been cleared for agriculture and just under three-quarters of the remainder occurs on private land where it is potentially threatened by further clearing, grazing and weed invasion (Keith 1995). Frequent fire regimes as part of grazing management and hazard reduction also pose a potential threat, particularly to woody rainforest elements. Substantial areas of Brogo Wet Vine Forest remain in good condition, although remaining stands show symptoms of fine-scale clearing and grazing relative to other grassy assemblages in the Bega valley.

**Floristic Summary:**

**Trees:** *Acacia implexa*, *Acacia mearnsii*, *Eucalyptus bosistoana*, *Eucalyptus tereticornis*, *Pittosporum undulatum*

**Shrubs:** *Breynia oblongifolia*, *Cassinia trinerva*, *Hymenanthera dentata*, *Solanum pungetium* **Climbers:** *Clematis glycinoides* var. *glycinoides*, *Eustrephus latifolius*, *Geitonoplesium cymosum*, *Marsdenia rostrata*, *Pandorea pandorana*, *Rubus parvifolius* **Groundcover:** *Asplenium flabellifolium*, *Cheilanthes sieberi*, *Desmodium varians*, *Dichondra* spp., *Echinopogon ovatus*, *Geranium solanderi* var. *solanderi*, *Glycine clandestina*, *Hydrocotyle laxiflora*, *Lepidosperma laterale*, *Microlaena stipoides*, *Oplismenus imbecillis*, *Pellaea falcata*, *Plectranthus parviflorus*, *Poa labillardierei* var. *labillardierei*, *Sigesbeckia orientalis* subsp. *Orientalis*, *Urtica incisa*, *Wahlenbergia gracilis*, *Xerochrysum bracteatum*

**Vegetation structure:**

Stratum	Frequency (n=24)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	96	21.2 (6.5)	20.9 (17.7)
Small tree	88	9.9 (3.5)	25.5 (16.3)
Shrub	92	2.5 (0.8)	21.9 (20.5)
Ground cover	100	0.6 (0.3)	50.6 (22.8)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 24 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 37 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 24 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia implexa</i>	1(1-2)	71	1(1-1)	6
<i>Acacia mearnsii</i>	2(1-2)	68	1(1-2)	7
<i>Angophora floribunda</i>	1(1-1)	32	1(1-2)	9
<i>Arthropodium species B</i>	1(1-1)	21	1(1-1)	1
<i>Asplenium flabellifolium</i>	1(1-1)	43	1(1-1)	11
<i>Austrocynoglossum latifolium</i>	1(1-1)	21	1(1-1)	1
<i>Austrodanthonia pilosa</i>	1(1-2)	21	1(1-1)	3
<i>Brachychiton populneus</i> subsp. <i>populneus</i>	1(1-2)	29	1(1-1)	3
<i>Breynia oblongifolia</i>	1(1-1)	79	1(1-1)	12
<i>Carex appressa</i>	1(1-1)	36	1(1-1)	4
<i>Carex breviculmis</i>	1(1-1)	32	1(1-1)	4
<i>Carex inversa</i>	1(1-1)	25	1(1-1)	3
<i>Carex longebrachiata</i>	1(1-1)	29	1(1-2)	3
<i>Cassinia trinerva</i>	1(1-2)	50	1(1-1)	3
<i>Celastrus australis</i>	1(1-1)	21	1(1-1)	2
<i>Cenchrus caliculatus</i>	1(1-2)	39	1(1-1)	1
<i>Cheilanthes sieberi</i>	1(1-1)	50	1(1-1)	14
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	79	1(1-1)	10
<i>Cynoglossum australe</i>	1(1-1)	39	1(1-1)	2
<i>Daucus glochidiatus</i>	1(1-1)	29	1(1-1)	2
<i>Desmodium brachypodium</i>	1(1-1)	32	1(1-1)	3
<i>Desmodium varians</i>	1(1-1)	68	1(1-1)	21
<i>Dichondra</i> spp.	1(1-1)	96	1(1-2)	25
<i>Echinopogon ovatus</i>	1(1-1)	68	1(1-1)	14
<i>Einadia hastata</i>	1(1-1)	32	1(1-1)	3
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-1)	21	1(1-1)	5
<i>Eragrostis leptostachya</i>	1(1-1)	39	1(1-1)	4
<i>Eucalyptus bosistoana</i>	1(1-2)	50	1(1-2)	3
<i>Eucalyptus globoidea</i>	2(1-2)	36	2(1-2)	12
<i>Eucalyptus tereticornis</i>	2(2-2)	71	2(1-3)	7
<i>Euchiton gymnocephalus</i>	1(1-1)	36	1(1-1)	7
<i>Eustrephus latifolius</i>	1(1-1)	61	1(1-1)	19
<i>Ficus rubiginosa</i>	1(1-3)	29	1(1-2)	1

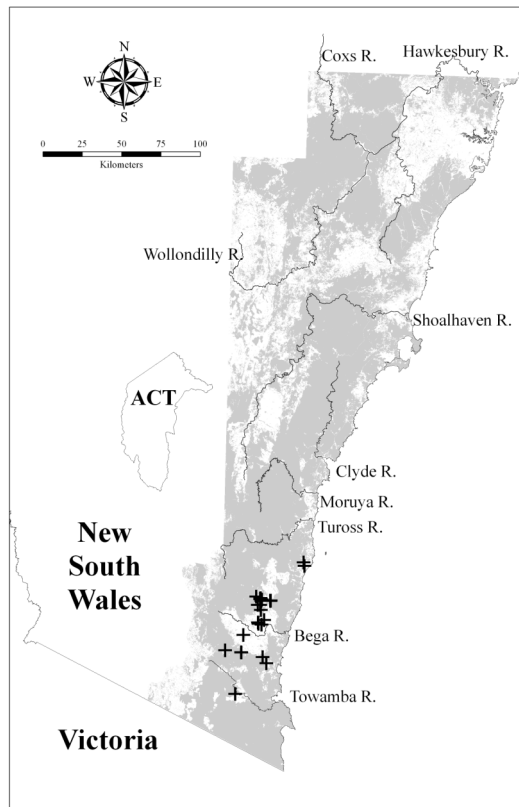
<i>Geitonoplesium cymosum</i>	1(1-1)	82	1(1-1)	16
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-1)	71	1(1-1)	7
<i>Glycine clandestina</i>	1(1-1)	86	1(1-1)	26
<i>Glycine tabacina</i>	1(1-1)	32	1(1-1)	7
<i>Hydrocotyle laxiflora</i>	1(1-1)	61	1(1-1)	15
<i>Hymenanthera dentata</i>	1(1-2)	86	1(1-1)	6
<i>Imperata cylindrica</i> var. <i>major</i>	2(1-3)	29	1(1-2)	10
<i>Indigofera australis</i>	1(1-2)	29	1(1-1)	9
<i>Marsdenia rostrata</i>	1(1-1)	64	1(1-2)	12
<i>Microlaena stipoides</i>	1(1-2)	89	1(1-2)	36
<i>Morinda jasminoides</i>	1(1-1)	32	1(1-2)	9
<i>Notodanthonia longifolia</i>	1(1-1)	32	1(1-2)	5
<i>Oplismenus imbecillis</i>	1(1-1)	79	1(1-2)	14
<i>Pandorea pandorana</i>	1(1-1)	46	1(1-1)	18
<i>Pellaea falcata</i>	1(1-2)	89	1(1-1)	10
<i>Pittosporum undulatum</i>	1(1-2)	61	1(1-1)	14
<i>Plantago debilis</i>	1(1-1)	29	1(1-1)	7
<i>Plectranthus parviflorus</i>	1(1-1)	50	1(1-1)	8
<i>Poa labillardierei</i> var. <i>labillardierei</i>	1(1-2)	43	1(1-2)	12
<i>Rubus parvifolius</i>	1(1-1)	57	1(1-1)	9
<i>Rumex brownii</i>	1(1-1)	39	1(1-1)	5
<i>Sarcopetalum harveyanum</i>	1(1-1)	36	1(1-1)	4
<i>Sicyos australis</i>	1(1-1)	25	1(1-1)	<1
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	82	1(1-1)	7
<i>Solanum pungetium</i>	1(1-1)	43	1(1-1)	5
<i>Stellaria flaccida</i>	1(1-2)	61	1(1-1)	10
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	57	1(1-1)	7
<i>Urtica incisa</i>	1(1-2)	54	1(1-1)	5
<i>Wahlenbergia gracilis</i>	1(1-1)	43	1(1-1)	11
<i>Xerochrysum bracteatum</i>	1(1-1)	43	1(1-1)	2

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Bursaria spinosa</i>	1(1-1)	32	1(1-2)	14
<i>Lepidosperma laterale</i>	1(1-1)	46	1(1-1)	29
<i>Lomandra longifolia</i>	1(1-1)	32	1(1-1)	44
<i>Oxalis perennans</i>	1(1-1)	32	1(1-1)	13

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus baueriana</i>	3(1-3)	7	2(1-2)	1
<i>Eucalyptus maidenii</i>	1(1-1)	7	2(1-2)	2
<i>Eucalyptus muelleriana</i>	1(1-1)	11	2(1-2)	6
<i>Eucalyptus sieberi</i>	1(1-1)	7	2(1-3)	16



Locations of survey sites allocated to GW e18. Grey shading indicates extant native vegetation cover within the study area.

### DSF e19: Bega Wet Shrub Forest



Plate e19. Bega Wet Shrub Forest (Map Unit e19) dominated by *Eucalyptus baueriana*, *E. viminalis* and *E. radiata* with a prominent shrub stratum of *Cassinia longifolia* and *Kunzea ericoides*, and groundcover dominated by *Lepidosperma gunnii* near Myrtle Creek, Yowaka section of South East Forests National Park.

Sample Sites: 96

Area Extant (ha): 23600

Estimated % remaining: 35-50%

Area in conservation reserves (ha): 6600

Estimated % of pre-clearing area in conservation reserves: 5-15%

No. Taxa (total / unique): 363 / 0

No. Taxa per Plot ( $\pm$ sd): 45.5 (10.6)

Class: Southern Hinterland Dry Sclerophyll Forests  
Related TEC: n/a

Bega Wet Shrub Forest is equivalent to a combination of two units described by Keith & Bedward (1999): Bega Wet Shrub Forest (map unit 19) and Wadbilliga River Valley Forest (map unit W6). The following description was drawn from approximately twice as many samples as were available in the former study resulting in some differences in assemblage composition and an expansion of range. Bega Wet Shrub Forest is a very species-rich assemblage dominated by *Eucalyptus* species to approximately 25 m in height. A small tree stratum approximately 10 m tall is also characteristic as well as a prominent shrub stratum up to 3 m in height. The diverse and largely continuous groundcover is dominated by small forbs and also includes ferns, grasses, graminoids and lilioids. Several vine species twine amongst the groundcover. Bega Wet Shrub Forest occurs in dry lowland valleys from Yowrie-Wandella-Belowra south to Nethercote and Towamba, including the lower gorges of the Tuross and Wadbilliga Rivers, on sheltered slopes and in gullies up to 300 m elevation on Ordovician mudstone, metasediment or granitoid substrates. The assemblage varies considerably in composition across its range, possibly in relation to soils. For example, an unusual variant dominated by *E. tereticornis* occurs on lowland Devonian basalts in the Wolumla - Nethercote area. Bega Wet Shrub Forest belongs to the complex of grassy ecosystems (Map Units GWe18, GWe20p229) in the Bega and Araluen valleys and associated rainshadow areas. Occurring in the most sheltered parts of the valleys, it is distinguished from other assemblages by the dominance of *E. elata* and its prominent small tree and shrub strata. The existence of a similar assemblage in East Gippsland seems doubtful. A single sample of Bega Wet Shrub Forest at south Nungatta near the Victorian border suggests possible affinities to the depleted forests of the lower Cann and Genoa valleys. Woodgate et al (1994) include forest with *E. baueriana* and *E. bosistoana* on flats of the Cann and Genoa River valleys, which are now largely cleared, within Riparian Forest (Ecological Vegetation Class 18) along with other more widespread types of wet forest more closely resembling hinterland wet forests in Eden (Map Units WSFe13 & WSFe14). To the north, similar vegetation occurs in the Yowrie - Wandella area, e.g. at Dignams Creek (CSIRO 1996). Two-thirds of Bega Wet Shrub Forest has been cleared for agriculture and three-quarters of the remainder occurs on private land where is it potentially threatened by further clearing, grazing and weed invasion (Keith 1995). Frequent fire implemented for hazard reduction and grazing management also pose a potential threat, especially to woody components of the community.

#### Floristic Summary:

**Trees:** *Acacia mearnsii*, *Angophora floribunda*, *Eucalyptus elata* **Shrubs:** *Cassinia trinerva*, *Hymenanthera dentata*, *Senecio linearifolius*, *Solanum pungetium* **Climbers:** *Clematis glycinoides* var. *glycinoides*, *Eustrephus latifolius*, *Rubus parvifolius*, *Tylophora barbata* **Groundcover:** *Carex longibrachiat*, *Desmodium varians*, *Dichondra* spp., *Doodia aspera*, *Echinopogon ovatus*, *Entolasia marginata*, *Euchiton gymnocephalus*, *Galium propinquum*, *Glycine clandestina*, *Hydrocotyle laxiflora*, *Lepidosperma laterale*, *Lomandra longifolia*, *Microlaena stipoides*, *Oplismenus imbecillis*, *Oxalis perennans*, *Pellaea falcata*, *Plantago debilis*, *Poa meionectes*, *Pratia purpurascens*, *Pteridium esculentum*, *Stellaria flaccida*

#### Vegetation structure:

Stratum	Frequency (n=78)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	1	35 (-)	25 (-)
Tree canopy	96	25 (5)	28.2 (16.9)
Small tree	88	10.6 (4.1)	21.8 (16.8)
Shrub	74	2.5 (1)	24.2 (21)
Ground cover	100	0.7 (0.7)	73.1 (30.1)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 28 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 37 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 28 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia floribunda</i>	1(1-1)	20	1(1-2)	2
<i>Acacia implexa</i>	1(1-1)	17	1(1-1)	6
<i>Acacia mearnsii</i>	2(1-2)	78	1(1-2)	6
<i>Acaena novae-zelandiae</i>	1(1-1)	35	1(1-1)	7
<i>Adiantum aethiopicum</i>	1(1-1)	40	1(1-2)	9
<i>Ajuga australis</i>	1(1-1)	11	1(1-1)	3
<i>Amyema pendulum</i> subsp. <i>pendulum</i>	1(1-1)	9	1(1-1)	2
<i>Angophora floribunda</i>	1(1-2)	42	1(1-2)	8

<i>Arthropodium milleflorum</i>	1(1-1)	35	1(1-1)	5
<i>Arthropodium minus</i>	1(1-1)	9	1(1-1)	1
<i>Arthropodium species B</i>	1(1-1)	11	1(1-1)	1
<i>Asplenium flabellifolium</i>	1(1-1)	39	1(1-1)	11
<i>Austrocynoglossum latifolium</i>	1(1-1)	18	1(1-1)	1
<i>Austrodanthonia pilosa</i>	1(1-1)	18	1(1-1)	3
<i>Austrostipa rudis</i>	1(1-1)	24	1(1-2)	6
<i>Botrychium australe</i>	1(1-1)	6	1(1-1)	<1
<i>Brachychiton populneus</i> subsp. <i>populneus</i>	1(1-1)	19	1(1-1)	3
<i>Breynia oblongifolia</i>	1(1-1)	23	1(1-1)	12
<i>Bursaria spinosa</i>	1(1-1)	40	1(1-2)	14
<i>Carex appressa</i>	1(1-1)	31	1(1-1)	4
<i>Carex breviculmis</i>	1(1-1)	23	1(1-1)	4
<i>Carex inversa</i>	1(1-1)	11	1(1-1)	3
<i>Carex longebrachiata</i>	1(1-1)	47	1(1-2)	3
<i>Cassinia aculeata</i>	1(1-1)	24	1(1-1)	6
<i>Cassinia longifolia</i>	1(1-2)	19	1(1-2)	6
<i>Cassinia trinerva</i>	1(1-2)	59	1(1-1)	3
<i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i>	1(1-1)	7	3(1-3)	1
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	63	1(1-1)	9
<i>Coprosma quadrifida</i>	1(1-1)	21	1(1-1)	9
<i>Cotula australis</i>	1(1-1)	5	1(1-1)	<1
<i>Crassula sieberiana</i>	1(1-1)	10	1(1-1)	3
<i>Cynoglossum australe</i>	1(1-1)	30	1(1-1)	1
<i>Cynoglossum suaveolens</i>	1(1-1)	8	1(1-1)	1
<i>Cyperus lucidus</i>	1(1-1)	5	1(1-1)	1
<i>Cyperus trinervis</i>	1(1-1)	4	1(1-1)	<1
<i>Daucus glochidiatus</i>	1(1-1)	14	1(1-1)	2
<i>Desmodium varians</i>	1(1-1)	78	1(1-1)	21
<i>Dichondra</i> spp.	1(1-1)	91	1(1-2)	25
<i>Doodia aspera</i>	1(1-2)	47	1(1-2)	11
<i>Echinopogon ovatus</i>	1(1-1)	74	1(1-1)	13
<i>Einadia hastata</i>	1(1-1)	16	1(1-1)	3
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-1)	15	1(1-1)	5
<i>Entolasia marginata</i>	1(1-1)	59	1(1-1)	11
<i>Eucalyptus angophoroides</i>	2(1-2)	16	1(1-2)	1
<i>Eucalyptus baueriana</i>	2(1-3)	33	1(1-2)	1
<i>Eucalyptus bosistoana</i>	1(1-2)	14	1(1-2)	3
<i>Eucalyptus botryoides</i>	2(1-2)	16	2(1-3)	3
<i>Eucalyptus elata</i>	2(1-2)	67	2(1-3)	4
<i>Eucalyptus globoidea</i>	2(1-2)	31	1(1-2)	12
<i>Eucalyptus maidenii</i>	2(1-2)	16	2(1-2)	2
<i>Eucalyptus viminalis</i>	1(1-2)	19	2(1-3)	4
<i>Euchiton gymnocephalus</i>	1(1-1)	43	1(1-1)	7
<i>Eustrephus latifolius</i>	1(1-1)	47	1(1-1)	19
<i>Exocarpos cupressiformis</i>	1(1-1)	23	1(1-1)	5

<i>Galium propinquum</i>	1(1-1)	42	1(1-1)	7
<i>Geitonoplesium cymosum</i>	1(1-1)	39	1(1-1)	16
<i>Geranium homeanum</i>	1(1-1)	13	1(1-1)	3
<i>Geranium potentilloides</i>	1(1-1)	16	1(1-1)	6
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-1)	40	1(1-1)	7
<i>Glycine clandestina</i>	1(1-1)	89	1(1-1)	25
<i>Hydrocotyle laxiflora</i>	1(1-1)	71	1(1-1)	15
<i>Hydrocotyle tripartita</i>	1(1-1)	18	1(1-1)	1
<i>Hymenanchera dentata</i>	1(1-1)	70	1(1-1)	6
<i>Hypericum gramineum</i>	1(1-1)	33	1(1-1)	16
<i>Hypericum japonicum</i>	1(1-1)	24	1(1-1)	2
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-1)	32	1(1-2)	9
<i>Indigofera australis</i>	1(1-1)	20	1(1-1)	9
<i>Kunzea ericoides</i>	2(1-3)	21	1(1-2)	2
<i>Lagenifera stipitata</i>	1(1-1)	38	1(1-1)	14
<i>Leucopogon juniperinus</i>	1(1-1)	22	1(1-1)	5
<i>Lomandra longifolia</i>	1(1-1)	80	1(1-1)	43
<i>Luzula flaccida</i>	1(1-1)	18	1(1-1)	4
<i>Marsdenia rostrata</i>	1(1-1)	30	1(1-2)	12
<i>Mentha diemenica</i>	1(1-1)	5	1(1-1)	1
<i>Microlaena stipoides</i>	2(1-2)	86	1(1-2)	36
<i>Notelaea venosa</i>	1(1-1)	27	1(1-1)	12
<i>Notodanthonia longifolia</i>	1(1-2)	14	1(1-2)	5
<i>Oplismenus imbecillis</i>	1(1-2)	73	1(1-2)	14
<i>Oxalis perennans</i>	1(1-1)	43	1(1-1)	12
<i>Ozothamnus argophyllus</i>	1(1-1)	15	1(1-1)	2
<i>Ozothamnus diosmifolius</i>	1(1-1)	23	1(1-1)	9
<i>Pellaea falcata</i>	1(1-2)	71	1(1-1)	10
<i>Phyllanthus gunnii</i>	1(1-1)	10	1(1-1)	2
<i>Picris angustifolia</i>	1(1-1)	8	1(1-1)	<1
<i>Pimelea axiflora</i>	1(1-2)	11	1(1-1)	3
<i>Pimelea ligustrina</i>	1(1-1)	6	1(1-1)	1
<i>Pittosporum undulatum</i>	1(1-1)	36	1(1-1)	14
<i>Plantago debilis</i>	1(1-1)	49	1(1-1)	7
<i>Plectranthus parviflorus</i>	1(1-1)	34	1(1-1)	7
<i>Poa ensiformis</i>	1(1-2)	19	1(1-2)	2
<i>Poa labillardierei</i> var. <i>labillardierei</i>	1(1-1)	34	1(1-2)	12
<i>Poa meionectes</i>	1(1-2)	51	1(1-2)	16
<i>Pomaderris aspera</i>	1(1-1)	17	1(1-2)	5
<i>Pratia purpurascens</i>	1(1-1)	53	1(1-1)	17
<i>Pteridium esculentum</i>	1(1-2)	65	1(1-2)	37
<i>Ranunculus plebeius</i>	1(1-1)	9	1(1-1)	1
<i>Rubus parvifolius</i>	1(1-1)	73	1(1-1)	9
<i>Rumex brownii</i>	1(1-1)	40	1(1-1)	5
<i>Santalum obtusifolium</i>	1(1-1)	9	1(1-1)	1
<i>Senecio hispidulus</i> var. <i>hispidulus</i>	1(1-1)	11	1(1-1)	3

<i>Senecio linearifolius</i>	1(1-1)	56	1(1-1)	7
<i>Senecio minimus</i>	1(1-1)	21	1(1-1)	1
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	40	1(1-1)	6
<i>Solanum americanum</i>	1(1-1)	5	1(1-1)	<1
<i>Solanum prinophyllum</i>	1(1-1)	16	1(1-1)	6
<i>Solanum pungetium</i>	1(1-1)	48	1(1-1)	5
<i>Stellaria flaccida</i>	1(1-1)	65	1(1-1)	10
<i>Tylophora barbata</i>	1(1-1)	43	1(1-1)	16
<i>Urtica incisa</i>	1(1-1)	24	1(1-1)	5
<i>Veronica calycina</i>	1(1-1)	25	1(1-1)	6
<i>Wahlenbergia gracilis</i>	1(1-1)	33	1(1-1)	10

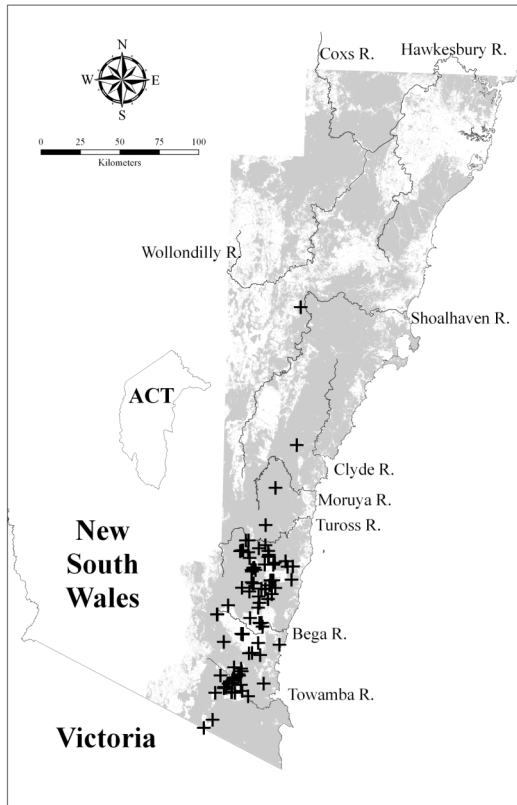
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Clematis aristata</i>	1(1-1)	31	1(1-1)	20
<i>Lepidosperma laterale</i>	1(1-1)	41	1(1-1)	28
<i>Viola hederacea</i>	1(1-1)	30	1(1-1)	22

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus bridgesiana</i>	1(1-1)	1	1(1-3)	1
<i>Eucalyptus cypellocarpa</i>	2(1-2)	8	2(1-2)	10
<i>Eucalyptus eugenioides</i>	2(2-2)	1	2(1-3)	4
<i>Eucalyptus fastigata</i>	3(3-3)	2	2(1-3)	6
<i>Eucalyptus longifolia</i>	2(2-2)	1	1(1-2)	2
<i>Eucalyptus melliodora</i>	1(1-1)	2	1(1-3)	2
<i>Eucalyptus muelleriana</i>	1(1-2)	3	2(1-2)	6
<i>Eucalyptus obliqua</i>	1(1-1)	1	2(1-3)	4
<i>Eucalyptus ovata</i>	2(2-2)	1	2(1-3)	1
<i>Eucalyptus parramattensis</i> subsp. <i>parramattensis</i>	1(1-1)	1	1(1-3)	<1
<i>Eucalyptus polyanthemos</i> subsp. <i>tarda</i>	2(1-2)	2	1(1-2)	<1
<i>Eucalyptus polyanthemos</i> subsp. <i>vestita</i>	1(1-1)	1	1(1-1)	<1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-2)	5	2(1-3)	6
<i>Eucalyptus saligna</i> X <i>botryoides</i>	1(1-1)	1	2(1-3)	2
<i>Eucalyptus tereticornis</i>	2(1-2)	11	2(1-3)	7





Locations of survey sites allocated to DSF e19. Grey shading indicates extant native vegetation cover within the study area.

### GW e20p229: Southeast Lowland Grassy Woodland



Plate e20p229. Southeast Lowland Grassy Woodland (Map Unit e20p229) dominated by *Eucalyptus tereticornis* and occasional *E. baueriana* with *Indigofera australis*, *Themeda australis* and *Microlaena stipoides* alongside a fenced roadside north of Wolumla, showing the effects of light grazing.

Sample Sites: 128

Area Extant (ha): 14,000

Estimated % remaining: 10-25%

Area in conservation reserves (ha): 780

Estimated % of pre-clearing area in conservation reserves: <5%

No. Taxa (total / unique): 379 / 1

No. Taxa per Plot ( $\pm$ sd): 39.4 (9.9)

Class: Coastal Valley Grassy Woodlands

Related TEC: Lowland Grassy Woodland of the South East Corner EEC (TSC)

Southeast Lowland Grassy Woodland represents a complex of grassy ecosystems including Bega and Candelo Dry Grass Forests (map units 20 and 21 described by Keith & Bedward (1999)), Araluen Valley Grassy Woodland and the southern examples of South Coast Grassy Woodland (map units GW229 and GW34 described by Tindal *et al.* (2004)). This woodland ranges from 20 – 22 m in height, with sparse strata of small trees and shrubs ranging from 2 – 9 m tall. The groundcover is dominated by grasses but typically includes a diverse array of forb and graminoid species. Southeast Lowland Grassy Woodland occurs in coastal rainshadow areas typically receiving between 800 – 950 mm of annual precipitation. It is most extensive in the Cobargo - Bega - Candelo area and the Towamba valley below 250 m elevation on granitoid substrates and Ordovician mudstones. Small stands also occur on fine-grained igneous intrusives on the coast near Tanja. In the driest western parts of the Bega and Towamba valleys it is found up to 300 m elevation on granitoid substrates or rarely Ordovician mudstones. Further north, a disjunct occurrence occupies the undulating floor of the Araluen valley on sandy loams derived from granite between 100 and 300m ASL. To the east of the Araluen valley Southeast Lowland Grassy Woodland is also found on granitoid substrates in the vicinity of Moruya.

No similar assemblages have been described in adjacent regions to the south (Austin 1978, Woodgate *et al.* 1994). To the north, Southeast Lowland Grassy Woodland grades into South Coast Grassy Woodland (GWp34) along the coast, while examples of the assemblage from the Araluen Valley share a number of species with Cumberland Shale Plains Woodland (Map Unit GW p29) of western Sydney.

Between 75 - 90% of Southeast Lowland Grassy Woodland has been cleared for agriculture and almost all of the remainder is highly fragmented on private land where it is potentially threatened by further clearing, grazing and weed invasion (Keith 1995).

#### Floristic Summary:

**Trees:** *Acacia mearnsii*, *Angophora floribunda*, *Eucalyptus globoidea*, *Eucalyptus tereticornis* **Shrubs:** *Bursaria spinosa*, *Ozothamnus diosmifolius* **Climbers:** *Clematis glycinoides* var. *glycinoides*, *Rubus parvifolius* **Groundcover:** *Cheilanthes sieberi*, *Desmodium varians*, *Dichondra* spp., *Echinopogon ovatus*, *Eragrostis leptostachya*, *Glycine clandestina*, *Glycine tabacina*, *Hydrocotyle laxiflora*, *Hypericum gramineum*, *Lepidosperma laterale*, *Lomandra longifolia*, *Lomandra multiflora* subsp. *multiflora*, *Microlaena stipoides*, *Oxalis perennans*, *Themeda australis*, *Wahlenbergia gracilis*

#### Vegetation structure:

Stratum	Frequency (n=124)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	1	20 (-)	25 (-)
Tree canopy	90	21.2 (4.5)	23.6 (14.7)
Small tree	73	9.5 (3.9)	18.5 (14.4)
Shrub	81	2.2 (0.8)	16 (14.3)
Ground cover	100	0.5 (0.3)	65.5 (24.6)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 23 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 32 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 23 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia implexa</i>	1(1-1)	38	1(1-1)	6
<i>Acacia mearnsii</i>	1(1-2)	70	1(1-2)	6
<i>Acaena agnipila</i>	1(1-1)	3	1(1-1)	<1
<i>Acaena echinata</i>	1(1-1)	23	1(1-1)	2
<i>Ajuga australis</i>	1(1-1)	13	1(1-1)	3
<i>Allocasuarina littoralis</i>	1(1-1)	29	1(1-2)	17
<i>Amyema congener</i> subsp. <i>congener</i>	1(1-1)	3	1(1-1)	<1
<i>Amyema pendulum</i> subsp. <i>pendulum</i>	1(1-1)	9	1(1-1)	2
<i>Angophora floribunda</i>	2(1-2)	59	1(1-2)	8
<i>Aristida vagans</i>	1(1-1)	20	1(1-2)	8
<i>Arthropodium milleflorum</i>	1(1-1)	20	1(1-1)	5
<i>Arthropodium species B</i>	1(1-1)	9	1(1-1)	1

<i>Asperula conferta</i>	1(1-1)	17	1(1-1)	4
<i>Austrodanthonia pilosa</i>	1(1-1)	23	1(1-1)	3
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	1(1-1)	34	1(1-2)	5
<i>Austrostipa rudis</i>	1(1-1)	35	1(1-2)	6
<i>Bossiaea buxifolia</i>	1(1-1)	14	1(1-1)	3
<i>Bothriochloa macra</i>	1(1-3)	7	1(1-2)	1
<i>Brachychiton populneus</i> subsp. <i>populneus</i>	1(1-1)	9	1(1-1)	3
<i>Bursaria spinosa</i>	1(1-2)	56	1(1-2)	14
<i>Carex breviculmis</i>	1(1-1)	20	1(1-1)	4
<i>Carex inversa</i>	1(1-1)	26	1(1-1)	3
<i>Carex longebrachiata</i>	1(1-1)	17	1(1-2)	3
<i>Cassinia aculeata</i>	1(1-1)	18	1(1-1)	6
<i>Cassinia longifolia</i>	1(1-1)	30	1(1-2)	6
<i>Cassinia trinerva</i>	1(1-1)	27	1(1-1)	3
<i>Cenchrus caliculatus</i>	1(1-1)	5	1(1-2)	1
<i>Cheilanthes distans</i>	1(1-1)	7	1(1-1)	2
<i>Cheilanthes sieberi</i>	1(1-1)	63	1(1-1)	13
<i>Chrysocephalum semipapposum</i>	1(1-1)	8	1(1-2)	1
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	42	1(1-1)	9
<i>Convolvulus erubescens</i>	1(1-1)	5	1(1-1)	1
<i>Crassula sieberiana</i>	1(1-1)	9	1(1-1)	3
<i>Cymbopogon refractus</i>	1(1-1)	27	1(1-1)	4
<i>Cynodon dactylon</i>	1(1-3)	5	1(1-2)	2
<i>Cynoglossum australe</i>	1(1-1)	10	1(1-1)	2
<i>Cynoglossum suaveolens</i>	1(1-1)	6	1(1-1)	1
<i>Cyperus gracilis</i>	1(1-2)	13	1(1-1)	2
<i>Desmodium brachypodium</i>	1(1-1)	26	1(1-1)	2
<i>Desmodium varians</i>	1(1-1)	71	1(1-1)	21
<i>Dianella longifolia</i>	1(1-1)	15	1(1-1)	4
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	27	1(1-1)	15
<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>	1(1-1)	10	1(1-1)	<1
<i>Dichelachne micrantha</i>	1(1-1)	38	1(1-1)	8
<i>Dichondra</i> spp.	1(1-1)	95	1(1-2)	24
<i>Digitaria parviflora</i>	1(1-1)	11	1(1-1)	2
<i>Digitaria ramularis</i>	1(1-1)	20	1(1-1)	1
<i>Dodonaea viscosa</i> subsp. <i>angustifolia</i>	1(1-1)	7	1(1-1)	1
<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	1(1-1)	33	1(1-1)	6
<i>Echinopogon ovatus</i>	1(1-1)	55	1(1-1)	13
<i>Einadia hastata</i>	1(1-1)	17	1(1-1)	3
<i>Einadia nutans</i>	1(1-1)	21	1(1-1)	2
<i>Einadia trigonos</i>	1(1-2)	7	1(1-1)	1
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-1)	30	1(1-1)	4
<i>Epilobium billardierianum</i>	1(1-1)	16	1(1-1)	1
<i>Eragrostis leptostachya</i>	1(1-1)	66	1(1-1)	3
<i>Eucalyptus baueriana</i>	1(1-2)	13	2(1-2)	1
<i>Eucalyptus bosistoana</i>	1(1-2)	16	1(1-2)	3

<i>Eucalyptus globoidea</i>	2(1-2)	52	1(1-2)	11
<i>Eucalyptus maidenii</i>	2(1-2)	8	2(1-2)	2
<i>Eucalyptus melliodora</i>	1(1-3)	19	1(1-3)	2
<i>Eucalyptus tereticornis</i>	2(1-2)	60	2(1-3)	6
<i>Euchiton gymnocephalus</i>	1(1-1)	37	1(1-1)	7
<i>Exocarpos cupressiformis</i>	1(1-1)	36	1(1-1)	4
<i>Gahnia aspera</i>	1(1-1)	14	1(1-1)	4
<i>Galium propinquum</i>	1(1-1)	39	1(1-1)	7
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-1)	38	1(1-1)	7
<i>Glycine clandestina</i>	1(1-1)	80	1(1-1)	25
<i>Glycine tabacina</i>	1(1-1)	46	1(1-1)	6
<i>Hardenbergia violacea</i>	1(1-1)	32	1(1-1)	17
<i>Hydrocotyle laxiflora</i>	1(1-1)	73	1(1-1)	15
<i>Hymenanthera dentata</i>	1(1-1)	25	1(1-1)	6
<i>Hypericum gramineum</i>	1(1-1)	53	1(1-1)	16
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-1)	22	1(1-2)	9
<i>Jacksonia scoparia</i>	1(1-2)	6	1(1-1)	2
<i>Juncus subsecundus</i>	1(1-1)	5	1(1-1)	1
<i>Lepidosperma laterale</i>	1(1-1)	44	1(1-1)	28
<i>Leucopogon juniperinus</i>	1(1-1)	19	1(1-1)	5
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	43	1(1-1)	25
<i>Microlaena stipoides</i>	2(1-2)	90	1(1-2)	36
<i>Notodanthonia longifolia</i>	1(1-2)	23	1(1-2)	5
<i>Opercularia aspera</i>	1(1-1)	27	1(1-1)	8
<i>Opercularia varia</i>	1(1-1)	24	1(1-1)	2
<i>Oplismenus imbecillis</i>	1(1-1)	27	1(1-2)	14
<i>Oxalis perennans</i>	1(1-1)	45	1(1-1)	12
<i>Oxalis radicata</i>	1(1-1)	5	1(1-1)	<1
<i>Ozothamnus argophyllus</i>	1(1-1)	23	1(1-1)	2
<i>Ozothamnus diosmifolius</i>	1(1-1)	45	1(1-1)	8
<i>Ozothamnus ferrugineus</i>	1(1-2)	3	1(1-1)	<1
<i>Panicum effusum</i>	1(1-1)	28	1(1-1)	2
<i>Pellaea falcata</i>	1(1-1)	24	1(1-2)	10
<i>Philothea trachyphylla</i>	1(1-1)	3	1(1-1)	<1
<i>Pimelea curviflora</i> var. <i>gracilis</i>	1(1-1)	3	1(1-1)	<1
<i>Pittosporum undulatum</i>	1(1-1)	26	1(1-1)	14
<i>Poa labillardierei</i> var. <i>labillardierei</i>	1(1-2)	39	1(1-2)	11
<i>Pratia purpurascens</i>	1(1-1)	38	1(1-1)	17
<i>Rubus parvifolius</i>	1(1-1)	44	1(1-1)	9
<i>Rumex brownii</i>	1(1-1)	24	1(1-1)	5
<i>Santalum obtusifolium</i>	1(1-1)	5	1(1-1)	1
<i>Scleranthus biflorus</i>	1(1-1)	16	1(1-1)	2
<i>Senecio hispidulus</i> var. <i>hispidulus</i>	1(1-1)	16	1(1-1)	2
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	22	1(1-1)	7
<i>Solanum americanum</i>	1(1-1)	7	1(1-1)	<1
<i>Solanum opacum</i>	1(1-2)	3	1(1-1)	<1

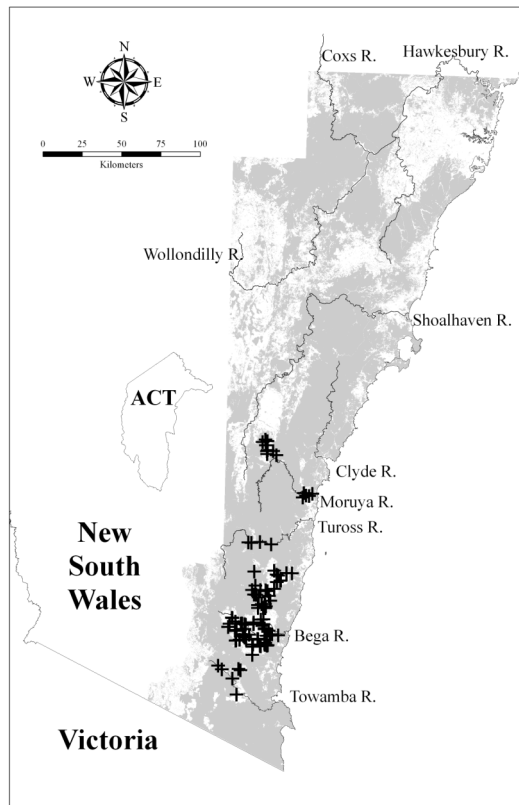
<i>Solanum prinophyllum</i>	1(1-1)	15	1(1-1)	6
<i>Solanum pungetium</i>	1(1-1)	28	1(1-1)	5
<i>Sporobolus creber</i>	1(1-1)	16	1(1-1)	1
<i>Sporobolus elongatus</i>	1(1-1)	5	1(1-1)	1
<i>Themeda australis</i>	2(1-3)	86	1(1-2)	16
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-1)	20	1(1-1)	4
<i>Veronica calycina</i>	1(1-1)	16	1(1-1)	6
<i>Veronica plebeia</i>	1(1-1)	22	1(1-1)	10
<i>Wahlenbergia communis</i>	1(1-1)	18	1(1-1)	2
<i>Wahlenbergia gracilis</i>	1(1-1)	42	1(1-1)	10
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	1(1-1)	16	1(1-1)	5
<i>Zornia dyctiocarpa</i> var. <i>dyctiocarpa</i>	1(1-1)	4	1(1-1)	<1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Lomandra longifolia</i>	1(1-1)	55	1(1-1)	44

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus agglomerata</i>	2(1-2)	5	2(1-3)	7
<i>Eucalyptus angophoroides</i>	2(1-2)	2	1(1-2)	1
<i>Eucalyptus botryoides</i>	1(1-2)	5	2(1-3)	3
<i>Eucalyptus bridgesiana</i>	1(1-1)	1	1(1-3)	2
<i>Eucalyptus considianiana</i>	1(1-1)	1	2(1-2)	2
<i>Eucalyptus dives</i>	2(2-2)	2	2(1-3)	4
<i>Eucalyptus elata</i>	2(1-3)	9	2(1-3)	5
<i>Eucalyptus eugenioides</i>	2(1-3)	3	2(1-3)	4
<i>Eucalyptus mannifera</i>	1(1-1)	1	2(1-3)	4
<i>Eucalyptus muelleriana</i>	2(1-2)	3	2(1-2)	6
<i>Eucalyptus pauciflora</i>	1(1-1)	1	1(1-2)	3
<i>Eucalyptus polyanthemos</i> subsp. <i>tarda</i>	1(1-1)	1	1(1-2)	<1
<i>Eucalyptus polyanthemos</i> subsp. <i>vestita</i>	1(1-1)	2	1(1-1)	<1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-2)	2	2(1-3)	6
<i>Eucalyptus viminalis</i>	2(1-2)	7	2(1-3)	4



Locations of survey sites allocated to GW e20p229. Grey shading indicates extant native vegetation cover within the study area.

### GL e23A: Monaro Grassland



Plate e23A. Monaro Grassland (Map Unit e23A) remnant dominated by *Poa labillardierei* var. *labillardierei* at Black Lake, west of Cathcart.

Sample Sites: 5  
 Area Extant (ha): 300  
 Estimated % remaining: <5%  
 Area in conservation reserves (ha): 0  
 Estimated % of pre-clearing area in conservation reserves: 0%  
 No. Taxa (total / unique): Unknown  
 No. Taxa per Plot ( $\pm$ sd): 11.0(2.5) (0.01ha)  
 Class: Temperate Montane Grasslands

## Related TEC: Natural Temperate Grassland of the Southern Tablelands EEC (EPBC).

Monaro Grassland is equivalent to unit 23A of the same name described by Keith & Bedward (1999). It includes several floristic assemblages characteristic of different habitats and disturbance histories. Floristic data recorded in 10 x 10 m quadrats were compiled from Benson (1994) who recognised eight grassland assemblages on the Monaro Tableland, of which three were sampled in the Eden study area. The grasses *Poa sieberiana*, *Themeda australis* and *P. labillardieri* dominate Benson's communities 4, 5 and 8, respectively. Common interstitial herbs include *Acaena ovina*, *Geranium antrorsum*, *Asperula conferta*, *Chrysocephalum apiculatum*, *Leptorhynchus squamatus*, *Plantago varia* and *Cullen tenax*. Grassland composition varies within the region according to substrate, soil moisture status and grazing history. Benson (1994) attributed differences between communities 3 and 4 to differences in grazing pressure, while community 8 was found in low-lying poorly drained sites. Monaro Grassland occurs on heavy textured soils, usually derived from basalt, alluvium or granitoids above 800 m elevation in a rainshadow characterised by low rainfall (<800 mm mean annual precipitation), periodic drought, drying summer winds, frosts and cold winter temperatures (Benson 1994). The largest and least disturbed stands occur between Bombala and Nimmitabel. Similar grasslands extend west and north-west on parts of the Monaro Tableland (Costin 1954, Benson 1994) and south into Victoria on the Nunniong High Plains and Emu Flat (Community 7.3, Walsh *et al.* 1983). However, there are notable differences in composition compared with alpine and subalpine grasslands in the Kosciuszko area and Victorian alps and lowland grasslands in Victoria and Tasmania (Benson 1994, McDougall & Kirkpatrick 1994). All Australian temperate grasslands, including those of the Eden region, persist in a highly modified, depleted state. Approximately one-twentieth of the region's grassland remains in a semi-natural state, although even this figure may be an overestimate. In the East Gippsland highlands, only 200 ha of degraded grassland remain (Woodgate *et al.* 1994). Most of the Monaro remnants are also heavily degraded by pasture improvement and overgrazing, although several small but significant patches retain a large complement of native species. These latter patches are associated with cemeteries, church yards, rubbish tips, travelling stock reserves and other small parcels of land that have been excluded from the most intensive pastoral land management practices. There are currently no formal conservation reserves that contain examples of grassland assemblages in the region and opportunities for conservation on and off reserve are extremely limited. The severity of continuing degradation supports the need for urgent conservation. Clearing and nutrification associated with cropping and pasture improvement encourages the replacement of native species by fast-growing swards of exotic grasses and herbs. Weed invasion associated with nutrification is most pronounced along drainage lines supporting assemblages dominated by *Poa labillardieri* (Benson 1994). Nutrification may also be associated with compositional shifts within the native component of the flora, with *P. labillardieri* known to produce a greater growth response to fertilisers than *Themeda australis* (Groves *et al.* 1973). High levels of grazing pressure are also associated with compositional changes. Species with erect herbaceous growth forms (e.g. *Microseris lanceolata*, *Podolepis hieracioides*, *Bulbine bulbosa*, *Discaria pubescens*) are likely to be more prone to elimination by intense grazing than those with rosette growth forms, which include several ubiquitous weed species (McIntyre *et al.* 1995). *Themeda australis* appears to be less resilient to heavy grazing than other grasses (Vickery 1961, Benson 1994). Contemporary disturbance regimes may also be associated with loss of diversity from grasslands, since the persistence of some herbaceous species is known to be dependent on gap dynamics (e.g. Morgan 1997). Disturbance regimes comprising certain mixtures of fire and grazing (e.g. exclusion of fire and herbivores, high stocking rates and fire exclusion) have been implicated in the loss of grassland diversity (Lunt 1991).

**Vegetation structure:**

Stratum	Frequency (n=15)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	0	- (-)	- (-)
Small tree	0	- (-)	- (-)
Shrub	0	- (-)	- (-)
Ground cover	100	0.5(0.1)	81(6)

**Diagnostic Species:** Not available

**GW e24: Southeast Subalpine Dry Shrub Forest**

Plate e24. Southeast Sub-alpine Dry Shrub Forest (Map Unit e24) dominated by *Eucalyptus pauciflora*, *E. dalrympleana* and *E. radiata* with *Gahnia subaequiglumis* and *Bossiaea foliosa* adjacent to Nunnock Swamp, Tantawangalo section, South East Forests National Park.

Sample Sites: 32

Area Extant (ha): 6200

Estimated % remaining: 50-60%

Area in conservation reserves (ha): 2000

Estimated % of pre-clearing area in conservation reserves: 10-20%

No. Taxa (total / unique): 167 / 2

No. Taxa per Plot ( $\pm$ sd): 23.4 (7.2)

Class: Subalpine Woodlands

Related TEC: n/a

Southeast Subalpine Dry Shrub Forest is equivalent to Subalpine Dry Shrub Forest (unit 24) described by Keith & Bedward (1999). It has a variable tree stratum up to 20 m tall with an understorey of scattered tall shrubs emerging from a stratum of smaller shrubs. The groundcover includes grass tussocks interspersed with forbs. Southeast subalpine Dry Shrub Forest is a variable unit extending across the Monaro Tableland from the western edge of the escarpment range as a major component of the complex of grassy assemblages in that rainshadow area. It typically occurs on gentle terrain above 700 m elevation on granitoid substrates or metasediments. Near the escarpment range *E. radiata* is most common and the assemblage is restricted to frost hollows associated with Southeast Subalpine Bogs (Map Unit FrWe59). Further west, the stands are more extensive, *E. pauciflora* becomes more dominant and the graminoid component of the understorey increases. Similar assemblages occur elsewhere on the Monaro Tableland (Costin 1954). In East Gippsland *E. radiata* and *E. dalrympleana* dominate 'better watered lower altitude' stands of Ecological Vegetation Class 36 (Woodgate *et al.* 1994), although some understorey components may differ. Approximately three-quarters of this extensive unit has been cleared for agriculture and although much of the remainder occurs on private land, there are significant stands in reserves and State Forest on the western edge of the escarpment range. The principal threats include further clearing (on private land), grazing, associated weed invasion and loss of shrub diversity in stands subject to frequent fire regimes.

**Floristic Summary:**

**Trees:** *Eucalyptus dalrympleana* subsp. *dalrympleana*, *Eucalyptus pauciflora*, *Eucalyptus radiata* subsp. *radiata*

**Shrubs:** *Bossiaea foliosa*, *Daviesia ulicifolia*, *Hibbertia obtusifolia*, *Hovea linearis*, *Leucopogon lanceolatus* var. *lanceolatus*, *Monotoca scoparia*, *Persoonia silvatica* **Groundcover:** *Dianella tasmanica*, *Gonocarpus tetragynus*, *Lomandra longifolia*, *Microlaena stipoides*, *Stylidium graminifolium*



**Vegetation structure:**

Stratum	Frequency (n=15)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	18.3 (5.7)	26.3 (9.9)
Small tree	20	5.3 (1.2)	9.7 (9)
Shrub	93	1.4 (0.8)	32.6 (21.4)
Ground cover	93	0.4 (0.3)	22.4 (19.8)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 8 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 18 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 8 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	1(1-1)	34	1(1-2)	5
<i>Acacia obliquinervia</i>	1(1-1)	22	1(1-1)	1
<i>Astroloma humifusum</i>	1(1-1)	28	1(1-1)	4
<i>Banksia marginata</i>	1(1-2)	22	1(1-1)	3
<i>Bossiaea foliosa</i>	1(1-1)	81	1(1-1)	<1
<i>Brachyloma daphnoides</i>	1(1-1)	38	1(1-1)	6
<i>Brachyscome spathulata</i>	1(1-1)	22	1(1-1)	1
<i>Choretrum pauciflorum</i>	1(1-1)	25	1(1-1)	1
<i>Daviesia ulicifolia</i>	1(1-1)	53	1(1-1)	6
<i>Dianella tasmanica</i>	1(1-1)	50	1(1-1)	7
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-2)	81	1(1-3)	3
<i>Eucalyptus dives</i>	2(1-2)	38	2(1-3)	4
<i>Eucalyptus pauciflora</i>	1(1-1)	53	2(1-3)	3
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-2)	66	2(1-3)	6
<i>Exocarpos strictus</i>	1(1-1)	34	1(1-1)	9
<i>Gompholobium huegelii</i>	1(1-1)	31	1(1-1)	2
<i>Gonocarpus tetragynus</i>	1(1-1)	66	1(1-1)	20
<i>Goodenia hederacea</i> subsp. <i>alpestris</i>	1(1-1)	25	1(1-1)	<1
<i>Helichrysum scorpioides</i>	1(1-1)	28	1(1-1)	7
<i>Hibbertia obtusifolia</i>	1(1-1)	63	1(1-1)	10
<i>Hovea linearis</i>	1(1-1)	47	1(1-1)	9
<i>Lomandra longifolia</i>	1(1-1)	91	1(1-1)	44
<i>Monotoca scoparia</i>	1(1-2)	66	1(1-1)	12
<i>Olearia erubescens</i>	1(1-1)	25	1(1-1)	2
<i>Patersonia sericea</i>	1(1-1)	28	1(1-1)	9
<i>Persoonia chamaepeuce</i>	1(1-1)	28	1(1-1)	1
<i>Persoonia silvatica</i>	1(1-1)	66	1(1-1)	2
<i>Stylidium graminifolium</i>	1(1-1)	72	1(1-1)	9
<i>Viola betonicifolia</i>	1(1-1)	25	1(1-1)	5

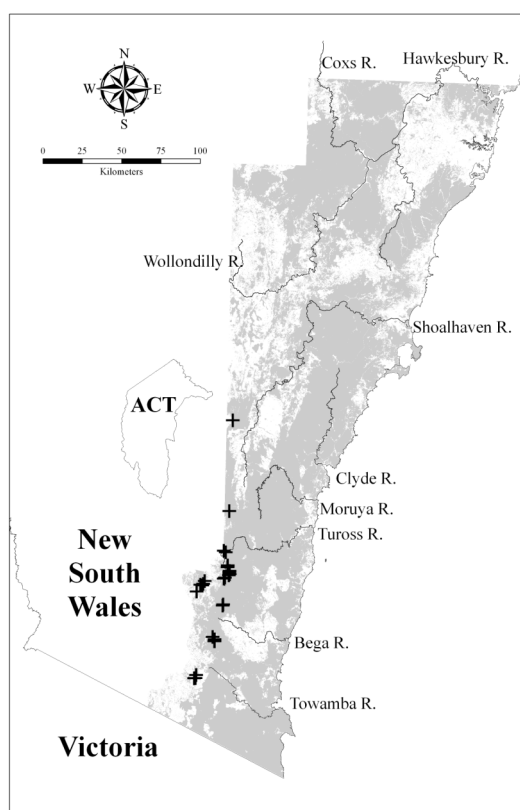
**Constant:**

Species	C/A	Freq	C/A O	Freq O
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	44	1(1-1)	24
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	31	1(1-1)	25

<i>Microlaena stipoides</i>	1(1-1)	50	1(1-2)	36
<i>Platysace lanceolata</i>	1(1-1)	31	1(1-1)	13
<i>Poa meionectes</i>	1(1-2)	34	1(1-2)	16

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia gummifera</i>	1(1-1)	3	2(1-2)	16
<i>Eucalyptus fastigata</i>	1(1-2)	9	2(1-3)	6
<i>Eucalyptus obliqua</i>	1(1-1)	3	2(1-3)	4
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-2)	9	1(1-2)	2
<i>Eucalyptus sieberi</i>	1(1-1)	6	2(1-3)	16
<i>Eucalyptus stellulata</i>	1(1-1)	6	1(1-2)	1
<i>Eucalyptus viminalis</i>	1(1-3)	13	2(1-3)	4



Locations of survey sites allocated to GW e24. Grey shading indicates extant native vegetation cover within the study area.

**DSF e25: Southeast Sandstone Dry Shrub Forest**

Plate e25. Southeast Sandstone Dry Shrub Forest (Map Unit e25) dominated by *Eucalyptus obliqua*, *E. sieberi* and *E. sp. aff. radiata* with *Acacia mucronata*, *Ozothamnus cuneifolius* and *Persoonia brevifolia* on Nungatta Plateau, Genoa section, South East Forests National Park.

Sample Sites: 11

Area Extant (ha): 820

Estimated % remaining: 65-75%

Area in conservation reserves (ha): 720

Estimated % of pre-clearing area in conservation reserves: 60-70%

No. Taxa (total / unique): 105 / 0

No. Taxa per Plot ( $\pm$ sd): 22.7 (6.5)

Class: South East Dry Sclerophyll Forests

Related TEC: n/a

Southeast Sandstone Dry Shrub Forest is equivalent to Sandstone Dry Shrub Forest (unit 25) described by Keith & Bedward (1999). It is characterised by a *Eucalyptus* canopy approximately 20 m in height with a prominent sclerophyllous shrub stratum and a relatively dense groundcover dominated by ferns, grasses, graminoids and forbs. Southeast Sandstone Dry Shrub Forest is restricted to elevated ridges on the Genoa sandstone and nearby sites on quartz-rich granitoid substrates and metasediments, usually above 700 m elevation. Although about one-quarter of its distribution has been cleared for pine plantations, the principal occurrences on Nungatta Mountain and Mt Tennyson are represented within conservation reserves. Future clearing is therefore unlikely to pose a significant threat. Frequent fire regimes that reduce diversity by interrupting life-cycle processes of woody species are likely to be the main threat to this assemblage. The high densities of *Pteridium esculentum*, *Tetrarrhena juncea* and *Acacia mucronata* may reflect the passage of a high intensity fire that burnt almost the entire range of this unit in 1983. Intervals between planned and unplanned fires need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided. Although no similar assemblage has been described in East Gippsland (Forbes et al 1982), one may occur within the Shrubby Dry Forest complex (Ecological Vegetation Class 21, Woodgate et al. 1994) on nearby elevated sandstone areas such as Mt Coopracambra and Mt Kaye.

**Floristic Summary:**

**Trees:** *Eucalyptus obliqua* **Shrubs:** *Acacia mucronata* subsp. *longifolia*, *Epacris impressa*, *Leucopogon lanceolatus* var. *lanceolatus*, *Lomatia ilicifolia*, *Monotoca scoparia*, *Oxylobium arborescens*, *Platysace lanceolata* **Groundcover:** *Amperea xiphoclada*, *Dianella tasmanica*, *Gonocarpus tetragynus*, *Gonocarpus teucroides*, *Lomandra longifolia*, *Poa meionectes*, *Pteridium esculentum*, *Tetrarrhena juncea*, *Viola hederacea*

**Vegetation structure:**

Stratum	Frequency (n=11)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	20.9 (6.5)	28.2 (12.7)
Small tree	9	6 (-)	5 (-)
Shrub	100	1.6 (0.7)	35.9 (19.5)
Ground cover	100	0.6 (0.4)	47.3 (21.8)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 7 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 18 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 7 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia mucronata</i> subsp. <i>longifolia</i>	3(1-3)	82	1(1-1)	1
<i>Amperea xiphioclada</i>	1(1-1)	55	1(1-1)	7
<i>Banksia marginata</i>	1(1-2)	27	1(1-1)	3
<i>Dianella tasmanica</i>	1(1-2)	45	1(1-1)	7
<i>Epacris impressa</i>	2(1-2)	91	1(1-1)	4
<i>Eucalyptus obliqua</i>	2(1-2)	64	2(1-3)	4
<i>Gonocarpus teucrioides</i>	1(1-1)	55	1(1-1)	18
<i>Leptospermum continentale</i>	2(2-2)	27	1(1-1)	3
<i>Lomandra longifolia</i>	2(2-3)	100	1(1-1)	44
<i>Lomatia ilicifolia</i>	1(1-1)	73	1(1-1)	6
<i>Monotoca scoparia</i>	1(1-2)	45	1(1-1)	12
<i>Olearia erubescens</i>	1(1-2)	36	1(1-1)	2
<i>Oxylobium arborescens</i>	1(1-1)	55	1(1-2)	<1
<i>Persoonia brevifolia</i>	1(1-1)	36	1(1-1)	<1
<i>Platysace lanceolata</i>	1(1-1)	91	1(1-1)	13
<i>Poa meionectes</i>	1(1-3)	73	1(1-2)	16
<i>Pteridium esculentum</i>	1(1-3)	82	1(1-2)	37
<i>Tetrarrhena juncea</i>	1(1-2)	45	1(1-2)	5

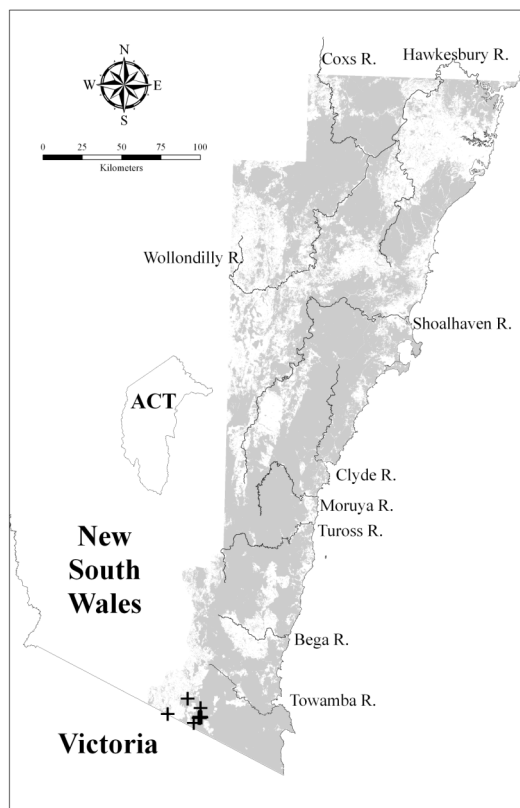
**Constant:**

Species	C/A	Freq	C/A O	Freq O
<i>Dianella caerulea</i>	1(1-1)	36	1(1-1)	28
<i>Eucalyptus sieberi</i>	2(1-3)	36	2(1-3)	16
<i>Gonocarpus tetragynus</i>	1(1-1)	45	1(1-1)	20
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	45	1(1-1)	24
<i>Microlaena stipoides</i>	1(1-1)	36	1(1-2)	36
<i>Viola hederacea</i>	1(1-1)	45	1(1-1)	22

**Other tree species occurring less frequently in this community:**

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus angophoroides</i>	2(2-2)	9	1(1-2)	1
<i>Eucalyptus consideniana</i>	3(3-3)	9	1(1-2)	2
<i>Eucalyptus cypellocarpa</i>	2(2-2)	18	2(1-2)	10
<i>Eucalyptus dives</i>	1(1-1)	9	2(1-3)	4

<i>Eucalyptus elata</i>	2(2-2)	9	2(1-3)	5
<i>Eucalyptus globoidea</i>	1(1-1)	9	2(1-2)	12
<i>Eucalyptus mckintii</i>	3(3-3)	9	2(2-3)	<1
<i>Eucalyptus ovata</i>	2(2-2)	9	2(1-3)	1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	18	2(1-3)	6
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-1)	9	1(1-2)	2



Locations of survey sites allocated to **DSF e25**. Grey shading indicates extant native vegetation cover within the study area.

**DSF e26: Southeast Tableland Dry Shrub Forest**

Plate e26. Southeast Tableland Dry Shrub Forest (Map Unit e26) dominated by *Eucalyptus viminalis* and *E. angophoroides* with *Acacia dealbata*, *Poa meionectes*, *Lomandra longifolia* and *Gahnia sieberiana* near Walla Walla Creek, Waalimma section of South East Forests National Park.

Sample Sites: 38  
 Area Extant (ha): 15000  
 Estimated % remaining: 60-70%  
 Area in conservation reserves (ha): 5700  
 Estimated % of pre-clearing area in conservation reserves: 20-30%  
 No. Taxa (total / unique): 223 / 0  
 No. Taxa per Plot ( $\pm$ sd): 33.6 (10.0)  
 Class: South East Dry Sclerophyll Forests  
 Related TEC: n/a

Southeast Tableland Dry Shrub Forest is equivalent to Tableland Dry Shrub Forest (unit 26) described by Keith & Bedward (1999). It is characterised by a *Eucalyptus* canopy up to 30 m tall with an open sclerophyllous shrub stratum dominated by Epacridaceae. The groundcover is relatively sparse and comprises a mixture of grasses, graminoids and forbs with a variable cover of bracken fern (*Pteridium esculentum*). Southeast Tableland Dry Shrub Forest occurs on ridges and dry slopes on metasediments and granitoid substrates at 300-850 m elevation in the south-western part of the study area. Forbes *et al.* (1982) described a similar assemblage (Community 9.3) scattered through the foothills of East Gippsland, but this differs in some compositional aspects (e.g. low frequency of *E. radiata*). About two-fifths of Southeast Tableland Dry Shrub Forest has been cleared, mainly for pine plantation and about two-thirds of the remainder occurs on State Forest and private land available for logging. Although a further 3 200 ha of this vegetation is potentially threatened by further clearing, the principal threat to stands outside reserves is frequent disturbance regimes that include logging and fire in combination. These regimes reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Logging followed by regeneration burns and thinning may change the relative abundance of eucalypt species, particularly *E. sieberi* (Bridges 1983). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

**Floristic Summary:**

**Trees:** *Eucalyptus cypellocarpa*, *Eucalyptus globoidea*, *Eucalyptus radiata* subsp. *radiata* **Shrubs:** *Acacia mucronata* subsp. *longifolia*, *Acrotriche serrulata*, *Epacris impressa*, *Leucopogon lanceolatus* var. *lanceolatus*, *Monotoca scoparia*, *Persoonia linearis* **Groundcover:** *Dianella caerulea*, *Dichelachne rara*, *Gonocarpus tetragynus*, *Helichrysum scorpioides*, *Hibbertia obtusifolia*, *Hydrocotyle laxiflora*, *Hypericum gramineum*, *Lagenifera stipitata*, *Lomandra longifolia*, *Lomandra multiflora* subsp. *multiflora*, *Microlaena stipoides*, *Poa meionectes*, *Pteridium esculentum*, *Senecio prenanthoides*, *Viola hederacea*

**Vegetation structure:**

Stratum	Frequency (n=33)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	27.9 (5.2)	28.6 (9.6)
Small tree	45	7.8 (3.3)	14.3 (9.8)
Shrub	100	2 (1)	22.9 (19.3)
Ground cover	100	0.5 (0.2)	18.6 (15.3)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 14 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 26 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 14 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	1(1-2)	21	1(1-2)	5
<i>Acacia mucronata</i> subsp. <i>longifolia</i>	1(1-1)	45	1(1-2)	1
<i>Acrotriche serrulata</i>	1(1-1)	45	1(1-1)	3
<i>Carex breviculmis</i>	1(1-1)	21	1(1-1)	4
<i>Dianella caerulea</i>	1(1-1)	87	1(1-1)	28
<i>Dichelachne rara</i>	1(1-1)	45	1(1-1)	4
<i>Epacris impressa</i>	1(1-1)	84	1(1-1)	4
<i>Eucalyptus angophoroides</i>	2(1-2)	32	1(1-2)	1
<i>Eucalyptus cypellocarpa</i>	2(1-2)	53	2(1-2)	10
<i>Eucalyptus globoidea</i>	2(1-2)	61	1(1-2)	12
<i>Eucalyptus obliqua</i>	2(2-2)	26	2(1-3)	4
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-2)	61	2(1-3)	6
<i>Euchiton gymnocephalus</i>	1(1-1)	29	1(1-1)	7
<i>Gahnia radula</i>	1(1-1)	29	1(1-2)	2
<i>Gonocarpus tetragynus</i>	1(1-1)	58	1(1-1)	20
<i>Helichrysum scorpioides</i>	1(1-1)	61	1(1-1)	7
<i>Hibbertia obtusifolia</i>	1(1-1)	74	1(1-1)	10
<i>Hydrocotyle laxiflora</i>	1(1-1)	47	1(1-1)	15
<i>Hypericum gramineum</i>	1(1-1)	63	1(1-1)	16
<i>Joycea pallida</i>	1(1-2)	24	1(1-2)	8
<i>Lagenifera stipitata</i>	1(1-1)	55	1(1-1)	14
<i>Leptospermum continentale</i>	1(1-1)	29	1(1-1)	3
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	87	1(1-1)	23
<i>Lomandra longifolia</i>	1(1-1)	100	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	63	1(1-1)	25
<i>Lomatia ilicifolia</i>	1(1-1)	34	1(1-1)	6
<i>Microlaena stipoides</i>	1(1-1)	66	1(1-2)	36
<i>Monotoca scoparia</i>	1(1-1)	63	1(1-1)	12
<i>Olearia erubescens</i>	1(1-1)	21	1(1-1)	2
<i>Persoonia linearis</i>	1(1-1)	55	1(1-1)	29
<i>Platysace lanceolata</i>	1(1-1)	37	1(1-1)	13
<i>Poa meionectes</i>	2(1-2)	92	1(1-2)	16
<i>Pteridium esculentum</i>	1(1-1)	66	1(1-2)	37

<i>Pultenaea retusa</i>	1(1-1)	21	1(1-1)	1
<i>Senecio prenanthoides</i>	1(1-1)	61	1(1-1)	8
<i>Stylidium graminifolium</i>	1(1-1)	26	1(1-1)	9
<i>Tetratheca thymifolia</i>	1(1-1)	32	1(1-1)	6
<i>Veronica calycina</i>	1(1-1)	34	1(1-1)	6
<i>Viola betonicifolia</i>	1(1-1)	24	1(1-1)	5
<i>Viola hederacea</i>	1(1-1)	58	1(1-1)	22

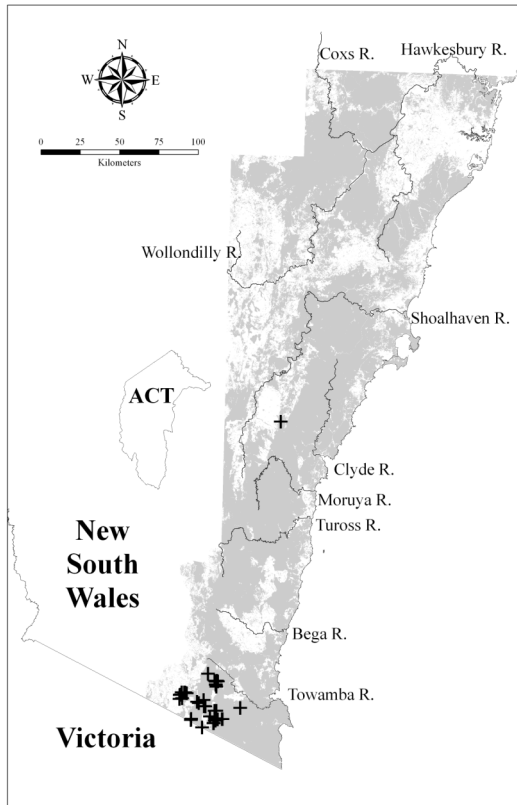
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	34	1(1-1)	28
<i>Hardenbergia violacea</i>	1(1-1)	37	1(1-1)	17
<i>Lepidosperma laterale</i>	1(1-1)	37	1(1-1)	29

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus croajingolensis</i>	3(2-3)	5	1(1-3)	<1
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-2)	18	1(1-2)	3
<i>Eucalyptus dives</i>	2(2-2)	3	2(1-3)	4
<i>Eucalyptus elata</i>	1(1-1)	3	2(1-3)	5
<i>Eucalyptus mckintii</i>	2(2-2)	3	2(2-3)	<1
<i>Eucalyptus muelleriana</i>	2(2-2)	11	2(1-2)	6
<i>Eucalyptus ovata</i>	1(1-1)	5	2(1-3)	1
<i>Eucalyptus pauciflora</i>	2(2-2)	3	1(1-2)	3
<i>Eucalyptus polyanthemus</i> subsp. <i>tarda</i>	1(1-1)	3	1(1-2)	<1
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-1)	3	1(1-2)	2
<i>Eucalyptus sieberi</i>	2(1-2)	26	2(1-3)	16
<i>Eucalyptus stellulata</i>	1(1-1)	3	1(1-2)	1
<i>Eucalyptus viminalis</i>	1(1-2)	18	2(1-3)	4





Locations of survey sites allocated to DSF e26. Grey shading indicates extant native vegetation cover within the study area.

### DSF e27: Waalimma Dry Grass Forest



Plate e27. Waalimma Dry Grass Forest (Map Unit e27) dominated by *Eucalyptus tricarpa*, *E. angophoroides* and *E. globoidea* with *Acacia mucronata*, *A. stricta*, *Lissanthe strigosa*, *Gahnia radula* and *Echinopogon ovatus* on the northern toe slope of Mt Waalimma, Waalimma section, South East Forest National Park.

Sample Sites: 7

Area Extant (ha): 1300

Estimated % remaining: >95%

Area in conservation reserves (ha): 300

Estimated % of pre-clearing area in conservation reserves: 15-25%

No. Taxa (total / unique): 113 / 0

No. Taxa per Plot ( $\pm$ sd): 40.0 (5.3)

Class: Southern Hinterland Dry Sclerophyll Forests  
Related TEC: n/a

Waalimma Dry Grass Forest is equivalent to Map Unit 27 of the same name described by Keith & Bedward (1999). It is characterised by a tree stratum up to 25 m tall, a tall, sclerophyllous shrub stratum and a rich and distinctive grassy understorey. A variety of small shrubs and forbs are interspersed among the grassy tussocks. Waalimma Dry Grass Forest occurs on broad ridges and upper slopes on metasediments and granitoid substrates at 350-500 m elevation. It has a highly restricted distribution around Mt Waalimma close to the Victorian border, primarily on State Forest. Forbes *et al.* (1982) recorded a similar assemblage on adjacent sites across the Victorian border (Box-Ironbark Woodland, Community 10.1). However, these stands appear to differ substantially in composition and habitat from other stands attributed to Box-Ironbark elsewhere in the foothills of East Gippsland. Foothill Box-Ironbark Forest (Ecological Vegetation Class 24) described by Woodgate *et al.* (1994) shares two tree species (*E. polyanthemos* and *E. tricarpa*) with Waalimma Dry Grass Forest, but has a structurally different shrubby understorey (cf. grassy) with none of the major species in common. The Victorian assemblage occurs in two highly restricted stands (ca. 600 ha) on limestone and metasediments (Woodgate *et al.* 1994). It therefore seems unlikely that Waalimma Dry Grass Forest occurs in Victoria beyond areas adjacent to the border. The principal threat facing Waalimma Dry Grass Forest is high frequency disturbance regimes associated with timber production. The largest area of this vegetation includes tree stands of post-1952 fire regrowth which are scheduled for intensive silvicultural management for thinnings and sawlog production in the first decades of the twenty-first century. Frequent disturbance regimes including logging, thinning and burning may reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Logging followed by regeneration burns and thinning may change the relative abundance of eucalypt species, particularly *E. sieberi* (Bridges 1983). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity from this distinctive, species-rich assemblage are to be avoided.

#### Floristic Summary:

**Trees:** *Eucalyptus angophoroides*, *Eucalyptus globoidea*, *Eucalyptus polyanthemos* subsp. *tarda*, *Eucalyptus sieberi*, *Eucalyptus tricarpa* **Shrubs:** *Acacia mucronata* subsp. *longifolia*, *Acacia stricta*, *Acrotriche serrulata*, *Astroloma humifusum*, *Bossiaea prostrata*, *Epacris impressa*, *Hibbertia aspera* subsp. *aspera*, *Hibbertia empetrifolia* subsp. *empetrifolia*, *Leptospermum continentale*, *Leucopogon lanceolatus* var. *lanceolatus*, *Lissanthe strigosa*, *Olearia erubescens*, *Pultenaea scabra* **Climbers:** *Billardiera scandens*, *Cassytha pubescens*, *Comesperma volubile*, *Hardenbergia violacea* **Groundcover:** *Burchardia umbellata*, *Deyeuxia quadriseta*, *Dianella caerulea*, *Dianella revoluta* var. *revoluta*, *Dichelachne micrantha*, *Dichelachne rara*, *Euchiton gymnocephalus*, *Gahnia radula*, *Gonocarpus tetragynus*, *Helichrysum scorpioides*, *Hypericum gramineum*, *Joycea pallida*, *Lepidosperma laterale*, *Lomandra filiformis* subsp. *flavior*, *Lomandra longifolia*, *Lomandra multiflora* subsp. *multiflora*, *Microlaena stipoides*, *Poa meionectes*, *Tetratheca thymifolia*, *Themeda australis*, *Viola hederacea*, *Wahlenbergia gracilis*, *Wahlenbergia stricta* subsp. *stricta*

#### Vegetation structure:

Stratum	Frequency (n=7)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	23.3 (5.1)	24.3 (5.3)
Small tree	43	9 (3.6)	10 (8.7)
Shrub	86	1.5 (0.5)	30.8 (14.6)
Ground cover	100	0.5 (0.3)	56.4 (24.8)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 36 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia mucronata</i> subsp. <i>longifolia</i>	2(1-2)	43	1(1-2)	1
<i>Acacia stricta</i>	2(1-3)	43	1(1-1)	<1
<i>Acrotriche serrulata</i>	1(1-1)	57	1(1-1)	3
<i>Astroloma humifusum</i>	1(1-3)	71	1(1-1)	4
<i>Bossiaea prostrata</i>	1(1-1)	86	1(1-1)	3
<i>Burchardia umbellata</i>	1(1-1)	57	1(1-1)	2
<i>Comesperma volubile</i>	1(1-1)	43	1(1-1)	2

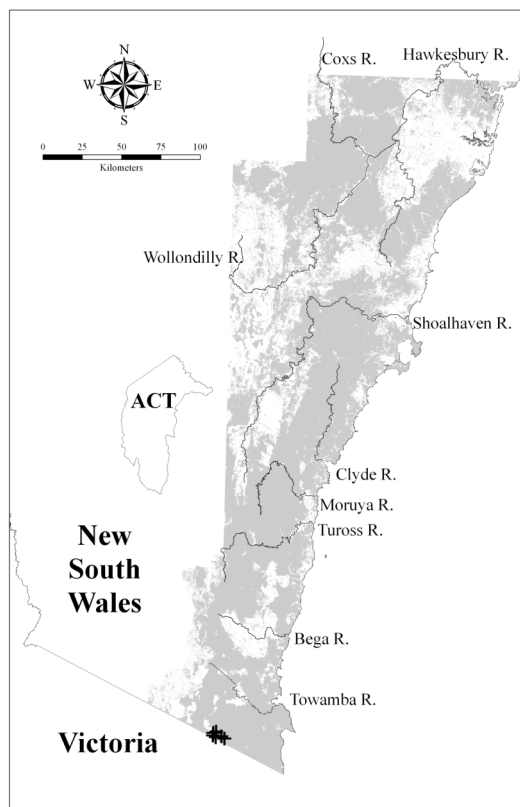
<i>Daviesia latifolia</i>	3(1-3)	29	1(1-2)	1
<i>Deyeuxia monticola</i>	1(1-1)	29	1(1-1)	1
<i>Deyeuxia quadriseta</i>	1(1-1)	57	1(1-1)	2
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	71	1(1-1)	15
<i>Dichelachne rara</i>	1(1-1)	57	1(1-1)	5
<i>Epacris impressa</i>	2(1-2)	71	1(1-1)	4
<i>Eucalyptus angophoroides</i>	2(1-2)	86	1(1-2)	1
<i>Eucalyptus bosistoana</i>	3(1-3)	29	1(1-2)	3
<i>Eucalyptus globoidea</i>	1(1-2)	71	2(1-2)	12
<i>Eucalyptus polyanthemus</i> subsp. <i>tarda</i>	1(1-2)	43	1(1-2)	<1
<i>Eucalyptus tricarpa</i>	2(2-3)	57	1(1-2)	1
<i>Euchiton gymnocephalus</i>	1(1-1)	57	1(1-1)	7
<i>Gahnia radula</i>	2(2-3)	100	1(1-2)	3
<i>Gonocarpus tetragynus</i>	1(1-1)	71	1(1-1)	20
<i>Helichrysum scorpioides</i>	1(1-1)	86	1(1-1)	7
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-1)	71	1(1-1)	7
<i>Hypericum gramineum</i>	1(1-1)	86	1(1-1)	16
<i>Lepidosperma laterale</i>	1(1-1)	86	1(1-1)	29
<i>Leptospermum continentale</i>	1(1-1)	57	1(1-1)	3
<i>Lissanthe strigosa</i>	1(1-2)	100	1(1-1)	8
<i>Lomandra filiformis</i> subsp. <i>flavior</i>	1(1-2)	43	1(1-1)	<1
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	100	1(1-1)	25
<i>Olearia erubescens</i>	1(1-1)	43	1(1-1)	2
<i>Plantago varia</i>	1(1-1)	29	1(1-1)	2
<i>Pultenaea retusa</i>	2(1-2)	29	1(1-1)	2
<i>Pultenaea scabra</i>	1(1-2)	43	1(1-2)	2
<i>Tetradlea thymifolia</i>	1(1-1)	57	1(1-1)	7
<i>Themeda australis</i>	1(1-1)	86	1(1-3)	17
<i>Wahlenbergia gracilis</i>	1(1-1)	57	1(1-1)	11
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	1(1-1)	43	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	71	1(1-1)	28
<i>Cassutha pubescens</i>	1(1-1)	43	1(1-1)	8
<i>Dianella caerulea</i>	1(1-1)	57	1(1-1)	28
<i>Dichelachne micrantha</i>	1(1-1)	43	1(1-1)	9
<i>Eucalyptus sieberi</i>	1(1-2)	57	2(1-3)	16
<i>Hardenbergia violacea</i>	1(1-1)	43	1(1-1)	17
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	43	1(1-1)	10
<i>Joycea pallida</i>	2(1-3)	43	1(1-2)	8
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	43	1(1-1)	24
<i>Lomandra longifolia</i>	1(1-2)	57	1(1-1)	44
<i>Microlaena stipoides</i>	1(1-1)	57	1(1-2)	36
<i>Poa meionectes</i>	2(1-3)	57	1(1-2)	16
<i>Viola hederacea</i>	1(1-1)	43	1(1-1)	22

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus agglomerata</i>	2(1-2)	29	2(1-3)	7
<i>Eucalyptus cypellocarpa</i>	1(1-1)	29	2(1-2)	10
<i>Eucalyptus muelleriana</i>	2(2-2)	29	2(1-2)	6
<i>Eucalyptus polyanthemos</i> subsp. <i>vestita</i>	1(1-1)	14	1(1-1)	<1



Locations of survey sites allocated to DSF e27. Grey shading indicates extant native vegetation cover within the study area.

**DSF e28: Wog Wog Dry Grass Forest**

Plate e28. Wog Wog Dry Grass Forest (Map Unit e28) dominated by *Eucalyptus maidenii* and *E. agglomerata* with *Leucopogon lanceolatus*, *Poa meionectes* and *Pteridium esculentum* on Conga Road near Wog Wog River, Coolangubra section, South East Forests National Park.

Sample Sites: 11

Area Extant (ha): 920

Estimated % remaining: 65-75%

Area in conservation reserves (ha): 880

Estimated % of pre-clearing area in conservation reserves: 60-70%

No. Taxa (total / unique): 110 / 0

No. Taxa per Plot ( $\pm$ sd): 33.2 (6.6)

Class: Southern Hinterland Dry Sclerophyll Forests

Related TEC: n/a

Wog Wog Dry Grass Forest is equivalent to Map Unit 28 of the same name described by Keith & Bedward (1999). The *Eucalyptus* canopy rises up to 30 m in height with an understorey comprised of a sparse stratum of sclerophyllous shrubs and a species-rich, semi-continuous groundcover dominated by grasses and graminoids interspersed with a rich array of forbs. The groundcover also includes prostrate shrubs of *Astroloma humifusum* and twining plants of *Glycine clandestina*. Wog Wog Dry Grass Forest is restricted to gentle lower slopes on granitoid substrates at 400-500 m elevation in the Wog Wog Creek area. No similar assemblages have been described outside the Eden region (Austin 1978, Woodgate *et al.* 1994). About one third of Wog Wog Dry Grass Forest has been cleared for agriculture and is now under pine plantation. Most of the remainder is in a national park, where fire regimes and feral pigs are the main management concerns. Diggings of feral pigs, which have been present in appreciable numbers in this area, potentially threaten the groundcover with loss of diversity and weed invasion.

**Floristic Summary:**

**Trees:** *Eucalyptus agglomerata*, *Eucalyptus maidenii* **Shrubs:** *Astroloma humifusum*, *Coprosma quadrifida*, *Hibbertia obtusifolia*, *Leucopogon lanceolatus* var. *lanceolatus*, *Senecio linearifolius* **Climbers:** *Glycine clandestina*

**Groundcover:** *Acaena novae-zelandiae*, *Ajuga australis*, *Austrodanthonia pilosa*, *Desmodium varians*, *Geranium potentilloides*, *Gonocarpus tetragynus*, *Gonocarpus teucroides*, *Hydrocotyle peduncularis*, *Hypericum gramineum*, *Lachnagrostis filiformis*, *Lagenifera stipitata*, *Lomandra longifolia*, *Lomandra multiflora* subsp. *multiflora*, *Luzula flaccida*, *Oxalis perennans*, *Plantago debilis*, *Plantago varia*, *Poa meionectes*, *Poranthera microphylla*, *Pteridium esculentum*, *Senecio prenanthoides*, *Viola hederacea*, *Wahlenbergia gracilis*, *Wahlenbergia stricta* subsp. *stricta*

**Vegetation structure:**

Stratum	Frequency (n=10)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	28.5 (3.4)	34 (9.7)
Small tree	30	6.3 (1.5)	11.3 (8.1)
Shrub	100	2.5 (1.2)	14.4 (16.6)
Ground cover	100	0.4 (0.3)	69 (26.9)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 16 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 28 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 16 positive diagnostic species.

**Positive Diagnostic Species:**

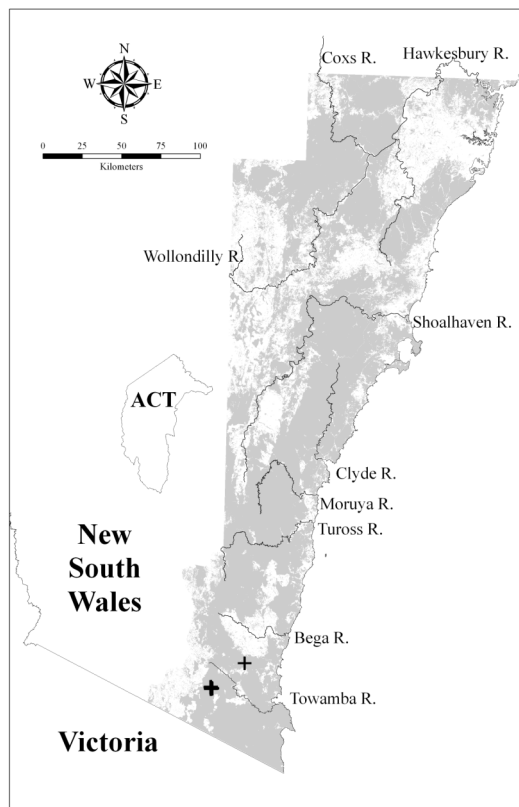
Species	C/A	Freq	C/A O	Freq O
<i>Acaena novae-zelandiae</i>	1(1-1)	73	1(1-1)	7
<i>Acrotriche serrulata</i>	1(1-1)	36	1(1-1)	3
<i>Ajuga australis</i>	1(1-1)	55	1(1-1)	3
<i>Astroloma humifusum</i>	1(1-1)	73	1(1-1)	4
<i>Austrodanthonia pilosa</i>	1(1-1)	73	1(1-1)	3
<i>Cassinia aculeata</i>	1(1-2)	36	1(1-1)	6
<i>Cassinia longifolia</i>	1(1-1)	36	1(1-2)	6
<i>Coprosma quadrifida</i>	1(1-1)	55	1(1-1)	10
<i>Desmodium varians</i>	1(1-1)	73	1(1-1)	21
<i>Eucalyptus agglomerata</i>	2(2-3)	82	2(1-3)	7
<i>Eucalyptus angophoroides</i>	1(1-2)	36	1(1-2)	1
<i>Eucalyptus maidenii</i>	2(1-2)	91	2(1-2)	2
<i>Euchiton gymnocephalus</i>	1(1-1)	36	1(1-1)	7
<i>Geranium potentilloides</i>	1(1-1)	55	1(1-1)	6
<i>Gonocarpus teucroides</i>	1(1-1)	73	1(1-1)	17
<i>Hibbertia obtusifolia</i>	1(1-1)	55	1(1-1)	11
<i>Hydrocotyle peduncularis</i>	1(1-1)	82	1(1-1)	9
<i>Hypericum gramineum</i>	1(1-1)	82	1(1-1)	16
<i>Lachnagrostis filiformis</i>	1(1-1)	64	1(1-1)	3
<i>Lagenifera stipitata</i>	1(1-1)	82	1(1-1)	14
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	100	1(1-1)	24
<i>Luzula flaccida</i>	1(1-1)	45	1(1-1)	4
<i>Oxalis perennans</i>	1(1-1)	64	1(1-1)	13
<i>Plantago debilis</i>	1(1-1)	73	1(1-1)	7
<i>Plantago varia</i>	1(1-1)	45	1(1-1)	2
<i>Poa meionectes</i>	4(3-5)	100	1(1-2)	16
<i>Poranthera microphylla</i>	1(1-1)	91	1(1-1)	15
<i>Senecio linearifolius</i>	1(1-1)	82	1(1-1)	8
<i>Senecio prenanthoides</i>	1(1-1)	55	1(1-1)	8
<i>Viola betonicifolia</i>	1(1-1)	36	1(1-1)	5
<i>Viola hederacea</i>	1(1-1)	64	1(1-1)	22
<i>Wahlenbergia gracilis</i>	1(1-1)	55	1(1-1)	11
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	1(1-1)	73	1(1-1)	5

Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	2(1-2)	36	1(1-2)	10
<i>Billardiera scandens</i>	1(1-1)	36	1(1-1)	28
<i>Glycine clandestina</i>	1(1-1)	64	1(1-1)	26
<i>Gonocarpus tetragynus</i>	1(1-1)	45	1(1-1)	20
<i>Lomandra longifolia</i>	1(1-2)	45	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	55	1(1-1)	25
<i>Pteridium esculentum</i>	1(1-1)	45	1(1-2)	37

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus bosistoana</i>	1(1-1)	9	1(1-2)	3
<i>Eucalyptus cypellocarpa</i>	2(2-2)	9	2(1-2)	10
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-1)	9	1(1-2)	3
<i>Eucalyptus elata</i>	1(1-1)	9	2(1-3)	5
<i>Eucalyptus globoidea</i>	3(3-3)	9	2(1-2)	12
<i>Eucalyptus muelleriana</i>	2(1-2)	18	2(1-2)	6
<i>Eucalyptus sieberi</i>	1(1-1)	9	2(1-3)	16



Locations of survey sites allocated to DSF e28. Grey shading indicates extant native vegetation cover within the study area.

**DSF e29: Nalbaugh Dry Grass Forest**

Plate e29. Nalbaugh Dry Grass Forest (Map Unit e29) dominated by *Eucalyptus radiata*, *E. viminalis* and *E. globoidea* with *Kunzea ericoides* and *Poa meionectes* on the summit of Big Jack Mountain, Coolangubra section of South East Forests National Park.

Sample Sites: 11

Area Extant (ha): 1900

Estimated % remaining: 70-80%

Area in conservation reserves (ha): 700

Estimated % of pre-clearing area in conservation reserves: 25-35%

No. Taxa (total / unique): 171 / 0

No. Taxa per Plot ( $\pm$ sd): 35.2 (9.1)

Class: Southern Hinterland Dry Sclerophyll Forests

Related TEC: n/a

Nalbaugh Dry Grass Forest is equivalent to Map Unit 29 of the same name described by Keith & Bedward (1999). It comprises a *Eucalyptus* forest rising to over 25 m in height with an open shrub stratum and moderately dense groundcover dominated by grasses and graminoids with a diverse complement of forbs. Nalbaugh Dry Grass Forest occurs on lower granitoid slopes at 500-850 m elevation on the southern part of the escarpment range. It differs from Southeast Tableland Dry Shrub Forest (Map Unit DSF e26) in its subdominant tree species and the greater diversity of forbs in its more developed groundcover. Its composition does not readily match any of the assemblages described in adjacent regions (Austin 1978, Forbes *et al.* 1982), however, there may be restricted occurrences within the Grassy Dry Forest complex in East Gippsland (Woodgate *et al.* 1994). One-quarter of Nalbaugh Dry Grass Forest has been cleared and three-fifths of the remainder occurs on State Forest and private land available for logging. The principal threat to stands outside reserves is frequent disturbance regimes that include logging and fire in combination, although the impact of these regimes is likely to be less severe than in assemblages with more diverse woody components. Logging followed by regeneration burns and thinning may change the relative abundance of eucalypt species, particularly *E. sieberi* (Bridges 1983). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

**Floristic Summary:**

**Trees:** *Eucalyptus cypellocarpa*, *Eucalyptus globoidea* **Shrubs:** *Acrotriche serrulata*, *Cassinia aculeata*, *Cassinia longifolia*, *Epacris impressa*, *Leucopogon lanceolatus* var. *lanceolatus* **Groundcover:** *Gonocarpus tetragynus*, *Helichrysum scorpioides*, *Hydrocotyle peduncularis*, *Hypericum gramineum*, *Lagenifera stipitata*, *Lepidosperma laterale*, *Lomandra longifolia*, *Lomandra multiflora* subsp. *multiflora*, *Luzula flaccida*, *Microlaena stipoides*, *Poa meionectes*, *Poranthera microphylla*, *Senecio prenanthoides*, *Veronica calycina*, *Viola hederacea*



**Vegetation structure:**

Stratum	Frequency (n=12)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	25	31.7 (7.6)	14.9 (17.4)
Tree canopy	100	25 (4.8)	33.2 (17)
Small tree	33	9.5 (1.9)	16.3 (14.4)
Shrub	83	3 (0.8)	31.8 (17.6)
Ground cover	100	0.6 (0.4)	43.3 (24.6)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 15 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 28 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 15 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	2(2-3)	37	1(1-2)	10
<i>Acrotriche serrulata</i>	1(1-1)	58	1(1-1)	3
<i>Astroloma humifusum</i>	1(1-1)	37	1(1-1)	4
<i>Bossiaea prostrata</i>	1(1-1)	37	1(1-1)	3
<i>Cassinia aculeata</i>	1(1-2)	84	1(1-1)	6
<i>Cassinia longifolia</i>	1(1-1)	47	1(1-2)	6
<i>Dichelachne inaequiglumis</i>	1(1-1)	21	1(1-1)	3
<i>Dichelachne rara</i>	1(1-1)	32	1(1-1)	5
<i>Epacris impressa</i>	1(1-1)	79	1(1-1)	4
<i>Eucalyptus cypellocarpa</i>	2(2-3)	68	2(1-2)	10
<i>Eucalyptus globoidea</i>	3(2-3)	84	1(1-2)	12
<i>Euchiton gymnocephalus</i>	1(1-1)	37	1(1-1)	7
<i>Exocarpos strictus</i>	1(1-1)	37	1(1-1)	9
<i>Geranium potentilloides</i>	1(1-1)	37	1(1-1)	6
<i>Gonocarpus tetragynus</i>	1(1-2)	63	1(1-1)	20
<i>Hakea eriantha</i>	1(1-1)	21	1(1-1)	2
<i>Helichrysum scorpioides</i>	1(1-1)	79	1(1-1)	7
<i>Hydrocotyle peduncularis</i>	1(1-1)	47	1(1-1)	9
<i>Hypericum gramineum</i>	1(1-1)	58	1(1-1)	16
<i>Kunzea ericoides</i>	1(1-3)	26	1(1-2)	2
<i>Lagenifera stipitata</i>	1(1-1)	68	1(1-1)	14
<i>Leptospermum continentale</i>	1(1-1)	37	1(1-1)	3
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	74	1(1-1)	23
<i>Lissanthe strigosa</i>	1(1-2)	37	1(1-1)	8
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1(1-1)	37	1(1-1)	11
<i>Lomandra longifolia</i>	1(1-2)	84	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	63	1(1-1)	25
<i>Lomatia ilicifolia</i>	1(1-1)	26	1(1-1)	6
<i>Luzula flaccida</i>	1(1-1)	63	1(1-1)	4
<i>Olearia erubescens</i>	1(1-1)	32	1(1-1)	2
<i>Opercularia varia</i>	1(1-1)	21	1(1-1)	3
<i>Plantago debilis</i>	1(1-1)	37	1(1-1)	7
<i>Poa meionectes</i>	2(2-3)	84	1(1-2)	16

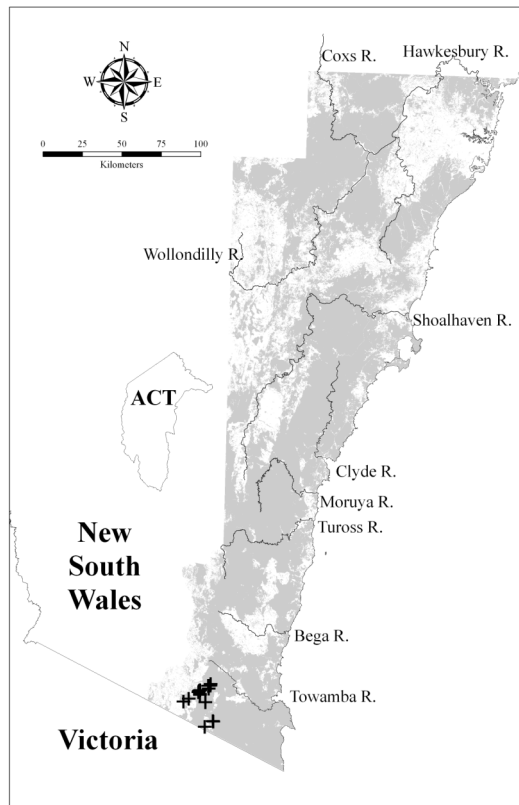
<i>Poranthera microphylla</i>	1(1-1)	84	1(1-1)	15
<i>Schoenus apogon</i>	1(1-1)	26	1(1-1)	2
<i>Senecio linearifolius</i>	1(1-1)	37	1(1-1)	8
<i>Senecio prenanthoides</i>	1(1-1)	63	1(1-1)	8
<i>Stackhousia monogyna</i>	1(1-1)	21	1(1-1)	2
<i>Stylidium graminifolium</i>	1(1-1)	37	1(1-1)	9
<i>Veronica calycina</i>	1(1-1)	47	1(1-1)	6
<i>Viola hederacea</i>	1(1-1)	79	1(1-1)	22

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Glycine clandestina</i>	1(1-1)	32	1(1-1)	26
<i>Hibbertia obtusifolia</i>	1(1-1)	32	1(1-1)	11
<i>Lepidosperma laterale</i>	1(1-1)	42	1(1-1)	29
<i>Microlaena stipoides</i>	1(1-1)	68	1(1-2)	36
<i>Pteridium esculentum</i>	1(1-2)	37	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus angophoroides</i>	2(1-2)	11	1(1-2)	1
<i>Eucalyptus elata</i>	1(1-1)	5	2(1-3)	5
<i>Eucalyptus maidenii</i>	1(1-1)	5	2(1-2)	2
<i>Eucalyptus muelleriana</i>	2(2-2)	5	2(1-2)	6
<i>Eucalyptus obliqua</i>	1(1-1)	11	2(1-3)	4
<i>Eucalyptus ovata</i>	1(1-2)	16	2(1-3)	1
<i>Eucalyptus polyanthemos</i> subsp. <i>vestita</i>	1(1-1)	11	1(1-1)	<1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-2)	11	2(1-3)	6
<i>Eucalyptus robertsonii</i> subsp. <i>robertsonii</i>	4(3-4)	11	2(1-4)	<1
<i>Eucalyptus sieberi</i>	1(1-2)	21	2(1-3)	16
<i>Eucalyptus viminalis</i>	1(1-2)	16	2(1-3)	4



Locations of survey sites allocated to DSF e29. Grey shading indicates extant native vegetation cover within the study area.

### DSF e30: Wallagaraugh Dry Grass Forest



Plate e30. Wallagaraugh Dry Grass Forest (Map Unit e30) dominated by *Eucalyptus angophoroides*, *E. viminalis* and *E. ovata* with *Acacia longifolia*, *Lomandra longifolia*, *Poa meionectes* and *Gahnia sieberiana* on Walla Walla Creek, Waalimma section of South East Forests National Park.

Sample Sites: 11

Area Extant (ha): 800

Estimated % remaining: 50-60%

Area in conservation reserves (ha): 350

Estimated % of pre-clearing area in conservation reserves: 20-30%

No. Taxa (total / unique): 170 / 0

No. Taxa per Plot ( $\pm$ sd): 37.9 (10.1)

Class: Southern Hinterland Dry Sclerophyll Forests

Related TEC: n/a

Wallagaraugh Dry Grass Forest is equivalent to Map Unit 30 of the same name described by Keith & Bedward (1999). It has a variable tree stratum exceeding 25 m in height and an open shrub stratum occasionally developing to the height of small trees. The species-rich groundcover is moderately dense and comprises grasses and graminoids with a variety of forbs and twiners interspersed. A variable stratum of bracken fern *Pteridium esculentum* may also be present. Wallagaraugh Dry Grass Forest is restricted to relatively small stands on lower slopes, usually on granitoid substrates at 100-500 m elevation in the southern hinterland. It generally occurs at lower elevation, extending into damper habitats than Southeast Tableland Dry Shrub Forest (Map Unit DSF e26) and Nalbaugh Dry Grass Forest (Map Unit DSF e29), and has a more variable composition of trees and less sclerophyllous complement of shrub species than these other assemblages. In broad open valleys Wallagaraugh Dry Grass Forest may grade into Southeast Lowland Swamp (Map Unit FrW e59) which occupies the most low-lying waterlogged sites in the catchment. Its composition does not readily match any of the assemblages described in adjacent regions (Austin 1978, Forbes *et al.* 1982), however, there may be restricted occurrences within the Grassy Dry Forest complex in the foothills of East Gippsland (Woodgate *et al.* 1994). Almost half of Wallagaraugh Dry Grass Forest has been cleared, mainly for pine plantation and three-fifths of the remainder occurs on State Forest and private land available for logging. Stands on private land are potentially threatened by further clearing. Frequent disturbance regimes that include logging (outside reserves) and fire in combination may reduce diversity by interrupting life-cycle processes of woody species and increase rates of sedimentation. Feral pigs also pose a threat to soils and the diverse ground flora through their diggings.

#### Floristic Summary:

**Trees:** *Eucalyptus cypellocarpa*, *Eucalyptus globoidea* **Shrubs:** *Acacia mearnsii*, *Cassinia aculeata*, *Exocarpos strictus*, *Gahnia radula*, *Hibbertia aspera* subsp. *aspera*, *Persoonia linearis* **Climbers:** *Billardiera scandens*, *Glycine clandestina*, *Kennedia rubicunda* **Groundcover:** *Desmodium varians*, *Dianella caerulea*, *Euchiton gymnocephalus*, *Gonocarpus teucrioides*, *Hydrocotyle peduncularis*, *Hypericum gramineum*, *Lagenifera stipitata*, *Lepidosperma laterale*, *Lomandra longifolia*, *Lomandra multiflora* subsp. *multiflora*, *Microlaena stipoides*, *Poa labillardierei* var. *labillardierei*, *Poa meionectes*, *Pteridium esculentum*, *Senecio prenanthoides*, *Themeda australis*, *Viola hederacea*

#### Vegetation structure:

Stratum	Frequency (n=8)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	21.1 (6.1)	35 (18.5)
Small tree	13	10 (-)	30 (-)
Shrub	88	2.1 (1.2)	30.3 (14.9)
Ground cover	100	0.6 (0.4)	58.1 (26.6)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 11 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 30 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 11 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia mearnsii</i>	1(1-3)	73	1(1-2)	7
<i>Billardiera scandens</i>	1(1-1)	73	1(1-1)	28
<i>Bossiaea prostrata</i>	1(1-1)	27	1(1-1)	3
<i>Cassinia aculeata</i>	1(1-1)	45	1(1-1)	6
<i>Cassinia longifolia</i>	1(1-3)	36	1(1-2)	6
<i>Dichelachne rara</i>	1(1-1)	36	1(1-1)	5
<i>Eucalyptus bosistoana</i>	2(1-3)	27	1(1-2)	3
<i>Eucalyptus cypellocarpa</i>	2(1-2)	73	2(1-2)	10
<i>Eucalyptus globoidea</i>	1(1-2)	64	2(1-2)	12
<i>Euchiton gymnocephalus</i>	1(1-1)	55	1(1-1)	7
<i>Exocarpos strictus</i>	1(1-1)	55	1(1-1)	9
<i>Gahnia radula</i>	3(2-3)	55	1(1-2)	3
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-1)	36	1(1-1)	8
<i>Glycine clandestina</i>	1(1-1)	73	1(1-1)	26

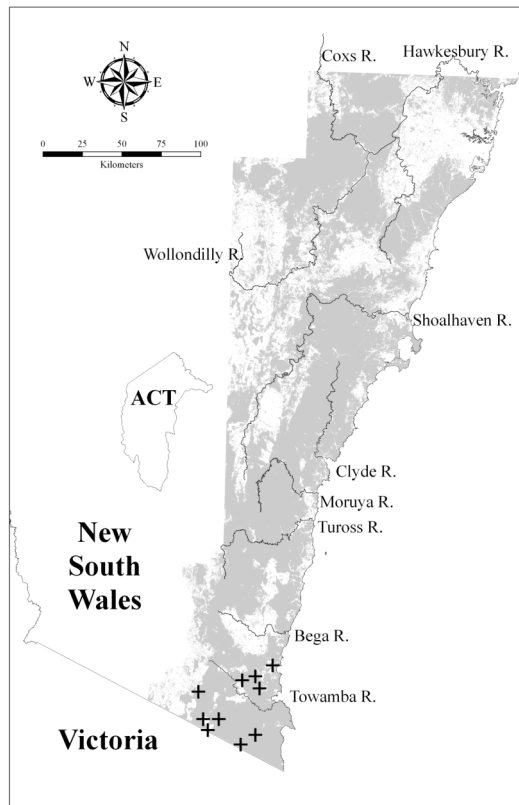
<i>Gonocarpus teucrioides</i>	1(1-1)	55	1(1-1)	18
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-2)	55	1(1-1)	10
<i>Hydrocotyle peduncularis</i>	1(1-1)	45	1(1-1)	9
<i>Hypericum gramineum</i>	1(1-1)	100	1(1-1)	16
<i>Kennedia rubicunda</i>	1(1-1)	45	1(1-1)	6
<i>Lagenifera stipitata</i>	1(1-1)	73	1(1-1)	14
<i>Lepidosperma laterale</i>	1(1-1)	91	1(1-1)	29
<i>Microlaena stipoides</i>	1(1-1)	82	1(1-2)	36
<i>Poa labillardierei</i> var. <i>labillardierei</i>	1(1-1)	55	1(1-2)	12
<i>Poa meionectes</i>	2(1-3)	91	1(1-2)	16
<i>Pultenaea retusa</i>	1(1-1)	27	1(1-1)	2
<i>Senecio prenanthoides</i>	1(1-1)	55	1(1-1)	8
<i>Viola hederacea</i>	1(1-1)	73	1(1-1)	22

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Clematis aristata</i>	1(1-1)	36	1(1-1)	20
<i>Desmodium varians</i>	1(1-1)	55	1(1-1)	21
<i>Dianella caerulea</i>	1(1-1)	55	1(1-1)	28
<i>Dichondra</i> spp.	1(1-1)	36	1(1-2)	25
<i>Hardenbergia violacea</i>	1(1-1)	36	1(1-1)	17
<i>Lomandra longifolia</i>	1(1-1)	73	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	45	1(1-1)	25
<i>Oxalis perennans</i>	1(1-1)	36	1(1-1)	13
<i>Persoonia linearis</i>	1(1-1)	45	1(1-1)	29
<i>Pteridium esculentum</i>	2(1-3)	64	1(1-2)	37
<i>Themeda australis</i>	2(1-3)	45	1(1-3)	17

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia gummifera</i>	2(2-2)	9	2(1-2)	16
<i>Eucalyptus agglomerata</i>	1(1-1)	9	2(1-3)	7
<i>Eucalyptus angophoroides</i>	2(2-2)	9	1(1-2)	1
<i>Eucalyptus muelleriana</i>	2(2-2)	9	2(1-2)	6
<i>Eucalyptus pilularis</i>	3(3-3)	9	2(1-3)	5
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-2)	18	2(1-3)	6
<i>Eucalyptus sieberi</i>	2(2-2)	9	2(1-3)	16
<i>Eucalyptus smithii</i>	1(1-1)	9	1(1-2)	2
<i>Eucalyptus viminalis</i>	2(1-2)	18	2(1-3)	4



Locations of survey sites allocated to DSF e30. Grey shading indicates extant native vegetation cover within the study area.

### DSF e31: Southeast Hinterland Dry Grass Forest



Plate e31. Southeast Hinterland Dry Grass Forest (Map Unit e31) dominated by *Eucalyptus angophoroides*, *E. cypellocarpa* and *E. globoidea* with *Poa meionectes* and numerous other grass and forb species on Nungatta Road east of Nungatta Creek, Waalimma section of South East Forests National Park.

Sample Sites: 57

Area Extant (ha): 27000

Estimated % remaining: 80-90%

Area in conservation reserves (ha): 16500

Estimated % of pre-clearing area in conservation reserves: 45-55%

No. Taxa (total / unique): 262 / 0

No. Taxa per Plot ( $\pm$ sd): 37.6 (9.0)

Class: Southern Hinterland Dry Sclerophyll Forests  
Related TEC: n/a

Southeast Hinterland Dry Grass Forest is equivalent to Hinterland Dry Grass Forest (unit 31) described by Keith & Bedward (1999). The *Eucalyptus* canopy rises to approximately 25 m in height above a stratum of scattered shrubs. The groundcover is diverse and semi-continuous and dominated by grasses and graminoids interspersed with forbs and twiners. A variable cover of bracken fern *Pteridium esculentum* may also be present. Southeast Hinterland Dry Grass Forest is widespread in undulating granitoid terrain at 250-700 m elevation in the hinterland and foothills mainly south of the Bega valley. It generally occurs on drier sites than Nalbaugh Dry Grass Forest (Map Unit DSF e29) and Wallagaraugh Dry Grass Forest (Map Unit DSF e30) and differs in the composition of sub-dominant trees, its less developed shrub stratum and greater compliment of groundcover species. Its composition does not readily match any of the assemblages described in adjacent regions (Austin 1978, Forbes *et al.* 1982), however, there may be restricted occurrences within the Grassy Dry Forest complex in the foothills of East Gippsland (Woodgate *et al.* 1994). About 15% of Southeast Hinterland Dry Grass Forest has been cleared, but large areas remain on all tenures. Stands on private land are potentially threatened by further clearing. Frequent disturbance regimes that include logging (outside reserves) and fire in combination may reduce diversity by interrupting life-cycle processes of woody species (Keith 1996), changing the relative abundance of eucalypt species (Bridges 1983) and increasing rates of sedimentation. These impacts are most severe for assemblages with larger components of woody species and those more topographically restricted to lower slopes.

#### Floristic Summary:

**Trees:** *Eucalyptus globoidea*, *Eucalyptus maidenii* **Shrubs:** *Cassinia aculeata*, *Coprosma quadrifida*, *Hibbertia obtusifolia*, *Leucopogon lanceolatus* var. *lanceolatus*, *Senecio linearifolius* **Climbers:** *Clematis aristata*, *Glycine clandestina* **Groundcover:** *Desmodium varians*, *Dichelachne rara*, *Euchiton gymnocephalus*, *Gonocarpus tetragynus*, *Hydrocotyle laxiflora*, *Hypericum gramineum*, *Lagenifera stipitata*, *Lepidosperma laterale*, *Lomandra longifolia*, *Lomandra multiflora* subsp. *multiflora*, *Microlaena stipoides*, *Oxalis perennans*, *Persoonia linearis*, *Plantago varia*, *Poa meionectes*, *Poranthera microphylla*, *Pteridium esculentum*, *Senecio prenanthoides*, *Veronica calycina*, *Viola betonicifolia*, *Viola hederacea*, *Wahlenbergia gracilis*, *Wahlenbergia stricta* subsp. *stricta*

#### Vegetation structure:

Stratum	Frequency (n=45)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	24.8 (5.5)	34.7 (10.7)
Small tree	24	9.9 (3.9)	9.5 (5.7)
Shrub	91	2.1 (1.3)	20.6 (14.1)
Ground cover	100	0.5 (0.2)	35.8 (22.1)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 20 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 31 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 20 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-2)	25	1(1-2)	10
<i>Acacia mearnsii</i>	1(1-2)	26	1(1-2)	7
<i>Acaena novae-zelandiae</i>	1(1-1)	30	1(1-1)	7
<i>Acrotriche serrulata</i>	1(1-1)	23	1(1-1)	3
<i>Astroloma humifusum</i>	1(1-1)	32	1(1-1)	4
<i>Austrodanthonia pilosa</i>	1(1-1)	21	1(1-1)	3
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	1(1-1)	23	1(1-2)	6
<i>Bossiaea buxifolia</i>	1(1-1)	16	1(1-1)	3
<i>Carex breviculmis</i>	1(1-1)	33	1(1-1)	4
<i>Cassinia aculeata</i>	1(1-2)	42	1(1-1)	6
<i>Cassinia longifolia</i>	1(1-2)	37	1(1-2)	6
<i>Clematis aristata</i>	1(1-1)	44	1(1-1)	20
<i>Coprosma quadrifida</i>	1(1-1)	40	1(1-1)	9
<i>Cymbonotus preissianus</i>	1(1-1)	23	1(1-1)	1

<i>Desmodium varians</i>	1(1-1)	70	1(1-1)	21
<i>Dichelachne micrantha</i>	1(1-1)	35	1(1-1)	9
<i>Dichelachne rara</i>	1(1-1)	63	1(1-1)	4
<i>Echinopogon ovatus</i>	1(1-1)	35	1(1-1)	14
<i>Epacris impressa</i>	1(1-1)	16	1(1-1)	4
<i>Eucalyptus angophoroides</i>	2(1-2)	33	1(1-2)	1
<i>Eucalyptus bosistoana</i>	1(1-2)	18	1(1-2)	3
<i>Eucalyptus cypellocarpa</i>	2(1-2)	30	2(1-2)	10
<i>Eucalyptus elata</i>	1(1-2)	19	2(1-3)	5
<i>Eucalyptus globoidea</i>	2(1-2)	81	1(1-2)	11
<i>Eucalyptus maidenii</i>	2(1-2)	42	2(1-2)	2
<i>Eucalyptus muelleriana</i>	2(2-3)	23	2(1-2)	6
<i>Eucalyptus sieberi</i>	2(1-3)	35	2(1-3)	16
<i>Euchiton gymnocephalus</i>	1(1-1)	67	1(1-1)	7
<i>Gahnia radula</i>	1(1-1)	23	1(1-2)	2
<i>Galium propinquum</i>	1(1-1)	23	1(1-1)	7
<i>Glycine clandestina</i>	1(1-1)	75	1(1-1)	26
<i>Gonocarpus tetragynus</i>	1(1-1)	56	1(1-1)	20
<i>Helichrysum scorpioides</i>	1(1-1)	33	1(1-1)	7
<i>Hibbertia obtusifolia</i>	1(1-1)	46	1(1-1)	10
<i>Hydrocotyle laxiflora</i>	1(1-1)	74	1(1-1)	15
<i>Hypericum gramineum</i>	1(1-1)	89	1(1-1)	16
<i>Lachnagrostis filiformis</i>	1(1-1)	12	1(1-1)	3
<i>Lagenifera stipitata</i>	1(1-1)	65	1(1-1)	14
<i>Lepidosperma laterale</i>	1(1-1)	49	1(1-1)	28
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	68	1(1-1)	23
<i>Lomandra longifolia</i>	1(1-1)	89	1(1-1)	43
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	58	1(1-1)	25
<i>Luzula flaccida</i>	1(1-1)	18	1(1-1)	4
<i>Microlaena stipoides</i>	1(1-1)	67	1(1-2)	36
<i>Opercularia aspera</i>	1(1-1)	33	1(1-1)	8
<i>Oxalis perennans</i>	1(1-1)	44	1(1-1)	13
<i>Persoonia linearis</i>	1(1-1)	51	1(1-1)	29
<i>Plantago debilis</i>	1(1-1)	23	1(1-1)	7
<i>Plantago varia</i>	1(1-1)	42	1(1-1)	2
<i>Poa labillardierei</i> var. <i>labillardierei</i>	1(1-2)	35	1(1-2)	12
<i>Poa meionectes</i>	2(1-2)	82	1(1-2)	16
<i>Poranthera microphylla</i>	1(1-1)	56	1(1-1)	15
<i>Pteridium esculentum</i>	1(1-2)	60	1(1-2)	37
<i>Senecio linearifolius</i>	1(1-1)	56	1(1-1)	8
<i>Senecio prenanthoides</i>	1(1-1)	65	1(1-1)	8
<i>Stylidium graminifolium</i>	1(1-1)	25	1(1-1)	9
<i>Tylophora barbata</i>	1(1-1)	35	1(1-1)	17
<i>Veronica calycina</i>	1(1-1)	74	1(1-1)	6
<i>Viola betonicifolia</i>	1(1-1)	49	1(1-1)	5
<i>Viola hederacea</i>	1(1-1)	51	1(1-1)	22



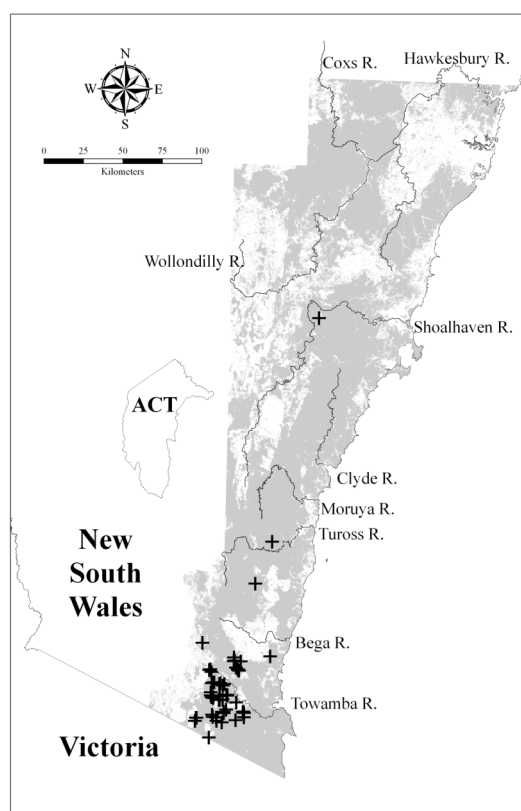
<i>Wahlenbergia gracilis</i>	1(1-1)	40	1(1-1)	10
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	1(1-1)	40	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	37	1(1-1)	28
<i>Dianella caerulea</i>	1(1-1)	37	1(1-1)	28
<i>Dichondra</i> spp.	1(1-1)	35	1(1-2)	25

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	2	1(1-2)	9
<i>Eucalyptus agglomerata</i>	2(1-2)	11	2(1-3)	7
<i>Eucalyptus baueriana</i>	3(3-3)	2	2(1-2)	1
<i>Eucalyptus croajingolensis</i>	2(2-2)	2	2(1-3)	<1
<i>Eucalyptus dives</i>	2(1-2)	4	2(1-3)	4
<i>Eucalyptus fastigata</i>	2(2-2)	2	2(1-3)	6
<i>Eucalyptus obliqua</i>	1(1-1)	2	2(1-3)	4
<i>Eucalyptus polyanthemos</i> subsp. <i>tarda</i>	2(1-2)	11	1(1-2)	<1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-2)	16	2(1-3)	6
<i>Eucalyptus robertsonii</i> subsp. <i>robertsonii</i>	1(1-1)	2	3(2-4)	<1
<i>Eucalyptus viminalis</i>	2(1-2)	11	2(1-3)	4



Locations of survey sites allocated to DSF e31. Grey shading indicates extant native vegetation cover within the study area.

### DSF e32A: Deua-Brogo Foothills Dry Shrub Forest



Plate e32A. Deua-Brogo Foothills Dry Shrub Forest (Map Unit e32A) dominated by *Eucalyptus agglomerata*, *E. paniculata* and *E. longifolia* with *Allocasuarina littoralis*, *Macrozamia communis* and *Joycea pallida*, below Donalds Creek Road in Deua National Park.

Sample Sites: 96

Area Extant (ha): 42,200

Estimated % remaining: >95%

Area in conservation reserves (ha): 27,700

Estimated % of pre-clearing area in conservation reserves: 60-70%

No. Taxa (total / unique): 272 / 0

No. Taxa per Plot ( $\pm$ sd): 28.8 (11.1)

Class: South East Dry Sclerophyll Forests

Related TEC: n/a

Deua-Brogo Foothills Dry Shrub Forest includes the northern distribution of Coastal Foothills Dry Shrub Forest (unit 32) described by Keith & Bedward (1999). It is characterised by a variable tree stratum dominated by *Eucalyptus*, *Angophora* or *Corymbia* sp. around 23 m in height. *Allocasuarina littoralis* may form an open subcanopy ca. 12 m tall. An open shrub stratum is usually present with a variety of species occurring with low frequency. The groundcover is characteristically dominated by tussock grasses. Deua-Brogo Foothills Dry Shrub Forest occurs on metamorphosed sediments and mudstones and is widespread on steep slopes and ridges at 50-250 m elevation on the coastal foothills from Brogo to Moruya. It shares many species with the closely related Far South Coastal Foothills Dry Shrub Forest (Map Unit DSF e32b) but is more often dominated by *Eucalyptus agglomerata*, *E. sieberi* or *Angophora floribunda* whereas *E. tricarpa* is more common in map unit DSF e32b. In addition, the groundcover of Deua-Brogo Foothills Dry Shrub Forest is less grassy than its southern counterpart. About 5% of this unit has been cleared for small-scale rural development, but large areas remain on all tenures. Stands on private land are potentially threatened by further clearing with ongoing development of rural blocks. Frequent disturbance regimes that include logging (outside reserves) and fire in combination may reduce diversity by interrupting life-cycle processes of woody species (Keith 1996) and increasing erosion from the steep slopes in these habitats. Logging followed by regeneration burns and thinning may change the relative abundance of eucalypt species, particularly *E. sieberi* (Bridges 1983). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

#### Floristic Summary:

**Trees:** *Allocasuarina littoralis*, *Angophora floribunda*, *Eucalyptus agglomerata*, *Eucalyptus longifolia*, *Eucalyptus muelleriana*, *Eucalyptus sieberi* **Shrubs:** *Acacia obtusifolia*, *Leucopogon lanceolatus* var. *lanceolatus*, *Persoonia linearis*, *Platysace lanceolata*, *Podolobium ilicifolium* **Climbers:** *Billardiera scandens*, *Hardenbergia violacea* **Groundcover:** *Dianella caerulea*, *Entolasia stricta*, *Joycea pallida*, *Lepidosperma laterale*, *Lomandra confertifolia* subsp. *similis*, *Lomandra multiflora* subsp. *multiflora*

#### Vegetation structure:

Stratum	Frequency (n=47)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)

Tree canopy	94	22.8 (4.5)	22.8 (9.2)
Small tree	79	10.4 (3.8)	16.2 (12.5)
Shrub	70	2.1 (1.2)	13.7 (12.6)
Ground cover	100	0.7 (0.3)	22 (17.4)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 13 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 20 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 13 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-1)	40	1(1-2)	10
<i>Acacia implexa</i>	1(1-1)	22	1(1-1)	6
<i>Acacia longissima</i>	1(1-1)	5	1(1-1)	1
<i>Acacia obtusifolia</i>	1(1-2)	50	1(1-2)	9
<i>Acacia terminalis</i>	1(1-1)	31	1(1-1)	11
<i>Allocasuarina littoralis</i>	1(1-2)	79	1(1-2)	16
<i>Angophora floribunda</i>	1(1-1)	54	1(1-2)	8
<i>Billardiera scandens</i>	1(1-1)	46	1(1-1)	27
<i>Bossiaea obcordata</i>	1(1-2)	22	1(1-2)	7
<i>Correa reflexa</i>	1(1-1)	40	1(1-1)	5
<i>Cymbidium suave</i>	1(1-1)	15	1(1-1)	2
<i>Daviesia ulicifolia</i>	1(1-1)	34	1(1-1)	6
<i>Dianella caerulea</i>	1(1-1)	61	1(1-1)	28
<i>Entolasia stricta</i>	1(1-1)	61	1(1-2)	33
<i>Eucalyptus agglomerata</i>	1(1-2)	64	2(1-3)	7
<i>Eucalyptus bosistoana</i>	1(1-2)	9	1(1-2)	3
<i>Eucalyptus consideniana</i>	1(1-2)	7	2(1-2)	2
<i>Eucalyptus globoidea</i>	1(1-1)	32	2(1-2)	12
<i>Eucalyptus longifolia</i>	1(1-2)	45	2(1-2)	2
<i>Eucalyptus muelleriana</i>	1(1-2)	41	2(1-2)	6
<i>Eucalyptus sieberi</i>	1(1-2)	66	2(1-3)	15
<i>Eucalyptus tricarpa</i>	1(1-1)	33	1(1-2)	<1
<i>Goodenia ovata</i>	1(1-1)	19	1(1-1)	7
<i>Hardenbergia violacea</i>	1(1-1)	72	1(1-1)	17
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	34	1(1-1)	10
<i>Joycea pallida</i>	2(1-2)	41	1(1-2)	8
<i>Kennedia rubicunda</i>	1(1-1)	19	1(1-1)	6
<i>Lagenifera stipitata</i>	1(1-1)	27	1(1-1)	14
<i>Lepidosperma laterale</i>	1(1-1)	60	1(1-1)	28
<i>Lepidosperma urophorum</i>	1(1-2)	17	1(1-2)	7
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	43	1(1-1)	23
<i>Lindsaea microphylla</i>	1(1-1)	17	1(1-1)	5
<i>Logania pusilla</i>	1(1-1)	13	1(1-1)	1
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	1(1-1)	22	1(1-2)	4
<i>Lomandra confertifolia</i> subsp. <i>similis</i>	1(1-1)	75	1(1-2)	2
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	70	1(1-1)	24
<i>Macrozamia communis</i>	1(1-1)	33	1(1-2)	4

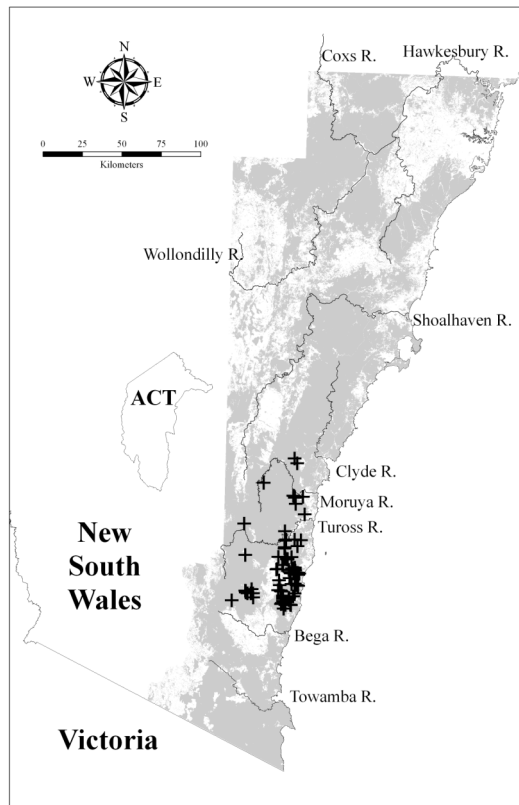
<i>Notelaea venosa</i>	1(1-1)	23	1(1-1)	12
<i>Notodanthonia longifolia</i>	2(1-2)	33	1(1-1)	5
<i>Opercularia varia</i>	1(1-1)	8	1(1-1)	3
<i>Ozothamnus argophyllus</i>	1(1-1)	24	1(1-1)	2
<i>Ozothamnus diosmifolius</i>	1(1-1)	32	1(1-1)	8
<i>Persoonia linearis</i>	1(1-1)	88	1(1-1)	28
<i>Platysace lanceolata</i>	1(1-1)	93	1(1-1)	12
<i>Poa cheelii</i>	1(1-1)	5	1(1-1)	<1
<i>Podolobium ilicifolium</i>	1(1-1)	83	1(1-1)	8
<i>Pomax umbellata</i>	1(1-1)	34	1(1-1)	14
<i>Rumohra adiantiformis</i>	1(1-1)	4	1(1-1)	<1
<i>Senecio velleioides</i>	1(1-1)	5	1(1-1)	1
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-1)	16	1(1-1)	4
<i>Wahlenbergia littoricola</i>	1(1-1)	7	1(1-1)	<1
<i>Xanthorrhoea concava</i>	1(1-1)	14	1(1-1)	4
<i>Xanthosia atkinsoniana</i>	1(1-1)	4	1(1-1)	<1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Glycine clandestina</i>	1(1-1)	31	1(1-1)	26

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora costata</i>	2(1-2)	4	1(1-3)	7
<i>Angophora subvelutina</i>	2(2-2)	1	3(1-3)	<1
<i>Corymbia gummifera</i>	1(1-2)	15	2(1-2)	16
<i>Corymbia maculata</i>	2(2-2)	2	2(1-3)	3
<i>Eucalyptus angophoroides</i>	2(1-2)	2	1(1-2)	1
<i>Eucalyptus botryoides</i>	1(1-1)	5	2(1-3)	3
<i>Eucalyptus cypellocarpa</i>	1(1-1)	3	2(1-2)	10
<i>Eucalyptus eugenioides</i>	1(1-1)	1	2(1-3)	4
<i>Eucalyptus fibrosa</i>	1(1-2)	3	2(1-3)	3
<i>Eucalyptus melliodora</i>	1(1-1)	1	1(1-3)	2
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-2)	5	1(1-2)	3
<i>Eucalyptus pilularis</i>	2(2-2)	1	2(1-3)	5
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-2)	3	2(1-3)	6
<i>Eucalyptus smithii</i>	2(1-2)	2	1(1-2)	2
<i>Eucalyptus viminalis</i>	1(1-1)	1	2(1-3)	5



Locations of survey sites allocated to DSF e32A. Grey shading indicates extant native vegetation cover within the study area.

### DSF e32B: Far South Coastal Foothills Dry Shrub Forest

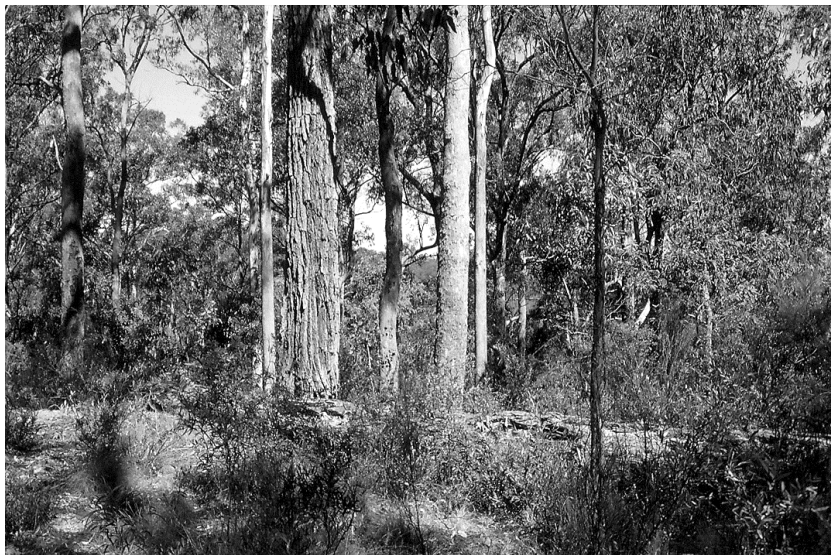


Plate e32B. Far South Coastal Foothills Dry Shrub Forest (Map Unit e32B) dominated by *Eucalyptus tricarpa*, *E. longifolia* and *E. bosistoana* with *Acacia falciformis*, *Daviesia mimosoides* and *Chionochloa pallida* on Goats Knob Road, southern section of Mimosa Rocks National Park.

Sample Sites: 45

Area Extant (ha): 14,000

Estimated % remaining: >90%

Area in conservation reserves (ha): 4,700

Estimated % of pre-clearing area in conservation reserves: 25-35%

No. Taxa (total / unique): 245 / 2

No. Taxa per Plot ( $\pm$ sd): 33.1 (16.6)



Class: South East Dry Sclerophyll Forests  
Related TEC: n/a

Far South Coast Foothills Dry Shrub Forest includes the southern distribution of Coastal Foothills Dry Shrub Forest (unit 32) described by Keith & Bedward (1999). It is characterised by a variable tree stratum dominated by *Eucalyptus* and *Corymbia* spp. around 25 m in height. *Allocasuarina littoralis* may form an open subcanopy ca. 12 m tall. An open shrub stratum is usually present with a variety of species occurring with low frequency. The groundcover is characteristically dominated by tussock grasses. Far South Coast Foothills Dry Shrub Forest occurs on metamorphosed sediments and mudstones and is widespread on steep slopes and ridges at 50-250 m elevation on the coastal foothills from Bermagui to Eden. It shares many species with the closely related Deua - Brogo Foothills Dry Shrub Forest (Map Unit DSF e32a) however this latter community is frequently dominated by *Eucalyptus agglomerata*, *E. sieberi* or *Angophora floribunda* whereas *E. tricarpa* is more common in Far South Coastal Foothills Dry Shrub Forest. In addition, the groundcover of Far South Coast Foothills Dry Shrub Forest generally contains a more diverse cover of grasses. About 10% of this unit has been cleared for small-scale rural development, but large areas remain on all tenures. Stands on private land are potentially threatened by further clearing with ongoing development of rural blocks. Frequent disturbance regimes that include logging (outside reserves) and fire in combination may reduce diversity by interrupting life-cycle processes of woody species (Keith 1996) and increasing erosion from the steep slopes in these habitats. Logging followed by regeneration burns and thinning may change the relative abundance of eucalypt species, particularly *E. sieberi* (Bridges 1983). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

#### Floristic Summary:

**Trees:** *Acacia falciformis*, *Allocasuarina littoralis*, *Eucalyptus longifolia*, *Eucalyptus muelleriana*, *Eucalyptus tricarpa*  
**Shrubs:** *Daviesia mimosoides*, *Hibbertia aspera* subsp. *aspera*, *Ozothamnus diosmifolius*, *Persoonia linearis*, *Platysace lanceolata* **Climbers:** *Glycine clandestina*, *Hardenbergia violacea* **Groundcover:** *Dianella caerulea*, *Entolasia stricta*, *Joycea pallida*, *Lagenifera stipitata*, *Lepidosperma laterale*, *Lomandra longifolia*, *Lomandra multiflora* subsp. *multiflora*, *Microlaena stipoides*, *Poa meionectes*, *Themeda australis*

#### Vegetation structure:

Stratum	Frequency (n=32)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	24.5 (5)	32.6 (12.4)
Small tree	59	11.1 (3.3)	16.4 (12.4)
Shrub	91	2 (0.9)	29 (15.8)
Ground cover	100	0.5 (0.3)	42.3 (28.1)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 10 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 20 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 10 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-2)	44	1(1-2)	10
<i>Allocasuarina littoralis</i>	1(1-2)	60	1(1-2)	16
<i>Aristida vagans</i>	1(1-1)	22	1(1-2)	8
<i>Austrostipa rudis</i>	1(1-2)	27	1(1-2)	6
<i>Cassinia longifolia</i>	1(1-2)	24	1(1-2)	6
<i>Correa reflexa</i>	1(1-1)	36	1(1-1)	5
<i>Daviesia mimosoides</i>	2(2-3)	62	1(1-2)	2
<i>Dichelachne rara</i>	1(1-1)	18	1(1-1)	4
<i>Eucalyptus agglomerata</i>	2(1-2)	36	2(1-3)	7
<i>Eucalyptus bosistoana</i>	1(1-1)	20	1(1-2)	3
<i>Eucalyptus globoidea</i>	2(2-3)	33	1(1-2)	12
<i>Eucalyptus longifolia</i>	1(1-2)	56	1(1-2)	2
<i>Eucalyptus muelleriana</i>	2(1-2)	58	2(1-2)	6
<i>Eucalyptus tricarpa</i>	1(1-2)	60	1(1-2)	1

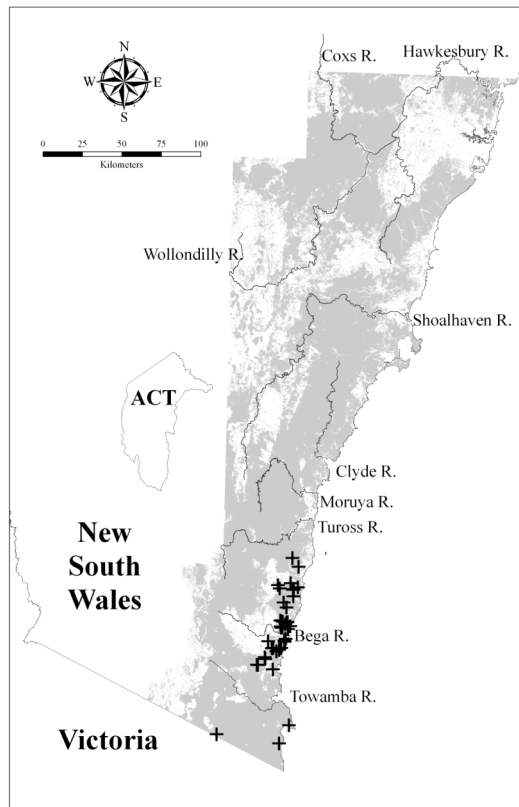
<i>Exocarpos strictus</i>	1(1-1)	29	1(1-1)	9
<i>Gahnia melanocarpa</i>	1(1-2)	20	1(1-1)	5
<i>Gahnia radula</i>	2(1-2)	18	1(1-2)	3
<i>Glycine clandestina</i>	1(1-1)	51	1(1-1)	26
<i>Goodenia ovata</i>	1(1-2)	27	1(1-1)	7
<i>Hardenbergia violacea</i>	1(1-1)	49	1(1-1)	17
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	58	1(1-1)	10
<i>Hypericum gramineum</i>	1(1-1)	38	1(1-1)	16
<i>Joycea pallida</i>	2(1-3)	69	1(1-2)	8
<i>Lagenifera stipitata</i>	1(1-1)	42	1(1-1)	14
<i>Lepidosperma laterale</i>	1(1-1)	69	1(1-1)	28
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	1(1-1)	36	1(1-2)	4
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	69	1(1-1)	25
<i>Microlaena stipoides</i>	1(1-1)	62	1(1-2)	36
<i>Opercularia aspera</i>	1(1-1)	29	1(1-1)	8
<i>Ozothamnus diosmifolius</i>	1(1-1)	44	1(1-1)	9
<i>Persoonia linearis</i>	1(1-1)	56	1(1-1)	29
<i>Platysace lanceolata</i>	1(1-1)	78	1(1-1)	12
<i>Poa meionectes</i>	1(1-2)	67	1(1-2)	16
<i>Pratia purpurascens</i>	1(1-1)	36	1(1-1)	17
<i>Pultenaea daphnoides</i>	1(1-1)	20	1(1-1)	4
<i>Themeda australis</i>	1(1-2)	42	1(1-3)	17
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-1)	24	1(1-1)	4

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia gummifera</i>	2(2-3)	31	2(1-2)	16
<i>Dianella caerulea</i>	1(1-1)	49	1(1-1)	28
<i>Dichondra</i> spp.	1(1-1)	33	1(1-2)	25
<i>Entolasia stricta</i>	1(1-1)	53	1(1-2)	34
<i>Lomandra longifolia</i>	1(1-1)	56	1(1-1)	44

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	18	1(1-2)	9
<i>Corymbia maculata</i>	2(1-4)	11	2(1-3)	3
<i>Eucalyptus consideniana</i>	1(1-1)	4	2(1-2)	2
<i>Eucalyptus cypellocarpa</i>	2(1-2)	9	2(1-2)	10
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	2(2-2)	2	1(1-2)	3
<i>Eucalyptus polyanthemos</i> subsp. <i>vestita</i>	1(1-1)	2	1(1-1)	<1
<i>Eucalyptus sieberi</i>	2(1-2)	24	2(1-3)	16
<i>Eucalyptus smithii</i>	3(1-3)	4	1(1-2)	2
<i>Eucalyptus tereticornis</i>	1(1-1)	2	2(1-3)	7



Locations of survey sites allocated to DSF e32B. Grey shading indicates extant native vegetation cover within the study area.

### DSF e33: Southeast Coastal Range Dry Shrub Forest



Plate e33. Southeast Coastal Range Dry Shrub Forest (Map Unit e33) dominated by *Eucalyptus muelleriana* and *E. sieberi* with tall shrubs of *Acacia cognata* and scattered *Goodenia ovata* and *Poa meioneetes* on the footslopes of Mt Imlay, southwest of Eden.

Sample Sites: 32

Area Extant (ha): 16300

Estimated % remaining: >95%



Area in conservation reserves (ha): 9700  
 Estimated % of pre-clearing area in conservation reserves: 55-65%  
 No. Taxa (total / unique): 187 / 0  
 No. Taxa per Plot ( $\pm$ sd): 28.0 (8.4)  
 Class: South East Dry Sclerophyll Forests  
 Related TEC: n/a

Southeast Coastal Range Dry Shrub Forest comprises a subset of Coastal Range Dry Shrub Forest (unit 33) described by Keith & Bedward (1999). The original unit was split based on the degree of topographic ruggedness; sites occupying the steeper, more rugged upper slopes and ridges were transferred to Clyde – Deua Open Forest (map unit DSF p91), while those occupying less rugged terrain on mid-lower slopes comprise the revised unit. Southeast Coastal Range Dry Shrub Forest is characterised by a tall *Eucalyptus* canopy frequently exceeding 28 m in height and a prominent stratum of shrubs 2 - 8 m tall. The groundcover is relatively species-poor and features mainly scattered grasses and graminoid species. Southeast Coastal Range Dry Shrub Forest is widespread on dry to intermediate slopes of the coastal and hinterland ranges south of Bega, primarily on metasediments at 100-600 m elevation. It often occupies drier slopes adjacent to gullies with Southeast Hinterland Wet Shrub Forest (Map Unit WSF e14) or Southeast Coastal Gully Shrub Forest (Map Unit WSF e34). Its distribution extends to higher elevations and further south than Far South Coastal Foothills Dry Shrub Forest (Map Unit DSF e32b). No similar assemblages have been described outside the Eden region (Austin 1978, Forbes *et al.* 1982). Most of this assemblage occurs on public land and very little has been cleared. The principal threat is frequent disturbance regimes that include logging (outside reserves) and fire in combination. These may reduce diversity by interrupting life-cycle processes of woody species (Keith 1996) and increasing erosion from the steep slopes in these habitats. Logging followed by regeneration burns and thinning may change the relative abundance of eucalypt species, particularly *E. sieberi* (Bridges 1983). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

#### Floristic Summary:

**Trees:** *Acacia falciformis*, *Eucalyptus cypellocarpa*, *Eucalyptus muelleriana* **Shrubs:** *Cassinia aculeata*, *Cassinia longifolia*, *Leucopogon lanceolatus* var. *lanceolatus* **Climbers:** *Billardiera scandens*, *Glycine clandestina*, *Tylophora barbata* **Groundcover:** *Desmodium varians*, *Dianella caerulea*, *Dichelachne rara*, *Gonocarpus teucroides*, *Hypericum gramineum*, *Lagenifera stipitata*, *Lepidosperma laterale*, *Lomandra longifolia*, *Lomandra multiflora* subsp. *multiflora*, *Opercularia aspera*, *Poa labillardierei* var. *labillardierei*, *Poa meionectes*, *Pteridium esculentum*, *Wahlenbergia gracilis*

#### Vegetation structure:

Stratum	Frequency (n=11)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	27.9 (6.9)	34.1 (12.4)
Small tree	55	8.5 (3)	22.3 (19.4)
Shrub	100	1.8 (0.5)	29.4 (22)
Ground cover	100	0.6 (0.3)	17.5 (13.4)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 8 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 21 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 8 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia cognata</i>	1(1-2)	22	2(1-2)	1
<i>Acacia falciformis</i>	1(1-2)	72	1(1-2)	10
<i>Acacia mearnsii</i>	1(1-2)	34	1(1-2)	7
<i>Cassinia aculeata</i>	1(1-1)	41	1(1-1)	6
<i>Cassinia longifolia</i>	1(1-1)	75	1(1-2)	6
<i>Daviesia buxifolia</i>	2(2-5)	22	1(1-2)	<1
<i>Desmodium varians</i>	1(1-1)	47	1(1-1)	21
<i>Dichelachne rara</i>	1(1-1)	50	1(1-1)	4
<i>Eucalyptus cypellocarpa</i>	2(1-2)	44	2(1-2)	10
<i>Eucalyptus muelleriana</i>	2(2-3)	81	2(1-2)	6

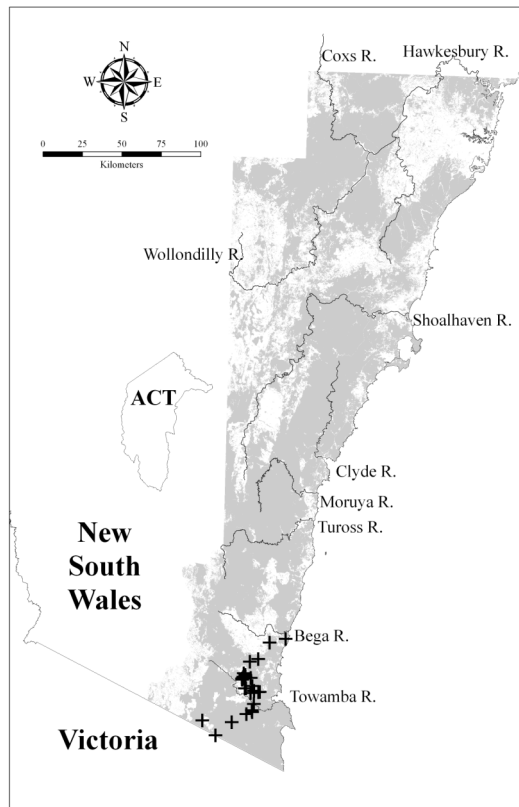
<i>Geranium potentilloides</i>	1(1-1)	28	1(1-1)	6
<i>Glycine clandestina</i>	1(1-1)	56	1(1-1)	26
<i>Gonocarpus teucroides</i>	1(1-1)	53	1(1-1)	17
<i>Goodenia ovata</i>	1(1-1)	28	1(1-1)	7
<i>Hibbertia dentata</i>	1(1-1)	22	1(1-1)	6
<i>Hypericum gramineum</i>	1(1-1)	50	1(1-1)	16
<i>Kennedia rubicunda</i>	1(1-1)	28	1(1-1)	6
<i>Lagenifera stipitata</i>	1(1-1)	41	1(1-1)	14
<i>Lepidosperma laterale</i>	1(1-1)	63	1(1-1)	28
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	56	1(1-1)	25
<i>Opercularia aspera</i>	1(1-1)	50	1(1-1)	8
<i>Poa labillardierei</i> var. <i>labillardierei</i>	1(1-2)	53	1(1-2)	12
<i>Poa meionectes</i>	1(1-2)	78	1(1-2)	16
<i>Senecio prenanthoides</i>	1(1-1)	31	1(1-1)	8
<i>Stypandra glauca</i>	1(1-2)	25	1(1-2)	5
<i>Tylophora barbata</i>	1(1-1)	47	1(1-1)	17
<i>Veronica plebeia</i>	1(1-1)	34	1(1-1)	10
<i>Wahlenbergia gracilis</i>	1(1-1)	41	1(1-1)	11

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	47	1(1-1)	28
<i>Clematis aristata</i>	1(1-1)	34	1(1-1)	20
<i>Dianella caerulea</i>	1(1-1)	41	1(1-1)	28
<i>Eucalyptus sieberi</i>	2(1-2)	31	2(1-3)	16
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	41	1(1-1)	24
<i>Lomandra longifolia</i>	1(1-1)	56	1(1-1)	44
<i>Persoonia linearis</i>	1(1-1)	38	1(1-1)	29
<i>Pteridium esculentum</i>	1(1-1)	47	1(1-2)	37
<i>Viola hederacea</i>	1(1-1)	38	1(1-1)	22

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	3	1(1-2)	9
<i>Eucalyptus agglomerata</i>	2(2-2)	22	2(1-3)	7
<i>Eucalyptus baueriana</i>	2(2-2)	3	2(1-2)	1
<i>Eucalyptus bosistoana</i>	2(1-2)	19	1(1-2)	3
<i>Eucalyptus elata</i>	2(2-2)	3	2(1-3)	5
<i>Eucalyptus globoidea</i>	2(2-2)	28	1(1-2)	12
<i>Eucalyptus longifolia</i>	1(1-1)	3	1(1-2)	2
<i>Eucalyptus maidenii</i>	1(1-1)	3	2(1-2)	2
<i>Eucalyptus polyanthemus</i> subsp. <i>vestita</i>	1(1-1)	9	1(1-1)	<1
<i>Eucalyptus smithii</i>	2(1-2)	19	1(1-2)	2
<i>Eucalyptus tricarpa</i>	1(1-2)	9	1(1-2)	1



Locations of survey sites allocated to DSF e33. Grey shading indicates extant native vegetation cover within the study area.

#### WSF e34: Southeast Coastal Gully Shrub Forest



Plate e34. Southeast Coastal Gully Shrub Forest (Map Unit e34) variant dominated by *Eucalyptus paniculata*, *Corymbia maculata* and *Macrozamia communis* with a diverse grassy groundcover, west of Bermagui in Bermagui State Forest.

Sample Sites: 49  
 Area Extant (ha): 22800  
 Estimated % remaining: >85%  
 Area in conservation reserves (ha): 6900  
 Estimated % of pre-clearing area in conservation reserves: 25-35%  
 No. Taxa (total / unique): 284 / 2  
 No. Taxa per Plot ( $\pm$ sd): 45.7 (12.0)

Class: South Coast Wet Sclerophyll Forests  
Related TEC: n/a

Southeast Coastal Gully Shrub Forest is equivalent to Coastal Gully Shrub Forest (unit 34) described by Keith & Bedward (1999). It is characterised by a very variable tree stratum reaching heights of up to 30 m and an open small tree stratum approximately 10 m tall that often contains species typical of rainforest. The shrub stratum contains a diverse range of mesophyllous species and the groundcover is species-rich and includes a variety of grasses, graminoids and forbs. Both the ground and shrub strata are entangled in a diverse complement of vines. Southeast Coastal Gully Shrub Forest is restricted to metasediments below 200 m elevation. It occurs in steep gullies on the coastal range mainly between Merimbula and Narooma and often co-occurs with Far South Coastal Foothills Dry Shrub Forest (Map Unit DSF e32b), which occupies adjacent upper slopes. Substantial areas of this assemblage remain on all tenures, slightly less than 15% being cleared. About 5 000 ha is potentially threatened by development of small rural holdings on private land. Frequent disturbance regimes that include logging (outside reserves) and fire in combination may reduce diversity by interrupting life-cycle processes of woody species and increasing erosion on the steep slopes in these habitats. Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if high levels of diversity are to be maintained in this species-rich assemblage.

#### Floristic Summary:

**Trees:** *Acacia falciformis*, *Acacia mearnsii*, *Allocasuarina littoralis*, *Eucalyptus muelleriana*, *Pittosporum undulatum*

**Shrubs:** *Breynia oblongifolia*, *Hibbertia aspera* subsp. *aspera*, *Notelaea venosa*, *Ozothamnus diosmifolius*, *Pittosporum revolutum*, *Platysace lanceolata* **Climbers:** *Billardiera scandens*, *Clematis aristata*, *Eustrephus latifolius*, *Geitonoplesium cymosum*, *Glycine clandestina*, *Marsdenia rostrata*, *Pandorea pandorana*, *Rubus parvifolius*

**Groundcover:** *Desmodium varians*, *Dianella caerulea*, *Dichondra* spp., *Doodia aspera*, *Entolasia stricta*, *Gahnia melanocarpa*, *Goodenia ovata*, *Lepidosperma laterale*, *Lomandra longifolia*, *Microlaena stipoides*, *Notodanthonia longifolia*, *Oplismenus imbecillis*, *Poa meionectes*, *Pratia purpurascens*, *Pteridium esculentum*, *Viola hederacea*

#### Vegetation structure:

Stratum	Frequency (n=33)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	94	26.2 (6)	31 (14.2)
Small tree	91	11.3 (4.6)	26.4 (20.8)
Shrub	85	2.6 (1.7)	29.4 (16.9)
Ground cover	100	0.7 (0.4)	42.3 (25.7)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 24 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 36 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 24 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-2)	55	1(1-2)	10
<i>Acacia implexa</i>	1(1-1)	27	1(1-1)	6
<i>Acacia irrorata</i> subsp. <i>irrorata</i>	2(1-2)	14	1(1-1)	2
<i>Acacia mearnsii</i>	1(1-2)	53	1(1-2)	7
<i>Adiantum aethiopicum</i>	1(1-1)	24	1(1-2)	9
<i>Allocasuarina littoralis</i>	1(1-2)	45	1(1-2)	17
<i>Angophora floribunda</i>	1(1-1)	31	1(1-2)	9
<i>Austrostipa rudis</i>	1(1-2)	22	1(1-2)	6
<i>Beyeria lasiocarpa</i>	1(1-2)	14	1(1-2)	1
<i>Billardiera scandens</i>	1(1-1)	65	1(1-1)	27
<i>Breynia oblongifolia</i>	1(1-1)	41	1(1-1)	12
<i>Cassinia aculeata</i>	1(1-1)	39	1(1-1)	6
<i>Cassinia trinerva</i>	1(1-2)	27	1(1-1)	3
<i>Clematis aristata</i>	1(1-1)	49	1(1-1)	20
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	33	1(1-1)	10

<i>Comesperma volubile</i>	1(1-1)	14	1(1-1)	2
<i>Coprosma quadrifida</i>	1(1-1)	24	1(1-1)	10
<i>Correa reflexa</i>	1(1-1)	39	1(1-1)	5
<i>Desmodium varians</i>	1(1-1)	57	1(1-1)	21
<i>Dianella caerulea</i>	1(1-1)	63	1(1-1)	28
<i>Dichondra spp.</i>	1(1-1)	71	1(1-2)	25
<i>Doodia aspera</i>	1(1-1)	41	1(1-2)	11
<i>Elaeocarpus reticulatus</i>	1(1-1)	29	1(1-1)	12
<i>Entolasia marginata</i>	1(1-2)	31	1(1-1)	11
<i>Entolasia stricta</i>	1(1-1)	63	1(1-2)	34
<i>Eucalyptus baueriana</i>	2(1-2)	16	2(1-2)	1
<i>Eucalyptus bosistoana</i>	2(1-2)	31	1(1-2)	3
<i>Eucalyptus cypellocarpa</i>	1(1-3)	31	2(1-2)	10
<i>Eucalyptus elata</i>	1(1-2)	31	2(1-3)	5
<i>Eucalyptus globoidea</i>	1(1-2)	29	2(1-2)	12
<i>Eucalyptus longifolia</i>	2(1-2)	31	1(1-2)	2
<i>Eucalyptus muelleriana</i>	2(1-2)	55	2(1-2)	6
<i>Eustrephus latifolius</i>	1(1-1)	82	1(1-1)	19
<i>Exocarpos cupressiformis</i>	1(1-1)	29	1(1-1)	5
<i>Gahnia melanocarpa</i>	1(1-1)	55	1(1-1)	5
<i>Geitonoplesium cymosum</i>	1(1-1)	71	1(1-1)	16
<i>Glycine clandestina</i>	1(1-1)	73	1(1-1)	26
<i>Goodenia ovata</i>	1(1-1)	69	1(1-1)	7
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	65	1(1-1)	10
<i>Hibbertia dentata</i>	1(1-1)	39	1(1-1)	6
<i>Hymenanthera dentata</i>	1(1-1)	20	1(1-1)	6
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-1)	24	1(1-2)	10
<i>Indigofera australis</i>	1(1-1)	37	1(1-1)	9
<i>Kennedia rubicunda</i>	1(1-1)	24	1(1-1)	6
<i>Lepidosperma laterale</i>	1(1-1)	63	1(1-1)	28
<i>Leucopogon juniperinus</i>	1(1-1)	20	1(1-1)	5
<i>Lomandra longifolia</i>	1(1-1)	71	1(1-1)	44
<i>Macrozamia communis</i>	1(1-1)	16	1(1-2)	4
<i>Marsdenia rostrata</i>	1(1-1)	61	1(1-2)	12
<i>Microlaena stipoides</i>	1(1-1)	61	1(1-2)	36
<i>Notelaea venosa</i>	1(1-1)	78	1(1-1)	11
<i>Notodanthonia longifolia</i>	1(1-2)	49	1(1-2)	5
<i>Oplismenus imbecillis</i>	1(1-1)	65	1(1-2)	14
<i>Ozothamnus argophyllus</i>	1(1-2)	37	1(1-1)	2
<i>Ozothamnus diosmifolius</i>	1(1-1)	69	1(1-1)	8
<i>Pandorea pandorana</i>	1(1-1)	57	1(1-1)	18
<i>Pimelea axiflora</i>	1(1-2)	24	1(1-1)	3
<i>Pittosporum revolutum</i>	1(1-1)	61	1(1-1)	8
<i>Pittosporum undulatum</i>	1(1-1)	67	1(1-1)	14
<i>Plantago debilis</i>	1(1-1)	24	1(1-1)	7
<i>Platysace lanceolata</i>	1(1-1)	45	1(1-1)	13

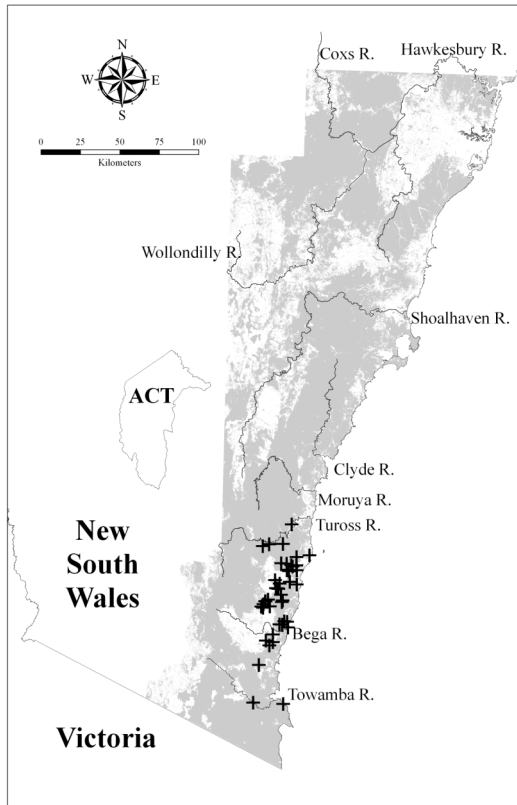
<i>Poa meionectes</i>	1(1-2)	73	1(1-2)	16
<i>Polyscias sambucifolia</i>	1(1-1)	22	1(1-1)	6
<i>Pomaderris aspera</i>	1(1-2)	24	1(1-2)	5
<i>Pomaderris cinerea</i>	1(1-2)	18	1(1-2)	1
<i>Pratia purpurascens</i>	1(1-1)	63	1(1-1)	17
<i>Pseuderanthemum variabile</i>	1(1-1)	22	1(1-2)	9
<i>Rubus parvifolius</i>	1(1-1)	43	1(1-1)	9
<i>Senecio linearifolius</i>	1(1-1)	39	1(1-1)	8
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	39	1(1-1)	7
<i>Solanum pungetium</i>	1(1-1)	29	1(1-1)	5
<i>Tylophora barbata</i>	1(1-1)	39	1(1-1)	17
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-1)	22	1(1-1)	4
<i>Viola hederacea</i>	1(1-1)	49	1(1-1)	22
<i>Zieria smithii</i>	1(1-1)	18	1(1-1)	2

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Gonocarpus teucroides</i>	1(1-1)	35	1(1-1)	17
<i>Hydrocotyle laxiflora</i>	1(1-1)	31	1(1-1)	15
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	35	1(1-1)	25
<i>Persoonia linearis</i>	1(1-1)	37	1(1-1)	29
<i>Pteridium esculentum</i>	1(1-1)	45	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia gummifera</i>	2(2-2)	2	2(1-2)	16
<i>Corymbia maculata</i>	2(2-3)	10	2(1-3)	3
<i>Eucalyptus agglomerata</i>	1(1-1)	2	2(1-3)	7
<i>Eucalyptus angophoroides</i>	1(1-1)	4	1(1-2)	1
<i>Eucalyptus botryoides</i>	1(1-1)	12	2(1-3)	3
<i>Eucalyptus maidenii</i>	2(1-2)	4	2(1-2)	2
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-1)	2	1(1-2)	3
<i>Eucalyptus pilularis</i>	1(1-1)	2	2(1-3)	5
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	2	2(1-3)	6
<i>Eucalyptus saligna</i> X <i>botryoides</i>	1(1-1)	2	2(1-3)	2
<i>Eucalyptus sieberi</i>	2(2-3)	14	2(1-3)	16
<i>Eucalyptus smithii</i>	2(1-2)	8	1(1-2)	2
<i>Eucalyptus tereticornis</i>	1(1-1)	6	2(1-3)	7
<i>Eucalyptus tricarpa</i>	1(1-1)	2	1(1-2)	1



Locations of survey sites allocated to WSF e34. Grey shading indicates extant native vegetation cover within the study area.

### DSF e35: Southeast Escarpment Dry Grass Forest



Plate e35. Southeast Escarpment Dry Grass Forest (Map Unit e35) dominated by *Eucalyptus maidenii* and *E. bosistoana* saplings with *Indigofera australis*, *Acacia falciformis* and *Poa meionectes* on the dry lower slopes of the Brown Mountain escarpment, Tantawangalo section of South East Forests National Park.

Sample Sites: 59

Area Extant (ha): 22600

Estimated % remaining: 65-75%

Area in conservation reserves (ha): 9200

Estimated % of pre-clearing area in conservation reserves: 20-30%

No. Taxa (total / unique): 247 / 0

No. Taxa per Plot ( $\pm$ sd): 34.9 (10.8)

Class: Southern Hinterland Dry Sclerophyll Forests  
Related TEC: n/a

Southeast Escarpment Dry Grass Forest is equivalent to Escarpment Dry Grass Forest (unit 35) described by Keith & Bedward (1999). It is characterised by a *Eucalyptus* canopy frequently exceeding 27 m in height with an open stratum of mesophyllous shrubs. The groundcover is dominated by grasses but includes a diverse range of forbs. Southeast Escarpment Dry Grass Forest occurs at 150-700 m elevation on steep to moderate, dry granitoid slopes surrounding the Bega and Towamba valleys and further north between Mumbullah Mountain and Central Tilba. Unusual stands occur on small basalt outcrops west of Nethercote. In the Murrabrine area and on the Bega valley escarpment, it is interspersed with Southeast Hinterland Wet Fern Forest (Map Unit WSF e13), which occupies more sheltered mesic sites. South of Wyndham, it occurs in hilly terrain interspersed with Bega Wet Shrub Forest (Map Unit WSF e19) on low relief sites. No similar assemblages have been described south of the Eden region (Austin 1978, Forbes *et al.* 1982). Approximately one-third of Southeast Escarpment Dry Grass Forest has been cleared for agriculture and over half of the remainder occurs on private land (mainly on toeslopes and foothills of the escarpment) where it is potentially threatened by further clearing. Soil erosion is a potential threat associated with logging, although in some cases this will be restricted to indirect effects from operations upslope because steep slopes may preclude direct timber harvesting within stands of this assemblage. Frequent burning around the interface of private and public land may also be a threat to some stands of Southeast Escarpment Dry Grass Forest. These may reduce diversity by interrupting life-cycle processes of woody species (Keith 1996) and increasing erosion from the steep slopes in these habitats. Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

#### Floristic Summary:

**Trees:** *Acacia falciformis*, *Acacia mearnsii*, *Eucalyptus bosistoana*, *Eucalyptus globosoides*, *Eucalyptus maidenii*  
**Shrubs:** *Cassinia longifolia*, *Indigofera australis*, *Senecio linearifolius* **Climbers:** *Clematis aristata*, *Eustrephus latifolius*, *Glycine clandestina*, *Tylophora barbata* **Groundcover:** *Desmodium varians*, *Dichondra* spp., *Echinopogon ovatus*, *Hydrocotyle laxiflora*, *Hypericum gramineum*, *Lepidosperma laterale*, *Lomandra longifolia*, *Microlaena stipoides*, *Notodanthonia longifolia*, *Plectranthus parviflorus*, *Poa meionectes*

#### Vegetation structure:

Stratum	Frequency (n=33)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	26.8 (5.9)	28 (10.5)
Small tree	64	8.3 (2.8)	20.5 (21.3)
Shrub	94	2.1 (1)	22.1 (14.8)
Ground cover	97	0.4 (0.2)	27.4 (25.4)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 26 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	2(1-2)	41	1(1-2)	10
<i>Acacia mearnsii</i>	2(1-2)	53	1(1-2)	7
<i>Acaena novae-zelandiae</i>	1(1-1)	19	1(1-1)	7
<i>Ajuga australis</i>	1(1-1)	14	1(1-1)	3
<i>Arthropodium milleflorum</i>	1(1-1)	32	1(1-1)	5
<i>Arthropodium species B</i>	1(1-1)	14	1(1-1)	1
<i>Austrodanthonia pilosa</i>	1(1-1)	17	1(1-1)	3
<i>Brachychiton populneus</i> subsp. <i>populneus</i>	1(1-1)	24	1(1-1)	3
<i>Bursaria spinosa</i>	1(1-2)	36	1(1-2)	14
<i>Carex breviculmis</i>	1(1-1)	24	1(1-1)	4
<i>Carex inversa</i>	1(1-1)	12	1(1-1)	3
<i>Cassinia aculeata</i>	1(1-1)	17	1(1-1)	6
<i>Cassinia longifolia</i>	2(1-2)	56	1(1-1)	6
<i>Cassinia trinerva</i>	1(1-2)	19	1(1-1)	3



<i>Clematis aristata</i>	1(1-1)	42	1(1-1)	20
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	31	1(1-1)	10
<i>Crassula sieberiana</i>	1(1-1)	20	1(1-1)	3
<i>Cynoglossum suaveolens</i>	1(1-1)	15	1(1-1)	1
<i>Desmodium varians</i>	1(1-1)	83	1(1-1)	21
<i>Dichelachne rara</i>	1(1-1)	32	1(1-1)	4
<i>Dichondra</i> spp.	1(1-1)	73	1(1-2)	25
<i>Echinopogon ovatus</i>	1(1-1)	47	1(1-1)	14
<i>Eucalyptus baueriana</i>	1(1-2)	19	2(1-2)	1
<i>Eucalyptus bosistoana</i>	2(1-2)	54	1(1-2)	2
<i>Eucalyptus elata</i>	1(1-2)	17	2(1-3)	5
<i>Eucalyptus globoidea</i>	2(1-2)	58	2(1-2)	11
<i>Eucalyptus maidenii</i>	2(2-2)	86	2(1-2)	1
<i>Eucalyptus muelleriana</i>	2(1-2)	36	2(1-2)	6
<i>Eucalyptus polyanthemos</i> subsp. <i>tarda</i>	1(1-2)	12	1(1-2)	<1
<i>Euchiton sphaericus</i>	1(1-1)	12	1(1-1)	3
<i>Eustrephus latifolius</i>	1(1-1)	42	1(1-1)	19
<i>Gahnia melanocarpa</i>	1(1-1)	20	1(1-1)	5
<i>Geitonoplesium cymosum</i>	1(1-1)	37	1(1-1)	16
<i>Glycine clandestina</i>	1(1-1)	81	1(1-1)	26
<i>Goodenia ovata</i>	2(1-2)	22	1(1-1)	7
<i>Hydrocotyle laxiflora</i>	1(1-1)	42	1(1-1)	15
<i>Hypericum gramineum</i>	1(1-1)	53	1(1-1)	16
<i>Indigofera australis</i>	1(1-2)	58	1(1-1)	9
<i>Lagenifera stipitata</i>	1(1-1)	37	1(1-1)	14
<i>Lepidosperma laterale</i>	1(1-1)	56	1(1-1)	28
<i>Leucopogon juniperinus</i>	1(1-1)	20	1(1-1)	5
<i>Lomandra longifolia</i>	1(1-1)	66	1(1-1)	44
<i>Marsdenia rostrata</i>	1(1-1)	29	1(1-2)	12
<i>Microlaena stipoides</i>	1(1-1)	68	1(1-2)	36
<i>Notodanthonia longifolia</i>	1(1-1)	46	1(1-2)	5
<i>Opercularia aspera</i>	1(1-1)	36	1(1-1)	8
<i>Oxalis perennans</i>	1(1-1)	36	1(1-1)	13
<i>Ozothamnus argophyllus</i>	3(1-3)	14	1(1-1)	2
<i>Pellaea falcata</i>	1(1-1)	34	1(1-2)	10
<i>Pimelea axiflora</i>	1(1-1)	15	1(1-1)	3
<i>Pittosporum undulatum</i>	1(1-1)	29	1(1-1)	14
<i>Plantago debilis</i>	1(1-1)	37	1(1-1)	7
<i>Plectranthus parviflorus</i>	1(1-1)	54	1(1-1)	7
<i>Poa meionectes</i>	2(1-2)	56	1(1-2)	16
<i>Pomaderris aspera</i>	1(1-2)	19	1(1-2)	5
<i>Rubus parvifolius</i>	1(1-1)	36	1(1-1)	9
<i>Rumex brownii</i>	1(1-1)	24	1(1-1)	5
<i>Senecio linearifolius</i>	1(1-1)	54	1(1-1)	8
<i>Senecio prenanthoides</i>	1(1-1)	27	1(1-1)	8
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	31	1(1-1)	7

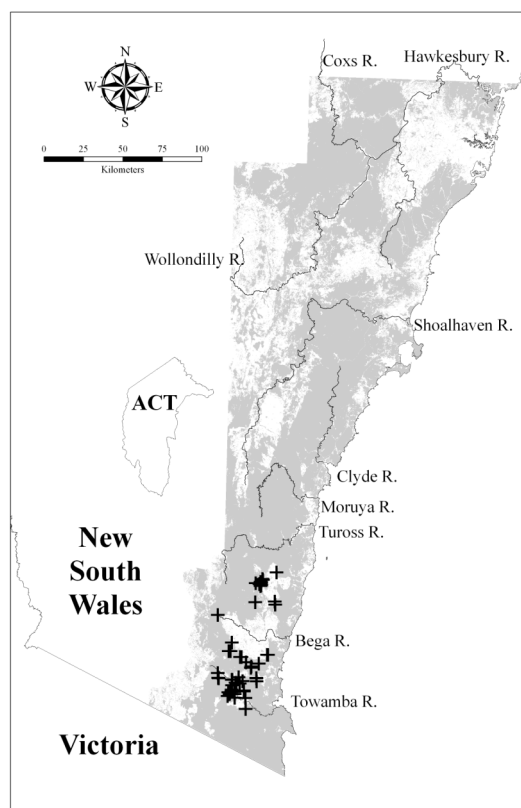
<i>Solanum pungetium</i>	1(1-1)	19	1(1-1)	5
<i>Tylophora barbata</i>	1(1-1)	41	1(1-1)	17
<i>Veronica calycina</i>	1(1-1)	29	1(1-1)	6
<i>Wahlenbergia gracilis</i>	1(1-1)	31	1(1-1)	11
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	1(1-1)	17	1(1-1)	5
<i>Xerochrysum bracteatum</i>	1(1-1)	22	1(1-1)	2

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Dianella caerulea</i>	1(1-1)	31	1(1-1)	28
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	31	1(1-1)	25

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	2(2-2)	2	1(1-2)	9
<i>Eucalyptus agglomerata</i>	2(2-2)	3	2(1-3)	7
<i>Eucalyptus angophoroides</i>	2(1-2)	3	1(1-2)	1
<i>Eucalyptus botryoides</i>	1(1-1)	2	2(1-3)	3
<i>Eucalyptus cypellocarpa</i>	1(1-2)	7	2(1-2)	10
<i>Eucalyptus fastigata</i>	3(3-3)	2	2(1-3)	6
<i>Eucalyptus polyanthemos</i> subsp. <i>vestita</i>	1(1-1)	5	1(1-1)	<1
<i>Eucalyptus sieberi</i>	1(1-3)	8	2(1-3)	16
<i>Eucalyptus smithii</i>	1(1-2)	10	1(1-2)	2
<i>Eucalyptus tricarpa</i>	1(1-1)	2	1(1-2)	1
<i>Eucalyptus viminalis</i>	2(2-2)	2	2(1-3)	5



Locations of survey sites allocated to DSF e35. Grey shading indicates extant native vegetation cover within the study area.

### WSF e37: Southeast Lowland Gully Shrub Forest



Plate e37. Southeast Lowland Gully Shrub Forest (Map Unit e37) dominated by *Angophora floribunda* with *Eucalyptus cypellocarpa*, *Acacia longifolia*, *A. mearnsii*, *Pteridium esculentum* and *Microlaena stipoides* at Saltwater Creek flat, Ben Boyd National Park.

Sample Sites: 20

Area Extant (ha): 13700

Estimated % remaining: >95%

Area in conservation reserves (ha): 4700

Estimated % of pre-clearing area in conservation reserves: 30-40%

No. Taxa (total / unique): 218 / 0

No. Taxa per Plot ( $\pm$ sd): 36.7 (9.5)

Class: South Coast Wet Sclerophyll Forests

Related TEC: n/a

Southeast Lowland Gully Shrub Forest is equivalent to Lowland Gully Shrub Forest (unit 37) described by Keith & Bedward (1999). The tree canopy typically rises to 25 m in height with one or two prominent tall shrub strata 5-8 m in height also present. The tall, semi-continuous groundcover is dominated by bracken fern *Pteridium esculentum*, grasses and graminoids with a variety of small shrubs and forbs scattered throughout. Southeast Lowland Gully Shrub Forest occurs on gully flats either on Tertiary alluvium, Holocene sands or on deep colluvial sandy soils washed down from adjacent sedimentary substrates upslope. It is most common in the Nadgee-Timbillica area below 100 m elevation and includes the well-known Monkey Gum flats in that area. These flats provide important resource-rich fauna habitat with dense groundcover in an area largely covered by open dry sclerophyllous forests. Southeast Lowland Gully Shrub Forest has affinities with a highly restricted assemblage in similar habitats in far East Gippsland (Ecological Vegetation Class 4, Woodgate *et al.* 1994), but this unit has *E. botryoides* as a co-dominant tree and a greater diversity of vines. Relatively little of this vegetation has been cleared. Although some stands on private land are potentially threatened by clearing, the principal threat is frequent disturbance regimes. In some unprotected sites with *E. cypellocarpa* the disturbance regime may include logging, although *A. floribunda* is not an economic wood species and some flats in production forest are protected by management prescriptions. Sedimentation may affect stands where logging occurs upslope. Where logging is carried out and followed by regeneration burns and thinning, this may change the relative abundance of eucalypt species, particularly *E. sieberi* (Bridges 1983). Frequent burning may reduce diversity by interrupting life-cycle processes of woody species and by competitive exclusion due to increased densities of *P. esculentum* and *I. cylindrica* (Keith 1996). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks, decline in densities of rhizomatous species and restoration of habitat structure if losses of diversity are to be avoided.

#### Floristic Summary:

**Trees:** *Allocasuarina littoralis*, *Angophora floribunda* **Shrubs:** *Acacia longifolia*, *Exocarpos strictus*, *Hibbertia aspera* subsp. *aspera*, *Leucopogon lanceolatus* var. *lanceolatus*, *Persoonia linearis*, *Pultenaea daphnoides* **Climbers:** *Billardiera scandens*, *Eustrephus latifolius*, *Glycine clandestina*, *Hibbertia dentata*, *Kennedia rubicunda*, *Tylophora*

*barbata* **Groundcover:** *Dianella caerulea*, *Dichondra* spp., *Entolasia stricta*, *Gonocarpus teucroides*, *Goodenia ovata*, *Imperata cylindrica* var. *major*, *Lomandra longifolia*, *Poa meionectes*, *Pteridium esculentum*, *Schelhammera undulata*, *Viola hederacea*

#### Vegetation structure:

Stratum	Frequency (n=18)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	22.1 (8.5)	39.1 (15.3)
Small tree	50	7.9 (2.4)	27 (20.9)
Shrub	94	3 (1.6)	36.9 (26.9)
Ground cover	100	1.1 (0.6)	63.1 (23.7)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 11 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 29 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 11 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia longifolia</i>	2(1-2)	60	1(1-2)	9
<i>Acacia mearnsii</i>	1(1-2)	30	1(1-2)	7
<i>Allocasuarina littoralis</i>	1(1-2)	60	1(1-2)	17
<i>Angophora floribunda</i>	2(1-3)	85	1(1-2)	9
<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>	1(1-2)	25	1(1-2)	2
<i>Cassytha pubescens</i>	1(1-1)	30	1(1-1)	8
<i>Dianella caerulea</i>	1(1-1)	75	1(1-1)	28
<i>Epacris impressa</i>	1(1-1)	35	1(1-1)	4
<i>Eucalyptus baxteri</i>	2(1-3)	25	1(1-2)	<1
<i>Eucalyptus cypellocarpa</i>	1(1-1)	35	2(1-2)	10
<i>Eucalyptus longifolia</i>	2(1-2)	20	1(1-2)	2
<i>Eustrephus latifolius</i>	1(1-1)	60	1(1-1)	19
<i>Exocarpos strictus</i>	1(1-1)	45	1(1-1)	9
<i>Gahnia radula</i>	1(1-2)	35	1(1-2)	3
<i>Glycine clandestina</i>	1(1-1)	75	1(1-1)	26
<i>Gonocarpus teucroides</i>	1(1-2)	65	1(1-1)	17
<i>Goodenia ovata</i>	2(1-3)	65	1(1-1)	7
<i>Goodia lotifolia</i>	1(1-1)	20	1(1-1)	2
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-2)	50	1(1-1)	10
<i>Hibbertia dentata</i>	1(1-1)	40	1(1-1)	6
<i>Hierochloa rariflora</i>	2(1-3)	30	1(1-2)	4
<i>Hydrocotyle peduncularis</i>	1(1-1)	35	1(1-1)	9
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-1)	40	1(1-2)	10
<i>Kennedia rubicunda</i>	1(1-1)	45	1(1-1)	6
<i>Leptospermum continentale</i>	1(1-2)	25	1(1-1)	3
<i>Lomandra longifolia</i>	1(1-3)	80	1(1-1)	44
<i>Muellerina eucalyptoides</i>	1(1-1)	20	1(1-1)	<1
<i>Opercularia aspera</i>	1(1-1)	30	1(1-1)	8
<i>Ozothamnus cuneifolius</i>	2(1-2)	30	1(1-1)	1
<i>Poa meionectes</i>	1(1-2)	80	1(1-2)	16

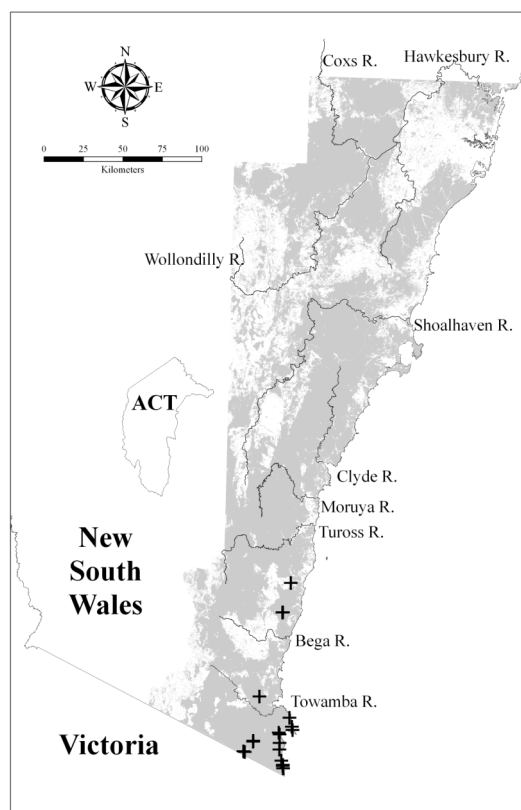
<i>Pteridium esculentum</i>	2(2-3)	90	1(1-2)	37
<i>Pultenaea daphnoides</i>	1(1-1)	40	1(1-1)	4
<i>Schelhammera undulata</i>	1(1-1)	50	1(1-1)	7
<i>Viola hederacea</i>	1(1-1)	75	1(1-1)	22

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	55	1(1-1)	28
<i>Calochlaena dubia</i>	3(1-4)	30	1(1-3)	9
<i>Coprosma quadrifida</i>	1(1-2)	30	1(1-1)	10
<i>Dichondra spp.</i>	1(1-1)	45	1(1-2)	25
<i>Elaeocarpus reticulatus</i>	1(1-2)	35	1(1-1)	12
<i>Entolasia marginata</i>	1(1-2)	30	1(1-1)	11
<i>Entolasia stricta</i>	1(1-2)	55	1(1-2)	34
<i>Lagenifera stipitata</i>	1(1-1)	30	1(1-1)	14
<i>Lepidosperma laterale</i>	1(1-2)	30	1(1-1)	29
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	50	1(1-1)	24
<i>Microlaena stipoides</i>	2(1-2)	30	1(1-2)	36
<i>Oplismenus imbecillis</i>	1(1-2)	30	1(1-2)	14
<i>Persoonia linearis</i>	1(1-1)	50	1(1-1)	29
<i>Tylophora barbata</i>	1(1-1)	40	1(1-1)	17

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia gummifera</i>	2(2-2)	5	2(1-2)	16
<i>Eucalyptus angophoroides</i>	3(3-3)	5	1(1-2)	1
<i>Eucalyptus botryoides</i>	3(3-3)	5	2(1-3)	3
<i>Eucalyptus elata</i>	1(1-1)	5	2(1-3)	5
<i>Eucalyptus globoidea</i>	2(1-3)	25	2(1-2)	12
<i>Eucalyptus muelleriana</i>	3(3-3)	5	2(1-2)	6
<i>Eucalyptus obliqua</i>	3(1-3)	10	2(1-3)	4
<i>Eucalyptus ovata</i>	2(2-2)	10	2(1-3)	1
<i>Eucalyptus pseudoglobulus</i>	2(2-2)	5	0(0-0)	0
<i>Eucalyptus sieberi</i>	1(1-3)	15	2(1-3)	16
<i>Eucalyptus smithii</i>	1(1-1)	5	1(1-2)	2



Locations of survey sites allocated to WSF e37. Grey shading indicates extant native vegetation cover within the study area.

**FoW e38: Far Southeast Riparian Scrub**

Plate e38. Far Southeast Riparian Scrub (Map Unit e38) with *Callistemon subulatus*, *Acacia floribunda*, *Calytrix tetragona* and *Lomandra longifolia* among granitoid outcrops in the bed of Imlay Creek near Imlay Road crossing, Wallagaraugh Flora Reserve.

Sample Sites: 5

Area Extant (ha): 420

Estimated % remaining: >90%

Area in conservation reserves (ha): 290

Estimated % of pre-clearing area in conservation reserves: 55-65%

No. Taxa (total / unique): 90 / 0

No. Taxa per Plot ( $\pm$ sd): 27.6 (19.2)

Class: Eastern Riverine Forests

Related TEC: n/a

Far Southeast Riparian Scrub is equivalent to Southern Riparian Scrub (unit 38) described by Keith & Bedward (1999). It features a patchy shrub stratum 2 m tall occasionally with emergent saplings of *Eucalyptus elata* around 8 m tall. The patchy groundcover is dominated by rushes and sedges with small ferns also present. Far Southeast Riparian Scrub is restricted to riverine alluvium derived from granitoid or sedimentary parent materials at elevations up to 400 m along major streams in the south, including the Genoa, Wallagaraugh and Merrica Rivers, and possibly parts of the Towamba River. Although not explicitly described, similar vegetation may occur in East Gippsland within the riparian scrub complex (Ecological Vegetation Class 17, Woodgate *et al.* 1994), which also includes assemblages related to Southeast Lowland Swamp (Map Unit FrW e57) and Southeast Flats Swamp Forest (Map Unit FoW e17). The principal threat to Far Southeast Riparian Scrub is from sedimentation and weed invasion associated with road and logging activities in stream catchments. Mitigation measures include stream buffer strips of varying width and erosion control during earthworks and logging. Frequent fire regimes may reduce diversity by interrupting life-cycle processes of woody species if streams are used repeatedly as ignition lines for hazard reduction.

**Floristic Summary:**

**Trees:** *Acacia mearnsii*, *Allocasuarina littoralis*, *Eucalyptus cypellocarpa*, *Eucalyptus elata* **Shrubs:** *Acacia floribunda*, *Acacia longifolia*, *Babingtonia pluriflora*, *Bursaria spinosa*, *Calytrix tetragona*, *Crocea exalata* subsp. *exalata*, *Kunzea ambigua*, *Kunzea ericoides*, *Leptospermum lanigerum*, *Leptospermum scoparium*, *Lomatia myricoides*, *Melaleuca squarrosa*, *Prostanthera lasianthos*, *Tristaniopsis laurina* **Climbers:** *Cassytha pubescens* **Groundcover:** *Adiantum aethiopicum*, *Drosera peltata*, *Entolasia stricta*, *Gahnia clarkei*, *Gahnia sieberiana*, *Goodenia ovata*, *Hierochloa rariflora*, *Lepidosperma laterale*, *Lepidosperma urophorum*, *Lomandra longifolia*, *Opercularia aspera*, *Pteridium esculentum*

**Vegetation structure:**

Stratum	Frequency (n=5)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	80	11 (6.7)	23 (19.9)
Small tree	40	8 (5.7)	70 (14.1)
Shrub	60	2 (0.5)	36.7 (30.6)
Ground cover	100	0.9 (0.7)	20 (10.6)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 9 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 12 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 9 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia floribunda</i>	2(1-2)	40	1(1-2)	3
<i>Adiantum aethiopicum</i>	1(1-1)	60	1(1-1)	9
<i>Babingtonia pluriflora</i>	2(1-4)	80	1(1-1)	1
<i>Baloskion tetraphyllum</i>	1(1-1)	20	1(1-2)	<1
<i>Callistemon subulatus</i>	1(1-1)	20	1(1-1)	<1
<i>Callitris rhomboidea</i>	1(1-1)	20	1(1-2)	<1
<i>Calytrix tetragona</i>	1(1-2)	60	1(1-2)	2
<i>Carex gaudichaudiana</i>	1(1-1)	20	1(1-2)	1
<i>Centrolepis fascicularis</i>	1(1-1)	20	1(1-1)	<1
<i>Crocea exalata</i> subsp. <i>exalata</i>	1(1-1)	40	1(1-2)	<1
<i>Derwentia perfoliata</i>	1(1-1)	20	1(1-1)	1
<i>Drosera glanduligera</i>	1(1-1)	20	1(1-1)	<1
<i>Drosera peltata</i>	1(1-1)	40	1(1-1)	2
<i>Drosera pygmaea</i>	1(1-1)	20	1(1-1)	<1
<i>Eucalyptus elata</i>	1(1-3)	60	2(1-3)	5
<i>Gahnia clarkei</i>	1(1-1)	40	1(1-2)	2
<i>Gahnia sieberiana</i>	1(1-1)	40	1(1-1)	5
<i>Gleichenia microphylla</i>	2(2-2)	20	1(1-2)	1
<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	2(2-2)	20	1(1-1)	<1
<i>Grevillea victoriae</i> subsp. <i>nivalis</i>	1(1-1)	20	1(1-2)	<1
<i>Hierochloa rariflora</i>	1(1-1)	40	1(1-2)	4
<i>Kunzea ambigua</i>	1(1-3)	60	1(1-2)	4
<i>Kunzea ericoides</i>	1(1-1)	40	1(1-2)	2
<i>Lepidosperma urophorum</i>	1(1-1)	60	1(1-2)	7
<i>Leptospermum brevipes</i>	1(1-1)	20	1(1-2)	<1
<i>Leptospermum lanigerum</i>	2(2-2)	40	1(1-1)	1
<i>Leptospermum scoparium</i>	2(1-2)	40	1(1-2)	<1
<i>Lomatia myricoides</i>	1(1-1)	60	1(1-1)	4
<i>Lythrum salicaria</i>	1(1-1)	20	1(1-1)	<1
<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	1(1-1)	20	2(1-2)	1
<i>Melaleuca squarrosa</i>	1(1-1)	40	2(1-3)	1
<i>Myriophyllum pedunculatum</i> subsp. <i>pedunculatum</i>	1(1-1)	20	1(1-2)	<1
<i>Pomaderris andromedifolia</i>	1(1-1)	20	1(1-1)	<1



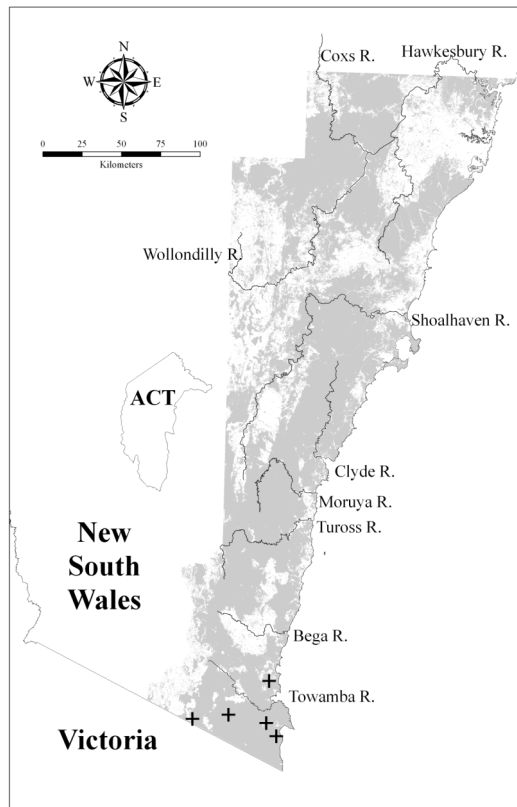
<i>Prostanthera lasianthos</i>	1(1-1)	60	1(1-1)	3
<i>Prostanthera rotundifolia</i>	1(1-1)	20	1(1-2)	<1
<i>Sticherus lobatus</i>	1(1-1)	20	1(1-3)	1
<i>Tristaniopsis laurina</i>	3(2-4)	100	1(1-2)	2
<i>Utricularia lateriflora</i>	1(1-1)	20	1(1-1)	<1
<i>Vallisneria gigantea</i>	1(1-1)	20	1(1-1)	<1
<i>Westringia eremicola</i>	1(1-1)	20	1(1-2)	<1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia longifolia</i>	1(1-1)	40	1(1-2)	10
<i>Acacia mearnsii</i>	2(1-2)	40	1(1-2)	7
<i>Allocasuarina littoralis</i>	1(1-1)	60	1(1-2)	17
<i>Bursaria spinosa</i>	1(1-1)	60	1(1-2)	14
<i>Cassutha pubescens</i>	1(1-1)	40	1(1-1)	8
<i>Entolasia stricta</i>	1(1-1)	40	1(1-2)	34
<i>Eucalyptus cypellocarpa</i>	1(1-1)	40	2(1-2)	10
<i>Goodenia ovata</i>	1(1-1)	40	1(1-1)	7
<i>Lepidosperma laterale</i>	1(1-1)	60	1(1-1)	29
<i>Lomandra longifolia</i>	2(1-3)	80	1(1-1)	44
<i>Opercularia aspera</i>	1(1-1)	40	1(1-1)	8
<i>Pteridium esculentum</i>	1(1-1)	40	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	2(2-2)	20	1(1-2)	9
<i>Eucalyptus obliqua</i>	1(1-1)	20	2(1-3)	4



Locations of survey sites allocated to FoW e38. Grey shading indicates extant native vegetation cover within the study area.

### FoW e39: Bega-Towamba Riparian Scrub



Plate e39. Bega-Towamba Riparian Scrub (Map Unit e39) with *Acacia floribunda* and *Leptospermum emarginatum* in the sandy bed of Myrtle Creek, Yowaka section of South East Forests National Park.

Sample Sites: 14  
 Area Extant (ha): 350  
 Estimated % remaining: <30%  
 Area in conservation reserves (ha): 40  
 Estimated % of pre-clearing area in conservation reserves: <10%  
 No. Taxa (total / unique): 174 / 0  
 No. Taxa per Plot ( $\pm$ sd): 32.2 (12.5)  
 Class: Eastern Riverine Forests

Related TEC: n/a

Bega-Towamba Riparian Scrub is equivalent to Northern Riparian Scrub (unit 39) described by Keith & Bedward (1999). It is characterised by a patchy shrub stratum up to 4 m tall with scattered emergent eucalypts up to 15 m tall dispersed in from adjacent forest vegetation. The patchy groundcover is dominated by grasses and graminoids with small scattered herbs also present. Bega –Towamba Riparian Scrub is restricted to riverine alluvium derived from granitoid substrates at elevations up to 250 m along major streams of the southeast including the lower Bemboka River and lower reaches of Tantawangalo, Stockyard and Myanba Creeks. It occurs in lower rainfall districts (<850 mm annual precipitation) than Far Southeast Riparian Scrub (Map Unit FoW e38) and has a different shrub composition. No similar assemblages have been described in adjacent regions (Austin 1978, Woodgate *et al.* 1994). Over one-third of Bega –Towamba Riparian Scrub has been cleared in agricultural districts and almost all of the remainder is threatened by further clearing and degradation on private land. The principal threats associated with agricultural land uses include sedimentation, nutrification, weed invasion and physical damage by stock. Some sedimentation may originate from roadworks and logging in steeper, higher rainfall areas in the upper catchments. Frequent burning of adjacent vegetation may also threaten shrub diversity at some sites.

#### Floristic Summary:

**Trees:** *Acacia mearnsii* **Shrubs:** *Acacia floribunda*, *Bursaria spinosa*, *Callistemon subulatus*, *Hakea microcarpa*, *Kunzea ericoides*, *Leptospermum emarginatum*, *Lomatia myricoides* **Groundcover:** *Carex gaudichaudiana*, *Cyperus lucidus*, *Epilobium billardierianum*, *Isolepis inundata*, *Lomandra longifolia*, *Microlaena stipoides*, *Persicaria decipiens*, *Themeda australis*

#### Vegetation structure:

Stratum	Frequency (n=13)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	38	12.8 (6.5)	10 (14)
Small tree	23	4.7 (1.2)	30 (10)
Shrub	100	2.8 (1.2)	33.9 (24.1)
Ground cover	92	0.9 (0.7)	21.4 (15.3)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 10 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 22 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 10 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia elongata</i>	2(1-2)	29	1(1-1)	1
<i>Acacia floribunda</i>	2(2-3)	93	1(1-1)	2
<i>Acacia mearnsii</i>	1(1-1)	71	1(1-2)	7
<i>Babingtonia pluriflora</i>	1(1-2)	21	1(1-1)	1
<i>Beyeria lasiocarpa</i>	1(1-3)	29	1(1-2)	2
<i>Blechnum minus</i>	1(1-1)	29	1(1-1)	<1
<i>Bursaria spinosa</i>	1(1-1)	50	1(1-2)	14
<i>Callistemon subulatus</i>	1(1-1)	57	1(1-1)	<1
<i>Calytrix tetragona</i>	1(1-2)	36	1(1-2)	2
<i>Carex gaudichaudiana</i>	1(1-1)	43	1(1-2)	1
<i>Crassula helmsii</i>	1(1-1)	21	1(1-2)	<1
<i>Cyperus lucidus</i>	1(1-1)	50	1(1-1)	1
<i>Epilobium billardierianum</i>	1(1-1)	43	1(1-1)	2
<i>Eucalyptus elata</i>	1(1-1)	29	2(1-3)	5
<i>Eucalyptus maidenii</i>	1(1-3)	21	2(1-2)	2
<i>Euchiton gymnocephalus</i>	1(1-1)	36	1(1-1)	7
<i>Exocarpos cupressiformis</i>	1(1-1)	29	1(1-1)	5
<i>Gratiola peruviana</i>	1(1-1)	36	1(1-1)	1

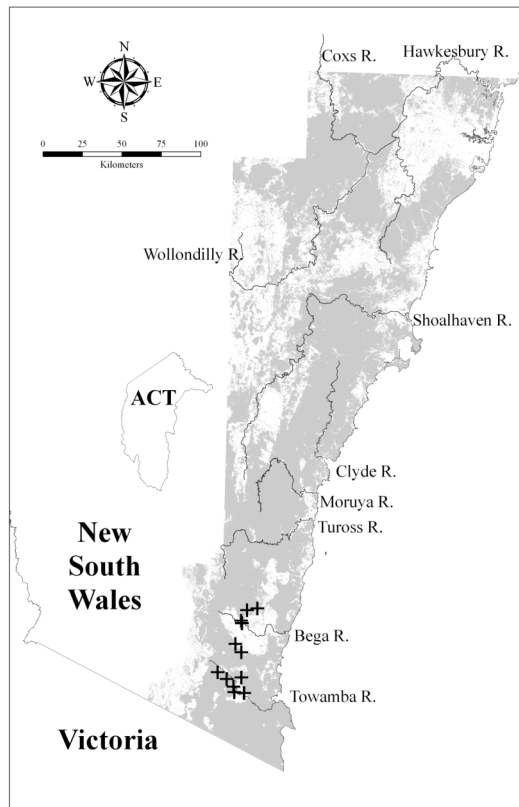
<i>Hakea microcarpa</i>	1(1-1)	43	1(1-1)	<1
<i>Isachne globosa</i>	1(1-2)	36	1(1-3)	<1
<i>Isolepis inundata</i>	1(1-1)	50	1(1-1)	1
<i>Juncus usitatus</i>	1(1-1)	21	1(1-1)	2
<i>Kunzea ericoides</i>	1(1-1)	50	1(1-2)	2
<i>Leptospermum emarginatum</i>	1(1-2)	100	1(1-2)	<1
<i>Leptospermum lanigerum</i>	1(1-1)	29	1(1-2)	1
<i>Leptospermum obovatum</i>	1(1-1)	29	2(1-3)	<1
<i>Leucopogon juniperinus</i>	1(1-1)	29	1(1-1)	6
<i>Lobelia anceps</i>	1(1-1)	36	1(1-1)	1
<i>Lomandra longifolia</i>	2(1-2)	93	1(1-1)	44
<i>Lomatia myricoides</i>	1(1-1)	79	1(1-1)	4
<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	2(2-3)	21	1(1-2)	1
<i>Melaleuca parvistaminea</i>	1(1-2)	21	1(1-1)	<1
<i>Persicaria decipiens</i>	1(1-1)	64	1(1-1)	1
<i>Pimelea axiflora</i>	1(1-1)	21	1(1-1)	3
<i>Plectranthus graveolens</i>	1(1-1)	21	1(1-1)	1
<i>Senecio quadridentatus</i>	1(1-1)	21	1(1-1)	1
<i>Themeda australis</i>	1(1-1)	50	1(1-3)	17

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Echinopogon ovatus</i>	1(1-1)	36	1(1-1)	14
<i>Entolasia stricta</i>	1(1-1)	36	1(1-2)	34
<i>Microlaena stipoides</i>	1(1-1)	50	1(1-2)	36

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	7	1(1-2)	9
<i>Eucalyptus agglomerata</i>	1(1-1)	7	2(1-3)	7
<i>Eucalyptus cypellocarpa</i>	1(1-1)	7	2(1-2)	10
<i>Eucalyptus muelleriana</i>	1(1-1)	14	2(1-2)	6
<i>Eucalyptus polyanthemus</i> subsp. <i>tarda</i>	1(1-1)	7	1(1-2)	<1
<i>Eucalyptus tereticornis</i>	2(1-2)	14	2(1-3)	7
<i>Eucalyptus viminalis</i>	1(1-1)	14	2(1-3)	4



Locations of survey sites allocated to FoW e39. Grey shading indicates extant native vegetation cover within the study area.

#### WSF e42: Southeast Inland Intermediate Shrub Forest



Plate e42. Southeast Inland Intermediate Shrub Forest (Map Unit e42) dominated by *Eucalyptus obliqua* and *E. sieberi* with *Acacia terminalis*, *A. longifolia*, *Pultenaea daphnoides* and *Pteridium esculentum* on Poole Fire Trail near Mt Poole Flora Reserve in Yambulla State Forest.

Sample Sites: 67

Area Extant (ha): 21400

Estimated % remaining: >95%

Area in conservation reserves (ha): 5700

Estimated % of pre-clearing area in conservation reserves: 20-30%

No. Taxa (total / unique): 230 / 0

No. Taxa per Plot ( $\pm$ sd): 29.3 (8.5)

Class: South Coast Wet Sclerophyll Forests

Related TEC: n/a

Southeast Inland Intermediate Shrub Forest is equivalent to Inland Intermediate Shrub Forest (unit 42) described by Keith & Bedward (1999). It is characterised by a tall *Eucalyptus* canopy frequently exceeding 28 m in height and a relatively dense shrub stratum including both smaller species and tall shrubs eventually forming a small tree stratum around 10 m in height. The tall semi-continuous groundcover is dominated by grasses, graminoids and herbs with a variable layer of bracken fern *Pteridium esculentum* usually present. Southeast Inland Intermediate Shrub Forest occurs on sheltered slopes either on metasediments or granitoid substrates at 150 - 650 m elevation in the coastal ranges and hinterland south from Merimbula. The most similar assemblage described in East Gippsland (Community 16.5, Forbes et al. 1982) shares few of the major understorey species and has relatively higher and lower frequencies of *E. globoidea* and *E. cypellocarpa*, respectively. Relatively little Inland Intermediate Shrub Forest has been cleared, most occurring on public land within production forest, while about one-quarter is reserved. The principal threat is frequent disturbance regimes that include logging (outside reserves) and fire in combination. These regimes reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Logging followed by regeneration burns and thinning may change the relative abundance of eucalypt species, particularly *E. sieberi* (Bridges 1983). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

#### Floristic Summary:

**Trees:** *Eucalyptus cypellocarpa*, *Eucalyptus obliqua*, *Eucalyptus sieberi* **Shrubs:** *Acacia obtusifolia*, *Epacris impressa*, *Leucopogon lanceolatus* var. *lanceolatus*, *Lomatia ilicifolia*, *Persoonia linearis*, *Platysace lanceolata*, *Pultenaea daphnoides* **Climbers:** *Billardiera scandens* **Groundcover:** *Dianella caerulea*, *Entolasia stricta*, *Gonocarpus teucroides*, *Hierochloa rariflora*, *Lepidosperma laterale*, *Lomandra longifolia*, *Poa meionectes*, *Pteridium esculentum*, *Stylidium graminifolium*, *Tetrarrhena juncea*, *Viola hederacea*

#### Vegetation structure:

Stratum	Frequency (n=19)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	27.7 (6.7)	34.7 (9.6)
Small tree	21	8.8 (4.5)	34.3 (21.9)
Shrub	95	3 (1.8)	36.7 (18.1)
Ground cover	100	0.9 (0.4)	53.2 (26.5)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 14 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 23 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 14 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia longifolia</i>	2(1-2)	33	1(1-2)	9
<i>Acacia myrtifolia</i>	1(1-1)	16	1(1-1)	4
<i>Acacia obtusifolia</i>	2(2-2)	58	1(1-2)	9
<i>Acacia terminalis</i>	2(1-2)	39	1(1-1)	11
<i>Amperea xiphoclada</i>	1(1-1)	30	1(1-1)	7
<i>Billardiera scandens</i>	1(1-1)	81	1(1-1)	27
<i>Blechnum cartilagineum</i>	1(1-2)	30	1(1-2)	11
<i>Calochlaena dubia</i>	1(1-2)	28	1(1-3)	9
<i>Cassinia longifolia</i>	1(1-1)	16	1(1-2)	6
<i>Comesperma ericinum</i>	1(1-1)	13	1(1-1)	1
<i>Comesperma volubile</i>	1(1-1)	10	1(1-1)	2
<i>Correa reflexa</i>	1(1-1)	18	1(1-1)	5
<i>Daviesia ulicifolia</i>	1(1-1)	18	1(1-1)	6
<i>Dianella caerulea</i>	1(1-1)	66	1(1-1)	28
<i>Dianella tasmanica</i>	1(1-1)	21	1(1-1)	7

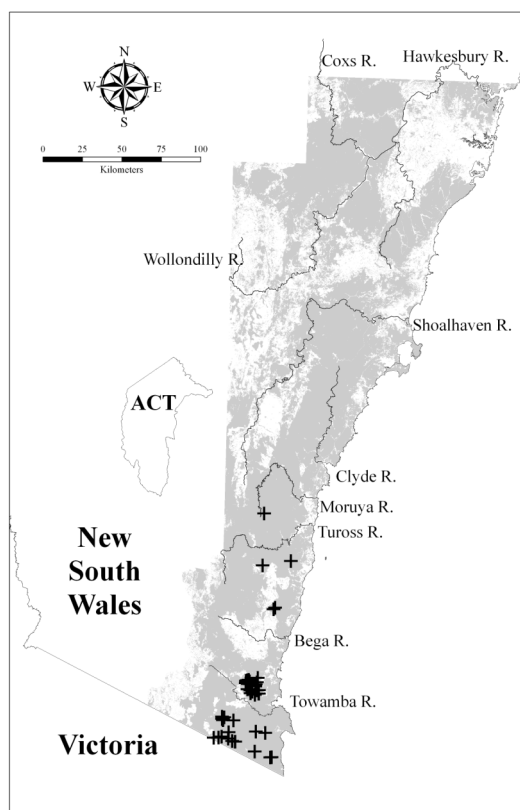
<i>Epacris impressa</i>	1(1-1)	61	1(1-1)	4
<i>Eucalyptus agglomerata</i>	2(1-2)	21	2(1-3)	7
<i>Eucalyptus cypellocarpa</i>	2(1-2)	43	2(1-2)	10
<i>Eucalyptus muelleriana</i>	2(2-2)	22	2(1-2)	6
<i>Eucalyptus obliqua</i>	2(1-2)	66	2(1-3)	4
<i>Eucalyptus sieberi</i>	2(2-3)	82	2(1-3)	15
<i>Gahnia radula</i>	1(1-2)	13	1(1-2)	3
<i>Gahnia sieberiana</i>	1(1-2)	13	1(1-1)	5
<i>Gonocarpus teucrioides</i>	2(1-2)	87	1(1-1)	17
<i>Goodenia ovata</i>	1(1-1)	21	1(1-1)	7
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-1)	36	1(1-1)	6
<i>Hierochloe rariflora</i>	1(1-2)	42	1(1-2)	4
<i>Hydrocotyle peduncularis</i>	1(1-1)	22	1(1-1)	9
<i>Lepidosperma laterale</i>	1(1-1)	51	1(1-1)	28
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	90	1(1-1)	23
<i>Lindsaea microphylla</i>	1(1-1)	15	1(1-1)	5
<i>Lomandra confertifolia</i> subsp. <i>leptostachya</i>	1(1-2)	12	1(1-1)	<1
<i>Lomandra longifolia</i>	1(1-1)	63	1(1-1)	44
<i>Lomatia ilicifolia</i>	1(1-1)	55	1(1-1)	6
<i>Olearia erubescens</i>	1(1-1)	19	1(1-1)	2
<i>Ozothamnus cuneifolius</i>	1(1-2)	16	1(1-1)	1
<i>Persoonia linearis</i>	1(1-1)	81	1(1-1)	28
<i>Platylobium formosum</i>	1(1-1)	22	1(1-1)	3
<i>Platysace lanceolata</i>	1(1-1)	40	1(1-1)	13
<i>Poa affinis</i>	1(1-2)	10	1(1-2)	2
<i>Poa meionectes</i>	1(1-1)	64	1(1-2)	16
<i>Polyscias sambucifolia</i>	1(1-1)	18	1(1-1)	6
<i>Pteridium esculentum</i>	2(1-2)	94	1(1-2)	37
<i>Pultenaea benthamii</i>	2(1-2)	12	1(1-1)	<1
<i>Pultenaea daphnoides</i>	1(1-2)	75	1(1-1)	4
<i>Schelhammera undulata</i>	1(1-1)	22	1(1-1)	7
<i>Senecio velleioides</i>	1(1-1)	10	1(1-1)	1
<i>Sticherus lobatus</i>	3(2-3)	9	1(1-2)	1
<i>Stylidium graminifolium</i>	1(1-1)	51	1(1-1)	9
<i>Tetrarrhena juncea</i>	2(1-2)	70	1(1-2)	4
<i>Tetralthea thymifolia</i>	1(1-1)	18	1(1-1)	6
<i>Viola hederacea</i>	1(1-1)	49	1(1-1)	22
<i>Xanthorrhoea australis</i>	1(1-3)	13	1(1-2)	1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Clematis aristata</i>	1(1-1)	33	1(1-1)	20
<i>Entolasia stricta</i>	1(1-1)	46	1(1-2)	34

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	2(1-2)	3	1(1-2)	9
<i>Eucalyptus croajingolensis</i>	1(1-1)	1	2(1-3)	<1
<i>Eucalyptus elata</i>	1(1-2)	4	2(1-3)	5
<i>Eucalyptus fastigata</i>	3(1-3)	3	2(1-3)	6
<i>Eucalyptus globoidea</i>	1(1-1)	24	2(1-2)	12
<i>Eucalyptus longifolia</i>	2(2-2)	1	1(1-2)	2
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	10	2(1-3)	6
<i>Eucalyptus smithii</i>	1(1-3)	4	1(1-2)	2



Locations of survey sites allocated to WSF e42. Grey shading indicates extant native vegetation cover within the study area.



**DSF e43: Southeast Mountain Sandstone Shrub Forest**

Plate e43. Southeast Mountain Sandstone Shrub Forest (Map Unit e43) dominated by *Eucalyptus sieberi* and *E. cypellocarpa* with *Persoonia linearis*, *Podolobium ilicifolium*, *Epacris impressa* and *Acacia falciformis* on the western rim of Nungatta Plateau, Genoa section of South East Forests National Park.

Sample Sites: 15

Area Extant (ha): 2500

Estimated % remaining: >95%

Area in conservation reserves (ha): 2300

Estimated % of pre-clearing area in conservation reserves: >90%

No. Taxa (total / unique): 147 / 1

No. Taxa per Plot ( $\pm$ sd): 33.8 (6.7)

Class: South East Dry Sclerophyll Forests

Related TEC: n/a

Southeast Mountain Sandstone Shrub Forest is equivalent to Mountain Sandstone Shrub Forest (unit 43) described by Keith & Bedward (1999). It is characterised by a tall *Eucalyptus* canopy which sometimes exceeds 31 m in height. Two prominent sclerophyllous shrub strata may be present ranging from 1 - 5 m tall. The open groundcover comprises grasses and graminoids with a variety of scattered herb species also present. Bracken fern *Pteridium esculentum* is also usually present with variable cover. Southeast Mountain Sandstone Shrub Forest occurs on ridges and upper slopes associated with Nungatta Mountain at 400 - 900 m elevation. Here, the substrate is Genoa Sandstone and underlying mudstones, although outlying stands occur on granitoid ridges on the escarpment range (Nalbaugh Plateau and Big Jack Mountain). This assemblage differs from Southeast Sandstone Dry Shrub Forest (Map Unit DSF e25) in its lack of *E. obliqua* and *E. sp. aff. radiata* which are substituted by other tree species, its different shrub composition and its shorter and more open groundcover. Although Southeast Mountain Sandstone Shrub Forest does not readily match any assemblages described in East Gippsland (Forbes *et al.* 1982), similar assemblages might occur within the dry sclerophyll forest complex (Woodgate *et al.* 1994) on Genoa sandstones across the border in the Coopracambra area. A negligible proportion of this assemblage has been cleared and almost all is represented within national parks. The principal threat is frequent fire regimes that may reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

**Floristic Summary:**

**Trees:** *Acacia falciformis*, *Eucalyptus cypellocarpa*, *Eucalyptus globoidea*, *Eucalyptus sieberi* **Shrubs:** *Cassinia longifolia*, *Daviesia ulicifolia*, *Epacris impressa*, *Exocarpos strictus*, *Leucopogon lanceolatus* var. *lanceolatus*, *Olearia erubescens*, *Ozothamnus cuneifolius*, *Persoonia linearis*, *Platysace lanceolata* **Climbers:** *Billardiera scandens*, *Hardenbergia violacea* **Groundcover:** *Dianella caerulea*, *Dianella tasmanica*, *Dichelachne rara*, *Gonocarpus teucroides*, *Hierochloe rariflora*, *Lepidosperma laterale*, *Lomandra longifolia*, *Lomandra multiflora* subsp. *multiflora*, *Poa meionectes*, *Poranthera microphylla*, *Pteridium esculentum*, *Senecio prenanthoides*, *Viola hederacea*

**Vegetation structure:**

Stratum	Frequency (n=14)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	24.3 (6.8)	37.5 (10)
Small tree	43	5.8 (3)	37.5 (6.1)
Shrub	93	1.4 (0.7)	37.7 (17.9)
Ground cover	100	0.6 (0.3)	33.9 (18.7)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 13 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 29 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 13 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	2(1-3)	87	1(1-2)	10
<i>Acacia mucronata</i> subsp. <i>longifolia</i>	1(1-2)	33	1(1-2)	1
<i>Cassinia longifolia</i>	1(1-2)	40	1(1-2)	6
<i>Comesperma volubile</i>	1(1-1)	20	1(1-1)	2
<i>Correa reflexa</i>	1(1-3)	27	1(1-1)	5
<i>Daviesia ulicifolia</i>	1(1-1)	53	1(1-1)	7
<i>Dianella tasmanica</i>	1(1-1)	40	1(1-1)	7
<i>Dichelachne rara</i>	1(1-2)	40	1(1-1)	4
<i>Epacris impressa</i>	1(1-1)	80	1(1-1)	4
<i>Eucalyptus agglomerata</i>	2(2-3)	33	2(1-3)	7
<i>Eucalyptus cypellocarpa</i>	2(1-2)	93	2(1-2)	10
<i>Eucalyptus globoidea</i>	2(1-2)	67	2(1-2)	12
<i>Eucalyptus mckintii</i>	2(2-2)	20	3(2-3)	<1
<i>Eucalyptus sieberi</i>	2(2-3)	60	2(1-3)	16
<i>Euchiton gymnocephalus</i>	1(1-1)	33	1(1-1)	7
<i>Exocarpos strictus</i>	1(1-2)	73	1(1-1)	9
<i>Gonocarpus teucroides</i>	1(1-1)	80	1(1-1)	17
<i>Hierochloe rariflora</i>	3(2-3)	40	1(1-2)	4
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	93	1(1-1)	23
<i>Leucopogon microphyllus</i>	1(1-1)	20	1(1-1)	3
<i>Lomandra longifolia</i>	1(1-1)	80	1(1-1)	44
<i>Olearia erubescens</i>	1(1-1)	53	1(1-1)	2
<i>Olearia stellulata</i>	1(1-1)	20	1(1-1)	1
<i>Opercularia aspera</i>	1(1-1)	33	1(1-1)	8
<i>Oxylobium arborescens</i>	1(1-2)	20	1(1-2)	<1
<i>Ozothamnus cuneifolius</i>	2(1-3)	40	1(1-1)	1
<i>Persoonia linearis</i>	1(1-1)	87	1(1-1)	29
<i>Persoonia silvatica</i>	1(1-1)	20	1(1-1)	2
<i>Platysace lanceolata</i>	2(1-3)	93	1(1-1)	13
<i>Poa meionectes</i>	2(1-2)	73	1(1-2)	16
<i>Pteridium esculentum</i>	1(1-2)	73	1(1-2)	37
<i>Senecio prenanthoides</i>	1(1-1)	60	1(1-1)	8
<i>Senecio velleioides</i>	1(1-1)	27	1(1-1)	1

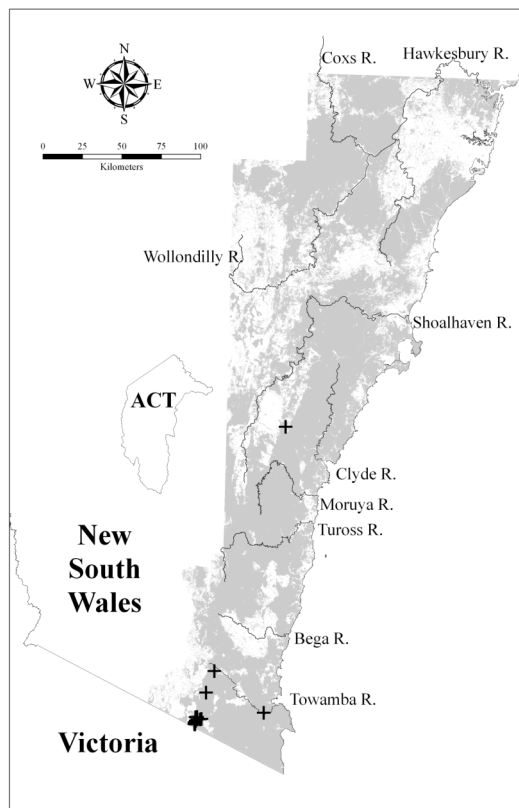
<i>Veronica calycina</i>	1(1-1)	33	1(1-1)	6
<i>Viola hederacea</i>	1(1-1)	73	1(1-1)	22

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	40	1(1-1)	28
<i>Dianella caerulea</i>	1(1-1)	53	1(1-1)	28
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	33	1(1-1)	15
<i>Hardenbergia violacea</i>	1(1-1)	47	1(1-1)	17
<i>Hibbertia obtusifolia</i>	1(1-1)	33	1(1-1)	11
<i>Hypericum gramineum</i>	1(1-1)	33	1(1-1)	16
<i>Lagenifera stipitata</i>	1(1-1)	33	1(1-1)	14
<i>Lepidosperma laterale</i>	1(1-1)	53	1(1-1)	29
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	40	1(1-1)	25
<i>Oxalis perennans</i>	1(1-1)	33	1(1-1)	13
<i>Poranthera microphylla</i>	1(1-1)	40	1(1-1)	15

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus angophoroides</i>	3(1-3)	13	1(1-2)	1
<i>Eucalyptus elata</i>	2(1-2)	13	2(1-3)	5
<i>Eucalyptus muelleriana</i>	3(1-3)	20	2(1-2)	6
<i>Eucalyptus obliqua</i>	3(2-3)	13	2(1-3)	4
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	7	2(1-3)	6



Locations of survey sites allocated to DSF e43. Grey shading indicates extant native vegetation cover within the study area.

**DSF e44: Southeast Foothills Dry Shrub Forest**

Plate e44. Southeast Foothills Dry Shrub Forest (Map Unit e44) dominated by *Eucalyptus sieberi* with occasional *E. cypellocarpa* and *Acacia falciformis*, *Leucopogon lanceolatus* and *Poa meionectes* near Mt Calabash, Coolangubra State Forest.

Sample Sites: 42

Area Extant (ha): 3100

Estimated % remaining: >90%

Area in conservation reserves (ha): 2300

Estimated % of pre-clearing area in conservation reserves: 65-75%

No. Taxa (total / unique): 218 / 0

No. Taxa per Plot ( $\pm$ sd): 30.5 (9.7)

Class: South East Dry Sclerophyll Forests

Related TEC: n/a

Southeast Foothills Dry Shrub Forest is equivalent to Foothills Dry Shrub Forest (unit 44) described by Keith & Bedward (1999). It is characterised by a *Eucalyptus* canopy typically around 25 m tall, but sometimes exceeding 30 m. It has an open sclerophyllous shrub stratum and a groundcover of scattered grasses, graminoids and herbs with a variable cover of bracken fern *Pteridium esculentum*. Southeast Foothills Dry Shrub Forest occurs on exposed ridges and slopes usually at 500 - 900 m elevation on granitoid substrates or more rarely on metasediments. Occurrences are scattered widely on the coastal and escarpment ranges. Similar assemblages occur to the south within the shrubby dry forest complex (Ecological Vegetation Class 21, Woodgate *et al.* 1994). Relatively little Southeast Foothills Dry Shrub Forest has been cleared, most being reserved while about one-quarter occurs within production forest. The principal threat is frequent disturbance regimes that include logging (outside reserves) and fire in combination. These regimes reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Logging followed by regeneration burns and thinning may change the relative abundance of eucalypt species, particularly *E. sieberi* (Bridges 1983). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

**Floristic Summary:**

**Trees:** *Acacia falciformis*, *Eucalyptus globoidea*, *Eucalyptus sieberi* **Shrubs:** *Leucopogon lanceolatus* var. *lanceolatus*, *Persoonia linearis*, *Platysace lanceolata* **Climbers:** *Billardiera scandens*, *Clematis aristata* **Groundcover:** *Dianella caerulea*, *Gonocarpus teucrioides*, *Hierochloa rariflora*, *Lagenifera stipitata*, *Lepidosperma laterale*, *Lomandra longifolia*, *Lomandra multiflora* subsp. *multiflora*, *Poa meionectes*, *Poranthera microphylla*, *Pteridium esculentum*, *Tetrarrhena juncea*, *Viola hederacea*

**Vegetation structure:**

Stratum	Frequency (n=26)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	24.3 (4.8)	43.8 (11.4)
Small tree	15	10 (-)	26.3 (30.7)
Shrub	96	2.6 (1.1)	23.9 (16.6)
Ground cover	100	0.7 (0.3)	31.3 (23.5)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 12 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 23 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 12 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	1(1-1)	26	1(1-2)	5
<i>Acacia falciformis</i>	1(1-2)	69	1(1-2)	10
<i>Acacia longifolia</i>	1(1-1)	29	1(1-2)	9
<i>Billardiera scandens</i>	1(1-1)	50	1(1-1)	27
<i>Cassinia longifolia</i>	2(1-2)	29	1(1-2)	6
<i>Clematis aristata</i>	1(1-1)	40	1(1-1)	20
<i>Comesperma volubile</i>	1(1-1)	21	1(1-1)	2
<i>Correa reflexa</i>	1(1-1)	26	1(1-1)	5
<i>Daviesia ulicifolia</i>	1(1-1)	26	1(1-1)	6
<i>Dianella caerulea</i>	1(1-1)	57	1(1-1)	28
<i>Dianella tasmanica</i>	1(1-1)	38	1(1-1)	7
<i>Epacris impressa</i>	1(1-1)	21	1(1-1)	4
<i>Eucalyptus cypellocarpa</i>	1(1-2)	36	2(1-2)	10
<i>Eucalyptus globoidea</i>	1(1-2)	50	2(1-2)	12
<i>Eucalyptus obliqua</i>	2(1-3)	31	2(1-3)	4
<i>Eucalyptus sieberi</i>	3(2-3)	98	2(1-3)	16
<i>Gonocarpus teucroides</i>	1(1-1)	50	1(1-1)	17
<i>Hakea eriantha</i>	1(1-1)	19	1(1-1)	2
<i>Helichrysum scorpioides</i>	1(1-1)	33	1(1-1)	7
<i>Hierochloe rariflora</i>	1(1-2)	62	1(1-2)	4
<i>Lagenifera stipitata</i>	1(1-1)	45	1(1-1)	14
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	83	1(1-1)	23
<i>Lomandra longifolia</i>	1(1-1)	93	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	57	1(1-1)	25
<i>Lomatia ilicifolia</i>	1(1-1)	33	1(1-1)	6
<i>Opercularia aspera</i>	1(1-1)	29	1(1-1)	8
<i>Persoonia linearis</i>	1(1-1)	74	1(1-1)	28
<i>Platysace lanceolata</i>	1(1-1)	62	1(1-1)	13
<i>Poa meionectes</i>	1(1-2)	74	1(1-2)	16
<i>Podolobium ilicifolium</i>	1(1-2)	31	1(1-1)	9
<i>Poranthera microphylla</i>	1(1-1)	71	1(1-1)	15
<i>Pteridium esculentum</i>	2(1-3)	100	1(1-2)	37
<i>Senecio prenanthoides</i>	1(1-1)	33	1(1-1)	8

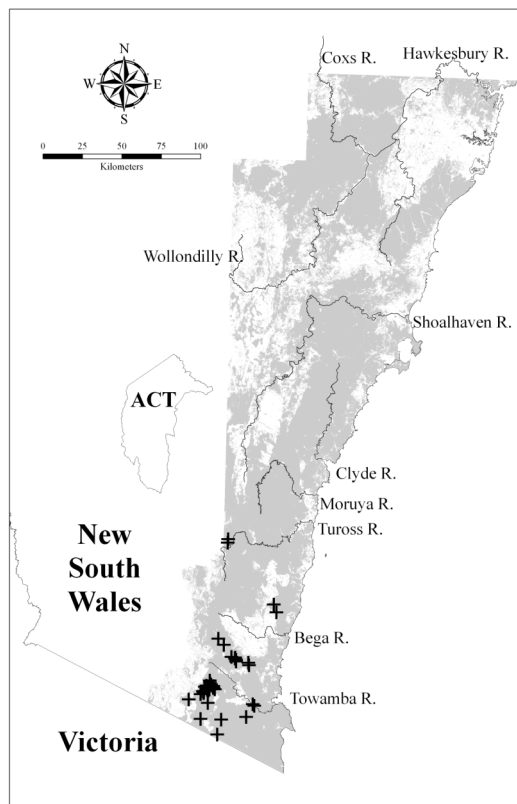
<i>Stylidium graminifolium</i>	1(1-1)	29	1(1-1)	9
<i>Tetrarrhena juncea</i>	1(1-1)	40	1(1-2)	5
<i>Tylophora barbata</i>	1(1-1)	38	1(1-1)	17
<i>Viola hederacea</i>	1(1-1)	64	1(1-1)	22
<i>Xerochrysum bracteatum</i>	1(1-1)	21	1(1-1)	2

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Hypericum gramineum</i>	1(1-1)	31	1(1-1)	16
<i>Lepidosperma laterale</i>	1(1-1)	48	1(1-1)	29

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus agglomerata</i>	1(1-2)	7	2(1-3)	7
<i>Eucalyptus baueriana</i>	2(2-2)	2	2(1-2)	1
<i>Eucalyptus elata</i>	2(1-3)	17	2(1-3)	5
<i>Eucalyptus fastigata</i>	1(1-1)	5	2(1-3)	6
<i>Eucalyptus muelleriana</i>	2(1-2)	5	2(1-2)	6
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-3)	7	2(1-3)	6
<i>Eucalyptus robertsonii</i> subsp. <i>robertsonii</i>	1(1-1)	2	3(2-4)	<1
<i>Eucalyptus smithii</i>	1(1-1)	2	1(1-2)	2



Locations of survey sites allocated to DSF e44 Grey shading indicates extant native vegetation cover within the study area.

**DSF e45: Southeast Mountain Dry Shrub Forest**

Plate e45. Southeast Mountain Dry Shrub Forest (Map Unit e45) dominated by *Eucalyptus sieberi* with *Lomatia ilicifolia*, *Hibbertia hermanniifolia*, *Lomandra longifolia* and *Poa meionectes* near Mt Cathcart, Cathcart State Forest.

Sample Sites: 29

Area Extant (ha): 1800

Estimated % remaining: >90%

Area in conservation reserves (ha): 1100

Estimated % of pre-clearing area in conservation reserves: 50-60%

No. Taxa (total / unique): 192 / 0

No. Taxa per Plot ( $\pm$ sd): 25.4 (11.5)

Class: South East Dry Sclerophyll Forests

Related TEC: n/a

Southeast Mountain Dry Shrub Forest is equivalent to Mountain Dry Shrub Forest (unit 45) described by Keith & Bedward (1999). It is usually dominated by *Eucalyptus sieberi* in pure stands between 20 and 30 m tall. It has a prominent sclerophyllous shrub stratum and a sparse groundcover dominated by rushes and bracken fern *Pteridium esculentum*. Southeast Mountain Dry Shrub Forest occurs on exposed stony ridges and upper slopes at 600 - 1 000 m elevation on granitoid substrates or more rarely on metasediments on the escarpment range and hinterland mountains. It differs from Southeast Foothills Dry Shrub Forest (Map Unit DSF e44) in the composition of its shrub stratum, the low frequency of co-dominant tree species and its less developed ground stratum. Similar assemblages occur to the south within the shrubby dry forest complex (Ecological Vegetation Class 21, Woodgate *et al.* 1994). A negligible area of Southeast Mountain Dry Shrub Forest has been cleared, over half being reserved while the remainder occurs within production forest on private and public land. The principal threat is frequent disturbance regimes that include logging (outside reserves) and fire in combination. These regimes reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Logging followed by regeneration burns and thinning may change the relative abundance of eucalypt species, particularly *E. sieberi* (Bridges 1983). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

**Floristic Summary:**

**Trees:** *Eucalyptus sieberi* **Shrubs:** *Acacia terminalis*, *Epacris impressa*, *Leucopogon lanceolatus* var. *lanceolatus*, *Lomatia ilicifolia*, *Monotoca scoparia*, *Persoonia linearis*, *Platysace lanceolata* **Climbers:** *Billardiera scandens* **Groundcover:** *Joycea pallida*, *Lepidosperma laterale*, *Lomandra longifolia*, *Lomandra multiflora* subsp. *multiflora*, *Poa meionectes*, *Pteridium esculentum*, *Stylidium graminifolium*

**Vegetation structure:**

Stratum	Frequency (n=19)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	21.4 (7.6)	33.9 (15)
Small tree	26	7.8 (4.4)	13.2 (15.2)
Shrub	100	1.9 (1.4)	34.2 (13.9)
Ground cover	100	0.5 (0.2)	19.6 (18.1)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 7 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 16 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 7 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia terminalis</i>	2(1-2)	72	1(1-1)	11
<i>Daviesia ulicifolia</i>	1(1-1)	31	1(1-1)	7
<i>Dianella tasmanica</i>	1(1-1)	31	1(1-1)	7
<i>Dichelachne rara</i>	1(1-1)	21	1(1-1)	5
<i>Epacris impressa</i>	1(1-1)	52	1(1-1)	4
<i>Eucalyptus sieberi</i>	3(3-3)	100	2(1-3)	16
<i>Helichrysum scorpioides</i>	1(1-1)	34	1(1-1)	7
<i>Hibbertia obtusifolia</i>	1(1-1)	38	1(1-1)	11
<i>Joycea pallida</i>	1(1-2)	41	1(1-2)	8
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-2)	72	1(1-1)	23
<i>Lomandra longifolia</i>	1(1-2)	86	1(1-1)	44
<i>Lomatia ilicifolia</i>	1(1-1)	79	1(1-1)	6
<i>Monotoca scoparia</i>	1(1-2)	79	1(1-1)	12
<i>Olearia erubescens</i>	1(1-1)	21	1(1-1)	2
<i>Persoonia linearis</i>	1(1-1)	72	1(1-1)	29
<i>Persoonia silvatica</i>	1(1-1)	21	1(1-1)	2
<i>Platysace lanceolata</i>	1(1-1)	62	1(1-1)	13
<i>Poa meionectes</i>	1(1-1)	41	1(1-2)	16
<i>Pteridium esculentum</i>	2(1-2)	83	1(1-2)	37
<i>Stylidium graminifolium</i>	1(1-1)	55	1(1-1)	9
<i>Tetratheca bauerifolia</i>	1(1-1)	28	1(1-1)	<1

**Constant:**

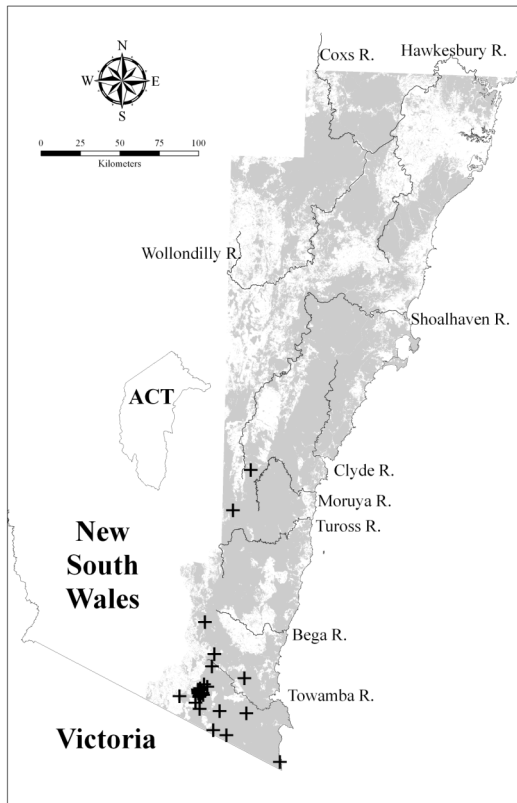
Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	41	1(1-1)	28
<i>Gonocarpus tetragynus</i>	1(1-1)	31	1(1-1)	20
<i>Gonocarpus teucroides</i>	1(1-1)	31	1(1-1)	18
<i>Lepidosperma laterale</i>	1(1-2)	45	1(1-1)	29
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	48	1(1-1)	25
<i>Viola hederacea</i>	1(1-1)	31	1(1-1)	22

**Other tree species occurring less frequently in this community:**

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus consideniana</i>	2(2-2)	3	1(1-2)	2



<i>Eucalyptus cypellocarpa</i>	1(1-2)	10	2(1-2)	10
<i>Eucalyptus dives</i>	1(1-1)	3	2(1-3)	4
<i>Eucalyptus fraxinoides</i>	2(1-2)	7	2(1-3)	1
<i>Eucalyptus globoidea</i>	1(1-4)	17	2(1-2)	12
<i>Eucalyptus muelleriana</i>	1(1-1)	3	2(1-2)	6
<i>Eucalyptus obliqua</i>	1(1-3)	17	2(1-3)	4
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	3	2(1-3)	6
<i>Eucalyptus smithii</i>	2(2-2)	3	1(1-2)	2



Locations of survey sites allocated to DSF e45. Grey shading indicates extant native vegetation cover within the study area.

**DSF e46A: Timbillica Dry Shrub Forest**

Plate e46a. Timbillica Dry Shrub Forest (Map Unit e46a) dominated by *Eucalyptus consideriana* with *Allocasuarina littoralis*, *Hakea decurrens* ssp. *physocarpa*, *Daviesia buxifolia*, *Leptospermum trinervium* and *Acacia terminalis* on Imlay Road near Imlay Creek crossing, Yambulla State Forest.

Sample Sites: 20

Area Extant (ha): 22800

Estimated % remaining: >95%

Area in conservation reserves (ha): 3500

Estimated % of pre-clearing area in conservation reserves: 10-20%

No. Taxa (total / unique): 146 / 0

No. Taxa per Plot ( $\pm$ sd): 34.9 (7.1)

Class: South East Dry Sclerophyll Forests

Related TEC: n/a

Timbillica Dry Shrub Forest is equivalent to Map Unit 46A of the same name described by Keith & Bedward (1999). It is a tall *Eucalyptus* forest typically around 26 m in height but frequently reaching 30 m. An open small tree stratum of *Allocasuarina littoralis* ca. 8 m tall is often present as well as a prominent sclerophyllous shrub stratum. The groundcover is dominated by grasses and graminoids and also contains a few forbs and the bracken fern *Pteridium esculentum*. Vines of *Billardiera scandens* twine among the shrubs and groundcover. Timbillica Dry Shrub Forest occupies low ridges and slopes in undulating granitoid terrain at 50 - 300 m elevation in the middle to lower reaches of the Wallagarragh River catchment. A similar assemblage occurs east of Cann River in the lowlands of East Gippsland (Community 16.2, Forbes *et al.* 1982), although *E. consideriana* is less frequent and some differences in understorey composition (e.g. more abundant Proteaceae) are apparent. Negligible amounts of Timbillica Dry Shrub Forest have been cleared, and although numerous small patches are reserved mainly along the corridor within Wallagarragh River Flora Reserve, most occurs within production forest. The principal threat is frequent disturbance regimes that include logging (outside reserves) and fire in combination. These regimes reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Logging followed by regeneration burns and thinning may change the relative abundance of eucalypt species, particularly *E. sieberi* (Bridges 1983). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

**Floristic Summary:**

**Trees:** *Allocasuarina littoralis*, *Eucalyptus agglomerata*, *Eucalyptus consideriana*, *Eucalyptus globoidea*, *Eucalyptus sieberi* **Shrubs:** *Acacia terminalis*, *Aotus ericoides*, *Correa reflexa*, *Daviesia buxifolia*, *Epacris impressa*, *Hibbertia empetrifolia* subsp. *empetrifolia*, *Hovea linearis*, *Leucopogon lanceolatus* var. *lanceolatus*, *Lomatia ilicifolia*, *Monotoca scoparia*, *Persoonia levis*, *Persoonia linearis*, *Platylobium formosum*, *Platysace lanceolata* **Climbers:** *Billardiera scandens* **Groundcover:** *Amperea xiphoclada*, *Caustis flexuosa*, *Dampiera stricta*, *Dianella caerulea*, *Gahnia radula*, *Gonocarpus teucroides*, *Lepidosperma laterale*, *Lomandra filiformis* subsp. *coriacea*, *Lomandra longifolia*, *Patersonia glabrata*, *Poa meionectes*, *Pteridium esculentum*, *Tetrarrhena juncea*, *Tetratheca pilosa* subsp. *latifolia*, *Xanthorrhoea concava*, *Xanthosia pilosa*

**Vegetation structure:**

Stratum	Frequency (n=20)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	26.4 (6.3)	24 (5.8)
Small tree	55	8.7 (3.8)	17.4 (10.9)
Shrub	100	2 (1.1)	20.3 (11.5)
Ground cover	100	0.6 (0.3)	15 (11.6)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 29 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia myrtifolia</i>	1(1-1)	25	1(1-1)	4
<i>Acacia terminalis</i>	1(1-2)	55	1(1-1)	11
<i>Allocasuarina littoralis</i>	1(1-3)	45	1(1-2)	17
<i>Amperea xiphoclada</i>	1(1-1)	40	1(1-1)	7
<i>Anisopogon avenaceus</i>	1(1-1)	30	1(1-2)	5
<i>Aotus ericoides</i>	1(1-1)	65	1(1-1)	3
<i>Banksia marginata</i>	1(1-1)	30	1(1-1)	3
<i>Banksia serrata</i>	1(1-1)	35	1(1-2)	9
<i>Caustis flexuosa</i>	1(1-1)	70	1(1-2)	7
<i>Choretrum pauciflorum</i>	1(1-1)	20	1(1-1)	1
<i>Cooperhooia barbata</i>	1(1-1)	30	1(1-1)	1
<i>Correa reflexa</i>	1(1-1)	50	1(1-1)	5
<i>Dampiera stricta</i>	1(1-1)	40	1(1-1)	8
<i>Daviesia buxifolia</i>	1(1-2)	45	2(1-3)	<1
<i>Daviesia latifolia</i>	2(1-3)	20	1(1-2)	1
<i>Deyeuxia quadriseta</i>	1(1-1)	20	1(1-1)	2
<i>Epacris impressa</i>	1(1-1)	95	1(1-1)	4
<i>Eucalyptus agglomerata</i>	2(2-2)	50	2(1-3)	7
<i>Eucalyptus considieniana</i>	2(1-2)	75	1(1-2)	2
<i>Eucalyptus globoidea</i>	1(1-2)	60	2(1-2)	12
<i>Eucalyptus sieberi</i>	2(1-2)	70	2(1-3)	16
<i>Gahnia radula</i>	1(1-1)	50	1(1-2)	2
<i>Gonocarpus teucroides</i>	1(1-1)	95	1(1-1)	17
<i>Hakea sericea</i>	1(1-1)	30	1(1-1)	7
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-1)	60	1(1-1)	6
<i>Hovea linearis</i>	1(1-1)	50	1(1-1)	9
<i>Kunzea ambigua</i>	1(1-3)	20	1(1-2)	4
<i>Lepidosperma laterale</i>	1(1-1)	95	1(1-1)	28
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-1)	45	1(1-2)	10
<i>Lomatia ilicifolia</i>	1(1-1)	75	1(1-1)	6
<i>Monotoca scoparia</i>	1(1-2)	90	1(1-1)	12
<i>Patersonia glabrata</i>	1(1-1)	95	1(1-1)	10
<i>Persoonia levis</i>	1(1-1)	40	1(1-1)	13

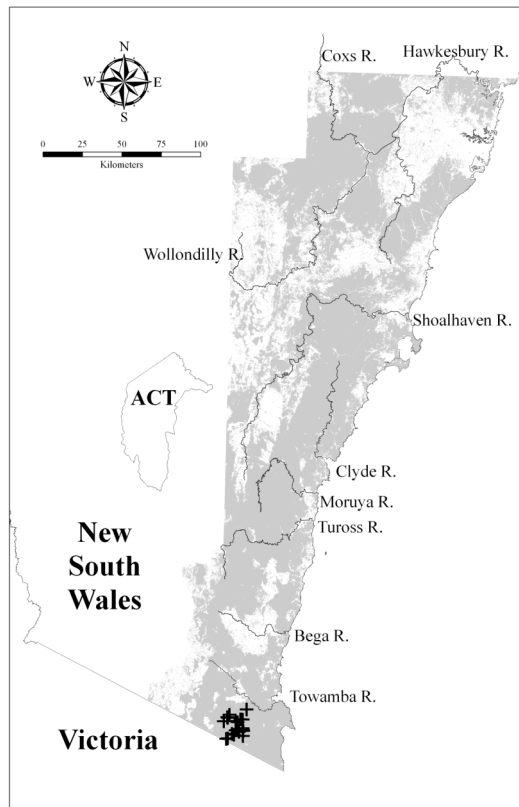
<i>Persoonia linearis</i>	1(1-1)	95	1(1-1)	29
<i>Platylobium formosum</i>	1(1-1)	50	1(1-1)	3
<i>Platysace lanceolata</i>	1(1-1)	50	1(1-1)	13
<i>Poa meionectes</i>	1(1-1)	80	1(1-2)	16
<i>Pteridium esculentum</i>	1(1-2)	95	1(1-2)	37
<i>Rhytidosporum procumbens</i>	1(1-1)	35	1(1-1)	3
<i>Tetrarrhena juncea</i>	1(1-1)	40	1(1-2)	5
<i>Tetratheca pilosa</i> subsp. <i>latifolia</i>	1(1-1)	65	1(1-1)	<1
<i>Xanthorrhoea concava</i>	1(1-1)	40	1(1-1)	4
<i>Xanthosia pilosa</i>	1(1-1)	40	1(1-1)	8

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia longifolia</i>	1(1-1)	30	1(1-2)	10
<i>Billardiera scandens</i>	1(1-1)	55	1(1-1)	28
<i>Dianella caerulea</i>	1(1-1)	50	1(1-1)	28
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	50	1(1-1)	24
<i>Lomandra glauca</i>	1(1-1)	30	1(1-1)	10
<i>Lomandra longifolia</i>	1(1-1)	70	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	30	1(1-1)	25
<i>Viola hederacea</i>	1(1-1)	30	1(1-1)	22

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus angophoroides</i>	1(1-2)	15	1(1-2)	1
<i>Eucalyptus cypellocarpa</i>	1(1-1)	5	2(1-2)	10
<i>Eucalyptus muelleriana</i>	2(2-2)	5	2(1-2)	6
<i>Eucalyptus obliqua</i>	1(1-1)	5	2(1-3)	4
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(2-2)	15	2(1-3)	6



Locations of survey sites allocated to DSF e46A. Grey shading indicates extant native vegetation cover within the study area.

### DSF e46B: Southeast Lowland Dry Shrub Forest



Plate e46b. Southeast Lowland Dry Shrub Forest (Map Unit e46b) dominated by *Corymbia gummifera* and *E. sieberi* with *Banksia spinulosa*, *B. serrata*, *Pimelea linifolia* and *Acacia obtusifolia* north of Bellbird Creek in northern section of Ben Boyd National Park.

Sample Sites: 25

Area Extant (ha): 14266

Estimated % remaining: >90%

Area in conservation reserves (ha): 6900

Estimated % of pre-clearing area in conservation reserves: 40-50%

No. Taxa (total / unique): 197 / 0

No. Taxa per Plot ( $\pm$ sd): 36.7 (10.4)

Class: South East Dry Sclerophyll Forests  
Related TEC: n/a

Southeast Lowland Dry Shrub Forest is equivalent to Lowland Dry Shrub Forest (unit 46B) described by Keith & Bedward (1999). It is characterised by a variable canopy around 22 m tall and an open small tree stratum up to 8m tall. It has a diverse sclerophyllous shrub stratum and groundcover comprising scattered grasses, herbs and bracken *Pteridium esculentum*. Southeast Lowland Dry Shrub Forest occurs on low ridges and moderate dry slopes in the coastal foothills and plains usually below 150 m elevation on metasediments or Tertiary alluvium. Some of these latter sites with deep sandy soils support relatively tall forest dominated by *E. pilularis*. The most similar assemblage in East Gippsland (Community 15.1, Forbes *et al.* 1982) has more restricted occurrences of *C. gummifera* and some differences in understorey composition (e.g. lower frequencies of *Bossiaea obcordata* and *Chionochloa pallida*, higher frequency of *Banksia serrata*). Significant occurrences of Southeast Lowland Dry Shrub Forest remain on all tenures, relatively little having been cleared. Although a few stands are threatened by coastal development and overuse, the principal threat is frequent disturbance regimes that include logging (outside reserves) and fire in combination. These regimes reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Logging followed by regeneration burns and thinning may change the relative abundance of eucalypt species, particularly *E. sieberi* (Bridges 1983). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

#### Floristic Summary:

**Trees:** *Allocasuarina littoralis*, *Banksia serrata*, *Corymbia gummifera*, *Eucalyptus globoidea*, *Eucalyptus sieberi*

**Shrubs:** *Acacia suaveolens*, *Acacia terminalis*, *Aotus ericoides*, *Banksia spinulosa* var. *spinulosa*, *Bossiaea obcordata*, *Correa reflexa*, *Epacris impressa*, *Leptospermum trinervium*, *Lomatia ilicifolia*, *Monotoca scoparia*, *Persoonia levis*, *Persoonia linearis*, *Pimelea linifolia* subsp. *linifolia*, *Platysace lanceolata*

**Climbers:** *Billardiera scandens*  
**Groundcover:** *Amperea xiphoclada*, *Anisopogon avenaceus*, *Dianella caerulea*, *Entolasia stricta*, *Gonocarpus teucrioides*, *Joycea pallida*, *Lepidosperma concavum*, *Lomandra longifolia*, *Patersonia glabrata*, *Pteridium esculentum*, *Xanthosia pilosa*

#### Vegetation structure:

Stratum	Frequency (n=18)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	22.2 (5.1)	26 (16.5)
Small tree	78	7.9 (2.9)	19.1 (12.4)
Shrub	89	1.7 (1)	29.4 (17.6)
Ground cover	100	0.6 (0.2)	40.8 (15.3)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 16 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 28 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 16 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia myrtifolia</i>	1(1-1)	28	1(1-1)	4
<i>Acacia suaveolens</i>	1(1-1)	52	1(1-1)	7
<i>Acacia terminalis</i>	1(1-2)	76	1(1-1)	11
<i>Allocasuarina littoralis</i>	1(1-2)	64	1(1-2)	17
<i>Amperea xiphoclada</i>	1(1-1)	40	1(1-1)	7
<i>Anisopogon avenaceus</i>	1(1-1)	44	1(1-2)	5
<i>Aotus ericoides</i>	1(1-1)	44	1(1-1)	3
<i>Banksia serrata</i>	2(1-3)	52	1(1-2)	9
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-1)	48	1(1-2)	15
<i>Bossiaea ensata</i>	1(1-1)	24	1(1-1)	2
<i>Bossiaea obcordata</i>	1(1-1)	48	1(1-2)	7
<i>Caustis flexuosa</i>	2(1-2)	36	1(1-2)	7
<i>Correa reflexa</i>	1(1-1)	56	1(1-1)	5
<i>Corymbia gummifera</i>	2(2-2)	72	2(1-2)	16

<i>Cyathochaeta diandra</i>	2(1-2)	28	1(1-2)	8
<i>Dianella caerulea</i>	1(1-1)	64	1(1-1)	28
<i>Epacris impressa</i>	1(1-2)	52	1(1-1)	4
<i>Eucalyptus globoidea</i>	1(1-2)	40	2(1-2)	12
<i>Eucalyptus pilularis</i>	2(1-3)	32	2(1-3)	5
<i>Eucalyptus sieberi</i>	2(1-3)	68	2(1-3)	16
<i>Gahnia radula</i>	2(1-2)	24	1(1-2)	3
<i>Gompholobium latifolium</i>	1(1-1)	20	1(1-1)	3
<i>Gonocarpus teucroides</i>	1(1-1)	88	1(1-1)	17
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-1)	28	1(1-1)	6
<i>Joycea pallida</i>	2(1-2)	56	1(1-2)	8
<i>Kennedia rubicunda</i>	1(1-1)	32	1(1-1)	6
<i>Lepidosperma concavum</i>	2(1-2)	44	1(1-2)	2
<i>Leptospermum trinervium</i>	1(1-2)	48	1(1-2)	16
<i>Lomandra confertifolia</i> subsp. <i>leptostachya</i>	1(1-2)	20	1(1-1)	1
<i>Lomandra glauca</i>	1(1-1)	36	1(1-1)	10
<i>Lomatia ilicifolia</i>	1(1-1)	52	1(1-1)	6
<i>Monotoca scoparia</i>	1(1-1)	44	1(1-1)	12
<i>Patersonia glabrata</i>	1(1-1)	68	1(1-1)	10
<i>Persoonia levis</i>	1(1-1)	40	1(1-1)	13
<i>Persoonia linearis</i>	1(1-1)	88	1(1-1)	29
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	68	1(1-1)	13
<i>Platylobium formosum</i>	2(1-2)	28	1(1-1)	3
<i>Platysace lanceolata</i>	1(1-1)	76	1(1-1)	13
<i>Pteridium esculentum</i>	2(1-3)	84	1(1-2)	37
<i>Pultenaea daphnoides</i>	1(1-1)	24	1(1-1)	4
<i>Pultenaea linophylla</i>	1(1-1)	32	1(1-1)	2
<i>Rhytidosporum procumbens</i>	1(1-1)	24	1(1-1)	3
<i>Scaevola ramosissima</i>	1(1-1)	20	1(1-1)	3
<i>Tetralitheca thymifolia</i>	1(1-1)	32	1(1-1)	6
<i>Xanthorrhoea concava</i>	1(1-1)	20	1(1-1)	4
<i>Xanthorrhoea resinifera</i>	1(1-2)	20	1(1-2)	4
<i>Xanthosia pilosa</i>	1(1-1)	48	1(1-1)	8
<i>Xanthosia tridentata</i>	1(1-1)	36	1(1-1)	5

## Constant:

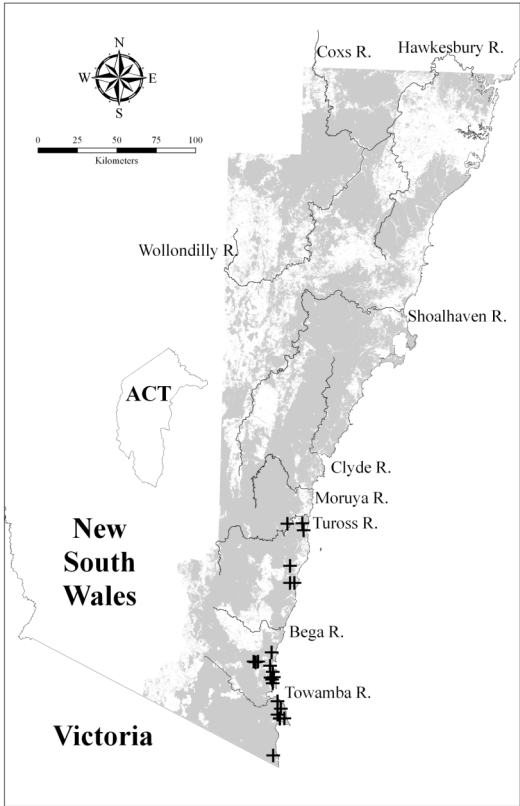
Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	44	1(1-1)	28
<i>Entolasia stricta</i>	1(1-1)	56	1(1-2)	34
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	32	1(1-1)	24
<i>Lomandra longifolia</i>	1(1-1)	40	1(1-1)	44

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	20	1(1-2)	9
<i>Corymbia maculata</i>	2(1-2)	8	2(1-3)	3
<i>Eucalyptus agglomerata</i>	2(1-2)	16	2(1-3)	7



<i>Eucalyptus consideniana</i>	1(1-2)	12	2(1-2)	2
<i>Eucalyptus muelleriana</i>	1(1-1)	8	2(1-2)	6



Locations of survey sites allocated to DSF e46B. Grey shading indicates extant native vegetation cover within the study area.

**DSF e47: Eden Dry Shrub Forest**



Plate e47. Eden Dry Shrub Forest (Map Unit e47) dominated by *Angophora floribunda* and *E. sieberi* with *Allocasuarina littoralis* and *Acacia falciformis* in the upper Merrica River catchment, Nadgee Nature Reserve.

Sample Sites: 22  
Area Extant (ha): 17100  
Estimated % remaining: >95%  
Area in conservation reserves (ha): 12300



Estimated % of pre-clearing area in conservation reserves: 65-75%

No. Taxa (total / unique): 170 / 0

No. Taxa per Plot ( $\pm$ sd): 25.8 (8.2)

Class: South East Dry Sclerophyll Forests

Related TEC: n/a

Eden Dry Shrub Forest is equivalent to Map Unit 47 of the same name described by Keith & Bedward (1999). It has a low – medium forest canopy typically around 20 m in height and less frequently reaching 26 m. Typically, an open stratum of small trees is present, dominated by *Allocasuarina littoralis* up to 6 m tall. It has an open sclerophyllous shrub stratum and groundcover comprising a mixture of grasses, graminoids, herbs and bracken fern *Pteridium esculentum*. Eden Dry Shrub Forest occupies coastal mountain ridges and coastal plateaux up to 800 m elevation on metasediments from the Nadgee coast to Mt Imlay. Although no similar assemblages have been explicitly described south of the Eden region (Austin 1978, Forbes *et al.* 1982), one may exist within the lowland sclerophyll forest complex in East Gippsland (Ecological Vegetation Class 16, Woodgate *et al.* 1994). Relatively little Eden Dry Shrub Forest has been cleared, most being reserved while about one-quarter occurs within public and private production forest. The principal threat is frequent disturbance regimes that include logging (outside reserves) and fire in combination. These regimes reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Logging followed by regeneration burns and thinning may change the relative abundance of eucalypt species, particularly *E. sieberi* (Bridges 1983). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided. Two intense fires occurred within 8 years over a large portion of the range of Eden Dry Shrub Forest in the 1970's. A long fire-free interval may therefore be necessary to ensure population recovery of some species and restoration of vegetation structure.

#### Floristic Summary:

**Trees:** *Allocasuarina littoralis*, *Angophora floribunda*, *Eucalyptus sieberi* **Shrubs:** *Acacia terminalis*, *Epacris impressa*, *Leucopogon lanceolatus* var. *lanceolatus*, *Persoonia linearis*, *Platysace lanceolata*, *Pultenaea daphnoides* **Climbers:** *Billardiera scandens* **Groundcover:** *Dianella caerulea*, *Gahnia radula*, *Gonocarpus teucroides*, *Lomandra longifolia*, *Pteridium esculentum*, *Tetrarrhena juncea*, *Xanthosia pilosa*

#### Vegetation structure:

Stratum	Frequency (n=22)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	19.4 (6.6)	24.8 (15.2)
Small tree	50	6.4 (3)	33.9 (26.4)
Shrub	100	2.5 (1.4)	36.6 (19.8)
Ground cover	100	0.9 (0.5)	41 (26.5)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 9 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 19 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 9 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia obtusifolia</i>	2(1-3)	32	1(1-2)	9
<i>Acacia terminalis</i>	2(1-3)	77	1(1-1)	11
<i>Allocasuarina littoralis</i>	2(1-3)	64	1(1-2)	17
<i>Angophora floribunda</i>	2(1-2)	50	1(1-2)	9
<i>Banksia serrata</i>	1(1-2)	36	1(1-2)	9
<i>Billardiera scandens</i>	1(1-1)	59	1(1-1)	28
<i>Caustis flexuosa</i>	2(1-3)	36	1(1-2)	7
<i>Dianella caerulea</i>	1(1-1)	64	1(1-1)	28
<i>Dillwynia glaberrima</i>	2(1-2)	27	1(1-1)	1
<i>Epacris impressa</i>	1(1-2)	77	1(1-1)	4
<i>Eucalyptus sieberi</i>	2(2-3)	91	2(1-3)	16
<i>Gahnia radula</i>	1(1-2)	73	1(1-2)	2
<i>Gonocarpus teucroides</i>	1(1-2)	77	1(1-1)	17

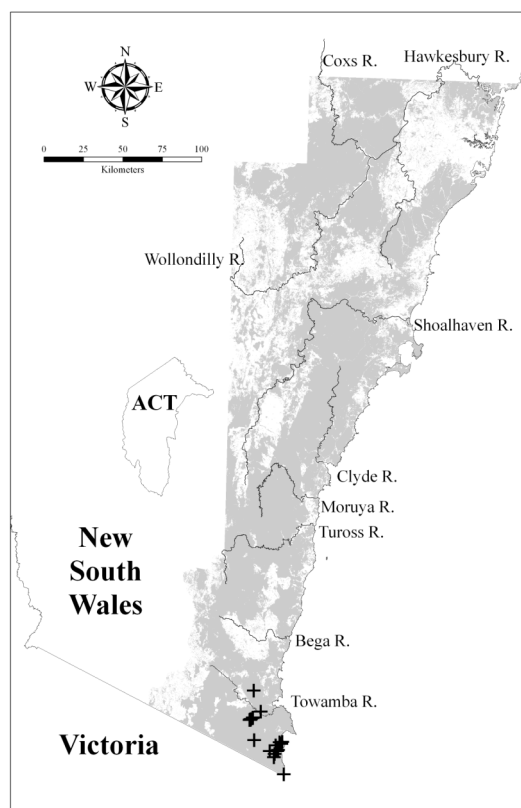
<i>Hierochloe rariflora</i>	1(1-1)	32	1(1-2)	4
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	64	1(1-1)	24
<i>Ozothamnus cuneifolius</i>	1(1-1)	32	1(1-1)	1
<i>Persoonia linearis</i>	1(1-1)	64	1(1-1)	29
<i>Platysace lanceolata</i>	1(1-1)	86	1(1-1)	13
<i>Pteridium esculentum</i>	2(1-3)	91	1(1-2)	37
<i>Pultenaea daphnoides</i>	1(1-1)	45	1(1-1)	4
<i>Pultenaea scabra</i>	1(1-2)	27	1(1-2)	2
<i>Tetrarrhena juncea</i>	2(1-3)	73	1(1-2)	5
<i>Xanthosia pilosa</i>	1(1-1)	73	1(1-1)	8

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Lomandra longifolia</i>	1(1-1)	45	1(1-1)	44

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus agglomerata</i>	1(1-2)	14	2(1-3)	7
<i>Eucalyptus baxteri</i>	2(2-2)	9	1(1-2)	<1
<i>Eucalyptus elata</i>	1(1-1)	5	2(1-3)	5
<i>Eucalyptus globoidea</i>	2(1-2)	14	2(1-2)	12
<i>Eucalyptus longifolia</i>	2(2-2)	5	1(1-2)	2
<i>Eucalyptus muelleriana</i>	2(2-2)	5	2(1-2)	6
<i>Eucalyptus obliqua</i>	1(1-1)	9	2(1-3)	4
<i>Eucalyptus smithii</i>	2(2-2)	5	1(1-2)	2



Locations of survey sites allocated to DSF e47. Grey shading indicates extant native vegetation cover within the study area.

### DSF e48: Mumbulla Dry Shrub Forest



Plate e48. Mumbulla Dry Shrub Forest (Map Unit e48) dominated by *Eucalyptus sieberi* with *E. agglomerata*, *Allocasuarina littoralis*, *Acacia obtusifolia* and *Lepidosperma urophorum* on Lizard Road, Biamanga National Park.

Sample Sites: 15

Area Extant (ha): 4500

Estimated % remaining: >95%

Area in conservation reserves (ha): 3500

Estimated % of pre-clearing area in conservation reserves: 70-80%

No. Taxa (total / unique): 154 / 1

No. Taxa per Plot ( $\pm$ sd): 33.1 (18.5)

Class: South East Dry Sclerophyll Forests

Related TEC: n/a

Mumbulla Dry Shrub Forest is equivalent to Map Unit 48 of the same name described by Keith & Bedward (1999). This low open forest typically reaches up to 20 m tall, often with an open sub-stratum of small trees of around 6 m in height. It has a sparse sclerophyllous shrub stratum and open groundcover comprising mainly grasses and graminoids. Mumbulla Dry Shrub Forest occupies coastal mountain ridges at 150 - 650 m elevation on the Bega tonalite on Mumbulla and Dr George Mountains. Outlying stands may occur at Mt Imlay and the upper Wog Wog Creek area. No similar assemblages have been described in East Gippsland (Forbes *et al.* 1982). Its distribution to the north is likely to be limited due to the lack of tonalite coastal mountain habitat. A negligible area of Mumbulla Dry Shrub Forest has been cleared, most being reserved while about one-sixth occurs within production forest. The principal threat is frequent disturbance regimes that include logging (outside reserves) and fire in combination. These regimes reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Logging followed by regeneration burns and thinning may change the relative abundance of eucalypt species, particularly *E. sieberi* (Bridges 1983). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

#### Floristic Summary:

**Trees:** *Allocasuarina littoralis*, *Eucalyptus agglomerata*, *Eucalyptus sieberi* **Shrubs:** *Acacia terminalis*, *Bossiaea obcordata*, *Correa reflexa*, *Hakea macraeana*, *Persoonia linearis*, *Platysace lanceolata*, *Pomaderris lanigera*

**Climbers:** *Billardiera scandens*, *Clematis aristata* **Groundcover:** *Entolasia stricta*, *Joycea pallida*, *Lepidosperma laterale*, *Lepidosperma urophorum*, *Lomandra confertifolia* subsp. *ruginosa*, *Lomandra multiflora* subsp. *multiflora*, *Patersonia glabrata*, *Senecio velleioides*, *Tetratheca thymifolia*, *Xanthosia pilosa*

#### Vegetation structure:

Stratum	Frequency (n=15)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	93	18.5 (4.6)	21.1 (14.9)
Small tree	67	8.5 (6.5)	22 (17)

Shrub	87	1.6 (1.2)	15.2 (16.1)
Ground cover	100	0.7 (0.3)	29 (20.2)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 10 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 18 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 10 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia mearnsii</i>	1(1-2)	33	1(1-2)	7
<i>Acacia terminalis</i>	1(1-1)	47	1(1-1)	11
<i>Allocasuarina littoralis</i>	2(1-2)	93	1(1-2)	17
<i>Arrhenechthites mixta</i>	1(1-1)	20	1(1-1)	1
<i>Bossiaea obcordata</i>	1(1-1)	40	1(1-2)	7
<i>Cooperookia barbata</i>	1(1-1)	20	1(1-1)	1
<i>Correa reflexa</i>	1(1-1)	67	1(1-1)	5
<i>Daviesia mimosoides</i>	1(1-1)	27	1(1-2)	2
<i>Eucalyptus agglomerata</i>	2(2-2)	40	2(1-3)	7
<i>Eucalyptus sieberi</i>	2(1-3)	87	2(1-3)	16
<i>Hakea macraeana</i>	1(1-1)	80	1(1-1)	1
<i>Hibbertia dentata</i>	1(1-1)	33	1(1-1)	6
<i>Joycea pallida</i>	2(2-3)	73	1(1-2)	8
<i>Lepidosperma urophorum</i>	1(1-2)	80	1(1-2)	7
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	1(1-1)	87	1(1-1)	4
<i>Lomandra confertifolia</i> subsp. <i>similis</i>	1(1-1)	20	1(1-2)	2
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	73	1(1-1)	25
<i>Marsdenia suaveolens</i>	1(1-1)	27	1(1-1)	3
<i>Olearia ramulosa</i> subsp. <i>D</i>	1(1-1)	20	1(1-1)	<1
<i>Patersonia glabrata</i>	1(1-1)	53	1(1-1)	10
<i>Persoonia linearis</i>	1(1-1)	93	1(1-1)	29
<i>Phyllanthus gunnii</i>	1(1-1)	20	1(1-1)	2
<i>Platysace lanceolata</i>	1(1-1)	100	1(1-1)	13
<i>Plectranthus graveolens</i>	1(1-1)	33	1(1-1)	1
<i>Pomaderris lanigera</i>	1(1-1)	40	1(1-1)	1
<i>Scaevola aemula</i>	1(1-1)	20	1(1-2)	<1
<i>Senecio velleioides</i>	1(1-1)	40	1(1-1)	1
<i>Tetratheca thymifolia</i>	1(1-1)	40	1(1-1)	6
<i>Xanthosia pilosa</i>	1(1-1)	47	1(1-1)	8
<i>Xerochrysum bracteatum</i>	1(1-1)	20	1(1-1)	2

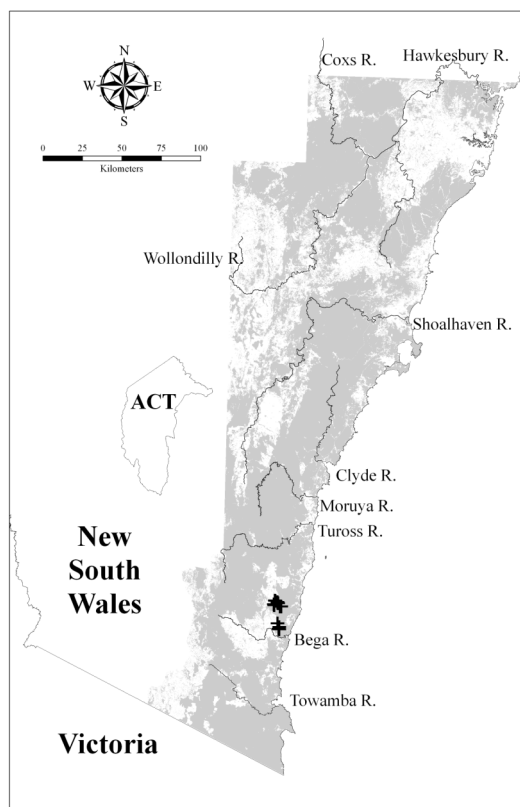
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-2)	33	1(1-2)	10
<i>Billardiera scandens</i>	1(1-1)	40	1(1-1)	28
<i>Clematis aristata</i>	1(1-1)	40	1(1-1)	20
<i>Dianella caerulea</i>	1(1-1)	33	1(1-1)	28
<i>Entolasia stricta</i>	1(1-1)	60	1(1-2)	34
<i>Glycine clandestina</i>	1(1-1)	33	1(1-1)	26

<i>Lepidosperma laterale</i>	1(1-1)	40	1(1-1)	29
<i>Pteridium esculentum</i>	1(1-1)	33	1(1-2)	37

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	2(1-2)	20	1(1-2)	9
<i>Eucalyptus elata</i>	1(1-1)	7	2(1-3)	5
<i>Eucalyptus globoidea</i>	2(2-2)	20	2(1-2)	12
<i>Eucalyptus muelleriana</i>	1(1-1)	7	2(1-2)	6



Locations of survey sites allocated to DSF e48. Grey shading indicates extant native vegetation cover within the study area.

#### DSF e49: Southeast Coastal Dry Shrub Forest





Plate e49. Southeast Coastal Dry Shrub Forest (Map Unit e49) dominated by *Eucalyptus sieberi* with *Acacia obtusifolia*, *Tetratheca thymifolia*, *Podolobium ilicifolium*, *Cooperhooia barbata* and *Lomandra multiflora* on Sugarloaf Road, near The Sugarloaf, Yowaka section of South East Forests National Park.

Sample Sites: 43  
 Area Extant (ha): 31800  
 Estimated % remaining: >95%  
 Area in conservation reserves (ha): 8000  
 Estimated % of pre-clearing area in conservation reserves: 20-30%  
 No. Taxa (total / unique): 202 / 0  
 No. Taxa per Plot ( $\pm$ sd): 26.9 (9.6)  
 Class: South East Dry Sclerophyll Forests  
 Related TEC: n/a

Southeast Coastal Dry Shrub Forest is equivalent to Coastal Dry Shrub Forest (unit 49) described by Keith & Bedward (1999). It is characterised by a *Eucalyptus* canopy up to 25 m tall, sometimes with an open stratum of small trees around 8 m tall. It has an open sclerophyllous shrub stratum with vines of *Billardiera scandens* twining amongst the shrubs. The sparse groundcover comprises sclerophyll herbs. Southeast Coastal Dry Shrub Forest is widespread on coastal mountain ridges, dry slopes and coastal plateaux on metasediments at 100 - 500 m elevation. It may occur up to 900 m elevation on hinterland mountains (Big Jack Mountain, Mt Poole) and in the dissected terrain north of Bemboka. It differs from the more restricted Mumbulla Dry Shrub Forest (Map Unit DSF e48) in understorey composition and subdominant tree species and occupies different substrates. Although no similar assemblages have been explicitly described in East Gippsland (Forbes *et al.* 1982), one may exist within the lowland sclerophyll forest complex (Ecological Vegetation Class 16, Woodgate *et al.* 1994). Relatively little Southeast Coastal Dry Shrub Forest has been cleared. Although the largest area remains on State Forest, substantial areas occur on all tenures. Although some areas on private land may be threatened by clearing, the principal threat is frequent disturbance regimes that include logging (outside reserves) and fire in combination. These regimes reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Logging followed by regeneration burns and thinning may change the relative abundance of eucalypt species, particularly *E. sieberi* (Bridges 1983). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

#### Floristic Summary:

**Trees:** *Eucalyptus Allocasuarina littoralis*, *Eucalyptus agglomerata*, *Eucalyptus sieberi* **Shrubs:** *Acacia obtusifolia*, *Acacia terminalis*, *Cooperhooia barbata*, *Leucopogon lanceolatus* var. *lanceolatus*, *Lomatia ilicifolia*, *Monotoca scoparia*, *Persoonia linearis*, *Platysace lanceolata*, *Podolobium ilicifolium* **Climbers:** *Billardiera scandens* **Groundcover:** *Dianella caerulea*, *Gonocarpus teucroides*, *Lepidosperma laterale*, *Lomandra multiflora* subsp. *multiflora*, *Patersonia glabrata*, *Pteridium esculentum*, *Stylidium graminifolium*, *Tetratheca thymifolia*, *Xanthosia pilosa*

#### Vegetation structure:

Stratum	Frequency (n=18)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	20.7 (4.6)	30.8 (10)
Small tree	39	9.1 (3.5)	15.9 (11.2)

Shrub	100	2.1 (1.3)	22.2 (13.4)
Ground cover	94	0.5 (0.3)	12.5 (10.9)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 10 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 19 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 10 positive diagnostic species.

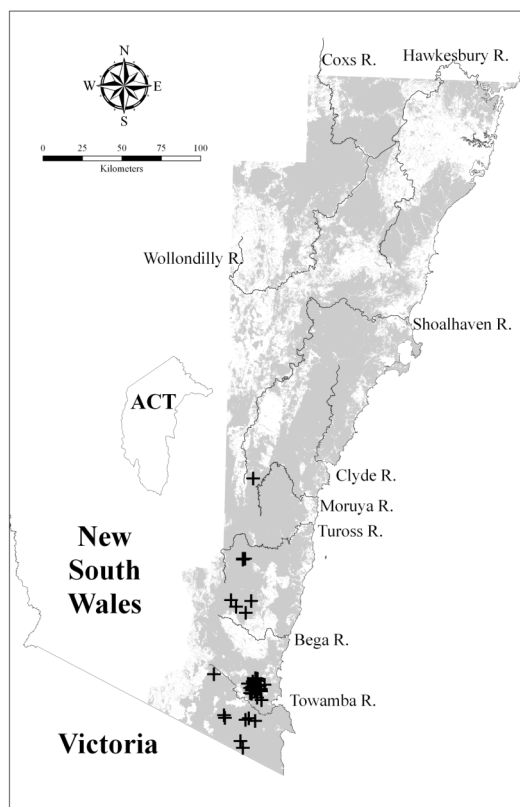
**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia myrtifolia</i>	1(1-2)	19	1(1-1)	4
<i>Acacia obtusifolia</i>	1(1-2)	58	1(1-2)	9
<i>Acacia terminalis</i>	1(1-1)	56	1(1-1)	11
<i>Allocasuarina littoralis</i>	2(1-3)	47	1(1-2)	17
<i>Amperea xiphoclada</i>	1(1-1)	28	1(1-1)	7
<i>Billardiera scandens</i>	1(1-1)	63	1(1-1)	27
<i>Bossiaea obcordata</i>	1(1-1)	23	1(1-2)	7
<i>Caustis flexuosa</i>	1(1-1)	28	1(1-2)	7
<i>Cooperookia barbata</i>	1(1-1)	51	1(1-1)	1
<i>Dianella caerulea</i>	1(1-1)	58	1(1-1)	28
<i>Epacris impressa</i>	1(1-1)	28	1(1-1)	4
<i>Eucalyptus agglomerata</i>	2(1-2)	65	2(1-3)	7
<i>Eucalyptus sieberi</i>	3(2-3)	95	2(1-3)	16
<i>Gonocarpus teucroides</i>	1(1-1)	53	1(1-1)	17
<i>Hakea macraeana</i>	1(1-2)	23	1(1-1)	1
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-1)	26	1(1-1)	6
<i>Joycea pallida</i>	1(1-2)	28	1(1-2)	8
<i>Lepidosperma laterale</i>	1(1-1)	60	1(1-1)	28
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	58	1(1-1)	23
<i>Lomatia ilicifolia</i>	1(1-1)	56	1(1-1)	6
<i>Monotoca scoparia</i>	1(1-1)	70	1(1-1)	12
<i>Opercularia aspera</i>	1(1-1)	23	1(1-1)	8
<i>Patersonia glabrata</i>	1(1-1)	47	1(1-1)	10
<i>Persoonia linearis</i>	1(1-1)	91	1(1-1)	28
<i>Platysace lanceolata</i>	1(1-1)	74	1(1-1)	13
<i>Podolobium ilicifolium</i>	1(1-1)	74	1(1-1)	8
<i>Polyscias sambucifolia</i>	1(1-1)	19	1(1-1)	6
<i>Pultenaea daphnoides</i>	1(1-1)	30	1(1-1)	4
<i>Stylidium graminifolium</i>	1(1-1)	58	1(1-1)	9
<i>Tetratheca thymifolia</i>	1(1-1)	49	1(1-1)	6
<i>Xanthorrhoea australis</i>	1(1-2)	40	1(1-2)	1
<i>Xanthosia pilosa</i>	1(1-1)	53	1(1-1)	7

**Constant:**

Species	C/A	Freq	C/A O	Freq O
<i>Entolasia stricta</i>	1(1-1)	40	1(1-2)	34
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	44	1(1-1)	25
<i>Pomax umbellata</i>	1(1-1)	30	1(1-1)	14

<i>Pteridium esculentum</i>	1(1-1)	44	1(1-2)	37
Other tree species occurring less frequently in this community:				
Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	5	1(1-2)	9
<i>Corymbia gummifera</i>	2(1-2)	5	2(1-2)	16
<i>Eucalyptus angophoroides</i>	2(2-2)	2	1(1-2)	1
<i>Eucalyptus consideniana</i>	1(1-1)	2	2(1-2)	2
<i>Eucalyptus cypellocarpa</i>	1(1-1)	5	2(1-2)	10
<i>Eucalyptus elata</i>	1(1-1)	2	2(1-3)	5
<i>Eucalyptus globoidea</i>	1(1-1)	2	2(1-2)	12
<i>Eucalyptus muelleriana</i>	2(1-2)	5	2(1-2)	6
<i>Eucalyptus obliqua</i>	1(1-1)	2	2(1-3)	4
<i>Eucalyptus smithii</i>	1(1-2)	9	1(1-2)	2
<i>Eucalyptus stenostoma</i>	1(1-1)	5	2(1-2)	<1



Locations of survey sites allocated to DSF e49. Grey shading indicates extant native vegetation cover within the study area.

#### DSF e50: Genoa Dry Shrub Forest





Plate e50. Genoa Dry Shrub Forest (Map Unit e50) dominated by *Eucalyptus mackintii* with *E. agglomerata* and *E. dives* and a shrubby understorey of *Hakea decurrens* subsp. *physocarpa*, *Leucopogon microphyllus*, *Caustis flexuosa* and *Pteridium esculentum* in the Genoa River gorge, Genoa section of South East Forests National Park.

Sample Sites: 7

Area Extant (ha): 3000

Estimated % remaining: >95%

Area in conservation reserves (ha): 2100

Estimated % of pre-clearing area in conservation reserves: 55-70%

**No. Taxa (total / unique): 81 / 0**

No. Taxa per Plot ( $\pm$ sd): 22.7 (7.7)

Class: South East Dry Sclerophyll Forests

Related TEC: n/a

Genoa Dry Shrub Forest is equivalent to Map Unit 50 of the same name described by Keith & Bedward (1999). It is characterised by a *Eucalyptus* canopy around 18 m in height with a prominent sclerophyllous shrub stratum. The sparse groundcover comprises grasses and graminoids with a variety of forbs and sprawling vines of *Hardenbergia violacea*. Genoa Dry Shrub Forest is restricted to dry ridges and slopes on sandstone terrain at 300 - 740 m around the Genoa River and on Mt Imlay. Although no similar assemblages have been explicitly described south of the Eden region (Austin 1978, Forbes *et al.* 1982), Genoa Dry Shrub Forest is likely to extend across the Victorian border in the Genoa sandstone terrain within Coopracambra National Park. About one-fifth of this assemblage has been cleared for pine plantations, most of the remainder being reserved while about one-third occurs within production forest on private or public land. The principal threat is frequent disturbance regimes that include logging (outside reserves) and fire in combination. These regimes reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Intervals between planned and unplanned disturbances need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

#### Floristic Summary:

**Trees:** *Acacia falciformis*, *Eucalyptus agglomerata* **Shrubs:** *Acacia terminalis*, *Cassinia longifolia*, *Correa reflexa*, *Hibbertia obtusifolia*, *Lomatia ilicifolia*, *Monotoca scoparia*, *Persoonia linearis*, *Platysace lanceolata*, *Podolobium ilicifolium* **Climbers:** *Hardenbergia violacea* **Groundcover:** *Caustis flexuosa*, *Dianella revoluta* var. *revoluta*, *Joycea pallida*, *Lomandra longifolia*, *Lomandra multiflora* subsp. *multiflora*, *Pomax umbellata*, *Rhytidosporum procumbens*

#### Vegetation structure:

Stratum	Frequency (n=7)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	18.1 (4)	30.7 (9.8)
Small tree	57	4.6 (1.5)	12.5 (6.5)
Shrub	86	1.4 (0.6)	30 (24.7)
Ground cover	100	0.5 (0.3)	16.7 (9.8)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 7 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 17 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 7 positive diagnostic species.

#### Positive Diagnostic Species:

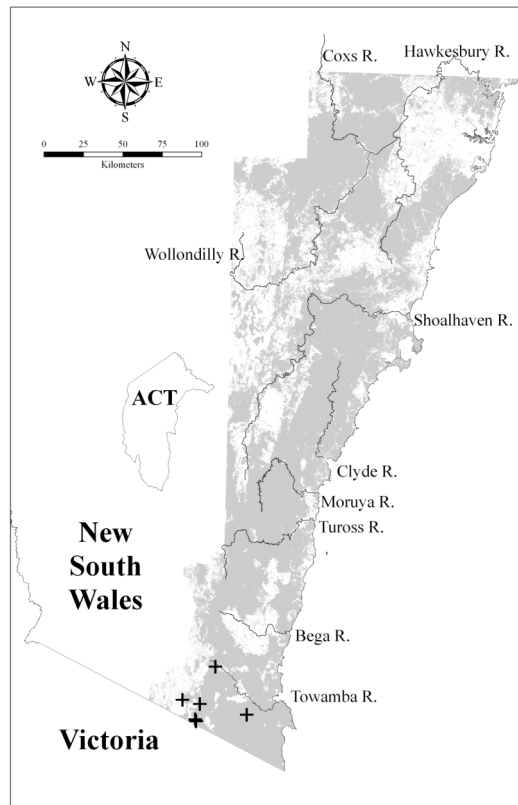
Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-3)	57	1(1-2)	10
<i>Banksia marginata</i>	2(1-2)	29	1(1-1)	3
<i>Cassinia longifolia</i>	1(1-1)	57	1(1-2)	6
<i>Caustis flexuosa</i>	1(1-2)	43	1(1-2)	7
<i>Choretrum pauciflorum</i>	1(1-1)	29	1(1-1)	1
<i>Correa reflexa</i>	1(1-1)	43	1(1-1)	5
<i>Eucalyptus agglomerata</i>	3(2-3)	71	2(1-3)	7
<i>Hakea macraeana</i>	1(1-1)	29	1(1-1)	1
<i>Joycea pallida</i>	1(1-2)	71	1(1-2)	8
<i>Leucopogon microphyllus</i>	1(1-1)	29	1(1-1)	3
<i>Lomatia ilicifolia</i>	1(1-1)	71	1(1-1)	6
<i>Monotoca scoparia</i>	2(1-2)	100	1(1-1)	12
<i>Oxylobium arborescens</i>	4(2-4)	29	1(1-1)	<1
<i>Ozothamnus cuneifolius</i>	1(1-1)	29	1(1-1)	1
<i>Persoonia linearis</i>	1(1-2)	86	1(1-1)	29
<i>Platysace lanceolata</i>	1(1-1)	100	1(1-1)	13
<i>Podolobium ilicifolium</i>	1(1-2)	71	1(1-1)	9
<i>Pomax umbellata</i>	1(1-2)	86	1(1-1)	14
<i>Rhytidosporum procumbens</i>	1(1-1)	43	1(1-1)	3

#### Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia terminalis</i>	2(1-2)	43	1(1-1)	11
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	57	1(1-1)	15
<i>Hardenbergia violacea</i>	1(1-2)	43	1(1-1)	17
<i>Hibbertia obtusifolia</i>	1(1-1)	43	1(1-1)	11
<i>Lomandra longifolia</i>	1(1-2)	71	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	57	1(1-1)	25

#### Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus angophoroides</i>	1(1-1)	14	1(1-2)	1
<i>Eucalyptus considianiana</i>	1(1-1)	14	2(1-2)	2
<i>Eucalyptus croajingolensis</i>	3(3-3)	14	2(1-2)	<1
<i>Eucalyptus globoidea</i>	2(2-2)	14	2(1-2)	12
<i>Eucalyptus mckintii</i>	3(3-3)	14	2(2-3)	<1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(2-2)	14	2(1-3)	6
<i>Eucalyptus sieberi</i>	2(2-2)	14	2(1-3)	16



Locations of survey sites allocated to DSF e50. Grey shading indicates extant native vegetation cover within the study area.

**HL e51: Southeast Rhyolite Rock Scrub**

Plate e51. Southeast Rhyolite Rock Scrub (Map Unit e51) open variant with *Xanthorrhoea australis*, scattered *Eucalyptus sieberi* and *Kunzea ambigua* on The Sugarloaf, Yowaka section of South east Forests National Park.

Sample Sites: 16

Area Extant (ha): 50

Estimated % remaining: >95%

Area in conservation reserves (ha): 40

Estimated % of pre-clearing area in conservation reserves: 75-85%

No. Taxa (total / unique): 179 / 3

No. Taxa per Plot ( $\pm$ sd): 32.1 (15.9)

Class: Southern Volcanic Scrubs

Related TEC: n/a

Southeast Rhyolite Rock Scrub is equivalent to Rhyolite Rock Scrub (unit 51) described by Keith & Bedward (1999). It is characterised by dense but patchy shrub strata, 2 - 7 m tall with occasional small trees emerging above. The groundcover comprises mainly scattered tussocks of grasses and graminoids and the lilioid herb *Stypandra glauca*. Southeast Rhyolite Rock Scrub is restricted to skeletal soils on outcrops of rhyolite at 100 - 400 m elevation on the coastal range west of Pambula. This assemblage contains a large number of rare, threatened and locally endemic species and is unique to the Eden region. Another rhyolite scrub assemblage with a different complement of rare and threatened species occurs to the north in Deua National Park. The highly restricted stands of Rhyolite Rock Scrub occur on all tenures and, although none have been cleared, they are threatened by grazing and frequent fire regimes. Occurrences on private land are subject to grazing by domestic goats, while feral goats potentially threaten stands on all tenures. Frequent fires used in hazard reduction or grazing management may reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Intervals between planned and unplanned fires need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided. Post-fire seedling recruitment in shrub populations may be poor on skeletal soils if drought follows fire. Long fire-free intervals also potentially threaten Rhyolite Rock Scrub if the length of intervals exceeds the combined longevity of standing plants and seed banks. Nevertheless, particular care is needed to avoid escape of hazard reduction fires onto the outcrops from adjacent production forest and grazing areas.

**Floristic Summary:**

**Trees:** *Allocasuarina littoralis* **Shrubs:** *Dodonaea truncatiales*, *Kunzea ambigua*, *Leionema ralstonii*, *Logania albiflora*, *Melaleuca armillaris* subsp. *armillaris*, *Platysace lanceolata*, *Pultenaea retusa* **Groundcover:** *Dendrobium speciosum*, *Entolasia stricta*, *Lepidosperma laterale*, *Lepidosperma urophorum*, *Notodanthonia longifolia*, *Stypandra glauca*

**Vegetation structure:**

Stratum	Frequency (n=14)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	57	14.4 (5.7)	6.6 (5.9)
Small tree	71	6.9 (2.6)	18.1 (19.5)
Shrub	100	2.6 (1.1)	32 (21.4)
Ground cover	100	0.6 (0.3)	7.9 (9.5)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 10 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 19 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 10 positive diagnostic species.

**Positive Diagnostic Species:**

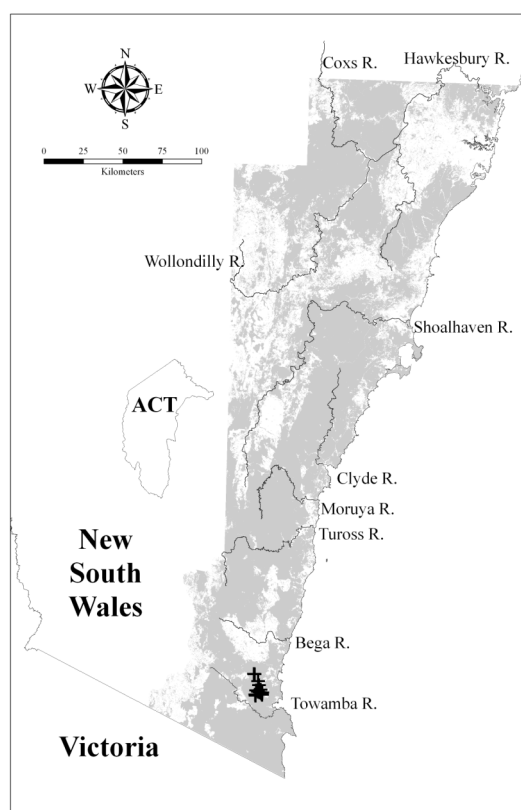
Species	C/A	Freq	C/A O	Freq O
<i>Allocasuarina littoralis</i>	1(1-1)	88	1(1-2)	17
<i>Beyeria lasiocarpa</i>	1(1-1)	38	1(1-2)	1
<i>Calytrix tetragona</i>	2(1-2)	38	1(1-2)	2
<i>Dendrobium speciosum</i>	1(1-1)	44	1(1-1)	1
<i>Dodonaea triquetra</i>	1(1-1)	31	1(1-2)	6
<i>Dodonaea truncatiales</i>	1(1-1)	44	1(1-2)	<1
<i>Entolasia stricta</i>	1(1-1)	69	1(1-2)	34
<i>Eucalyptus agglomerata</i>	1(1-2)	31	2(1-3)	7
<i>Eucalyptus smithii</i>	1(1-1)	25	1(1-2)	2
<i>Hakea macraeana</i>	1(1-1)	38	1(1-1)	1
<i>Hierochloe rariflora</i>	1(1-1)	25	1(1-2)	4
<i>Hovea purpurea</i>	1(1-1)	31	1(1-1)	<1
<i>Isotoma axillaris</i>	1(1-1)	38	1(1-1)	<1
<i>Kunzea ambigua</i>	2(2-2)	88	1(1-2)	3
<i>Lasiopetalum macrophyllum</i>	1(1-1)	25	1(1-2)	<1
<i>Leionema ralstonii</i>	1(1-1)	69	1(1-2)	<1
<i>Lepidosperma urophorum</i>	1(1-1)	75	1(1-2)	7
<i>Leucopogon attenuatus</i>	1(1-1)	25	1(1-1)	<1
<i>Leucopogon setiger</i>	1(1-3)	25	1(1-1)	1
<i>Logania albiflora</i>	1(1-1)	44	1(1-1)	1
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	1(1-2)	25	1(1-1)	4
<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	2(1-2)	88	1(1-2)	1
<i>Notodanthonia longifolia</i>	1(1-1)	75	1(1-2)	5
<i>Ozothamnus obcordatus</i> subsp. <i>major</i>	1(1-1)	31	1(1-1)	<1
<i>Philotheca myoporoides</i> subsp. <i>myoporoides</i>	1(1-2)	31	1(1-1)	<1
<i>Platysace lanceolata</i>	1(1-1)	94	1(1-1)	13
<i>Pomaderris intermedia</i>	1(1-1)	25	1(1-1)	<1
<i>Pomaderris lanigera</i>	1(1-1)	25	1(1-1)	1
<i>Pseudanthus divaricatissimus</i>	1(1-1)	25	1(1-1)	<1
<i>Pultenaea retusa</i>	1(1-1)	50	1(1-1)	1
<i>Schoenus melanostachys</i>	1(1-1)	25	1(1-2)	2
<i>Stypandra glauca</i>	1(1-1)	63	1(1-2)	5
<i>Westringia davidii</i>	1(1-2)	25	0(0-0)	0

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Cheilanthes sieberi</i>	1(1-1)	38	1(1-1)	14
<i>Eucalyptus sieberi</i>	1(1-1)	38	2(1-3)	16
<i>Lepidosperma laterale</i>	1(1-1)	56	1(1-1)	29
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	31	1(1-1)	24
<i>Persoonia linearis</i>	1(1-1)	31	1(1-1)	29
<i>Poa meionectes</i>	1(1-1)	31	1(1-2)	16
<i>Pomax umbellata</i>	1(1-1)	31	1(1-1)	14

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus elata</i>	1(1-1)	6	2(1-3)	5
<i>Eucalyptus maidenii</i>	1(1-1)	6	2(1-2)	2



Locations of survey sites allocated to HL e51. Grey shading indicates extant native vegetation cover within the study area.

**HL e52: Southeast Mountain Rock Scrub**

Plate e52. Southeast Mountain Rock Scrub (Map Unit e52) with clumped stands of *Melaleuca armillaris* and *Kunzea ambigua* with *Epacris microphylla* and *Lepidosperma gunnii* on massive granitoid outcrops near Mt Poole, Mt Poole Flora Reserve.

Sample Sites: 8

Area Extant (ha): 170

Estimated % remaining: >95%

Area in conservation reserves (ha): 160

Estimated % of pre-clearing area in conservation reserves: >90%

No. Taxa (total / unique): 101 / 1

No. Taxa per Plot ( $\pm$ sd): 24.1 (5.6)

Class: Southern Volcanic Scrubs

Related TEC: n/a

Southeast Mountain Rock Scrub is equivalent to Mountain Rock Scrub (unit 52) described by Keith & Bedward (1999). It is dominated by a dense but patchy shrub stratum 4 m tall with occasional small trees emerging above. The groundcover comprises scattered tussocks of graminoids and the lilioid herb *Stypandra glauca*. Southeast Mountain Rock Scrub is restricted to skeletal soils on granitoid outcrops at 500 - 1000 m elevation on hinterland and escarpment mountains in the south-west (e.g. Mt Poole, White Rock Mountain, Pheasants Peak). This assemblage lacks the complement of rare, threatened and endemic plant species characteristic of the lower elevation rhyolite outcrops (Map Unit HL e51), as well as including some shrub species that are absent from that assemblage. A similar assemblage has a restricted distribution on granitoid peaks in East Gippsland including Maramingo Hill, Genoa Peak and Mt Kaye. This assemblage is included within Rocky Outcrop Shrubland (Ecological Vegetation Class 28, Woodgate *et al.* 1994), along with other assemblages on non-granitoid substrates that share few species in common. Southeast Mountain Rock Scrub remains uncleared and is almost entirely contained within reserves. Frequent regimes fire may reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Intervals between planned and unplanned fires need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided. Post-fire seedling recruitment in shrub populations may be poor on skeletal soils if drought follows fire. Long fire-free intervals also potentially threaten Mountain Rock Scrub if the length of intervals exceeds the combined longevity of standing plants and seed banks. The level of grazing by feral goats is unknown, but potentially problematic.

**Floristic Summary:**

**Trees:** *Eucalyptus sieberi*, *Eucalyptus smithii* **Shrubs:** *Acacia longifolia*, *Correa reflexa*, *Grevillea victoriae* subsp. *nivalis*, *Hakea macraeana*, *Kunzea ambigua*, *Platysace lanceolata* **Groundcover:** *Goodenia ovata*, *Hierochloa rariflora*, *Lepidosperma laterale*, *Lepidosperma urophorum*, *Lomandra longifolia*, *Stypandra glauca*



**Vegetation structure:**

Stratum	Frequency (n=3)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	67	13.5 (2.1)	7.5 (3.5)
Small tree	-	- (-)	- (-)
Shrub	100	4 (1.7)	46.7 (24.7)
Ground cover	100	0.5 (-)	15 (13.2)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 6 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 20 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 6 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia longifolia</i>	1(1-1)	63	1(1-2)	10
<i>Cassinia longifolia</i>	1(1-1)	38	1(1-2)	6
<i>Correa reflexa</i>	1(1-1)	88	1(1-1)	5
<i>Derwentia perfoliata</i>	1(1-1)	25	1(1-1)	1
<i>Eucalyptus sieberi</i>	1(1-1)	75	2(1-3)	16
<i>Eucalyptus smithii</i>	1(1-2)	50	1(1-2)	2
<i>Goodenia ovata</i>	1(1-1)	75	1(1-1)	7
<i>Grevillea victoriae</i> subsp. <i>nivalis</i>	1(1-2)	50	1(1-2)	<1
<i>Hakea macraeana</i>	2(1-3)	50	1(1-1)	1
<i>Hierochloa rariflora</i>	1(1-1)	50	1(1-2)	4
<i>Hovea purpurea</i>	1(1-1)	25	1(1-1)	<1
<i>Kunzea ambigua</i>	3(2-5)	63	1(1-2)	4
<i>Lasiopetalum ferrugineum</i>	1(1-1)	25	1(1-2)	2
<i>Lepidosperma laterale</i>	1(1-1)	88	1(1-1)	29
<i>Lepidosperma urophorum</i>	1(1-1)	75	1(1-2)	7
<i>Leptospermum scoparium</i>	1(1-1)	25	1(1-2)	<1
<i>Platysace lanceolata</i>	1(1-1)	75	1(1-1)	13
<i>Pomaderris lanigera</i>	1(1-1)	38	1(1-1)	1
<i>Schoenus apogon</i>	1(1-1)	25	1(1-1)	2
<i>Stypandra glauca</i>	1(1-1)	75	1(1-2)	5

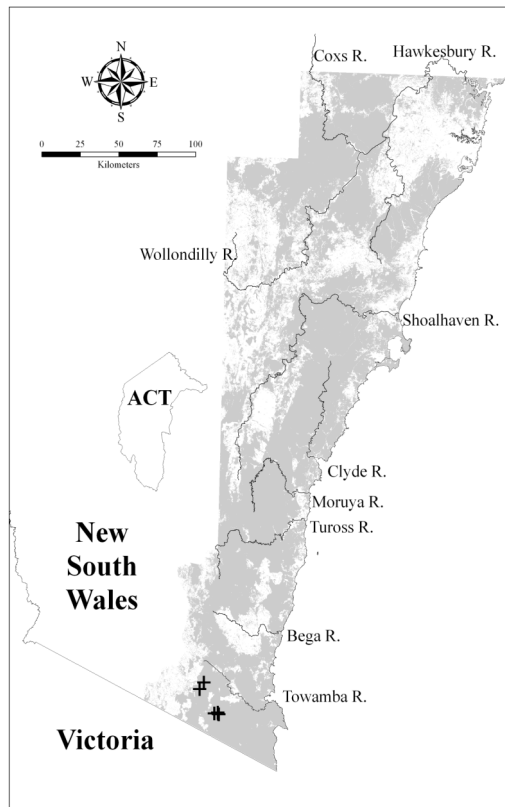
**Constant:**

Species	C/A	Freq	C/A O	Freq O
<i>Allocasuarina littoralis</i>	1(1-2)	38	1(1-2)	17
<i>Gonocarpus teucrioides</i>	1(1-1)	38	1(1-1)	18
<i>Lomandra longifolia</i>	1(1-1)	63	1(1-1)	44
<i>Poranthera microphylla</i>	1(1-1)	38	1(1-1)	15
<i>Xanthosia pilosa</i>	1(1-1)	38	1(1-1)	8

**Other tree species occurring less frequently in this community:**

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus elata</i>	1(1-1)	13	2(1-3)	5
<i>Eucalyptus globoidea</i>	1(1-1)	13	2(1-2)	12





Locations of survey sites allocated to HL e52. Grey shading indicates extant native vegetation cover within the study area.

### HL e53: Southern Montane Heath



Plate e53. Southern Montane Heath (Map Unit e53) dominated by *Allocasuarina nana* with *Brachyloma daphnoides*, *Notodanthonia tenuior* and scattered emergent *Eucalyptus dalrympleana* on Bald Hill, Bondi Gulf Nature Reserve.

Sample Sites: 30  
 Area Extant (ha): 6700  
 Estimated % remaining: >95%  
 Area in conservation reserves (ha): 3600  
 Estimated % of pre-clearing area in conservation reserves: 50-65%  
 No. Taxa (total / unique): 144 / 4  
 No. Taxa per Plot ( $\pm$ sd): 19.3 (8.1)  
 Class: Southern Montane Heaths

Related TEC: n/a

Southern Montane Heath is equivalent to Montane Heath (unit 53 of Keith & Bedward 1999) and Upper Shoalhaven Montane Heath (unit 123 of Tindall *et al.* 2004) combined. It comprises a closed shrub canopy of *Allocasuarina nana* exceeding 1 m in height, with a variety of other shrubs present at lower densities and a sparse scattering of eucalypt saplings 10 m tall emerging from the shrub canopy. The groundcover comprises scattered tussocks of grasses and graminoids. Southern Montane Heath has a restricted distribution with disjunct occurrences on the western fall of the Budawang Range from Corang to Mongarlowe, along the Bendoura and Minuma Ranges from Bendoura to Snowball and possibly on the Bombalawa and Gourock Ranges in the Hereford Hall area. Further south it occurs on the edge of the Monaro Tableland in the upper Tuross and Numeralla Rivers area in the north-west and the Bombala area in the south-west. Southern Montane Heath occurs on skeletal sandy loams derived from metasedimentary, acid volcanic or granitic substrates. It is typically found on exposed slopes and ridges between 600m to 800m ASL, although an unusual stand occurs on a granitoid substrate at 560 m elevation in the White Rock River area. No similar assemblages occur in East Gippsland (Woodgate *et al.* 1994). Less than 5% of Southern Montane Heath has been cleared for pine plantations or rough grazing. Further clearing and grazing potentially threatens some of the remainder on private and leasehold land in the Numeralla area. Extreme fire frequencies if sustained, may threaten stands on all tenures, particularly where Southern Montane Heath adjoins pine plantations or grazing lands. Frequent regimes fire may reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). The absence of serotinous obligate seeders, such as *Banksia canei*, *Hakea dactyloides* and *Allocasuarina distyla*, from Montane Heath around Bombala (*cf.* Wadbilliga) may be a consequence of such regimes in this area during the last 150 years (Banks 1990). Intervals between planned and unplanned fires need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided. The absence of serotinous obligate-seeding shrubs from some stands, particularly in the south may reflect historical regimes of high-frequency fire. Post-fire seedling recruitment in shrub populations may be poor on skeletal soils if drought follows fire. The risk of recruitment failure is greater under frequent fire regimes. Long fire-free intervals also potentially threaten Montane Heath if the length of intervals exceeds the combined longevity of standing plants and seed banks.

#### Floristic Summary:

**Shrubs:** *Allocasuarina nana*, *Brachyloma daphnoides*, *Hakea dactyloides*, *Monotoca scoparia* **Groundcover:** *Austrostipa pubinodis*, *Gonocarpus tetragynus*, *Joycea pallida*, *Lepidosperma gunnii*, *Lomandra glauca*, *Stylidium graminifolium*

#### Vegetation structure:

Stratum	Frequency (n=28)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	11	8.3 (5.9)	2.3 (2.3)
Tree canopy	25	7.7 (3.9)	19 (25.1)
Small tree	14	1.3 (0.2)	2.5 (1.9)
Shrub	86	1.3 (0.8)	83.2 (16.6)
Ground cover	100	0.4 (0.2)	21.4 (30.7)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 6 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 13 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 6 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Allocasuarina nana</i>	5(4-5)	100	1(1-2)	1
<i>Amperea xiphoclada</i>	1(1-2)	30	1(1-1)	7
<i>Austrodanthonia tenuior</i>	1(1-1)	37	1(1-2)	2
<i>Austrostipa pubinodis</i>	1(1-2)	43	1(1-1)	<1
<i>Brachyloma daphnoides</i>	1(1-2)	83	1(1-1)	6
<i>Dampiera stricta</i>	1(1-1)	27	1(1-1)	8
<i>Epacris impressa</i>	1(1-1)	23	1(1-1)	4
<i>Eucalyptus dives</i>	1(1-2)	20	2(1-3)	4
<i>Gompholobium huegelii</i>	1(1-1)	30	1(1-1)	2
<i>Gonocarpus tetragynus</i>	1(1-1)	60	1(1-1)	20
<i>Hakea dactyloides</i>	1(1-2)	60	1(1-1)	12
<i>Hibbertia pedunculata</i>	2(1-3)	23	1(1-1)	<1

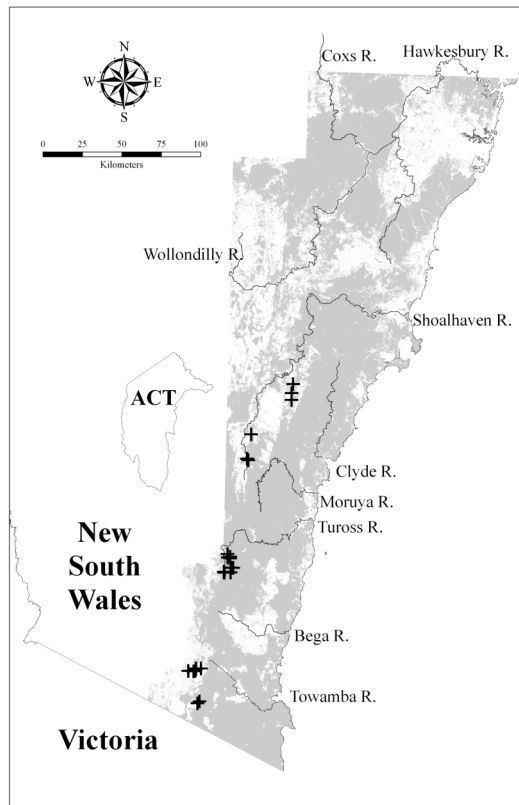
<i>Isopogon prostratus</i>	1(1-2)	33	1(1-1)	<1
<i>Joycea pallida</i>	1(1-2)	47	1(1-2)	8
<i>Kunzea</i> sp. 'Wadbilliga'	2(1-3)	20	1(1-1)	<1
<i>Lepidosperma gunnii</i>	1(1-1)	40	1(1-1)	4
<i>Lepidosperma tortuosum</i>	1(1-1)	37	1(1-1)	<1
<i>Lomandra glauca</i>	1(1-2)	60	1(1-1)	10
<i>Mirbelia platylobioides</i>	1(1-2)	23	1(1-1)	1
<i>Monotoca scoparia</i>	1(1-1)	43	1(1-1)	12
<i>Patersonia longifolia</i>	1(1-1)	33	1(1-1)	2
<i>Persoonia asperula</i>	1(1-1)	30	1(1-1)	<1
<i>Persoonia chamaepeuce</i>	1(1-1)	27	1(1-1)	1
<i>Platysace lanceolata</i>	1(1-1)	37	1(1-1)	13
<i>Stylidium graminifolium</i>	1(1-2)	73	1(1-1)	9

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Lomandra longifolia</i>	1(1-1)	30	1(1-1)	44

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus considaniana</i>	1(1-1)	3	2(1-2)	2
<i>Eucalyptus croajingolensis</i>	1(1-1)	3	2(1-3)	<1
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-1)	3	1(1-2)	3
<i>Eucalyptus gregsoniana</i>	2(2-2)	3	2(1-2)	<1
<i>Eucalyptus ovata</i>	1(1-1)	3	2(1-3)	1
<i>Eucalyptus pauciflora</i>	1(1-1)	17	1(1-2)	3
<i>Eucalyptus recurva</i>	2(2-2)	3	0(0-0)	0
<i>Eucalyptus rossii</i>	2(1-2)	7	3(1-3)	2
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-1)	10	1(1-2)	2
<i>Eucalyptus sieberi</i>	1(1-2)	10	2(1-3)	16



Locations of survey sites allocated to HL e53. Grey shading indicates extant native vegetation cover within the study area.

#### HL e54: Mt Nadgee Heath



Plate e54. Mt Nadgee Heath (Map Unit e54) dominated by *Allocasuarina nana* with *A. paludosa*, *Leptospermum trinervium*, *Leucopogon esquamatus*, *Lepidosperma concava* and emergent *Eucalyptus baxteri* on Mt Nadgee plateau, Nadgee Nature Reserve.

Sample Sites: 18

Area Extant (ha): 370

Estimated % remaining: >95%

Area in conservation reserves (ha): 370

Estimated % of pre-clearing area in conservation reserves: 100%

No. Taxa (total / unique): 137 / 0

No. Taxa per Plot ( $\pm$ sd): 32.9 (8.1)

Class: South Coast Heaths  
Related TEC: n/a

Mt Nadgee Heath is equivalent to Map Unit 54 of the same described by Keith & Bedward (1999). It has a diverse open shrub canopy over 1 m tall interspersed with scattered individuals of *Eucalyptus baxteri* emerging from the shrub stratum. The groundcover is dominated by sedges with some grasses, herbs and small ferns also present. Swards of *Xanthorrhoea resinifera* occur in damper sites. Mt Nadgee Heath is restricted to rocky Devonian sandstone plateaux around Mt Nadgee and west of Green Cape at elevations up to 450 m and possibly on damper soils than Southeast Coastal Lowland Heath (Map Unit HL e55). No similar assemblages occur outside the Eden region (Austin 1978, Woodgate et al. 1994). Almost all of this restricted unit occurs in reserves. Frequent regimes fire may reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Intervals between planned and unplanned fires need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

#### Floristic Summary:

**Trees:** *Eucalyptus baxteri* **Shrubs:** *Banksia paludosa*, *Darwinia camptostylis*, *Dillwynia glaberrima*, *Epacris impressa*, *Epacris microphylla* var. *microphylla*, *Epacris obtusifolia*, *Leptospermum continentale*, *Leptospermum trinervium*, *Leucopogon esquamatus*, *Monotoca scoparia*, *Persoonia levis*, *Pimelea linifolia* subsp. *linifolia* **Climbers:** *Cassytha glabella* **Groundcover:** *Burchardia umbellata*, *Dampiera stricta*, *Drosera peltata*, *Gonocarpus tetragynus*, *Lepidosperma concavum*, *Lepidosperma filiforme*, *Lepyrodia scariosa*, *Lindsaea linearis*, *Lomandra glauca*, *Xanthosia pilosa*

#### Vegetation structure:

Stratum	Frequency (n=18)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	44	13.3 (8)	7.9 (4.8)
Small tree	28	5.2 (2.2)	26 (11.9)
Shrub	89	1.8 (1)	36.2 (22.5)
Ground cover	94	0.9 (0.6)	51.2 (23.9)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 27 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Allocasuarina nana</i>	2(2-3)	39	2(1-4)	1
<i>Allocasuarina paludosa</i>	3(1-3)	22	1(1-3)	1
<i>Aotus ericoides</i>	1(1-1)	39	1(1-1)	3
<i>Baeckea linifolia</i>	1(1-1)	28	1(1-2)	1
<i>Banksia paludosa</i>	1(1-2)	78	1(1-2)	3
<i>Banksia serrata</i>	2(1-2)	33	1(1-2)	9
<i>Bossiaea ensata</i>	1(1-1)	28	1(1-1)	2
<i>Bossiaea heterophylla</i>	1(1-1)	33	1(1-1)	6
<i>Burchardia umbellata</i>	1(1-1)	72	1(1-1)	2
<i>Cassytha glabella</i>	1(1-1)	83	1(1-1)	8
<i>Caustis pentandra</i>	2(1-2)	28	1(1-1)	1
<i>Dampiera stricta</i>	1(1-1)	72	1(1-1)	8
<i>Darwinia camptostylis</i>	1(1-1)	56	1(1-2)	<1
<i>Dillwynia glaberrima</i>	1(1-1)	72	1(1-1)	1
<i>Dillwynia sericea</i>	1(1-1)	33	1(1-1)	2
<i>Drosera peltata</i>	1(1-1)	44	1(1-1)	2
<i>Empodisma minus</i>	1(1-2)	22	1(1-2)	3
<i>Epacris impressa</i>	1(1-1)	61	1(1-1)	4

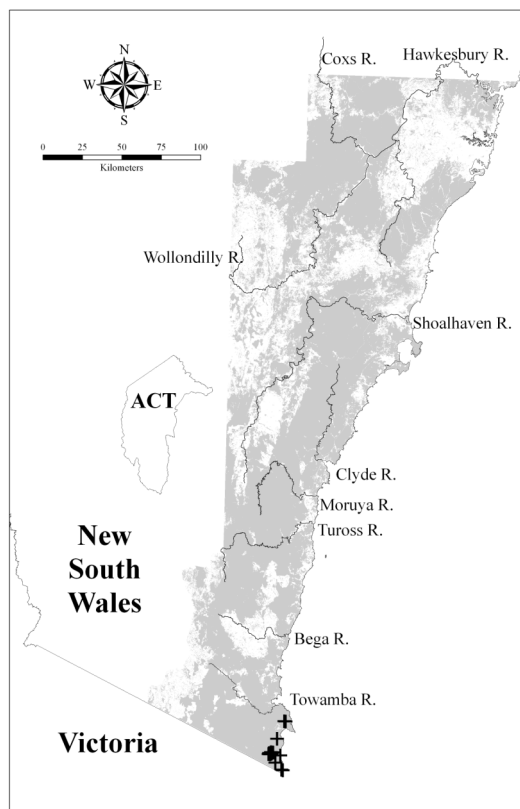
<i>Epacris microphylla</i> var. <i>microphylla</i>	2(1-2)	56	1(1-1)	5
<i>Epacris obtusifolia</i>	1(1-1)	44	1(1-1)	2
<i>Eucalyptus baxteri</i>	1(1-2)	67	2(1-2)	<1
<i>Gahnia sieberiana</i>	1(1-1)	33	1(1-1)	5
<i>Gompholobium huegelii</i>	1(1-1)	22	1(1-1)	2
<i>Gonocarpus tetragynus</i>	1(1-1)	56	1(1-1)	20
<i>Gymnoschoenus sphaerocephalus</i>	2(1-2)	33	2(1-3)	1
<i>Hakea decurrens</i>	1(1-1)	28	1(1-2)	<1
<i>Hakea teretifolia</i>	1(1-1)	28	1(1-2)	4
<i>Hibbertia riparia</i>	1(1-2)	39	1(1-1)	2
<i>Hypolaena fastigiata</i>	1(1-1)	33	1(1-1)	1
<i>Leionema diosmeum</i>	1(1-2)	28	2(1-2)	<1
<i>Lepidosperma concavum</i>	1(1-3)	44	1(1-2)	2
<i>Lepidosperma filiforme</i>	1(1-2)	61	1(1-2)	2
<i>Lepidosperma gladiatum</i>	3(1-3)	22	1(1-1)	<1
<i>Lepidosperma neesii</i>	1(1-2)	22	1(1-2)	1
<i>Leptocarpus tenax</i>	2(1-2)	22	1(1-2)	2
<i>Leptospermum continentale</i>	1(1-1)	61	1(1-1)	3
<i>Leptospermum trinervium</i>	2(1-2)	89	1(1-2)	15
<i>Lepyrodia scariosa</i>	1(1-3)	67	1(1-2)	6
<i>Leucopogon esquamatus</i>	1(1-1)	67	1(1-1)	1
<i>Lindsaea linearis</i>	1(1-1)	67	1(1-1)	7
<i>Lomandra glauca</i>	1(1-2)	50	1(1-1)	10
<i>Melaleuca squarrosa</i>	1(1-3)	22	2(1-3)	1
<i>Mitrasacme polymorpha</i>	1(1-1)	28	1(1-1)	3
<i>Monotoca scoparia</i>	1(1-1)	44	1(1-1)	12
<i>Persoonia levis</i>	1(1-1)	67	1(1-1)	13
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	50	1(1-1)	13
<i>Plinthanthesis paradoxa</i>	1(1-1)	22	1(1-1)	<1
<i>Rhytidosporum procumbens</i>	1(1-1)	22	1(1-1)	3
<i>Ricinocarpos pinifolius</i>	1(1-1)	22	1(1-1)	1
<i>Selaginella uliginosa</i>	1(1-2)	22	1(1-1)	2
<i>Sowerbaea juncea</i>	1(1-1)	33	1(1-1)	1
<i>Symphionema paludosum</i>	1(1-1)	33	1(1-1)	<1
<i>Xanthorrhoea resinifera</i>	1(1-3)	22	1(1-2)	4
<i>Xanthosia pilosa</i>	1(1-1)	56	1(1-1)	8

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia terminalis</i>	1(1-1)	33	1(1-1)	11
<i>Allocasuarina littoralis</i>	1(1-1)	39	1(1-2)	17
<i>Eucalyptus sieberi</i>	1(1-2)	33	2(1-3)	16
<i>Gonocarpus teucroides</i>	1(1-1)	39	1(1-1)	18
<i>Lomandra longifolia</i>	1(1-2)	39	1(1-1)	44

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	11	1(1-2)	9
<i>Corymbia gummifera</i>	2(2-2)	6	2(1-2)	16
<i>Eucalyptus consideniana</i>	1(1-1)	6	2(1-2)	2



Locations of survey sites allocated to HL e54. Grey shading indicates extant native vegetation cover within the study area.

**HL e55: Southeast Coastal Lowland Heath**

Plate e55. Southeast Coastal Lowland Heath (Map Unit e55) dominated by *Allocasuarina paludosa*, *Banksia paludosa* and *Epacris impressa* on Impressa Moor in Nadgee Nature Reserve.

Sample Sites: 25

Area Extant (ha): 1900

Estimated % remaining: >90%

Area in conservation reserves (ha): 1700

Estimated % of pre-clearing area in conservation reserves: 75-90%

No. Taxa (total / unique): 170 / 3

No. Taxa per Plot ( $\pm$ sd): 34.6 (8.9)

Class: South Coast Heaths

Related TEC: n/a

Southeast Coastal Lowland Heath is equivalent to Coastal Lowland Heath (unit 55) described by Keith & Bedward (1999). It is characterised by a diverse open shrub canopy up to 1 m tall with occasional eucalypts up to 5 m tall emerging from the shrub stratum. The relatively dense and diverse groundcover is dominated by sedges and a distinctive array of herbs, with occasional grasses and small ferns also present. Southeast Coastal Lowland Heath is restricted to gentle slopes on coastal deposits of Tertiary alluvium and Recent sands below 100 m elevation south from Pambula. It is distinguished from Mt Nadgee Heath by several shrub and herb species which are apparently unique to the lowland assemblage. Unlike Mt Nadgee Heath, the mainly continuous vegetation cover is not punctuated by outcrops of rock. A similar assemblage extends to the south along the East Gippsland coastal plain (Ecological Vegetation Classes 7 and 8, Woodgate *et al.* 1994). Almost all of this restricted unit occurs within reserves. Frequent regimes fire may reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Intervals between planned and unplanned fires need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

**Floristic Summary:**

**Trees:** *Allocasuarina littoralis*, *Banksia serrata* **Shrubs:** *Acacia suaveolens*, *Allocasuarina paludosa*, *Banksia paludosa*, *Correa reflexa*, *Dillwynia glaberrima*, *Epacris impressa*, *Gompholobium huegelii*, *Hibbertia empetrifolia* subsp. *empetrifolia*, *Leptospermum continentale*, *Pimelea linifolia* subsp. *linifolia* **Climbers:** *Cassytha glabella* **Groundcover:** *Anisopogon avenaceus*, *Bossiaea ensata*, *Burchardia umbellata*, *Dampiera stricta*, *Entolasia stricta*, *Gonocarpus teucroides*, *Hypolaena fastigiata*, *Lepidosperma neesii*, *Lindsaea linearis*, *Lomandra glauca*, *Mitrasacme polymorpha*, *Patersonia glabrata*, *Phyllanthus hirtellus*, *Scaevola ramosissima*, *Schoenus brevifolius*, *Selaginella uliginosa*



**Vegetation structure:**

Stratum	Frequency (n=25)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	0	0 (0)	0 (0)
Tree canopy	8	5.5 (0.7)	8 (9.9)
Small tree	0	0 (0)	0 (0)
Shrub	76	1.7 (1)	49 (28)
Ground cover	100	0.7 (0.3)	73.6 (32.6)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 18 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 28 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 18 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia myrtifolia</i>	1(1-1)	32	1(1-1)	4
<i>Acacia suaveolens</i>	1(1-1)	56	1(1-1)	7
<i>Allocasuarina littoralis</i>	1(1-1)	44	1(1-2)	17
<i>Allocasuarina paludosa</i>	3(2-3)	80	1(1-2)	1
<i>Anisopogon avenaceus</i>	1(1-1)	48	1(1-2)	5
<i>Argentipallium obtusifolium</i>	1(1-2)	32	0(0-0)	0
<i>Astroloma humifusum</i>	1(1-1)	24	1(1-1)	4
<i>Austrostipa mollis</i>	1(1-2)	20	2(1-2)	<1
<i>Banksia paludosa</i>	1(1-2)	68	1(1-2)	3
<i>Banksia serrata</i>	1(1-2)	48	1(1-2)	9
<i>Bossiaea ensata</i>	1(1-1)	44	1(1-1)	2
<i>Bossiaea prostrata</i>	1(1-1)	24	1(1-1)	3
<i>Burchardia umbellata</i>	1(1-1)	80	1(1-1)	2
<i>Cassylia glabella</i>	1(1-1)	92	1(1-1)	7
<i>Correa reflexa</i>	1(1-1)	40	1(1-1)	5
<i>Cryptandra ericoides</i>	1(1-1)	32	1(1-1)	<1
<i>Dampiera stricta</i>	1(1-1)	60	1(1-1)	8
<i>Darwinia camplostylis</i>	1(1-2)	28	1(1-1)	<1
<i>Dillwynia glaberrima</i>	1(1-2)	40	1(1-1)	1
<i>Dillwynia sericea</i>	1(1-1)	36	1(1-1)	2
<i>Drosera peltata</i>	1(1-1)	20	1(1-1)	2
<i>Entolasia stricta</i>	1(1-1)	68	1(1-2)	34
<i>Epacris impressa</i>	1(1-1)	88	1(1-1)	4
<i>Euphrasia collina</i> subsp. <i>collina</i>	1(1-1)	20	0(0-0)	0
<i>Gahnia radula</i>	1(1-2)	32	1(1-2)	3
<i>Gompholobium huegelii</i>	1(1-1)	40	1(1-1)	2
<i>Gonocarpus teucrioides</i>	1(1-1)	56	1(1-1)	17
<i>Grevillea lanigera</i>	1(1-2)	24	1(1-1)	<1
<i>Hakea decurrens</i>	1(1-3)	36	1(1-1)	<1
<i>Hakea teretifolia</i>	1(1-2)	32	1(1-2)	4
<i>Hakea ulicina</i>	2(1-2)	36	1(1-1)	<1
<i>Helichrysum scorpioides</i>	1(1-1)	32	1(1-1)	7
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-2)	60	1(1-1)	6

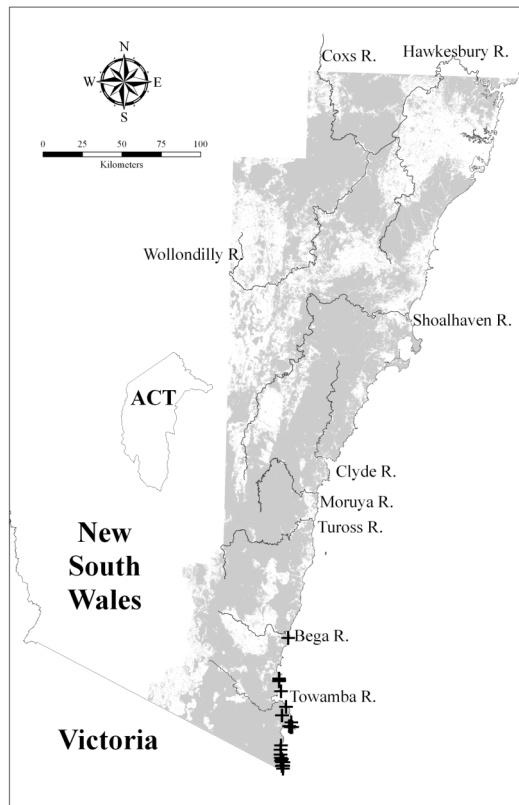
<i>Hibbertia riparia</i>	1(1-1)	36	1(1-1)	2
<i>Hybanthus vernonii</i>	1(1-1)	32	1(1-1)	<1
<i>Hypolaena fastigiata</i>	1(1-1)	48	1(1-1)	1
<i>Lasiopetalum macrophyllum</i>	2(1-3)	20	1(1-2)	<1
<i>Lepidosperma concavum</i>	2(1-2)	28	1(1-2)	2
<i>Lepidosperma neesii</i>	2(1-2)	44	1(1-2)	1
<i>Leptocarpus tenax</i>	1(1-3)	36	1(1-2)	2
<i>Leptospermum continentale</i>	1(1-1)	84	1(1-1)	2
<i>Lindsaea linearis</i>	1(1-1)	80	1(1-1)	7
<i>Lomandra glauca</i>	1(1-1)	76	1(1-1)	10
<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	1(1-2)	36	2(1-2)	1
<i>Mirbelia rubiifolia</i>	1(1-1)	24	1(1-1)	3
<i>Mitrasacme polymorpha</i>	1(1-1)	48	1(1-1)	3
<i>Patersonia glabrata</i>	1(1-1)	68	1(1-1)	10
<i>Phyllanthus hirtellus</i>	1(1-1)	44	1(1-1)	14
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	84	1(1-1)	13
<i>Scaevola ramosissima</i>	1(1-1)	40	1(1-1)	3
<i>Schoenus brevifolius</i>	3(3-3)	56	1(1-2)	1
<i>Selaginella uliginosa</i>	1(1-1)	44	1(1-1)	2
<i>Xanthorrhoea resinifera</i>	3(1-4)	20	1(1-1)	4
<i>Xanthosia tridentata</i>	1(1-1)	36	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Leptospermum trinervium</i>	1(1-1)	32	1(1-2)	16
<i>Persoonia levis</i>	1(1-1)	32	1(1-1)	13

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia gummifera</i>	1(1-1)	20	2(1-2)	16
<i>Eucalyptus cephalocarpa</i>	2(2-2)	4	0(0-0)	0
<i>Eucalyptus globoidea</i>	2(1-2)	8	2(1-2)	12



Locations of survey sites allocated to HL e55. Grey shading indicates extant native vegetation cover within the study area.

### FrW e56: Southeast Hinterland Heath



Plate e56. Southeast Hinterland Heath (Map Unit e56) variant dominated by *Callistemon paludosus*, *Kunzea ericoides*, *Gahnia sieberiana* and *Allocasuarina nana* on the White Rock River track, Genoa section of the South East Forests National Park.

Sample Sites: 13

Area Extant (ha): 360

Estimated % remaining: >90%

Area in conservation reserves (ha): 80

Estimated % of pre-clearing area in conservation reserves: 15-25%

No. Taxa (total / unique): 156 / 1

No. Taxa per Plot ( $\pm$ sd): 29.4 (9.0)

Class: Coastal Heath Swamps  
Related TEC: n/a

Southeast Hinterland Heath is equivalent to Hinterland Heath (unit 56) described by Keith & Bedward (1999). It is characterised by an open shrub canopy up to 2 m tall, with scattered emergent trees. The relatively dense groundcover is dominated by sedges with grasses, herbs and small ferns also present. Southeast Hinterland Heath is restricted to small soaks in the southern granitoid hinterland, typically at 150 - 500 m elevation, but reaching 650 m in the Myanba Creek area. This assemblage lacks many of the shrub and forb species characteristic of the more coastal heath assemblages (Map Units HL e54 and HL e55). The most similar assemblage in East Gippsland is a lowland clay heathland entity (within Ecological Vegetation Class 7, Woodgate *et al.* 1994), which, like Southeast Hinterland Heath, is locally restricted but scattered widely in the hinterland. Although almost all of this restricted unit occurs on public land, a small portion is reserved and most occurs within production forest. The principal threats entail small scale clearing, earthworks, erosion, sedimentation and burning associated with logging and road building, even though the paucity of merchantable timber generally precludes direct logging of this assemblage. Frequent fire regimes may reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Intervals between planned and unplanned fires need to be long enough to allow replenishment of seed banks and restoration of habitat structure to avoid losses of diversity.

#### Floristic Summary:

**Trees:** **Shrubs:** *Allocasuarina paludosa*, *Callistemon citrinus*, *Hakea sericea*, *Leptospermum continentale*, *Melaleuca squarrosa* **Groundcover:** *Empodisma minus*, *Gahnia radula*, *Lepidosperma filiforme*, *Leptocarpus tenax*, *Lindsaea linearis*, *Patersonia fragilis*, *Selaginella uliginosa*, *Xyris gracilis*

#### Vegetation structure:

Stratum	Frequency (n=11)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	-	- (-)	- (-)
Small tree	82	8.7 (3)	2.2 (2)
Shrub	100	2.5 (0.7)	55 (20.1)
Ground cover	100	0.9 (0.4)	76.8 (22.8)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 10 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 22 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 10 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Allocasuarina paludosa</i>	3(2-4)	69	1(1-3)	1
<i>Banksia marginata</i>	1(1-1)	23	1(1-1)	3
<i>Boronia parviflora</i>	1(1-1)	23	1(1-1)	<1
<i>Bossiaea prostrata</i>	1(1-1)	38	1(1-1)	3
<i>Burchardia umbellata</i>	1(1-1)	31	1(1-1)	2
<i>Callistemon citrinus</i>	2(2-3)	69	1(1-1)	1
<i>Cryptostylis subulata</i>	1(1-1)	31	1(1-1)	1
<i>Dampiera stricta</i>	1(1-1)	38	1(1-1)	8
<i>Drosera peltata</i>	1(1-1)	38	1(1-1)	2
<i>Empodisma minus</i>	1(1-2)	85	1(1-2)	3
<i>Epacris obtusifolia</i>	1(1-2)	31	1(1-1)	2
<i>Epacris paludosa</i>	1(1-1)	23	1(1-2)	1
<i>Eucalyptus considaniana</i>	1(1-1)	38	2(1-2)	2
<i>Eucalyptus ignorabilis</i>	1(1-2)	23	0(0-0)	0
<i>Eucalyptus ovata</i>	1(1-1)	23	2(1-3)	1
<i>Gahnia radula</i>	2(1-2)	77	1(1-2)	2
<i>Gleichenia microphylla</i>	1(1-3)	23	1(1-2)	1
<i>Hakea sericea</i>	2(1-2)	46	1(1-1)	7

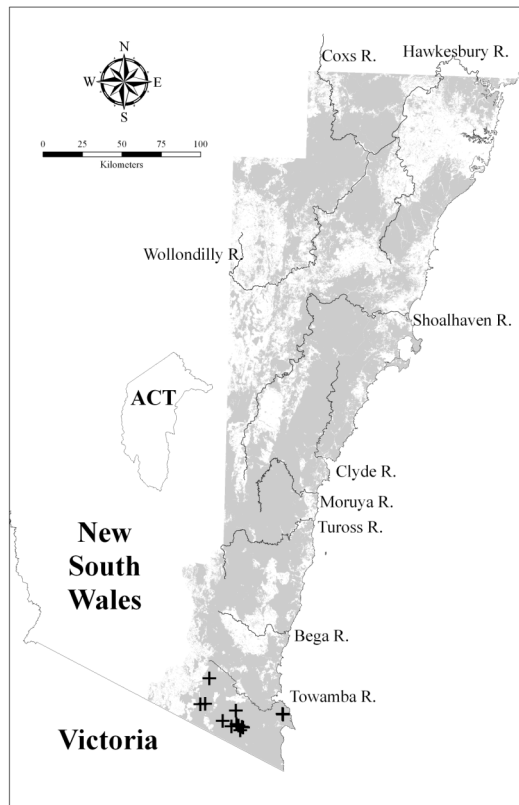
<i>Hypericum japonicum</i>	1(1-1)	38	1(1-1)	2
<i>Lepidosperma filiforme</i>	2(1-3)	46	1(1-2)	2
<i>Lepidosperma limicola</i>	2(1-3)	31	1(1-2)	1
<i>Leptocarpus tenax</i>	1(1-2)	54	1(1-2)	2
<i>Leptospermum continentale</i>	1(1-2)	92	1(1-1)	3
<i>Lindsaea linearis</i>	1(1-1)	77	1(1-1)	7
<i>Melaleuca squarrosa</i>	2(2-3)	62	2(1-3)	1
<i>Mitrasacme serpyllifolia</i>	1(1-1)	31	1(1-2)	<1
<i>Patersonia fragilis</i>	1(1-1)	46	1(1-1)	<1
<i>Rhytidosporum procumbens</i>	1(1-1)	31	1(1-1)	3
<i>Schoenus brevifolius</i>	3(2-5)	31	1(1-2)	1
<i>Selaginella uliginosa</i>	1(1-1)	62	1(1-1)	2
<i>Sphaerolobium vimineum</i>	1(1-1)	23	1(1-1)	<1
<i>Sprengelia incarnata</i>	1(1-1)	38	1(1-2)	1
<i>Tetrarrhena juncea</i>	1(1-2)	38	1(1-2)	5
<i>Thysanotus tuberosus</i> subsp. <i>tuberosus</i>	1(1-1)	31	1(1-1)	2
<i>Xanthosia dissecta</i>	1(1-1)	38	1(1-1)	<1
<i>Xyris gracilis</i>	1(1-1)	54	1(1-1)	1
<i>Xyris operculata</i>	1(1-2)	23	1(1-1)	1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Gonocarpus tetragynus</i>	1(1-1)	38	1(1-1)	20
<i>Gonocarpus teucrioides</i>	1(1-1)	38	1(1-1)	18
<i>Lagenifera stipitata</i>	1(1-1)	31	1(1-1)	14
<i>Lomandra longifolia</i>	1(1-2)	31	1(1-1)	44
<i>Poa meionectes</i>	1(1-2)	31	1(1-2)	16

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus agglomerata</i>	1(1-1)	8	2(1-3)	7
<i>Eucalyptus angophoroides</i>	1(1-1)	15	1(1-2)	1
<i>Eucalyptus conspicua</i>	1(1-1)	8	1(1-1)	<1
<i>Eucalyptus globoidea</i>	1(1-1)	15	2(1-2)	12
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	8	2(1-3)	6
<i>Eucalyptus viminalis</i>	1(1-1)	8	2(1-3)	5



Locations of survey sites allocated to FrW e56. Grey shading indicates extant native vegetation cover within the study area.

### FrW e57: Southeast Lowland Swamp



Plate e57. Southeast Lowland Swamp (Map Unit e57) dominated by *Melaleuca squarrosa*, *Epacris paludosa*, *Sprengelia incarnata* and sedges on Timbillica Road in Sidlings Swamp Flora Reserve. *Eucalyptus cephalocarpa* occurs on the swamp edge in background.

Sample Sites: 20

Area Extant (ha): 1700

Estimated % remaining: >70%

Area in conservation reserves (ha): 1000

Estimated % of pre-clearing area in conservation reserves: 50-65%

No. Taxa (total / unique): 105 / 0

No. Taxa per Plot ( $\pm$ sd): 18.8 (5.1)

Class: Coastal Heath Swamps  
Related TEC: n/a

Southeast Lowland Swamp is equivalent to Lowland Swamp (unit 57) described by Keith & Bedward (1999). It has a dense but variable shrub stratum up to 2 m tall, with scattered emergent *Eucalyptus* trees occurring mainly around the edges of swamps. The tall dense groundcover is dominated by sedges with grasses and small ferns also present. Southeast Lowland Swamp is restricted to waterlogged soils on Tertiary alluvium, sandy colluvial granitoid soils and Holocene sands below 100 m elevation in broad open flat gullies in the Nadgee area and lower Wallagaraugh River catchment. A similar assemblage occurs within the riparian scrub complex (Ecological Vegetation Class 17, Woodgate et al. 1994) in similar lowland habitats east of Orbost in East Gippsland. Southeast Lowland Swamp includes some stands (e.g. around Nadgee Lake) with affinities to coastal lagoon wetlands (Ecological Vegetation Class 11, Woodgate et al. 1994) in East Gippsland. A relatively small area of Southeast Lowland Swamp has been cleared and about two-thirds is represented in reserves. Outside reserves, the principal threat is sedimentation from road building, burning and logging activities within swamp catchments. Frequent fires used in hazard reduction may reduce diversity by interrupting life-cycle processes of woody species. Long fire-free intervals also potentially threaten diversity of small shrubs and forbs that may be excluded by competition from the dense sedge stratum (Keith 1996). Thus to maintain diversity, intervals between planned and unplanned fires need to be long enough to allow replenishment of seed banks and restoration of habitat structure, and shorter than the combined longevity of standing plants and seed banks.

#### Floristic Summary:

**Shrubs:** *Baeckea linifolia*, *Dillwynia glaberrima*, *Epacris obtusifolia*, *Epacris paludosa*, *Leptospermum continentale*, *Melaleuca squarrosa*, *Sprengelia incarnata* **Climbers:** *Cassytha glabella* **Groundcover:** *Empodisma minus*, *Gleichenia dicarpa*, *Gymnoschoenus sphaerocephalus*, *Leptocarpus tenax*, *Selaginella uliginosa*, *Xanthorrhoea resinifera*, *Xyris operculata*

#### Vegetation structure:

Stratum	Frequency (n=19)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	-	- (-)	- (-)
Small tree	16	8 (6.1)	12.7 (15)
Shrub	74	2.5 (0.6)	49.3 (19.2)
Ground cover	100	1.3 (0.4)	75.5 (21.5)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 7 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 15 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 7 positive diagnostic species.

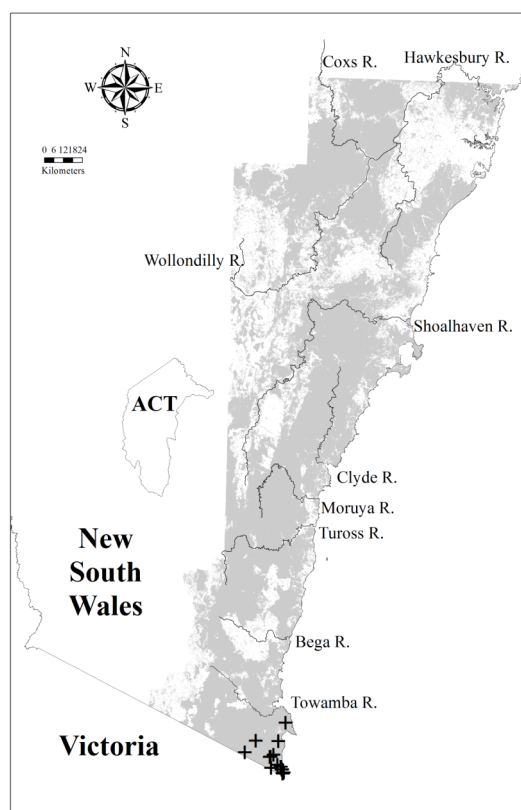
#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Baeckea linifolia</i>	1(1-3)	55	1(1-1)	1
<i>Banksia paludosa</i>	1(1-1)	25	1(1-2)	3
<i>Boronia muelleri</i>	1(1-2)	20	1(1-2)	<1
<i>Burchardia umbellata</i>	1(1-1)	25	1(1-1)	2
<i>Callistemon citrinus</i>	1(1-1)	20	1(1-2)	1
<i>Cassytha glabella</i>	1(1-1)	60	1(1-1)	8
<i>Dillwynia glaberrima</i>	1(1-1)	45	1(1-1)	1
<i>Drosera peltata</i>	1(1-1)	35	1(1-1)	2
<i>Empodisma minus</i>	2(1-3)	70	1(1-2)	2
<i>Epacris microphylla</i> var. <i>microphylla</i>	1(1-2)	30	1(1-1)	5
<i>Epacris obtusifolia</i>	1(1-1)	75	1(1-1)	1
<i>Epacris paludosa</i>	1(1-2)	40	1(1-1)	<1
<i>Eurychorda complanata</i>	1(1-1)	20	1(1-1)	1
<i>Gahnia clarkei</i>	1(1-1)	30	1(1-2)	2
<i>Gleichenia dicarpa</i>	4(3-5)	45	1(1-2)	2
<i>Gymnoschoenus sphaerocephalus</i>	3(1-4)	65	2(1-3)	1

<i>Hakea teretifolia</i>	1(1-1)	35	1(1-2)	4
<i>Lepidosperma forsythii</i>	3(2-3)	30	1(1-2)	<1
<i>Leptocarpus tenax</i>	2(1-2)	85	1(1-2)	2
<i>Leptospermum continentale</i>	1(1-2)	50	1(1-1)	3
<i>Leucopogon esquamatus</i>	1(1-1)	20	1(1-1)	1
<i>Lycopodiella lateralis</i>	1(1-1)	20	1(1-1)	<1
<i>Melaleuca squarrosa</i>	3(2-3)	95	2(1-2)	1
<i>Selaginella uliginosa</i>	1(1-1)	40	1(1-1)	2
<i>Sowerbaea juncea</i>	1(1-1)	20	1(1-1)	1
<i>Sprengelia incarnata</i>	1(1-1)	70	1(1-2)	1
<i>Xanthorrhoea resinifera</i>	1(1-1)	50	1(1-2)	4
<i>Xyris operculata</i>	1(1-2)	55	1(1-1)	1

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus baxteri</i>	1(1-2)	15	1(1-2)	<1
<i>Eucalyptus consideniana</i>	1(1-1)	5	2(1-2)	2
<i>Eucalyptus conspicua</i>	1(1-1)	5	1(1-1)	<1
<i>Eucalyptus ovata</i>	1(1-1)	10	2(1-3)	1



Locations of survey sites allocated to FrW e57. Grey shading indicates extant native vegetation cover within the study area.



**FrW e59: Southeast Sub-alpine Bog**

Plate e59. Southeast Sub-alpine Bog (Map Unit e59) dominated by *Baeckea utilis*, *Hakea microcarpa*, *Epacris breviflora*, and *Baloskion australe* with *Pratia surrepens* along the drainage line at Nunnock Swamp, Tantawangalo section of South East Forests National Park.

Sample Sites: 18

Area Extant (ha): 2700

Estimated % remaining: 50-70%

Area in conservation reserves (ha): 880

Estimated % of pre-clearing area in conservation reserves: 15-25%

No. Taxa (total / unique): 200 / 15

No. Taxa per Plot ( $\pm$ sd): 25.6 (10.2)

Class: Montane Bogs and Fens

Related TECs: Montane Peatlands and Swamps EEC (TSC); Temperate Highland Peat Swamps on Sandstone (EPBC).

Southeast Sub-alpine Bog is equivalent to Sub-alpine Bog (unit 59) described by Keith & Bedward (1999). It features a diverse open shrub stratum over 1 m tall dominated by species in the Myrtaceae and Epacridaceae. Scattered emergent trees including occur mainly around the edges of swamps. The continuous groundcover is dominated by sedges with occasional grasses and a diverse range of herbs. Southeast Subalpine Bog is restricted to waterlogged broad open flat gullies on alluvium derived from granitoid substrates or metasediments above 800 m elevation on the edge of the Monaro Tableland. Perennial and ephemeral lakes have developed in basalt depressions on the tableland, although most of these are located to the west of the study area. Their flora and vegetation is described by Benson & Jacobs (1994). There is usually development of substantial peat and standing water is common in winter. A similar assemblage extends further north (Tableland Bog FrW p53) and also south into East Gippsland (Community 1.2, Forbes *et al.* 1982). Almost 72% of this unit has been cleared or heavily degraded by grazing and over half of the remainder occurs on private land where it is subject to further clearing, continuing degradation by trampling, grazing, nutrification, sedimentation and weed invasion associated with pastoral land uses. The spongy peat soils are especially vulnerable to trampling by stock, which must therefore be excluded if degradation is to be minimised. Bogs in State Forest may be affected by sedimentation and burning in adjacent forest, but to a lesser extent than those in pastoral areas. Some stands may also be threatened by peat mining, as has occurred at Killarney Swamp near Bombala. Frequent fires used in hazard reduction and grazing management may reduce diversity by interrupting life-cycle processes of woody species. Intense fires may consume peat, changing habitat structure of the bogs for many years (Keith 1996). Thus intervals between planned and unplanned fires need to be long enough to allow replenishment of seed banks and restoration of habitat structure, and very intense fires need to be excluded if losses of diversity are to be avoided.

**Floristic Summary:**

**Trees:** *Eucalyptus pauciflora* **Shrubs:** *Baeckea utilis*, *Epacris paludosa*, *Hakea microcarpa*, *Leptospermum myrtifolium*, *Hymenanthera dentata*, *Melaleuca ericifolia* **Groundcover:** *Asperula gunnii*, *Baloskion australe*, *Empodisma minus*, *Gonocarpus micranthus*.

**Vegetation structure:**

Stratum	Frequency (n=10)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	40	8.6 (3)	15.3 (23.2)
Small tree	10	12 (-)	5 (-)
Shrub	100	1.7 (0.7)	41.7 (22.7)
Ground cover	100	0.6 (0.3)	72 (28.5)

**Diagnostic Species:**

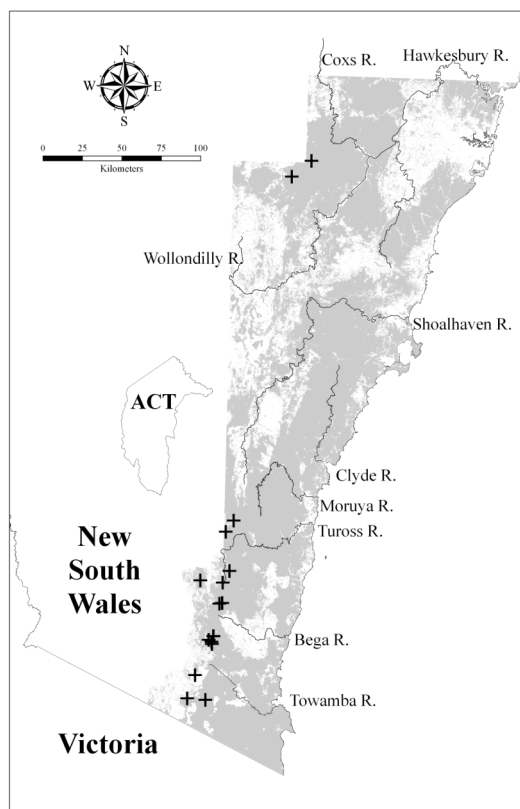
A 0.04 ha plot located in this Map Unit is expected to contain at least 7 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 17 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 7 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Asperula gunnii</i>	1(1-2)	44	1(1-1)	<1
<i>Baeckea utilis</i>	2(1-2)	83	1(1-1)	<1
<i>Baloskion australe</i>	1(1-2)	83	1(1-1)	<1
<i>Banksia marginata</i>	1(1-2)	28	1(1-1)	3
<i>Baumea rubiginosa</i>	2(1-3)	22	1(1-2)	1
<i>Brachyscome scapigera</i>	1(1-1)	22	1(1-1)	<1
<i>Carex gaudichaudiana</i>	1(1-3)	22	1(1-2)	1
<i>Empodisma minus</i>	2(1-4)	72	1(1-2)	3
<i>Epacris breviflora</i>	1(1-1)	33	1(1-1)	<1
<i>Epacris microphylla</i> var. <i>microphylla</i>	2(1-3)	39	1(1-1)	5
<i>Epacris paludosa</i>	2(1-3)	61	1(1-1)	<1
<i>Eucalyptus pauciflora</i>	1(1-2)	44	1(1-2)	3
<i>Gentianella diemensis</i>	1(1-1)	22	1(1-1)	<1
<i>Geranium neglectum</i>	1(1-1)	22	1(1-1)	1
<i>Gonocarpus micranthus</i>	1(1-2)	61	1(1-1)	1
<i>Grevillea lanigera</i>	1(1-2)	22	1(1-1)	<1
<i>Hakea microcarpa</i>	1(1-1)	83	1(1-1)	<1
<i>Hydrocotyle peduncularis</i>	1(1-2)	33	1(1-1)	9
<i>Hypericum japonicum</i>	1(1-2)	33	1(1-1)	2
<i>Hypoxis hygrometrica</i>	1(1-1)	28	1(1-1)	1
<i>Leptospermum continentale</i>	1(1-1)	28	1(1-1)	3
<i>Leptospermum myrtifolium</i>	1(1-2)	72	1(1-1)	1
<i>Lepyrodia anarthria</i>	2(1-2)	28	1(1-3)	<1
<i>Luzula flaccida</i>	1(1-1)	22	1(1-1)	4
<i>Patersonia fragilis</i>	1(1-1)	22	1(1-1)	<1
<i>Pratia surrepens</i>	1(1-1)	22	1(1-1)	<1
<i>Ranunculus pimpinellifolius</i>	1(1-2)	22	1(1-1)	<1
<i>Schoenus apogon</i>	1(1-1)	22	1(1-1)	2
<i>Stylidium graminifolium</i>	1(1-1)	39	1(1-1)	9
<i>Utricularia dichotoma</i>	1(1-1)	28	1(1-1)	<1
<i>Velleia montana</i>	1(1-1)	22	1(1-1)	<1
<i>Veronica gracilis</i>	1(1-1)	22	1(1-1)	<1

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-1)	11	1(1-2)	3
<i>Eucalyptus dives</i>	1(1-1)	6	2(1-3)	4
<i>Eucalyptus ovata</i>	1(1-1)	11	2(1-3)	1
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-1)	11	1(1-2)	2
<i>Eucalyptus stellulata</i>	1(1-1)	6	1(1-2)	1
<i>Eucalyptus viminalis</i>	1(1-1)	11	2(1-3)	5



Locations of survey sites allocated to FrW e59. Grey shading indicates extant native vegetation cover within the study area.

**FoW e60: Southeast Floodplain Wetlands**

Plate e60. Southeast Floodplain Wetlands (Map Unit e60) dominated by *Phragmites australis* with scattered *Melaleuca ericifolia* at Whelans Swamp on Princes Highway south of Eden.

Sample Sites: 11

Area Extant (ha): 1800

Estimated % remaining: 15-25%

Area in conservation reserves (ha): 100

Estimated % of pre-clearing area in conservation reserves: <5%

No. Taxa (total / unique): 119 / 2

No. Taxa per Plot ( $\pm$ sd): 23.9 (12.1)

Class: Coastal Floodplain Wetlands

Related TECs: Freshwater Wetland on Coastal Floodplains EEC, River Flat Eucalypt Forest on Coastal Floodplains EEC (TSC).

Southeast Floodplain Wetlands is equivalent to Floodplain Wetlands (unit 60) described by Keith & Bedward (1999). This unit comprises a complex of plant assemblages including reedlands, herbfields, scrubs and swamp forests but not all of these have been sampled quantitatively. Herbaceous wetlands are dominated by *Phragmites australis*, *Eleocharis spachelata* and *Typha* spp. and typically have standing water for much of the year. The wooded floodplain swamp forests are dominated by scattered *Eucalyptus ovata*, and may have patchy thickets of *Melaleuca ericifolia* with *Hymenanthera dentata*. The diverse groundcover is patchy and poorly developed beneath dense patches of shrubs. It includes herbs *Callitriche muelleri*, *Persicaria decipiens*, *Centella asiatica*, *Dichondra repens*, *Geranium solanderi*, *Lagenifera stipitata*, *Lobelia alata*, *Pratia purpurascens*, *Rumex brownii* and *Senecio minimus*, sedges *Carex* spp., *Eleocharis acuta*, *Isolepis habra* and *Juncus planifolius*, and ferns *Adiantum aethiopicum*, *Blechnum minus* and *Pteris tremula*. Remnants of forested wetlands occur around the margins of the floodplains. Southeast Floodplain Wetlands are restricted to the floodplains of major Rivers on riverine alluvium. More than three quarters of Southeast Floodplain Wetlands have been cleared for agriculture and coastal development, while three-quarters of the remainder occur on private land where they are threatened by further clearing, nutrification, weed invasion, trampling and grazing. Much of the remaining area, including that on public land, is wooded wetland. Some herbaceous wetlands persist in varying states of degradation near the town of Bega and at Jellat Jellat. Floodplain vegetation on Australia's southeast coast is generally depleted by clearing and degraded by grazing and weed invasion (e.g. Pressey 1989). In East Gippsland the most similar assemblage is restricted to areas adjacent to coastal lagoons (Ecological Vegetation Type 11, Woodgate et al. 1994).

**Floristic Summary:**

**Shrubs:** *Hymenanthera dentata*, *Melaleuca ericifolia* **Groundcover:** *Acaena novae-zelandiae*, *Carex appressa*, *Centella asiatica*, *Lobelia anceps*, *Persicaria decipiens*, *Persicaria praetermissa*, *Phragmites australis*, *Ranunculus inundatus*, *Ranunculus plebeius*, *Senecio minimus*

**Vegetation structure:**

Stratum	Frequency (n=11)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	55	10.2 (4.1)	20.2 (16.8)
Small tree	45	6.8 (0.8)	63 (12)
Shrub	73	2.6 (0.5)	33.1 (31.2)
Ground cover	100	0.9 (0.6)	41.8 (26.5)

**Diagnostic Species:**

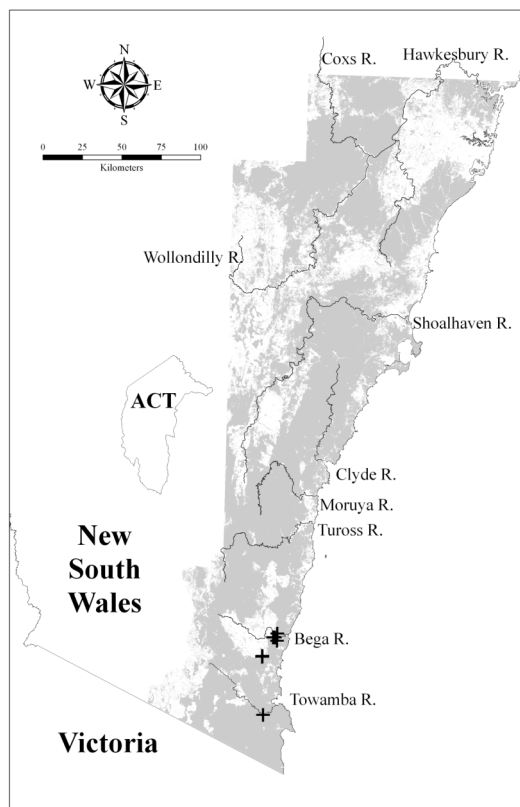
A 0.04 ha plot located in this Map Unit is expected to contain at least 7 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 14 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 7 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acaena novae-zelandiae</i>	1(1-1)	45	1(1-1)	7
<i>Alisma plantago-aquatica</i>	1(1-1)	36	1(1-1)	<1
<i>Alternanthera denticulata</i>	1(1-1)	27	1(1-1)	1
<i>Blechnum minus</i>	1(1-2)	36	1(1-1)	<1
<i>Callitriche muelleri</i>	1(1-2)	27	1(1-1)	<1
<i>Calystegia sepium</i>	1(1-2)	36	1(1-2)	<1
<i>Carex appressa</i>	3(2-4)	82	1(1-1)	4
<i>Carex gaudichaudiana</i>	1(1-1)	36	1(1-2)	1
<i>Centella asiatica</i>	1(1-1)	45	1(1-1)	4
<i>Eucalyptus ovata</i>	1(1-2)	27	2(1-3)	1
<i>Hymenanthera dentata</i>	1(1-2)	45	1(1-1)	6
<i>Hypolepis muelleri</i>	2(1-3)	27	1(1-2)	1
<i>Isolepis habra</i>	1(1-1)	27	1(1-1)	<1
<i>Isolepis inundata</i>	1(1-2)	36	1(1-1)	1
<i>Juncus gregiflorus</i>	1(1-1)	27	1(1-1)	<1
<i>Juncus planifolius</i>	1(1-1)	27	1(1-1)	1
<i>Juncus usitatus</i>	1(1-1)	27	1(1-1)	2
<i>Lobelia anceps</i>	1(1-1)	64	1(1-1)	1
<i>Lycopus australis</i>	2(1-3)	36	1(1-2)	<1
<i>Lythrum salicaria</i>	1(1-1)	36	1(1-1)	<1
<i>Melaleuca ericifolia</i>	3(3-4)	91	2(1-4)	1
<i>Persicaria decipiens</i>	1(1-1)	55	1(1-1)	1
<i>Persicaria praetermissa</i>	1(1-2)	45	1(1-1)	<1
<i>Phragmites australis</i>	1(1-2)	45	1(1-2)	1
<i>Pteris tremula</i>	1(1-1)	27	1(1-1)	1
<i>Ranunculus amphitrichus</i>	1(1-1)	27	1(1-1)	<1
<i>Ranunculus inundatus</i>	1(1-1)	55	1(1-1)	1
<i>Ranunculus plebeius</i>	1(1-1)	45	1(1-1)	1
<i>Senecio minimus</i>	1(1-1)	45	1(1-1)	1

Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Adiantum aethiopicum</i>	1(1-1)	36	1(1-2)	9
<i>Viola hederacea</i>	1(1-1)	36	1(1-1)	22



Locations of survey sites allocated to FoW e60. Grey shading indicates extant native vegetation cover within the study area.

**DSF e61: Coastal Foredune Scrub**

Plate e61. Coastal Foredune Scrub (Map Unit e61) dune variant with *Banksia integrifolia*, *Acacia sophorae*, *Westringia fruticosa*, *Leucopogon parviflorus*, *Isolepis nodosa* and *Lomandra longifolia* on the foredune at Picnic Point, northern section of Mimosas Rocks National Park. Headland variant dominated by *Allocasuarina verticillata* in background.

**NOTE:** DSF e61 and GL e62 are generally only spatially separable at very fine mapping scales, with e62 tending to occur as small linear patches in association with e61. For the purposes of this project these units were mapped as a single combined e61e62 unit, and the figures below apply to the combined e61e62 unit.

Sample Sites: 35 (DSF e61); 30 (GL e62)  
 Area Extant (ha): 3100  
 Estimated % remaining: 35-50%  
 Area in conservation reserves (ha): 1700  
 Estimated % of pre-clearing area in conservation reserves: 25-35%  
 No. Taxa (total / unique): 94 / 1  
 No. Taxa per Plot ( $\pm$ sd): 43.4 (18.1)  
 Class: South Coast Sands Dry Sclerophyll Forests  
 Related TEC: n/a

Coastal Foredune Scrub is equivalent to Coastal Scrub (unit 61) described by Keith & Bedward (1999). It is characterised by a variable shrub stratum up to 3 m tall that includes numerous species that occur at low frequencies but are apparently exclusive to this assemblage. Occasionally small trees (*Eucalyptus botryoides*) emerge above the shrub stratum. The patchy groundcover includes the prostrate succulent herb *Carpobrotus glaucescens*, the sedge *Isolepis nodosa* and the herb *Oxalis perennans*. Coastal Foredune Scrub is restricted to foredunes immediately adjacent to the coast. Coastal Sand Forest (Map Unit DSF p64) may be adjacent to Coastal Foredune Scrub in more sheltered sites on sand dunes. Beach Strand Grassland (Map Unit GL e62) occurs between Coastal Foredune Scrub and the high tide mark. Coastal Foredune Scrub occurs throughout the coast and similar assemblages extend both north and south of the study area. In East Gippsland *Leptospermum laevigatum* becomes a dominant shrub species (Community 20, Forbes *et al.* 1982; Ecological Vegetation Class 1, Woodgate *et al.* 1994). More than half of Coastal Foredune Scrub has been cleared for coastal development. Although most of the remainder is represented within reserves, some of these reserved areas and some off-reserve sites are threatened by intense recreational usage and development pressures. Causes of continuing degradation include rubbish dumping, small-scale clearing and burning, firewood harvesting, trampling and weed invasion.

**Floristic Summary:**

**Trees:** *Banksia integrifolia* subsp. *integrifolia* **Shrubs:** *Acacia longifolia*, *Leucopogon parviflorus*, *Rhagodia candolleana* subsp. *candolleana* **Groundcover:** *Actites megalocarpa*, *Carpobrotus glaucescens*, *Isolepis nodosa*, *Lomandra longifolia*, *Muehlenbeckia adpressa*, *Oxalis perennans*, *Pteridium esculentum*, *Spinifex sericeus*, *Zoysia macrantha*

**Vegetation structure:**

Stratum	Frequency (n=3)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	-	- (-)	- (-)
Small tree	33	6 (0)	10 (0)
Shrub	100	1.8 (0.6)	58.3 (12.6)
Ground cover	100	0.6 (0.3)	36.7 (12.6)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 5 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 29 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 5 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia longifolia</i>	1(1-1)	91	1(1-2)	9
<i>Acaena novae-zelandiae</i>	1(1-1)	34	1(1-1)	7
<i>Actites megalocarpa</i>	1(1-1)	51	1(1-1)	<1
<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>	1(1-1)	91	1(1-2)	2
<i>Calystegia soldanella</i>	1(1-1)	23	1(1-1)	<1
<i>Carpobrotus glaucescens</i>	1(1-1)	74	1(1-1)	<1
<i>Dichelachne crinita</i>	1(1-1)	26	1(1-1)	1
<i>Isolepis nodosa</i>	1(1-1)	74	1(1-1)	1
<i>Leptospermum laevigatum</i>	1(1-2)	26	1(1-3)	1
<i>Leucopogon parviflorus</i>	1(1-1)	71	1(1-1)	<1
<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	1(1-3)	26	2(1-2)	1
<i>Monotoca elliptica</i>	1(1-1)	37	1(1-1)	2
<i>Muehlenbeckia adpressa</i>	1(1-1)	40	1(1-1)	<1
<i>Oxalis perennans</i>	1(1-1)	66	1(1-1)	13
<i>Pelargonium australe</i>	1(1-1)	26	1(1-1)	<1
<i>Rhagodia candolleana</i> subsp. <i>candolleana</i>	1(1-1)	63	1(1-1)	<1
<i>Spinifex sericeus</i>	1(1-1)	63	1(1-1)	<1
<i>Zoysia macrantha</i>	1(1-1)	71	1(1-2)	<1

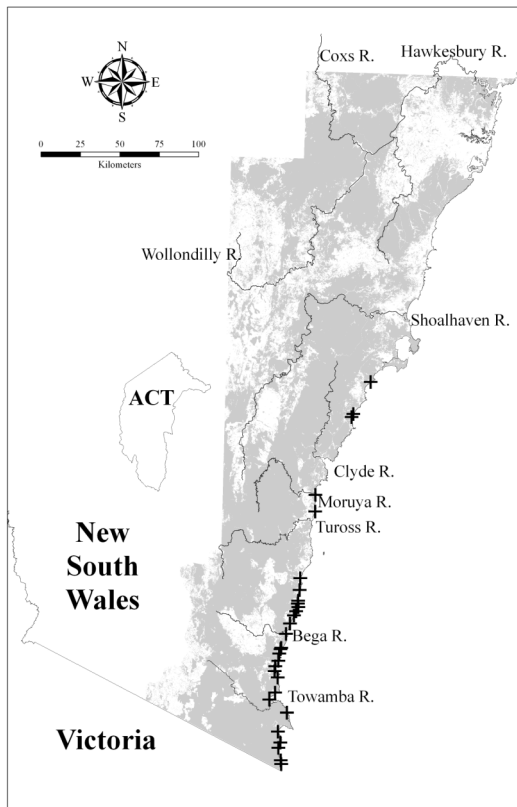
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Lomandra longifolia</i>	1(1-1)	46	1(1-1)	44
<i>Pteridium esculentum</i>	1(1-1)	40	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus botryoides</i>	1(1-1)	3	2(1-3)	3





Locations of survey sites allocated to DSF e61. Grey shading indicates extant native vegetation cover within the study area.

### GL e62: Beach Strand Grassland



Plate e62. Beach Strand Grassland (Map Unit e62) at Little Austinmer beach dominated by *Spinifex sericeus* and *Zoysia macrantha*.

**NOTE:** DSF e61 and GL e62 are generally only spatially separable at very fine mapping scales, with e62 tending to occur as small linear patches in association with e61. For the purposes of this project these units were mapped as a single combined e61e62 unit, and the figures below apply to the combined e61e62 unit.

Sample Sites: 35 (DSF e61); 30 (GL e62)  
 Area Extant (ha): 3100  
 Estimated % remaining: 35-50%  
 Area in conservation reserves (ha): 1700  
 Estimated % of pre-clearing area in conservation reserves: 25-35%  
 No. Taxa (total / unique): 94 / 1  
 No. Taxa per Plot ( $\pm$ sd): 43.4 (18.1)  
 Class: Maritime Grasslands  
 Related TEC: n/a

Beach Strand Grassland has a sparse ground stratum dominated by grasses *Spinifex sericeus* and *Festuca littoralis*, with scattered patches of the prostrate succulent herb *Carpobrotus glaucescens*. Beach Strand Grassland is restricted to mobile, unconsolidated calcareous sands on beach strands directly above the high tide mark on the seaward side of Coastal Fore-dune Scrub (Map Unit DSF e61) on beach foredunes. Individual occurrences are generally linear in shape and less than 20 m wide. Coastal Fore-dune Scrub and Beach Strand Grassland (Map Units DSF e61 and GL e62) were therefore mapped together as a mosaic. Similar assemblages extend both north and south of the study area. In East Gippsland similar vegetation is included within the coastal dune scrub complex (Community 20, Forbes *et al.* 1982; Ecological Vegetation Class 1, Woodgate *et al.* 1994). Beach Strand Grassland is a very resilient, species-poor assemblage. Its principal species tolerate a wide range of physical disturbances and are widely dispersed by wind and wave action. There are numerous beaches represented in reserves. Beach strands subject to intense recreational usage have grassland with reduced density due to trampling. Some stands include maritime weeds such as *Cakile edentula*.

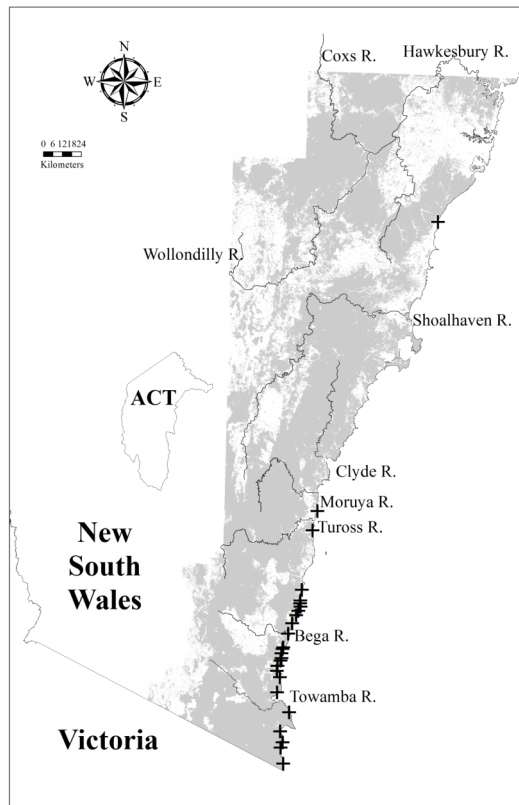
#### Vegetation structure:

Stratum	Frequency (n=1)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	-	- (-)	- (-)
Small tree	-	- (-)	- (-)
Shrub	-	- (-)	- (-)
Ground cover	100	0.3 (0)	50 (0)

#### Diagnostic Species:

##### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Actites megalocarpa</i>	1(1-1)	23	1(1-1)	<1
<i>Austrofestuca littoralis</i>	1(1-1)	73	1(1-1)	<1
<i>Calystegia soldanella</i>	1(1-1)	33	1(1-1)	<1
<i>Carpobrotus glaucescens</i>	1(1-1)	53	1(1-1)	<1
<i>Isolepis nodosa</i>	1(1-2)	20	1(1-1)	1
<i>Spinifex sericeus</i>	1(1-1)	100	1(1-1)	<1



Locations of survey sites allocated to GL e62. Grey shading indicates extant native vegetation cover within the study area.

### SL e65: River Mangrove

Sample Sites: no data  
 Area Extant (ha): 550  
 Estimated % remaining:  
 Area in conservation reserves (ha): 210  
 Estimated % of pre-clearing area in conservation reserves: <5%  
 No. Taxa (total / unique): no data  
 No. Taxa per Plot ( $\pm$ sd): no data  
 Class: Mangrove Swamps  
 Related TEC: Protected Marine Vegetation.

No quantitative data are available for this assemblage. The dominant species is *Aegiceras corniculata* which varies in stature from a shrub to a small tree. There may be a sparse cover of herbaceous species that are associated more commonly with Saltmarsh (Map Unit SL p509). Estuarine Wetland (River Mangrove) is restricted to the upper tidal zone on mudflats north from Merimbula Lake, where the dominant species reaches its southern limit. *A. corniculata* also occurs as an emergent in Saltmarsh of other estuaries within the region (e.g. Bermagui River). Its distribution continues further north along the New South Wales coast. Mangroves have an important role in estuarine productivity and in supporting breeding populations of fish and other marine organisms. The principal threats entail degradation associated with foreshore and catchment development, and intensifying recreational use of the lake.

### SL e67: Seagrass Meadows (*Halophila*)

Sample Sites: no data  
 Area Extant (ha): 610  
 Estimated % remaining:  
 Area in conservation reserves (ha): 60  
 Estimated % of pre-clearing area in conservation reserves: 5-10%  
 No. Taxa (total / unique): no data  
 No. Taxa per Plot ( $\pm$ sd): no data  
 Class: Seagrass Meadows  
 Related TEC: Protected Marine Vegetation

No quantitative data are available for this unit. The dominant species is *Halophila ovalis* which may co-occur with other seagrass species (Map Units SL e68 - SL e70). Seagrass Meadows (*Halophila*) are restricted to soft substrates in the sub-tidal zone of coastal estuaries such as Wallagoot, Cuttagee and Wallaga Lakes. More work is required to

establish its relationship to other seagrass assemblages. Sea grass meadows have an important role in estuarine productivity and in supporting breeding populations of fish and other marine organisms. Potential threats include degradation caused by development or pasture improvement in estuary catchments, although the relevant catchments are partially protected in conservation reserves.

**SL e68: Seagrass Meadows (*Posidonia*)**

Sample Sites: no data

Area Extant (ha): 260

Estimated % remaining:

Area in conservation reserves (ha): 20

Estimated % of pre-clearing area in conservation reserves: <5%

No. Taxa (total / unique): no data

No. Taxa per Plot ( $\pm$ sd): no data

Class: Seagrass Meadows

Related TEC: Protected Marine Vegetation

No quantitative data are available for this unit. The dominant species is *Posidonia australis* which may co-occur with other seagrass species (Map Units SL e67, SL e 68 & SL e 70). Seagrass Meadows (*Posidonia*) are restricted to soft substrates in the sub-tidal zone of coastal estuaries such as Merimbula Lake and the Bermagui River estuary. More work is required to establish its relationship to other seagrass assemblages in the region. Sea grass meadows have an important role in estuarine productivity and in supporting breeding populations of fish and other marine organisms. Potential threats include degradation caused by development or pasture improvement in estuary catchments.

**SL e69: Seagrass Meadows (*Ruppia*)**

Sample Sites: no data

Area Extant (ha): 150

Estimated % remaining:

Area in conservation reserves (ha): 60

Estimated % of pre-clearing area in conservation reserves: 5-10%

No. Taxa (total / unique): no data

No. Taxa per Plot ( $\pm$ sd): no data

Class: Seagrass Meadows

Related TEC: Protected Marine Vegetation

No quantitative data are available for this unit. The dominant species are *Ruppia polycarpa* and *R. megacarpa* which may co-occur with other seagrass species (Map Units SL e67, SL e 68 & SL e 70). Seagrass Meadows (*Ruppia*) are restricted to soft substrates in the sub-tidal zone of coastal estuaries. Scattered occurrences include Curralo Lagoon near Eden, Middle Lagoon, Baragoot Lake and Wallaga Lake. More work is required to establish its relationship to other seagrass assemblages in the region. Sea grass meadows have an important role in estuarine productivity and in supporting breeding populations of fish and other marine organisms. Potential threats include degradation caused by development or pasture improvement in estuary catchments, although the some of the catchments are partially protected in conservation reserves.

**SL e70: Seagrass Meadows (*Zostera*)**

Plate e70. Seagrass Meadow (*Zostera*) (Map Unit e70) dominated by *Zostera capricorni* in the shallows of Lake Illawarra at Windang.

Sample Sites: no data

Area Extant (ha): 1400

Estimated % remaining:

Area in conservation reserves (ha): 80

Estimated % of pre-clearing area in conservation reserves: <5%

No. Taxa (total / unique): no data

No. Taxa per Plot ( $\pm$ sd): no data

Class: Seagrass Meadows

Related TEC: Protected Marine Vegetation

No quantitative data are available for this unit. The dominant species is *Zostera capricorni* which may co-occur with other seagrass species (Map Units SL e67 - SL e69). Seagrass Meadows (*Zostera*) are restricted to soft substrates in the sub-tidal zone of coastal estuaries. Further work is required to establish its relationship to other seagrass assemblages in the region. This is the most widespread seagrass assemblage. Sea grass meadows have an important role in estuarine productivity and in supporting breeding populations of fish and other marine organisms. Potential threats include degradation caused by development or pasture improvement in estuary catchments, although some of these catchments are partially protected in conservation reserves.



**DSF eW1: Wadbilliga Dry Shrub Forest**

Plate eW1. Wadbilliga Dry Shrub Forest (Map Unit eW1) dominated by *Eucalyptus sieberi* with *Podolobium ilicifolium*, *Xanthorrhoea concava* and *Lomandra confertifolia* subsPage *similis* near the eastern end of the Razorback Trail, Wadbilliga National Park.

Sample Sites: 20  
 Area Extant (ha): 6600  
 Estimated % remaining: >95%  
 Area in conservation reserves (ha): 6600  
 Estimated % of pre-clearing area in conservation reserves: >95%  
 No. Taxa (total / unique): 112 / 0  
 No. Taxa per Plot ( $\pm$ sd): 20.8 (6.4)  
 Class: South East Dry Sclerophyll Forests  
 Related TEC: n/a

Wadbilliga Dry Shrub Forest is equivalent to Map Unit W1 of the same name described by Keith & Bedward (1999). It features a tall canopy, frequently up to 30 m in height, composed of a mix of *Eucalyptus* species. A prominent stratum of sclerophyllous shrubs is present and the sparse groundcover is dominated by graminoid species. Wadbilliga Dry Shrub Forest occupies narrow ridges and upper slopes on metasediments at 400 - 1000 m elevation. Its rugged and inaccessible habitat and its distribution almost entirely within Wadbilliga National Park have protected this assemblage from past clearing activities. Although not currently threatened, increases in fire frequency would very likely result in losses of species diversity if an increase in ignitions occurred in future. Frequent fire regimes reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Intervals between planned and unplanned fires need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

**Floristic Summary:**

**Trees:** *Acacia falciformis*, *Eucalyptus cypellocarpa*, *Eucalyptus fraxinoides*, *Eucalyptus sieberi* **Shrubs:** *Acacia obtusifolia*, *Leucopogon lanceolatus* var. *lanceolatus*, *Notelaea venosa*, *Persoonia linearis*, *Platysace lanceolata*, *Polyscias sambucifolia* **Climbers:** *Billardiera scandens*, *Smilax australis* **Groundcover:** *Dianella caerulea*, *Dianella tasmanica*, *Lomandra longifolia*, *Pteridium esculentum*

**Vegetation structure:**

Stratum	Frequency (n=8)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	25.8 (4.9)	28.1 (7)
Small tree	50	18 (8.1)	26.3 (23.9)
Shrub	75	2.5 (0.5)	14.2 (9.2)
Ground cover	88	1 (-)	28.6 (21.4)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 8 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 16 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 8 positive diagnostic species.

**Positive Diagnostic Species:**

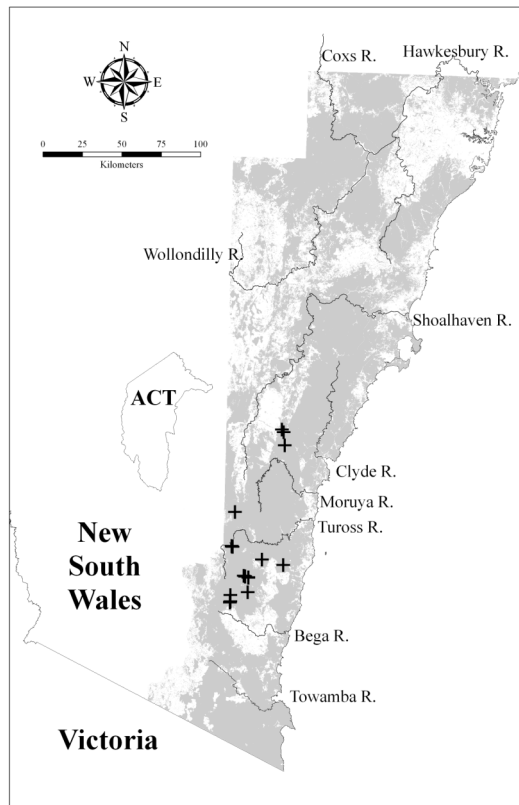
Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-1)	60	1(1-2)	10
<i>Acacia obliquinervia</i>	1(1-1)	20	1(1-1)	1
<i>Acacia obtusifolia</i>	1(1-1)	75	1(1-2)	9
<i>Billardiera scandens</i>	1(1-1)	60	1(1-1)	28
<i>Choretrum candollei</i>	1(1-2)	25	1(1-1)	1
<i>Dianella caerulea</i>	1(1-1)	70	1(1-1)	28
<i>Dianella tasmanica</i>	1(1-2)	55	1(1-1)	7
<i>Eucalyptus cypellocarpa</i>	1(1-1)	60	2(1-2)	10
<i>Eucalyptus elata</i>	1(1-3)	25	2(1-3)	5
<i>Eucalyptus fraxinoides</i>	1(1-1)	40	2(1-3)	1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-2)	35	2(1-3)	6
<i>Eucalyptus sieberi</i>	1(1-1)	85	2(1-3)	16
<i>Exocarpos strictus</i>	1(1-1)	35	1(1-1)	9
<i>Hakea eriantha</i>	1(1-1)	30	1(1-1)	2
<i>Hierochloe rariflora</i>	1(1-1)	20	1(1-2)	4
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	90	1(1-1)	23
<i>Lomandra longifolia</i>	1(1-1)	85	1(1-1)	44
<i>Notelaea venosa</i>	1(1-1)	60	1(1-1)	12
<i>Persoonia linearis</i>	1(1-1)	95	1(1-1)	29
<i>Platysace lanceolata</i>	1(1-1)	40	1(1-1)	13
<i>Polyscias sambucifolia</i>	1(1-1)	50	1(1-1)	6
<i>Pteridium esculentum</i>	1(1-1)	95	1(1-2)	37
<i>Stylidium graminifolium</i>	1(1-1)	35	1(1-1)	9

**Constant:**

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus globoidea</i>	1(1-1)	30	2(1-2)	12
<i>Podolobium ilicifolium</i>	1(1-1)	30	1(1-1)	9
<i>Smilax australis</i>	1(1-1)	40	1(1-1)	16

**Other tree species occurring less frequently in this community:**

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	10	1(1-2)	9
<i>Eucalyptus angophoroides</i>	1(1-1)	5	1(1-2)	1
<i>Eucalyptus fastigata</i>	1(1-2)	20	2(2-3)	6
<i>Eucalyptus muelleriana</i>	1(1-1)	10	2(1-2)	6
<i>Eucalyptus obliqua</i>	2(2-2)	15	2(1-3)	4
<i>Eucalyptus smithii</i>	2(1-2)	10	1(1-2)	2



Locations of survey sites allocated to DSF eW1. Grey shading indicates extant native vegetation cover within the study area.

### HL eW3: Wadbilliga Heath Forest



Plate eW3. Wadbilliga Heath Forest (Map Unit eW3) with *Eucalyptus pauciflora*, *E. latiuscula*, *Banksia canei*, *Kunzea* sPage C and *Leptospermum myrtifolium* south of Wadbilliga trig on the Razorback Trail, Wadbilliga National Park.

Sample Sites: 15  
 Area Extant (ha): 1600  
 Estimated % remaining: >95%  
 Area in conservation reserves (ha): 1600  
 Estimated % of pre-clearing area in conservation reserves: >95%  
 No. Taxa (total / unique): 74 / 0  
 No. Taxa per Plot ( $\pm$ sd): 19.2 (5.8)  
 Class: Southern Montane Heaths



Related TEC: n/a

Wadbilliga Heath Forest is equivalent to Map Unit W3 of the same name described by Keith & Bedward (1999). This low *Eucalyptus* forest is characterised by a prominent and diverse shrub stratum and groundcover of variable height, with small herbs interspersed with tussocks of *Gahnia sieberiana*. Wadbilliga Heath Forest occupies dry sites on a metamorphosed sandstone plateau at 1100 - 1350 m elevation. It occupies more exposed sites than Southern Escarpment Ash Dry Forest (Map Unit WSF p78) and less exposed sites than Southern Montane Heath (Map Unit HL e53). This assemblage is distinguished from the latter by the presence of a tree stratum and a more open shrub stratum. It is found almost exclusively on the Wadbilliga Mountain plateau and associated ridges to the south-west within Wadbilliga National Park. Although not currently threatened, extremes in fire frequency, if sustained, would very likely result in losses of species diversity. The most western stands may have been exposed to higher frequencies prior to park dedication (unpubl. data). Frequent fire regimes reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Intervals between planned and unplanned fires need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

#### Floristic Summary:

**Trees:** *Eucalyptus kybeanensis*, *Eucalyptus pauciflora* **Shrubs:** *Acacia obliquinervia*, *Acrotriche serrulata*, *Allocasuarina nana*, *Banksia canei*, *Boronia algida*, *Brachyloma daphnoides*, *Dillwynia sericea*, *Hakea dactyloides*, *Hibbertia pedunculata*, *Kunzea* sp. 'Wadbilliga', *Leptospermum lanigerum*, *Monotoca scoparia*, *Oxylobium ellipticum*, *Persoonia asperula*, *Persoonia silvatica*, *Platysace lanceolata* **Groundcover:** *Gahnia sieberiana*, *Lepidosperma laterale*, *Stylidium graminifolium*

**Vegetation structure:** Not available

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 9 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 15 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 9 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia obliquinervia</i>	1(1-1)	40	1(1-1)	1
<i>Acrotriche serrulata</i>	1(1-1)	47	1(1-1)	3
<i>Allocasuarina nana</i>	1(1-1)	73	2(1-4)	1
<i>Baeckea denticulata</i>	1(1-1)	20	2(2-3)	<1
<i>Baeckea utilis</i>	1(1-1)	27	1(1-2)	<1
<i>Banksia canei</i>	1(1-1)	100	1(1-2)	<1
<i>Boronia algida</i>	1(1-1)	40	1(1-2)	<1
<i>Brachyloma daphnoides</i>	1(1-1)	40	1(1-1)	7
<i>Choretrum pauciflorum</i>	1(1-1)	27	1(1-1)	1
<i>Dillwynia sericea</i>	1(1-1)	73	1(1-1)	2
<i>Epacris robusta</i>	1(1-1)	27	0(0-0)	0
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-1)	27	1(1-2)	3
<i>Eucalyptus kybeanensis</i>	1(1-1)	47	0(0-0)	0
<i>Eucalyptus latiuscula</i>	1(1-1)	20	1(1-1)	<1
<i>Eucalyptus pauciflora</i>	1(1-1)	47	2(1-2)	3
<i>Gahnia sieberiana</i>	1(1-1)	67	1(1-1)	4
<i>Gahnia subaequiglumis</i>	1(1-1)	33	1(1-2)	<1
<i>Gleichenia dicarpa</i>	1(1-1)	20	1(1-2)	2
<i>Hakea dactyloides</i>	1(1-1)	60	1(1-1)	12
<i>Hibbertia pedunculata</i>	1(1-1)	60	1(1-2)	<1
<i>Kunzea</i> sp. 'Wadbilliga'	1(1-1)	67	2(1-3)	<1
<i>Leptospermum lanigerum</i>	1(1-1)	67	1(1-2)	1
<i>Leucopogon gelidus</i>	1(1-1)	27	1(1-1)	<1
<i>Lomatia fraseri</i>	1(1-1)	33	1(1-1)	1
<i>Monotoca scoparia</i>	1(1-1)	53	1(1-1)	12

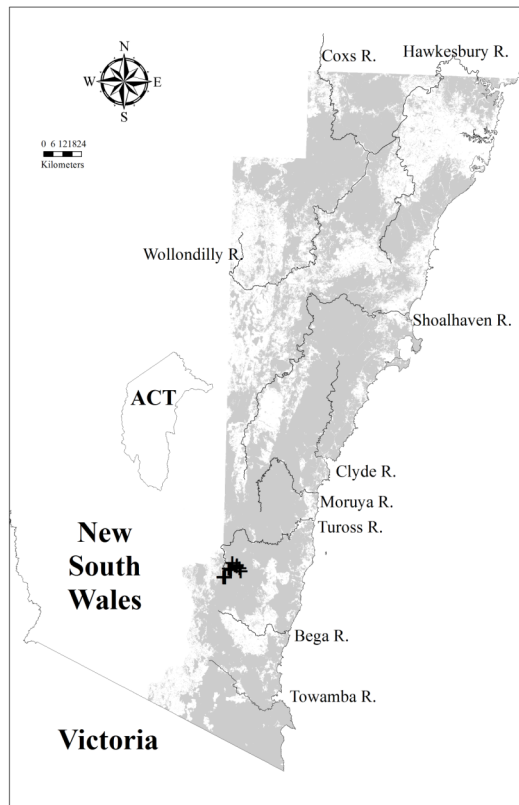
<i>Oxylobium ellipticum</i>	1(1-1)	40	1(1-1)	<1
<i>Persoonia asperula</i>	1(1-1)	47	1(1-1)	<1
<i>Persoonia silvatica</i>	1(1-1)	40	1(1-1)	2
<i>Platysace lanceolata</i>	1(1-1)	60	1(1-1)	13
<i>Stylidium graminifolium</i>	1(1-1)	73	1(1-1)	9
<i>Styphelia triflora</i>	1(1-1)	27	1(1-1)	<1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Lepidosperma laterale</i>	1(1-1)	40	1(1-1)	29
<i>Lomandra glauca</i>	1(1-1)	33	1(1-1)	10

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	13	2(1-3)	6
<i>Eucalyptus sieberi</i>	1(1-1)	7	2(1-3)	16



Locations of survey sites allocated to HL eW3. Grey shading indicates extant native vegetation cover within the study area.

**DSF eW5: Wadbilliga Gorge Dry Forest**

Plate eW5. Wadbilliga Gorge Dry Forest (Map Unit eW5) dominated by *Eucalyptus agglomerata* and *E. consideniana* with *Allocasuarina littoralis*, *Persoonia linearis* and *Dodonaea triquetra* on the lower slopes of the Wadbilliga River gorge, Wadbilliga trail, Wadbilliga National Park.

Sample Sites: 34

Area Extant (ha): 16000

Estimated % remaining: >85%

Area in conservation reserves (ha): 11000

Estimated % of pre-clearing area in conservation reserves: 55-65%

No. Taxa (total / unique): 243 / 0

No. Taxa per Plot ( $\pm$ sd): 35.8 (8.2)

Class: South East Dry Sclerophyll Forests

Related TEC: n/a

Wadbilliga Gorge Dry Forest is equivalent to Map Unit W5 of the same name described by Keith & Bedward (1999). It is characterised by a mix of tree species forming a canopy up to around 20 m in height. A prominent small tree stratum is also present and the shrub stratum is sclerophyllous and highly variable in composition. The groundcover includes graminoids, herbs, the vine *Glycine clandestina* and bracken fern *Pteridium esculentum*. Wadbilliga Gorge Dry Forest occupies steep to moderate dry slopes on metasediments and granitoid substrates at 200 - 500 m elevation. It differs from other assemblages in the dissected northern terrain in tree composition and the presence of a subcanopy, albeit patchy and probably extends further north in similar habitat. It is restricted to the gorges of Tuross and Brogo Rivers and their tributaries, principally within Wadbilliga National Park. Although not presently a serious threat, frequent fire regimes if they occurred would reduce diversity by interrupting life-cycle processes of woody species (Keith 1996). Intervals between planned and unplanned fires need to be long enough to allow replenishment of seed banks and restoration of habitat structure if losses of diversity are to be avoided.

**Floristic Summary:**

**Trees:** *Acacia mearnsii*, *Allocasuarina littoralis*, *Angophora floribunda*, *Eucalyptus angophoroides*, *Eucalyptus globoidea* **Shrubs:** *Leucopogon lanceolatus* var. *lanceolatus*, *Persoonia linearis* **Climbers:** *Glycine clandestina*, *Hardenbergia violacea* **Groundcover:** *Brachyscome spathulata*, *Desmodium varians*, *Dianella caerulea*, *Dichondra* spp., *Hydrocotyle laxiflora*, *Hypericum gramineum*, *Imperata cylindrica* var. *major*, *Lagenifera stipitata*, *Lepidosperma laterale*, *Lomandra longifolia*, *Lomandra multiflora* subsp. *multiflora*, *Microlaena stipoides*, *Oxalis perennans*, *Pomax umbellata*, *Pratia purpurascens*, *Pteridium esculentum*

**Vegetation structure:**

Stratum	Frequency (n=11)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	19.7 (3.3)	22.3 (10.1)
Small tree	73	8.3 (3.8)	9.8 (5.7)
Shrub	55	2.8 (0.4)	11.7 (9.3)
Ground cover	100	0.8 (0.3)	33.2 (23.6)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 13 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 29 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 13 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-1)	29	1(1-2)	10
<i>Acacia mearnsii</i>	1(1-2)	50	1(1-2)	7
<i>Ajuga australis</i>	1(1-1)	26	1(1-1)	3
<i>Allocasuarina littoralis</i>	1(1-1)	50	1(1-2)	17
<i>Angophora floribunda</i>	1(1-2)	82	1(1-2)	8
<i>Arthropodium minus</i>	1(1-1)	21	1(1-1)	1
<i>Bossiaea buxifolia</i>	1(1-1)	32	1(1-1)	3
<i>Brachyscome spathulata</i>	1(1-1)	41	1(1-1)	1
<i>Desmodium varians</i>	1(1-1)	88	1(1-1)	21
<i>Dichondra spp.</i>	1(1-1)	76	1(1-2)	25
<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	1(1-1)	32	1(1-1)	6
<i>Eucalyptus angophoroides</i>	1(1-1)	50	1(1-2)	1
<i>Eucalyptus elata</i>	1(1-1)	21	2(1-3)	5
<i>Eucalyptus globoidea</i>	1(1-2)	62	2(1-2)	12
<i>Exocarpos strictus</i>	1(1-1)	26	1(1-1)	9
<i>Glycine clandestina</i>	1(1-1)	65	1(1-1)	26
<i>Hardenbergia violacea</i>	1(1-1)	62	1(1-1)	17
<i>Hydrocotyle laxiflora</i>	1(1-1)	41	1(1-1)	15
<i>Hypericum gramineum</i>	1(1-1)	56	1(1-1)	16
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-1)	41	1(1-2)	10
<i>Indigofera australis</i>	1(1-1)	26	1(1-1)	9
<i>Lagenifera stipitata</i>	1(1-1)	50	1(1-1)	14
<i>Lepidosperma laterale</i>	1(1-1)	65	1(1-1)	28
<i>Leucopogon juniperinus</i>	1(1-2)	38	1(1-1)	5
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	56	1(1-1)	23
<i>Lomandra longifolia</i>	1(1-1)	91	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	59	1(1-1)	25
<i>Microlaena stipoides</i>	1(1-2)	62	1(1-2)	36
<i>Opercularia aspera</i>	1(1-1)	35	1(1-1)	8
<i>Oxalis perennans</i>	1(1-1)	41	1(1-1)	13
<i>Ozothamnus argophyllus</i>	1(1-1)	24	1(1-1)	2
<i>Persoonia linearis</i>	1(1-1)	88	1(1-1)	28
<i>Plantago debilis</i>	1(1-1)	24	1(1-1)	7

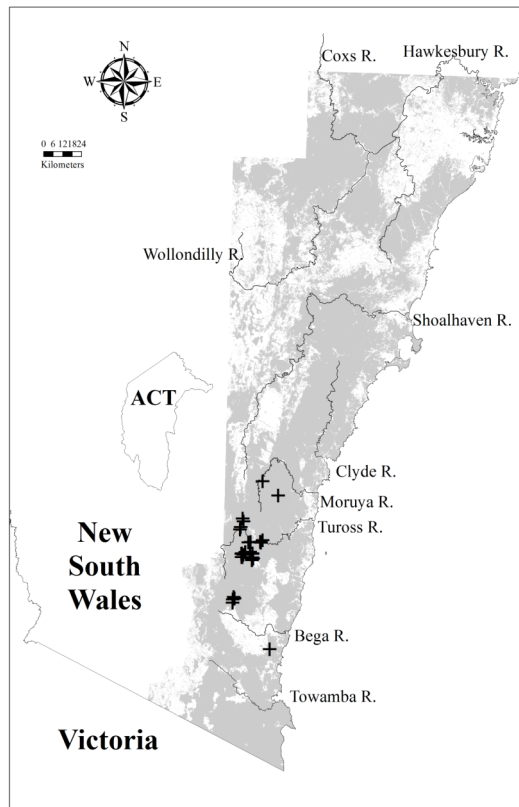
<i>Pomax umbellata</i>	1(1-1)	41	1(1-1)	14
<i>Poranthera microphylla</i>	1(1-1)	38	1(1-1)	15
<i>Pratia purpurascens</i>	1(1-1)	65	1(1-1)	17
<i>Pteridium esculentum</i>	1(1-1)	74	1(1-2)	37
<i>Senecio glomeratus</i>	1(1-1)	21	1(1-1)	<1
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-1)	32	1(1-1)	4
<i>Viola betonicifolia</i>	1(1-1)	24	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Clematis aristata</i>	1(1-1)	35	1(1-1)	20
<i>Dianella caerulea</i>	1(1-1)	50	1(1-1)	28

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus agglomerata</i>	1(1-2)	21	2(1-3)	7
<i>Eucalyptus baueriana</i>	1(1-3)	15	2(1-2)	1
<i>Eucalyptus bosistoana</i>	1(1-1)	6	1(1-2)	3
<i>Eucalyptus consideniana</i>	2(1-2)	12	2(1-2)	2
<i>Eucalyptus cypellocarpa</i>	1(1-1)	15	2(1-2)	10
<i>Eucalyptus dives</i>	1(1-2)	18	2(1-3)	4
<i>Eucalyptus maidenii</i>	1(1-1)	3	2(1-2)	2
<i>Eucalyptus mannifera</i>	1(1-2)	15	2(1-3)	4
<i>Eucalyptus muelleriana</i>	1(1-2)	15	2(1-2)	6
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-3)	12	2(1-3)	6
<i>Eucalyptus sieberi</i>	1(1-1)	6	2(1-3)	16
<i>Eucalyptus tereticornis</i>	2(2-2)	3	2(1-3)	7
<i>Eucalyptus viminalis</i>	1(1-2)	12	2(1-3)	4



Locations of survey sites allocated to DSF eW5. Grey shading indicates extant native vegetation cover within the study area.

### FoW m15: Eden Shrubby Swamp Woodland



Plate m15. Eden Shrubby Swamp Woodland (Map Unit m15) in a swampy drainage west of the Princes Highway at Boydtown. An open tree layer dominated by *Eucalyptus baueriana* and *E. pilularis* grows above a prominent, diverse midstorey including *Banksia serrata*, *Allocasuarina littoralis*, *Monotoca elliptica* and *Melaleuca ericifolia*, and a tall, dense groundcover dominated by *Gahnia clarkei*, *Phragmites australis*, *Pteridium esculentum* and *Calochlaena dubia*.

Sample Sites: 8

Area Extant (ha): n/a

Estimated % remaining: >70%

Area in conservation reserves (ha): n/a



Estimated % of pre-clearing area in conservation reserves: >80%

No. Taxa (total / unique): 91 / 0

No. Taxa per Plot ( $\pm$ sd): 21.9 (12.6)

Class: Temperate Swamp Forests

Related TEC: n/a

Eden Shrubby Swamp Woodland is floristically equivalent to Gahnia Tea Tree Swamp Forest (*E. ovata*-*Gahnia clarkei*) identified by Beukers (undated). This unit typically has a sparse tree canopy, dense understorey of small trees and shrubs, and a dense groundcover dominated by sedges and ferns. It has been recorded from narrow swampy coastal creeklines on the far South Coast between Pambula and Nadgee. Sites occur on sandy alluvial soils derived from surrounding quartz-rich sedimentary and acid-volcanic substrates, at elevations below 100m ASL and with mean annual rainfall of 800-900mm.

With increasing frequency and depth of inundation, this alluvial unit may be replaced by Southeast Lowland Swamp (FrW e57). Sites with some tidal/saline influence may grade into Estuarine Creekflat Scrub (FoW p107).

Most records of this unit were not mapped by this project and its extent is underestimated on the vegetation map, because its habitat corresponds with fine-scale drainage patterns that are not discriminated by the available topographic data. In many locations it may be mapped as one of the surrounding moist gully units, such as Southeast Hinterland Wet Shrub Forest (WSF e14) or Southeast Lowland Gully Shrub Forest (WSF e37).

Eden Shrubby Swamp Woodland fits within the Coastal Floodplain Wetlands vegetation class (Keith 2004). It is conserved within Ben Boyd National Park and Nadgee Nature Reserve, and occurrences within nearby State Forests will generally be protected from direct impacts by prescriptions applied to riparian habitats. Fire and weed invasion represent the main potential pressures on this vegetation type.

#### Floristic Summary:

**Trees:** *Melaleuca squarrosa*, *M. ericifolia*, *Eucalyptus longifolia*, *E. ovata*. **Shrubs:** *Elaeocarpus reticulatus*, *Babingtonia pluriflora*, *Banksia integrifolia* subsp. *integrifolia*, **Climbers:** *Tylophora barbata* **Groundcover:** *Gahnia clarkei*, *Viola hederacea*, *Calochlaena dubia*, *Lobelia anceps*, *Pteridium esculentum*, *Gonocarpus teucroides*, *Gleichenia microphylla*, *Gonocarpus micranthus*.

#### Vegetation structure:

Stratum	Frequency (n=8)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	22.8 (6.6)	13.6 (16.4)
Small tree	100	7.4 (3.3)	53.1 (38.3)
Shrub	25	2.3 (0.4)	65 (21.2)
Ground cover	100	2.2 (1.2)	61.9 (36.7)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 3 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 12 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 3 positive diagnostic species.

#### Positive Diagnostic Species:

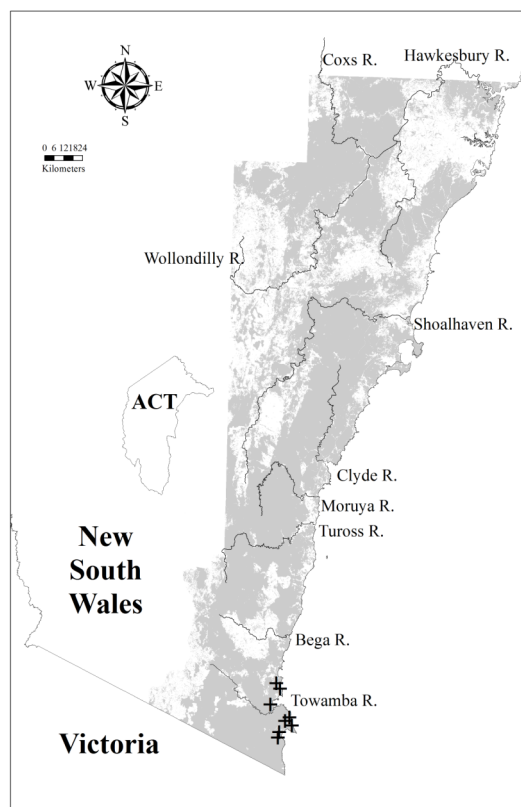
Species	C/A	Freq	C/A O	Freq O
<i>Babingtonia pluriflora</i>	1(1-1)	25	1(1-1)	1
<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>	2(1-2)	25	1(1-2)	2
<i>Calochlaena dubia</i>	1(1-2)	63	1(1-3)	9
<i>Elaeocarpus reticulatus</i>	1(1-1)	75	1(1-1)	12
<i>Eucalyptus longifolia</i>	1(1-2)	38	1(1-2)	2
<i>Eucalyptus ovata</i>	3(2-3)	25	2(1-2)	1
<i>Gahnia clarkei</i>	3(2-4)	88	1(1-2)	2
<i>Gleichenia microphylla</i>	3(1-3)	25	1(1-2)	1
<i>Gonocarpus micranthus</i>	1(1-1)	25	1(1-1)	1
<i>Lobelia anceps</i>	1(1-1)	50	1(1-1)	1
<i>Melaleuca ericifolia</i>	2(1-3)	50	2(1-4)	1
<i>Melaleuca squarrosa</i>	2(2-5)	88	2(1-3)	1
<i>Viola hederacea</i>	1(1-1)	75	1(1-1)	22

Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia longifolia</i>	1(1-1)	38	1(1-2)	10
<i>Allocasuarina littoralis</i>	1(1-2)	38	1(1-2)	17
<i>Banksia serrata</i>	1(1-3)	38	1(1-2)	9
<i>Coprosma quadrifida</i>	1(1-1)	38	1(1-1)	10
<i>Dianella caerulea</i>	1(1-1)	38	1(1-1)	28
<i>Entolasia marginata</i>	1(1-1)	38	1(1-1)	11
<i>Gonocarpus teucroides</i>	1(1-1)	50	1(1-1)	18
<i>Goodenia ovata</i>	1(1-1)	38	1(1-1)	7
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	38	1(1-1)	24
<i>Morinda jasminoides</i>	1(1-1)	38	1(1-2)	9
<i>Pteridium esculentum</i>	2(1-2)	75	1(1-2)	37
<i>Tylophora barbata</i>	1(1-1)	50	1(1-1)	17

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	25	1(1-2)	9
<i>Eucalyptus baueriana</i>	3(3-3)	13	2(1-2)	1
<i>Eucalyptus baxteri</i>	1(1-1)	13	1(1-2)	<1
<i>Eucalyptus cypellocarpa</i>	1(1-1)	13	2(1-2)	10
<i>Eucalyptus globoidea</i>	1(1-1)	13	2(1-2)	12
<i>Eucalyptus obliqua</i>	1(1-1)	13	2(1-3)	4
<i>Eucalyptus pilularis</i>	2(2-2)	25	2(1-3)	5
<i>Eucalyptus sieberi</i>	1(1-1)	13	2(1-3)	16



Locations of survey sites allocated to FoW m15. Grey shading indicates extant native vegetation cover within the study area.



**GL m68: Southeast Tablelands Grassy Wetlands Complex**

Plate m68. Southeast Tablelands Grassy Wetlands Complex (Map Unit m68) showing the characteristic treeless habitat of this unit on grazed flats adjacent to the Kybeyan River. Dense tussocks of *Poa labillardierei* var. *labillardierei* obscure a diverse range of moisture-loving herbs and sedges.

Sample Sites: 20

Area Extant (ha): 1000

Estimated % remaining: <50 %

Area in conservation reserves (ha): 390

Estimated % of pre-clearing area in conservation reserves: <30%

No. Taxa (total / unique): 188/5

No. Taxa per Plot ( $\pm$ sd): 29.5 (18.1)

Class: Temperate Montane Grasslands

Related TEC: n/a

Southeast Tablelands Grassy Wetlands is characterised by a tall and dense groundcover comprising a diverse range of forb species interspersed among tussocks of grasses and sedges. Trees and shrubs are generally absent but may occur occasionally in less water-logged sites. It has been recorded on open drainage flats associated with minor water courses in gently undulating country along the Great Dividing Range and Monaro Tableland between Breadbo and Bombala. Southeast Tablelands Grassy Wetlands is found across a wide range in elevation (750-1150 m ASL) in areas receiving from 750 – 950 mm of precipitation annually. Soils are typically derived from basalt or granite with a mantle of alluvium of varying depth depending on local drainage and topographic conditions. As soil drainage improves Southeast Tablelands Grassy Wetlands grades into Southern Range Wet Forest (WSF p338) on the Divide, and Sub-alpine Dry Shrub Forest (GW e24) or Southern Tableland Flats Forest (GW p220) further west. It may also be found within these or other map units on drainage features that were too small to be detected at the resolution of mapping employed in this project.

Southeast Tablelands Grassy Wetlands has been extensively modified by grazing, pasture improvement and weed invasion. Although small areas are represented in the western extremities of National Parks along the range, the majority of the former distribution lies further west and is inadequately represented in conservation reserves.

**Floristic Summary:**

**Groundcover:** *Acaena novae-zelandiae*, *Asperula conferta*, *Carex appressa*, *Carex inversa*, *Cyperus sphaeroideus*, *Elymus scaber* var. *scaber*, *Epilobium billardiereanum*, *Euchiton gymnocephalus*, *Geranium neglectum*, *Haloragis heterophylla*, *Helichrysum scorpioides*, *Hydrocotyle tripartita*, *Hypericum japonicum*, *Juncus filicaulis*, *Poa labillardierei* var. *labillardierei*, *Poa meionectes*, *Ranunculus pimpinellifolius*, *Rumex brownii*, *Scleranthus biflorus*

**Vegetation structure:**

Stratum	Frequency (n=20)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)

Tree canopy	15	15.5 (12.4)	44.3 (41.8)
Small tree	15	14 (3.5)	18.3 (7.6)
Shrub	30	1.4 (1.4)	19 (16.5)
Ground cover	100	0.9 (0.3)	89.5 (32.8)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 11 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 15 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 11 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acaena echinata</i>	1(1-1)	35	1(1-1)	2
<i>Acaena novae-zelandiae</i>	1(1-1)	55	1(1-1)	7
<i>Asperula conferta</i>	1(1-1)	40	1(1-1)	4
<i>Brachyscome graminea</i>	1(1-1)	20	1(1-1)	<1
<i>Carex appressa</i>	1(1-3)	65	1(1-1)	4
<i>Carex gaudichaudiana</i>	2(1-2)	35	1(1-2)	1
<i>Carex inversa</i>	1(1-1)	55	1(1-1)	3
<i>Cyperus sphaeroideus</i>	1(1-2)	40	1(1-2)	<1
<i>Dichelachne hirtella</i>	1(1-1)	20	1(1-1)	<1
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-1)	40	1(1-1)	5
<i>Epilobium billardierianum</i>	1(1-1)	80	1(1-1)	2
<i>Eragrostis brownii</i>	1(1-1)	20	1(1-1)	3
<i>Eucalyptus pauciflora</i>	1(1-2)	25	1(1-2)	3
<i>Eucalyptus viminalis</i>	1(1-3)	25	2(1-3)	4
<i>Euchiton gymnocephalus</i>	1(1-1)	55	1(1-1)	7
<i>Euchiton sphaericus</i>	1(1-1)	25	1(1-1)	3
<i>Geranium antrorsum</i>	1(1-1)	30	1(1-2)	<1
<i>Geranium neglectum</i>	1(1-1)	40	1(1-1)	1
<i>Geranium retrorsum</i>	1(1-1)	30	1(1-1)	<1
<i>Gratiola peruviana</i>	1(1-1)	20	1(1-1)	1
<i>Haloragis heterophylla</i>	1(1-1)	55	1(1-1)	1
<i>Helichrysum scorpioides</i>	1(1-1)	40	1(1-1)	7
<i>Hemarthria uncinata</i> var. <i>uncinata</i>	1(1-1)	30	1(1-1)	<1
<i>Hydrocotyle tripartita</i>	2(1-2)	60	1(1-1)	1
<i>Hypericum japonicum</i>	1(1-1)	55	1(1-1)	2
<i>Juncus australis</i>	1(1-1)	30	1(1-1)	1
<i>Juncus falcatus</i>	1(1-3)	20	1(1-1)	<1
<i>Juncus filicaulis</i>	1(1-1)	45	1(1-1)	1
<i>Juncus planifolius</i>	1(1-1)	30	1(1-1)	1
<i>Juncus usitatus</i>	1(1-2)	25	1(1-1)	2
<i>Lachnagrostis filiformis</i>	1(1-1)	25	1(1-1)	3
<i>Leptospermum myrtifolium</i>	1(1-1)	35	1(1-1)	1
<i>Myriophyllum variifolium</i>	1(1-3)	25	1(1-1)	<1
<i>Oreomyrrhis eriopoda</i>	1(1-1)	25	1(1-1)	1
<i>Poa labillardierei</i> var. <i>labillardierei</i>	2(1-4)	95	1(1-2)	12
<i>Pratia surrepens</i>	1(1-1)	20	1(1-1)	<1

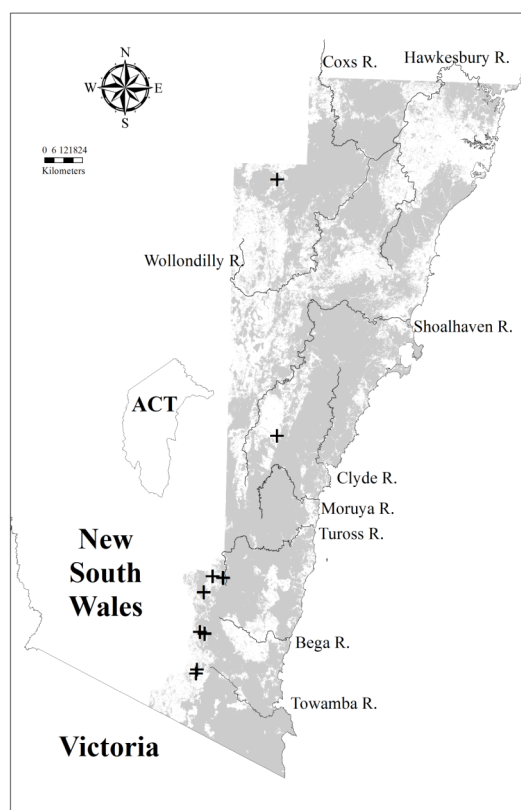
<i>Ranunculus pimpinellifolius</i>	1(1-1)	50	1(1-1)	<1
<i>Rumex brownii</i>	1(1-1)	40	1(1-1)	5
<i>Rytidosperma nudiflorum</i>	1(1-1)	20	1(1-1)	<1
<i>Schoenus apogon</i>	1(1-2)	20	1(1-1)	2
<i>Scirpus polystachyus</i>	1(1-2)	20	1(1-2)	<1
<i>Scleranthus biflorus</i>	1(1-1)	40	1(1-1)	2
<i>Spiranthes sinensis</i> subsp. <i>australis</i>	1(1-1)	25	1(1-1)	<1
<i>Stellaria angustifolia</i>	1(1-1)	35	1(1-1)	<1
<i>Veronica gracilis</i>	1(1-1)	20	1(1-1)	<1
<i>Viola betonicifolia</i>	1(1-1)	25	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Dichondra</i> spp.	1(1-1)	30	1(1-2)	25
<i>Hydrocotyle laxiflora</i>	1(1-1)	30	1(1-1)	16
<i>Poa meionectes</i>	1(1-2)	40	1(1-2)	16

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus parvula</i>	2(2-2)	5	1(1-1)	<1
<i>Eucalyptus robertsonii</i> subsp. <i>robertsonii</i>	1(1-1)	5	3(2-4)	<1
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-1)	10	1(1-2)	2
<i>Eucalyptus stellulata</i>	1(1-1)	10	1(1-2)	1



Locations of survey sites allocated to GL m68. Grey shading indicates extant native vegetation cover within the study area.

**HL m83: South Coast Headland Scrub**

Plate m83. South Coast Headland Scrub (Map Unit m83) on rocky sea cliffs at Bittangabee with a dense wind-pruned canopy including *Melaleuca armillaris* and *Banksia integrifolia* subsp. *integrifolia*.

Sample Sites: 9

Area Extant (ha): 20

Estimated % remaining: 50-95%

Area in conservation reserves (ha): 10

Estimated % of pre-clearing area in conservation reserves: 40-70%

No. Taxa (total / unique): 97/0

No. Taxa per Plot ( $\pm$ sd): 21 (10.2)

Class: Coastal Headland Heaths

Related TEC: n/a

South Coast Headland Scrub is characterised by a moderately diverse and sometimes patchy shrub stratum, generally around 2 m tall in exposed locations but often developing to the stature of small trees (6–10 m) when protected from coastal winds. The groundcover is typically sparse and contains relatively low numbers of species dominated by small twining forbs and sedges. South Coast Headland Scrub shares many species in common with Coastal Foredune Scrub (DSF e61) but occurs in more exposed locations on coastal headlands and at the edge of sea cliffs. Soils are typically derived from sandstone although a thin mantle of quaternary aeolian sand may also be present. South Coast Headland Scrub has been recorded from Mimosa Rocks to Cape Howe and a similar assemblage occurs to the south in East Gippsland (Woodgate *et al.* 1994). Its distribution may extend slightly further to the north but it is replaced by Headland Grassland (GL p434) from around Narooma.

South Coast Headland Scrub is highly restricted in distribution with only a small area protected in conservation reserves. The remaining area is potentially affected by clearing and weed invasion associated with coastal urban developments. This unit belongs to the Coastal Headland Heaths vegetation class of Keith (2004).

**Floristic Summary:**

**Trees:** *Pittosporum undulatum* **Shrubs:** *Leptospermum laevigatum*, *Melaleuca armillaris* subsp. *armillaris*, *Monotoca elliptica* **Climbers:** *Billardiera scandens*, *Glycine clandestina* **Groundcover:** *Dichondra* spp., *Lepidosperma concavum*

**Vegetation structure:**

Stratum	Frequency (n=9)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	44	8.5 (2.6)	55 (38.1)
Small tree	33	6 (1.7)	50 (10)
Shrub	89	2.4 (1.1)	37.8 (33.1)
Ground cover	100	0.6 (0.4)	29 (32.5)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 3 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 13 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 3 positive diagnostic species.

**Positive Diagnostic Species:**

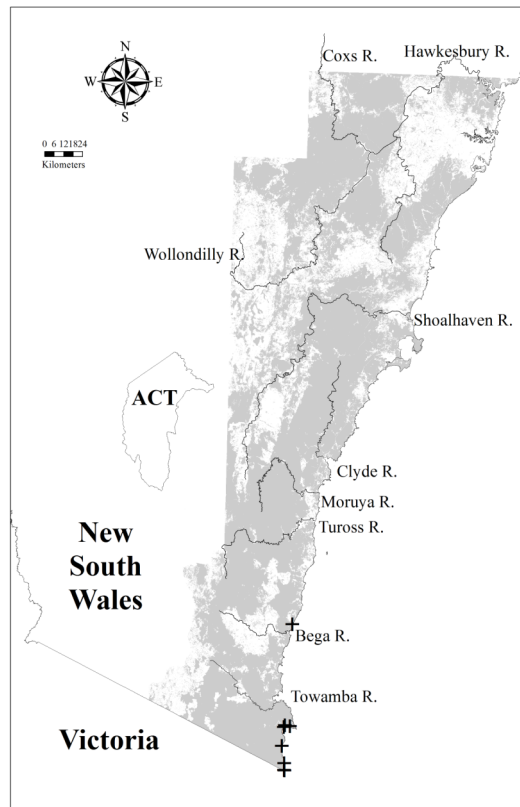
Species	C/A	Freq	C/A O	Freq O
<i>Acacia longifolia</i>	1(1-2)	89	1(1-2)	9
<i>Allocasuarina verticillata</i>	2(1-2)	22	1(1-2)	<1
<i>Alyxia buxifolia</i>	2(2-2)	22	1(1-1)	<1
<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>	1(1-2)	33	1(1-2)	2
<i>Correa reflexa</i>	1(1-2)	33	1(1-1)	5
<i>Gahnia radula</i>	1(1-1)	33	1(1-2)	3
<i>Isolepis nodosa</i>	1(1-3)	33	1(1-1)	1
<i>Lepidosperma concavum</i>	1(1-2)	89	1(1-2)	2
<i>Leptospermum laevigatum</i>	2(2-3)	44	1(1-2)	1
<i>Leucopogon parviflorus</i>	1(1-1)	22	1(1-1)	<1
<i>Libertia paniculata</i>	1(1-1)	22	1(1-1)	2
<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	4(3-4)	89	1(1-2)	1
<i>Monotoca elliptica</i>	1(1-2)	44	1(1-1)	2
<i>Notodanthonia longifolia</i>	1(1-2)	33	1(1-2)	5
<i>Poa poiformis</i> var. <i>poiformis</i>	3(2-3)	22	1(1-2)	<1
<i>Senecio lautus</i> subsp. <i>maritimus</i>	1(1-1)	22	1(1-1)	<1
<i>Westringia fruticosa</i>	2(1-2)	22	1(1-1)	<1

**Constant:**

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	56	1(1-1)	28
<i>Dichondra</i> spp.	1(1-1)	56	1(1-2)	25
<i>Glycine clandestina</i>	1(1-1)	44	1(1-1)	26
<i>Goodenia ovata</i>	1(1-2)	33	1(1-1)	7
<i>Kennedia rubicunda</i>	1(1-1)	33	1(1-1)	6
<i>Pittosporum undulatum</i>	1(1-2)	44	1(1-1)	14
<i>Senecio linearifolius</i>	1(1-2)	33	1(1-1)	8

**Other tree species occurring less frequently in this community:**

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus longifolia</i>	1(1-1)	11	1(1-2)	2



Locations of survey sites allocated to HL m83. Grey shading indicates extant native vegetation cover within the study area.



**WSF n183: South Coast Hinterland Wet Forest**

Plate n183. South Coast Hinterland Wet Forest (Map Unit n183) near Government Corner on the Kings Highway on Clyde Mountain. Canopy trees include *Eucalyptus cypellocarpa*, *E. muelleriana* and *E. fastigata*, with scattered small trees of *Acacia irrorata* subsp. *irrorata* and *Synoum glandulosum* subsp. *glandulosum*, shrubs including *Notelaea venosa* and *Cyathea australis*, and a groundcover dominated by ferns and vines including *Cissus hypoglauca*, *Calochlaena dubia* and *Pteridium esculentum*.

Sample Sites: 76

Area Extant (ha): 69400

Estimated % remaining: >95%

Area in conservation reserves (ha): 30300

Estimated % of pre-clearing area in conservation reserves: 40-50%

No. Taxa (total / unique): 320/1

No. Taxa per Plot ( $\pm$ sd): 39.3 (10.1)

Class: South Coast Wet Sclerophyll Forests

Related TEC: n/a

South Coast Hinterland Wet Forest comprises a tall, multi-layered forest characterised by Eucalypts exceeding 30 m in height and a prominent sub-canopy of smaller trees. Tree ferns usually overtop a sparse shrub layer that is frequently festooned with a diverse array of climbing species arising from within a dense groundcover dominated by ferns and graminoid species. South Coast Hinterland Wet Forest shares many species with the closely related Clyde Gully Wet Forest (WSF p103) and these assemblages were considered a single unit (DSF 103) by Tindall *et al.* (2004). WSF n183 is found in moist sheltered gullies and slopes on the low coastal ranges from Yadboro to Bega but does not occur east of the Clyde River. WSF p103 occurs in similar habitats but occupies lower elevations in the slightly warmer and wetter region east of the Clyde River from Batemans Bay north to Yadboro. South Coast Hinterland Wet Forest occurs predominantly on sandy loam soils and is well represented within conservation reserves. Outside of these reserves it is primarily affected by forestry activities.

**Floristic Summary:**

**Trees:** *Cyathea australis*, *Elaeocarpus reticulatus*, *Eucalyptus cypellocarpa*, *Eucalyptus muelleriana*, *Pittosporum undulatum*, *Synoum glandulosum* subsp. *glandulosum* **Shrubs:** *Leucopogon lanceolatus* var. *lanceolatus*, *Notelaea venosa*, *Persoonia linearis*, *Pittosporum revolutum* **Climbers:** *Billardiera scandens*, *Cissus hypoglauca*, *Eustrephus latifolius*, *Geitonoplesium cymosum*, *Hibbertia dentata*, *Pandorea pandorana*, *Smilax australis*, *Tylophora barbata* **Groundcover:** *Blechnum cartilagineum*, *Calochlaena dubia*, *Desmodium varians*, *Dianella caerulea*, *Doodia aspera*, *Gahnia melanocarpa*, *Lomandra longifolia*, *Oplismenus imbecillis*, *Poa meionectes*, *Pteridium esculentum*, *Schelhammra undulata*, *Viola hederacea*

**Vegetation structure:**

Stratum	Frequency (n=59)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	98	30.8 (5.4)	24.7 (13.3)
Small tree	97	12.6 (5.8)	35.1 (19.7)
Shrub	32	3.4 (1.9)	20.2 (16.5)
Ground cover	98	1 (0.7)	49.5 (28.7)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 19 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 31 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 19 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-2)	39	1(1-2)	10
<i>Acacia irrorata</i> subsp. <i>irrorata</i>	2(1-2)	28	1(1-1)	2
<i>Acacia mabelliae</i>	2(1-2)	21	1(1-2)	2
<i>Angophora floribunda</i>	1(1-2)	30	1(1-2)	9
<i>Astrotricha latifolia</i>	1(1-2)	11	1(1-1)	2
<i>Blechnum cartilagineum</i>	2(1-3)	80	1(1-2)	11
<i>Callicoma serratifolia</i>	2(1-3)	18	1(1-2)	3
<i>Calochlaena dubia</i>	2(1-3)	62	1(1-3)	9
<i>Cassinia trinerva</i>	1(1-1)	11	1(1-1)	3
<i>Cissus hypoglauca</i>	1(1-1)	67	1(1-2)	9
<i>Clematis aristata</i>	1(1-1)	38	1(1-1)	20
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	36	1(1-1)	10
<i>Correa lawrenceana</i> var. <i>cordifolia</i>	1(1-1)	8	1(1-1)	<1
<i>Cyathea australis</i>	1(1-1)	59	1(1-2)	8
<i>Desmodium varians</i>	1(1-1)	42	1(1-1)	21
<i>Dianella caerulea</i>	1(1-1)	58	1(1-1)	28
<i>Doodia aspera</i>	1(1-1)	51	1(1-2)	11
<i>Elaeocarpus reticulatus</i>	1(1-2)	87	1(1-1)	11
<i>Eucalyptus cypellocarpa</i>	1(1-2)	72	2(1-2)	10
<i>Eucalyptus fastigata</i>	2(1-2)	28	2(2-3)	6
<i>Eucalyptus longifolia</i>	1(1-1)	13	1(1-2)	2
<i>Eucalyptus muelleriana</i>	2(1-2)	68	2(1-2)	6
<i>Eucalyptus saligna</i> X <i>botryoides</i>	2(1-2)	11	2(1-3)	2
<i>Eucalyptus scias</i> subsp. <i>callimastha</i>	1(1-2)	7	1(1-2)	1
<i>Eucalyptus smithii</i>	1(1-2)	9	1(1-2)	2
<i>Eustrephus latifolius</i>	1(1-1)	75	1(1-1)	19
<i>Gahnia melanocarpa</i>	1(1-1)	49	1(1-1)	5
<i>Galium binifolium</i>	1(1-1)	12	1(1-1)	3
<i>Geitonoplesium cymosum</i>	1(1-1)	68	1(1-1)	15
<i>Goodenia ovata</i>	1(1-1)	37	1(1-1)	7
<i>Hakea eriantha</i>	1(1-1)	11	1(1-1)	2
<i>Hibbertia dentata</i>	1(1-1)	82	1(1-1)	6
<i>Hydrocotyle geraniifolia</i>	1(1-1)	8	1(1-1)	2



<i>Hypolepis muelleri</i>	1(1-1)	9	1(1-2)	1
<i>Lastreopsis microsora</i> subsp. <i>microsora</i>	2(1-2)	12	2(1-3)	4
<i>Lepidosperma urophorum</i>	1(1-2)	18	1(1-2)	7
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	54	1(1-1)	23
<i>Libertia paniculata</i>	1(1-1)	22	1(1-1)	2
<i>Marsdenia rostrata</i>	1(1-1)	39	1(1-2)	12
<i>Notelaea venosa</i>	1(1-1)	61	1(1-1)	11
<i>Olearia argophylla</i>	1(1-1)	11	1(1-2)	3
<i>Oplismenus imbecillis</i>	1(1-1)	47	1(1-2)	14
<i>Oxalis chnoodes</i>	1(1-1)	11	1(1-1)	1
<i>Ozothamnus argophyllus</i>	1(1-2)	28	1(1-1)	2
<i>Pandorea pandorana</i>	1(1-1)	76	1(1-1)	18
<i>Persoonia linearis</i>	1(1-1)	54	1(1-1)	28
<i>Pittosporum revolutum</i>	1(1-1)	46	1(1-1)	8
<i>Pittosporum undulatum</i>	1(1-1)	46	1(1-1)	14
<i>Poa meionectes</i>	1(1-1)	53	1(1-2)	16
<i>Pomaderris aspera</i>	1(1-1)	18	1(1-2)	5
<i>Prostanthera incisa</i>	1(1-3)	7	1(1-1)	1
<i>Pseuderanthemum variabile</i>	1(1-1)	28	1(1-2)	9
<i>Psychotria loniceroides</i>	1(1-1)	25	1(1-1)	3
<i>Pteridium esculentum</i>	1(1-1)	76	1(1-2)	37
<i>Rapanea howittiana</i>	1(1-1)	16	1(1-1)	5
<i>Rubus moluccanus</i> var. <i>trilobus</i>	1(1-1)	21	1(1-1)	2
<i>Rubus rosifolius</i>	1(1-1)	20	1(1-1)	3
<i>Santalum obtusifolium</i>	1(1-1)	7	1(1-1)	1
<i>Schelhammera undulata</i>	1(1-1)	62	1(1-1)	7
<i>Schizomeria ovata</i>	1(1-1)	7	1(1-2)	1
<i>Senecio velleioides</i>	1(1-1)	12	1(1-1)	1
<i>Smilax australis</i>	1(1-1)	80	1(1-1)	16
<i>Sticherus lobatus</i>	1(1-3)	7	1(1-2)	1
<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	1(1-1)	58	1(1-2)	6
<i>Tetrarrhena juncea</i>	1(1-2)	18	1(1-2)	5
<i>Tristaniopsis collina</i>	2(1-3)	38	1(1-2)	2
<i>Tylophora barbata</i>	1(1-1)	80	1(1-1)	16
<i>Viola hederacea</i>	1(1-1)	50	1(1-1)	22
<i>Zieria smithii</i>	1(1-1)	14	1(1-1)	2

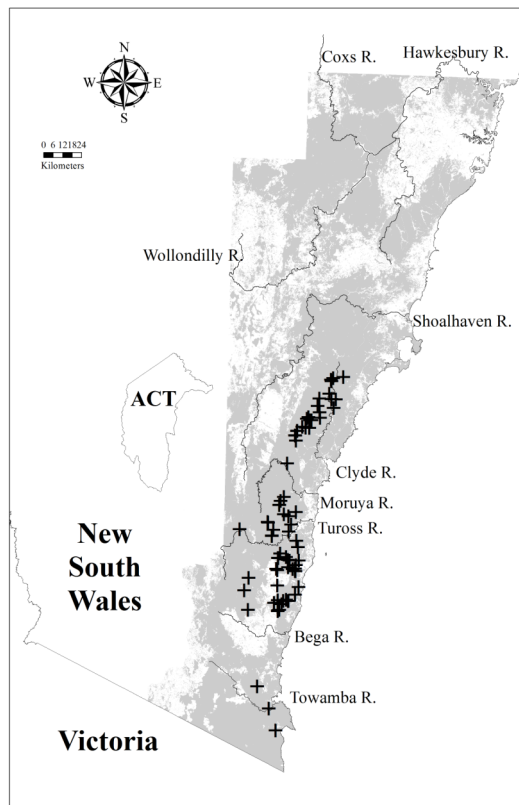
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	41	1(1-1)	27
<i>Glycine clandestina</i>	1(1-1)	34	1(1-1)	26
<i>Lepidosperma laterale</i>	1(1-1)	30	1(1-1)	29
<i>Lomandra longifolia</i>	1(1-1)	51	1(1-1)	44

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora costata</i>	1(1-1)	3	1(1-3)	7

<i>Eucalyptus agglomerata</i>	1(1-1)	8	2(1-3)	7
<i>Eucalyptus angophoroides</i>	1(1-1)	1	1(1-2)	1
<i>Eucalyptus baueriana</i>	1(1-1)	1	2(1-2)	1
<i>Eucalyptus bosistoana</i>	1(1-2)	5	1(1-2)	3
<i>Eucalyptus botryoides</i>	2(1-2)	9	2(1-3)	3
<i>Eucalyptus elata</i>	1(1-3)	12	2(1-3)	5
<i>Eucalyptus globoidea</i>	1(1-2)	13	2(1-2)	12
<i>Eucalyptus maidenii</i>	2(1-2)	3	2(1-2)	2
<i>Eucalyptus obliqua</i>	2(2-2)	4	2(1-3)	4
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-1)	3	1(1-2)	3
<i>Eucalyptus pilularis</i>	2(2-2)	1	2(1-3)	5
<i>Eucalyptus piperita</i>	2(1-2)	18	2(1-3)	9
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	1	2(1-3)	6
<i>Eucalyptus sieberi</i>	1(1-2)	25	2(1-3)	16
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	4(1-4)	3	2(1-3)	8



Locations of survey sites allocated to WSF n183. Grey shading indicates extant native vegetation cover within the study area.

**WSF n184: Clyde-Tuross Hinterland Forest**

Plate n184. Clyde-Tuross Hinterland Forest (Map Unit n184) near Government Corner on the Kings Highway east of Clyde Mountain, with a canopy of *Eucalyptus muelleriana*, *E. cypellocarpa* and *E. sieberi*, scattered *Elaeocarpus reticulatus* and *Persoonia linearis* and a sparse groundcover of ferns and herbs.

Sample Sites: 33

Area Extant (ha): 19300

Estimated % remaining: >95%

Area in conservation reserves (ha): 7400

Estimated % of pre-clearing area in conservation reserves: 30-40%

No. Taxa (total / unique): 247/0

No. Taxa per Plot ( $\pm$ sd): 41.5 (10.9)

Class: Southern Lowland Wet Sclerophyll Forests

Related TEC: n/a

Clyde-Tuross Hinterland Forest is characterised by a tall *Eucalyptus* tree canopy rising to around 30 m in height with emergent individuals occasionally attaining 40 m. It has a prominent sub-canopy of smaller trees, typically 10 – 15 m in height, and a dense groundcover dominated by ferns and graminoids with a reasonable complement of small forbs also present. A shrub stratum is frequently present and is usually burdened down with a diversity of climbing species that emerge in a tangle from the groundcover. Clyde-Tuross Hinterland Forest is closely related to both WSF p103 and n183 but occurs in areas with elevation and annual rainfall intermediate between the two. It occurs primarily on sandy loam soils on the coastal range from Currowan to Tathra with isolated examples also found further west around Wadbilliga. Clyde-Tuross Hinterland Forest occurs predominantly on sandy loam soils and is well represented within conservation reserves. Outside of these reserves it is primarily affected by forestry activities.

**Floristic Summary:**

**Trees:** *Acacia maidenii*, *Eucalyptus muelleriana*, *Pittosporum undulatum* **Shrubs:** *Breynia oblongifolia*, *Indigofera australis*, *Notelaea venosa* **Climbers:** *Clematis glycinoides* var. *glycinoides*, *Eustrephus latifolius*, *Geitonoplesium cymosum*, *Glycine clandestina*, *Hibbertia dentata*, *Marsdenia rostrata*, *Pandorea pandorana*, *Rubus parvifolius*, *Smilax australis*, *Tylophora barbata* **Groundcover:** *Desmodium varians*, *Dichondra* spp., *Doodia aspera*, *Gahnia melanocarpa*, *Goodenia ovata*, *Lepidosperma laterale*, *Microlaena stipoides*, *Oplismenus imbecillis*, *Pellaea falcata*, *Plectranthus parviflorus*, *Pratia purpurascens*, *Stellaria flaccida*

**Vegetation structure:**

Stratum	Frequency (n=26)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	4	40 (-)	30 (-)
Tree canopy	100	27.8 (4.1)	23.4 (13.2)
Small tree	96	10.9 (4.3)	25 (21.2)
Shrub	54	2.3 (0.8)	23.8 (18.8)
Ground cover	92	0.8 (0.4)	35.6 (27.5)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 18 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 33 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 18 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-1)	30	1(1-2)	10
<i>Acacia maidenii</i>	1(1-1)	42	1(1-1)	2
<i>Arthropodium milleflorum</i>	1(1-1)	24	1(1-1)	5
<i>Asplenium flabellifolium</i>	1(1-1)	36	1(1-1)	11
<i>Breynia oblongifolia</i>	1(1-1)	61	1(1-1)	12
<i>Cassinia trinerva</i>	1(1-2)	24	1(1-1)	3
<i>Cissus hypoglauca</i>	1(1-2)	33	1(1-2)	10
<i>Claoxylon australe</i>	1(1-1)	24	1(1-2)	3
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	61	1(1-1)	10
<i>Coprosma quadrifida</i>	1(1-1)	33	1(1-1)	10
<i>Corymbia maculata</i>	3(2-3)	27	2(1-3)	3
<i>Desmodium varians</i>	1(1-1)	88	1(1-1)	21
<i>Doodia aspera</i>	1(1-2)	73	1(1-2)	11
<i>Eucalyptus bosistoana</i>	2(1-2)	36	1(1-2)	3
<i>Eucalyptus muelleriana</i>	2(1-2)	70	2(1-2)	6
<i>Eucalyptus smithii</i>	2(1-2)	21	1(1-2)	2
<i>Eustrephus latifolius</i>	1(1-1)	91	1(1-1)	19
<i>Gahnia melanocarpa</i>	1(1-1)	55	1(1-1)	5
<i>Geitonoplesium cymosum</i>	1(1-1)	91	1(1-1)	16
<i>Glycine clandestina</i>	1(1-1)	64	1(1-1)	26
<i>Goodenia ovata</i>	1(1-1)	52	1(1-1)	7
<i>Hibbertia dentata</i>	1(1-1)	45	1(1-1)	6
<i>Hibbertia scandens</i>	1(1-1)	27	1(1-1)	5
<i>Hymenanthera dentata</i>	1(1-1)	24	1(1-1)	6
<i>Indigofera australis</i>	1(1-1)	58	1(1-1)	9
<i>Lepidosperma laterale</i>	1(1-1)	55	1(1-1)	28
<i>Macrozamia communis</i>	2(1-2)	36	1(1-2)	4
<i>Marsdenia rostrata</i>	1(1-1)	61	1(1-2)	12
<i>Morinda jasminoides</i>	1(1-1)	27	1(1-2)	9
<i>Notelaea venosa</i>	1(1-1)	61	1(1-1)	12
<i>Notodanthonia longifolia</i>	1(1-2)	30	1(1-2)	5
<i>Oplismenus imbecillis</i>	1(1-2)	64	1(1-2)	14
<i>Ozothamnus argophyllus</i>	1(1-2)	21	1(1-1)	2
<i>Pandorea pandorana</i>	1(1-1)	85	1(1-1)	18
<i>Pellaea falcata</i>	1(1-1)	73	1(1-2)	10
<i>Pittosporum revolutum</i>	1(1-1)	33	1(1-1)	8
<i>Pittosporum undulatum</i>	1(1-2)	58	1(1-1)	14
<i>Plantago debilis</i>	1(1-1)	24	1(1-1)	7
<i>Plectranthus parviflorus</i>	1(1-1)	73	1(1-1)	7
<i>Poa ensiformis</i>	2(1-2)	30	1(1-1)	2
<i>Pomaderris aspera</i>	1(1-1)	27	1(1-2)	5

<i>Pratia purpurascens</i>	1(1-1)	48	1(1-1)	17
<i>Pseuderanthemum variabile</i>	1(1-1)	36	1(1-2)	9
<i>Psychotria loniceroides</i>	1(1-1)	27	1(1-1)	4
<i>Rapanea howittiana</i>	1(1-1)	21	1(1-1)	5
<i>Rubus parvifolius</i>	1(1-1)	58	1(1-1)	9
<i>Sarcopetalum harveyanum</i>	1(1-1)	27	1(1-1)	4
<i>Senecio linearifolius</i>	1(1-1)	33	1(1-1)	8
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	39	1(1-1)	7
<i>Smilax australis</i>	1(1-1)	70	1(1-1)	16
<i>Solanum pungetium</i>	1(1-1)	33	1(1-1)	5
<i>Stellaria flaccida</i>	1(1-2)	52	1(1-1)	10
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	24	1(1-1)	7
<i>Tylophora barbata</i>	1(1-1)	73	1(1-1)	17

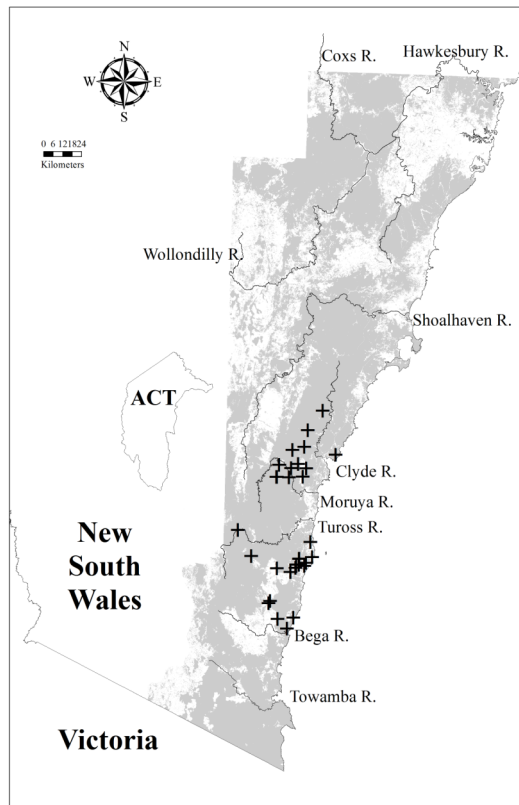
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Dichondra</i> spp.	1(1-1)	42	1(1-2)	25
<i>Entolasia stricta</i>	1(1-1)	33	1(1-2)	34
<i>Lomandra longifolia</i>	1(1-1)	39	1(1-1)	44
<i>Microlaena stipoides</i>	1(1-1)	45	1(1-2)	36
<i>Poa meionectes</i>	1(1-1)	30	1(1-2)	16
<i>Pteridium esculentum</i>	1(1-1)	33	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-2)	15	1(1-2)	9
<i>Corymbia gummifera</i>	3(3-3)	3	2(1-2)	16
<i>Eucalyptus angophoroides</i>	2(2-2)	6	1(1-2)	1
<i>Eucalyptus baueriana</i>	1(1-3)	9	2(1-2)	1
<i>Eucalyptus botryoides</i>	1(1-1)	6	2(1-3)	3
<i>Eucalyptus cypellocarpa</i>	1(1-2)	9	2(1-2)	10
<i>Eucalyptus elata</i>	1(1-1)	6	2(1-3)	5
<i>Eucalyptus globoidea</i>	2(2-2)	3	2(1-2)	12
<i>Eucalyptus longifolia</i>	2(2-2)	12	1(1-2)	2
<i>Eucalyptus maidenii</i>	2(1-2)	12	2(1-2)	2
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	2(1-2)	18	1(1-2)	3
<i>Eucalyptus saligna</i> X <i>botryoides</i>	1(1-1)	9	2(1-3)	2
<i>Eucalyptus sieberi</i>	1(1-1)	3	2(1-3)	16
<i>Eucalyptus tricarpa</i>	2(2-2)	3	1(1-2)	1





Locations of survey sites allocated to WSF n184. Grey shading indicates extant native vegetation cover within the study area.

### DSF p1: Castlereagh Ironbark Forest



Plate p1. Castlereagh Ironbark Forest (Map Unit p1) on the corner of Londonderry Road and The Northern Road, Castlereagh. The dominant tree species are *Eucalyptus fibrosa* and *E. sclerophylla* with a diverse shrub understorey including *Pultenaea parviflora*, *Daviesia ulicifolia* and *Melaleuca nodosa*.

Sample Sites: 42  
 Area Extant (ha): 1100  
 Estimated % remaining: 5-20%  
 Area in conservation reserves (ha): 290  
 Estimated % of pre-clearing area in conservation reserves: <5%  
 No. taxa (total / unique): 277 / 1  
 No. taxa per plot ( $\pm$ sd): 41.6 (8)

Class: Cumberland Dry Sclerophyll Forests

Related TEC: Cooks River/ Castlereagh Ironbark Forest EEC (TSC).

Castlereagh Ironbark Forest (DSF p1) is equivalent to DSF 1 described by Tindall *et al.* (2004). This unit is a eucalypt forest or woodland with a mixed understorey of sclerophyll shrubs and grasses, occurring on the Cumberland Plain (western Sydney) between Castlereagh and Holsworthy (Tozer 2003). It is found on clay soils with iron-indurated gravel derived from Tertiary alluvium or shale. Castlereagh Ironbark Forest occurs below 100m ASL where mean annual rainfall ranges from 800 to 1000mm. It typically occurs as small pockets within the more extensively distributed Castlereagh Scribbly Gum Woodland (DSF p7) which is found on free-draining soils with sandier texture. In areas of poor drainage, Castlereagh Ironbark Forest is replaced by Castlereagh Swamp Woodland (DSF p4). Where Tertiary Alluvium adjoins shale soils, Castlereagh Ironbark Forest grades to Shale-Gravel Transition Forest (DSF p502) with decreasing depth of alluvium. The naturally restricted distribution of Castlereagh Ironbark Forest has been largely cleared, and rural-residential and industrial development, rubbish dumping and high frequency fires pose continuing threats.

#### Floristic Summary:

**Trees:** *Eucalyptus fibrosa*, *Melaleuca decora*. **Shrubs:** *Lissanthe strigosa*, *Melaleuca nodosa*, *Daviesia ulicifolia*, *Ozothamnus diosmifolius*, *Acacia falcata*, *Bursaria spinosa*. **Climbers:** *Glycine clandestina*. **Groundcover:** *Entolasia stricta*, *Microlaena stipoides*, *Cheilanthes sieberi*, *Aristida vagans*, *Pratia purpurascens*, *Lomandra multiflora*, *Opercularia diphylla*, *Dianella revoluta*, *Lepidosperma laterale*, *Goodenia hederacea*, *Paspalidium distans*, *Pomax umbellata*, *Themeda australis*, *Panicum simile*, *Laxmannia gracilis*, *Austrodanthonia tenuior*, *Eragrostis brownii*.

#### Vegetation structure:

Stratum	Frequency (n=40)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	100	19.5 (6)	19.1 (9.3)
Small tree	83	9.6 (3.6)	29 (21.4)
Shrub	73	2.5 (0.6)	21.9 (19.7)
Ground cover	100	0.9 (0.2)	27.7 (24.5)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 21 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 35 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 21 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia elongata</i>	1(1-2)	19	1(1-1)	1
<i>Acacia falcata</i>	1(1-2)	55	1(1-1)	1
<i>Acacia parramattensis</i>	1(1-1)	19	1(1-2)	4
<i>Angophora bakeri</i>	1(1-1)	19	1(1-2)	2
<i>Aristida ramosa</i>	1(1-1)	24	1(1-2)	5
<i>Aristida vagans</i>	2(1-2)	81	1(1-2)	8
<i>Austrodanthonia tenuior</i>	1(1-2)	50	1(1-2)	2
<i>Austrostipa pubescens</i>	2(1-3)	19	1(1-2)	5
<i>Boronia polygalifolia</i>	1(1-1)	19	1(1-1)	1
<i>Brunoniella australis</i>	2(1-2)	29	2(1-2)	4
<i>Brunoniella pumilio</i>	1(1-2)	24	1(1-1)	4
<i>Bursaria spinosa</i>	1(1-2)	50	1(1-2)	14
<i>Calotis cuneifolia</i>	1(1-3)	21	1(1-2)	<1
<i>Cassytha glabella</i>	1(1-2)	38	1(1-1)	8
<i>Cheilanthes sieberi</i>	2(1-2)	90	1(1-1)	13
<i>Cyathochaeta diandra</i>	1(1-1)	26	1(1-2)	8
<i>Cymbopogon refractus</i>	1(1-1)	19	1(1-1)	4
<i>Daviesia ulicifolia</i>	1(1-2)	52	1(1-1)	6
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-2)	76	1(1-1)	15

<i>Dichelachne micrantha</i>	1(1-1)	45	1(1-1)	9
<i>Dillwynia tenuifolia</i>	2(1-3)	38	2(1-2)	<1
<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	1(1-2)	43	1(1-1)	6
<i>Entolasia stricta</i>	2(1-2)	98	1(1-2)	33
<i>Eragrostis brownii</i>	1(1-2)	55	1(1-1)	3
<i>Eucalyptus eugenioides</i>	1(1-3)	21	2(1-3)	4
<i>Eucalyptus fibrosa</i>	3(3-4)	71	2(1-3)	3
<i>Eucalyptus longifolia</i>	1(1-1)	21	2(1-2)	2
<i>Exocarpos cupressiformis</i>	1(1-1)	19	1(1-1)	5
<i>Glycine clandestina</i>	1(1-1)	52	1(1-1)	26
<i>Glycine microphylla</i>	1(1-1)	26	1(1-2)	5
<i>Gonocarpus tetragynus</i>	1(1-1)	43	1(1-1)	20
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-1)	62	1(1-2)	14
<i>Grevillea mucronulata</i>	1(1-1)	24	1(1-1)	3
<i>Hakea sericea</i>	1(1-2)	31	1(1-1)	7
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-2)	26	1(1-1)	10
<i>Hypericum gramineum</i>	1(1-1)	36	1(1-1)	16
<i>Kunzea ambigua</i>	1(1-2)	29	1(1-2)	3
<i>Laxmannia gracilis</i>	1(1-2)	55	1(1-1)	3
<i>Lepidosperma laterale</i>	2(1-2)	74	1(1-1)	28
<i>Leucopogon juniperinus</i>	1(1-2)	21	1(1-1)	5
<i>Lissanthe strigosa</i>	2(1-2)	62	1(1-1)	8
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1(1-3)	29	1(1-1)	11
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-2)	71	1(1-1)	25
<i>Melaleuca decora</i>	3(1-3)	69	2(1-3)	1
<i>Melaleuca nodosa</i>	3(2-4)	64	1(1-3)	1
<i>Microlaena stipoides</i>	2(1-3)	93	1(1-2)	36
<i>Olearia microphylla</i>	1(1-1)	29	1(1-1)	1
<i>Opercularia diphylla</i>	1(1-2)	74	1(1-1)	7
<i>Ozothamnus diosmifolius</i>	1(1-2)	67	1(1-1)	8
<i>Panicum simile</i>	1(1-2)	62	1(1-1)	6
<i>Paspalidium distans</i>	1(1-2)	69	1(1-2)	2
<i>Phyllanthus hirtellus</i>	1(1-2)	33	1(1-1)	14
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	36	1(1-1)	13
<i>Pomax umbellata</i>	1(1-2)	64	1(1-1)	14
<i>Poranthera microphylla</i>	1(1-2)	36	1(1-1)	15
<i>Pratia purpurascens</i>	1(1-2)	79	1(1-1)	17
<i>Pultenaea parviflora</i>	2(1-2)	26	1(1-2)	<1
<i>Themeda australis</i>	2(1-3)	67	1(1-3)	17
<i>Thysanotus tuberosus</i> subsp. <i>tuberosus</i>	1(1-2)	21	1(1-1)	2
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-1)	45	1(1-1)	4
<i>Veronica plebeia</i>	1(1-1)	29	1(1-1)	10
<i>Wahlenbergia gracilis</i>	1(1-2)	31	1(1-1)	11

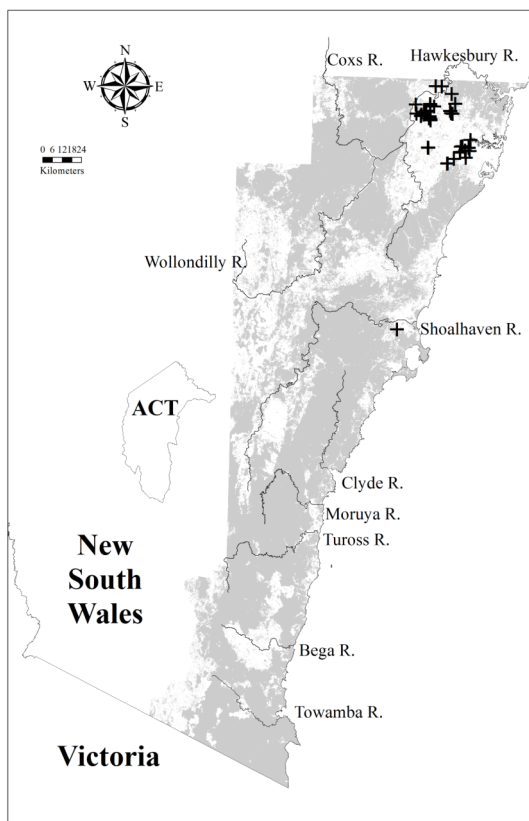


## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	45	1(1-1)	28
<i>Lomandra longifolia</i>	1(1-1)	31	1(1-1)	44

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	3(1-3)	7	1(1-2)	9
<i>Angophora subvelutina</i>	1(1-1)	2	3(1-3)	<1
<i>Corymbia eximia</i>	3(1-3)	5	1(1-2)	2
<i>Eucalyptus crebra</i>	1(1-1)	5	2(1-3)	3
<i>Eucalyptus globoidea</i>	2(1-3)	10	2(1-2)	12
<i>Eucalyptus haemastoma</i>	3(3-3)	2	1(1-2)	2
<i>Eucalyptus moluccana</i>	1(1-3)	10	3(1-3)	2
<i>Eucalyptus oblonga</i>	3(3-3)	5	1(1-2)	2
<i>Eucalyptus parramattensis</i> subsp. <i>parramattensis</i>	1(1-1)	5	1(1-3)	<1
<i>Eucalyptus punctata</i>	1(1-3)	14	2(1-3)	9
<i>Eucalyptus resinifera</i> subsp. <i>resinifera</i>	3(1-3)	5	1(1-2)	1
<i>Eucalyptus sclerophylla</i>	2(1-3)	14	2(1-3)	4
<i>Eucalyptus sideroxylon</i>	1(1-1)	2	3(1-4)	<1
<i>Eucalyptus tereticornis</i>	1(1-3)	7	2(1-3)	7
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-2)	12	2(1-3)	8



Locations of survey sites allocated to DSF p1. Grey shading indicates extant native vegetation cover within the study area.

**GW p2: Cumberland Shale Sandstone Transition Forest**

Plate p2. Cumberland Shale Sandstone Transition Forest (Map Unit p2) with a canopy dominated by *Eucalyptus punctata*, *E. tereticornis* and *E. globoides* at Billets Creek, Orangeville.

Sample Sites: 79

Area Extant (ha): 9,600

Estimated % remaining: 20-40%

Area in conservation reserves (ha): 240

Estimated % of pre-clearing area in conservation reserves: <2%

No. Taxa (total / unique): 406 / 2

No. Taxa per Plot ( $\pm$ sd): 46 (9.4)

Class: Coastal Valley Grassy Woodlands

Related TECs: Shale/Sandstone Transition Forest EEC (TSC); Shale/Sandstone Transition Forest EEC (EPBC).

Cumberland Shale Sandstone Transition Forest (GW p2) is equivalent to GW 2 described by Tindall *et al.* (2004), and is a eucalypt forest or woodland with a mixed understorey of sclerophyll shrubs and grasses. It occurs on clay soils derived from Wianamatta shale (Bannerman and Hazelton 1990) predominantly on the margins of the Cumberland Plain, Sydney, where the underlying sandstone strata are near the surface. Minor occurrences are found on isolated shale remnants in the lower Blue Mountains and the Hornsby and Woronora plateaux and, more rarely, associated with shale lenses within sandstone strata. Cumberland Shale Sandstone Transition Forest is found up to 350m ASL in areas where mean annual rainfall ranges from 800 to 1100mm.

Cumberland Shale Sandstone Transition Forest is highly variable in floristic composition. Species composition varies as a function of the degree of sandstone influence in the soil: remnants close to outcropping sandstone may contain a large component of sclerophyll shrub species while those remote from the sandstone boundary contain more grasses and herbs, and resemble Cumberland Shale Plains Woodland (GW p29), (Tozer 2003). Remnants occurring in the higher rainfall range (> 1000mm) contain a proportion of mesic species and show similarities to Sydney Turpentine Ironbark Forest (WSF p87). This transition varies depending on exposure to solar radiation. Cumberland Shale Sandstone Transition Forest continues to be threatened by suburban expansion, weed invasion and high frequency fires, though important stands exist along the southeast margin of the Cumberland Plain from Appin to Thirlmere.

#### **Floristic Summary:**

**Trees:** *Eucalyptus crebra*, *Eucalyptus fibrosa*, *Allocasuarina littoralis*, *Eucalyptus punctata*. **Shrubs:** *Persoonia linearis*, *Bursaria spinosa*, *Ozothamnus diosmifolius*, *Hibbertia aspera*. **Climbers:** *Glycine clandestina*.

**Groundcover:** *Lepidosperma laterale*, *Cheilanthes sieberi*, *Aristida vagans*, *Pratia purpurascens*, *Microlaena stipoides*, *Entolasia stricta*, *Lomandra multiflora*, *Themeda australis*, *Panicum simile*, *Echinopogon caespitosus*, *Pomax umbellata*, *Dichondra* spp., *Billardiera scandens*, *Opercularia diphyllo*.

**Vegetation structure:**

Stratum	Frequency (n=69)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	100	21.4 (4.5)	21.4 (10.4)
Small tree	78	10.9 (4.4)	17.9 (15.8)
Shrub	65	2.3 (0.6)	7.9 (9.2)
Ground cover	99	1 (0.1)	40.2 (22.5)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 26 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 39 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 26 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia binervata</i>	1(1-1)	14	1(1-2)	2
<i>Acacia decurrens</i>	1(1-1)	27	1(1-1)	2
<i>Acacia elongata</i>	1(1-1)	6	1(1-1)	1
<i>Acacia falcata</i>	1(1-1)	18	1(1-1)	1
<i>Acacia floribunda</i>	1(1-1)	14	1(1-2)	2
<i>Acacia implexa</i>	1(1-1)	20	1(1-1)	6
<i>Acacia parramattensis</i>	1(1-1)	30	1(1-2)	4
<i>Allocasuarina littoralis</i>	1(1-2)	53	1(1-2)	16
<i>Allocasuarina torulosa</i>	1(1-1)	19	1(1-3)	5
<i>Angophora bakeri</i>	1(1-2)	16	1(1-2)	2
<i>Aristida vagans</i>	1(1-2)	80	1(1-2)	8
<i>Arthropodium milleflorum</i>	1(1-1)	19	1(1-1)	5
<i>Astroloma humifusum</i>	1(1-1)	20	1(1-1)	4
<i>Austrodanthonia fulva</i>	1(1-1)	20	1(1-2)	2
<i>Austrodanthonia tenuior</i>	1(1-1)	10	1(1-2)	2
<i>Austrostipa pubescens</i>	2(1-3)	33	1(1-2)	5
<i>Billardiera scandens</i>	1(1-1)	56	1(1-1)	27
<i>Boronia polygalifolia</i>	1(1-1)	6	1(1-1)	1
<i>Bossiaea prostrata</i>	1(1-1)	22	1(1-1)	2
<i>Brachyscome angustifolia</i>	1(1-1)	9	1(1-1)	2
<i>Breynia oblongifolia</i>	1(1-1)	27	1(1-1)	12
<i>Brunoniella australis</i>	1(1-2)	41	2(1-2)	3
<i>Brunoniella pumilio</i>	1(1-1)	24	1(1-1)	4
<i>Bursaria spinosa</i>	1(1-2)	65	1(1-2)	14
<i>Caesia parviflora</i>	1(1-2)	11	1(1-1)	2
<i>Calotis dentex</i>	1(1-2)	30	1(1-2)	<1
<i>Cassytha glabella</i>	1(1-1)	18	1(1-1)	8
<i>Cheilanthes sieberi</i>	1(1-2)	82	1(1-1)	13
<i>Corymbia maculata</i>	3(2-4)	11	2(1-3)	3
<i>Cymbopogon refractus</i>	1(1-1)	28	1(1-1)	4
<i>Daviesia squarrosa</i>	1(1-2)	6	1(1-1)	<1
<i>Daviesia ulicifolia</i>	1(1-1)	19	1(1-1)	6
<i>Desmodium rhytidophyllum</i>	1(1-1)	15	1(1-1)	1
<i>Dianella longifolia</i>	1(1-1)	13	1(1-1)	4

<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-2)	42	1(1-1)	15
<i>Dichelachne micrantha</i>	1(1-1)	33	1(1-1)	9
<i>Dichelachne parva</i>	1(1-2)	8	1(1-1)	2
<i>Dichondra</i> spp.	1(1-2)	58	1(1-2)	25
<i>Digitaria parviflora</i>	1(1-2)	27	1(1-1)	2
<i>Digitaria ramularis</i>	1(1-2)	30	1(1-1)	1
<i>Dodonaea triquetra</i>	1(1-2)	20	1(1-2)	6
<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	1(1-2)	62	1(1-1)	6
<i>Echinopogon ovatus</i>	1(1-1)	33	1(1-1)	14
<i>Entolasia marginata</i>	1(1-2)	41	1(1-1)	11
<i>Entolasia stricta</i>	2(1-2)	77	1(1-2)	33
<i>Eragrostis brownii</i>	1(1-1)	24	1(1-1)	3
<i>Eragrostis leptostachya</i>	1(1-2)	19	1(1-1)	4
<i>Eucalyptus crebra</i>	2(1-3)	63	2(1-3)	2
<i>Eucalyptus eugenioides</i>	1(1-3)	24	2(1-3)	4
<i>Eucalyptus fibrosa</i>	2(1-3)	52	2(1-3)	2
<i>Eucalyptus punctata</i>	2(1-3)	52	1(1-3)	8
<i>Eucalyptus resinifera</i> subsp. <i>resinifera</i>	1(1-1)	6	1(1-2)	1
<i>Euchiton sphaericus</i>	1(1-1)	20	1(1-1)	3
<i>Exocarpos cupressiformis</i>	1(1-1)	22	1(1-1)	5
<i>Gahnia aspera</i>	1(1-2)	24	1(1-1)	4
<i>Galium binifolium</i>	1(1-1)	11	1(1-1)	3
<i>Glycine clandestina</i>	1(1-1)	72	1(1-1)	26
<i>Glycine microphylla</i>	1(1-1)	18	1(1-2)	5
<i>Glycine tabacina</i>	1(1-1)	28	1(1-1)	7
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-1)	46	1(1-2)	14
<i>Hardenbergia violacea</i>	1(1-1)	47	1(1-1)	17
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-2)	51	1(1-1)	10
<i>Hibbertia diffusa</i>	1(1-1)	29	1(1-1)	3
<i>Hypoxis hygrometrica</i>	1(1-1)	15	1(1-1)	1
<i>Jacksonia scoparia</i>	1(1-2)	25	1(1-1)	1
<i>Kunzea ambigua</i>	1(1-3)	49	1(1-2)	3
<i>Lagenifera gracilis</i>	1(1-1)	39	1(1-1)	3
<i>Laxmannia gracilis</i>	1(1-1)	25	1(1-1)	3
<i>Lepidosperma laterale</i>	1(1-2)	87	1(1-1)	28
<i>Leucopogon juniperinus</i>	1(1-1)	48	1(1-1)	5
<i>Lissanthe strigosa</i>	1(1-1)	39	1(1-1)	8
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	1(1-3)	19	1(1-1)	4
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-1)	37	1(1-2)	10
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	75	1(1-1)	24
<i>Microlaena stipoides</i>	1(1-2)	81	1(1-2)	36
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-1)	27	1(1-1)	7
<i>Olearia microphylla</i>	1(1-1)	16	1(1-1)	1
<i>Opercularia diphylla</i>	1(1-1)	54	1(1-1)	6
<i>Oxalis perennans</i>	1(1-1)	38	1(1-1)	13
<i>Ozothamnus diosmifolius</i>	1(1-1)	56	1(1-1)	8

<i>Panicum simile</i>	1(1-1)	68	1(1-1)	5
<i>Paspalidium distans</i>	1(1-1)	30	1(1-2)	2
<i>Passiflora herbertiana</i> subsp. <i>herbertiana</i>	1(1-1)	8	1(1-1)	1
<i>Persoonia linearis</i>	1(1-1)	77	1(1-1)	28
<i>Phyllanthus hirtellus</i>	1(1-2)	34	1(1-1)	14
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-2)	34	1(1-1)	13
<i>Poa labillardierei</i> var. <i>labillardierei</i>	1(1-1)	33	1(1-2)	12
<i>Polymeria calycina</i>	1(1-1)	11	1(1-1)	1
<i>Pomaderris lanigera</i>	1(1-1)	8	1(1-1)	1
<i>Pomax umbellata</i>	1(1-2)	62	1(1-1)	13
<i>Poranthera microphylla</i>	1(1-1)	37	1(1-1)	15
<i>Pratia purpurascens</i>	1(1-2)	82	1(1-1)	17
<i>Pterostylis concinna</i>	1(1-1)	8	1(1-1)	<1
<i>Pultenaea villosa</i>	1(1-2)	10	1(1-2)	1
<i>Rapanea variabilis</i>	1(1-1)	15	1(1-1)	4
<i>Solanum prinophyllum</i>	1(1-1)	37	1(1-1)	6
<i>Solanum pungetium</i>	1(1-1)	19	1(1-1)	5
<i>Stypandra glauca</i>	1(1-1)	27	1(1-2)	5
<i>Themeda australis</i>	2(1-3)	75	1(1-3)	17
<i>Tricoryne elatior</i>	1(1-1)	14	1(1-1)	3
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-1)	34	1(1-1)	4
<i>Veronica plebeia</i>	1(1-1)	42	1(1-1)	10
<i>Westringia longifolia</i>	1(1-3)	6	1(1-2)	<1

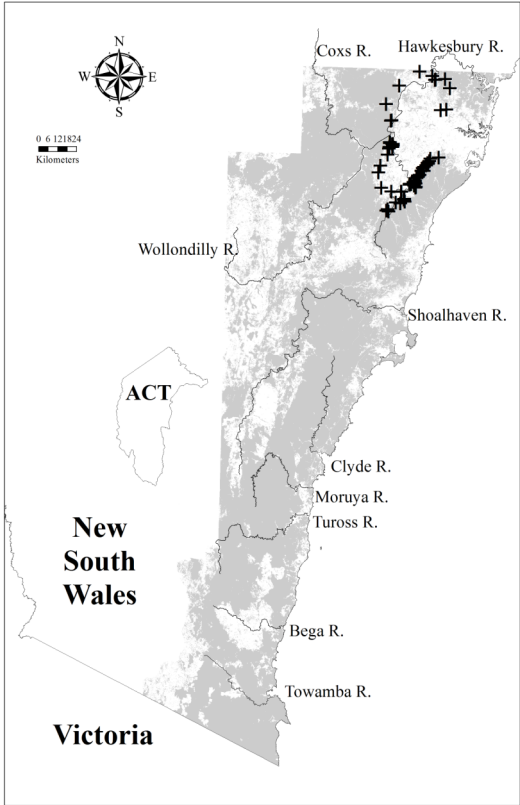
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Desmodium varians</i>	1(1-1)	32	1(1-1)	21
<i>Dianella caerulea</i>	1(1-1)	42	1(1-1)	28
<i>Gonocarpus tetragynus</i>	1(1-1)	34	1(1-1)	20

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora costata</i>	1(1-1)	3	1(1-3)	7
<i>Angophora floribunda</i>	1(1-1)	9	1(1-2)	9
<i>Corymbia eximia</i>	2(1-3)	5	1(1-2)	2
<i>Corymbia gummifera</i>	1(1-1)	14	2(1-2)	16
<i>Eucalyptus agglomerata</i>	1(1-1)	1	2(1-3)	8
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	1(1-1)	4	2(1-3)	1
<i>Eucalyptus beyeriana</i>	2(2-2)	3	2(1-2)	<1
<i>Eucalyptus bosistoana</i>	1(1-1)	1	1(1-2)	3
<i>Eucalyptus deanei</i>	1(1-1)	1	3(1-3)	1
<i>Eucalyptus globoidea</i>	2(1-2)	23	2(1-2)	12
<i>Eucalyptus longifolia</i>	3(1-3)	5	1(1-2)	2
<i>Eucalyptus moluccana</i>	1(1-3)	8	3(1-3)	2
<i>Eucalyptus notabilis</i>	1(1-1)	1	1(1-2)	1
<i>Eucalyptus oblonga</i>	2(1-3)	6	1(1-2)	2
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-1)	1	1(1-2)	3

<i>Eucalyptus pilularis</i>	3(1-4)	10	2(1-3)	5
<i>Eucalyptus scias</i> subsp. <i>scias</i>	2(2-2)	1	1(1-1)	<1
<i>Eucalyptus tereticornis</i>	1(1-2)	14	2(1-3)	7
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	3(1-3)	15	2(1-3)	7



Locations of survey sites allocated to GW p2. Grey shading indicates extant native vegetation cover within the study area.

**GW p3: South Coast Lowland Swamp Woodland**



Plate p3. South Coast Lowland Swamp Woodland (Map Unit p3) at Croome Reserve, Albion Park, with *Eucalyptus longifolia* and *Melaleuca styphelioides* above a diverse grassy groundcover.

Sample Sites: 19

Area Extant (ha): 1100  
 Estimated % remaining: 5-15%  
 Area in conservation reserves (ha): 90  
 Estimated % of pre-clearing area in conservation reserves: <1%  
 No. taxa (total / unique): 191 / 0  
 No. taxa per plot ( $\pm$ sd): 38.7 (8.2)  
 Class: Coastal Valley Grassy Woodlands  
 Related TEC: Illawarra Lowlands Grassy Woodland EEC (TSC).

South Coast Lowland Swamp Woodland (GW p3) represents a revision and extension of GW 3 identified by Tindall *et al.* (2004), based on classification of a larger sample pool over a wider study area. This map unit is a grassy eucalypt woodland found in coastal valleys and floodplains, most extensively around Lake Illawarra and in the Moruya - Congo area, but with sporadic occurrences between including small areas near Worrigee, Kioloa and Nelligen. Its distribution is restricted to flats below 100m ASL with sandy loam soils and partially impeded drainage, receiving over 1000mm of annual rainfall. South Coast Lowland Swamp Woodland is related to Castlereagh Swamp Woodland (DSF p4) but contains a higher and more diverse cover of grass species.

On the Illawarra plain, South Coast Lowland Swamp Woodland grades into South Coast Grassy Woodland (GW p34) with increasing soil clay content and better drainage. The occurrences of these two units on the Illawarra Plain are listed as 'Illawarra Lowlands Grassy Woodland' on Schedule 1 of the NSW *Threatened Species Conservation Act* (1995). At Moruya, improved drainage leads from GW p3 to Southeast Lowland Grassy Woodland (GW e20p229).

The naturally small distribution of South Coast Lowland Swamp Woodland has been severely depleted by land clearing and is threatened by continuing fragmentation, weed invasion and high frequency fire.

#### Floristic Summary:

**Trees:** *Eucalyptus globoidea*, *E. longifolia*, *Melaleuca decora*. **Shrubs:** *Leucopogon juniperinus*, *Pittosporum undulatum*, *Ozothamnus diosmifolius*. **Climbers:** *Glycine clandestina*, *G. tabacina*. **Groundcover:** *Microlaena stipoides*, *Pratia purpurascens*, *Entolasia stricta*, *Themeda australis*, *Cheilanthes sieberi*, *Lagenifera stipitata*, *Lepidosperma laterale*, *Cymbopogon refractus*, *Dichondra* spp., *Echinopogon caespitosus*, *Dianella longifolia*, *Imperata cylindrica*, *Arthropodium* species B, *Eragrostis leptostachya*, *Veronica plebeia*.

#### Vegetation structure:

Stratum	Frequency (n=18)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	18 (3.8)	23.9 (12.8)
Small tree	83	9 (3.3)	27.1 (25.2)
Shrub	33	1.9 (0.5)	9.7 (12.4)
Ground cover	100	0.9 (0.2)	66.7 (24.1)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 32 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia binervata</i>	2(1-2)	21	1(1-2)	2
<i>Acacia falcata</i>	1(1-1)	26	1(1-1)	1
<i>Acacia mearnsii</i>	1(1-2)	37	1(1-2)	7
<i>Amyema gaudichaudii</i>	1(1-2)	21	1(1-1)	<1
<i>Arthropodium milleflorum</i>	1(1-1)	26	1(1-1)	5
<i>Arthropodium species B</i>	1(1-2)	47	1(1-1)	1
<i>Austrodanthonia pilosa</i>	1(1-1)	21	1(1-1)	3
<i>Breynia oblongifolia</i>	1(1-1)	42	1(1-1)	12
<i>Carex longibrachiata</i>	1(1-1)	32	1(1-2)	4
<i>Casuarina glauca</i>	2(1-2)	32	2(1-3)	1
<i>Centella asiatica</i>	1(1-2)	42	1(1-1)	4
<i>Cheilanthes sieberi</i>	1(1-2)	74	1(1-1)	14
<i>Commelina cyanea</i>	1(1-1)	37	1(1-1)	4



<i>Corymbia maculata</i>	2(1-3)	21	2(1-3)	3
<i>Cymbopogon refractus</i>	1(1-2)	74	1(1-1)	4
<i>Daviesia genistifolia</i>	1(1-1)	21	1(1-1)	<1
<i>Dianella longifolia</i>	2(1-2)	37	1(1-1)	4
<i>Dichondra spp.</i>	1(1-2)	74	1(1-2)	25
<i>Digitaria parviflora</i>	2(2-3)	26	1(1-1)	2
<i>Dodonaea viscosa</i> subsp. <i>angustifolia</i>	1(1-1)	26	1(1-1)	1
<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	2(1-2)	74	1(1-1)	6
<i>Entolasia stricta</i>	2(1-2)	79	1(1-2)	34
<i>Eragrostis leptostachya</i>	1(1-2)	58	1(1-1)	4
<i>Eucalyptus globoidea</i>	3(1-3)	68	2(1-2)	12
<i>Eucalyptus longifolia</i>	3(1-4)	68	1(1-2)	2
<i>Eucalyptus tereticornis</i>	1(1-2)	58	2(1-3)	7
<i>Exocarpos cupressiformis</i>	1(1-1)	47	1(1-1)	5
<i>Glycine clandestina</i>	1(1-2)	95	1(1-1)	26
<i>Glycine tabacina</i>	1(1-1)	37	1(1-1)	7
<i>Hypoxis hygrometrica</i>	2(1-3)	26	1(1-1)	1
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-2)	63	1(1-2)	10
<i>Lagenifera stipitata</i>	1(1-2)	63	1(1-1)	14
<i>Laxmannia gracilis</i>	1(1-1)	21	1(1-1)	4
<i>Lepidosperma laterale</i>	1(1-2)	68	1(1-1)	29
<i>Leucopogon juniperinus</i>	1(1-2)	74	1(1-1)	5
<i>Lomandra longifolia</i>	1(1-2)	79	1(1-1)	44
<i>Melaleuca decora</i>	4(4-4)	47	2(1-3)	1
<i>Opercularia diphylla</i>	1(1-2)	32	1(1-1)	7
<i>Opercularia hispida</i>	1(1-2)	21	1(1-1)	3
<i>Ozothamnus diosmifolius</i>	1(1-1)	42	1(1-1)	9
<i>Panicum simile</i>	2(1-2)	26	1(1-1)	6
<i>Parsonsia straminea</i>	1(1-1)	37	1(1-1)	7
<i>Pittosporum undulatum</i>	1(1-1)	74	1(1-1)	14
<i>Polymeria calycina</i>	1(1-2)	26	1(1-1)	1
<i>Pratia purpurascens</i>	1(1-2)	89	1(1-1)	17
<i>Pultenaea retusa</i>	1(1-2)	26	1(1-1)	2
<i>Pultenaea villosa</i>	2(1-3)	21	1(1-2)	1
<i>Solanum prinophyllum</i>	1(1-1)	32	1(1-1)	6
<i>Themeda australis</i>	1(1-2)	68	1(1-3)	17
<i>Veronica plebeia</i>	1(1-1)	37	1(1-1)	10

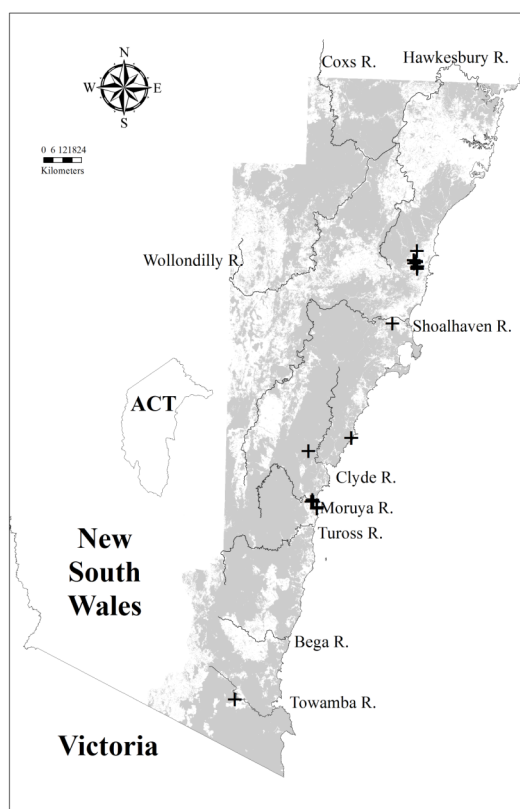
Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Desmodium varians</i>	1(1-1)	42	1(1-1)	21
<i>Dianella caerulea</i>	1(1-1)	37	1(1-1)	28
<i>Echinopogon ovatus</i>	1(1-2)	37	1(1-1)	14
<i>Entolasia marginata</i>	1(1-1)	32	1(1-1)	11
<i>Geitonoplesium cymosum</i>	1(1-1)	32	1(1-1)	16
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-1)	32	1(1-2)	14

<i>Hardenbergia violacea</i>	1(1-1)	42	1(1-1)	17
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-2)	32	1(1-1)	25
<i>Microlaena stipoides</i>	2(1-3)	68	1(1-2)	36
<i>Oplismenus imbecillis</i>	1(1-2)	32	1(1-2)	14

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	2(1-3)	21	1(1-2)	9
<i>Eucalyptus bosistoana</i>	2(1-2)	11	1(1-2)	3
<i>Eucalyptus botryoides</i>	1(1-2)	16	2(1-3)	3
<i>Eucalyptus eugenioides</i>	3(3-3)	5	2(1-3)	4
<i>Eucalyptus maidenii</i>	1(1-1)	5	2(1-2)	2
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-1)	5	1(1-2)	3
<i>Eucalyptus pilularis</i>	3(3-3)	5	2(1-3)	5
<i>Eucalyptus polyanthemos</i> subsp. <i>vestita</i>	2(2-2)	5	1(1-1)	<1



Locations of survey sites allocated to GW p3. Grey shading indicates extant native vegetation cover within the study area.

**DSF p4: Castlereagh Swamp Woodland**

Plate p4. Castlereagh Swamp Woodland (Map Unit p4) near Agnes Banks with *Melaleuca decora* and *M. linariifolia* over a dense, sedge-dominated groundcover.

Sample Sites: 7

Area Extant (ha): 610

Estimated % remaining: 55-70%

Area in conservation reserves (ha): 120

Estimated % of pre-clearing area in conservation reserves: 5-15%

No. taxa (total / unique): 141 / 3

No. taxa per plot ( $\pm$ sd): 43.6 (8.1)

Class: Sydney Sand Flats Dry Sclerophyll Forests

Related TEC: Castlereagh Swamp Woodland EEC (TSC).

Castlereagh Swamp Woodland (DSF p4) is equivalent to DSF 4 described by Tindall *et al.* (2004). This unit is a low eucalypt woodland found below 50m ASL on flat, poorly drained Tertiary alluvium between Castlereagh and Holsworthy on the Cumberland Plain, western Sydney, where mean annual rainfall is 750 – 870mm (Tozer 2003). It occurs mainly in the Castlereagh area where it covers broad depressions loosely oriented around a network of ephemeral drainage channels. Elsewhere it is restricted to alluvium adjacent to larger drainage lines. Its naturally restricted range has been reduced by clearing and is further threatened by rural-residential and industrial development.

**Floristic Summary:**

**Trees:** *Melaleuca decora*, *Eucalyptus parramattensis*, *M. linariifolia*. **Groundcover:** *Goodenia paniculata*, *Schoenus apogon*, *Centella asiatica*, *Cheilanthes sieberi*, *Juncus usitatus*, *Opercularia diphylla*, *Pratia purpurascens*, *Themeda australis*, *Agrostis avenacea*, *Gratiola pedunculata*, *Hydrocotyle peduncularis*, *Hypericum gramineum*, *Paspalidium distans*, *Poranthera microphylla*, *Austrodanthonia tenuior*, *Eragrostis brownii*, *Fimbristylis dichotoma*, *Hypoxis hygrometrica*.

**Vegetation structure:**

Stratum	Frequency (n=7)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	17.6 (5.1)	24 (19.4)
Small tree	71	10.6 (2.2)	17.8 (10.1)
Shrub	43	2.7 (0.6)	7.3 (6.8)
Ground cover	100	1 (-)	56.3 (33.2)

**Diagnostic Species:**

A 0.04 ha plot located in this Map Unit is expected to contain at least 19 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 37 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 19 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
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<i>Acacia elongata</i>	1(1-1)	29	1(1-1)	1
<i>Alternanthera denticulata</i>	1(1-1)	29	1(1-1)	1
<i>Angophora subvelutina</i>	3(1-3)	29	3(1-3)	<1
<i>Austrodanthonia tenuior</i>	1(1-1)	57	1(1-2)	2
<i>Brunoniella pumilio</i>	1(1-1)	43	1(1-1)	4
<i>Centella asiatica</i>	2(1-3)	86	1(1-1)	4
<i>Centipeda minima</i> var. <i>minima</i>	1(1-3)	43	1(1-1)	<1
<i>Cheilanthes sieberi</i>	1(1-1)	86	1(1-1)	14
<i>Dianella longifolia</i>	1(1-2)	43	1(1-1)	4
<i>Epaltes australis</i>	1(1-1)	43	1(1-1)	<1
<i>Eragrostis brownii</i>	1(1-3)	57	1(1-1)	3
<i>Eragrostis elongata</i>	1(1-1)	29	1(1-1)	<1
<i>Eragrostis leptostachya</i>	1(1-1)	43	1(1-1)	4
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	1(1-1)	29	2(1-3)	1
<i>Eucalyptus fibrosa</i>	3(1-3)	29	2(1-3)	3
<i>Eucalyptus parramattensis</i> subsp. <i>parramattensis</i>	1(1-1)	57	1(1-3)	<1
<i>Euchiton sphaericus</i>	1(1-2)	43	1(1-1)	3
<i>Fimbristylis dichotoma</i>	2(1-3)	57	1(1-1)	1
<i>Goodenia paniculata</i>	2(1-2)	100	1(1-1)	<1
<i>Gratiola pedunculata</i>	1(1-2)	71	1(1-2)	<1
<i>Haloragis heterophylla</i>	3(3-3)	29	1(1-1)	1
<i>Hemarthria uncinata</i> var. <i>uncinata</i>	1(1-1)	29	1(1-1)	1
<i>Hydrocotyle peduncularis</i>	2(2-3)	71	1(1-1)	9
<i>Hypericum gramineum</i>	1(1-2)	71	1(1-1)	16
<i>Hypoxis hygrometrica</i>	1(1-2)	57	1(1-1)	1
<i>Isolepis inundata</i>	3(1-3)	43	1(1-1)	1
<i>Juncus planifolius</i>	2(1-3)	43	1(1-1)	1
<i>Juncus prismatocarpus</i>	2(1-2)	29	1(1-1)	<1
<i>Juncus usitatus</i>	2(1-2)	86	1(1-1)	2
<i>Lachnagrostis filiformis</i>	2(1-3)	71	1(1-1)	3
<i>Lepyrodia muelleri</i>	3(1-4)	43	1(1-1)	<1
<i>Melaleuca decora</i>	4(2-4)	86	2(1-3)	1
<i>Melaleuca linariifolia</i>	2(1-2)	43	1(1-2)	1
<i>Melaleuca thymifolia</i>	1(1-1)	29	1(1-1)	1
<i>Microlaena stipoides</i>	2(1-2)	86	1(1-2)	36
<i>Opercularia diphylla</i>	1(1-1)	86	1(1-1)	7
<i>Panicum effusum</i>	1(1-1)	29	1(1-1)	2
<i>Panicum simile</i>	1(1-2)	43	1(1-1)	6
<i>Paspalidium distans</i>	1(1-2)	71	1(1-2)	3
<i>Paspalum orbiculare</i>	1(1-1)	43	1(1-1)	<1
<i>Poranthera microphylla</i>	1(1-2)	71	1(1-1)	15
<i>Pratia purpurascens</i>	2(1-2)	86	1(1-1)	17
<i>Pultenaea villosa</i>	2(1-2)	29	1(1-2)	1
<i>Schoenus apogon</i>	1(1-2)	100	1(1-1)	2
<i>Themeda australis</i>	1(1-1)	86	1(1-3)	17
<i>Tricoryne elatior</i>	1(1-1)	43	1(1-1)	3

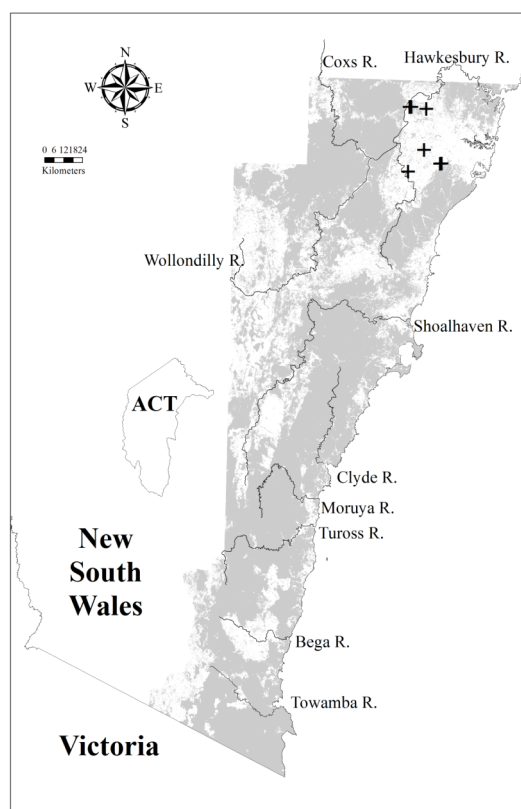
<i>Wurmbea dioica</i> subsp. <i>dioica</i>	3(1-3)	29	1(1-1)	<1
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## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Aristida vagans</i>	1(1-1)	43	1(1-2)	8
<i>Bursaria spinosa</i>	1(1-1)	43	1(1-2)	14
<i>Dichelachne micrantha</i>	1(1-2)	43	1(1-1)	9
<i>Dichondra</i> spp.	1(1-1)	71	1(1-2)	25
<i>Entolasia stricta</i>	2(1-4)	57	1(1-2)	34
<i>Lomandra longifolia</i>	3(1-3)	57	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-2)	71	1(1-1)	25
<i>Wahlenbergia gracilis</i>	1(1-2)	43	1(1-1)	11

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	3(3-3)	14	1(1-2)	9
<i>Eucalyptus eugenioides</i>	1(1-1)	14	2(1-3)	4
<i>Eucalyptus sclerophylla</i>	1(1-1)	14	2(1-3)	4
<i>Eucalyptus sideroxylon</i>	3(3-3)	14	3(1-4)	<1
<i>Eucalyptus tereticornis</i>	3(1-3)	29	2(1-3)	7



Locations of survey sites allocated to DSF p4. Grey shading indicates extant native vegetation cover within the study area.



**DSF p5: Burragorang Hillslope Forest**

Plate p5. Burragorang Hillslope Forest (Map Unit p5) with *Eucalyptus fibrosa*, *E. eugenioides* and *E. punctata* at Cooba Bay, Lake Burragorang. *Angophora floribunda* and *Persoonia linearis* are present in the midstorey, with a scattering of sclerophyllous shrubs above a sparse groundcover.

Sample Sites: 56

Area Extant (ha): 20700

Estimated % remaining: 75-90%

Area in conservation reserves (ha): 20400

Estimated % of pre-clearing area in conservation reserves: 70-90%

No. taxa (total / unique): 365 / 1

No. taxa per plot ( $\pm$ sd): 43.7 (10.3)

Class: Central Gorge Dry Sclerophyll Forests

Related TEC: n/a

Burragorang Hillslope Forest (DSF p5) is equivalent to DSF 5 described by Tindall *et al.* (2004). This unit is a eucalypt forest or woodland with a sparse sclerophyll shrub layer and patchy groundcover of forbs, sedges and grasses, occurring on dry hill slopes in the Burragorang Valley. It is found on sandy loams and loams and typically occupies more moderate topography with greater exposure to solar radiation than Burragorang Escarpment Forest (DSF p88). These two units intergrade extensively. Burragorang Hillslope Forest is distributed from 100 – 650m ASL and occurs in areas receiving 800 – 1000mm of annual rainfall. Extensive areas are represented in the southern portions of Blue Mountains National Park.

**Floristic Summary:**

**Trees:** *Eucalyptus punctata*, *E. fibrosa*, *E. eugenioides*. **Shrubs:** *Persoonia linearis*, *Phyllanthus hirtellus*, *Lissanthe strigosa*, *Notelaea longifolia*. **Climbers:** *Billardiera scandens*, *Hardenbergia violacea*, *Glycine clandestina*. **Groundcover:** *Pomax umbellata*, *Entolasia stricta*, *Lomandra multiflora*, *Goodenia hederacea*, *Aristida vagans*, *Dianella revoluta*, *Lepidosperma laterale*, *Cheilanthes sieberi*, *Pratia purpurascens*.

**Vegetation structure:**

Stratum	Frequency (n=55)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	21.6 (5.3)	26.7 (11)
Small tree	60	9.4 (3.1)	15 (12.7)
Shrub	87	2.2 (0.6)	15.5 (15.1)
Ground cover	100	0.7 (0.3)	27.2 (20.7)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 19 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 36 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 19 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia buxifolia</i> subsp. <i>buxifolia</i>	1(1-3)	29	1(1-1)	1
<i>Acacia implexa</i>	1(1-1)	32	1(1-1)	6
<i>Acacia parramattensis</i>	1(1-1)	27	1(1-2)	4
<i>Allocasuarina littoralis</i>	1(1-1)	39	1(1-2)	17
<i>Allocasuarina torulosa</i>	3(1-3)	29	1(1-3)	4
<i>Angophora bakeri</i>	1(1-3)	41	1(1-2)	2
<i>Aristida vagans</i>	1(1-2)	68	1(1-2)	8
<i>Astroloma humifusum</i>	1(1-1)	34	1(1-1)	4
<i>Astrotricha latifolia</i>	1(1-2)	14	1(1-1)	2
<i>Austrostipa ramosissima</i>	1(1-2)	13	1(1-2)	1
<i>Billardiera scandens</i>	1(1-1)	66	1(1-1)	27
<i>Brachyscome angustifolia</i>	1(1-2)	29	1(1-1)	2
<i>Breynia oblongifolia</i>	1(1-1)	38	1(1-1)	12
<i>Bursaria longisepala</i>	1(1-2)	50	1(1-1)	1
<i>Cheilanthes sieberi</i>	1(1-2)	52	1(1-1)	14
<i>Cymbopogon refractus</i>	1(1-1)	27	1(1-1)	4
<i>Dampiera purpurea</i>	1(1-1)	21	1(1-1)	4
<i>Daviesia ulicifolia</i>	1(1-1)	20	1(1-1)	7
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-2)	68	1(1-1)	15
<i>Digitaria ramularis</i>	1(1-2)	18	1(1-1)	1
<i>Dillwynia retorta</i>	1(1-2)	34	1(1-2)	6
<i>Entolasia stricta</i>	2(1-2)	88	1(1-2)	33
<i>Eragrostis brownii</i>	1(1-1)	20	1(1-1)	3
<i>Eucalyptus crebra</i>	1(1-3)	29	2(1-3)	3
<i>Eucalyptus eugenioides</i>	3(1-3)	41	2(1-3)	4
<i>Eucalyptus fibrosa</i>	3(1-3)	70	2(1-3)	2
<i>Eucalyptus punctata</i>	3(1-3)	84	1(1-3)	8
<i>Exocarpos strictus</i>	1(1-1)	45	1(1-1)	9
<i>Gahnia aspera</i>	1(1-2)	14	1(1-1)	4
<i>Glycine clandestina</i>	1(1-2)	50	1(1-1)	26
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-2)	79	1(1-2)	14
<i>Grevillea aspleniifolia</i>	2(1-3)	14	1(1-1)	<1
<i>Hardenbergia violacea</i>	1(1-1)	61	1(1-1)	17
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-2)	30	1(1-1)	10
<i>Hovea linearis</i>	1(1-1)	27	1(1-1)	9
<i>Jacksonia scoparia</i>	1(1-1)	25	1(1-1)	1
<i>Joycea pallida</i>	1(1-3)	36	1(1-2)	8
<i>Lepidosperma gunnii</i>	1(1-2)	30	1(1-1)	4
<i>Lepidosperma laterale</i>	1(1-2)	55	1(1-1)	28
<i>Leptospermum trinervium</i>	1(1-2)	39	1(1-2)	15
<i>Leucopogon muticus</i>	1(1-1)	25	1(1-1)	1
<i>Lissanthe strigosa</i>	1(1-2)	79	1(1-1)	8
<i>Lomandra confertifolia</i> subsp. <i>pallida</i>	2(2-2)	16	1(1-2)	1
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	2(1-2)	14	1(1-1)	4



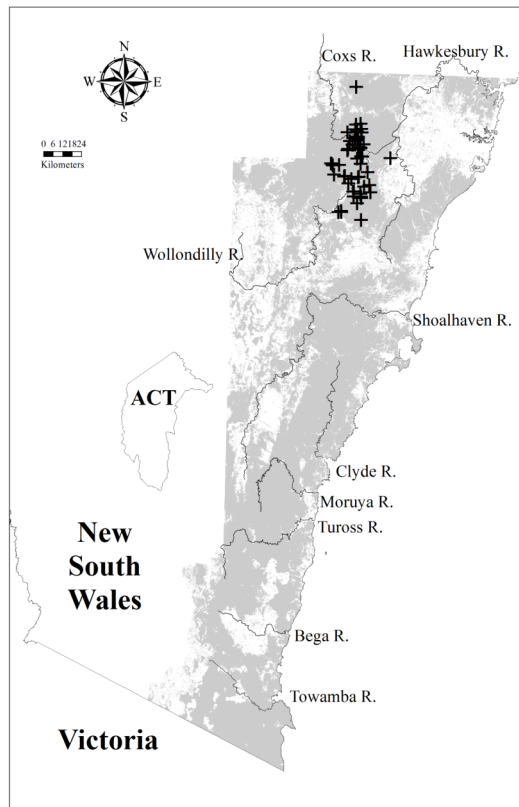
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-1)	34	1(1-2)	10
<i>Lomandra glauca</i>	1(1-1)	25	1(1-1)	10
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-2)	86	1(1-1)	24
<i>Lomandra obliqua</i>	1(1-1)	48	1(1-1)	14
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-2)	59	1(1-1)	7
<i>Notodanthonia longifolia</i>	1(1-2)	16	1(1-2)	5
<i>Olearia viscidula</i>	1(1-1)	23	1(1-2)	5
<i>Opercularia diphylla</i>	1(1-1)	29	1(1-1)	7
<i>Opercularia hispida</i>	1(1-1)	20	1(1-1)	3
<i>Panicum simile</i>	1(1-1)	43	1(1-1)	6
<i>Persoonia linearis</i>	1(1-1)	100	1(1-1)	28
<i>Phyllanthus hirtellus</i>	1(1-2)	82	1(1-1)	14
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-2)	43	1(1-1)	13
<i>Podolobium ilicifolium</i>	1(1-1)	36	1(1-1)	9
<i>Pomax umbellata</i>	1(1-2)	89	1(1-1)	13
<i>Pratia purpurascens</i>	1(1-1)	52	1(1-1)	17
<i>Stackhousia viminea</i>	1(1-2)	14	1(1-1)	3
<i>Stypandra glauca</i>	2(1-2)	20	1(1-2)	5
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-1)	20	1(1-1)	4

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Dianella caerulea</i>	1(1-1)	30	1(1-1)	28
<i>Lomandra longifolia</i>	1(1-1)	55	1(1-1)	44
<i>Microlaena stipoides</i>	1(1-2)	30	1(1-2)	36

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora costata</i>	3(1-3)	9	1(1-3)	7
<i>Angophora floribunda</i>	1(1-3)	13	1(1-2)	9
<i>Angophora hispida</i>	1(1-1)	2	1(1-2)	1
<i>Corymbia eximia</i>	2(1-3)	7	1(1-2)	2
<i>Corymbia gummifera</i>	3(1-3)	7	2(1-2)	16
<i>Corymbia maculata</i>	3(3-3)	2	2(1-3)	3
<i>Eucalyptus agglomerata</i>	3(1-3)	11	2(1-3)	7
<i>Eucalyptus benthamii</i>	1(1-1)	2	3(2-3)	<1
<i>Eucalyptus globoidea</i>	3(1-3)	4	2(1-2)	12
<i>Eucalyptus piperita</i>	3(1-3)	4	2(1-3)	9
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	2	2(1-3)	6
<i>Eucalyptus ralla</i>	3(3-3)	2	3(3-3)	<1
<i>Eucalyptus rossii</i>	1(1-1)	2	3(1-3)	2
<i>Eucalyptus sclerophylla</i>	3(1-3)	5	2(1-3)	4
<i>Eucalyptus sideroxylon</i>	4(4-4)	2	3(1-3)	<1
<i>Eucalyptus sparsifolia</i>	3(1-3)	4	2(1-3)	2
<i>Eucalyptus tereticornis</i>	1(1-1)	2	2(1-3)	7
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	3(1-3)	14	2(1-3)	8



Locations of survey sites allocated to DSF p5. Grey shading indicates extant native vegetation cover within the study area.

#### DSF p6: Burragorang - Nepean Hinterland Woodland



Plate p6. Burragorang-Nepean Hinterland Woodland (Map Unit p6) with *Eucalyptus sclerophylla* over a diverse shrubby understorey including *Banksia oblongifolia*, *B. spinulosa* subsp. *spinulosa*, *Hakea laevipes* and *Isopogon anemonifolius* on deep sandy sediments in Cripple Creek Reserve, Mount Riverview.

Sample Sites: 25

Area Extant (ha): 960

Estimated % remaining: 80-90%  
 Area in conservation reserves (ha): 550  
 Estimated % of pre-clearing area in conservation reserves: 40-55%  
 No. taxa (total / unique): 305 / 2  
 No. taxa per plot ( $\pm$ sd): 44.8 (9.9)  
 Class: Sydney Sand Flats Dry Sclerophyll Forests  
 Related TEC: n/a

Burraborang – Nepean Hinterland Woodland (DSF 6) is equivalent to DSF 6 identified by Tindall *et al.* (2004), and is a eucalypt woodland with an open layer of sclerophyll shrubs and a grassy groundcover. This woodland has a restricted distribution and occurs primarily in the Kedumba and Megalong valleys, up to 700m ASL, on sandy loams and loams derived from Permian sedimentary rocks. These areas receive 800 – 1250mm mean annual rainfall. It may be more widely distributed than mapped, particularly where shale/sandstone inter-bedding is common in the surface strata, but is unlikely to cover large areas. For example, small outlying occurrences have been recorded sporadically in the upper Nepean catchment and in the vicinity of Riverstone, Ebenezer and East Kurrajong on soils derived from Triassic sediments. The limited areas of this unit are largely outside conservation reserves, however their remote location and poor soils have afforded them effective protection from land clearing.

#### Floristic Summary:

**Trees:** *Angophora bakeri*, *Eucalyptus punctata*, *Eucalyptus sclerophylla*. **Shrubs:** *Leptospermum trinervium*, *Pimelea linifolia*, *Persoonia linearis*, *Phyllanthus hirtellus*, *Banksia spinulosa*. **Groundcover:** *Entolasia stricta*, *Goodenia hederacea*, *Pomax umbellata*, *Dianella revoluta*, *Cheilanthes sieberi*, *Eragrostis brownii*, *Gonocarpus tetragynus*, *Laxmannia gracilis*, *Patersonia sericea*, *Cyathochaeta diandra*, *Lomandra multiflora*, *Aristida vagans*, *Themeda australis*, *Austrostipa pubescens*, *Lomandra obliqua*, *Pratia purpurascens*.

#### Vegetation structure:

Stratum	Frequency (n=17)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	19.2 (8)	19.8 (11.5)
Small tree	65	10.7 (2.5)	15.7 (13.2)
Shrub	76	2.2 (0.6)	16.2 (11.3)
Ground cover	94	0.6 (0.2)	48.6 (19.3)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 37 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia brownii</i>	1(1-1)	28	1(1-1)	1
<i>Acacia buxifolia</i> subsp. <i>buxifolia</i>	1(1-2)	28	1(1-1)	1
<i>Acacia parramattensis</i>	1(1-3)	20	1(1-2)	4
<i>Angophora bakeri</i>	2(1-3)	60	1(1-2)	2
<i>Aristida vagans</i>	1(1-1)	52	1(1-2)	8
<i>Austrostipa pubescens</i>	1(1-2)	48	1(1-2)	5
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-2)	56	1(1-2)	15
<i>Bossiaea obcordata</i>	1(1-1)	28	1(1-2)	7
<i>Bursaria longisepala</i>	1(1-1)	36	1(1-1)	1
<i>Calytrix tetragona</i>	3(2-4)	20	1(1-2)	2
<i>Cheilanthes sieberi</i>	1(1-1)	64	1(1-1)	14
<i>Cryptandra amara</i>	1(1-3)	20	1(1-1)	1
<i>Cyathochaeta diandra</i>	2(1-3)	56	1(1-2)	8
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-2)	76	1(1-1)	15
<i>Dillwynia retorta</i>	1(1-2)	48	1(1-2)	7
<i>Drosera peltata</i>	1(1-1)	24	1(1-1)	2
<i>Entolasia stricta</i>	1(1-2)	92	1(1-2)	34

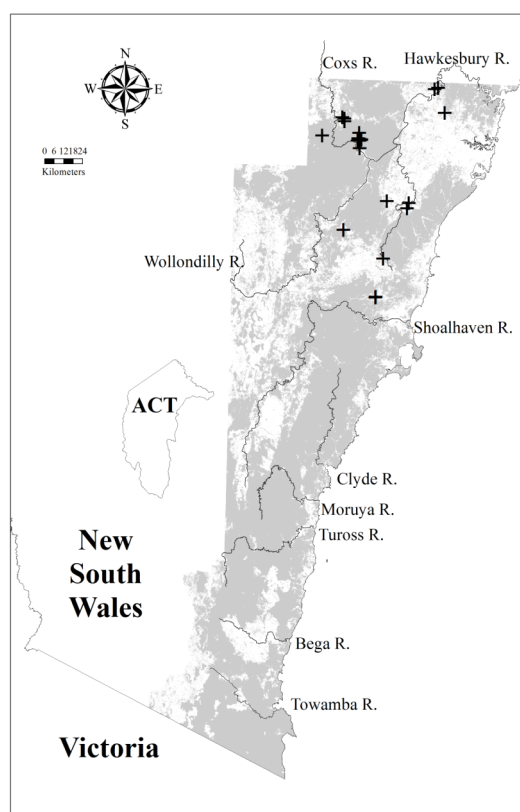
<i>Eragrostis brownii</i>	1(1-1)	64	1(1-1)	3
<i>Eucalyptus crebra</i>	1(1-3)	28	2(1-3)	3
<i>Eucalyptus eugenioides</i>	3(1-3)	44	2(1-3)	4
<i>Eucalyptus punctata</i>	1(1-3)	60	2(1-3)	8
<i>Eucalyptus sclerophylla</i>	2(1-3)	64	2(1-3)	4
<i>Gonocarpus tetragynus</i>	1(1-1)	60	1(1-1)	20
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	1(1-1)	36	1(1-1)	4
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-1)	88	1(1-2)	14
<i>Grevillea kedumbensis</i>	3(1-3)	24	1(1-1)	<1
<i>Hakea dactyloides</i>	1(1-1)	40	1(1-1)	12
<i>Helichrysum scorpioides</i>	1(1-2)	36	1(1-1)	7
<i>Hypericum gramineum</i>	1(1-1)	40	1(1-1)	16
<i>Isopogon anemonifolius</i>	1(1-2)	40	1(1-1)	8
<i>Kunzea ambigua</i>	2(2-4)	20	1(1-2)	4
<i>Laxmannia gracilis</i>	1(1-1)	60	1(1-1)	3
<i>Leptospermum parvifolium</i>	2(1-3)	20	1(1-1)	1
<i>Leptospermum trinervium</i>	1(1-2)	76	1(1-2)	15
<i>Leucopogon virgatus</i>	1(1-2)	36	1(1-1)	1
<i>Lissanthe strigosa</i>	1(1-2)	36	1(1-1)	8
<i>Lomandra cylindrica</i>	1(1-1)	28	1(1-1)	4
<i>Lomandra glauca</i>	1(1-2)	32	1(1-1)	10
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	56	1(1-1)	25
<i>Lomandra obliqua</i>	1(1-2)	48	1(1-1)	14
<i>Mirbelia rubiifolia</i>	1(1-1)	24	1(1-1)	3
<i>Panicum simile</i>	1(1-1)	24	1(1-1)	6
<i>Patersonia sericea</i>	1(1-1)	60	1(1-1)	9
<i>Persoonia linearis</i>	1(1-1)	72	1(1-1)	29
<i>Phyllanthus hirtellus</i>	1(1-1)	60	1(1-1)	14
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	76	1(1-1)	13
<i>Pomax umbellata</i>	1(1-2)	80	1(1-1)	14
<i>Pratia purpurascens</i>	1(1-1)	52	1(1-1)	17
<i>Ptilothrix deusta</i>	2(1-3)	32	1(1-2)	2
<i>Stackhousia viminea</i>	1(1-1)	36	1(1-1)	3
<i>Tetradlea decora</i>	1(1-1)	24	1(1-2)	<1
<i>Themeda australis</i>	1(1-2)	52	1(1-3)	17

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Allocasuarina littoralis</i>	1(1-1)	40	1(1-2)	17
<i>Billardiera scandens</i>	1(1-1)	36	1(1-1)	28
<i>Gonocarpus teucroides</i>	1(1-2)	36	1(1-1)	18
<i>Lepidosperma laterale</i>	1(1-2)	44	1(1-1)	29
<i>Lomandra longifolia</i>	1(1-1)	48	1(1-1)	44
<i>Monotoca scoparia</i>	1(1-1)	32	1(1-1)	12

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora costata</i>	1(1-1)	4	1(1-3)	7
<i>Angophora floribunda</i>	1(1-1)	8	1(1-2)	9
<i>Corymbia gummifera</i>	1(1-1)	8	2(1-2)	16
<i>Eucalyptus fibrosa</i>	3(3-3)	8	2(1-3)	3
<i>Eucalyptus goniocalyx</i>	3(3-3)	4	1(1-3)	1
<i>Eucalyptus mannifera</i>	3(3-3)	4	2(1-3)	4
<i>Eucalyptus notabilis</i>	1(1-1)	4	1(1-2)	1
<i>Eucalyptus parramattensis</i> subsp. <i>parramattensis</i>	1(1-1)	4	1(1-3)	<1
<i>Eucalyptus sieberi</i>	1(1-1)	4	2(1-3)	16
<i>Eucalyptus sparsifolia</i>	3(1-3)	8	2(1-3)	2
<i>Eucalyptus squamosa</i>	1(1-1)	4	1(1-2)	0
<i>Eucalyptus tereticornis</i>	1(1-1)	4	2(1-3)	7



Locations of survey sites allocated to DSF p6. Grey shading indicates extant native vegetation cover within the study area.



**DSF p7: Castlereagh Scribbly Gum Woodland**

Plate p7. Castlereagh Scribbly Gum Woodland (Map Unit p7) along Heathcote Road in Holsworthy, with *Eucalyptus sclerophylla* and *Angophora bakeri* over a diverse layer of sclerophyllous shrubs.

Sample Sites: 25  
 Area Extant (ha): 3100  
 Estimated % remaining: 50-70%  
 Area in conservation reserves (ha): 390  
 Estimated % of pre-clearing area in conservation reserves: <10%  
 No. taxa (total / unique): 220 / 3  
 No. taxa per plot ( $\pm$ sd): 48.8 (7.7)  
 Class: Sydney Sand Flats Dry Sclerophyll Forests  
 Related TEC: n/a

Castlereagh Scribbly Gum Woodland (DSF p7) is equivalent to DSF 7 described by Tindall *et al.* (2004). This unit is a low eucalypt woodland with an understorey of sclerophyll shrubs, grasses and sedges. It has a restricted distribution and occurs mainly in the vicinity of Castlereagh and Holsworthy (western Sydney), with small isolated occurrences between these localities. Castlereagh Scribbly Gum Woodland occurs exclusively on alluvial sand, gravel and clay of Tertiary origin or residual iron-indurated gravels overlying Wianamatta shale. It is found on flat or undulating terrain at elevations up to 70m ASL and where mean annual rainfall is from 800 – 900mm. About one-third of its distribution has been cleared, though important examples are represented in Agnes Banks, Castlereagh and Windsor Downs Nature Reserves. The remainder is threatened by rural-residential and industrial development, high frequency fires and weeds.

**Floristic Summary:**

**Trees:** *Angophora bakeri*, *Eucalyptus parramattensis*, *E. sclerophylla*, *Melaleuca decora*. **Shrubs:** *Pimelea linifolia*, *Banksia spinulosa*, *Hakea sericea*, *Melaleuca nodosa*, *Grevillea mucronulata*, *Leptospermum trinervium*, *Acacia brownii*, *Dillwynia tenuifolia*, *Platysace ericoides*. **Climbers:** *Cassytha glabella*. **Groundcover:** *Cyathochaeta diandra*, *Entolasia stricta*, *Themeda australis*, *Eragrostis brownii*, *Gonocarpus tetragynus*, *Lomandra multiflora*, *Xanthorrhoea minor*, *Dianella revoluta*, *Stylidium graminifolium*, *Opercularia diphylla*, *Aristida warburgii*, *Panicum simile*, *Cheilanthes sieberi*, *Lepyrodia scariosa*.

**Vegetation structure:**

Stratum	Frequency (n=25)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	14.4 (3.5)	15.2 (8.6)
Small tree	48	8.8 (2.7)	16 (12.6)
Shrub	88	2.2 (0.7)	24.8 (12.4)
Ground cover	100	1 (-)	39.8 (32.7)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 30 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 43 or greater. A 95% confidence interval means

that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 30 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia brownii</i>	1(1-1)	56	1(1-1)	1
<i>Acacia elongata</i>	1(1-2)	48	1(1-1)	1
<i>Angophora bakeri</i>	2(1-3)	76	1(1-2)	2
<i>Aristida ramosa</i>	1(1-2)	52	1(1-2)	5
<i>Aristida vagans</i>	1(1-2)	48	1(1-2)	8
<i>Aristida warburgii</i>	1(1-2)	60	1(1-1)	<1
<i>Austrostipa pubescens</i>	2(1-3)	28	1(1-2)	5
<i>Banksia oblongifolia</i>	1(1-2)	36	1(1-1)	2
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	2(1-3)	84	1(1-2)	15
<i>Boronia polygalifolia</i>	1(1-1)	24	1(1-1)	1
<i>Bossiaea rhombifolia</i> subsp. <i>rhombifolia</i>	1(1-1)	24	2(1-3)	1
<i>Brunoniella pumilio</i>	1(1-1)	36	1(1-1)	4
<i>Burchardia umbellata</i>	1(1-1)	32	1(1-1)	2
<i>Caesia parviflora</i>	1(1-2)	32	1(1-1)	2
<i>Callistemon pinifolius</i>	1(1-1)	36	1(1-1)	<1
<i>Cassytha glabella</i>	1(1-1)	60	1(1-1)	8
<i>Cassytha pubescens</i>	1(1-2)	32	1(1-1)	8
<i>Cheilanthes sieberi</i>	1(1-2)	56	1(1-1)	14
<i>Cryptandra amara</i>	1(1-2)	24	1(1-1)	1
<i>Cyathochaeta diandra</i>	2(1-3)	92	1(1-2)	8
<i>Dampiera stricta</i>	1(1-1)	36	1(1-1)	8
<i>Daviesia squarrosa</i>	1(1-1)	40	1(1-1)	<1
<i>Daviesia ulicifolia</i>	1(1-2)	52	1(1-1)	6
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-2)	76	1(1-1)	15
<i>Dillwynia tenuifolia</i>	2(1-3)	56	1(1-2)	<1
<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	1(1-1)	24	1(1-1)	6
<i>Entolasia stricta</i>	2(1-2)	96	1(1-2)	34
<i>Eragrostis brownii</i>	1(1-2)	80	1(1-1)	3
<i>Eucalyptus fibrosa</i>	1(1-2)	24	2(1-3)	3
<i>Eucalyptus parramattensis</i> subsp. <i>parramattensis</i>	1(1-3)	80	1(1-1)	<1
<i>Eucalyptus sclerophylla</i>	3(1-3)	72	2(1-3)	3
<i>Gompholobium inconspicuum</i>	1(1-2)	20	1(1-1)	<1
<i>Gompholobium pinnatum</i>	1(1-1)	28	1(1-1)	<1
<i>Gonocarpus tetragynus</i>	1(1-2)	80	1(1-1)	20
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	2(1-2)	36	1(1-1)	4
<i>Goodenia paniculata</i>	1(1-2)	28	1(1-1)	<1
<i>Grevillea mucronulata</i>	1(1-1)	72	1(1-1)	3
<i>Haemodorum planifolium</i>	1(1-1)	32	1(1-1)	1
<i>Hakea dactyloides</i>	1(1-2)	80	1(1-1)	12
<i>Hakea sericea</i>	2(1-2)	84	1(1-1)	7
<i>Hovea linearis</i>	1(1-2)	32	1(1-1)	9
<i>Hypericum gramineum</i>	1(1-2)	52	1(1-1)	16



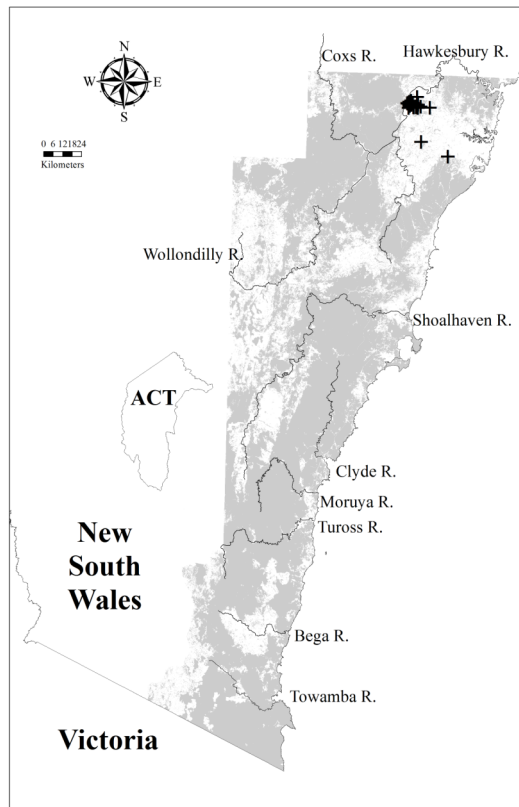
<i>Isopogon anemonifolius</i>	1(1-1)	36	1(1-1)	8
<i>Kunzea capitata</i>	1(1-1)	20	1(1-2)	1
<i>Laxmannia gracilis</i>	1(1-1)	52	1(1-1)	4
<i>Leptospermum polygalifolium</i>	1(1-2)	32	1(1-2)	8
<i>Leptospermum trinervium</i>	2(1-2)	56	1(1-2)	15
<i>Lepyrodia scariosa</i>	2(1-3)	52	1(1-2)	6
<i>Lissanthe strigosa</i>	1(1-2)	40	1(1-1)	8
<i>Lomandra cylindrica</i>	1(1-1)	24	1(1-1)	4
<i>Lomandra glauca</i>	1(1-1)	32	1(1-1)	10
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-2)	80	1(1-1)	25
<i>Melaleuca decora</i>	3(1-3)	56	2(1-3)	1
<i>Melaleuca erubescens</i>	1(1-2)	32	1(1-1)	<1
<i>Melaleuca nodosa</i>	2(1-3)	84	2(1-3)	1
<i>Melaleuca thymifolia</i>	1(1-3)	32	1(1-1)	1
<i>Microlaena stipoides</i>	1(1-2)	68	1(1-2)	36
<i>Micromyrtus ciliata</i>	1(1-2)	36	1(1-1)	<1
<i>Micromyrtus minutiflora</i>	1(1-2)	28	0(0-0)	<1
<i>Mitrasacme polymorpha</i>	1(1-1)	24	1(1-1)	3
<i>Opercularia diphylla</i>	1(1-1)	72	1(1-1)	7
<i>Panicum effusum</i>	2(1-2)	24	1(1-1)	2
<i>Panicum simile</i>	1(1-2)	60	1(1-1)	6
<i>Paspalidium distans</i>	1(1-2)	32	1(1-2)	3
<i>Patersonia sericea</i>	1(1-1)	52	1(1-1)	9
<i>Persoonia nutans</i>	1(1-1)	36	1(1-1)	<1
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-2)	88	1(1-1)	13
<i>Platysace ericoides</i>	1(1-1)	52	1(1-1)	2
<i>Pomax umbellata</i>	1(1-1)	48	1(1-1)	14
<i>Ptilothrix deusta</i>	2(1-2)	24	1(1-2)	2
<i>Pultenaea tuberculata</i>	1(1-2)	52	1(1-1)	3
<i>Stylidium graminifolium</i>	2(1-2)	72	1(1-1)	9
<i>Themeda australis</i>	2(2-3)	84	1(1-3)	17
<i>Thysanotus tuberosus</i> subsp. <i>tuberosus</i>	1(1-2)	28	1(1-1)	2
<i>Xanthorrhoea minor</i> subsp. <i>minor</i>	1(1-1)	76	1(1-1)	<1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-2)	32	1(1-2)	14
<i>Hardenbergia violacea</i>	2(1-2)	32	1(1-1)	17

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia gummifera</i>	1(1-3)	12	2(1-2)	16
<i>Eucalyptus beyeriana</i>	3(3-3)	4	2(1-2)	<1
<i>Eucalyptus eugenioides</i>	2(2-2)	4	2(1-3)	4
<i>Eucalyptus sideroxylon</i>	2(1-3)	16	3(3-4)	<1



Locations of survey sites allocated to DSF p7. Grey shading indicates extant native vegetation cover within the study area.

### DSF p8: Tableland Ridge Forest



Plate p8. Tableland Ridge Forest (Map Unit p8) at Nyanga Mountain on the Bindook Highlands in Blue Mountains National Park, with *Eucalyptus sieberi*, *E. radiata* and *E. cypellocarpa* over a sparse shrub layer with *Daviesia mimosoides* subsp. *mimosoides* and *Persoonia linearis* and a ground layer dominated by *Pteridium esculentum* and *Hibbertia empetrifolia* subsp. *empetrifolia*.

Sample Sites: 84

Area Extant (ha): 44500

Estimated % remaining: 80-90%

Area in conservation reserves (ha): 25600

Estimated % of pre-clearing area in conservation reserves: 40-60%

No. taxa (total / unique): 328 / 0

No. taxa per plot ( $\pm$ sd): 26 (8.6)

Class: South East Dry Sclerophyll Forests  
Related TEC: n/a

Tableland Ridge Forest (DSF p8) is equivalent to DSF 8 described by Tindall *et al.* (2004). This unit is a eucalypt forest with an open understorey of sclerophyll shrubs, forbs, sedges and grass, found at elevations from 600 to 1200m ASL along drier parts of the Great Diving Range receiving 700 – 1100mm mean annual rainfall. It occurs from Hartley to Big Badja, primarily on sandy-loams derived from sedimentary, acid-volcanic or, more rarely, granitic substrates. Tableland Ridge Forest often co-occurs with Cool Montane Wet Forest (WSF p73), with the former occupying ridge-tops and dry slopes and the latter found on deeper, moister loam soils. While large areas of Tableland Ridge Forest are represented in western Blue Mountains and Kanangra-Boyd National Parks, the southern part of the distribution (south of Goulburn) has been reduced by some land clearing and some remnants are subject to rough grazing on the footslopes of ridges in rural landscapes.

#### Floristic Summary:

**Trees:** *Eucalyptus sieberi*, *E. radiata*. **Shrubs:** *Hibbertia obtusifolia*, *Persoonia linearis*, *Leucopogon lanceolatus*, *Monotoca scoparia*. **Groundcover:** *Gonocarpus tetragynus*, *Pteridium esculentum*, *Lomandra longifolia*, *Dianella revoluta*, *Poa sieberiana*.

#### Vegetation structure:

Stratum	Frequency (n=62)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	100	20.5 (4.6)	32.2 (13.9)
Small tree	42	8.8 (3.5)	10.1 (11.8)
Shrub	73	2 (0.7)	14 (12.7)
Ground cover	97	0.7 (0.3)	20.1 (16.3)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 11 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 19 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 11 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-1)	29	1(1-2)	10
<i>Acacia gunnii</i>	1(1-1)	13	1(1-1)	2
<i>Acacia obliquinervia</i>	1(1-2)	7	1(1-1)	1
<i>Acacia terminalis</i>	1(1-1)	32	1(1-1)	11
<i>Amperea xiphoclada</i>	1(1-1)	24	1(1-1)	7
<i>Austrodanthonia fulva</i>	3(2-3)	8	1(1-2)	2
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-2)	31	1(1-2)	15
<i>Billardiera scandens</i>	1(1-1)	48	1(1-1)	27
<i>Brachyloma daphnoides</i>	1(1-1)	19	1(1-1)	6
<i>Choretrum pauciflorum</i>	1(1-1)	8	1(1-1)	1
<i>Dampiera purpurea</i>	1(1-1)	13	1(1-1)	4
<i>Daviesia latifolia</i>	1(1-1)	10	1(1-2)	1
<i>Daviesia mimosoides</i>	2(1-3)	14	1(1-2)	2
<i>Daviesia ulicifolia</i>	1(1-1)	17	1(1-1)	6
<i>Deyeuxia quadriseta</i>	1(1-2)	10	1(1-1)	2
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	57	1(1-1)	15
<i>Dianella tasmanica</i>	1(1-1)	19	1(1-1)	7
<i>Dichelachne inaequiglumis</i>	1(1-1)	12	1(1-1)	3
<i>Dillwynia phyllicoides</i>	1(1-2)	8	1(1-1)	1
<i>Eucalyptus blaxlandii</i>	1(1-3)	18	2(1-3)	1
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-3)	10	1(1-2)	3

<i>Eucalyptus dives</i>	1(1-2)	24	2(1-3)	4
<i>Eucalyptus mannifera</i>	1(1-1)	13	2(1-3)	4
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-3)	55	2(1-3)	6
<i>Eucalyptus sieberi</i>	3(2-3)	95	2(1-3)	15
<i>Gonocarpus tetragynus</i>	1(1-1)	86	1(1-1)	20
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-2)	43	1(1-2)	14
<i>Hardenbergia violacea</i>	1(1-1)	33	1(1-1)	17
<i>Hibbertia obtusifolia</i>	1(1-1)	79	1(1-1)	10
<i>Hovea linearis</i>	1(1-1)	25	1(1-1)	9
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	69	1(1-1)	23
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	2(1-2)	48	1(1-2)	10
<i>Lomandra glauca</i>	1(1-1)	21	1(1-1)	10
<i>Lomandra longifolia</i>	1(1-2)	64	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	42	1(1-1)	25
<i>Lomandra obliqua</i>	1(1-2)	27	1(1-1)	14
<i>Lomatia silaifolia</i>	1(1-2)	25	1(1-1)	10
<i>Melichrus urceolatus</i>	1(1-1)	11	1(1-1)	4
<i>Monotoca scoparia</i>	1(1-1)	54	1(1-1)	12
<i>Patersonia glabrata</i>	1(1-1)	23	1(1-1)	10
<i>Persoonia laurina</i>	1(1-1)	11	1(1-1)	2
<i>Persoonia linearis</i>	1(1-1)	75	1(1-1)	28
<i>Platylobium formosum</i>	1(1-1)	10	1(1-1)	3
<i>Platysace ericoides</i>	2(1-2)	12	1(1-1)	3
<i>Poa sieberiana</i> var. <i>cyanophylla</i>	1(1-1)	10	1(1-2)	2
<i>Poa sieberiana</i> var. <i>sieberiana</i>	2(1-2)	49	1(1-2)	10
<i>Podolobium ilicifolium</i>	1(1-2)	46	1(1-1)	8
<i>Polyscias sambucifolia</i>	1(1-1)	17	1(1-1)	6
<i>Pomax umbellata</i>	1(1-2)	30	1(1-1)	14
<i>Pteridium esculentum</i>	1(1-2)	75	1(1-2)	37
<i>Rhytidosporum procumbens</i>	1(1-1)	13	1(1-1)	3
<i>Stylidium graminifolium</i>	1(1-1)	32	1(1-1)	9
<i>Stypandra glauca</i>	1(1-2)	14	1(1-2)	5

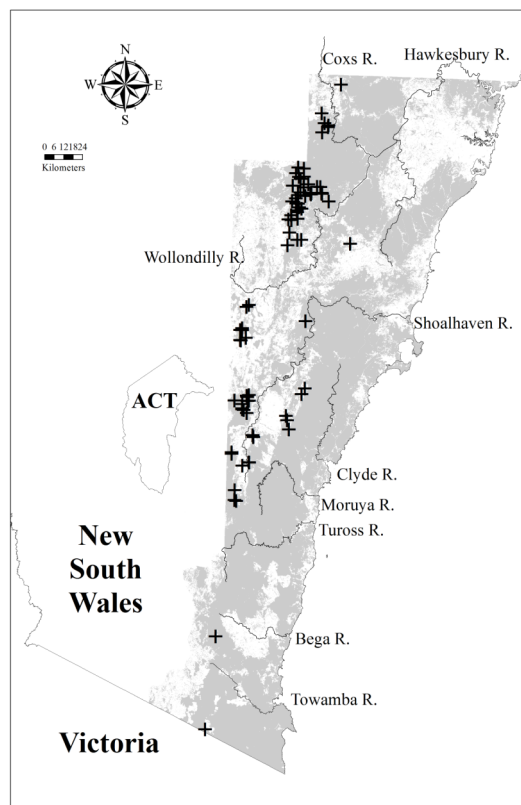
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Microlaena stipoides</i>	1(1-1)	35	1(1-2)	36

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus agglomerata</i>	1(1-3)	5	2(1-3)	7
<i>Eucalyptus cypellocarpa</i>	2(2-3)	12	2(1-2)	10
<i>Eucalyptus elata</i>	1(1-1)	1	2(1-3)	5
<i>Eucalyptus eugenioides</i>	1(1-1)	1	2(1-3)	4
<i>Eucalyptus fastigata</i>	1(1-1)	1	2(1-3)	6
<i>Eucalyptus fraxinoides</i>	2(2-2)	1	2(1-3)	1
<i>Eucalyptus globoidea</i>	3(1-3)	5	2(1-2)	12
<i>Eucalyptus goniocalyx</i>	1(1-1)	1	1(1-3)	1

<i>Eucalyptus macrorhyncha</i>	3(1-3)	2	2(1-3)	3
<i>Eucalyptus obliqua</i>	1(1-1)	4	2(1-3)	4
<i>Eucalyptus pauciflora</i>	3(3-3)	1	1(1-2)	3
<i>Eucalyptus punctata</i>	3(1-3)	10	2(1-3)	9
<i>Eucalyptus sclerophylla</i>	3(3-3)	1	2(1-3)	4
<i>Eucalyptus smithii</i>	1(1-2)	6	1(1-2)	2
<i>Eucalyptus sparsifolia</i>	1(1-1)	7	2(1-3)	2
<i>Eucalyptus stricta</i>	1(1-1)	1	1(1-2)	1
<i>Eucalyptus viminalis</i>	1(1-1)	4	2(1-3)	5



Locations of survey sites allocated to DSF p8. Grey shading indicates extant native vegetation cover within the study area.



**DSF p9: Tableland Low Woodland**

Plate p9. Tableland Low Woodland (Map Unit p9) on Governor's Hill near Goulburn, with a canopy of *Eucalyptus rossii* and *E. macrorhyncha* above a very sparse shrub layer and a groundcover dominated by *Joycea pallida*.

Sample Sites: 44

Area Extant (ha): 36700

Estimated % remaining: 40-60%

Area in conservation reserves (ha): 4400

Estimated % of pre-clearing area in conservation reserves: <10%

No. taxa (total / unique): 228 / 1

No. taxa per plot ( $\pm$ sd): 28.1 (7.8)

Class: Southern Tableland Dry Sclerophyll Forests

Related TEC: n/a

Tableland Low Woodland (DSF p9) is equivalent to DSF 9 identified by Tindall *et al.* (2004). This unit is a low eucalypt woodland with an open understorey of sclerophyll shrubs, sedges, grass and forbs. It occurs on low ridges on the southern tablelands from Canyonleigh to Braidwood on sandy loam soils derived primarily from fine-grained sedimentary rocks. Tableland Low Woodland is found on dry parts of the tableland receiving 650-800mm mean annual rainfall, at elevations of 550 - 800m ASL. In moister areas or on slightly deeper soils it is replaced by Eastern Tablelands Dry Forest (DSF p10). About half of its original extent has been cleared, and very little is represented within conservation reserves. Use of some remaining stands as rough grazing country may have simplified the structure and diversity of the understorey, particularly in small fragments and edges of larger patches.

**Floristic Summary:**

**Trees:** *Eucalyptus rossii*, *E. mannifera*. **Shrubs:** *Brachyloma daphnoides*, *Persoonia linearis*, *Hibbertia obtusifolia*, *Allocasuarina littoralis*, *Melichrus urceolatus*. **Groundcover:** *Goodenia hederacea*, *Lepidosperma gunnii*, *Dianella revoluta*, *Lomandra obliqua*, *Gonocarpus tetragynus*, *Joycea pallida*, *Lomandra multiflora*, *L. filiformis*, *Patersonia sericea*.

**Vegetation structure:**

Stratum	Frequency (n=41)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	15.8 (3.6)	22.6 (7.8)
Small tree	46	6.9 (2.5)	9.9 (7.4)
Shrub	59	1.6 (0.6)	9.4 (12.1)
Ground cover	98	0.5 (0.3)	18.7 (14.9)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 11 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 22 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 11 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia gunnii</i>	1(1-1)	20	1(1-1)	2
<i>Allocasuarina littoralis</i>	1(1-3)	48	1(1-2)	17
<i>Aotus ericoides</i>	2(1-2)	18	1(1-1)	3
<i>Aristida ramosa</i>	1(1-2)	34	1(1-2)	5
<i>Astroloma humifusum</i>	1(1-1)	20	1(1-1)	4
<i>Brachyloma daphnoides</i>	1(1-2)	64	1(1-1)	6
<i>Caustis flexuosa</i>	1(1-2)	23	1(1-2)	7
<i>Daviesia leptophylla</i>	1(1-2)	27	1(1-1)	2
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	66	1(1-1)	15
<i>Dillwynia sericea</i>	1(1-1)	30	1(1-1)	2
<i>Entolasia stricta</i>	1(1-2)	61	1(1-2)	34
<i>Eucalyptus dives</i>	1(1-3)	30	2(1-3)	4
<i>Eucalyptus macrorhyncha</i>	1(1-3)	27	2(1-3)	3
<i>Eucalyptus mannifera</i>	1(1-3)	41	2(1-3)	3
<i>Eucalyptus rossii</i>	3(3-3)	86	2(1-3)	2
<i>Gompholobium minus</i>	1(1-1)	27	1(1-1)	1
<i>Gonocarpus tetragynus</i>	1(1-1)	59	1(1-1)	20
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	2(1-2)	91	1(1-2)	14
<i>Hibbertia obtusifolia</i>	1(1-1)	48	1(1-1)	10
<i>Hovea linearis</i>	1(1-1)	32	1(1-1)	9
<i>Joycea pallida</i>	2(1-3)	52	1(1-2)	8
<i>Laxmannia gracilis</i>	1(1-1)	30	1(1-1)	4
<i>Lepidosperma gunnii</i>	1(1-2)	70	1(1-1)	4
<i>Leucopogon virgatus</i>	1(1-2)	30	1(1-1)	1
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	2(1-2)	48	1(1-2)	10
<i>Lomandra glauca</i>	1(1-2)	41	1(1-1)	10
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	52	1(1-1)	25
<i>Lomandra obliqua</i>	1(1-1)	59	1(1-1)	14
<i>Lomatia ilicifolia</i>	1(1-2)	25	1(1-1)	6
<i>Melichrus urceolatus</i>	1(1-1)	45	1(1-1)	3
<i>Opercularia diphylla</i>	1(1-1)	45	1(1-1)	7
<i>Patersonia glabrata</i>	1(1-2)	25	1(1-1)	10
<i>Patersonia longifolia</i>	1(1-2)	18	1(1-1)	2
<i>Patersonia sericea</i>	1(1-1)	50	1(1-1)	9
<i>Persoonia linearis</i>	1(1-1)	64	1(1-1)	28
<i>Persoonia mollis</i> subsp. <i>livens</i>	1(1-1)	34	1(1-1)	0
<i>Poa sieberiana</i> var. <i>cyanophylla</i>	1(1-2)	20	1(1-2)	2
<i>Rhytidosporum procumbens</i>	1(1-1)	23	1(1-1)	3
<i>Stylidium graminifolium</i>	1(1-1)	39	1(1-1)	9
<i>Xanthorrhoea concava</i>	1(1-1)	34	1(1-1)	4

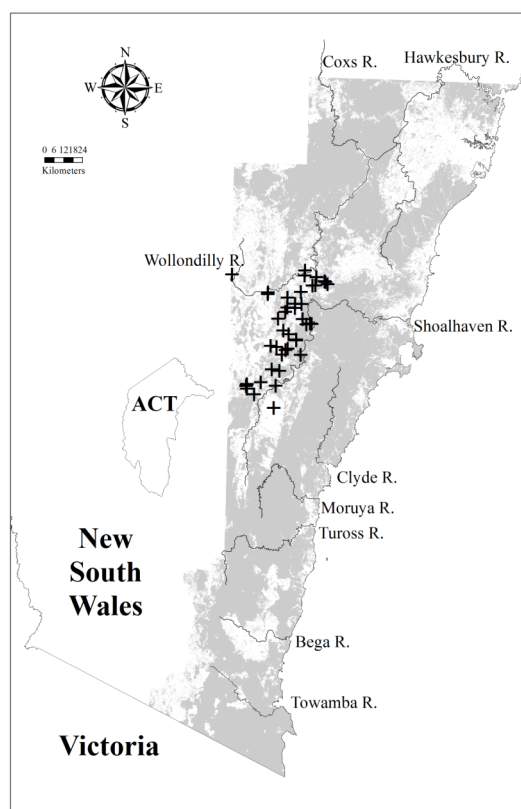


## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Hardenbergia violacea</i>	1(1-1)	32	1(1-1)	17
<i>Microlaena stipoides</i>	1(1-2)	55	1(1-2)	36

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus agglomerata</i>	3(1-3)	18	2(1-3)	7
<i>Eucalyptus bridgesiana</i>	3(3-3)	2	1(1-3)	1
<i>Eucalyptus cinerea</i>	1(1-2)	9	1(1-2)	1
<i>Eucalyptus globoidea</i>	2(1-2)	14	2(1-2)	12
<i>Eucalyptus goniocalyx</i>	1(1-1)	2	1(1-3)	1
<i>Eucalyptus melliodora</i>	1(1-1)	2	1(1-3)	2
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	4(1-4)	5	2(1-3)	6
<i>Eucalyptus sclerophylla</i>	4(3-4)	7	2(1-3)	4
<i>Eucalyptus sieberi</i>	1(1-4)	7	2(1-3)	16
<i>Eucalyptus sparsifolia</i>	1(1-1)	2	2(1-3)	2
<i>Eucalyptus tereticornis</i>	1(1-1)	2	2(1-3)	7



Locations of survey sites allocated to DSF p9. Grey shading indicates extant native vegetation cover within the study area.

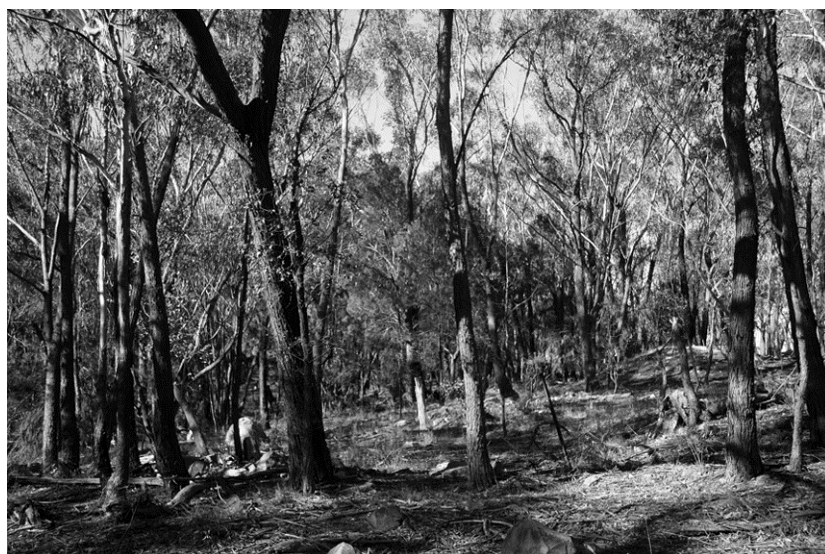
**DSF p10: Eastern Tablelands Dry Forest**

Plate p10. Eastern Tablelands Dry Forest (Map Unit p10) adjacent to the Hume Highway south of Marulan. The canopy is dominated by *Eucalyptus sieberi* and the ground cover is sparse and dominated by forbs and grasses.

Sample Sites: 65

Area Extant (ha): 48000

Estimated % remaining: 60-75%

Area in conservation reserves (ha): 11200

Estimated % of pre-clearing area in conservation reserves: 10-25%

No. taxa (total / unique): 326 / 0

No. taxa per plot ( $\pm$ sd): 30.7 (12.9)

Class: South East Dry Sclerophyll Forests

Related TEC: n/a

Eastern Tablelands Dry Forest (DSF p10) is equivalent to DSF 10 described by Tindall *et al.* (2004), and is an open eucalypt forest with an open understorey of sclerophyll shrubs, sedges and forbs. It occurs on ridges, primarily on the eastern edge of the Southern Tablelands between Joadja and Braidwood, and less frequently further west in the area between the Cookbundoon Range and Lake Bathurst. Eastern Tablelands Dry Forest is found on sandy-loams derived from fine or coarse grained sedimentary rocks, at elevations of 550 – 900m ASL. It replaces Tableland Low Woodland (DSF p9) in areas with higher annual rainfall (700 – 950mm compared with 650 – 800mm) or where soils are slightly deeper. Eastern Tablelands Dry Forest occurs mainly as residual vegetation on poor soils in rural landscapes, and has been depleted in some areas by land clearing, rough-country grazing and frequent fires. Examples occur in Bungonia State Recreation Area, Belanglo State Forest and along the western edge of Morton National Park.

**Floristic Summary:**

**Trees:** *Eucalyptus sieberi*, *E. agglomerata*. **Shrubs:** *Persoonia linearis*, *Allocasuarina littoralis*, *Hibbertia obtusifolia*, *Stypandra glauca*. **Climbers:** *Billardiera scandens*. **Groundcover:** *Goodenia hederacea*, *Pomax umbellata*, *Lomandra obliqua*, *Microlaena stipoides*.

**Vegetation structure:**

Stratum	Frequency (n=63)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	2	- (-)	5 (-)
Tree canopy	89	18.8 (4.7)	26.8 (12.3)
Small tree	67	8 (2.9)	16.2 (15.3)
Shrub	41	2.2 (0.8)	9.4 (9.8)
Ground cover	92	0.7 (0.7)	11.5 (13.6)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 12 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 20 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 12 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia brownii</i>	1(1-1)	11	1(1-1)	1
<i>Acacia gunnii</i>	1(1-1)	9	1(1-1)	2
<i>Acacia obtusifolia</i>	2(1-2)	25	1(1-2)	9
<i>Acacia terminalis</i>	1(1-1)	42	1(1-1)	11
<i>Allocasuarina littoralis</i>	2(1-3)	75	1(1-2)	16
<i>Austrostipa rudis</i>	1(1-2)	29	1(1-2)	6
<i>Billardiera scandens</i>	1(1-1)	60	1(1-1)	27
<i>Brachyloma daphnoides</i>	1(1-1)	23	1(1-1)	6
<i>Dampiera purpurea</i>	1(1-2)	15	1(1-1)	4
<i>Daviesia leptophylla</i>	1(1-1)	22	1(1-1)	2
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	45	1(1-1)	15
<i>Dichelachne inaequiglumis</i>	1(1-1)	11	1(1-1)	3
<i>Entolasia stricta</i>	1(1-2)	58	1(1-2)	34
<i>Eucalyptus agglomerata</i>	3(1-3)	65	2(1-3)	7
<i>Eucalyptus mannifera</i>	1(1-1)	18	2(1-3)	4
<i>Eucalyptus rossii</i>	1(1-2)	11	3(1-3)	2
<i>Eucalyptus sieberi</i>	2(2-3)	86	2(1-3)	15
<i>Gompholobium minus</i>	1(1-1)	15	1(1-1)	1
<i>Gonocarpus tetragynus</i>	1(1-1)	43	1(1-1)	20
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-2)	91	1(1-2)	13
<i>Hakea dactyloides</i>	1(1-2)	26	1(1-1)	12
<i>Helichrysum leucopsideum</i>	1(1-1)	26	1(1-1)	1
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-1)	34	1(1-1)	6
<i>Hibbertia obtusifolia</i>	1(1-1)	62	1(1-1)	10
<i>Hovea linearis</i>	1(1-1)	34	1(1-1)	9
<i>Hybanthus monopetalus</i>	1(1-1)	9	1(1-1)	2
<i>Joycea pallida</i>	1(1-1)	32	1(1-2)	8
<i>Lagenifera gracilis</i>	1(1-2)	20	1(1-1)	3
<i>Lepidosperma gunnii</i>	1(1-1)	42	1(1-1)	4
<i>Lomandra cylindrica</i>	1(1-2)	20	1(1-1)	4
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-2)	42	1(1-2)	10
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	46	1(1-1)	25
<i>Lomandra obliqua</i>	1(1-1)	62	1(1-1)	14
<i>Lomatia ilicifolia</i>	1(1-1)	34	1(1-1)	6
<i>Melichrus urceolatus</i>	1(1-1)	35	1(1-1)	3
<i>Microlaena stipoides</i>	1(1-2)	55	1(1-2)	36
<i>Opercularia diphylla</i>	1(1-1)	25	1(1-1)	7
<i>Patersonia glabrata</i>	1(1-2)	31	1(1-1)	10
<i>Patersonia longifolia</i>	1(1-1)	20	1(1-1)	2
<i>Patersonia sericea</i>	1(1-1)	26	1(1-1)	9
<i>Persoonia laurina</i>	1(1-1)	17	1(1-1)	2
<i>Persoonia linearis</i>	1(1-1)	89	1(1-1)	28
<i>Phyllanthus hirtellus</i>	1(1-2)	35	1(1-1)	14
<i>Platysace ericoides</i>	1(1-1)	20	1(1-1)	2

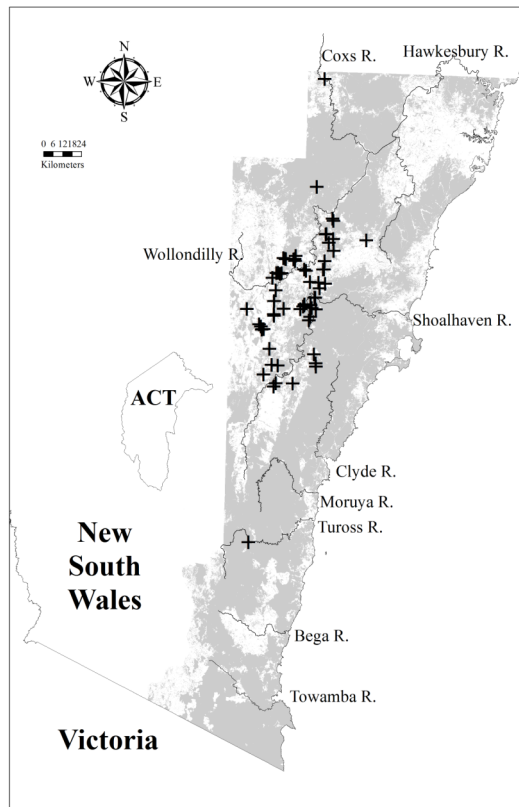
<i>Podolobium ilicifolium</i>	1(1-1)	23	1(1-1)	9
<i>Pomax umbellata</i>	1(1-2)	65	1(1-1)	13
<i>Rhytidosporum procumbens</i>	1(1-1)	32	1(1-1)	3
<i>Stypandra glauca</i>	1(1-2)	54	1(1-2)	4
<i>Xanthorrhoea concava</i>	1(1-1)	35	1(1-1)	4

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Pteridium esculentum</i>	1(1-2)	34	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora costata</i>	1(1-1)	2	1(1-3)	7
<i>Angophora floribunda</i>	1(1-1)	2	1(1-2)	9
<i>Corymbia gummifera</i>	2(2-2)	3	2(1-2)	16
<i>Eucalyptus blaxlandii</i>	1(1-1)	2	1(1-3)	1
<i>Eucalyptus bosistoana</i>	1(1-1)	2	1(1-2)	3
<i>Eucalyptus cinerea</i>	1(1-2)	8	1(1-2)	1
<i>Eucalyptus consideniana</i>	2(2-2)	2	1(1-2)	2
<i>Eucalyptus cypellocarpa</i>	3(1-3)	3	2(1-2)	10
<i>Eucalyptus dives</i>	1(1-2)	11	2(1-3)	4
<i>Eucalyptus elata</i>	1(1-1)	2	2(1-3)	5
<i>Eucalyptus eugenioides</i>	2(2-2)	2	2(1-3)	4
<i>Eucalyptus globoidea</i>	2(1-3)	25	2(1-2)	12
<i>Eucalyptus goniocalyx</i>	1(1-1)	2	1(1-3)	1
<i>Eucalyptus macrorhyncha</i>	1(1-4)	5	2(1-3)	3
<i>Eucalyptus piperita</i>	1(1-3)	6	2(1-3)	9
<i>Eucalyptus punctata</i>	1(1-1)	18	2(1-3)	9
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	3	2(1-3)	6
<i>Eucalyptus sclerophylla</i>	2(1-3)	9	2(1-3)	4
<i>Eucalyptus smithii</i>	3(2-3)	6	1(1-2)	2
<i>Eucalyptus sparsifolia</i>	3(3-3)	2	2(1-3)	2



Locations of survey sites allocated to DSF p10. Grey shading indicates extant native vegetation cover within the study area.

### DSF p11: Elevated Gorge Forest



Plate p11. Elevated Gorge Forest (Map Unit p11) at Moogah Spur in Blue Mountains National Park with *Eucalyptus agglomerata*, *E. punctata* and *E. sparsifolia* over a patchy shrub layer dominated by *Exocarpos strictus* and *Daviesia mimosoides* subsp. *mimosoides* and a sparse groundcover including *Stypandra glauca* and *Lomandra filiformis* subsp. *filiformis*.

Sample Sites: 64

Area Extant (ha): 34600

Estimated % remaining: 80-95%

Area in conservation reserves (ha): 14600

Estimated % of pre-clearing area in conservation reserves: 30-45%



No. taxa (total / unique): 350 / 0  
 No. taxa per plot ( $\pm$ sd): 34.7 (11)  
 Class: Central Gorge Dry Sclerophyll Forests  
 Related TEC: n/a

Elevated Gorge Forest (DSF p11) is equivalent to DSF 11 described by Tindall *et al.* (2004). This unit is a eucalypt forest with an open understorey of sclerophyll shrubs and grasses, found on the dry upper slopes of rocky gorges along the Shoalhaven, Wingecarribee, Wollondilly, Nattai and Tarlo Rivers and their tributaries. It occurs from 400 to 850m ASL on loam or sandy loam soils derived from fine or coarse grained sedimentary rocks. Average annual rainfall across the distribution ranges from 700 to 900mm. Several examples of Elevated Gorge Forest are represented in conservation reserves. Other stands have largely escaped land clearing due to their steep terrain, and are used primarily for rough grazing.

#### Floristic Summary:

**Trees:** *Eucalyptus punctata*, *E. agglomerata*. **Shrubs:** *Persoonia linearis*, *Phyllanthus hirtellus*, *Hibbertia obtusifolia*, *Olearia viscidula*, *Podolobium ilicifolium*. **Climbers:** *Hardenbergia violacea*, *Billardiera scandens*. **Groundcover:** *Goodenia hederacea*, *Pomax umbellata*, *Dianella revoluta*, *Lomandra multiflora*, *L. filiformis*, *Opercularia diphyllo*.

#### Vegetation structure:

Stratum	Frequency (n=63)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	92	19.4 (4.7)	30.3 (11.2)
Small tree	41	9.3 (4.5)	14.3 (10.3)
Shrub	67	2.1 (0.7)	10.7 (11.3)
Ground cover	100	0.6 (0.3)	15.5 (16.3)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 13 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 26 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 13 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia buxifolia</i> subsp. <i>buxifolia</i>	1(1-2)	14	1(1-1)	1
<i>Acacia decurrens</i>	1(1-1)	16	1(1-1)	2
<i>Acacia falciformis</i>	1(1-2)	25	1(1-2)	10
<i>Acacia longifolia</i>	1(1-1)	23	1(1-2)	9
<i>Aristida ramosa</i>	2(1-2)	16	1(1-2)	5
<i>Austrostipa rudis</i>	1(1-2)	30	1(1-2)	6
<i>Billardiera scandens</i>	1(1-1)	61	1(1-1)	27
<i>Bossiaea buxifolia</i>	1(1-2)	11	1(1-1)	3
<i>Brachyloma daphnoides</i>	1(1-1)	17	1(1-1)	7
<i>Brachyscome angustifolia</i>	1(1-1)	20	1(1-1)	2
<i>Cassinia aculeata</i>	1(1-2)	20	1(1-1)	6
<i>Cassinia laevis</i>	1(1-1)	13	1(1-2)	1
<i>Dampiera purpurea</i>	1(1-1)	30	1(1-1)	4
<i>Daviesia mimosoides</i>	2(1-2)	16	1(1-2)	2
<i>Deyeuxia quadriseta</i>	1(1-2)	19	1(1-1)	2
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-2)	77	1(1-1)	15
<i>Dichelachne inaequiglumis</i>	1(1-1)	20	1(1-1)	3
<i>Dichelachne micrantha</i>	1(1-2)	39	1(1-1)	9
<i>Dichelachne parva</i>	1(1-2)	17	1(1-1)	1
<i>Entolasia stricta</i>	1(1-2)	58	1(1-2)	34
<i>Eucalyptus agglomerata</i>	3(2-3)	56	2(1-3)	7

<i>Eucalyptus globoidea</i>	3(1-3)	36	1(1-2)	12
<i>Eucalyptus punctata</i>	3(2-3)	75	1(1-3)	8
<i>Exocarpos strictus</i>	1(1-2)	31	1(1-1)	9
<i>Gonocarpus tetragynus</i>	1(1-2)	45	1(1-1)	20
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	2(1-2)	88	1(1-1)	14
<i>Hardenbergia violacea</i>	1(1-1)	69	1(1-1)	17
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-1)	19	1(1-1)	6
<i>Hibbertia obtusifolia</i>	1(1-1)	50	1(1-1)	10
<i>Joycea pallida</i>	2(1-2)	47	1(1-2)	8
<i>Lagenifera gracilis</i>	1(1-1)	23	1(1-1)	3
<i>Lepidosperma gunnii</i>	1(1-1)	22	1(1-1)	4
<i>Leucopogon muticus</i>	2(1-3)	9	1(1-1)	1
<i>Lissanthe strigosa</i>	1(1-1)	39	1(1-1)	8
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	2(1-2)	59	1(1-2)	10
<i>Lomandra glauca</i>	1(1-2)	31	1(1-1)	10
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	73	1(1-1)	25
<i>Melichrus urceolatus</i>	1(1-1)	19	1(1-1)	4
<i>Notodanthonia longifolia</i>	1(1-2)	19	1(1-2)	5
<i>Olearia viscidula</i>	1(1-1)	48	1(1-2)	5
<i>Opercularia diphylla</i>	1(1-1)	52	1(1-1)	7
<i>Oxalis perennans</i>	1(1-1)	31	1(1-1)	13
<i>Ozothamnus diosmifolius</i>	1(1-1)	23	1(1-1)	9
<i>Persoonia linearis</i>	1(1-1)	81	1(1-1)	28
<i>Phyllanthus hirtellus</i>	1(1-2)	56	1(1-1)	14
<i>Podolobium ilicifolium</i>	1(1-2)	48	1(1-1)	8
<i>Pomax umbellata</i>	2(1-2)	81	1(1-1)	13
<i>Senecio prenanthoides</i>	1(1-1)	28	1(1-1)	8
<i>Stypandra glauca</i>	2(1-2)	44	1(1-2)	4
<i>Veronica plebeia</i>	1(1-1)	25	1(1-1)	10
<i>Vittadinia cuneata</i> var. <i>cuneata</i>	1(1-1)	9	1(1-1)	1
<i>Wahlenbergia communis</i>	1(1-1)	9	1(1-1)	2
<i>Wahlenbergia gracilis</i>	1(1-1)	39	1(1-1)	10

## Constant:

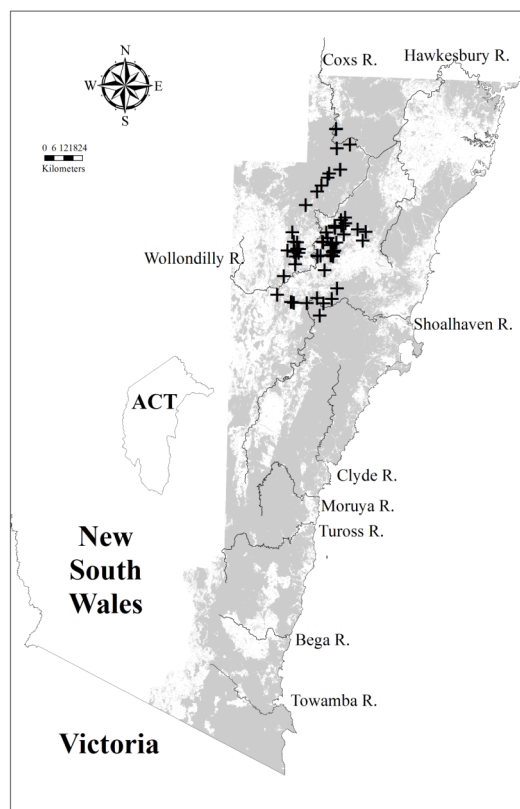
Species	C/A	Freq	C/A O	Freq O
<i>Allocasuarina littoralis</i>	1(1-3)	31	1(1-2)	17
<i>Lomandra longifolia</i>	1(1-1)	36	1(1-1)	44
<i>Microlaena stipoides</i>	1(1-2)	52	1(1-2)	36

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	2	1(1-2)	9
<i>Eucalyptus blakelyi</i>	1(1-1)	3	2(1-3)	1
<i>Eucalyptus blaxlandii</i>	1(1-1)	3	2(1-3)	1
<i>Eucalyptus bosistoana</i>	2(1-2)	6	1(1-2)	3
<i>Eucalyptus bridgesiana</i>	1(1-1)	2	1(1-3)	1
<i>Eucalyptus cinerea</i>	1(1-1)	2	1(1-2)	1



<i>Eucalyptus crebra</i>	3(3-3)	8	2(1-3)	3
<i>Eucalyptus cypellocarpa</i>	3(1-3)	3	2(1-2)	10
<i>Eucalyptus dives</i>	1(1-1)	3	2(1-3)	4
<i>Eucalyptus elata</i>	3(3-3)	2	2(1-3)	5
<i>Eucalyptus eugenioides</i>	3(3-3)	5	2(1-3)	4
<i>Eucalyptus fibrosa</i>	3(3-3)	2	2(1-3)	3
<i>Eucalyptus goniacalyx</i>	2(1-3)	5	1(1-3)	1
<i>Eucalyptus imitans</i>	1(1-1)	2	1(1-3)	<1
<i>Eucalyptus macrorhyncha</i>	3(3-3)	9	2(1-3)	3
<i>Eucalyptus mannifera</i>	1(1-1)	9	2(1-3)	4
<i>Eucalyptus melliodora</i>	1(1-1)	8	1(1-3)	2
<i>Eucalyptus ovata</i>	1(1-1)	2	2(1-3)	1
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	2(2-2)	2	1(1-2)	3
<i>Eucalyptus piperita</i>	1(1-1)	3	2(1-3)	9
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-3)	9	2(1-3)	6
<i>Eucalyptus rossii</i>	1(1-3)	6	3(1-3)	2
<i>Eucalyptus sclerophylla</i>	3(1-3)	9	2(1-3)	4
<i>Eucalyptus sideroxylon</i>	3(3-3)	2	3(1-4)	<1
<i>Eucalyptus sieberi</i>	3(1-3)	17	2(1-3)	16
<i>Eucalyptus sparsifolia</i>	3(1-3)	5	2(1-3)	2
<i>Eucalyptus tereticornis</i>	3(3-3)	8	2(1-3)	7
<i>Eucalyptus viminalis</i>	1(1-1)	2	2(1-3)	5
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-1)	2	2(1-3)	8



Locations of survey sites allocated to DSF p11. Grey shading indicates extant native vegetation cover within the study area.

**DSF p14: Western Tablelands Dry Forest**

Plate p14. Western Tablelands Dry Forest (Map Unit p14) in Abercrombie River National Park at the Goulburn-Oberon Road crossing, with *Eucalyptus rossii* and *E. mannifera* above a groundcover dominated by low shrubs and grasses including *Brachyloma daphnoides*, *Hibbertia obtusifolia* and *Poa sieberiana* var. *cyanophylla*.

Sample Sites: 154

Area Extant (ha): 121600

Estimated % remaining: 45-65%

Area in conservation reserves (ha): 24500

Estimated % of pre-clearing area in conservation reserves: <15%

No. taxa (total / unique): 401 / 10

No. taxa per plot ( $\pm$ sd): 26.2 (8.8)

Class: Southern Tableland Dry Sclerophyll Forests

Related TEC: n/a

Western Tablelands Dry Forest (DSF p14) is equivalent to DSF 14 described by Tindall *et al.* (2004). This unit is a low eucalypt forest with an open understorey of sclerophyll shrubs, grasses and forbs. It is widely distributed on dry ridges in the Southern Tablelands between Wallerawang and Captains Flat, at elevations 550 – 1150m ASL and where average annual rainfall is 670 – 920mm. Similar habitats extend further to the west of the study area. Western Tablelands Dry Forest shares several species with Braidwood Dry Forest but there is little overlap in distribution, the latter having a restricted distribution on sandy rises between Nerriga and Captains Flat. Western Tablelands Dry Forest covers broad areas in the rocky hills to the west of the Great Dividing Range north of Goulburn, where it grades into Abercrombie-Tarlo Foothills Woodland (GW p19) on hill footslopes. Elsewhere, it may co-occur with Tableland Grassy Box-Gum Woodland (GW p24), which occupies more gently undulating land with deeper loamy soils. Examples of Western Tablelands Dry Forest are represented in Abercrombie River and Tarlo River National Parks. Elsewhere, large areas have been cleared or used for rough-country grazing.

**Floristic Summary:**

**Trees:** *Eucalyptus macrorhyncha*, *E. mannifera*, *E. rossii*, *E. dives*. **Shrubs:** *Hibbertia obtusifolia*, *Brachyloma daphnoides*, *Daviesia leptophylla*. **Groundcover:** *Gonocarpus tetragynus*, *Lomandra filiformis* subsp. *coriacea*, *Poa sieberiana*, *Goodenia hederacea*, *Dianella revoluta*, *Joycea pallida*, *Hovea linearis*.

**Vegetation structure:**

Stratum	Frequency (n=126)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	97	15.5 (4)	31.4 (12.1)
Small tree	16	7.4 (3.3)	14.1 (17.7)
Shrub	63	1.8 (0.8)	15 (18.3)
Ground cover	96	0.7 (0.3)	30 (20.1)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 12 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 19 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 12 positive diagnostic species.

**Positive Diagnostic Species:**

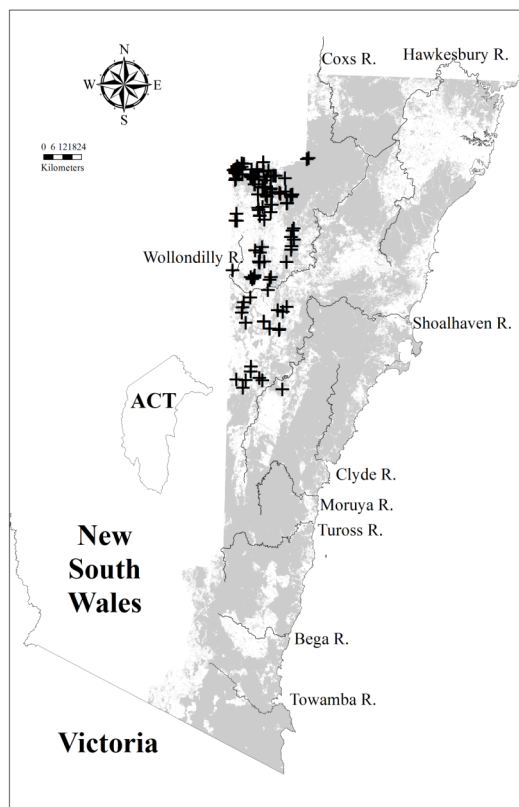
Species	C/A	Freq	C/A O	Freq O
<i>Acacia buxifolia</i> subsp. <i>buxifolia</i>	1(1-1)	5	1(1-1)	1
<i>Acacia dawsonii</i>	1(1-1)	2	1(1-1)	<1
<i>Acacia dealbata</i>	1(1-1)	16	1(1-2)	5
<i>Acacia decurrens</i>	1(1-1)	6	1(1-1)	2
<i>Acacia genistifolia</i>	1(1-2)	8	1(1-2)	<1
<i>Acacia gunnii</i>	1(1-1)	41	1(1-1)	1
<i>Acacia lanigera</i>	1(1-1)	3	1(1-2)	<1
<i>Acrotriche serrulata</i>	1(1-1)	8	1(1-1)	3
<i>Aristida jerichoensis</i> var. <i>jerichoensis</i>	1(1-2)	4	1(1-2)	<1
<i>Astrotricha ledifolia</i>	1(1-1)	2	1(1-1)	<1
<i>Austrodanthonia fulva</i>	3(2-4)	10	1(1-2)	2
<i>Austrostipa mollis</i>	2(2-3)	4	1(1-2)	<1
<i>Brachyloma daphnoides</i>	1(1-1)	66	1(1-1)	6
<i>Caladenia carnea</i> var. <i>carnea</i>	1(1-1)	5	1(1-1)	<1
<i>Cassinia aculeata</i>	1(1-1)	13	1(1-1)	6
<i>Cassinia arcuata</i>	1(1-1)	10	1(1-1)	<1
<i>Cassinia laevis</i>	1(1-2)	5	1(1-2)	1
<i>Cassinia longifolia</i>	1(1-2)	18	1(1-2)	6
<i>Cassinia uncata</i>	1(1-1)	3	1(1-1)	<1
<i>Cheiranthra cyanea</i> var. <i>cyanea</i>	1(1-1)	5	1(1-1)	<1
<i>Choretrum pauciflorum</i>	1(1-1)	6	1(1-1)	1
<i>Cyrtostylis reniformis</i>	1(1-1)	3	1(1-1)	<1
<i>Daucus glochidiatus</i>	1(1-1)	15	1(1-1)	2
<i>Daviesia latifolia</i>	1(1-2)	14	1(1-2)	1
<i>Daviesia leptophylla</i>	1(1-2)	44	1(1-1)	1
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	57	1(1-1)	14
<i>Dichelachne inaequiglumis</i>	1(1-1)	11	1(1-1)	2
<i>Dichelachne sieberiana</i>	1(1-2)	10	1(1-1)	<1
<i>Dillwynia phyllicoides</i>	1(1-1)	10	1(1-2)	1
<i>Dillwynia sericea</i>	1(1-1)	21	1(1-1)	2
<i>Eriochilus cucullatus</i>	1(1-1)	5	1(1-1)	<1
<i>Eucalyptus blakelyi</i>	1(1-1)	8	3(1-3)	<1
<i>Eucalyptus bridgesiana</i>	1(1-2)	11	1(1-3)	1
<i>Eucalyptus cinerea</i>	1(1-4)	3	1(1-2)	1
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	2(1-3)	14	1(1-2)	3
<i>Eucalyptus dives</i>	3(1-3)	49	2(1-3)	4
<i>Eucalyptus goniocalyx</i>	1(1-3)	26	2(1-3)	<1
<i>Eucalyptus macrorhyncha</i>	1(1-3)	70	2(1-3)	2
<i>Eucalyptus mannifera</i>	3(1-3)	56	1(1-2)	3
<i>Eucalyptus melliodora</i>	1(1-1)	8	1(1-3)	2

<i>Eucalyptus polyanthemos</i> subsp. <i>polyanthemos</i>	2(1-2)	12	1(1-1)	<1
<i>Eucalyptus praecox</i>	2(1-2)	2	1(1-2)	<1
<i>Eucalyptus rossii</i>	3(1-3)	56	3(1-3)	1
<i>Galium gaudichaudii</i>	1(1-1)	14	1(1-1)	3
<i>Glossodia major</i>	1(1-1)	3	1(1-1)	<1
<i>Gompholobium huegelii</i>	1(1-1)	23	1(1-1)	1
<i>Gompholobium minus</i>	1(1-1)	6	1(1-1)	1
<i>Gonocarpus tetragynus</i>	1(1-1)	86	1(1-1)	19
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-2)	61	1(1-2)	13
<i>Hakea decurrens</i>	1(1-1)	2	1(1-1)	<1
<i>Hardenbergia violacea</i>	1(1-1)	38	1(1-1)	17
<i>Hibbertia obtusifolia</i>	1(1-1)	86	1(1-1)	9
<i>Hibbertia riparia</i>	1(1-2)	11	1(1-1)	2
<i>Hovea linearis</i>	1(1-1)	55	1(1-1)	9
<i>Hydrocotyle laxiflora</i>	1(1-1)	34	1(1-1)	15
<i>Hypericum gramineum</i>	1(1-1)	33	1(1-1)	16
<i>Joycea pallida</i>	2(1-4)	56	1(1-2)	7
<i>Lepidosperma gunnii</i>	1(1-1)	11	1(1-1)	4
<i>Leptospermum multicaule</i>	2(1-3)	2	1(1-3)	<1
<i>Leptospermum myrtifolium</i>	1(1-1)	5	1(1-1)	1
<i>Leptospermum obovatum</i>	1(1-1)	3	2(1-3)	<1
<i>Leucopogon virgatus</i>	1(1-1)	19	1(1-1)	1
<i>Lissanthe strigosa</i>	1(1-1)	16	1(1-1)	8
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-2)	65	1(1-2)	9
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1(1-1)	19	1(1-1)	11
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	42	1(1-1)	25
<i>Luzula densiflora</i>	1(1-1)	4	1(1-1)	1
<i>Melichrus urceolatus</i>	1(1-1)	41	1(1-1)	3
<i>Microseris lanceolata</i>	1(1-1)	10	1(1-1)	<1
<i>Monotoca scoparia</i>	1(1-1)	34	1(1-1)	12
<i>Persoonia chamaepeuce</i>	1(1-2)	5	1(1-1)	1
<i>Persoonia mollis</i> subsp. <i>livens</i>	1(1-1)	4	1(1-1)	<1
<i>Persoonia rigida</i>	1(1-1)	18	1(1-1)	<1
<i>Pimelea curviflora</i> var. <i>gracilis</i>	1(1-1)	2	1(1-1)	<1
<i>Pimelea curviflora</i> var. <i>sericea</i>	1(1-1)	5	1(1-1)	1
<i>Platylobium formosum</i>	1(1-2)	8	1(1-1)	3
<i>Poa sieberiana</i> var. <i>cyanophylla</i>	2(1-2)	17	1(1-2)	2
<i>Poa sieberiana</i> var. <i>sieberiana</i>	2(1-2)	65	1(1-2)	10
<i>Pomaderris angustifolia</i>	1(1-1)	3	1(1-4)	<1
<i>Pomaderris betulina</i>	1(1-2)	7	1(1-3)	<1
<i>Pomaderris prunifolia</i> var. <i>prunifolia</i>	1(1-1)	3	1(1-1)	<1
<i>Pultenaea microphylla</i>	1(1-2)	13	1(1-1)	1
<i>Pultenaea procumbens</i>	1(1-1)	7	1(1-2)	<1
<i>Pultenaea subspicata</i>	1(1-2)	6	1(1-2)	<1
<i>Ranunculus sessiliflorus</i> var. <i>pilulifer</i>	1(1-1)	2	1(1-1)	<1
<i>Ranunculus sessiliflorus</i> var. <i>sessiliflorus</i>	1(1-1)	3	1(1-1)	<1

<i>Rhytidosporum procumbens</i>	1(1-2)	8	1(1-1)	3
<i>Senecio prenanthoides</i>	1(1-1)	28	1(1-1)	8
<i>Senecio tenuiflorus</i>	1(1-1)	10	1(1-1)	<1
<i>Stylidium graminifolium</i>	1(1-1)	30	1(1-1)	9
<i>Stypandra glauca</i>	1(1-1)	15	1(1-2)	5
<i>Styphelia triflora</i>	1(1-1)	4	1(1-1)	<1
<i>Tetratheca bauerifolia</i>	1(1-1)	4	1(1-1)	<1
<i>Thysanotus patersonii</i>	1(1-1)	8	1(1-1)	<1
<i>Wahlenbergia luteola</i>	1(1-2)	3	1(1-2)	1
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	1(1-1)	24	1(1-1)	5
<i>Wahlenbergia victoriensis</i>	1(1-1)	2	0(0-0)	0

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	2(2-2)	1	2(1-3)	1
<i>Eucalyptus pauciflora</i>	2(1-2)	1	1(1-2)	3
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-3)	2	1(1-2)	2



Locations of survey sites allocated to DSF p14. Grey shading indicates extant native vegetation cover within the study area.

**DSF p15: Braidwood Dry Forest**

Plate p15. Braidwood Dry Forest (Map Unit p15) along Mulloon Fire trail in Tallaganda State Conservation Area, with *Eucalyptus dives* and *E. mannifera* above a sparse groundcover including *Dianella revoluta* var. *revoluta* and *Hibbertia obtusifolia*.

Sample Sites: 40  
 Area Extant (ha): 35200  
 Estimated % remaining: 45-65%  
 Area in conservation reserves (ha): 2800  
 Estimated % of pre-clearing area in conservation reserves: <10%  
 No. taxa (total / unique): 267 / 2  
 No. taxa per plot ( $\pm$ sd): 30.3 (9.4)  
 Class: Southern Tableland Dry Sclerophyll Forests  
 Related TEC: n/a

Braidwood Dry Forest (DSF p15) is equivalent to DSF 15 described by Tindall *et al.* (2004). This unit is a low eucalypt forest with an open understorey of sclerophyll shrubs, grasses and forbs. It is found on the eastern edge of the Southern Tablelands between Nerriga and Captains Flat, in areas receiving 670 – 900mm mean annual rainfall. Braidwood Dry Forest typically lies on rises in gently undulating terrain with deep sandy loams or coarse sands between 600 and 900m elevation. Braidwood Dry Forest shares several species with Western Tablelands Dry Forest (DSF p14), which has a much wider but non-overlapping distribution to the north and west.

About half of the original distribution of Braidwood Dry Forest has been cleared. Most of the remaining area occurs as remnants subject to grazing in rural landscapes, although small areas occur within the south-western fringe of Morton National Park.

**Floristic Summary:**

**Trees:** *Eucalyptus dives*, *E. mannifera*, *E. radiata*. **Shrubs:** *Brachyloma daphnoides*, *Lomatia ilicifolia*, *Gompholobium minus*, *Acacia gunnii*. **Groundcover:** *Goodenia hederacea*, *Dianella revoluta*, *Hovea linearis*, *Stylidium graminifolium*, *Gonocarpus tetragynus*, *Poa sieberiana*, *Hibbertia obtusifolia*, *Lomandra multiflora*.

**Vegetation structure:**

Stratum	Frequency (n=34)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	94	13.7 (3)	28.1 (16.5)
Small tree	29	7.1 (4.3)	20.4 (15.4)
Shrub	53	1.9 (0.8)	14.2 (15.6)
Ground cover	97	0.6 (0.3)	29.7 (20.5)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 10 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 23 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 10 positive diagnostic species.



**Positive Diagnostic Species:**

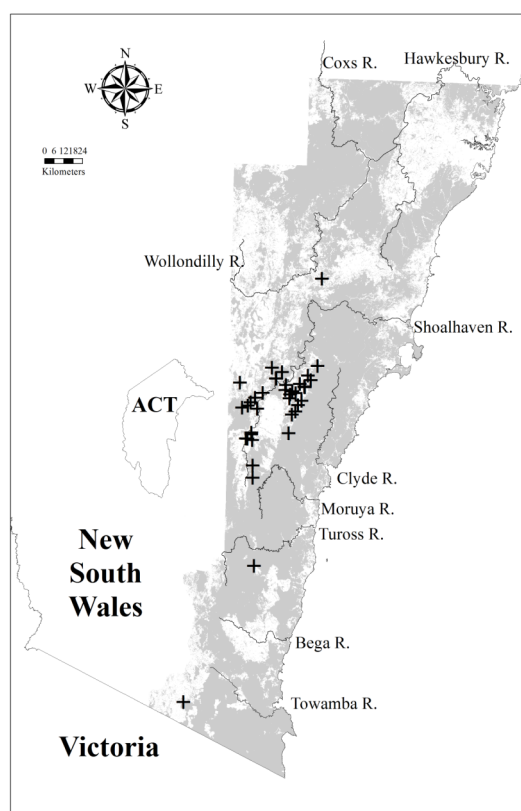
Species	C/A	Freq	C/A O	Freq O
<i>Acacia gunnii</i>	1(1-1)	45	1(1-1)	1
<i>Aotus ericoides</i>	1(1-2)	23	1(1-1)	3
<i>Aristida ramosa</i>	1(1-2)	20	1(1-2)	5
<i>Austrostipa rudis</i>	1(1-2)	25	1(1-2)	6
<i>Banksia marginata</i>	1(1-1)	25	1(1-1)	3
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-2)	35	1(1-2)	15
<i>Brachyloma daphnoides</i>	1(1-1)	63	1(1-1)	6
<i>Daviesia mimosoides</i>	1(1-2)	28	1(1-2)	2
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	63	1(1-1)	15
<i>Eucalyptus dives</i>	3(2-3)	75	2(1-3)	4
<i>Eucalyptus mannifera</i>	3(2-3)	73	1(1-3)	3
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-3)	40	2(1-3)	6
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-2)	28	1(1-2)	1
<i>Gompholobium minus</i>	1(1-1)	53	1(1-1)	1
<i>Gonocarpus tetragynus</i>	1(1-2)	58	1(1-1)	20
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	1(1-1)	20	1(1-1)	4
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-2)	68	1(1-2)	14
<i>Hakea dactyloides</i>	1(1-1)	60	1(1-1)	12
<i>Hibbertia obtusifolia</i>	1(1-1)	50	1(1-1)	10
<i>Hovea linearis</i>	1(1-1)	65	1(1-1)	9
<i>Hypericum gramineum</i>	1(1-1)	40	1(1-1)	16
<i>Joycea pallida</i>	2(1-2)	43	1(1-2)	8
<i>Kunzea parvifolia</i>	1(1-2)	23	1(1-2)	<1
<i>Lepidosperma gunnii</i>	1(1-2)	28	1(1-1)	4
<i>Leucopogon virgatus</i>	1(1-1)	30	1(1-1)	1
<i>Lomandra glauca</i>	1(1-2)	30	1(1-1)	10
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	53	1(1-1)	25
<i>Lomatia ilicifolia</i>	1(1-1)	58	1(1-1)	6
<i>Melichrus urceolatus</i>	1(1-1)	38	1(1-1)	4
<i>Mirbelia platylobioides</i>	1(1-1)	30	1(1-1)	<1
<i>Monotoca scoparia</i>	1(1-1)	38	1(1-1)	12
<i>Patersonia longifolia</i>	1(1-2)	20	1(1-1)	2
<i>Patersonia sericea</i>	1(1-1)	40	1(1-1)	9
<i>Persoonia mollis</i> subsp. <i>livens</i>	1(1-2)	23	1(1-1)	<1
<i>Poa sieberiana</i> var. <i>sieberiana</i>	2(1-3)	50	1(1-2)	10
<i>Pultenaea subspicata</i>	2(1-2)	30	1(1-1)	<1
<i>Rhytidosporum procumbens</i>	1(1-1)	33	1(1-1)	3
<i>Stylidium graminifolium</i>	1(1-1)	68	1(1-1)	9
<i>Xanthorrhoea concava</i>	1(1-2)	20	1(1-1)	4

**Constant:**

Species	C/A	Freq	C/A O	Freq O
<i>Lomandra longifolia</i>	1(1-2)	65	1(1-1)	44
<i>Microlaena stipoides</i>	1(1-1)	43	1(1-2)	36



<i>Themeda australis</i>	1(1-2)	30	1(1-3)	17
Other tree species occurring less frequently in this community:				
Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus bridgesiana</i>	3(3-3)	3	1(1-3)	1
<i>Eucalyptus cinerea</i>	1(1-1)	3	1(1-2)	1
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-2)	8	1(1-2)	3
<i>Eucalyptus macrorhyncha</i>	2(2-2)	3	2(1-3)	3
<i>Eucalyptus pauciflora</i>	2(1-3)	15	1(1-2)	3
<i>Eucalyptus rossii</i>	2(1-3)	15	3(1-3)	2
<i>Eucalyptus sclerophylla</i>	3(3-3)	5	2(1-3)	4
<i>Eucalyptus sieberi</i>	3(1-3)	5	2(1-3)	16
<i>Eucalyptus viminalis</i>	3(1-3)	8	2(1-3)	4



Locations of survey sites allocated to DSF p15. Grey shading indicates extant native vegetation cover within the study area.

**GW p17: Lithgow-Abercrombie Grassy Forest**

Plate p17. Lithgow-Abercrombie Grassy Forest (Map Unit p17) near Hartley Vale Cemetery where a canopy of *Eucalyptus rubida* subsp. *rubida* and *E. dives* grows above a patchy shrub layer dominated by *Leptospermum myrtifolium* and a groundcover with *Poa sieberiana* subsp. *cyanophylla* and *Lomandra longifolia*.

Sample Sites: 9

Area Extant (ha): 100

Estimated % remaining: 35-55%

Area in conservation reserves (ha): 0

Estimated % of pre-clearing area in conservation reserves: 0

No. taxa (total / unique): 143 / 0

No. taxa per plot ( $\pm$ sd): 30 (15.5)

Class: Southern Tableland Grassy Woodlands

Related TEC: n/a

Lithgow-Abercrombie Grassy Forest (GW p17) is equivalent to GW 17 described by Tindall *et al.* (2004). This unit is an open eucalypt forest with a sparse shrub layer and grassy groundcover, found primarily in the upper Cocks River valley but also recorded in the Abercrombie River area. It occupies granite soils on undulating terrain, 600 – 1100m ASL where average annual rainfall varies from 730 to 930mm. It is likely to extend further to the north and west of the study area.

The small areas of Lithgow-Abercrombie Grassy Forest mapped within the study area persist as paddock and roadside remnants threatened by small-scale clearing and grazing.

**Floristic Summary:**

**Trees:** *Eucalyptus dives*, *E. viminalis*, *E. pauciflora*. **Shrubs:** *Hibbertia obtusifolia*, *Acacia dealbata*, *Bursaria spinosa*, *Lissanthe strigosa*, *Bossiaea buxifolia*. **Groundcover:** *Poranthera microphylla*, *Hypericum gramineum*, *Lomandra glauca*, *Poa labillardierei*, *Dichelachne micrantha*.

**Vegetation structure:**

Stratum	Frequency (n=4)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	50	23.5 (2.1)	22.5 (17.7)
Small tree	50	9 (4.2)	10 (7.1)
Shrub	25	1.5 (-)	15 (-)
Ground cover	100	0.4 (0.1)	37.5 (18.5)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 6 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 17 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 6 positive diagnostic species.

**Positive Diagnostic Species:**

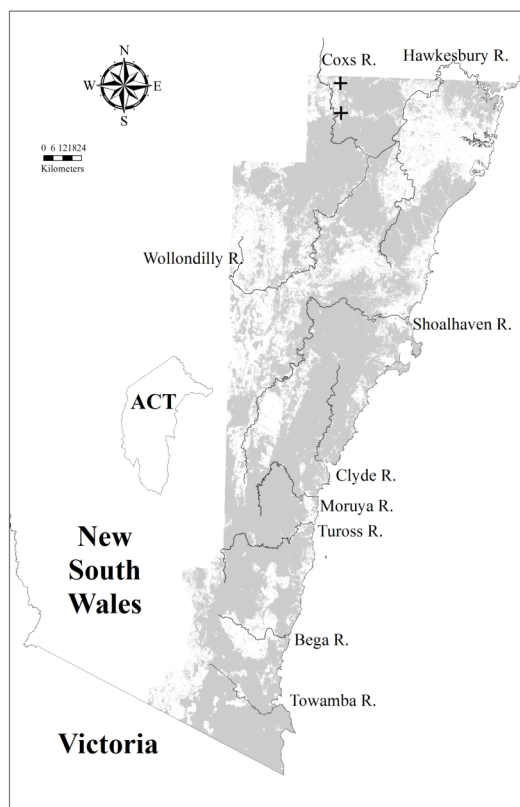
Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	1(1-1)	56	1(1-2)	5
<i>Acaena ovina</i>	1(1-1)	33	1(1-1)	1
<i>Austrodanthonia caespitosa</i>	1(1-1)	22	1(1-2)	1
<i>Austrodanthonia tenuior</i>	1(1-2)	33	1(1-2)	2
<i>Bossiaea buxifolia</i>	1(1-1)	44	1(1-1)	3
<i>Bursaria spinosa</i>	1(1-1)	67	1(1-2)	14
<i>Centaurium spicatum</i>	1(1-1)	22	1(1-1)	<1
<i>Dichelachne micrantha</i>	1(1-1)	44	1(1-1)	9
<i>Dichelachne rara</i>	1(1-2)	33	1(1-1)	5
<i>Eucalyptus bridgesiana</i>	2(1-2)	33	1(1-3)	1
<i>Eucalyptus dives</i>	2(2-2)	67	2(1-3)	4
<i>Eucalyptus pauciflora</i>	1(1-5)	33	1(1-2)	3
<i>Eucalyptus viminalis</i>	2(2-2)	56	2(1-3)	4
<i>Gompholobium huegelii</i>	1(1-1)	22	1(1-1)	2
<i>Hibbertia obtusifolia</i>	1(1-1)	89	1(1-1)	11
<i>Hypericum gramineum</i>	1(1-1)	67	1(1-1)	16
<i>Lissanthe strigosa</i>	2(1-2)	44	1(1-1)	8
<i>Lomandra glauca</i>	1(1-1)	56	1(1-1)	10
<i>Microtis unifolia</i>	1(1-1)	22	1(1-1)	1
<i>Plantago hispida</i>	1(1-1)	22	1(1-1)	<1
<i>Poa labillardierei</i> var. <i>labillardierei</i>	1(1-2)	56	1(1-2)	12
<i>Poranthera microphylla</i>	1(1-1)	67	1(1-1)	15
<i>Senecio quadridentatus</i>	1(1-1)	22	1(1-1)	1
<i>Sorghum leiocladum</i>	1(1-1)	22	1(1-1)	<1
<i>Themeda australis</i>	1(1-1)	67	1(1-3)	17

**Constant:**

Species	C/A	Freq	C/A O	Freq O
<i>Asplenium flabellifolium</i>	1(1-1)	33	1(1-1)	12
<i>Cheilanthes sieberi</i>	1(1-1)	33	1(1-1)	14
<i>Desmodium varians</i>	1(1-1)	44	1(1-1)	21
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	33	1(1-1)	15
<i>Dichondra</i> spp.	1(1-1)	44	1(1-2)	25
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-1)	33	1(1-1)	8
<i>Glycine clandestina</i>	1(1-1)	44	1(1-1)	26
<i>Gonocarpus tetragynus</i>	1(1-1)	56	1(1-1)	20
<i>Hardenbergia violacea</i>	1(1-1)	33	1(1-1)	17
<i>Indigofera australis</i>	1(1-1)	33	1(1-1)	9
<i>Poa sieberiana</i> var. <i>sieberiana</i>	2(1-2)	33	1(1-2)	11

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus eugenioides</i>	2(2-2)	11	2(1-3)	4
<i>Eucalyptus macrorhyncha</i>	1(1-1)	11	2(1-3)	3
<i>Eucalyptus mannifera</i>	2(2-2)	22	2(1-3)	4
<i>Eucalyptus praecox</i>	2(2-2)	11	1(1-2)	<1



Locations of survey sites allocated to GW p17. Grey shading indicates extant native vegetation cover within the study area.

**GW p19: Abercrombie – Tarlo Footslope Woodland**

Plate p19. Abercrombie-Tarlo Footslope Woodland (Map Unit p19) on a footslope above the river in Abercrombie River National Park. *Eucalyptus bridgesiana* grows above scattered shrubs including *Cassinia longifolia* and a dense grassy groundcover dominated by *Poa labillardierei* var. *labillardierei*.

Sample Sites: 42

Area Extant (ha): 5200

Estimated % remaining: 70-85%

Area in conservation reserves (ha): 1700

Estimated % of pre-clearing area in conservation reserves: 15-35%

No. taxa (total / unique): 306 / 2

No. taxa per plot ( $\pm$ sd): 32.5 (9.7)

Class: Southern Tableland Grassy Woodlands

Related TEC: n/a

Abercrombie – Tarlo Footslope Woodland (GW p19) is equivalent to GW 19 described by Tindall *et al.* (2004). This unit is an open eucalypt woodland or forest with a sparse shrub layer and grassy groundcover. It occurs on the footslopes of rocky hills along the Abercrombie and lower Tarlo Rivers at 530 – 800m ASL in areas receiving 680 – 780 mm mean annual rainfall. Abercrombie-Tarlo Footslope Woodland frequently occurs in association with Western Tablelands Dry Forest (DSF p14), which usually occupies the mid-upper slopes and ridgelines. It is closely related to Wombeyan Caves Woodland (DSF p219), which is restricted to clay soils derived from limestone in a small area around Wombeyan Caves. While some of these woodlands have been cleared or used as rough grazing country, examples are represented within Abercrombie National Park.

**Floristic Summary:**

**Trees:** *Eucalyptus bridgesiana*, *E. macrorhyncha*. **Shrubs:** *Cassinia longifolia*. **Groundcover:** *Hydrocotyle laxiflora*, *Geranium solanderi*, *Microlaena stipoides*, *Acaena novae-zelandiae*, *Cheilanthes sieberi*, *Poa sieberiana*, *Dichondra* spp., *Stellaria pungens*, *Asplenium flabellifolium*, *Gonocarpus tetragynus*, *Rumex brownii*.

**Vegetation structure:**

Stratum	Frequency (n=40)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	83	16.9 (6.7)	26.4 (17.2)
Small tree	35	5.6 (2)	14.7 (14.9)
Shrub	58	2.2 (0.6)	23.1 (25)
Ground cover	83	0.7 (0.3)	53.8 (24.7)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 10 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 25 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 10 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	1(1-2)	21	1(1-2)	5
<i>Acacia falciformis</i>	1(1-2)	36	1(1-2)	10
<i>Acaena novae-zelandiae</i>	1(1-1)	67	1(1-1)	7
<i>Asplenium flabellifolium</i>	1(1-1)	55	1(1-1)	11
<i>Austrodanthonia pilosa</i>	2(2-3)	19	1(1-1)	3
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	2(1-2)	29	1(1-2)	6
<i>Bursaria spinosa</i>	1(1-2)	36	1(1-2)	14
<i>Cassinia longifolia</i>	2(1-2)	48	1(1-2)	6
<i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i>	3(2-4)	21	3(1-3)	1
<i>Cheilanthes sieberi</i>	1(1-1)	69	1(1-1)	14
<i>Crassula sieberiana</i>	1(1-1)	26	1(1-1)	3
<i>Daucus glochidiatus</i>	1(1-1)	36	1(1-1)	2
<i>Dichondra</i> spp.	1(1-2)	62	1(1-2)	25
<i>Echinopogon ovatus</i>	1(1-1)	40	1(1-1)	14
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-1)	36	1(1-1)	5
<i>Eucalyptus bridgesiana</i>	2(1-3)	62	1(1-3)	1
<i>Eucalyptus dives</i>	1(1-2)	19	2(1-3)	4
<i>Eucalyptus macrorhyncha</i>	2(1-3)	40	2(1-3)	3
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-1)	74	1(1-1)	7
<i>Gonocarpus tetragynus</i>	1(1-1)	50	1(1-1)	20
<i>Hibbertia obtusifolia</i>	1(1-1)	29	1(1-1)	11
<i>Hydrocotyle laxiflora</i>	1(1-1)	90	1(1-1)	15
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-1)	26	1(1-2)	10
<i>Luzula flaccida</i>	1(1-1)	21	1(1-1)	4
<i>Microlaena stipoides</i>	1(1-2)	71	1(1-2)	36
<i>Oxalis perennans</i>	1(1-1)	33	1(1-1)	13
<i>Plantago debilis</i>	1(1-1)	29	1(1-1)	7
<i>Poa sieberiana</i> var. <i>sieberiana</i>	1(1-2)	67	1(1-2)	10
<i>Poa labillardierei</i> var. <i>labillardierei</i>	1(1-2)	29	1(1-2)	12
<i>Rumex brownii</i>	1(1-1)	48	1(1-1)	5
<i>Senecio hispidulus</i> var. <i>hispidulus</i>	1(1-1)	19	1(1-1)	3
<i>Senecio prenanthoides</i>	1(1-1)	43	1(1-1)	8
<i>Senecio quadridentatus</i>	1(1-1)	29	1(1-1)	1
<i>Stellaria pungens</i>	1(1-1)	57	1(1-1)	6
<i>Urtica incisa</i>	1(1-2)	21	1(1-1)	5
<i>Veronica plebeia</i>	1(1-1)	31	1(1-1)	10
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	1(1-1)	31	1(1-1)	5

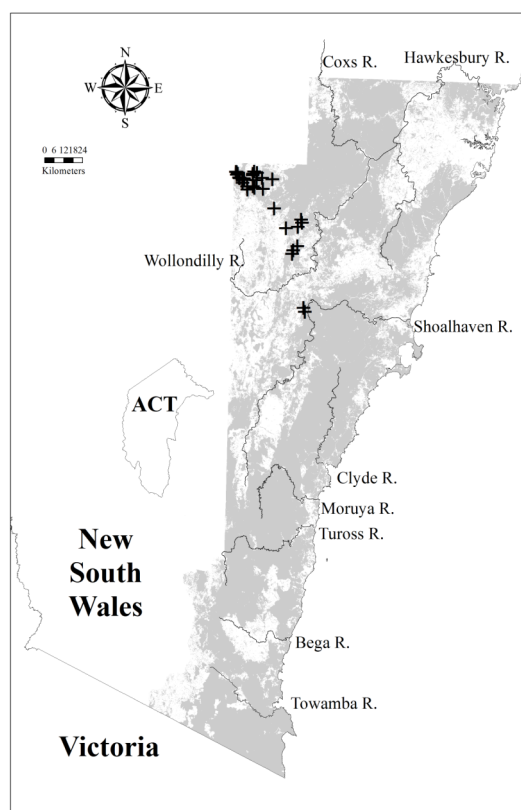
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Desmodium varians</i>	1(1-1)	38	1(1-1)	21
<i>Glycine clandestina</i>	1(1-1)	36	1(1-1)	26
<i>Hypericum gramineum</i>	1(1-1)	33	1(1-1)	16
<i>Lomandra longifolia</i>	1(1-2)	57	1(1-1)	44

Other tree species occurring less frequently in this community:



Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	1(1-1)	2	2(1-3)	1
<i>Eucalyptus blakelyi</i>	1(1-1)	5	2(1-3)	1
<i>Eucalyptus blakelyi</i> X <i>dealbata</i>	3(3-3)	5	3(1-3)	<1
<i>Eucalyptus cinerea</i>	2(2-2)	5	1(1-2)	1
<i>Eucalyptus considieniana</i>	1(1-1)	2	2(1-2)	2
<i>Eucalyptus elata</i>	2(2-2)	2	2(1-3)	5
<i>Eucalyptus eugenioides</i>	1(1-1)	2	2(1-3)	4
<i>Eucalyptus goniocalyx</i>	2(1-2)	14	1(1-3)	1
<i>Eucalyptus mannifera</i>	2(1-4)	12	2(1-3)	4
<i>Eucalyptus melliodora</i>	1(1-1)	12	1(1-3)	2
<i>Eucalyptus polyanthemos</i> subsp. <i>polyanthemos</i>	1(1-1)	5	2(1-2)	<1
<i>Eucalyptus praecox</i>	1(1-1)	2	2(1-2)	<1
<i>Eucalyptus rossii</i>	1(1-3)	10	3(1-3)	2
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-1)	5	1(1-2)	2



Locations of survey sites allocated to GW p19. Grey shading indicates extant native vegetation cover within the study area.



**GW p20: Tableland Basalt Forest**

Plate p20. Tableland Basalt Forest (Map Unit p20) on rocky basalt scree above Pipeclay creek at Golspie, with *Eucalyptus viminalis* and *Acacia melanoxylon* over a groundcover dominated by *Poa sieberiana* var. *sieberiana*, *Austrodanthonia racemosa* var. *racemosa* and various soft forbs.

Sample Sites: 28

Area Extant (ha): 10700

Estimated % remaining: 5-20%

Area in conservation reserves (ha): 280

Estimated % of pre-clearing area in conservation reserves: <2%

No. taxa (total / unique): 206 / 0

No. taxa per plot ( $\pm$ sd): 30.8 (9)

Class: Tableland Clay Grassy Woodlands

Related TEC: n/a

Tableland Basalt Forest (GW p20) is equivalent to GW 20 described by Tindall *et al.* (2004). This unit is a eucalypt forest with sparse shrubs and dense groundcover of herbs and grass. It is restricted to heavy clay soils derived from basalt and occurs sporadically on the central tablelands at localities such as Taralga, Fullerton, Jerrong, Wanganderry and the Moss Vale and Tolwong Plateaux. Tableland Basalt Forest typically occurs from 600–900m ASL in areas receiving 750–1000mm mean annual rainfall, or occasionally up to 1100mm on the Moss Vale Plateau. Where rainfall exceeds 1100mm, Tableland Basalt Forest is replaced by Southern Highlands Basalt Forest (WSF p266) east of Moss Vale and on the summit of Mount Gibraltar, or by Blue Mountains Basalt Forest (WSF p72) further north (e.g. Mount Tomah). Only about one fifth of the original distribution of Tableland Basalt Forest has escaped land clearing to develop its fertile soils on flat terrain for pastoral uses. The remnants, found almost exclusively on freehold land, are exposed to continued small-scale clearing, grazing and weed invasion.

**Floristic Summary:**

**Trees:** *Acacia melanoxylon*, *Eucalyptus viminalis*, *E. radiata*. **Groundcover:** *Microlaena stipoides*, *Stellaria pungens*, *Pteridium esculentum*, *Acaena novae-zelandiae*, *Dichondra* spp., *Geranium solanderi*, *Hydrocotyle laxiflora*, *Desmodium varians*, *Echinopogon ovatus*, *Austrodanthonia racemosa*, *Austrostipa rudis*, *Plantago varia*, *Viola betonicifolia*.

**Vegetation structure:**

Stratum	Frequency (n=27)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	93	23.8 (6.4)	31.8 (10.6)
Small tree	30	8.8 (5.8)	8.4 (6.2)
Shrub	44	2 (0.9)	14.6 (23.3)
Ground cover	96	0.5 (0.2)	72.6 (26.1)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 11 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 24 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 11 positive diagnostic species.

**Positive Diagnostic Species:**

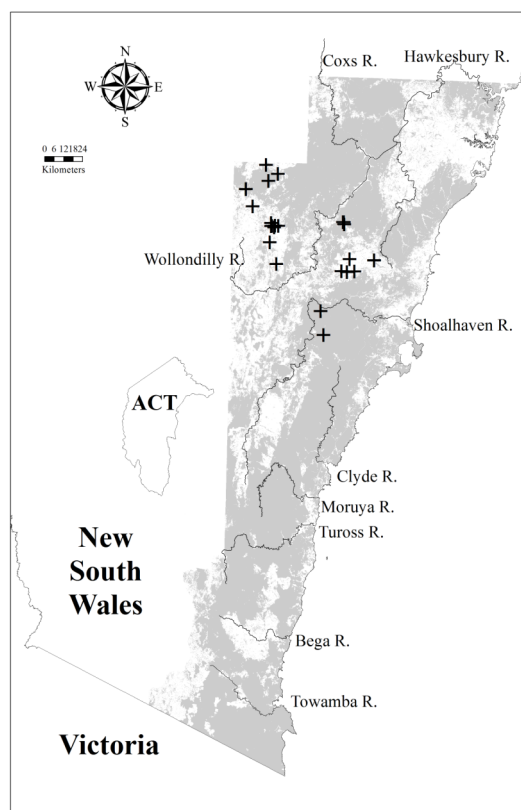
Species	C/A	Freq	C/A O	Freq O
<i>Acacia melanoxylon</i>	1(1-2)	36	1(1-1)	6
<i>Acaena novae-zelandiae</i>	1(1-2)	75	1(1-1)	7
<i>Asperula conferta</i>	1(1-2)	50	1(1-1)	4
<i>Austrodanthonia pilosa</i>	2(1-3)	25	1(1-1)	3
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	2(1-2)	54	1(1-2)	6
<i>Austrostipa rudis</i>	3(2-3)	50	1(1-2)	6
<i>Carex inversa</i>	1(1-1)	39	1(1-1)	3
<i>Cymbonotus lawsonianus</i>	1(1-1)	29	1(1-1)	1
<i>Desmodium varians</i>	1(1-2)	57	1(1-1)	21
<i>Dichelachne inaequiglumis</i>	1(1-2)	32	1(1-1)	3
<i>Dichondra</i> spp.	2(1-2)	71	1(1-2)	25
<i>Echinopogon ovatus</i>	1(1-2)	57	1(1-1)	14
<i>Einadia nutans</i>	1(1-2)	25	1(1-1)	3
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-2)	32	1(1-1)	5
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	3(2-3)	21	1(1-2)	3
<i>Eucalyptus pauciflora</i>	1(1-2)	21	1(1-2)	3
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	3(1-4)	32	2(1-3)	6
<i>Eucalyptus viminalis</i>	3(3-4)	32	2(1-3)	4
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-2)	68	1(1-1)	7
<i>Glycine microphylla</i>	1(1-2)	39	1(1-1)	5
<i>Hydrocotyle laxiflora</i>	2(1-2)	68	1(1-1)	15
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-2)	46	1(1-2)	10
<i>Microlaena stipoides</i>	2(2-4)	82	1(1-2)	36
<i>Oreomyrrhis eriopoda</i>	2(2-2)	21	1(1-1)	1
<i>Oxalis perennans</i>	1(1-1)	43	1(1-1)	13
<i>Plantago varia</i>	1(1-2)	50	1(1-1)	2
<i>Poa sieberiana</i> var. <i>sieberiana</i>	3(2-4)	39	1(1-2)	10
<i>Poa labillardierei</i> var. <i>labillardierei</i>	2(1-3)	46	1(1-2)	12
<i>Pteridium esculentum</i>	1(1-2)	79	1(1-2)	37
<i>Ranunculus lappaceus</i>	1(1-2)	25	1(1-1)	1
<i>Rubus parvifolius</i>	1(1-1)	46	1(1-1)	9
<i>Rumex brownii</i>	1(1-1)	36	1(1-1)	5
<i>Stellaria pungens</i>	2(1-2)	82	1(1-1)	6
<i>Themeda australis</i>	1(1-2)	43	1(1-3)	17
<i>Veronica plebeia</i>	1(1-1)	32	1(1-1)	10
<i>Viola betonicifolia</i>	1(1-2)	54	1(1-1)	5
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	1(1-1)	39	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Clematis aristata</i>	2(2-2)	43	1(1-1)	20
<i>Glycine clandestina</i>	1(1-1)	39	1(1-1)	26

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	4	1(1-2)	9
<i>Eucalyptus blaxlandii</i>	3(1-3)	14	1(1-3)	1
<i>Eucalyptus bosistoana</i>	1(1-1)	4	1(1-2)	3
<i>Eucalyptus bridgesiana</i>	3(1-3)	7	1(1-3)	1
<i>Eucalyptus dives</i>	3(3-3)	7	2(1-3)	4
<i>Eucalyptus elata</i>	4(3-4)	14	2(1-2)	5
<i>Eucalyptus fastigata</i>	3(2-4)	11	2(1-3)	6
<i>Eucalyptus goniocalyx</i>	1(1-1)	4	1(1-3)	1
<i>Eucalyptus macrorhyncha</i>	3(3-3)	7	2(1-3)	3
<i>Eucalyptus mannifera</i>	4(4-4)	4	2(1-3)	4
<i>Eucalyptus obliqua</i>	3(3-3)	4	2(1-3)	4
<i>Eucalyptus tereticornis</i>	1(1-3)	14	2(1-3)	7



Locations of survey sites allocated to GW p20. Grey shading indicates extant native vegetation cover within the study area.

**GW p22: Frost Hollow Grassy Woodland**

Plate p22. Frost Hollow Grassy Woodland (Map Unit p22) on Showground Reserve, Taralga, with a canopy of *Eucalyptus pauciflora* and dense groundcover dominated by *Poa sieberiana* var. *sieberiana*, *Themeda australis* and *Austrodanthonia pilosa* with a diverse complement of forbs.

Sample Sites: 71

Area Extant (ha): 14100

Estimated % remaining: 5-20%

Area in conservation reserves (ha): 680

Estimated % of pre-clearing area in conservation reserves: <2%

No. taxa (total / unique): 319 / 4

No. taxa per plot ( $\pm$ sd): 25.2 (11)

Class: Subalpine Woodlands

Related TEC: includes areas matching Natural Temperate Grasslands of the Southern Tablelands of NSW and the ACT EEC (EPBC).

Frost Hollow Grassy Woodland (GW p22) represents a revision and extension of GW 22 identified by Tindall *et al.* (2004), based on classification of a larger sample pool over a larger study area. The revised unit includes additional sites classified by Keith & Bedward (1999) as Monaro Basalt Grass Woodland (unit 23B) and by Beukers (undated) as Monaro Dry Grassy Woodland.

Frost Hollow Grassy Woodland is a low open eucalypt woodland with a sparse shrub layer and dense, diverse groundcover of grasses and forbs. In some areas the trees may have been so sparse that the community had a grassland structure, however these patterns are now difficult to discern given extensive clearing of this vegetation. Frost Hollow Grassy Woodland is found between Abercrombie and the Monaro tableland south of Bombala, within a mean annual rainfall range of 650–950 mm, and probably extends to the west of the study area. Within the study area it occurs from 600–1100m ASL on soils derived from a variety of substrates including fine-grained sedimentary, granite, acid volcanics and alluvium. Frost Hollow Grassy Woodland is typically restricted to broad valley flats of the tablelands where cold air accumulates or frosts occur frequently. It has been extensively cleared and persists almost exclusively as small remnants on grazing properties.

**Floristic Summary:**

**Trees:** *Eucalyptus pauciflora*, *E. rubida*. **Groundcover:** *Themeda australis*, *Gonocarpus tetragynus*, *Microlaena stipoides*, *Hypericum gramineum*, *Chrysocephalum apiculatum*, *Poa sieberiana*, *Asperula conferta*, *Elymus scaber*, *Hydrocotyle laxiflora*.

**Vegetation structure:**

Stratum	Frequency (n=51)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	63	11.1 (6)	23.5 (17.3)
Small tree	10	8.6 (4.2)	11 (5.5)
Shrub	31	2.1 (0.8)	10 (14.1)
Ground cover	98	0.4 (0.3)	53 (33.1)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 8 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 16 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 8 positive diagnostic species.

**Positive Diagnostic Species:**

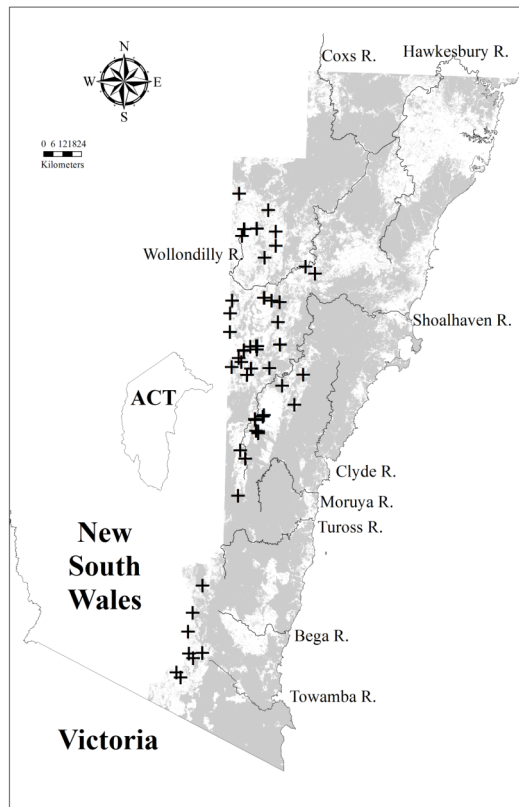
Species	C/A	Freq	C/A O	Freq O
<i>Acaena echinata</i>	1(1-1)	27	1(1-1)	2
<i>Acaena ovina</i>	1(1-1)	13	1(1-1)	1
<i>Acrotriche serrulata</i>	1(1-1)	15	1(1-1)	3
<i>Aristida ramosa</i>	1(1-2)	25	1(1-2)	5
<i>Asperula conferta</i>	1(1-1)	48	1(1-1)	3
<i>Astroloma humifusum</i>	1(1-2)	13	1(1-1)	4
<i>Austrostipa bigeniculata</i>	1(1-2)	11	1(1-2)	<1
<i>Austrodanthonia laevis</i>	1(1-2)	11	1(1-2)	1
<i>Austrodanthonia pilosa</i>	1(1-2)	15	1(1-1)	3
<i>Austrostipa scabra</i>	1(1-1)	8	1(1-2)	1
<i>Bossiaea prostrata</i>	1(1-1)	14	1(1-1)	3
<i>Bothriochloa macra</i>	1(1-2)	10	1(1-2)	1
<i>Calocephalus citreus</i>	1(1-1)	27	1(1-1)	<1
<i>Carex inversa</i>	1(1-1)	14	1(1-1)	3
<i>Chrysocephalum apiculatum</i>	1(1-1)	58	1(1-1)	2
<i>Convolvulus erubescens</i>	1(1-1)	23	1(1-1)	1
<i>Dichelachne micrantha</i>	1(1-1)	30	1(1-1)	9
<i>Dichelachne crinita</i>	1(1-1)	11	1(1-1)	1
<i>Dichopogon fimbriatus</i>	1(1-1)	11	1(1-1)	<1
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-1)	38	1(1-1)	5
<i>Epilobium billardioreanum</i>	1(1-1)	11	1(1-1)	2
<i>Eragrostis brownii</i>	1(1-1)	13	1(1-1)	3
<i>Eryngium ovinum</i>	1(1-1)	17	1(1-1)	<1
<i>Eucalyptus bridgesiana</i>	1(1-3)	8	1(1-3)	1
<i>Eucalyptus pauciflora</i>	2(1-3)	62	1(1-2)	3
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	2(1-3)	30	1(1-2)	1
<i>Eucalyptus stellulata</i>	1(1-2)	13	1(1-3)	<1
<i>Eucalyptus viminalis</i>	1(1-1)	14	2(1-3)	4
<i>Gonocarpus tetragynus</i>	1(1-1)	63	1(1-1)	20
<i>Haloragis heterophylla</i>	1(1-1)	21	1(1-1)	1
<i>Hydrocotyle laxiflora</i>	1(1-1)	34	1(1-1)	15
<i>Hypericum gramineum</i>	1(1-1)	55	1(1-1)	16
<i>Juncus australis</i>	1(1-1)	11	1(1-1)	1
<i>Juncus filicaulis</i>	1(1-1)	14	1(1-1)	<1
<i>Juncus subsecundus</i>	1(1-1)	8	1(1-1)	1
<i>Kunzea parvifolia</i>	1(1-4)	13	1(1-2)	<1
<i>Leptospermum squarrosus</i>	1(1-1)	21	1(1-1)	1
<i>Leptospermum myrtifolium</i>	1(1-1)	14	1(1-1)	1
<i>Leptorhynchus squamatus</i> subsp. A	1(1-1)	27	1(1-2)	<1
<i>Luzula densiflora</i>	1(1-1)	8	1(1-1)	1



<i>Melichrus urceolatus</i>	1(1-1)	14	1(1-1)	4
<i>Microlaena stipoides</i>	1(1-2)	62	1(1-2)	36
<i>Microtis unifolia</i>	1(1-1)	21	1(1-1)	<1
<i>Opercularia hispida</i>	1(1-1)	14	1(1-1)	3
<i>Panicum effusum</i>	1(1-1)	23	1(1-1)	2
<i>Pimelea curviflora</i> var. <i>sericea</i>	1(1-1)	17	1(1-1)	1
<i>Plantago gaudichaudii</i>	1(1-1)	15	1(1-2)	<1
<i>Plantago varia</i>	1(1-1)	25	1(1-1)	2
<i>Poa sieberiana</i> var. <i>sieberiana</i>	1(1-3)	48	1(1-2)	10
<i>Poa labillardierei</i> var. <i>labillardierei</i>	2(1-2)	39	1(1-2)	12
<i>Pultenaea subspicata</i>	1(1-3)	8	1(1-2)	<1
<i>Rumex brownii</i>	1(1-1)	15	1(1-1)	5
<i>Schoenus apogon</i>	1(1-1)	20	1(1-1)	2
<i>Scleranthus biflorus</i>	1(1-1)	30	1(1-1)	2
<i>Solenogyne dominii</i>	1(1-1)	13	1(1-1)	<1
<i>Solenogyne gunnii</i>	1(1-1)	14	1(1-1)	1
<i>Themeda australis</i>	3(2-4)	99	1(1-2)	17
<i>Tricoryne elatior</i>	1(1-1)	28	1(1-1)	3
<i>Viola betonicifolia</i>	1(1-2)	17	1(1-1)	5
<i>Vittadinia muelleri</i>	1(1-1)	10	1(1-1)	<1
<i>Wurmbea dioica</i> subsp. <i>dioica</i>	1(1-1)	11	1(1-1)	<1

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus aggregata</i>	1(1-2)	4	3(3-3)	<1
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	1(1-1)	1	2(1-3)	1
<i>Eucalyptus cinerea</i>	2(1-2)	4	1(1-2)	1
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	2(1-2)	3	1(1-2)	3
<i>Eucalyptus dives</i>	1(1-2)	8	2(1-3)	4
<i>Eucalyptus macrorhyncha</i>	2(1-2)	3	2(1-3)	3
<i>Eucalyptus mannifera</i>	1(1-2)	6	2(1-3)	4
<i>Eucalyptus melliodora</i>	2(1-2)	3	1(1-3)	2
<i>Eucalyptus ovata</i>	3(3-3)	3	2(1-2)	1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	3	2(1-3)	6
<i>Eucalyptus tereticornis</i>	1(1-1)	1	2(1-3)	7



Locations of survey sites allocated to GW p22. Grey shading indicates extant native vegetation cover within the study area.

### GW p23: Tableland Hills Grassy Woodland



Plate p23. Tableland Hills Grassy Woodland (Map Unit p23) adjacent to Hartley cemetery. *Eucalyptus rubida* and *E. pauciflora* are the dominant tree species and the grassy ground cover is dominated by *Lomandra longifolia*, *Poa sieberiana* var. *cyanophylla* and *Microlaena stipoides*.

Sample Sites: 122

Area Extant (ha): 18800

Estimated % remaining: 20-40%

Area in conservation reserves (ha): 710

Estimated % of pre-clearing area in conservation reserves: <2%

No. taxa (total / unique): 439 / 2

No. taxa per plot ( $\pm$ sd): 33.8 (11.7)



Class: transitional between Southern Tableland Grassy Woodlands and Southern Tableland Dry Sclerophyll Forests  
Related TEC: n/a

Tableland Hills Grassy Woodland (GW p23) is equivalent to GW 23 described by Tindall *et al.* (2004). This unit is an open eucalypt forest or woodland with a sparse shrub layer and grassy groundcover. It occurs across the tablelands, primarily between the Abercrombie River district, Berrima and Braidwood, with an outlying area to the north around Hartley. Tableland Hills Grassy Woodland occurs on loamy soils from 550 – 1100m ASL and extends to the north-west and south-west of the study area within a mean annual rainfall band of 650 – 950 mm. This woodland shares several species with Tableland Grassy Box-Gum Woodland (GW p24). Both communities are found in undulating terrain on the tablelands, although Tableland Hills Grassy Woodland occurs more frequently than Tableland Grassy Box-Gum Woodland closer to the coast. Where their distributions overlap, Tableland Hills Grassy Woodland is found in more rugged terrain. In the eastern portion of its distribution Tableland Hills Grassy Woodland is usually found on lower slopes, and grades into dry sclerophyll forest communities such as Tableland Low Woodland (DSF p9) on upper slopes. The extensive original distribution of Tableland Hills Grassy Woodland has been heavily fragmented by clearing and rough grazing, but small examples exist within several conservation reserves and state forests.

#### Floristic Summary:

**Trees:** *Eucalyptus dives*, *E. macrorhyncha*. **Shrubs:** *Melichrus urceolatus*. **Groundcover:** *Microlaena stipoides*, *Gonocarpus tetragynus*, *Lomandra filiformis* ssp. *coriacea*, *Hydrocotyle laxiflora*, *Hypericum gramineum*, *Hibbertia obtusifolia*, *Goodenia hederacea*, *Oxalis perennans*, *Austrodanthonia racemosa*.

#### Vegetation structure:

Stratum	Frequency (n=114)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	99	18.1 (5.7)	27.5 (11)
Small tree	35	7.9 (4.2)	12.2 (10.4)
Shrub	49	1.6 (0.7)	10.8 (12.8)
Ground cover	100	0.5 (0.3)	43.4 (26.4)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 16 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 25 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 16 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	1(1-2)	14	1(1-2)	5
<i>Acacia decurrens</i>	1(1-2)	13	1(1-1)	2
<i>Acacia genistifolia</i>	1(1-2)	4	1(1-2)	1
<i>Acacia gunnii</i>	1(1-1)	8	1(1-1)	2
<i>Acaena novae-zelandiae</i>	1(1-1)	37	1(1-1)	7
<i>Acianthus exsertus</i>	2(1-2)	3	1(1-2)	<1
<i>Ajuga australis</i>	1(1-2)	11	1(1-1)	3
<i>Aristida calycina</i> var. <i>calycina</i>	2(1-3)	3	1(1-1)	<1
<i>Aristida jerichoensis</i> var. <i>jerichoensis</i>	1(1-2)	3	1(1-2)	<1
<i>Aristida ramosa</i>	1(1-2)	30	1(1-2)	5
<i>Astroloma humifusum</i>	1(1-1)	23	1(1-1)	4
<i>Austrodanthonia auriculata</i>	3(2-3)	3	3(1-3)	<1
<i>Austrostipa densiflora</i>	1(1-3)	14	1(1-1)	<1
<i>Austrodanthonia laevis</i>	1(1-3)	9	1(1-2)	1
<i>Austrostipa mollis</i>	2(1-3)	7	1(1-2)	<1
<i>Austrodanthonia monticola</i>	2(1-2)	7	1(1-1)	<1
<i>Austrodanthonia pilosa</i>	1(1-2)	17	1(1-1)	3
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	2(1-2)	46	1(1-2)	5
<i>Austrostipa rudis</i>	1(1-2)	25	1(1-2)	6

<i>Austrostipa scabra</i>	1(1-1)	6	1(1-2)	1
<i>Bossiaea buxifolia</i>	1(1-2)	20	1(1-1)	3
<i>Bossiaea prostrata</i>	1(1-1)	15	1(1-1)	2
<i>Brachyloma daphnoides</i>	1(1-1)	32	1(1-1)	6
<i>Brachyscome spathulata</i>	1(1-1)	8	1(1-1)	1
<i>Cassinia aculeata</i>	1(1-1)	23	1(1-1)	6
<i>Cassinia cunninghamii</i>	1(1-2)	5	1(1-1)	<1
<i>Cassinia laevis</i>	1(1-1)	8	1(1-2)	1
<i>Cheilanthes sieberi</i>	1(1-1)	42	1(1-1)	13
<i>Chrysocephalum apiculatum</i>	1(1-1)	8	1(1-1)	2
<i>Convolvulus erubescens</i>	1(1-1)	5	1(1-1)	1
<i>Cymbonotus lawsonianus</i>	1(1-1)	20	1(1-1)	1
<i>Daviesia latifolia</i>	1(1-2)	13	1(1-2)	1
<i>Daviesia leptophylla</i>	1(1-1)	7	1(1-1)	2
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	30	1(1-1)	15
<i>Dichelachne micrantha</i>	1(1-1)	28	1(1-1)	9
<i>Dichelachne parva</i>	1(1-1)	6	1(1-1)	2
<i>Dillwynia phyllicoides</i>	1(1-2)	7	1(1-1)	1
<i>Dillwynia sericea</i>	1(1-1)	7	1(1-1)	2
<i>Echinopogon ovatus</i>	1(1-1)	25	1(1-1)	14
<i>Einadia nutans</i>	1(1-1)	9	1(1-1)	3
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-1)	20	1(1-1)	5
<i>Eragrostis benthamii</i>	1(1-2)	3	1(1-1)	<1
<i>Eriochilus cucullatus</i>	1(1-1)	3	1(1-1)	<1
<i>Eucalyptus blakelyi</i>	3(1-3)	4	1(1-3)	<1
<i>Eucalyptus bridgesiana</i>	1(1-3)	15	1(1-3)	1
<i>Eucalyptus cinerea</i>	3(1-3)	12	1(1-2)	<1
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	3(1-4)	19	1(1-2)	3
<i>Eucalyptus dives</i>	3(1-3)	53	2(1-3)	4
<i>Eucalyptus macrorhyncha</i>	3(1-3)	38	2(1-3)	3
<i>Eucalyptus mannifera</i>	1(1-3)	31	2(1-3)	3
<i>Eucalyptus melliodora</i>	2(1-3)	12	1(1-3)	2
<i>Eucalyptus rossii</i>	2(1-3)	14	3(1-3)	2
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	3(2-3)	7	1(1-2)	1
<i>Eucalyptus viminalis</i>	2(1-3)	12	2(1-3)	4
<i>Euchiton gymnocephalus</i>	1(1-1)	25	1(1-1)	7
<i>Euchiton involucrat</i>	1(1-1)	8	1(1-1)	1
<i>Galium gaudichaudii</i>	1(1-1)	19	1(1-1)	3
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-1)	21	1(1-1)	7
<i>Gonocarpus tetragynus</i>	2(1-2)	87	1(1-1)	19
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	2(1-2)	64	1(1-1)	13
<i>Hardenbergia violacea</i>	1(1-1)	34	1(1-1)	17
<i>Helichrysum leucopsideum</i>	1(1-1)	5	1(1-1)	1
<i>Helichrysum scorpioides</i>	1(1-2)	16	1(1-1)	7
<i>Hibbertia obtusifolia</i>	1(1-2)	68	1(1-1)	10
<i>Hovea linearis</i>	1(1-1)	30	1(1-1)	9

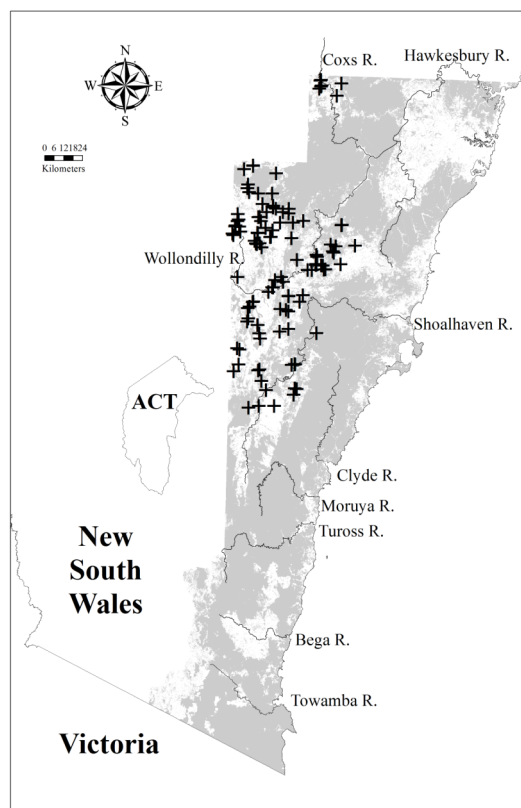
<i>Hydrocotyle laxiflora</i>	1(1-2)	77	1(1-1)	15
<i>Hypericum gramineum</i>	1(1-1)	75	1(1-1)	15
<i>Joycea pallida</i>	2(1-3)	30	1(1-2)	8
<i>Juncus filicaulis</i>	1(1-1)	7	1(1-1)	1
<i>Kunzea ericoides</i>	1(1-3)	7	1(1-2)	2
<i>Kunzea parvifolia</i>	1(1-3)	3	1(1-2)	1
<i>Lagenifera gracilis</i>	1(1-2)	14	1(1-1)	3
<i>Laxmannia gracilis</i>	1(1-1)	12	1(1-1)	4
<i>Lepidosperma gunnii</i>	1(1-2)	15	1(1-1)	4
<i>Lissanthe strigosa</i>	1(1-2)	25	1(1-1)	8
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-2)	79	1(1-2)	9
<i>Luzula densiflora</i>	1(1-1)	20	1(1-1)	<1
<i>Melichrus urceolatus</i>	1(1-1)	46	1(1-1)	3
<i>Microlaena stipoides</i>	2(1-3)	91	1(1-2)	36
<i>Opercularia diphylla</i>	1(1-2)	30	1(1-1)	7
<i>Oreomyrrhis eriopoda</i>	1(1-2)	11	1(1-1)	1
<i>Oxalis exilis</i>	1(1-2)	9	1(1-1)	3
<i>Oxalis perennans</i>	1(1-1)	57	1(1-1)	12
<i>Oxalis radicata</i>	1(1-1)	5	1(1-1)	<1
<i>Persoonia mollis</i> subsp. <i>livens</i>	1(1-1)	4	1(1-1)	<1
<i>Pimelea curviflora</i> var. <i>sericea</i>	1(1-2)	11	1(1-1)	1
<i>Plantago varia</i>	1(1-2)	13	1(1-1)	2
<i>Poa meionectes</i>	2(1-2)	34	1(1-2)	16
<i>Poa sieberiana</i> var. <i>cyanophylla</i>	2(2-3)	30	1(1-2)	1
<i>Poa sieberiana</i> var. <i>sieberiana</i>	2(1-2)	26	1(1-2)	10
<i>Pomaderris prunifolia</i> var. <i>prunifolia</i>	1(1-4)	3	1(1-1)	<1
<i>Poranthera microphylla</i>	1(1-1)	27	1(1-1)	15
<i>Ranunculus lappaceus</i>	1(1-1)	6	1(1-1)	1
<i>Schoenus apogon</i>	1(1-1)	8	1(1-1)	2
<i>Scleranthus biflorus</i>	1(1-2)	15	1(1-1)	2
<i>Senecio diaschides</i>	1(1-1)	5	1(1-1)	1
<i>Senecio prenanthoides</i>	1(1-1)	36	1(1-1)	8
<i>Solenogyne dominii</i>	1(1-1)	10	1(1-1)	<1
<i>Solenogyne gunnii</i>	1(1-1)	13	1(1-1)	1
<i>Stackhousia monogyna</i>	1(1-1)	9	1(1-1)	2
<i>Stellaria pungens</i>	2(1-2)	18	1(1-1)	6
<i>Themeda australis</i>	1(1-1)	39	1(1-3)	17
<i>Thysanotus patersonii</i>	1(1-1)	7	1(1-1)	<1
<i>Tricoryne elatior</i>	1(1-2)	15	1(1-1)	3
<i>Veronica plebeia</i>	1(1-1)	43	1(1-1)	10
<i>Viola betonicifolia</i>	1(1-2)	30	1(1-1)	5
<i>Wahlenbergia communis</i>	1(1-1)	8	1(1-1)	2
<i>Wahlenbergia gracilis</i>	1(1-1)	34	1(1-1)	10
<i>Wahlenbergia luteola</i>	1(1-2)	4	1(1-2)	1
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	1(1-1)	27	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Dichondra</i> spp.	1(1-2)	30	1(1-2)	25
<i>Lomandra longifolia</i>	1(1-2)	38	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	33	1(1-1)	25

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus agglomerata</i>	2(1-2)	2	2(1-3)	8
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	2(2-2)	1	2(1-3)	1
<i>Eucalyptus blakelyi</i> X <i>dealbata</i>	3(1-3)	2	3(3-3)	<1
<i>Eucalyptus elata</i>	2(1-3)	2	2(1-3)	5
<i>Eucalyptus eugenioides</i>	2(1-3)	6	2(1-3)	4
<i>Eucalyptus fibrosa</i>	1(1-1)	1	2(1-3)	3
<i>Eucalyptus globoidea</i>	3(1-4)	4	2(1-2)	12
<i>Eucalyptus goniacalyx</i>	3(1-3)	2	1(1-3)	1
<i>Eucalyptus pauciflora</i>	1(1-3)	7	1(1-2)	3
<i>Eucalyptus polyanthemos</i> subsp. <i>polyanthemos</i>	1(1-1)	1	1(1-2)	<1
<i>Eucalyptus praecox</i>	1(1-1)	1	2(1-2)	<1
<i>Eucalyptus punctata</i>	4(3-4)	2	1(1-3)	9
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	3(2-4)	12	2(1-3)	6
<i>Eucalyptus sclerophylla</i>	4(3-4)	2	2(1-3)	4
<i>Eucalyptus smithii</i>	3(3-3)	2	1(1-2)	2
<i>Eucalyptus tereticornis</i>	1(1-3)	4	2(1-3)	7



Locations of survey sites allocated to GW p23. Grey shading indicates extant native vegetation cover within the study area.

**GW p24: Tableland Grassy Box-Gum Woodland**

Plate p24. Tableland Grassy Box-Gum Woodland (Map Unit p24) in Doughboy Travelling Stock Reserve at Manar. A canopy of *Eucalyptus rubida* subsp. *rubida* and *E. melliodora* is shown over a diverse grassy groundcover dominated by *Themeda australis* and *Joycea pallida*.

Sample Sites: 80

Area Extant (ha): 17900

Estimated % remaining: 10-25%

Area in conservation reserves (ha): 10

Estimated % of pre-clearing area in conservation reserves: <1%

No. taxa (total / unique): 299 / 3

No. taxa per plot ( $\pm$ sd): 28.4 (10.5)

Class: Southern Tableland Grassy Woodlands

Related TECs: includes areas matching White Box Yellow Box Blakely's Red Gum Woodland EEC (TSC); White Box-Yellow Box-Blakely's Red Gum Grassy Woodland CEEC and Natural Temperate Grasslands of the Southern Tablelands of NSW and the ACT EEC (EPBC).

Tableland Grassy Box-Gum Woodland (GW p24) is equivalent to GW 24 described by Tindall *et al.* (2004), and is a eucalypt woodland with a sparse shrub layer and grassy groundcover. It is found on undulating country on the tablelands between Hartley and Braidwood, and is likely to extend west of the study area. Tableland Grassy Box-Gum Woodland spans elevations from 600 to 900m ASL in areas receiving from 650 – 900mm average annual rainfall. It occurs on loamy soils derived predominantly from fine-grained sedimentary or acid-volcanic substrates, but is also found on granite soils near Hartley and between Woodhouselee and the Breadalbane Plains. Tableland Grassy Box-Gum Woodland is replaced by Tableland Hills Grassy Woodland (GW p23) with increasing topographic roughness, the latter unit being more extensively distributed closer to the coast. Tableland Grassy Box-Gum Woodland has been extensively cleared for pastoral land use. The remnants are distributed almost exclusively on freehold land and are subject to continuing small-scale clearing, grazing and weed invasion.

**Floristic Summary:**

**Trees:** *Eucalyptus melliodora*, *E. dives*, *E. macrorhyncha*. **Shrubs:** *Lissanthe strigosa*, *Melichrus urceolatus*.

**Groundcover:** *Lomandra filiformis* ssp. *coriacea*, *Themeda australis*, *Microlaena stipoides*, *Gonocarpus tetragynus*, *Hydrocotyle laxiflora*, *Poa sieberiana*, *Austrodanthonia racemosa*, *Goodenia hederacea*.

**Vegetation structure:**

Stratum	Frequency (n=66)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	97	16 (5.5)	21.8 (14.9)
Small tree	35	7.5 (2.4)	11.1 (10.4)
Shrub	58	1.5 (0.5)	7.6 (8.8)
Ground cover	98	0.4 (0.2)	45 (21.6)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 14 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 20 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 14 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	1(1-1)	16	1(1-2)	5
<i>Acacia deanei</i> subsp. <i>paucijuga</i>	1(1-3)	6	1(1-3)	<1
<i>Acacia decurrens</i>	1(1-3)	21	1(1-1)	2
<i>Acacia genistifolia</i>	1(1-2)	18	1(1-1)	<1
<i>Acaena echinata</i>	1(1-1)	28	1(1-1)	2
<i>Acaena novae-zelandiae</i>	1(1-1)	18	1(1-1)	7
<i>Acaena ovina</i>	1(1-1)	8	1(1-1)	1
<i>Aristida jerichoensis</i> var. <i>jerichoensis</i>	1(1-2)	18	1(1-2)	<1
<i>Aristida ramosa</i>	1(1-2)	29	1(1-2)	5
<i>Asperula conferta</i>	1(1-1)	21	1(1-1)	4
<i>Austrostipa bigeniculata</i>	1(1-3)	8	1(1-2)	<1
<i>Austrodanthonia laevis</i>	2(1-3)	24	1(1-2)	1
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	2(1-2)	50	1(1-2)	5
<i>Austrostipa rudis</i>	2(2-3)	16	1(1-2)	6
<i>Austrostipa scabra</i>	2(1-2)	30	1(1-2)	1
<i>Austrodanthonia setacea</i>	1(1-1)	6	1(1-1)	<1
<i>Austrodanthonia tenuior</i>	2(1-2)	18	1(1-1)	2
<i>Bossiaea buxifolia</i>	1(1-2)	34	1(1-1)	3
<i>Bossiaea prostrata</i>	1(1-1)	14	1(1-1)	3
<i>Bothriochloa macra</i>	1(1-1)	13	1(1-2)	1
<i>Brachyloma daphnoides</i>	1(1-1)	19	1(1-1)	6
<i>Calocephalus citreus</i>	1(1-1)	8	1(1-1)	<1
<i>Cassinia arcuata</i>	1(1-1)	19	1(1-1)	<1
<i>Cassinia laevis</i>	1(1-1)	10	1(1-2)	1
<i>Cheilanthes sieberi</i>	1(1-1)	33	1(1-1)	14
<i>Chenopodium pumilio</i>	1(1-1)	8	1(1-1)	<1
<i>Chrysocephalum apiculatum</i>	1(1-1)	43	1(1-1)	2
<i>Chrysocephalum semipapposum</i>	1(1-2)	13	1(1-1)	1
<i>Convolvulus erubescens</i>	1(1-1)	8	1(1-1)	1
<i>Crassula sieberiana</i>	1(1-2)	11	1(1-1)	3
<i>Cryptandra amara</i>	1(1-2)	6	1(1-1)	1
<i>Cymbonotus lawsonianus</i>	1(1-1)	15	1(1-1)	1
<i>Cynoglossum australe</i>	1(1-1)	8	1(1-1)	2
<i>Daviesia genistifolia</i>	1(1-2)	8	1(1-1)	<1
<i>Daviesia latifolia</i>	1(1-3)	30	1(1-2)	1
<i>Dianella longifolia</i>	1(1-1)	14	1(1-1)	4
<i>Dianella revoluta</i> var. <i>revoluta</i>	2(1-2)	45	1(1-1)	15
<i>Dichelachne micrantha</i>	1(1-1)	31	1(1-1)	9
<i>Dillwynia phyllicoides</i>	1(1-2)	14	1(1-1)	1
<i>Dillwynia sericea</i>	1(1-2)	9	1(1-1)	2

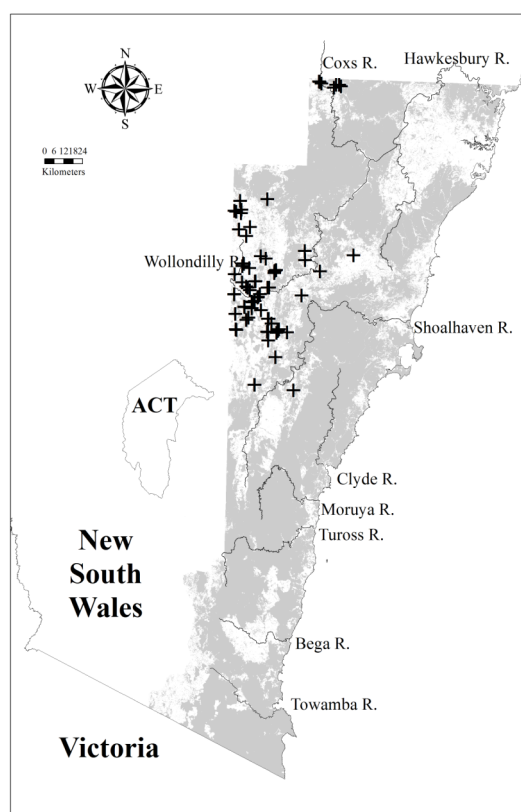
<i>Einadia nutans</i>	1(1-1)	31	1(1-1)	2
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-1)	31	1(1-1)	5
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	3(2-3)	8	2(1-3)	1
<i>Eucalyptus blakelyi</i>	3(1-3)	23	1(1-2)	<1
<i>Eucalyptus bridgesiana</i>	2(1-3)	29	1(1-3)	1
<i>Eucalyptus dives</i>	2(1-3)	33	2(1-3)	4
<i>Eucalyptus macrorhyncha</i>	1(1-3)	30	2(1-3)	3
<i>Eucalyptus mannifera</i>	1(1-3)	15	2(1-3)	4
<i>Eucalyptus melliodora</i>	3(1-3)	38	1(1-3)	2
<i>Eucalyptus pauciflora</i>	3(1-3)	20	1(1-2)	3
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-3)	25	1(1-2)	1
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-1)	24	1(1-1)	8
<i>Gonocarpus tetragynus</i>	1(1-2)	65	1(1-1)	20
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-2)	49	1(1-2)	14
<i>Hibbertia obtusifolia</i>	1(1-1)	29	1(1-1)	10
<i>Hydrocotyle laxiflora</i>	1(1-2)	55	1(1-1)	15
<i>Hypericum gramineum</i>	1(1-1)	39	1(1-1)	16
<i>Juncus filicaulis</i>	1(1-1)	10	1(1-1)	1
<i>Juncus subsecundus</i>	1(1-1)	10	1(1-1)	1
<i>Juncus usitatus</i>	1(1-1)	9	1(1-1)	2
<i>Leptorhynchus squamatus</i> subsp. <i>A</i>	1(1-1)	9	1(1-1)	<1
<i>Leucochrysum albicans</i> subsp. <i>albicans</i>	1(1-1)	9	1(1-1)	<1
<i>Lissanthe strigosa</i>	1(1-2)	46	1(1-1)	8
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	2(1-2)	90	1(1-2)	9
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	41	1(1-1)	25
<i>Melichrus urceolatus</i>	1(1-1)	43	1(1-1)	3
<i>Microlaena stipoides</i>	2(1-3)	76	1(1-2)	36
<i>Opercularia aspera</i>	1(1-1)	28	1(1-1)	8
<i>Opercularia hispida</i>	1(1-1)	13	1(1-1)	3
<i>Oxalis exilis</i>	1(1-1)	13	1(1-1)	3
<i>Oxalis perennans</i>	1(1-2)	39	1(1-1)	13
<i>Panicum effusum</i>	1(1-1)	18	1(1-1)	2
<i>Pimelea curviflora</i> var. <i>gracilis</i>	1(1-1)	8	1(1-1)	<1
<i>Pimelea curviflora</i> var. <i>sericea</i>	1(1-1)	21	1(1-1)	1
<i>Plantago debilis</i>	1(1-2)	19	1(1-1)	7
<i>Plantago gaudichaudii</i>	1(1-2)	19	1(1-1)	<1
<i>Plantago varia</i>	2(1-2)	10	1(1-1)	2
<i>Poa sieberiana</i> var. <i>sieberiana</i>	2(1-3)	55	1(1-2)	10
<i>Pultenaea microphylla</i>	1(1-1)	14	1(1-1)	1
<i>Rumex brownii</i>	1(1-1)	19	1(1-1)	5
<i>Scleranthus biflorus</i>	1(1-1)	16	1(1-1)	2
<i>Solenogyne dominii</i>	1(1-1)	8	1(1-1)	<1
<i>Solenogyne gunnii</i>	1(1-1)	9	1(1-1)	1
<i>Stackhousia monogyna</i>	1(1-1)	10	1(1-1)	2
<i>Themeda australis</i>	2(1-3)	81	1(1-2)	17
<i>Tricoryne elatior</i>	1(1-1)	29	1(1-1)	3



<i>Wahlenbergia communis</i>	1(1-2)	13	1(1-1)	2
<i>Wahlenbergia graniticola</i>	1(1-1)	6	1(1-1)	<1
<i>Wahlenbergia luteola</i>	1(1-1)	10	1(1-2)	<1

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus agglomerata</i>	3(3-3)	1	2(1-3)	8
<i>Eucalyptus aggregata</i>	3(3-3)	1	2(1-3)	<1
<i>Eucalyptus cinerea</i>	2(1-2)	3	1(1-2)	1
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	3(3-3)	3	1(1-2)	3
<i>Eucalyptus eugenioides</i>	4(1-4)	3	2(1-3)	4
<i>Eucalyptus globoidea</i>	2(1-2)	3	2(1-2)	12
<i>Eucalyptus polyanthemos</i> subsp. <i>polyanthemos</i>	1(1-1)	1	1(1-2)	<1
<i>Eucalyptus rossii</i>	3(1-3)	5	3(1-3)	2
<i>Eucalyptus stellulata</i>	3(1-3)	3	1(1-2)	1
<i>Eucalyptus tereticornis</i>	3(3-3)	1	2(1-3)	7
<i>Eucalyptus viminalis</i>	3(1-3)	11	2(1-3)	4



Locations of survey sites allocated to GW p24. Grey shading indicates extant native vegetation cover within the study area.

**DSF p27: Bungonia Slates Woodland**

Plate p27. Bungonia Slates Woodland (Map Unit p27) on Old Timberlight Road northwest of Nerriga. A sparse canopy dominated by *Eucalyptus bosistoana* and *E. macrorhyncha*, subcanopy of *Acacia deanei* and *E. cinerea*, shrub layer dominated by *Cassinia uncata* and a very sparse groundcover.

Sample Sites: 19

Area Extant (ha): 21200

Estimated % remaining: 85-95%

Area in conservation reserves (ha): 9200

Estimated % of pre-clearing area in conservation reserves: 30-50%

No. taxa (total / unique): 155 / 2

No. taxa per plot ( $\pm$ sd): 27.8 (7.5)

Class: Central Gorge Dry Sclerophyll Forests

Related TEC: n/a

Bungonia Slates Woodland (DSF p27) represents a slight revision of DSF 27 described by Tindall *et al.* (2004), with the addition of some recent sites from the Bungonia area. This unit is a dry eucalypt woodland with a sparse understorey of shrubs and grasses, restricted to mid-upper slopes in the Shoalhaven and Endrick gorges between Tallong and Nerriga. It is found almost exclusively on soils derived from Ordovician metasediments, at 320–570m elevation and within a mean annual rainfall range of 700–770mm. At higher elevations Bungonia Slates Woodland is replaced by Eastern Tablelands Dry Forest (DSF p10) or, less frequently, Western Tablelands Dry Forest (DSF p14). At lower elevations in the Shoalhaven Gorge it grades into Wollondilly-Cox-Shoalhaven Gorge Woodland (DSF p35). Little clearing of Bungonia Slates Woodland has taken place due to the steep terrain, and much of this woodland is within conservation reserves.

**Floristic Summary:**

**Trees:** *Eucalyptus bosistoana*, *E. macrorhyncha*. **Shrubs:** *Olearia viscidula*, *Lissanthe strigosa*, *Cassinia uncata*, *Daviesia leptophylla*. **Climbers:** *Clematis microphylla*. **Groundcover:** *Dianella revoluta*, *Lomandra filiformis*, *L. multiflora*, *Goodenia hederacea*, *Senecio* sp. E, *Hydrocotyle laxiflora*, *Opercularia varia*, *Notodanthonia longifolia*.

**Vegetation structure:**

Stratum	Frequency (n=18)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	89	19.2 (4)	18.7 (8.5)
Small tree	56	6.3 (2.5)	11.2 (13.8)
Shrub	50	1.7 (0.5)	12.2 (8.3)
Ground cover	89	0.4 (0.3)	12.8 (11.6)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 9 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 22 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 9 positive diagnostic species.

**Positive Diagnostic Species:**

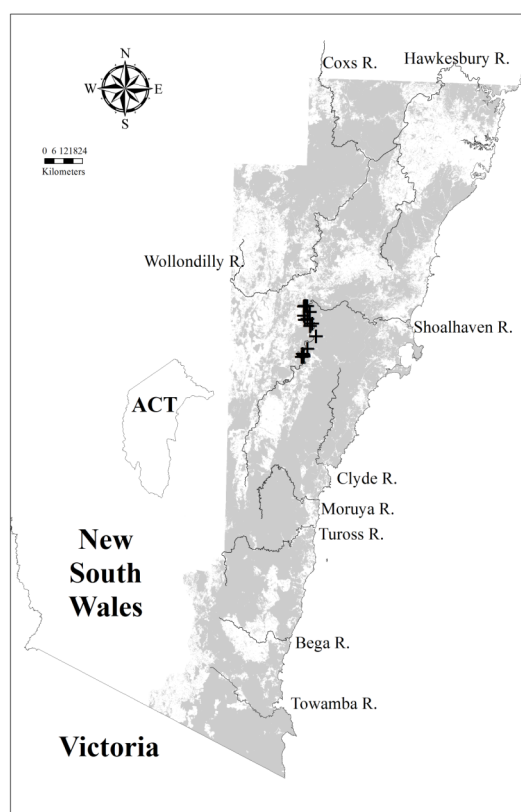
Species	C/A	Freq	C/A O	Freq O
<i>Acacia deanei</i> subsp. <i>paucijuga</i>	3(1-3)	21	1(1-3)	<1
<i>Acacia parramattensis</i>	1(1-2)	32	1(1-2)	4
<i>Cassinia aculeata</i>	1(1-1)	32	1(1-1)	6
<i>Cassinia uncata</i>	2(1-3)	37	1(1-1)	<1
<i>Clematis microphylla</i> var. <i>leptophylla</i>	1(1-1)	37	1(1-1)	<1
<i>Crassula sieberiana</i>	1(1-1)	32	1(1-1)	3
<i>Daviesia leptophylla</i>	1(1-2)	47	1(1-1)	2
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	79	1(1-1)	15
<i>Einadia hastata</i>	1(1-1)	26	1(1-1)	3
<i>Einadia nutans</i>	1(1-1)	21	1(1-1)	3
<i>Eucalyptus agglomerata</i>	1(1-2)	37	2(1-3)	7
<i>Eucalyptus bosistoana</i>	1(1-2)	68	1(1-2)	3
<i>Eucalyptus cinerea</i>	1(1-1)	21	1(1-2)	1
<i>Eucalyptus macrorhyncha</i>	2(1-2)	37	2(1-3)	3
<i>Eucalyptus mannifera</i>	1(1-3)	21	2(1-3)	4
<i>Eucalyptus melliodora</i>	1(1-2)	26	1(1-3)	2
<i>Galium gaudichaudii</i>	1(1-1)	21	1(1-1)	3
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-1)	84	1(1-2)	14
<i>Hydrocotyle laxiflora</i>	1(1-1)	47	1(1-1)	16
<i>Lepidosperma gunnii</i>	1(1-1)	37	1(1-1)	5
<i>Lissanthe strigosa</i>	1(1-1)	63	1(1-1)	8
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-1)	89	1(1-2)	10
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	68	1(1-1)	25
<i>Melichrus urceolatus</i>	1(1-1)	26	1(1-1)	4
<i>Notodanthonia longifolia</i>	1(1-1)	37	1(1-2)	5
<i>Olearia viscidula</i>	1(1-2)	79	1(1-2)	5
<i>Opercularia varia</i>	1(1-1)	68	1(1-1)	2
<i>Pultenaea microphylla</i>	1(1-1)	21	1(1-1)	1
<i>Senecio prenanthoides</i>	1(1-1)	63	1(1-1)	8
<i>Stellaria pungens</i>	1(1-1)	32	1(1-1)	6
<i>Veronica plebeia</i>	1(1-1)	42	1(1-1)	10
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	1(1-1)	26	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Bursaria spinosa</i>	1(1-1)	32	1(1-2)	14
<i>Cheilanthes sieberi</i>	1(1-1)	32	1(1-1)	14
<i>Eucalyptus globoidea</i>	2(1-2)	32	2(1-2)	12
<i>Hardenbergia violacea</i>	1(1-1)	37	1(1-1)	17
<i>Lomandra longifolia</i>	1(1-1)	47	1(1-1)	44
<i>Microlaena stipoides</i>	1(1-2)	37	1(1-2)	36
<i>Persoonia linearis</i>	1(1-1)	32	1(1-1)	29
<i>Pomax umbellata</i>	1(1-1)	32	1(1-1)	14
<i>Wahlenbergia gracilis</i>	1(1-1)	32	1(1-1)	11

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	4(1-4)	11	2(1-3)	1
<i>Eucalyptus blaxlandii</i>	1(1-1)	5	1(1-3)	1
<i>Eucalyptus bridgesiana</i>	1(1-1)	11	1(1-3)	1
<i>Eucalyptus dives</i>	1(1-1)	16	2(1-3)	4
<i>Eucalyptus eugenioides</i>	1(1-1)	5	2(1-3)	4
<i>Eucalyptus imitans</i>	1(1-1)	5	1(1-3)	<1
<i>Eucalyptus moluccana</i>	1(1-1)	5	3(1-3)	2
<i>Eucalyptus rossii</i>	3(1-3)	11	3(1-3)	2
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-1)	5	1(1-2)	2
<i>Eucalyptus tereticornis</i>	2(1-2)	16	2(1-3)	7



Locations of survey sites allocated to DSF p27. Grey shading indicates extant native vegetation cover within the study area.

**GW p28: Cumberland Shale Hills Woodland**

Plate p28. Cumberland Shale Hills Woodland (Map Unit p28) with a canopy of *Eucalyptus crebra*, an understorey of *Acacia implexa*, *Myoporum montanum* and *Bursaria spinosa*, and a characteristically sparse groundcover.

Sample Sites: 44

Area Extant (ha): 4400

Estimated % remaining: 10-25%

Area in conservation reserves (ha): 210

Estimated % of pre-clearing area in conservation reserves: <2%

No. taxa (total / unique): 240 / 3

No. taxa per plot ( $\pm$ sd): 37.7 (8.7)

Class: Coastal Valley Grassy Woodlands

Related TECs: included within Cumberland Plain Woodland EEC (TSC) and Cumberland Plain Woodlands EEC (EPBC).

Cumberland Shale Hills Woodland (GW p28) is equivalent to GW 29 described by Tindall *et al.* (2004). This unit is a eucalypt woodland with an open shrub layer and grassy groundcover, restricted to clay-loam soils derived from Wianamatta Shale on the southern half of the Cumberland Plain, western Sydney. Cumberland Shale Hills Woodland is closely related to Cumberland Shale Plains Woodland (GW p29) but typically occurs on steeper and more undulating terrain. It is found from 50 – 350m ASL in areas receiving 750 – 900mm mean annual rainfall. In steep, sheltered locations Cumberland Shale Hills Woodland grades into Cumberland Moist Shale Woodland (GW p514) or Grey Myrtle Dry Rainforest (RF p38). Cumberland Shale Hills Woodland, also described by Tozer (2003), has been extensively cleared for agriculture and continues to be threatened by urban and industrial development, grazing, high frequency fire and weed invasion.

**Floristic Summary:**

**Trees:** *Acacia implexa*, *Eucalyptus moluccana*, *E. tereticornis*. **Shrubs:** *Bursaria spinosa*, *Rubus parvifolius*.

**Climbers:** *Clematis glycinoides*, *Glycine tabacina*. **Groundcover:** *Dichondra repens*, *Brunoniella australis*, *Desmodium gunnii*, *Aristida ramosa*, *Microlaena stipoides*, *Carex inversa*, *Themeda australis*, *Cyperus gracilis*, *Dichelachne micrantha*, *Asperula conferta*, *Oxalis perennans*, *Cheilanthes sieberi*, *Desmodium brachypodium*, *Sporobolus creber*, *Wahlenbergia gracilis*.

**Vegetation structure:**

Stratum	Frequency (n=44)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	2	18 (-)	2 (-)
Tree canopy	100	23.6 (6.2)	18.7 (9)
Small tree	89	8.6 (4.1)	22.8 (17.4)
Shrub	41	2.3 (0.7)	12.4 (12.3)
Ground cover	100	1 (0.1)	46.6 (24)



**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 20 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 31 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 20 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia implexa</i>	1(1-2)	66	1(1-1)	6
<i>Ajuga australis</i>	1(1-2)	30	1(1-1)	3
<i>Aristida ramosa</i>	2(1-3)	82	1(1-2)	5
<i>Arthropodium milleflorum</i>	1(1-2)	45	1(1-1)	5
<i>Asperula conferta</i>	1(1-1)	64	1(1-1)	3
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	1(1-2)	34	1(1-2)	6
<i>Austrodanthonia tenuior</i>	1(1-3)	20	1(1-2)	2
<i>Bothriochloa macra</i>	1(1-1)	30	1(1-2)	1
<i>Brunoniella australis</i>	2(1-2)	82	2(1-2)	3
<i>Brunoniella pumilio</i>	2(1-2)	20	1(1-1)	4
<i>Bursaria spinosa</i>	3(3-4)	86	1(1-2)	14
<i>Carex inversa</i>	1(1-2)	64	1(1-1)	3
<i>Cheilanthes distans</i>	1(1-1)	34	1(1-1)	2
<i>Cheilanthes sieberi</i>	1(1-1)	59	1(1-1)	14
<i>Chloris truncata</i>	1(1-1)	27	1(1-1)	<1
<i>Chloris ventricosa</i>	2(1-2)	50	1(1-1)	1
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	34	1(1-1)	10
<i>Commelina cyanea</i>	1(1-2)	20	1(1-1)	4
<i>Crassula sieberiana</i>	1(1-1)	20	1(1-1)	3
<i>Cymbopogon refractus</i>	1(1-2)	30	1(1-1)	4
<i>Cyperus gracilis</i>	2(1-2)	59	1(1-1)	2
<i>Desmodium brachypodium</i>	1(1-1)	52	1(1-1)	2
<i>Desmodium varians</i>	2(1-2)	82	1(1-1)	21
<i>Dianella longifolia</i>	1(1-1)	27	1(1-1)	4
<i>Dichelachne micrantha</i>	1(1-2)	66	1(1-1)	9
<i>Dichondra</i> spp.	2(1-2)	98	1(1-2)	25
<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>	1(1-1)	20	1(1-1)	<1
<i>Echinopogon ovatus</i>	1(1-2)	50	1(1-1)	14
<i>Einadia hastata</i>	1(1-2)	20	1(1-1)	3
<i>Einadia nutans</i>	1(1-1)	36	1(1-1)	3
<i>Einadia trigonos</i>	1(1-1)	23	1(1-1)	1
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-1)	23	1(1-1)	5
<i>Eragrostis leptostachya</i>	1(1-1)	30	1(1-1)	4
<i>Eremophila debilis</i>	1(1-2)	30	1(1-1)	1
<i>Eucalyptus crebra</i>	3(1-3)	30	2(1-3)	3
<i>Eucalyptus moluccana</i>	3(2-3)	77	3(1-3)	2
<i>Eucalyptus tereticornis</i>	3(2-3)	66	2(1-3)	7
<i>Euchiton sphaericus</i>	1(1-1)	50	1(1-1)	3
<i>Fimbristylis dichotoma</i>	1(1-1)	18	1(1-1)	1
<i>Galium propinquum</i>	1(1-1)	34	1(1-1)	7

<i>Geranium homeanum</i>	1(1-2)	20	1(1-1)	3
<i>Glycine microphylla</i>	1(1-2)	34	1(1-1)	5
<i>Glycine tabacina</i>	1(1-2)	55	1(1-1)	7
<i>Hypericum gramineum</i>	1(1-1)	41	1(1-1)	16
<i>Hypoxis hygrometrica</i>	1(1-1)	23	1(1-1)	1
<i>Microlaena stipoides</i>	2(1-3)	75	1(1-2)	36
<i>Oplismenus aemulus</i>	2(1-3)	18	1(1-2)	5
<i>Oxalis perennans</i>	1(1-2)	59	1(1-1)	13
<i>Paspalidium distans</i>	1(1-1)	20	1(1-2)	3
<i>Phyllanthus virgatus</i>	1(1-1)	18	1(1-1)	1
<i>Plantago debilis</i>	1(1-2)	20	1(1-1)	7
<i>Plectranthus parviflorus</i>	1(1-2)	30	1(1-1)	8
<i>Poa labillardierei</i> var. <i>labillardierei</i>	2(1-3)	45	1(1-2)	12
<i>Rubus parvifolius</i>	1(1-1)	25	1(1-1)	9
<i>Rumex brownii</i>	1(1-1)	18	1(1-1)	5
<i>Scleria mackaviensis</i>	1(1-3)	30	1(1-2)	<1
<i>Scutellaria humilis</i>	1(1-1)	18	1(1-1)	1
<i>Senecio hispidulus</i> var. <i>hispidulus</i>	1(1-1)	18	1(1-1)	3
<i>Sida corrugata</i>	1(1-1)	45	1(1-2)	<1
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	23	1(1-1)	7
<i>Solanum prinophyllum</i>	1(1-1)	32	1(1-1)	6
<i>Solanum pungetium</i>	1(1-1)	18	1(1-1)	6
<i>Sporobolus creber</i>	1(1-1)	52	1(1-1)	1
<i>Sporobolus elongatus</i>	1(1-1)	23	1(1-1)	1
<i>Themeda australis</i>	2(1-3)	70	1(1-3)	17
<i>Tricoryne elatior</i>	1(1-1)	20	1(1-1)	3
<i>Veronica plebeia</i>	1(1-1)	27	1(1-1)	10
<i>Wahlenbergia gracilis</i>	1(1-1)	48	1(1-1)	11

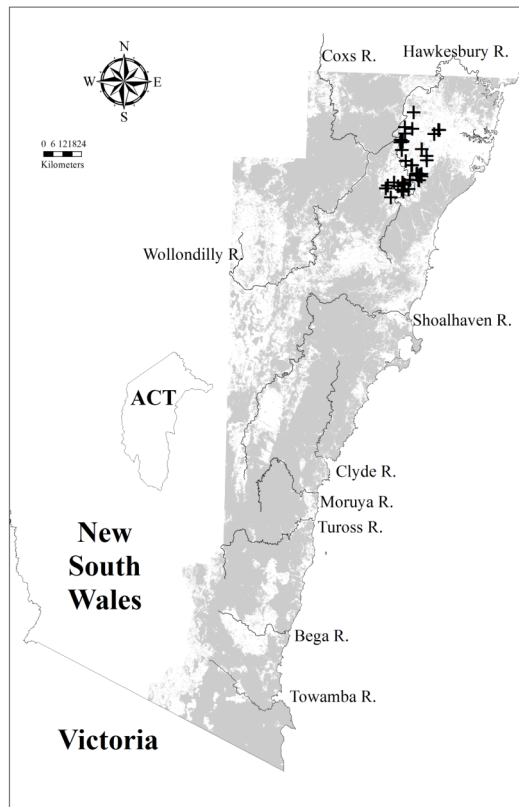
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Glycine clandestina</i>	1(1-2)	41	1(1-1)	26

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	2(2-2)	2	1(1-2)	9
<i>Corymbia maculata</i>	4(4-4)	2	2(1-3)	3
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	3(3-3)	2	2(1-3)	1
<i>Eucalyptus eugenioides</i>	1(1-2)	7	2(1-3)	4
<i>Eucalyptus fibrosa</i>	1(1-1)	5	2(1-3)	3





Locations of survey sites allocated to GW p28. Grey shading indicates extant native vegetation cover within the study area.

### GW p29: Cumberland Shale Plains Woodland



Plate p29. Cumberland Shale Plains Woodland (Map Unit p29) with a canopy of *Eucalyptus tereticornis*, an understorey of *Acacia parramattensis* and *Bursaria spinosa* and a dense grassy groundcover including *Microlaena stipoides* var. *stipoides*, *Themeda australis* and *Aristida ramosa*.

Sample Sites: 150

Area Extant (ha): 6800

Estimated % remaining: 5-25%

Area in conservation reserves (ha): 560

Estimated % of pre-clearing area in conservation reserves: <2%

No. taxa (total / unique): 364 / 3

No. taxa per plot ( $\pm$ sd): 39.3 (10.1)

Class: Coastal Valley Grassy Woodlands

Related TECs: included within Cumberland Plain Woodland EEC (TSC) and Cumberland Plain Woodlands EEC (EPBC).

Cumberland Shale Plains Woodland (GW p29) is equivalent to GW 29 described by Tindall *et al.* (2004), and is a eucalypt woodland with an open shrub layer and grassy groundcover. It occurs on clay-loam soils derived from Wianamatta shale and is restricted to the Cumberland Plain, western Sydney. Cumberland Shale Plains Woodland is primarily found below 150m ASL but may occur on flat terrain up to 300m ASL. It lies in a coastal rainshadow receiving 750 – 950 mm mean annual rainfall. Cumberland Shale Plains Woodland grades into Cumberland Shale Hills Woodland (GW p28) as elevation and topographic roughness increase in the southern half of the Cumberland Plain. Towards the margins of the plain Cumberland Shale Plains Woodland grades into Cumberland Shale Sandstone Transition Forest as the depth of the underlying sandstone strata decreases. Cumberland Shale Plains Woodland shares some species with Castlereagh Shale-Gravel Transition Forest (DSF p502), which occurs on shale soils with a high concentration of iron-indurated gravel or overlain by Tertiary alluvium. Cumberland Shale Plains Woodland, also described by Tozer (2003), was extensively cleared for the rural and urban development of western Sydney. The remaining stands are small fragments threatened by continued clearing, degradation, weed invasion and high fire frequency. A few occurrences are represented within conservation reserves, such as Scheyville National Park.

#### Floristic Summary:

**Trees:** *Eucalyptus moluccana*, *E. tereticornis*. **Shrubs:** *Bursaria spinosa*. **Climbers:** *Glycine tabacina*, *G. clandestina*.

**Groundcover:** *Dichondra repens*, *Cheilanthes sieberi*, *Aristida vagans*, *Microlaena stipoides*, *Themeda australis*, *Brunoniella australis*, *Desmodium gunnii*, *Opercularia diphylla*, *Wahlenbergia gracilis*, *Dichelachne micrantha*, *Paspalidium distans*, *Eragrostis leptostachya*, *Lomandra filiformis*, *L. multiflora*, *Dianella longifolia*, *Oxalis perennans*, *Euchiton sphaericus*, *Goodenia hederacea*, *Aristida ramosa*, *Arthropodium milleflorum*, *Austrodanthonia tenuior*, *Cymbopogon refractus*, *Echinopogon caespitosus*.

#### Vegetation structure:

Stratum	Frequency (n=136)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	2	24.7 (5)	3.7 (1.2)
Tree canopy	100	20.9 (5)	18.7 (9.9)
Small tree	75	9.4 (3.9)	18.2 (15.2)
Shrub	65	2.5 (0.6)	14.4 (12.2)
Ground cover	99	0.9 (0.2)	47.3 (22.4)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 26 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 31 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 26 positive diagnostic species.

#### Positive Diagnostic Species:

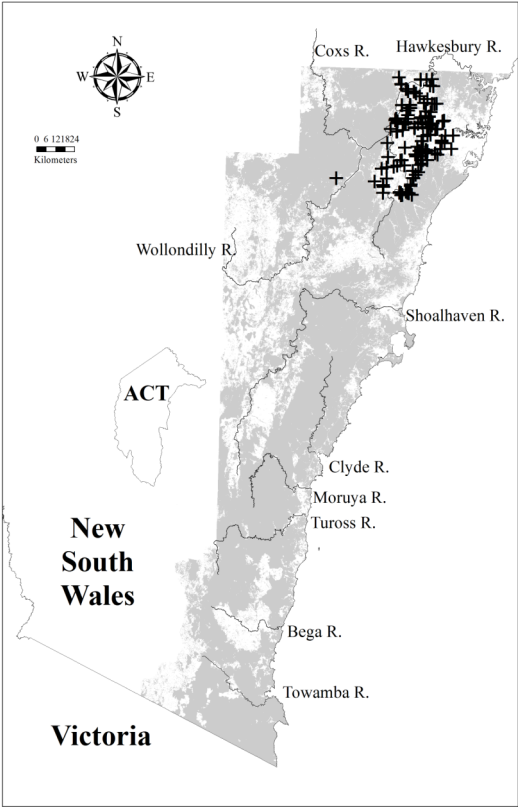
Species	C/A	Freq	C/A O	Freq O
<i>Acacia decurrens</i>	1(1-2)	25	1(1-1)	2
<i>Acacia falcata</i>	1(1-1)	13	1(1-1)	1
<i>Acacia implexa</i>	1(1-2)	15	1(1-1)	6
<i>Acacia parramattensis</i>	1(1-2)	22	1(1-2)	4
<i>Ajuga australis</i>	1(1-1)	15	1(1-1)	3
<i>Amyema gaudichaudii</i>	1(1-2)	3	1(1-1)	<1
<i>Amyema miquelii</i>	1(1-1)	2	1(1-1)	<1
<i>Angophora subvelutina</i>	3(2-3)	5	2(1-3)	<1
<i>Aristida ramosa</i>	1(1-2)	51	1(1-2)	4
<i>Aristida vagans</i>	2(1-2)	80	1(1-1)	7
<i>Arthropodium milleflorum</i>	1(1-2)	33	1(1-1)	5
<i>Arthropodium minus</i>	1(1-1)	5	1(1-1)	1
<i>Asperula conferta</i>	1(1-1)	26	1(1-1)	3
<i>Astroloma humifusum</i>	1(1-1)	12	1(1-1)	4

<i>Austrodanthonia fulva</i>	2(1-2)	7	1(1-2)	2
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	1(1-2)	26	1(1-2)	5
<i>Austrodanthonia tenuior</i>	1(1-2)	32	1(1-1)	2
<i>Bossiaea prostrata</i>	1(1-1)	15	1(1-1)	2
<i>Bothriochloa decipiens</i>	1(1-2)	7	1(1-2)	<1
<i>Bothriochloa macra</i>	1(1-1)	12	1(1-2)	1
<i>Breynia oblongifolia</i>	1(1-1)	21	1(1-1)	12
<i>Brunoniella australis</i>	2(1-2)	81	1(1-2)	2
<i>Bursaria spinosa</i>	3(2-3)	93	1(1-2)	13
<i>Caesia parviflora</i>	1(1-2)	19	1(1-1)	2
<i>Calotis cuneifolia</i>	1(1-2)	5	1(1-2)	<1
<i>Calotis dentex</i>	2(1-3)	7	1(1-2)	1
<i>Carex inversa</i>	1(1-1)	20	1(1-1)	3
<i>Centella asiatica</i>	1(1-2)	21	1(1-1)	4
<i>Centaurium spicatum</i>	1(1-1)	4	1(1-1)	<1
<i>Cheilanthes distans</i>	1(1-1)	7	1(1-1)	2
<i>Cheilanthes sieberi</i>	2(1-2)	87	1(1-1)	13
<i>Chloris truncata</i>	1(1-2)	5	1(1-1)	<1
<i>Chloris ventricosa</i>	1(1-2)	17	1(1-2)	1
<i>Chorizema parviflorum</i>	1(1-1)	5	1(1-1)	<1
<i>Commelina cyanea</i>	1(1-1)	21	1(1-1)	4
<i>Cymbopogon refractus</i>	1(1-2)	41	1(1-1)	4
<i>Cynodon dactylon</i>	1(1-2)	10	1(1-2)	1
<i>Cyperus enervis</i>	1(1-2)	2	1(1-1)	<1
<i>Cyperus gracilis</i>	1(1-1)	15	1(1-2)	2
<i>Cyperus laevis</i>	1(1-1)	4	1(1-1)	1
<i>Daviesia ulicifolia</i>	1(1-2)	24	1(1-1)	6
<i>Desmodium brachypodium</i>	1(1-1)	18	1(1-1)	2
<i>Desmodium rhytidophyllum</i>	1(1-1)	9	1(1-1)	1
<i>Desmodium varians</i>	1(1-2)	79	1(1-1)	20
<i>Dianella longifolia</i>	1(1-1)	51	1(1-1)	4
<i>Dichelachne micrantha</i>	1(1-2)	65	1(1-1)	8
<i>Dichopogon fimbriatus</i>	1(1-2)	3	1(1-1)	<1
<i>Dichondra</i> spp.	2(2-2)	93	1(1-2)	24
<i>Dichelachne parva</i>	1(1-1)	12	1(1-1)	1
<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>	1(1-1)	3	1(1-1)	<1
<i>Dichopogon strictus</i>	1(1-1)	5	1(1-1)	<1
<i>Digitaria diffusa</i>	1(1-1)	5	1(1-1)	<1
<i>Digitaria parviflora</i>	1(1-1)	12	1(1-1)	2
<i>Digitaria ramularis</i>	1(1-1)	9	1(1-1)	1
<i>Dillwynia sieberi</i>	1(1-2)	23	1(1-1)	1
<i>Dodonaea viscosa</i> subsp. <i>cuneata</i>	1(1-1)	11	1(1-2)	<1
<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	1(1-2)	38	1(1-1)	6
<i>Echinopogon ovatus</i>	1(1-2)	38	1(1-1)	13
<i>Einadia hastata</i>	1(1-1)	27	1(1-1)	3
<i>Einadia nutans</i>	1(1-1)	9	1(1-1)	3

<i>Einadia polygonoides</i>	1(1-2)	4	1(1-2)	<1
<i>Einadia trigonos</i>	1(1-1)	12	1(1-1)	1
<i>Entolasia marginata</i>	1(1-1)	28	1(1-1)	11
<i>Eragrostis brownii</i>	1(1-2)	25	1(1-1)	3
<i>Eragrostis leptostachya</i>	1(1-1)	61	1(1-1)	3
<i>Eragrostis parviflora</i>	1(1-1)	2	1(1-1)	<1
<i>Eremophila debilis</i>	1(1-1)	27	1(1-1)	<1
<i>Eriochloa pseudoacrotricha</i>	1(1-1)	5	1(1-1)	<1
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	3(1-3)	4	2(1-3)	1
<i>Eucalyptus crebra</i>	3(1-3)	32	2(1-3)	3
<i>Eucalyptus eugenioides</i>	1(1-3)	25	2(1-3)	4
<i>Eucalyptus fibrosa</i>	2(1-3)	14	2(1-3)	3
<i>Eucalyptus moluccana</i>	3(1-3)	61	3(1-3)	1
<i>Eucalyptus tereticornis</i>	3(1-3)	71	2(1-3)	6
<i>Euchiton sphaericus</i>	1(1-1)	37	1(1-1)	3
<i>Exocarpos cupressiformis</i>	1(1-1)	20	1(1-1)	5
<i>Fimbristylis dichotoma</i>	1(1-1)	20	1(1-1)	<1
<i>Glossogyne tannensis</i>	1(1-1)	6	1(1-2)	<1
<i>Glycine clandestina</i>	1(1-2)	48	1(1-1)	26
<i>Glycine microphylla</i>	1(1-2)	37	1(1-1)	4
<i>Glycine tabacina</i>	1(1-2)	63	1(1-1)	6
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-1)	41	1(1-2)	14
<i>Grevillea juniperina</i>	1(1-2)	3	2(1-2)	<1
<i>Hardenbergia violacea</i>	1(1-2)	37	1(1-1)	17
<i>Hibbertia diffusa</i>	1(1-2)	19	1(1-1)	3
<i>Hypericum gramineum</i>	1(1-1)	31	1(1-1)	16
<i>Hypoxis hygrometrica</i>	1(1-1)	28	1(1-1)	1
<i>Hypoxis pratensis</i> var. <i>pratensis</i>	1(1-1)	4	1(1-1)	<1
<i>Indigofera australis</i>	1(1-1)	17	1(1-1)	9
<i>Juncus usitatus</i>	1(1-1)	21	1(1-1)	2
<i>Lachnagrostis aemula</i>	1(1-2)	2	1(1-1)	<1
<i>Lachnagrostis filiformis</i>	1(1-1)	18	1(1-1)	3
<i>Lagenifera gracilis</i>	1(1-1)	13	1(1-1)	3
<i>Laxmannia gracilis</i>	1(1-1)	19	1(1-1)	3
<i>Leucopogon juniperinus</i>	1(1-2)	18	1(1-1)	5
<i>Linum marginale</i>	2(1-2)	3	1(1-1)	<1
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	2(1-2)	43	1(1-1)	10
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	47	1(1-1)	24
<i>Maytenus silvestris</i>	1(1-2)	3	1(1-1)	1
<i>Melaleuca decora</i>	1(1-3)	15	3(1-3)	1
<i>Melaleuca styphelioides</i>	1(1-3)	5	2(1-3)	2
<i>Mentha diemenica</i>	1(1-2)	6	1(1-1)	1
<i>Microlaena stipoides</i>	3(2-3)	93	1(1-2)	35
<i>Murdannia graminea</i>	1(1-1)	3	1(1-1)	<1
<i>Opercularia diphylla</i>	1(1-2)	67	1(1-1)	6
<i>Oplismenus aemulus</i>	1(1-2)	21	1(1-2)	5

<i>Oxalis exilis</i>	1(1-1)	12	1(1-1)	3
<i>Oxalis perennans</i>	1(1-2)	52	1(1-1)	12
<i>Ozothamnus diosmifolius</i>	1(1-1)	33	1(1-1)	8
<i>Panicum effusum</i>	1(1-1)	17	1(1-1)	2
<i>Panicum simile</i>	1(1-1)	28	1(1-1)	6
<i>Paspalidium distans</i>	2(1-2)	67	1(1-2)	2
<i>Paspalidium albobillosum</i>	2(1-3)	2	2(1-3)	<1
<i>Paspalidium aversum</i>	1(1-1)	2	1(1-1)	<1
<i>Phyllanthus virgatus</i>	1(1-1)	26	1(1-1)	<1
<i>Pimelea curviflora</i> var. <i>subglabrata</i>	1(1-3)	3	2(1-3)	<1
<i>Pimelea spicata</i>	2(1-3)	2	1(1-1)	<1
<i>Plantago debilis</i>	1(1-2)	19	1(1-1)	7
<i>Plantago gaudichaudii</i>	1(1-2)	5	1(1-2)	1
<i>Polymeria calycina</i>	1(1-1)	10	1(1-1)	1
<i>Polygala japonica</i>	1(1-1)	5	1(1-1)	<1
<i>Poranthera microphylla</i>	1(1-1)	36	1(1-1)	15
<i>Pratia purpurascens</i>	1(1-2)	47	1(1-1)	17
<i>Pultenaea microphylla</i>	1(1-2)	7	1(1-1)	1
<i>Scaevola albida</i> var. <i>albida</i>	1(1-2)	3	1(1-2)	<1
<i>Scleria mackaviensis</i>	1(1-1)	4	1(1-2)	<1
<i>Scutellaria humilis</i>	1(1-2)	4	1(1-1)	1
<i>Senecio hispidulus</i> var. <i>dissectus</i>	1(1-1)	2	1(1-1)	<1
<i>Solanum prinophyllum</i>	1(1-1)	43	1(1-1)	6
<i>Solenogyne bellioides</i>	1(1-1)	3	1(1-1)	<1
<i>Sorghum leiocladum</i>	1(1-2)	4	1(1-1)	<1
<i>Sporobolus creber</i>	1(1-1)	15	1(1-1)	1
<i>Sporobolus elongatus</i>	1(1-1)	16	1(1-1)	<1
<i>Stackhousia muricata</i>	1(1-2)	3	1(1-1)	<1
<i>Stackhousia viminea</i>	1(1-1)	41	1(1-1)	2
<i>Themeda australis</i>	3(2-3)	85	1(1-2)	16
<i>Tricoryne elatior</i>	1(1-1)	40	1(1-1)	2
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-2)	35	1(1-1)	4
<i>Veronica plebeia</i>	1(1-1)	40	1(1-1)	10
<i>Vittadinia cuneata</i> var. <i>cuneata</i>	1(1-1)	5	1(1-1)	1
<i>Vittadinia pustulata</i>	1(1-2)	3	1(1-1)	<1
<i>Wahlenbergia communis</i>	1(1-1)	7	1(1-1)	2
<i>Wahlenbergia gracilis</i>	1(1-1)	59	1(1-1)	10
<i>Wurmbea dioica</i> subsp. <i>dioica</i>	1(1-1)	8	1(1-1)	<1
<i>Zornia dyctiocarpa</i> var. <i>dyctiocarpa</i>	1(1-1)	6	1(1-1)	<1
Other tree species occurring less frequently in this community:				
Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	3(1-3)	1	1(1-2)	2
<i>Angophora floribunda</i>	1(1-2)	11	1(1-2)	9
<i>Corymbia maculata</i>	3(2-4)	5	2(1-3)	3
<i>Eucalyptus acmenoides</i>	4(4-4)	1	2(1-2)	<1

<i>Eucalyptus baueriana</i>	3(1-3)	1	2(1-2)	1
<i>Eucalyptus bosistoana</i>	3(3-3)	1	1(1-2)	3
<i>Eucalyptus longifolia</i>	1(1-3)	2	1(1-2)	2
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	3(1-3)	1	1(1-2)	3
<i>Eucalyptus punctata</i>	2(1-3)	5	1(1-3)	9
<i>Eucalyptus resinifera</i> subsp. <i>resinifera</i>	3(3-3)	1	1(1-2)	1



Locations of survey sites allocated to GW p29. Grey shading indicates extant native vegetation cover within the study area.

**FoW p30: South Coast River Flat Forest**

Plate p30. South Coast River Flat Forest (Map Unit p30) at Cullendulla Creek Nature Reserve, north Batemans Bay, with a canopy dominated by *Eucalyptus tereticornis* and scattered *Banksia integrifolia* and a dense groundcover dominated by *Lomandra longifolia*, *Carex longibrachiata* and *Oplismenus imbecillis*.

Sample Sites: 39

Area Extant (ha): 8400

Estimated % remaining: 50-65%

Area in conservation reserves (ha): 1600

Estimated % of pre-clearing area in conservation reserves: <15%

No. taxa (total / unique): 324 / 2

No. taxa per plot ( $\pm$ sd): 42.7 (16.1)

Class: transitional between Coastal Floodplain Wetland and Eastern Riverine Forest.

Related TEC: includes areas of River Flat Eucalypt Forest on Coastal Floodplains EEC (TSC).

South Coast River Flat Forest (FoW p30) represents a revision and extension of FoW 30 identified by Tindall *et al.* (2004), based on classification of a larger sample pool over a wider study area. The revised FoW p30 includes additional sites classified by Beukers (undated) as Riparian Eucalypt Forest and as Coastal Alluvial Flats Forest.

South Coast River Flat Forest is an open eucalypt forest with an open understorey of small trees, scattered shrubs and dense groundcover of grasses and forbs. It occurs from Wandandian south to the Bega River on sandy alluvial flats, on floodplain margins and in riverine corridors, most extensively below 100m ASL but also found up to 300m ASL. Annual average rainfall across the distribution typically ranges from 900 – 1200mm, and, less frequently, as low as 800mm. Examples occur on Calymea, Tomerong, Croobyar, Cullendulla, Billa Bilba, Dignams and Wapengo Creeks, along the Clyde, Deua/Moruya, Tomaga, Tuross and Murrah River systems, and on the margins of Longvale Swamp, Brunderee, Mummuga and Tilba Tilba Lakes and Nelson Lagoon. On floodplains and coastal flats with increasing soil moisture this unit may be replaced by South Coast Swamp Woodland (GW p3) or Southeast Floodplain Wetlands (FrW e60), or in slightly saline areas by Floodplain Swamp Forest (FoW p105). In riparian areas with coarser, more gravelly alluvium, often at higher elevations and subject to higher velocity flows, this unit tends to be replaced by Riverbank Forest (FoW p32).

South Coast River Flat Forest has been targeted by localised clearing for livestock grazing. Its riparian habitat is exposed to weed invasion where upstream pastures provide a source of propagules.

**Floristic Summary:**

**Trees:** *Eucalyptus elata*, *Angophora floribunda*. **Shrubs:** *Rubus parvifolius*, *Breynia oblongifolia*, *Hymenanthera dentata*, *Acacia mearnsii*. **Climbers:** *Glycine clandestina*, *Stephania japonica*. **Groundcover:** *Microlaena stipoides*, *Dichondra* spp., *Lomandra longifolia*, *Carex longibrachiata*, *Pteridium esculentum*, *Adiantum aethiopicum*, *Oplismenus aemulus*, *Pratia purpurascens*, *Echinopogon ovatus*, *Entolasia marginata*, *Stellaria flaccida*, *Desmodium varians*, *Hydrocotyle laxiflora*.



**Vegetation structure:**

Stratum	Frequency (n=25)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	88	26.7 (7)	22.7 (11.2)
Small tree	80	11.2 (3.5)	22.7 (18.7)
Shrub	20	2.8 (0.4)	7 (4.5)
Ground cover	100	1.2 (0.4)	73.1 (27.1)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 16 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 30 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 16 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia irrorata</i> subsp. <i>irrorata</i>	1(1-2)	26	1(1-1)	2
<i>Acacia mearnsii</i>	1(1-2)	41	1(1-2)	7
<i>Adiantum aethiopicum</i>	1(1-1)	62	1(1-2)	9
<i>Angophora floribunda</i>	1(1-2)	28	1(1-2)	9
<i>Babingtonia pluriflora</i>	1(1-2)	23	1(1-1)	1
<i>Breynia oblongifolia</i>	1(1-1)	54	1(1-1)	12
<i>Carex appressa</i>	1(1-1)	21	1(1-1)	4
<i>Carex longibrachiata</i>	1(1-2)	79	1(1-2)	3
<i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i>	2(1-3)	21	3(1-3)	1
<i>Centella asiatica</i>	1(1-1)	36	1(1-1)	4
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	31	1(1-1)	10
<i>Cyathea australis</i>	1(1-1)	26	1(1-2)	8
<i>Desmodium varians</i>	1(1-1)	59	1(1-1)	21
<i>Dichondra</i> spp.	1(1-1)	85	1(1-2)	25
<i>Echinopogon ovatus</i>	1(1-1)	56	1(1-1)	14
<i>Entolasia marginata</i>	1(1-1)	59	1(1-1)	11
<i>Eucalyptus elata</i>	2(1-2)	28	2(1-3)	5
<i>Eucalyptus tereticornis</i>	2(1-3)	23	2(1-3)	7
<i>Eustrephus latifolius</i>	1(1-1)	46	1(1-1)	19
<i>Gahnia melanocarpa</i>	1(1-1)	38	1(1-1)	5
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-1)	33	1(1-1)	8
<i>Glycine clandestina</i>	1(1-1)	82	1(1-1)	26
<i>Hibbertia scandens</i>	1(1-1)	26	1(1-1)	5
<i>Hydrocotyle laxiflora</i>	1(1-1)	51	1(1-1)	15
<i>Hymenanthera dentata</i>	1(1-1)	44	1(1-1)	6
<i>Hypolepis glandulifera</i>	1(1-2)	21	1(1-1)	1
<i>Hypolepis muelleri</i>	1(1-2)	31	1(1-2)	1
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-1)	44	1(1-2)	10
<i>Juncus usitatus</i>	1(1-1)	21	1(1-1)	2
<i>Lomandra longifolia</i>	1(1-2)	79	1(1-1)	44
<i>Microlaena stipoides</i>	2(1-2)	87	1(1-2)	36
<i>Morinda jasminoides</i>	1(1-1)	36	1(1-2)	9
<i>Oplismenus aemulus</i>	1(1-2)	51	1(1-2)	5

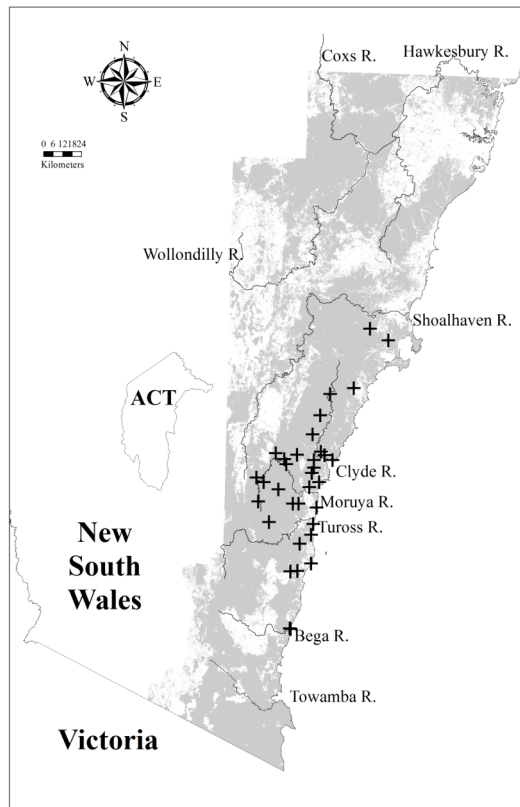
<i>Oplismenus imbecillis</i>	1(1-2)	59	1(1-2)	14
<i>Parsonsia straminea</i>	1(1-1)	33	1(1-1)	7
<i>Pellaea falcata</i>	1(1-1)	44	1(1-2)	10
<i>Pittosporum revolutum</i>	1(1-1)	26	1(1-1)	8
<i>Plectranthus parviflorus</i>	1(1-1)	23	1(1-1)	8
<i>Pratia purpurascens</i>	1(1-1)	72	1(1-1)	17
<i>Prostanthera lasianthos</i>	1(1-1)	21	1(1-1)	2
<i>Pseuderanthemum variabile</i>	1(1-1)	41	1(1-2)	9
<i>Pteridium esculentum</i>	2(1-2)	74	1(1-2)	37
<i>Rapanea howittiana</i>	1(1-1)	44	1(1-1)	5
<i>Rubus parvifolius</i>	1(1-1)	62	1(1-1)	9
<i>Schelhammera undulata</i>	1(1-1)	23	1(1-1)	7
<i>Senecio linearifolius</i>	1(1-1)	26	1(1-1)	8
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	26	1(1-1)	7
<i>Solanum pungetium</i>	1(1-1)	41	1(1-1)	5
<i>Stellaria flaccida</i>	1(1-1)	54	1(1-1)	10
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	46	1(1-1)	7
<i>Tylophora barbata</i>	1(1-1)	38	1(1-1)	17
<i>Veronica plebeia</i>	1(1-1)	28	1(1-1)	10
<i>Viola hederacea</i>	1(1-2)	44	1(1-1)	22

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Entolasia stricta</i>	2(1-2)	46	1(1-2)	34
<i>Geitonoplesium cymosum</i>	1(1-1)	31	1(1-1)	16

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia maculata</i>	1(1-2)	13	2(1-3)	3
<i>Eucalyptus angophoroides</i>	2(1-2)	5	1(1-2)	1
<i>Eucalyptus baueriana</i>	2(2-2)	3	2(1-2)	1
<i>Eucalyptus bosistoana</i>	1(1-1)	3	1(1-2)	3
<i>Eucalyptus botryoides</i>	3(1-3)	10	2(1-3)	3
<i>Eucalyptus cypellocarpa</i>	1(1-1)	8	2(1-2)	10
<i>Eucalyptus globoidea</i>	1(1-2)	10	2(1-2)	12
<i>Eucalyptus longifolia</i>	2(1-2)	8	1(1-2)	2
<i>Eucalyptus muelleriana</i>	1(1-1)	3	2(1-2)	6
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-2)	10	1(1-2)	3
<i>Eucalyptus piperita</i>	2(2-2)	5	2(1-3)	9
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	3	2(1-3)	6
<i>Eucalyptus robusta</i>	2(2-2)	3	3(1-3)	<1
<i>Eucalyptus saligna</i> X <i>botryoides</i>	2(2-4)	13	2(1-3)	2
<i>Eucalyptus scias</i> subsp. <i>callimastha</i>	2(2-2)	3	1(1-2)	1
<i>Eucalyptus smithii</i>	3(3-3)	3	1(1-2)	2
<i>Eucalyptus viminalis</i>	2(2-2)	5	2(1-3)	5
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-1)	3	2(1-3)	8



Locations of survey sites allocated to FoW p30. Grey shading indicates extant native vegetation cover within the study area.

### FoW p31: Burragorang River Flat Forest



Plate p31. Burragorang River Flat Forest (Map Unit p31) on Orange tree Flat on Little River at Nattai. *Eucalyptus deanei* and *E. tereticornis* grow above a sub canopy of *Acacia maidenii*, *Lomatia myricoides* and *Cassinia cunninghamii*, and a diverse groundcover dominated by *Lomandra longifolia* and *Pteridium esculentum*.

Sample Sites: 16

Area Extant (ha): 1900

Estimated % remaining: >95%

Area in conservation reserves (ha): 1800

Estimated % of pre-clearing area in conservation reserves: >90%

No. taxa (total / unique): 239 / 0

No. taxa per plot ( $\pm$ sd): 42.6 (10.1)

Class: Eastern Riverine Forests

Related TEC: includes areas of River Flat Eucalypt Forest on Coastal Floodplains EEC (TSC); may include Sun Valley Cabbage Gum Forest EEC (TSC).

Burraborang River Flat Forest (FoW p31) is equivalent to FoW 31 identified by Tindall *et al.* (2004). This unit is a tall eucalypt forest with an open shrub layer and dense groundcover of grasses and forbs, occurring on sheltered valley flats along major streams emptying into Lake Burraborang, including the Wollondilly, Nattai and Kedumba rivers. This unit occupies sandy alluvium derived from surrounding Permian Shoalhaven Group sediments and Triassic Narrabeen and Hawkesbury sandstones, on sites between 100m and 200m ASL where mean annual rainfall is 800-950mm. Low-elevation stands were drowned during the flooding of Lake Burraborang, but the remaining unflooded area is largely intact.

#### Floristic Summary:

**Trees:** *Eucalyptus deanei*, *E. eugenioides*. **Shrubs:** *Rubus parvifolius*, *Leptospermum polygalifolium*, *Acacia* spp., *Breynia oblongifolia*. **Climbers:** *Glycine clandestina*, *Clematis aristata*. **Groundcover:** *Lomandra longifolia*, *Pratia purpurascens*, *Pteridium esculentum*, *Adiantum aethiopicum*, *Gahnia aspera*, *Imperata cylindrica*, *Cheilanthes sieberi*, *Dichondra* spp., *Veronica plebeia*, *Entolasia marginata*, *Oplismenus aemulus*, *Poranthera microphylla*.

#### Vegetation structure:

Stratum	Frequency (n=14)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	7	22 (-)	5 (-)
Tree canopy	100	31.1 (7.9)	33.9 (12.1)
Small tree	93	11.5 (4.3)	26.5 (16.6)
Shrub	36	2.5 (0.9)	24 (12.4)
Ground cover	100	0.9 (0.2)	75.4 (14.7)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 12 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 35 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 12 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia filicifolia</i>	3(3-3)	44	1(1-2)	<1
<i>Acacia parramattensis</i>	1(1-3)	44	1(1-2)	4
<i>Adiantum aethiopicum</i>	1(1-2)	75	1(1-1)	9
<i>Breynia oblongifolia</i>	1(1-1)	44	1(1-1)	12
<i>Calochlaena dubia</i>	1(1-3)	38	1(1-3)	9
<i>Carex breviculmis</i>	1(1-1)	44	1(1-1)	4
<i>Carex longibrachiata</i>	3(3-4)	25	1(1-2)	4
<i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i>	3(1-3)	38	3(1-3)	1
<i>Centella asiatica</i>	1(1-3)	31	1(1-1)	4
<i>Cheilanthes sieberi</i>	1(1-1)	63	1(1-1)	14
<i>Dichondra</i> spp.	2(1-3)	63	1(1-2)	25
<i>Entolasia marginata</i>	2(1-3)	56	1(1-1)	11
<i>Eucalyptus benthamii</i>	3(3-3)	38	2(1-3)	<1
<i>Eucalyptus deanei</i>	3(1-4)	50	3(1-3)	1
<i>Eucalyptus eugenioides</i>	3(1-3)	50	2(1-3)	4
<i>Eucalyptus tereticornis</i>	3(3-4)	31	2(1-3)	7
<i>Gahnia aspera</i>	1(1-3)	69	1(1-1)	4
<i>Gahnia melanocarpa</i>	1(1-3)	31	1(1-1)	5
<i>Galium propinquum</i>	1(1-2)	31	1(1-1)	7
<i>Glycine clandestina</i>	1(1-1)	75	1(1-1)	26

<i>Hydrocotyle peduncularis</i>	1(1-3)	44	1(1-1)	9
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-3)	69	1(1-2)	10
<i>Leptospermum polygalifolium</i>	2(1-3)	50	1(1-2)	8
<i>Lomandra longifolia</i>	2(1-3)	100	1(1-1)	44
<i>Melaleuca linariifolia</i>	1(1-3)	38	1(1-2)	1
<i>Melaleuca styphelioides</i>	3(3-3)	38	2(1-3)	2
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-1)	31	1(1-1)	8
<i>Oplismenus aemulus</i>	3(1-3)	50	1(1-2)	5
<i>Oxalis exilis</i>	1(1-1)	44	1(1-1)	3
<i>Poranthera microphylla</i>	1(1-2)	50	1(1-1)	15
<i>Pratia purpurascens</i>	1(1-2)	88	1(1-1)	17
<i>Pteridium esculentum</i>	3(1-3)	81	1(1-2)	37
<i>Rubus parvifolius</i>	1(1-1)	75	1(1-1)	9
<i>Veronica plebeia</i>	1(1-1)	63	1(1-1)	10

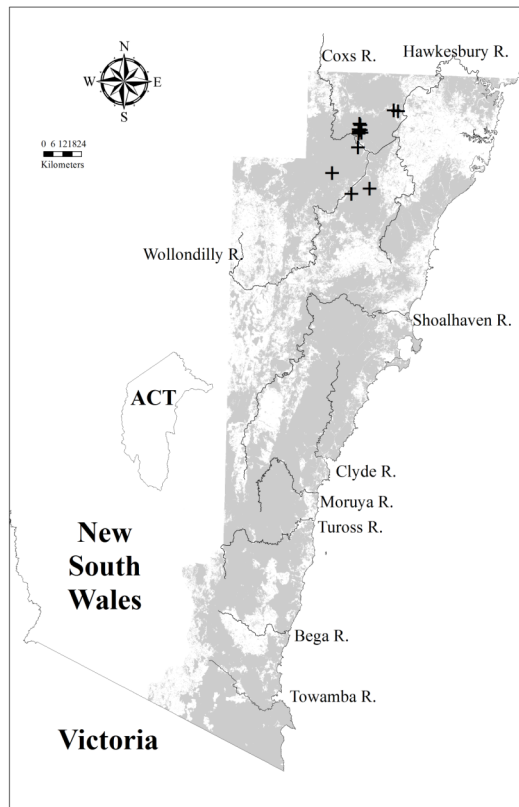
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-3)	31	1(1-2)	9
<i>Billardiera scandens</i>	1(1-1)	50	1(1-1)	28
<i>Clematis aristata</i>	1(1-1)	50	1(1-1)	20
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-3)	31	1(1-1)	10
<i>Dianella caerulea</i>	1(1-1)	38	1(1-1)	28
<i>Echinopogon ovatus</i>	1(1-1)	31	1(1-1)	14
<i>Entolasia stricta</i>	1(1-2)	56	1(1-2)	34
<i>Geitonoplesium cymosum</i>	1(1-1)	31	1(1-1)	16
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	31	1(1-1)	10
<i>Hydrocotyle laxiflora</i>	1(1-3)	38	1(1-1)	16
<i>Lepidosperma laterale</i>	1(1-3)	50	1(1-1)	29
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	44	1(1-1)	25
<i>Microlaena stipoides</i>	4(3-5)	31	1(1-2)	36
<i>Persoonia linearis</i>	1(1-1)	50	1(1-1)	29
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-2)	31	1(1-1)	13
<i>Tylophora barbata</i>	1(1-3)	31	1(1-1)	17

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	3(1-3)	13	1(1-2)	2
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	4(4-4)	6	2(1-3)	1
<i>Eucalyptus crebra</i>	3(1-3)	13	2(1-3)	3
<i>Eucalyptus cypellocarpa</i>	3(3-3)	6	2(1-2)	10
<i>Eucalyptus elata</i>	4(4-4)	6	2(1-3)	5
<i>Eucalyptus fibrosa</i>	1(1-1)	19	2(1-3)	3
<i>Eucalyptus piperita</i>	3(3-3)	6	2(1-3)	9
<i>Eucalyptus punctata</i>	1(1-1)	13	2(1-3)	9
<i>Eucalyptus sclerophylla</i>	1(1-1)	6	2(1-3)	4





Locations of survey sites allocated to FoW p31. Grey shading indicates extant native vegetation cover within the study area.

### FoW p32: Riverbank Forest



Plate p32. Riverbank Forest (Map Unit p32) on gravelly alluvium along the Abercrombie River, in Abercrombie National Park. The canopy and understorey are dominated by *Casuarina cunninghamiana* while the patchy groundcover includes a variety of aquatic and semi-aquatic plants.

Sample Sites: 44

Area Extant (ha): 9400

Estimated % remaining: 60-85%

Area in conservation reserves (ha): 3900

Estimated % of pre-clearing area in conservation reserves: 25-45%

No. taxa (total / unique): 331 / 0

No. taxa per plot ( $\pm$ sd): 28.6 (12.6)

Class: Eastern Riverine Forests  
Related TEC: n/a

Riverbank Forest (FoW p32) represents a revision and extension of FoW 32 identified by Tindall *et al.* (2004), based on classification of a larger sample pool over a larger study area. The revised unit includes additional sites classified by Keith & Bedward (1999) as Riverine Forest (unit 40) and by Beukers (undated) as Riparian She-Oak Forest.

Riverbank Forest is a distinctive tall River Oak forest with an open shrub layer and a dense or patchy groundcover of grasses and forbs. It is found on sand/gravel alluvium strewn with cobbles along swift-flowing reaches of streams, at elevations from 20-800m ASL. Riverbank Forest occurs widely across the study area along major streams including the Coss, Abercrombie, Wollondilly, Shoalhaven, Deua and Brogo River systems, and Araluen and Wandella Creeks. This Map Unit occurs on a range of substrates, however none of the sites assigned to this unit were located on Hawkesbury or Narrabeen Sandstones, where similar habitat is occupied by Sandstone Riparian Scrub (FoW p58). On less gravelly alluvium on the South Coast, FrW p32 may grade into South Coast River Flat Forest (FoW p30).

Some areas of Riverbank Forest have been cleared, although some regrowth has occurred. Its riparian habitat is susceptible to weed invasion and degradation where livestock are unconstrained. Significant examples are represented within the Warragamba Special Area along the Wollondilly and Kowmung Rivers, and in Abercrombie River, Tarlo River and Morton National Parks.

#### Floristic Summary:

**Trees:** *Casuarina cunninghamiana*. **Shrubs:** *Hymenanthera dentata*, *Urtica incisa*. **Climbers:** *Stephania japonica*, *Pandorea pandorana*. **Groundcover:** *Microlaena stipoides*, *Lomandra longifolia*, *Oplismenus aemulus*, *Dichondra repens*.

#### Vegetation structure:

Stratum	Frequency (n=33)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	6	21 (5.7)	2 (-)
Tree canopy	100	27 (7.3)	35.5 (17.4)
Small tree	67	7.6 (3.7)	19.1 (16.2)
Shrub	45	2.5 (0.6)	15.1 (13)
Ground cover	94	0.8 (0.4)	56.4 (30.9)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 7 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 19 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 7 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia floribunda</i>	1(1-2)	25	1(1-2)	2
<i>Acacia mearnsii</i>	2(1-2)	20	1(1-2)	7
<i>Adiantum aethiopicum</i>	1(1-2)	25	1(1-1)	9
<i>Austrocynoglossum latifolium</i>	1(1-2)	18	1(1-1)	1
<i>Backhousia myrtifolia</i>	1(1-2)	20	2(1-3)	5
<i>Cardamine paucijuga</i>	1(1-2)	18	1(1-1)	<1
<i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i>	3(3-4)	95	2(1-3)	1
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-2)	32	1(1-1)	10
<i>Commelina cyanea</i>	1(1-2)	27	1(1-1)	4
<i>Cynodon dactylon</i>	1(1-1)	25	1(1-2)	1
<i>Dichondra</i> spp.	1(1-2)	48	1(1-2)	25
<i>Entolasia marginata</i>	1(1-1)	34	1(1-1)	11
<i>Ficus coronata</i>	1(1-1)	36	1(1-2)	4
<i>Geranium homeanum</i>	1(1-1)	20	1(1-1)	3
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-1)	32	1(1-1)	8
<i>Hymenanthera dentata</i>	2(1-2)	64	1(1-1)	6
<i>Juncus usitatus</i>	1(1-1)	18	1(1-1)	2
<i>Lomandra longifolia</i>	1(1-2)	68	1(1-1)	44



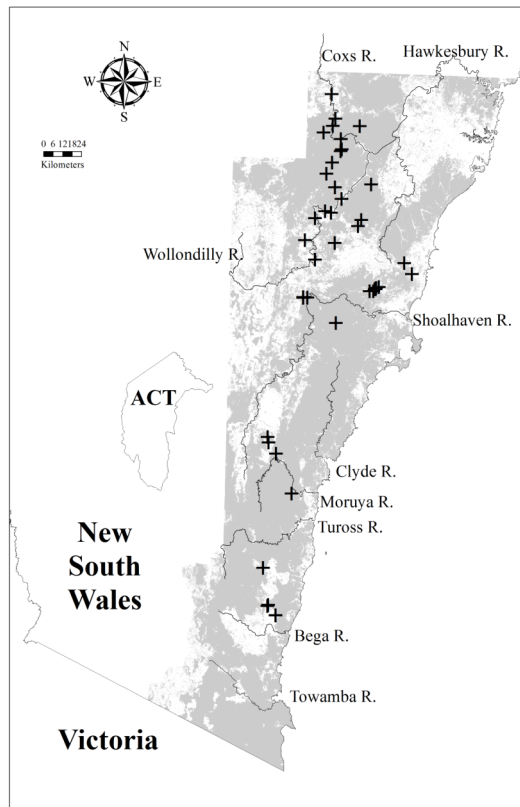
<i>Microlaena stipoides</i>	2(1-3)	86	1(1-2)	36
<i>Oplismenus aemulus</i>	1(1-2)	50	1(1-2)	5
<i>Oplismenus imbecillis</i>	1(1-1)	34	1(1-2)	14
<i>Pandorea pandorana</i>	1(1-1)	45	1(1-1)	18
<i>Pellaea falcata</i>	1(1-2)	36	1(1-1)	10
<i>Persicaria decipiens</i>	1(1-1)	23	1(1-1)	1
<i>Rumex brownii</i>	1(1-1)	32	1(1-1)	5
<i>Senecio linearifolius</i>	1(1-2)	30	1(1-1)	8
<i>Senecio minimus</i>	1(1-1)	18	1(1-1)	1
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	36	1(1-1)	7
<i>Stellaria flaccida</i>	1(1-3)	27	1(1-1)	10
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	57	1(1-1)	6
<i>Tristaniopsis laurina</i>	1(1-2)	23	1(1-3)	1
<i>Urtica incisa</i>	1(1-2)	41	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Pteridium esculentum</i>	1(1-1)	39	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-2)	11	1(1-2)	9
<i>Eucalyptus crebra</i>	1(1-1)	2	2(1-3)	3
<i>Eucalyptus deanei</i>	5(5-5)	2	3(1-3)	1
<i>Eucalyptus elata</i>	1(1-1)	5	2(1-3)	5
<i>Eucalyptus eugenioides</i>	1(1-1)	2	2(1-3)	4
<i>Eucalyptus maidenii</i>	2(2-2)	2	2(1-2)	2
<i>Eucalyptus melliodora</i>	1(1-1)	2	1(1-3)	2
<i>Eucalyptus quadrangulata</i>	2(2-2)	2	3(1-3)	1
<i>Eucalyptus saligna</i> X <i>botryoides</i>	1(1-2)	9	2(1-3)	2
<i>Eucalyptus tereticornis</i>	2(1-2)	9	2(1-3)	7
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-1)	2	2(1-3)	8



Locations of survey sites allocated to FoW p32. Grey shading indicates extant native vegetation cover within the study area.

### FoW p33: Cumberland River Flat Forest



Plate p33. Cumberland River Flat Forest (Map Unit p33) on a tributary of South Creek at Windsor Downs Nature Reserve. The canopy is dominated by *Eucalyptus tereticornis* and *Melaleuca styphelioides*, with a diverse groundcover including *Juncus* spp., *Cyperus* spp., *Eleocharis* spp. and *Carex* spp..

Sample Sites: 74

Area Extant (ha): 5300

Estimated % remaining: 5-20%

Area in conservation reserves (ha): 150

Estimated % of pre-clearing area in conservation reserves: <2%

No. taxa (total / unique): 356 / 2

No. taxa per plot ( $\pm$ sd): 34.9 (10.8)

Class: Coastal Floodplain Wetlands

Related TEC: River Flat Eucalypt Forest on Coastal Floodplains EEC (TSC).

Cumberland River Flat Forest (FoW p33) is equivalent to FoW 33 identified by Tindall *et al.* (2004), and is a woodland to open forest with open shrub layer and continuous groundcover of grasses and forbs. Its distribution is restricted to the Hawkesbury-Nepean and Georges River systems on the Cumberland Plain, on streambanks and alluvial flats draining soils derived from Wianamatta Shale. It occurs at altitudes from 1m to 160m ASL, where mean annual rainfall is in the range 750-900mm.

Cumberland River Flat Forest combines three units described by Tozer (2003) from the Cumberland Plain: 11 Alluvial Woodland; 5 Riparian Woodland; and 12 Riparian Forest. The original extent of Cumberland River Flat Forest has been greatly reduced by land clearing, and the remnants are small and threatened by weed invasion, rubbish dumping and other processes of degradation.

#### Floristic Summary:

**Trees:** *Eucalyptus tereticornis*, *Angophora floribunda*, *E. amplifolia*. **Shrubs:** *Acacia parramattensis*, *Bursaria spinosa*, *Sigesbeckia orientalis*. **Groundcover:** *Microlaena stipoides*, *Oplismenus aemulus*, *Dichondra* spp., *Entolasia marginata*, *Solanum prinophyllum*, *Pratia purpurascens*, *Echinopogon ovatus*, *Desmodium gunnii*, *Commelina cyanea*, *Veronica plebeia*.

#### Vegetation structure:

Stratum	Frequency (n=70)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	3	26 (5.7)	6.5 (4.9)
Tree canopy	100	23.2 (5.2)	23.3 (10.7)
Small tree	91	10.5 (4.4)	24.7 (18.2)
Shrub	49	2.6 (0.7)	10.9 (11)
Ground cover	99	1 (0.2)	62.4 (26.6)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 16 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 26 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 16 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia decurrens</i>	1(1-3)	18	1(1-1)	2
<i>Acacia floribunda</i>	1(1-2)	31	1(1-2)	2
<i>Acacia parramattensis</i>	2(1-3)	65	1(1-1)	4
<i>Adiantum aethiopicum</i>	2(1-2)	39	1(1-1)	9
<i>Alternanthera denticulata</i>	1(1-1)	11	1(1-1)	<1
<i>Angophora floribunda</i>	1(1-3)	41	1(1-2)	9
<i>Angophora subvelutina</i>	3(1-3)	11	2(1-3)	<1
<i>Arthropodium milleflorum</i>	1(1-1)	19	1(1-1)	5
<i>Austrostipa ramosissima</i>	2(1-2)	24	1(1-2)	1
<i>Breynia oblongifolia</i>	1(1-1)	38	1(1-1)	12
<i>Brunoniella australis</i>	2(1-2)	32	2(1-2)	4
<i>Bursaria spinosa</i>	2(1-3)	78	1(1-2)	14
<i>Caesia parviflora</i>	1(1-2)	9	1(1-1)	2
<i>Carex longibrachiata</i>	1(1-3)	12	1(1-2)	3
<i>Casuarina glauca</i>	3(1-4)	15	2(1-3)	1
<i>Cayratia clematidea</i>	1(1-2)	22	1(1-1)	2
<i>Centella asiatica</i>	1(1-2)	34	1(1-1)	4
<i>Cheilanthes sieberi</i>	1(1-1)	43	1(1-1)	14
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-2)	47	1(1-1)	9

<i>Commelina cyanea</i>	1(1-2)	46	1(1-1)	4
<i>Cynodon dactylon</i>	1(1-2)	14	1(1-2)	1
<i>Cyperus gracilis</i>	1(1-1)	18	1(1-2)	2
<i>Desmodium brachypodum</i>	1(1-2)	11	1(1-1)	3
<i>Desmodium varians</i>	1(1-1)	47	1(1-1)	21
<i>Dianella longifolia</i>	1(1-1)	19	1(1-1)	4
<i>Dichondra spp.</i>	2(2-2)	85	1(1-2)	25
<i>Digitaria parviflora</i>	1(1-1)	12	1(1-1)	2
<i>Doodia caudata</i>	1(1-1)	11	1(1-1)	1
<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	1(1-2)	28	1(1-1)	6
<i>Echinopogon ovatus</i>	1(1-2)	59	1(1-1)	13
<i>Einadia hastata</i>	1(1-1)	30	1(1-1)	3
<i>Einadia trigonos</i>	1(1-2)	20	1(1-1)	1
<i>Entolasia marginata</i>	2(1-3)	82	1(1-1)	11
<i>Eragrostis leptostachya</i>	1(1-1)	35	1(1-1)	4
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	3(1-4)	31	1(1-3)	<1
<i>Eucalyptus eugenioides</i>	1(1-1)	19	2(1-3)	4
<i>Eucalyptus tereticornis</i>	3(1-3)	42	2(1-3)	7
<i>Euchiton sphaericus</i>	1(1-1)	11	1(1-1)	3
<i>Gahnia aspera</i>	1(1-2)	16	1(1-1)	4
<i>Galium propinquum</i>	1(1-1)	30	1(1-1)	7
<i>Glycine clandestina</i>	1(1-2)	45	1(1-1)	26
<i>Glycine microphylla</i>	1(1-2)	36	1(1-1)	5
<i>Glycine tabacina</i>	1(1-2)	41	1(1-1)	6
<i>Hibbertia diffusa</i>	1(1-2)	15	1(1-1)	3
<i>Hymenanthera dentata</i>	2(1-2)	18	1(1-1)	6
<i>Juncus usitatus</i>	1(1-1)	20	1(1-1)	2
<i>Lachnagrostis filiformis</i>	1(1-1)	14	1(1-1)	3
<i>Leucopogon juniperinus</i>	1(1-2)	18	1(1-1)	5
<i>Melaleuca linariifolia</i>	1(1-1)	14	1(1-2)	1
<i>Melaleuca styphelioides</i>	2(1-3)	9	2(1-3)	2
<i>Microlaena stipoides</i>	3(3-4)	99	1(1-2)	36
<i>Olearia viscidula</i>	1(1-1)	19	1(1-2)	5
<i>Oplismenus aemulus</i>	2(1-3)	89	1(1-2)	4
<i>Oxalis perennans</i>	2(1-2)	42	1(1-1)	13
<i>Ozothamnus diosmifolius</i>	1(1-2)	35	1(1-1)	8
<i>Paspalidium distans</i>	1(1-1)	15	1(1-2)	3
<i>Persicaria decipiens</i>	1(1-1)	8	1(1-1)	1
<i>Phyllanthus gunnii</i>	2(1-3)	14	1(1-1)	2
<i>Phyllanthus similis</i>	2(1-2)	16	1(1-1)	<1
<i>Plectranthus parviflorus</i>	1(1-2)	26	1(1-1)	7
<i>Poa affinis</i>	2(1-3)	11	1(1-2)	2
<i>Polymeria calycina</i>	1(1-1)	15	1(1-1)	1
<i>Poranthera microphylla</i>	1(1-2)	39	1(1-1)	15
<i>Pratia purpurascens</i>	1(1-2)	62	1(1-1)	17
<i>Rubus parvifolius</i>	1(1-1)	30	1(1-1)	9

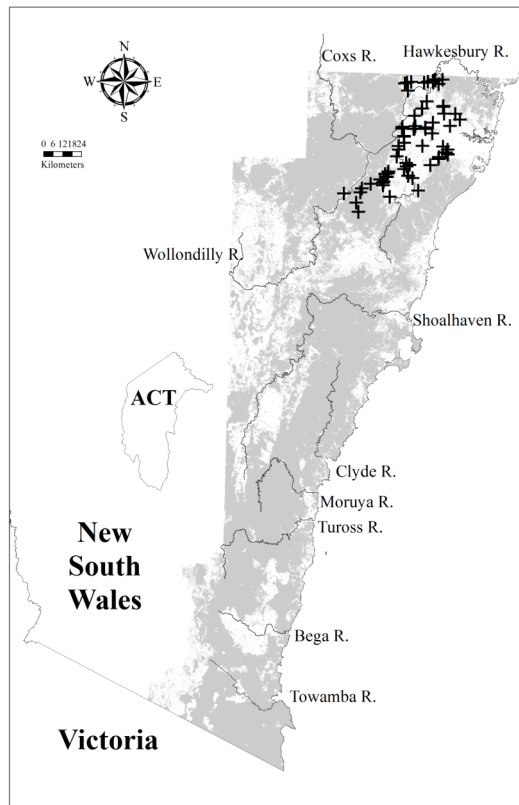
<i>Senecio hispidulus</i> var. <i>hispidulus</i>	1(1-1)	12	1(1-1)	3
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-2)	49	1(1-1)	7
<i>Solanum prinophyllum</i>	1(1-1)	69	1(1-1)	6
<i>Trema tomentosa</i> var. <i>viridis</i>	1(1-2)	12	1(1-1)	1
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-1)	16	1(1-1)	4
<i>Veronica plebeia</i>	1(1-2)	49	1(1-1)	10
<i>Wahlenbergia gracilis</i>	1(1-1)	35	1(1-1)	10

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Lomandra longifolia</i>	1(1-2)	45	1(1-1)	44
<i>Pteridium esculentum</i>	2(1-3)	32	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	1(1-1)	1	1(1-2)	2
<i>Corymbia maculata</i>	3(3-3)	1	2(1-3)	3
<i>Eucalyptus baueriana</i>	3(2-4)	7	2(1-2)	1
<i>Eucalyptus benthamii</i>	2(1-3)	5	3(1-3)	<1
<i>Eucalyptus botryoides</i>	4(3-4)	4	2(1-3)	3
<i>Eucalyptus crebra</i>	1(1-3)	8	2(1-3)	3
<i>Eucalyptus deanei</i>	3(1-3)	5	3(1-3)	1
<i>Eucalyptus elata</i>	1(1-4)	12	2(1-2)	5
<i>Eucalyptus globoidea</i>	1(1-1)	5	2(1-2)	12
<i>Eucalyptus longifolia</i>	3(3-3)	1	1(1-2)	2
<i>Eucalyptus moluccana</i>	1(1-1)	5	3(1-3)	2
<i>Eucalyptus pilularis</i>	3(3-3)	3	2(1-3)	5
<i>Eucalyptus piperita</i>	1(1-1)	1	2(1-3)	9
<i>Eucalyptus punctata</i>	1(1-1)	9	2(1-3)	9
<i>Eucalyptus quadrangulata</i>	1(1-1)	1	3(1-3)	1
<i>Eucalyptus resinifera</i> subsp. <i>resinifera</i>	1(1-1)	1	1(1-2)	1
<i>Eucalyptus saligna</i> X <i>botryoides</i>	3(3-4)	7	2(1-3)	2
<i>Eucalyptus sclerophylla</i>	1(1-1)	3	2(1-3)	4
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	3(3-3)	1	2(1-3)	8



Locations of survey sites allocated to FoW p33. Grey shading indicates extant native vegetation cover within the study area.

#### GW p34: South Coast Grassy Woodland



Plate p34. South Coast Grassy Woodland (Map Unit p34) at Wisemans Park in Gwynneville, with *Eucalyptus tereticornis* and *Syncarpia glomulifera* subsp. *glomulifera* in the canopy, a sub canopy dominated by *Melaleuca styphelioides*, *M. decora* and *Pittosporum undulatum*, and grassy groundcover dominated by *Themeda australis*, *Microlaena stipoides* var. *stipoides* and *Echinopogon caespitosus* var. *caespitosus*.

Sample Sites: 39

Area Extant (ha): 3100

Estimated % remaining: 15-30%

Area in conservation reserves (ha): 180

Estimated % of pre-clearing area in conservation reserves: <2%

No. taxa (total / unique): 290 / 2



No. taxa per plot ( $\pm$ sd): 39 (10.2)

Class: Coastal Valley Grassy Woodlands

Related TEC: Illawarra Lowlands Grassy Woodland EEC (TSC).

South Coast Grassy Woodland represents a modification and contraction of GW 34 identified by Tindall *et al.* (2004), based on a revised classification of a larger sample pool over a larger study area.

The revised GW p34 is a eucalypt woodland or open forest with an open shrub layer and a continuous grassy groundcover, found on lower slopes in coastal rainshadow valleys below 350m ASL, from Wollongong to Milton and west to Yalwal. These areas receive mean annual rainfall of 850-1500mm, and have loamy soils derived from a variety of substrates. South of Milton this unit is replaced in similar habitats by the closely-related Southeast Lowland Grassy Woodland (GW e20p229).

South Coast Grassy Woodland shares a number of species with grassy woodlands of the Cumberland Plain (GW p28 and GW p29) and far South Coast (GW e20p229), and with grassy forests of river flats (FrW p30-33) and gorges (Map Units DSF p35-37).

South Coast Grassy Woodland has been depleted throughout its range by land clearing. Remnants are generally small, located largely on freehold lands, and exposed to continuing attrition by overgrazing, frequent fire and small-scale clearing.

#### Floristic Summary:

**Trees:** *Eucalyptus tereticornis*, *E. eugenioides*. **Shrubs:** *Pittosporum undulatum*, *Breynia oblongifolia*, *Rapanea variabilis*. **Climbers:** *Geitonoplesium cymosum*, *Eustrephus latifolius*, *Glycine clandestina*, *Pandorea pandorana*.

**Groundcover:** *Dichondra* spp., *Desmodium gunnii*, *Microlaena stipoides*, *Oplismenus imbecillis*, *Carex longibrachiata*, *Poa labillardierei*, *Commelina cyanea*, *Pratia purpurascens*, *Themeda australis*.

#### Vegetation structure:

Stratum	Frequency (n=36)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	3	18 (-)	5 (-)
Tree canopy	100	20.8 (3.7)	33.5 (8.3)
Small tree	78	9 (3.5)	32.6 (22.3)
Shrub	50	2.3 (0.5)	19.8 (19.9)
Ground cover	100	0.8 (0.3)	63.8 (28.2)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 31 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

#### Positive Diagnostic Species:

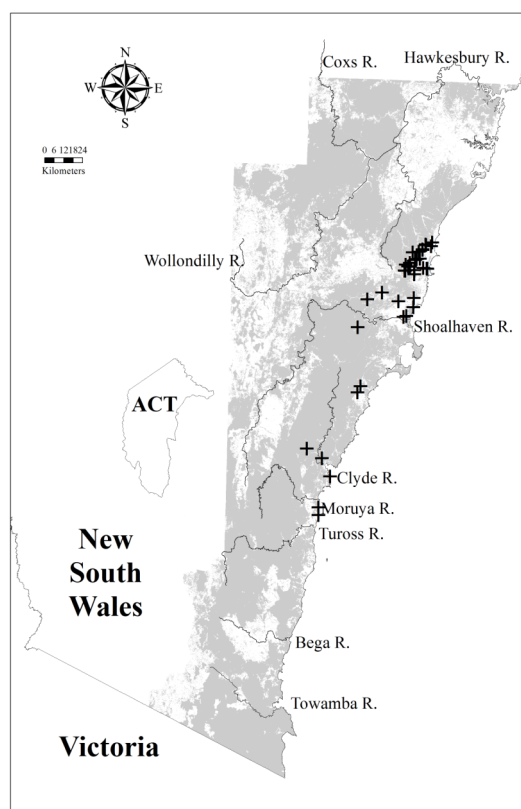
Species	C/A	Freq	C/A O	Freq O
<i>Acacia implexa</i>	1(1-1)	28	1(1-1)	6
<i>Acacia maidenii</i>	1(1-1)	46	1(1-1)	2
<i>Angophora floribunda</i>	3(1-3)	26	1(1-2)	9
<i>Breynia oblongifolia</i>	1(1-1)	67	1(1-1)	12
<i>Carex longibrachiata</i>	2(2-3)	64	1(1-2)	3
<i>Cassine australis</i> var. <i>australis</i>	1(1-2)	21	1(1-3)	2
<i>Cayratia clematidea</i>	1(1-1)	21	1(1-1)	2
<i>Clerodendrum tomentosum</i>	1(1-1)	26	1(1-1)	5
<i>Commelina cyanea</i>	1(1-2)	62	1(1-1)	4
<i>Cymbopogon refractus</i>	1(1-1)	26	1(1-1)	4
<i>Cyperus imbecillis</i>	1(1-2)	23	1(1-1)	<1
<i>Cyperus laevis</i>	1(1-2)	31	1(1-1)	1
<i>Desmodium varians</i>	2(1-2)	72	1(1-1)	21
<i>Dianella longifolia</i>	1(1-1)	21	1(1-1)	4
<i>Dichondra</i> spp.	2(1-2)	85	1(1-2)	25
<i>Diospyros australis</i>	1(1-1)	26	1(1-2)	3



<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	2(1-2)	21	1(1-1)	6
<i>Echinopogon ovatus</i>	2(1-2)	46	1(1-1)	14
<i>Entolasia marginata</i>	1(1-2)	46	1(1-1)	11
<i>Eragrostis leptostachya</i>	2(1-3)	33	1(1-1)	4
<i>Eucalyptus eugenioides</i>	3(1-3)	41	2(1-3)	4
<i>Eucalyptus tereticornis</i>	3(2-3)	90	2(1-3)	7
<i>Eustrephus latifolius</i>	1(1-1)	72	1(1-1)	19
<i>Galium propinquum</i>	1(1-1)	26	1(1-1)	7
<i>Geitonoplesium cymosum</i>	1(1-1)	87	1(1-1)	16
<i>Geranium homeanum</i>	1(1-1)	26	1(1-1)	3
<i>Glycine clandestina</i>	1(1-2)	59	1(1-1)	26
<i>Glycine microphylla</i>	1(1-2)	23	1(1-1)	5
<i>Glycine tabacina</i>	1(1-2)	33	1(1-1)	7
<i>Hibbertia scandens</i>	1(1-2)	38	1(1-1)	5
<i>Imperata cylindrica</i> var. <i>major</i>	2(1-2)	38	1(1-2)	10
<i>Indigofera australis</i>	1(1-1)	26	1(1-1)	9
<i>Leucopogon juniperinus</i>	1(1-2)	23	1(1-1)	5
<i>Maclura cochinchinensis</i>	1(1-1)	26	1(1-2)	1
<i>Marsdenia rostrata</i>	1(1-1)	41	1(1-2)	12
<i>Microlaena stipoides</i>	2(1-2)	79	1(1-2)	36
<i>Notelaea venosa</i>	1(1-2)	38	1(1-1)	12
<i>Oplismenus aemulus</i>	2(1-2)	41	1(1-2)	5
<i>Oplismenus imbecillis</i>	2(1-3)	77	1(1-2)	14
<i>Pandorea pandorana</i>	1(1-1)	74	1(1-1)	18
<i>Parsonsia straminea</i>	1(1-1)	33	1(1-1)	7
<i>Pittosporum multiflorum</i>	1(1-3)	23	1(1-2)	4
<i>Pittosporum revolutum</i>	1(1-1)	33	1(1-1)	8
<i>Pittosporum undulatum</i>	2(1-3)	67	1(1-1)	14
<i>Plectranthus parviflorus</i>	1(1-1)	28	1(1-1)	8
<i>Poa labillardierei</i> var. <i>labillardierei</i>	2(2-3)	64	1(1-2)	12
<i>Pratia purpurascens</i>	1(1-1)	49	1(1-1)	17
<i>Pseuderanthemum variabile</i>	2(1-2)	38	1(1-2)	9
<i>Rapanea variabilis</i>	1(1-2)	54	1(1-1)	3
<i>Rubus parvifolius</i>	1(1-1)	38	1(1-1)	9
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	33	1(1-1)	7
<i>Solanum prinophyllum</i>	1(1-1)	21	1(1-1)	6
<i>Streblus brunonianus</i>	1(1-1)	26	1(1-3)	1
<i>Themeda australis</i>	2(1-3)	49	1(1-3)	17
<i>Tylophora barbata</i>	1(1-2)	44	1(1-1)	17
Constant:				
Species	C/A	Freq	C/A O	Freq O
<i>Lepidosperma laterale</i>	1(1-1)	31	1(1-1)	29
<i>Lomandra longifolia</i>	1(1-1)	49	1(1-1)	44

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia maculata</i>	3(3-4)	10	2(1-3)	3
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	1(1-1)	3	2(1-3)	1
<i>Eucalyptus bosistoana</i>	3(1-3)	10	1(1-2)	3
<i>Eucalyptus elata</i>	1(1-1)	3	2(1-3)	5
<i>Eucalyptus globoidea</i>	1(1-3)	8	2(1-2)	12
<i>Eucalyptus longifolia</i>	3(1-3)	5	1(1-2)	2
<i>Eucalyptus muelleriana</i>	3(3-3)	3	2(1-2)	6
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	4(1-4)	5	1(1-2)	3
<i>Eucalyptus pilularis</i>	4(1-4)	8	2(1-3)	5
<i>Eucalyptus punctata</i>	3(3-3)	5	1(1-3)	9
<i>Eucalyptus quadrangulata</i>	3(1-4)	13	3(1-3)	1
<i>Eucalyptus robusta</i>	3(3-3)	3	2(1-3)	<1
<i>Eucalyptus saligna</i> X <i>botryoides</i>	3(3-3)	10	2(1-3)	2
<i>Eucalyptus scias</i> subsp. <i>callimastha</i>	1(1-1)	5	1(1-2)	1
<i>Eucalyptus sparsifolia</i>	1(1-1)	3	2(1-3)	2
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	4(3-4)	5	2(1-3)	8



Locations of survey sites allocated to GW p34. Grey shading indicates extant native vegetation cover within the study area.

**DSF p35: Wollondilly-Cox-Shoalhaven Gorge Woodland**

Plate p35. Wollondilly-Cox-Shoalhaven Gorge Woodland (Map Unit p35) on the Wollondilly Gorge, midway between Barrallier and Scabby Flat. The open tree canopy contains *Eucalyptus albens* and *E. tereticornis*, with dense shrub patches of *Olearia viscidula* and patchy grassy groundcover dominated by *Poa sieberiana* var. *sieberiana*.

Sample Sites: 99

Area Extant (ha): 41800

Estimated % remaining: 50-65%

Area in conservation reserves (ha): 14100

Estimated % of pre-clearing area in conservation reserves: 20-30%

No. taxa (total / unique): 422 / 3

No. taxa per plot ( $\pm$ sd): 44.9 (11.5)

Class: Central Gorge Dry Sclerophyll Forests.

Related TEC: may include areas matching White Box Yellow Box Blakely's Red Gum Woodland EEC (TSC).

Wollondilly-Cox-Shoalhaven Gorge Woodland (DSF p35) is equivalent to DSF 35 identified by Tindall *et al.* (2004). This unit is a dry eucalypt woodland with a mixed understorey of shrubs, forbs and grasses, found on loam and sandy loam soils on dry slopes within rocky gorges 150-700m ASL receiving 700-850mm annual rainfall. It is distributed around the Bannaby-Hanworth-Tomat area in dissected granite country, and in the lower Wollondilly River gorge where it is strongly associated with soils derived from Bindook Porphyry. It also extends to the Jenolan River (Hellgate Gorge) and Coxs River valleys on soils derived from Carboniferous granitic rocks, and in the Shoalhaven River gorge between Timberlight Creek and Greys Point, on Ordovician sediments.

Wollondilly-Cox-Shoalhaven Gorge Woodland intergrades extensively with DSF p36 and DSF p37 on granite and porphyry substrates to the northwest and southwest of Lake Burragorang. On these substrates Wollondilly-Cox-Shoalhaven Gorge Woodland occupies the driest parts of the landscape, but is replaced by DSF p37 in higher, moister areas, while DSF p36 is found at intermediate elevations and rainfall levels, generally associated with more exposed north- and west-facing footslopes and gullies.

Extensive areas of Wollondilly-Cox-Shoalhaven Gorge Woodland have been cleared for farms in the Coxs and Wollondilly River valleys, though examples remain on steeper terrain in Blue Mountains National Park.

**Floristic Summary:**

**Trees:** *Eucalyptus tereticornis*, *Brachychiton populneus*, *E. melliodora*. **Shrubs:** *Olearia viscidula*, *Bursaria spinosa*, *Lissanthe strigosa*. **Climbers:** *Glycine clandestina*, *Clematis aristata*. **Groundcover:** *Dichondra* spp., *Cheilanthes sieberi*, *Desmodium varians*, *Lomandra multiflora*, *L. longifolia*, *Aristida ramosa*, *Cheilanthes distans*, *Dichelachne micrantha*, *Microlaena stipoides*, *Desmodium brachypodum*, *Hypericum gramineum*, *Veronica plebeia*, *Wahlenbergia gracilis*.

**Vegetation structure:**

Stratum	Frequency (n=90)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	100	18.8 (4.4)	20.6 (10.6)
Small tree	60	8 (3.2)	12.2 (12.4)
Shrub	74	2.2 (0.6)	18 (14.2)
Ground cover	99	0.6 (0.3)	28.8 (20.9)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 26 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 36 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 26 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Abutilon oxycarpum</i> var. <i>oxycarpum</i>	1(1-2)	4	1(1-1)	<1
<i>Acacia falciformis</i>	1(1-1)	20	1(1-2)	10
<i>Acacia fimbriata</i>	1(1-3)	8	1(1-2)	<1
<i>Acacia implexa</i>	1(1-1)	38	1(1-1)	6
<i>Acacia parramattensis</i>	1(1-2)	19	1(1-2)	4
<i>Acacia penninervis</i> var. <i>penninervis</i>	1(1-2)	4	1(1-2)	<1
<i>Acaena echinata</i>	1(1-2)	9	1(1-1)	2
<i>Acaena ovina</i>	1(1-1)	8	1(1-1)	1
<i>Ajuga australis</i>	1(1-1)	13	1(1-1)	3
<i>Allocasuarina verticillata</i>	1(1-1)	19	1(1-2)	<1
<i>Aristida ramosa</i>	2(1-2)	59	1(1-2)	4
<i>Aristida vagans</i>	1(1-2)	23	1(1-2)	8
<i>Arthropodium milleflorum</i>	1(1-1)	40	1(1-1)	5
<i>Arthropodium minus</i>	1(1-2)	11	1(1-1)	1
<i>Asplenium flabellifolium</i>	1(1-2)	28	1(1-1)	11
<i>Astroloma humifusum</i>	1(1-1)	12	1(1-1)	4
<i>Austrodanthonia caespitosa</i>	1(1-2)	7	1(1-2)	1
<i>Austrodanthonia fulva</i>	2(1-2)	16	1(1-2)	2
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	1(1-2)	35	1(1-2)	5
<i>Austrostipa ramosissima</i>	1(1-2)	9	1(1-2)	1
<i>Austrostipa rudis</i>	1(1-2)	17	1(1-2)	6
<i>Austrostipa scabra</i>	1(1-2)	29	1(1-2)	1
<i>Austrostipa verticillata</i>	1(1-2)	12	1(1-1)	<1
<i>Bothriochloa macra</i>	2(1-2)	10	1(1-2)	1
<i>Brachychiton populneus</i> subsp. <i>populneus</i>	1(1-1)	48	1(1-1)	2
<i>Brachyscome angustifolia</i>	1(1-2)	28	1(1-1)	2
<i>Brachyscome graminea</i>	1(1-1)	7	1(1-1)	<1
<i>Bursaria longisepala</i>	1(1-1)	11	1(1-1)	1
<i>Bursaria spinosa</i>	1(1-2)	63	1(1-2)	14
<i>Calotis lappulacea</i>	1(1-2)	37	1(1-1)	<1
<i>Carex breviculmis</i>	1(1-1)	19	1(1-1)	4
<i>Carex incomitata</i>	1(1-1)	4	1(1-1)	<1
<i>Cassinia aculeata</i>	2(1-3)	18	1(1-1)	6

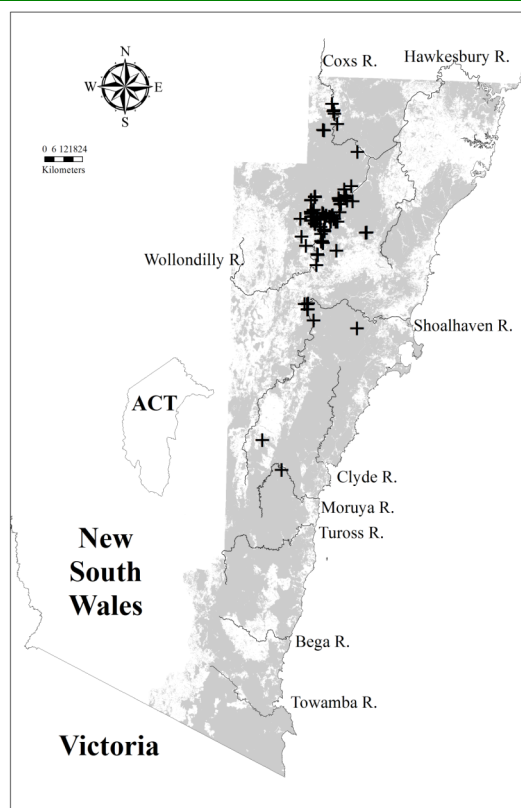
<i>Cassinia laevis</i>	1(1-2)	37	1(1-1)	1
<i>Cayratia clematidea</i>	1(1-2)	14	1(1-1)	2
<i>Cenchrus caliculatus</i>	1(1-1)	23	1(1-1)	1
<i>Centaureum spicatum</i>	1(1-2)	4	1(1-1)	<1
<i>Cheilanthes austrotenuifolia</i>	1(1-1)	9	1(1-1)	1
<i>Cheilanthes distans</i>	1(1-2)	58	1(1-1)	1
<i>Cheilanthes sieberi</i>	1(1-2)	86	1(1-1)	13
<i>Chloris ventricosa</i>	1(1-2)	16	1(1-2)	1
<i>Cissus opaca</i>	1(1-2)	9	1(1-1)	<1
<i>Clematis aristata</i>	1(1-1)	44	1(1-1)	20
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	29	1(1-1)	10
<i>Clematis microphylla</i> var. <i>leptophylla</i>	1(1-1)	4	1(1-1)	<1
<i>Commelina cyanea</i>	1(1-1)	15	1(1-1)	4
<i>Convolvulus erubescens</i>	1(1-1)	10	1(1-1)	1
<i>Crassula sieberiana</i>	1(1-1)	39	1(1-1)	2
<i>Cymbonotus lawsonianus</i>	1(1-1)	7	1(1-1)	1
<i>Cymbopogon refractus</i>	1(1-2)	40	1(1-1)	4
<i>Cynoglossum australe</i>	1(1-1)	7	1(1-1)	2
<i>Cynoglossum suaveolens</i>	1(1-1)	5	1(1-1)	1
<i>Cyperus gracilis</i>	1(1-1)	18	1(1-1)	2
<i>Daucus glochidiatus</i>	1(1-1)	24	1(1-1)	2
<i>Dendrophthoe vitellina</i>	1(1-1)	5	1(1-1)	<1
<i>Desmodium brachypodium</i>	1(1-2)	53	1(1-1)	2
<i>Desmodium varians</i>	1(1-2)	77	1(1-1)	21
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	38	1(1-1)	15
<i>Dichelachne micrantha</i>	1(1-1)	57	1(1-1)	8
<i>Dichondra</i> spp.	2(1-2)	89	1(1-2)	25
<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>	2(1-2)	6	1(1-1)	<1
<i>Digitaria brownii</i>	2(1-2)	6	1(1-1)	<1
<i>Digitaria diffusa</i>	1(1-1)	11	1(1-1)	<1
<i>Dodonaea viscosa</i> subsp. <i>angustifolia</i>	1(1-1)	9	1(1-1)	1
<i>Echinopogon ovatus</i>	1(1-1)	28	1(1-1)	14
<i>Einadia hastata</i>	1(1-1)	33	1(1-1)	3
<i>Einadia nutans</i>	1(1-1)	26	1(1-1)	2
<i>Einadia trigonos</i>	1(1-1)	8	1(1-1)	1
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-1)	37	1(1-1)	4
<i>Eragrostis leptostachya</i>	2(1-2)	17	1(1-1)	4
<i>Eucalyptus albens</i>	3(3-3)	6	3(1-3)	<1
<i>Eucalyptus eugenioides</i>	3(3-3)	27	2(1-3)	4
<i>Eucalyptus macrorhyncha</i>	2(1-3)	10	2(1-3)	3
<i>Eucalyptus melliodora</i>	3(1-3)	46	1(1-3)	2
<i>Eucalyptus moluccana</i>	3(1-3)	17	3(1-3)	2
<i>Eucalyptus tereticornis</i>	3(1-3)	67	2(1-3)	6
<i>Euchiton sphaericus</i>	1(1-1)	27	1(1-1)	3
<i>Exocarpos strictus</i>	1(1-1)	24	1(1-1)	9
<i>Ficus rubiginosa</i>	1(1-1)	7	1(1-3)	1

<i>Gahnia aspera</i>	1(1-2)	39	1(1-1)	3
<i>Galium gaudichaudii</i>	1(1-2)	14	1(1-1)	3
<i>Galium migrans</i>	1(1-1)	8	1(1-1)	1
<i>Geitonoplesium cymosum</i>	1(1-1)	39	1(1-1)	16
<i>Geranium homeanum</i>	1(1-2)	15	1(1-1)	3
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-2)	38	1(1-1)	7
<i>Glossogyne tannensis</i>	1(1-2)	8	1(1-1)	<1
<i>Glycine clandestina</i>	1(1-1)	51	1(1-1)	26
<i>Glycine microphylla</i>	1(1-1)	27	1(1-2)	5
<i>Glycine tabacina</i>	1(1-2)	41	1(1-1)	6
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-2)	25	1(1-2)	14
<i>Hydrocotyle geraniifolia</i>	1(1-2)	10	1(1-1)	2
<i>Hydrocotyle laxiflora</i>	1(1-2)	41	1(1-1)	15
<i>Hymenanthera dentata</i>	1(1-1)	19	1(1-1)	6
<i>Hypericum gramineum</i>	1(1-2)	54	1(1-1)	16
<i>Indigofera australis</i>	1(1-1)	36	1(1-1)	9
<i>Lissanthe strigosa</i>	1(1-2)	57	1(1-1)	7
<i>Lomandra confertifolia</i> subsp. <i>pallida</i>	2(1-2)	12	1(1-2)	1
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-2)	34	1(1-2)	10
<i>Lomandra longifolia</i>	1(1-2)	65	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	65	1(1-1)	24
<i>Luzula flaccida</i>	1(1-1)	13	1(1-1)	4
<i>Mentha diemenica</i>	1(1-1)	8	1(1-1)	1
<i>Microlaena stipoides</i>	2(1-2)	58	1(1-2)	36
<i>Myoporum montanum</i>	1(1-1)	18	1(1-1)	<1
<i>Notelaea neglecta</i>	1(1-1)	8	1(1-1)	<1
<i>Notodanthonia longifolia</i>	2(1-2)	21	1(1-2)	5
<i>Olearia viscidula</i>	2(1-3)	87	1(1-2)	5
<i>Opercularia hispida</i>	1(1-2)	11	1(1-1)	3
<i>Oxalis perennans</i>	1(1-1)	36	1(1-1)	12
<i>Pandorea pandorana</i>	1(1-2)	38	1(1-1)	18
<i>Panicum effusum</i>	1(1-1)	16	1(1-1)	2
<i>Paspalidium criniforme</i>	1(1-1)	4	1(1-2)	<1
<i>Pellaea falcata</i>	1(1-1)	23	1(1-2)	10
<i>Plantago debilis</i>	1(1-2)	34	1(1-1)	7
<i>Plectranthus parviflorus</i>	1(1-2)	29	1(1-1)	7
<i>Poa sieberiana</i> var. <i>sieberiana</i>	1(1-2)	35	1(1-2)	10
<i>Poa labillardierei</i> var. <i>labillardierei</i>	1(1-2)	34	1(1-2)	12
<i>Rumex brownii</i>	1(1-1)	23	1(1-1)	5
<i>Scleria mackaviensis</i>	1(1-2)	8	1(1-2)	<1
<i>Scutellaria humilis</i>	1(1-1)	11	1(1-1)	1
<i>Senecio diaschides</i>	1(1-2)	8	1(1-1)	1
<i>Senecio hispidulus</i> var. <i>hispidulus</i>	1(1-2)	9	1(1-1)	3
<i>Senecio quadridentatus</i>	1(1-1)	19	1(1-1)	1
<i>Senecio tenuiflorus</i>	1(1-1)	5	1(1-1)	1
<i>Sida corrugata</i>	1(1-2)	13	1(1-1)	<1

<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	17	1(1-1)	7
<i>Solanum cinereum</i>	1(1-1)	5	1(1-1)	<1
<i>Solanum prinophyllum</i>	1(1-1)	27	1(1-1)	6
<i>Stellaria pungens</i>	1(1-1)	18	1(1-1)	6
<i>Veronica plebeia</i>	1(1-1)	47	1(1-1)	10
<i>Vittadinia cuneata</i> var. <i>cuneata</i>	1(1-1)	36	1(1-1)	1
<i>Vittadinia sulcata</i>	1(1-2)	14	1(1-2)	<1
<i>Wahlenbergia communis</i>	1(1-2)	25	1(1-1)	2
<i>Wahlenbergia gracilis</i>	1(1-2)	45	1(1-1)	10
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	1(1-1)	27	1(1-1)	5

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-3)	13	1(1-2)	9
<i>Eucalyptus agglomerata</i>	3(1-3)	2	2(1-3)	8
<i>Eucalyptus blakelyi</i>	3(1-3)	3	1(1-3)	<1
<i>Eucalyptus bosistoana</i>	2(1-3)	3	1(1-2)	3
<i>Eucalyptus bridgesiana</i>	3(1-3)	3	1(1-3)	1
<i>Eucalyptus crebra</i>	1(1-3)	3	2(1-3)	3
<i>Eucalyptus cypellocarpa</i>	1(1-1)	2	2(1-2)	10
<i>Eucalyptus dives</i>	1(1-1)	1	2(1-3)	4
<i>Eucalyptus fibrosa</i>	1(1-1)	2	2(1-3)	3
<i>Eucalyptus globoidea</i>	3(1-3)	3	2(1-2)	12
<i>Eucalyptus mannifera</i>	3(3-3)	1	2(1-3)	4
<i>Eucalyptus punctata</i>	3(1-3)	15	1(1-3)	9



Locations of survey sites allocated to DSF p35. Grey shading indicates extant native vegetation cover within the study area.



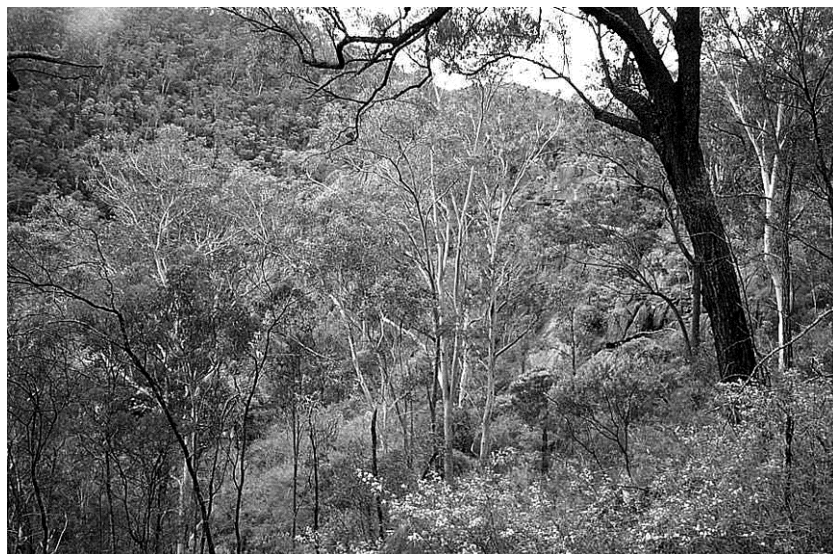
**DSF p36: Kowmung-Wollondilly Gorge Woodland**

Plate p36. Kowmung-Wollondilly Gorge Forest (Map Unit p36) on a side slope of Mount Armour between the Wollondilly River and Scotts Main Range. The tree canopy is dominated by *Eucalyptus crebra* and *E. tereticornis*, with shrubs including *Acacia filicifolia*, *Olearia viscidula* and *Bursaria spinosa* over a groundcover dominated by *Cenchrus caliculatus* and *Austrodanthonia* spp..

Sample Sites: 56

Area Extant (ha): 26200

Estimated % remaining: >95%

Area in conservation reserves (ha): 24600

Estimated % of pre-clearing area in conservation reserves: >85%

No. taxa (total / unique): 398 / 4

No. taxa per plot ( $\pm$ sd): 50.6 (10.7)

Class: Central Gorge Dry Sclerophyll Forests.

Related TEC: n/a

Kowmung-Wollondilly Gorge Woodland (DSF p36) is equivalent to DSF 36 identified by Tindall *et al.* (2004). This unit is an open eucalypt forest with an open shrub layer and prominent groundcover of forbs and ferns, and is found on loams on intermediate slopes within rocky gorges in the lower Coxs and Kowmung River catchments. It has been sampled at altitudes of 100 to 750m ASL, and across a mean annual rainfall band of 750 - 950mm.

Kowmung-Wollondilly Gorge Woodland is most extensive on sediments of the Devonian Lambie Group and Permian Shoalhaven Group (Berry Formation), with smaller occurrences on Bindook Porphyry and Carboniferous granitic substrates in the southern part of its range, where it grades into DSF p35 and DSF p37 (see DSF p35). Most of its range is within conservation reserves and very little has been cleared due to the steep and inaccessible terrain.

**Floristic Summary:**

**Trees:** *Eucalyptus tereticornis*, *E. crebra*, *Acacia implexa*. **Shrubs:** *Olearia viscidula*, *Breynia oblongifolia*, *Bursaria spinosa*, *Indigofera australis*. **Climbers:** *Geitonoplesium cymosum*, *Clematis glycinoides*, *Glycine clandestina*, *Pandorea pandorana*. **Groundcover:** *Dichondra* spp., *Desmodium gunnii*, *Plectranthus parviflorus*, *Pellaea falcata*, *Pratia purpurascens*, *Microlaena stipoides*, *Oplismenus imbecillis*, *Cheilanthes sieberi*, *Einadia hastata*, *Cymbopogon refractus*, *Lomandra multiflora*, *Adiantum aethiopicum*.

**Vegetation structure:**

Stratum	Frequency (n=53)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	2	23 (-)	2 (-)
Tree canopy	100	22 (5.7)	26.3 (10)
Small tree	83	10.5 (5)	17.7 (19.5)
Shrub	75	2.2 (0.6)	21.1 (15.9)
Ground cover	100	0.7 (0.3)	37.2 (23)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 27 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 42 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 27 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Abutilon oxycarpum</i> var. <i>oxycarpum</i>	1(1-1)	14	1(1-1)	<1
<i>Acacia clunies-rossiae</i>	1(1-3)	16	1(1-2)	<1
<i>Acacia implexa</i>	1(1-1)	63	1(1-1)	6
<i>Acacia parramattensis</i>	1(1-2)	25	1(1-2)	4
<i>Adiantum aethiopicum</i>	1(1-2)	50	1(1-1)	9
<i>Ajuga australis</i>	1(1-1)	25	1(1-1)	3
<i>Allocasuarina torulosa</i>	2(1-3)	50	1(1-3)	4
<i>Aphanopetalum resinosum</i>	1(1-2)	14	2(1-3)	4
<i>Aristida ramosa</i>	2(1-3)	23	1(1-2)	5
<i>Aristida vagans</i>	1(1-1)	39	1(1-2)	8
<i>Arthropodium milleflorum</i>	1(1-2)	21	1(1-1)	5
<i>Arthropodium minus</i>	1(1-1)	14	1(1-1)	1
<i>Asplenium flabellifolium</i>	1(1-1)	43	1(1-1)	11
<i>Austrostipa ramosissima</i>	1(1-2)	34	1(1-2)	1
<i>Backhousia myrtifolia</i>	1(1-3)	23	2(1-3)	5
<i>Brachychiton populneus</i> subsp. <i>populneus</i>	1(1-1)	30	1(1-1)	3
<i>Breynia oblongifolia</i>	1(1-1)	61	1(1-1)	12
<i>Brunoniella australis</i>	1(1-1)	18	2(1-2)	4
<i>Bursaria spinosa</i>	2(1-3)	63	1(1-2)	14
<i>Calotis dentex</i>	1(1-1)	14	1(1-2)	1
<i>Carex breviculmis</i>	1(1-1)	23	1(1-1)	4
<i>Cayratia clematidea</i>	1(1-1)	27	1(1-1)	2
<i>Celastrus australis</i>	1(1-1)	21	1(1-2)	2
<i>Cenchrus caliculatus</i>	1(1-2)	30	1(1-1)	1
<i>Cheilanthes distans</i>	1(1-1)	45	1(1-1)	2
<i>Cheilanthes sieberi</i>	1(1-1)	59	1(1-1)	14
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-2)	57	1(1-1)	9
<i>Clerodendrum tomentosum</i>	1(1-1)	36	1(1-1)	5
<i>Commelina cyanea</i>	1(1-1)	16	1(1-1)	4
<i>Crassula sieberiana</i>	1(1-1)	25	1(1-1)	3
<i>Cymbopogon refractus</i>	2(1-2)	54	1(1-1)	4
<i>Cyperus gracilis</i>	1(1-1)	20	1(1-2)	2
<i>Cyperus laevis</i>	1(1-1)	23	1(1-1)	1
<i>Desmodium brachypodium</i>	1(1-1)	41	1(1-1)	3
<i>Desmodium varians</i>	1(1-1)	84	1(1-1)	21
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	48	1(1-1)	15
<i>Dichelachne micrantha</i>	1(1-2)	23	1(1-1)	9
<i>Dichondra</i> spp.	2(1-2)	89	1(1-2)	25
<i>Digitaria parviflora</i>	1(1-1)	16	1(1-1)	2
<i>Digitaria ramularis</i>	1(1-1)	13	1(1-1)	1

<i>Dodonaea viscosa</i> subsp. <i>angustifolia</i>	1(1-2)	27	1(1-1)	1
<i>Echinopogon ovatus</i>	1(1-1)	46	1(1-1)	14
<i>Einadia hastata</i>	1(1-2)	55	1(1-1)	3
<i>Einadia nutans</i>	1(1-2)	16	1(1-1)	3
<i>Eucalyptus crebra</i>	3(2-3)	64	2(1-3)	3
<i>Eucalyptus eugenioides</i>	1(1-2)	18	2(1-3)	4
<i>Eucalyptus punctata</i>	3(1-3)	45	1(1-3)	8
<i>Eucalyptus tereticornis</i>	3(1-3)	70	2(1-3)	7
<i>Exocarpos strictus</i>	1(1-1)	45	1(1-1)	9
<i>Gahnia aspera</i>	1(1-2)	34	1(1-1)	4
<i>Galium propinquum</i>	1(1-1)	21	1(1-1)	7
<i>Geitonoplesium cymosum</i>	1(1-2)	68	1(1-1)	16
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-1)	32	1(1-1)	8
<i>Glycine clandestina</i>	1(1-1)	55	1(1-1)	26
<i>Glycine microphylla</i>	1(1-1)	29	1(1-2)	5
<i>Glycine tabacina</i>	1(1-1)	21	1(1-1)	7
<i>Hardenbergia violacea</i>	1(1-1)	41	1(1-1)	17
<i>Hibbertia obtusifolia</i>	1(1-2)	38	1(1-1)	10
<i>Hymenanthera dentata</i>	1(1-1)	25	1(1-1)	6
<i>Indigofera australis</i>	1(1-1)	61	1(1-1)	9
<i>Jacksonia scoparia</i>	2(1-2)	14	1(1-1)	2
<i>Leucopogon juniperinus</i>	1(1-2)	27	1(1-1)	5
<i>Lissanthe strigosa</i>	1(1-1)	32	1(1-1)	8
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	2(1-3)	18	1(1-1)	4
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	55	1(1-1)	25
<i>Microlaena stipoides</i>	1(1-2)	61	1(1-2)	36
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-1)	34	1(1-1)	7
<i>Notodanthonia longifolia</i>	2(1-3)	46	1(1-2)	5
<i>Nyssanthes diffusa</i>	1(1-1)	13	1(1-1)	<1
<i>Olearia viscidula</i>	2(1-3)	93	1(1-2)	5
<i>Oplismenus aemulus</i>	1(1-3)	16	1(1-2)	5
<i>Oplismenus imbecillis</i>	2(1-2)	61	1(1-2)	14
<i>Oxalis chnoodes</i>	1(1-1)	20	1(1-1)	1
<i>Pandorea pandorana</i>	1(1-1)	52	1(1-1)	18
<i>Panicum effusum</i>	1(1-2)	29	1(1-1)	2
<i>Passiflora herbertiana</i> subsp. <i>herbertiana</i>	1(1-1)	21	1(1-1)	1
<i>Pellaea falcata</i>	1(1-2)	71	1(1-1)	10
<i>Phyllanthus gunnii</i>	2(1-3)	13	1(1-1)	2
<i>Plantago debilis</i>	1(1-1)	38	1(1-1)	7
<i>Plectranthus parviflorus</i>	1(1-2)	73	1(1-1)	7
<i>Pomax umbellata</i>	1(1-1)	34	1(1-1)	14
<i>Pratia purpurascens</i>	1(1-1)	68	1(1-1)	17
<i>Rubus parvifolius</i>	1(1-2)	23	1(1-1)	9
<i>Rumex brownii</i>	1(1-1)	21	1(1-1)	5
<i>Senecio lautus</i> subsp. <i>lanceolatus</i>	1(1-1)	13	1(1-1)	<1
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-2)	30	1(1-1)	7

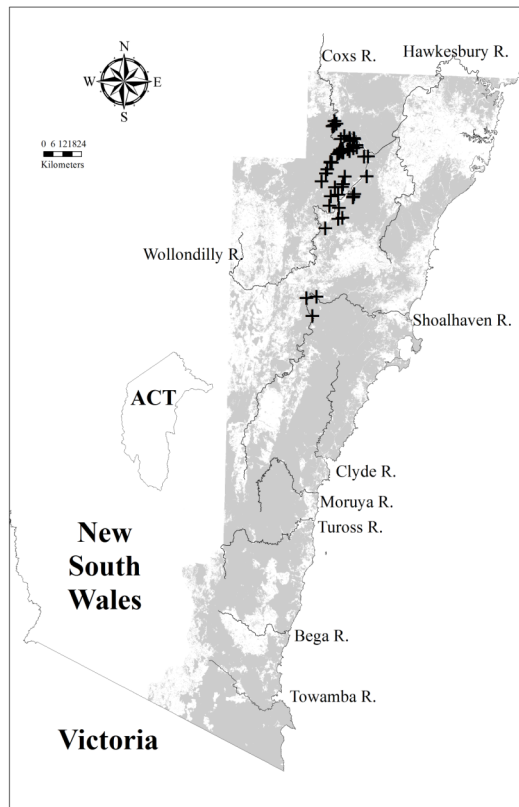
<i>Solanum prinophyllum</i>	1(1-1)	48	1(1-1)	6
<i>Solanum pungetium</i>	1(1-1)	27	1(1-1)	5
<i>Stellaria pungens</i>	1(1-2)	23	1(1-1)	6
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	39	1(1-1)	6
<i>Stypantra glauca</i>	1(1-2)	21	1(1-2)	5
<i>Urtica incisa</i>	1(1-2)	21	1(1-1)	5
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-1)	29	1(1-1)	4
<i>Veronica plebeia</i>	1(1-1)	48	1(1-1)	10
<i>Wahlenbergia gracilis</i>	1(1-1)	30	1(1-1)	11

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Clematis aristata</i>	1(1-2)	30	1(1-1)	20
<i>Lomandra longifolia</i>	1(1-2)	61	1(1-1)	44
<i>Persoonia linearis</i>	1(1-1)	34	1(1-1)	29

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-3)	18	1(1-2)	9
<i>Eucalyptus agglomerata</i>	3(1-3)	4	2(1-3)	7
<i>Eucalyptus blakelyi</i>	3(3-3)	2	1(1-3)	1
<i>Eucalyptus blaxlandii</i>	1(1-1)	2	1(1-3)	1
<i>Eucalyptus cypellocarpa</i>	1(1-1)	2	2(1-2)	10
<i>Eucalyptus elata</i>	1(1-1)	2	2(1-3)	5
<i>Eucalyptus fibrosa</i>	1(1-1)	4	2(1-3)	3
<i>Eucalyptus melliodora</i>	1(1-3)	7	1(1-3)	2
<i>Eucalyptus moluccana</i>	3(1-4)	9	3(1-3)	2
<i>Eucalyptus smithii</i>	1(1-1)	2	1(1-2)	2
<i>Eucalyptus sparsifolia</i>	1(1-3)	7	2(1-3)	2
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-1)	2	2(1-3)	8



Locations of survey sites allocated to DSF p36. Grey shading indicates extant native vegetation cover within the study area.

### DSF p37: Kowmung-Wollondilly Grassy Gorge Forest



Plate p37. Kowmung-Wollondilly Grassy Gorge Woodland (Map Unit p37) beside Pimlico Creek, between Tomat Swamps and Mount Egan in Blue Mountains National Park. A canopy dominated by *Eucalyptus eugenioides* and *E. viminalis* grows above a patchy shrub layer including *Cassinia cunninghamii* and *Olearia viscidula* and a diverse moist groundcover.

Sample Sites: 59

Area Extant (ha): 37100

Estimated % remaining: >90%

Area in conservation reserves (ha): 31700

Estimated % of pre-clearing area in conservation reserves: 70-90%

No. taxa (total / unique): 367 / 2



No. taxa per plot ( $\pm$ sd): 45.8 (10.2)

Class: Central Gorge Dry Sclerophyll Forests

Related TEC: n/a

Kowmung-Wollondilly Grassy Gorge Woodland (DSF p37) is equivalent to DSF 37 identified by Tindall *et al.* (2004), and is a dry eucalypt woodland with an open shrub layer and prominent groundcover of forbs and grasses. Kowmung-Wollondilly Grassy Gorge Woodland covers extensive areas of the Coxs, Kowmung and lower Wollondilly River catchments, where mean annual rainfall varies from 750 to 1000mm, and loamy soils have formed on dry slopes and ridges from Bindook Porphyry and Devonian Lambie Group sediments. This woodland tends to occupy altitudes from 300m to 850m ASL, occupying more sheltered aspects at lower elevations and grading into DSF p36 on exposed aspects and lower slopes of the valleys, or DSF p35 in more open granite/porphyry landscapes.

Most Kowmung-Wollondilly Grassy Gorge Woodland occurs within the Blue Mountains and Kanangra Boyd National Parks in steep remote areas that were unattractive for farming.

#### Floristic Summary:

**Trees:** *Eucalyptus punctata*, *E. eugenioides*. **Shrubs:** *Olearia viscidula*, *Acacia falciformis*. **Climbers:** *Glycine clandestina*, *Geitonoplesium cymosum*, *Clematis aristata*. **Groundcover:** *Dichondra* spp., *Pratia purpurascens*, *Lomandra longifolia*, *Desmodium gunnii*, *Poranthera microphylla*, *Echinopogon ovatus*, *Veronica plebeia*, *Wahlenbergia stricta*, *Hypericum gramineum*, *Lomandra multiflora*, *Cheilanthes sieberi*, *Poa sieberiana*, *Plantago debilis*, *Solanum pungetium*.

#### Vegetation structure:

Stratum	Frequency (n=41)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	22 (3.7)	23.4 (8.3)
Small tree	71	11.6 (3.8)	11.6 (9.4)
Shrub	63	2.1 (0.8)	16 (16.3)
Ground cover	100	0.7 (0.4)	49.3 (30)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 21 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 38 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 21 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-3)	47	1(1-2)	10
<i>Acacia implexa</i>	1(1-1)	27	1(1-1)	6
<i>Acacia parramattensis</i>	1(1-1)	29	1(1-2)	4
<i>Acaena novae-zelandiae</i>	1(1-2)	20	1(1-1)	7
<i>Acaena ovina</i>	1(1-1)	20	1(1-1)	1
<i>Adiantum aethiopicum</i>	1(1-2)	42	1(1-1)	9
<i>Ajuga australis</i>	1(1-1)	25	1(1-1)	3
<i>Allocasuarina torulosa</i>	2(1-3)	20	1(1-3)	5
<i>Asplenium flabellifolium</i>	1(1-1)	42	1(1-1)	11
<i>Brachychiton populneus</i> subsp. <i>populneus</i>	1(1-1)	15	1(1-1)	3
<i>Brachyscome angustifolia</i>	1(1-2)	22	1(1-1)	2
<i>Brachyscome graminea</i>	1(1-1)	14	1(1-1)	<1
<i>Bursaria longisepala</i>	1(1-1)	14	1(1-1)	1
<i>Bursaria spinosa</i>	1(1-1)	41	1(1-2)	14
<i>Carex breviculmis</i>	1(1-1)	25	1(1-1)	4
<i>Carex incomitata</i>	1(1-1)	12	1(1-1)	<1
<i>Centella asiatica</i>	1(1-1)	15	1(1-1)	4
<i>Cheilanthes austrotenuifolia</i>	1(1-2)	14	1(1-1)	1
<i>Cheilanthes distans</i>	1(1-1)	15	1(1-1)	2

<i>Cheilanthes sieberi</i>	1(1-1)	54	1(1-1)	14
<i>Clematis aristata</i>	1(1-1)	56	1(1-1)	20
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	31	1(1-1)	10
<i>Crassula sieberiana</i>	1(1-1)	15	1(1-1)	3
<i>Cymbonotus lawsonianus</i>	1(1-1)	19	1(1-1)	1
<i>Daucus glochidiatus</i>	1(1-1)	15	1(1-1)	2
<i>Desmodium varians</i>	1(1-2)	81	1(1-1)	21
<i>Dichondra</i> spp.	2(1-2)	88	1(1-2)	25
<i>Dichelachne parva</i>	1(1-2)	12	1(1-1)	1
<i>Dichelachne rara</i>	2(1-3)	15	1(1-1)	4
<i>Echinopogon ovatus</i>	1(1-1)	73	1(1-1)	13
<i>Eucalyptus eugenoides</i>	3(1-3)	44	2(1-3)	4
<i>Eucalyptus punctata</i>	3(1-3)	56	1(1-3)	8
<i>Eucalyptus tereticornis</i>	3(1-3)	27	2(1-3)	7
<i>Euchiton involucratus</i>	1(1-1)	14	1(1-1)	1
<i>Euchiton sphaericus</i>	1(1-1)	32	1(1-1)	3
<i>Galium gaudichaudii</i>	1(1-2)	17	1(1-1)	3
<i>Galium propinquum</i>	1(1-1)	46	1(1-1)	7
<i>Geitonoplesium cymosum</i>	1(1-1)	58	1(1-1)	16
<i>Geranium homeanum</i>	1(1-2)	20	1(1-1)	3
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-2)	41	1(1-1)	7
<i>Glycine clandestina</i>	1(1-1)	64	1(1-1)	26
<i>Glycine microphylla</i>	1(1-1)	20	1(1-2)	5
<i>Glycine tabacina</i>	1(1-1)	22	1(1-1)	7
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-1)	37	1(1-2)	14
<i>Helichrysum scorpioides</i>	1(1-2)	27	1(1-1)	7
<i>Hydrocotyle geraniifolia</i>	1(1-1)	17	1(1-1)	2
<i>Hydrocotyle laxiflora</i>	2(1-2)	46	1(1-1)	15
<i>Hymenanthera dentata</i>	1(1-2)	22	1(1-1)	6
<i>Hypericum gramineum</i>	1(1-1)	59	1(1-1)	16
<i>Indigofera australis</i>	1(1-1)	29	1(1-1)	9
<i>Libertia paniculata</i>	1(1-2)	12	1(1-1)	2
<i>Lissanthe strigosa</i>	1(1-2)	32	1(1-1)	8
<i>Lomandra longifolia</i>	1(1-2)	85	1(1-1)	43
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	58	1(1-1)	25
<i>Luzula flaccida</i>	1(1-1)	46	1(1-1)	4
<i>Notodanthonia longifolia</i>	1(1-2)	17	1(1-2)	5
<i>Olearia viscidula</i>	2(1-3)	68	1(1-2)	5
<i>Opercularia hispida</i>	1(1-1)	22	1(1-1)	3
<i>Oxalis perennans</i>	1(1-1)	41	1(1-1)	13
<i>Pellaea falcata</i>	1(1-1)	31	1(1-1)	10
<i>Plantago debilis</i>	1(1-2)	49	1(1-1)	7
<i>Plectranthus parviflorus</i>	1(1-1)	24	1(1-1)	8
<i>Poa sieberiana</i> var. <i>sieberiana</i>	2(1-3)	53	1(1-2)	10
<i>Poa labillardierei</i> var. <i>labillardierei</i>	1(1-2)	25	1(1-2)	12
<i>Poranthera microphylla</i>	1(1-1)	73	1(1-1)	15



<i>Pratia purpurascens</i>	1(1-1)	86	1(1-1)	17
<i>Senecio hispidulus</i> var. <i>hispidulus</i>	1(1-1)	12	1(1-1)	3
<i>Senecio lautus</i> subsp. <i>lanceolatus</i>	1(1-1)	14	1(1-1)	<1
<i>Senecio linearifolius</i>	1(1-1)	29	1(1-1)	8
<i>Senecio minimus</i>	1(1-2)	24	1(1-1)	1
<i>Senecio prenanthoides</i>	1(1-1)	20	1(1-1)	8
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	39	1(1-1)	7
<i>Solanum pungetium</i>	1(1-1)	49	1(1-1)	5
<i>Stackhousia viminea</i>	1(1-1)	12	1(1-1)	3
<i>Stellaria pungens</i>	1(1-1)	29	1(1-1)	6
<i>Stypandra glauca</i>	2(1-3)	32	1(1-2)	5
<i>Veronica plebeia</i>	1(1-1)	66	1(1-1)	10
<i>Viola betonicifolia</i>	1(1-1)	44	1(1-1)	5
<i>Wahlenbergia gracilis</i>	1(1-1)	34	1(1-1)	11
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	1(1-1)	61	1(1-1)	5

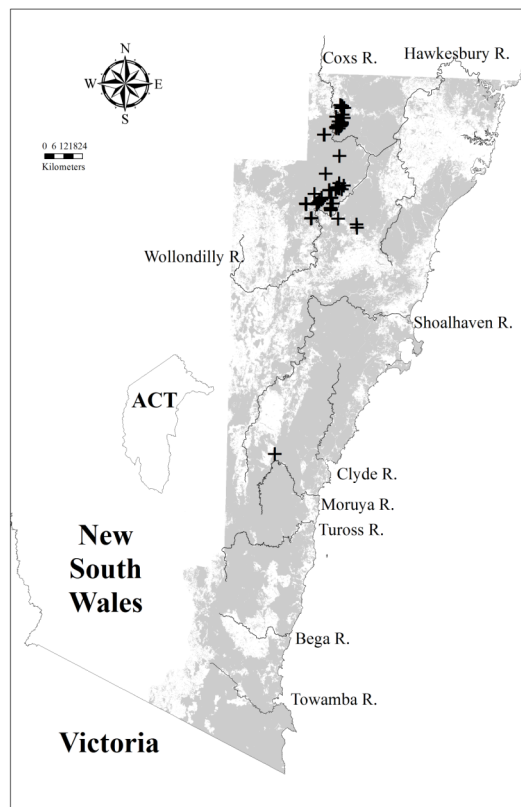
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Entolasia stricta</i>	1(1-1)	39	1(1-2)	34
<i>Hardenbergia violacea</i>	1(1-1)	32	1(1-1)	17
<i>Microlaena stipoides</i>	2(1-3)	51	1(1-2)	36
<i>Pteridium esculentum</i>	1(1-1)	46	1(1-2)	37
<i>Viola hederacea</i>	1(1-2)	36	1(1-1)	22

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	1(1-1)	2	1(1-2)	2
<i>Angophora costata</i>	1(1-1)	2	1(1-3)	7
<i>Angophora floribunda</i>	1(1-2)	20	1(1-2)	9
<i>Eucalyptus agglomerata</i>	3(1-3)	14	2(1-3)	7
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	1(1-1)	2	2(1-3)	1
<i>Eucalyptus angophoroides</i>	2(2-2)	2	1(1-2)	1
<i>Eucalyptus beyeriana</i>	3(3-3)	2	2(1-2)	<1
<i>Eucalyptus bicostata</i>	1(1-1)	2	3(3-3)	<1
<i>Eucalyptus blaxlandii</i>	3(3-3)	2	1(1-3)	1
<i>Eucalyptus bosistoana</i>	3(1-3)	10	1(1-2)	3
<i>Eucalyptus bridgesiana</i>	1(1-1)	2	1(1-3)	1
<i>Eucalyptus camphora</i>	1(1-1)	2	2(2-2)	<1
<i>Eucalyptus crebra</i>	1(1-2)	8	2(1-3)	3
<i>Eucalyptus cypellocarpa</i>	1(1-2)	22	2(1-2)	10
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	3(3-3)	2	1(1-2)	3
<i>Eucalyptus elata</i>	3(1-3)	14	2(1-2)	5
<i>Eucalyptus globoidea</i>	3(1-3)	5	2(1-2)	12
<i>Eucalyptus macrorhyncha</i>	3(3-3)	2	2(1-3)	3
<i>Eucalyptus mannifera</i>	2(2-2)	2	2(1-3)	4
<i>Eucalyptus melliodora</i>	1(1-1)	7	1(1-3)	2
<i>Eucalyptus moluccana</i>	1(1-1)	3	3(1-3)	2

<i>Eucalyptus muelleriana</i>	4(3-4)	3	2(1-2)	6
<i>Eucalyptus piperita</i>	1(1-1)	2	2(1-3)	9
<i>Eucalyptus quadrangulata</i>	3(3-4)	5	3(1-3)	1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	3(1-3)	3	2(1-3)	6
<i>Eucalyptus sparsifolia</i>	3(3-3)	3	2(1-3)	2
<i>Eucalyptus viminalis</i>	3(1-3)	10	2(1-3)	4



Locations of survey sites allocated to DSF p37. Grey shading indicates extant native vegetation cover within the study area.

**RF p38: Grey Myrtle Dry Rainforest**

Plate p38. Grey Myrtle Dry Rainforest (Map Unit p38) at Butchers Creek between Lacy's Tableland and Scotts Main Range. The canopy is dominated by *Backhousia myrtifolia*, with a very sparse midstorey and a groundcover of scattered ferns and sprawling tufts of *Poa affinis*.

Sample Sites: 53

Area Extant (ha): 6550

Estimated % remaining: 75-85%

Area in conservation reserves (ha): 5600

Estimated % of pre-clearing area in conservation reserves: 55-75%

No. taxa (total / unique): 406 / 5

No. taxa per plot ( $\pm$ sd): 41.9 (13.8)

Class: Dry Rainforests

Grey Myrtle Dry Rainforest (RF p38) represents a revision of RF 38 described by Tindall *et al.* (2004). Examples occurring on the Razorback Range and Cumberland Plain have been removed to a new class (p39: Western Sydney Dry Rainforest) while in the south the range has extend somewhat with the addition of some recent sites from the Bungonia area. This unit is a simple, low closed forest with a sparse groundcover. It is widely distributed as small patches throughout the dry gorge country of the southern Blue Mountains (Coxs, Kowmung and Wollondilly gorges), the margins of the Cumberland Plain, and the Shoalhaven and Ettrema Gorges. It usually occupies the steep lower slopes of gorges below 600m ASL with an annual rainfall from 750 - 900mm, where pre-Permian rocks underlying those of the Sydney Basin are exposed. From Ettrema south, this unit grades into the closely related Temperate Dry Rainforest (RF p40).

The inaccessibility of its habitat has largely protected Grey Myrtle Dry Rainforest from past land clearing. Grey Myrtle Dry Rainforest is highly sensitive to fire, and remnants on private lands are likely to be degraded by grazing and weed invasion.

**Floristic Summary:**

**Trees:** *Backhousia myrtifolia*. **Shrubs:** *Notelaea longifolia*, *Breynia oblongifolia*, *Hymenanthera dentata*, *Sigesbeckia orientalis*. **Climbers:** *Geitonoplesium cymosum*, *Pandorea pandorana*, *Aphanopetalum resinosum*, *Eustrephus latifolius*, *Cayratia clematidea*. **Groundcover:** *Adiantum aethiopicum*, *Asplenium flabellifolium*, *Pellaea falcata*, *Dichondra* spp., *Microlaena stipoides*, *Oplismenus imbecillis*, *Desmodium varians*, *Plectranthus parviflorus*, *Stellaria flaccida*.

**Vegetation structure:**

Stratum	Frequency (n=47)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	28	23.2 (5.3)	7.3 (5.1)
Tree canopy	100	16.8 (7.9)	39.9 (25.1)
Small tree	49	9.8 (4.1)	37.1 (21.4)
Shrub	45	2.4 (0.7)	20.1 (17.6)
Ground cover	96	0.6 (0.3)	34 (27.3)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 18 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 31 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 18 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Adiantum aethiopicum</i>	2(1-3)	85	1(1-1)	9
<i>Adiantum hispidulum</i>	1(1-1)	15	1(1-1)	2
<i>Alectryon subcinereus</i>	1(1-2)	40	1(1-1)	2
<i>Aphanopetalum resinosum</i>	1(1-2)	49	2(1-3)	4
<i>Arthropodium milleflorum</i>	1(1-2)	25	1(1-1)	5
<i>Arthropodium minus</i>	1(1-1)	13	1(1-1)	1
<i>Asplenium flabellifolium</i>	1(1-2)	75	1(1-1)	11
<i>Austrostipa ramosissima</i>	1(1-2)	17	1(1-2)	1
<i>Backhousia myrtifolia</i>	4(3-5)	87	2(1-3)	5
<i>Brachychiton populneus</i> subsp. <i>populneus</i>	1(1-1)	28	1(1-1)	3
<i>Breynia oblongifolia</i>	1(1-1)	49	1(1-1)	12
<i>Bursaria spinosa</i>	1(1-2)	40	1(1-2)	14
<i>Cardamine paucijuga</i>	1(1-1)	19	1(1-1)	<1
<i>Carex longibrachiata</i>	1(1-1)	13	1(1-2)	4
<i>Cayratia clematidea</i>	1(1-1)	36	1(1-1)	2
<i>Celastrus australis</i>	1(1-2)	32	1(1-1)	2
<i>Cissus antarctica</i>	1(1-1)	26	1(1-2)	3
<i>Claoxylon australe</i>	1(1-1)	21	1(1-2)	3
<i>Clematis aristata</i>	1(1-1)	43	1(1-1)	20
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	42	1(1-1)	10
<i>Clerodendrum tomentosum</i>	1(1-1)	25	1(1-1)	5
<i>Commelina cyanea</i>	1(1-1)	19	1(1-1)	4
<i>Crassula sieberiana</i>	1(1-1)	21	1(1-1)	3
<i>Cyperus gracilis</i>	1(1-2)	13	1(1-1)	2
<i>Deeringia amaranthoides</i>	1(1-1)	13	1(1-1)	<1
<i>Desmodium varians</i>	1(1-1)	53	1(1-1)	21
<i>Dichondra</i> spp.	1(1-1)	64	1(1-2)	25
<i>Doodia aspera</i>	1(1-2)	30	1(1-2)	11
<i>Doodia caudata</i>	1(1-1)	21	1(1-1)	<1
<i>Einadia hastata</i>	1(1-1)	13	1(1-1)	3
<i>Eucalyptus tereticornis</i>	1(1-2)	43	2(1-3)	7
<i>Eustrephus latifolius</i>	1(1-1)	49	1(1-1)	19
<i>Ficus coronata</i>	1(1-3)	23	1(1-2)	4

<i>Ficus rubiginosa</i>	3(1-3)	19	1(1-1)	1
<i>Galium propinquum</i>	1(1-1)	26	1(1-1)	7
<i>Geitonoplesium cymosum</i>	1(1-1)	83	1(1-1)	15
<i>Geranium homeanum</i>	1(1-1)	15	1(1-1)	3
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-1)	26	1(1-1)	8
<i>Hydrocotyle geraniifolia</i>	1(1-1)	23	1(1-1)	2
<i>Hymenanthera dentata</i>	1(1-2)	58	1(1-1)	6
<i>Indigofera australis</i>	1(1-1)	28	1(1-1)	9
<i>Marsdenia flavescent</i>	1(1-1)	32	1(1-2)	2
<i>Marsdenia rostrata</i>	1(1-1)	28	1(1-2)	12
<i>Melaleuca styphelioides</i>	3(1-3)	15	2(1-3)	2
<i>Microlaena stipoides</i>	1(1-2)	66	1(1-2)	36
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-1)	55	1(1-1)	7
<i>Notodanthonia longifolia</i>	1(1-1)	21	1(1-2)	5
<i>Olearia viscidula</i>	1(1-1)	38	1(1-2)	5
<i>Oplismenus aemulus</i>	1(1-2)	21	1(1-2)	5
<i>Oplismenus imbecillis</i>	1(1-2)	55	1(1-2)	14
<i>Oxalis chnoodes</i>	1(1-1)	15	1(1-1)	1
<i>Pandorea pandorana</i>	1(1-2)	85	1(1-1)	18
<i>Parietaria debilis</i>	1(1-1)	19	1(1-1)	<1
<i>Passiflora herbertiana</i> subsp. <i>herbertiana</i>	1(1-1)	15	1(1-1)	1
<i>Pellaea falcata</i>	1(1-2)	70	1(1-1)	10
<i>Pellaea nana</i>	1(1-2)	53	1(1-1)	1
<i>Pittosporum undulatum</i>	1(1-1)	43	1(1-1)	14
<i>Plantago debilis</i>	1(1-1)	26	1(1-1)	7
<i>Plectranthus parviflorus</i>	1(1-1)	55	1(1-1)	7
<i>Poa affinis</i>	1(1-3)	17	1(1-2)	2
<i>Pratia purpurascens</i>	1(1-1)	38	1(1-1)	17
<i>Pyrrosia rupestris</i>	1(1-2)	51	1(1-2)	6
<i>Rapanea howittiana</i>	1(1-1)	21	1(1-1)	5
<i>Rumex brownii</i>	1(1-1)	21	1(1-1)	5
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	45	1(1-1)	7
<i>Solanum prinophyllum</i>	1(1-1)	30	1(1-1)	6
<i>Solanum pungetium</i>	1(1-1)	19	1(1-1)	5
<i>Stellaria flaccida</i>	2(1-2)	42	1(1-1)	10
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	38	1(1-1)	7
<i>Tylophora barbata</i>	1(1-1)	43	1(1-1)	17
<i>Urtica incisa</i>	1(1-1)	45	1(1-1)	5

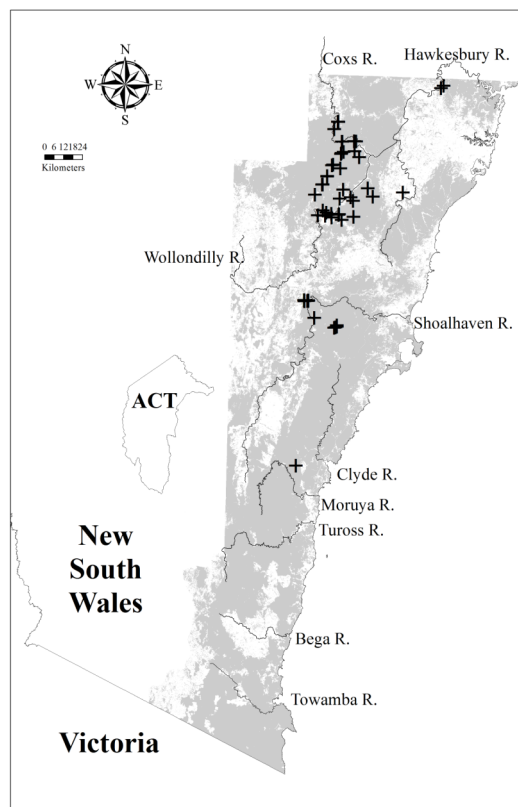
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Glycine clandestina</i>	1(1-1)	36	1(1-1)	26

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-3)	17	1(1-2)	9
<i>Eucalyptus albens</i>	3(1-3)	4	3(3-3)	<1

<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	1(1-1)	2	2(1-3)	1
<i>Eucalyptus blakelyi</i>	1(1-1)	2	2(1-3)	1
<i>Eucalyptus bosistoana</i>	1(1-1)	2	1(1-2)	3
<i>Eucalyptus crebra</i>	1(1-1)	4	2(1-3)	3
<i>Eucalyptus deanei</i>	3(1-3)	6	3(1-3)	1
<i>Eucalyptus elata</i>	1(1-1)	2	2(1-3)	5
<i>Eucalyptus eugenioides</i>	1(1-1)	2	2(1-3)	4
<i>Eucalyptus hypostomatica</i>	3(2-3)	4	1(1-3)	<1
<i>Eucalyptus macrorhyncha</i>	1(1-1)	2	2(1-3)	3
<i>Eucalyptus maidenii</i>	1(1-1)	2	2(1-2)	2
<i>Eucalyptus melliodora</i>	1(1-1)	4	1(1-3)	2
<i>Eucalyptus moluccana</i>	3(1-3)	4	3(1-3)	2
<i>Eucalyptus muelleriana</i>	1(1-1)	2	2(1-2)	6
<i>Eucalyptus piperita</i>	3(3-3)	2	2(1-3)	9
<i>Eucalyptus punctata</i>	1(1-1)	11	2(1-3)	9
<i>Eucalyptus siderophloia</i>	2(2-2)	2	3(1-3)	<1
<i>Eucalyptus smithii</i>	2(1-3)	6	1(1-2)	2
<i>Eucalyptus sparsifolia</i>	1(1-1)	2	2(1-3)	2
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-1)	2	2(1-3)	8



Locations of survey sites allocated to RF p38. Grey shading indicates extant native vegetation cover within the study area.

**RF p39: Western Sydney Dry Rainforest**

Plate p39. Western Sydney Dry Rainforest (Map Unit p39) in a gully beside Remembrance Drive on the Razorback Range north of Picton. This example shows a thicket of *Melaleuca styphelioides* draped with lianes (*Pandorea pandorana* and *Aphanopetalum resinosum*) above a shrub layer of *Clerodendrum tomentosum* and *Notelaea longifolia* forma *longifolia* and a close groundcover of *Adiantum aethiopicum*, *Oplismenus imbecillis* and *Pellaea falcata*.

Sample Sites: 9

Area Extant (ha): 350

Estimated % remaining: 25-50%

Area in conservation reserves (ha): <20 ha

Estimated % of pre-clearing area in conservation reserves: <3%

No. taxa (total / unique): 185 / 0

No. taxa per plot ( $\pm$ sd): 42.4 (12.8)

Class: Dry Rainforests

Related TEC: Equivalent to Western Sydney Dry Rainforest EEC (TSC).

Western Sydney Dry Rainforest (RF p39) was previously included in Grey Myrtle Dry Rainforest (RF p38) by Tindall *et al.* (2004). The new unit corresponds closely with the map unit of the same name described by Tozer (2003). This unit is a simple, low closed forest, frequently characterised by an interrupted canopy of *Melaleuca styphelioides* with scattered emergent *Eucalyptus* species and a sparse groundcover.

It has narrow distribution and occurs in small patches, mainly on the Razorback range (near Picton) and the Kurrajong area, with scattered occurrences in the central Cumberland Plain (e.g. Fairfield City Farm) and around its margins (e.g. the Cattai-Maroota area). Western Sydney Dry Rainforest generally occurs on sheltered lower slopes and gullies on steeply sloping, rugged topography. It is found almost exclusively on soils derived from Wianamatta Shale in areas receiving annual rainfall in the range of 800 - 920 mm.

In more marginal sites it grades into Cumberland Moist Shale Woodland (Map Unit p514) which is characterised by fewer subtropical rainforest species and an even *Eucalyptus* canopy. There is often an abrupt transition from Western Sydney Dry Rainforest to Cumberland Shale Hills (p28) or Shale Plains (p29) Woodland which may relate to soil moisture gradients or fire history. This transition is also associated with a decrease in annual rainfall and a transition to less rugged topography. In the southern parts of its distribution this unit may grade into Grey Myrtle Dry Rainforest (p38) with which it is closely related.

Remaining stands of Western Sydney Dry Rainforest have become highly fragmented by clearing and as little as one quarter of the original distribution may remain. It is highly sensitive to fire, and remnants on private lands are likely to be degraded by grazing and weed invasion.

**Floristic Summary:**

**Trees:** *Melaleuca styphelioides*. **Shrubs:** *Acacia implexa*, *Breynia oblongifolia*, *Clerodendrum tomentosum*, *Notelaea longifolia* forma *longifolia*, *Pittosporum revolutum*, *Rapanea variabilis*. **Climbers** *Aphanopetalum resinosum*, *Cayratia clematidea*, *Eustrephus latifolius*, *Geitonoplesium cymosum*, *Pandorea pandorana*, *Rubus parvifolius*, *Stephania japonica* var. *discolor*. **Groundcover:** *Adiantum aethiopicum*, *Asplenium flabellifolium*, *Desmodium varians*, *Dichondra* spp., *Echinopogon ovatus*, *Galium propinquum*, *Geranium homeanum*, *Microlaena stipoides*,



*Oplismenus imbecillis*, *Pellaea falcata*, *Plectranthus parviflorus*, *Sigesbeckia orientalis* subsp. *orientalis*, *Stellaria flaccida*, *Urtica incisa*.

#### Vegetation structure:

Stratum	Frequency (n=9)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	11	25 (-)	5 (-)
Tree canopy	100	22.4 (12.6)	26.8 (17.9)
Small tree	22	13.5 (9.2)	40 (0)
Shrub	78	3.4 (2.2)	23.8 (16.2)
Ground cover	89	0.8 (0.3)	37.5 (26)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 22 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 32 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 18 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Abutilon oxycarpum</i> var. <i>oxycarpum</i>	2(1-2)	22	1(1-1)	<1
<i>Acacia implexa</i>	1(1-1)	78	1(1-1)	7
<i>Acacia parramattensis</i>	1(1-1)	33	1(1-2)	4
<i>Adiantum aethiopicum</i>	2(2-3)	89	1(1-1)	9
<i>Alectryon subcinereus</i>	1(1-3)	33	1(1-1)	2
<i>Allocasuarina torulosa</i>	1(1-1)	44	1(1-3)	5
<i>Aphanopetalum resinsum</i>	2(1-3)	78	2(1-3)	4
<i>Asplenium flabellifolium</i>	1(1-3)	56	1(1-1)	12
<i>Breynia oblongifolia</i>	1(1-1)	78	1(1-1)	12
<i>Carex longibrachiata</i>	1(1-1)	33	1(1-2)	4
<i>Cayratia clematidea</i>	2(1-2)	89	1(1-1)	2
<i>Celastrus australis</i>	2(1-2)	22	1(1-1)	2
<i>Cheilanthes distans</i>	1(1-1)	22	1(1-1)	2
<i>Cissus antarctica</i>	2(1-4)	44	1(1-2)	3
<i>Clerodendrum tomentosum</i>	1(1-2)	89	1(1-1)	5
<i>Commelina cyanea</i>	1(1-1)	33	1(1-1)	4
<i>Corymbia maculata</i>	2(1-4)	33	2(1-3)	3
<i>Cyperus gracilis</i>	1(1-1)	33	1(1-1)	2
<i>Cyperus imbecillis</i>	1(1-2)	33	1(1-1)	<1
<i>Deeringia amaranthoides</i>	2(1-2)	22	1(1-1)	<1
<i>Desmodium varians</i>	1(1-1)	78	1(1-1)	21
<i>Dichondra</i> spp.	2(1-2)	78	1(1-2)	25
<i>Echinopogon ovatus</i>	1(1-1)	67	1(1-1)	14
<i>Einadia trigonos</i>	1(1-1)	22	1(1-1)	1
<i>Eucalyptus tereticornis</i>	3(1-3)	44	2(1-3)	7
<i>Eustrephus latifolius</i>	1(1-1)	78	1(1-1)	19
<i>Galium propinquum</i>	1(1-1)	67	1(1-1)	7
<i>Geitonoplesium cymosum</i>	1(1-1)	89	1(1-1)	16
<i>Geranium homeanum</i>	2(1-2)	67	1(1-1)	3
<i>Juncus usitatus</i>	1(1-1)	22	1(1-1)	2

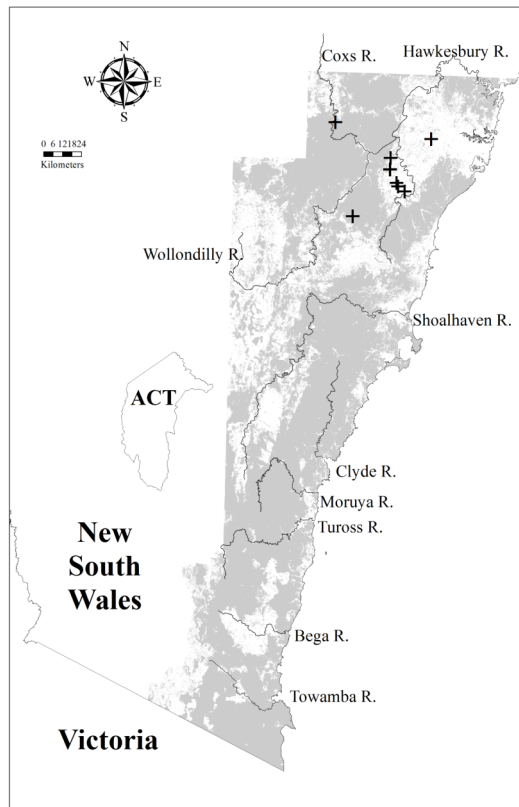
<i>Melaleuca styphelioides</i>	3(1-3)	67	2(1-3)	2
<i>Melicope micrococca</i>	1(1-1)	22	1(1-2)	1
<i>Microlaena stipoides</i>	1(1-2)	89	1(1-2)	36
<i>Notelaea longifolia forma longifolia</i>	1(1-2)	78	1(1-1)	8
<i>Omalanthus populifolius</i>	1(1-1)	22	1(1-1)	1
<i>Oplismenus aemulus</i>	2(1-2)	44	1(1-2)	5
<i>Oplismenus imbecillis</i>	2(1-2)	78	1(1-2)	14
<i>Pandorea pandorana</i>	2(1-2)	67	1(1-1)	18
<i>Pellaea falcata</i>	2(1-3)	89	1(1-1)	10
<i>Pittosporum revolutum</i>	1(1-1)	67	1(1-1)	8
<i>Plectranthus parviflorus</i>	1(1-2)	78	1(1-1)	8
<i>Poa affinis</i>	1(1-1)	22	1(1-2)	2
<i>Pseuderanthemum variabile</i>	1(1-2)	44	1(1-2)	9
<i>Pteris tremula</i>	1(1-1)	22	1(1-1)	1
<i>Rapanea variabilis</i>	1(1-2)	56	1(1-1)	4
<i>Rubus parvifolius</i>	1(1-1)	67	1(1-1)	9
<i>Sarcopetalum harveyanum</i>	1(1-2)	44	1(1-1)	4
<i>Sigesbeckia orientalis subsp. orientalis</i>	1(1-2)	89	1(1-1)	7
<i>Solanum stelligerum</i>	1(1-1)	33	1(1-1)	1
<i>Stellaria flaccida</i>	2(1-2)	56	1(1-1)	11
<i>Stephania japonica var. discolor</i>	1(1-2)	67	1(1-1)	7
<i>Urtica incisa</i>	1(1-2)	56	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Bursaria spinosa</i>	1(1-2)	44	1(1-2)	14
<i>Clematis aristata</i>	1(1-2)	44	1(1-1)	20
<i>Doodia aspera</i>	2(1-4)	33	1(1-2)	12
<i>Glycine clandestina</i>	1(1-1)	33	1(1-1)	26
<i>Glycine tabacina</i>	1(1-2)	33	1(1-1)	7
<i>Hymenanthera dentata</i>	1(1-1)	33	1(1-1)	6
<i>Marsdenia rostrata</i>	2(1-2)	33	1(1-2)	12
<i>Oxalis perennans</i>	1(1-1)	33	1(1-1)	13
<i>Plantago debilis</i>	1(1-2)	33	1(1-1)	7
<i>Pratia purpurascens</i>	1(1-2)	33	1(1-1)	17
<i>Senecio linearifolius</i>	1(1-1)	33	1(1-1)	8
<i>Tylophora barbata</i>	2(1-2)	33	1(1-1)	17
<i>Wahlenbergia gracilis</i>	1(1-1)	33	1(1-1)	11

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	11	1(1-2)	9
<i>Eucalyptus hypostomatica</i>	3(3-3)	11	2(1-3)	<1
<i>Eucalyptus pilularis</i>	3(3-3)	11	2(1-3)	5
<i>Eucalyptus punctata</i>	1(1-1)	11	2(1-3)	9
<i>Syncarpia glomulifera subsp. glomulifera</i>	1(1-1)	11	2(1-3)	8



Locations of survey sites allocated to RF p39. Grey shading indicates extant native vegetation cover within the study area.

#### RF p40: Temperate Dry Rainforest



Plate p40. Temperate Dry Rainforest (Map Unit p40) beside the Kings Highway at Currowan. The canopy is dominated by *Backhousia myrtifolia*, with a very sparse midstorey including *Pittosporum undulatum* and a sparse groundcover of scattered ferns including *Asplenium australasicum* and *Doodia aspera*.

Sample Sites: 124

Area Extant (ha): 7500

Estimated % remaining: >90%

Area in conservation reserves (ha): 3500

Estimated % of pre-clearing area in conservation reserves: 40-50%

No. taxa (total / unique): 372 / 0

No. taxa per plot ( $\pm$ sd): 37.9 (13.6)

Class: Dry Rainforests  
Related TEC: n/a

Temperate Dry Rainforest (RF p40) represents a revision and extension of RF 40 identified by Tindall *et al.* (2004), based on additional samples over a larger study area. The revised RF p40 includes a number of additional sites classified by Beukers (undated) as Dry Gully Rainforest.

This unit is a simple closed forest characterised by a dense tree canopy, lianas, a mesic shrub stratum and a sparse patchy groundcover. This dry rainforest has a widespread distribution as small occurrences in gullies and on lower slopes of gorges and foothills below 400m ASL, predominantly south of Nowra in the Ettrema Gorge and the Clyde, Deua and Tuross hinterlands. Within this distribution Temperate Dry Rainforest typically occupies dry shale gullies with an annual rainfall from 850 – 1250mm. North of the Shoalhaven, Temperate Dry Rainforest is largely replaced by Grey Myrtle Dry Rainforest (RF p38) in the Blue Mountains and Cumberland Plain margins, while south of Cobargo it grades into and is replaced by Southeast Dry Rainforest (RF e1).

Temperate Dry Rainforest is highly sensitive to fire, and remnants on private lands are likely to be subject to grazing and weed invasion.

#### Floristic Summary:

**Trees:** *Backhousia myrtifolia*, *Acmena smithii*, *Pittosporum undulatum*. **Shrubs:** *Pittosporum revolutum*, *Breynia oblongifolia*, *Ficus coronata*, *Notelaea venosa*, *Rapanea howittiana*. **Climbers:** *Morinda jasminoides*, *Cissus hypoglauca*, *Eustrephus latifolius*, *Pandorea pandorana*, *Smilax australis*, *Marsdenia rostrata*, *Geitonoplesium cymosum*, *Parsonia straminea*. **Groundcover:** *Doodia aspera*, *Pseuderanthemum variabile*, *Oplismenus imbecillis*.

#### Vegetation structure:

Stratum	Frequency (n=45)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	11	29 (8.2)	6.2 (7.9)
Tree canopy	93	24.7 (10.3)	37.2 (24.9)
Small tree	82	12.2 (5.5)	52 (29.7)
Shrub	33	2.8 (0.7)	25.3 (18.9)
Ground cover	89	0.9 (0.4)	31.9 (26.6)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 24 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 27 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 24 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia silvestris</i>	1(1-2)	10	1(1-2)	<1
<i>Acacia trachyphloia</i>	1(1-1)	6	1(1-1)	<1
<i>Acmena smithii</i>	2(1-3)	70	2(1-3)	8
<i>Acronychia oblongifolia</i>	1(1-2)	9	1(1-3)	1
<i>Adiantum aethiopicum</i>	1(1-1)	23	1(1-2)	9
<i>Adiantum formosum</i>	1(1-2)	15	2(1-3)	3
<i>Adiantum hispidulum</i>	1(1-1)	31	1(1-1)	2
<i>Alectryon subdentatus forma subdentatus</i>	1(1-2)	18	1(1-2)	<1
<i>Alphitonia excelsa</i>	2(1-3)	6	1(1-1)	1
<i>Aphanopetalum resinosum</i>	2(1-3)	48	1(1-3)	3
<i>Arthropteris tenella</i>	2(1-3)	9	1(1-2)	2
<i>Asplenium australasicum forma australasicum</i>	1(1-1)	18	1(1-2)	2
<i>Asplenium flabellifolium</i>	2(1-3)	55	1(1-1)	11
<i>Austrocynoglossum latifolium</i>	1(1-2)	5	1(1-1)	1
<i>Australina pusilla</i>	1(1-2)	14	1(1-2)	1
<i>Backhousia myrtifolia</i>	3(3-3)	81	2(1-3)	4
<i>Beyeria lasiocarpa</i>	1(1-2)	24	1(1-2)	1
<i>Blechnum cartilagineum</i>	1(1-3)	45	1(1-2)	11

<i>Blechnum nudum</i>	1(1-2)	10	1(1-2)	3
<i>Blechnum patersonii</i> subsp. <i>patersonii</i>	1(1-2)	9	1(1-2)	2
<i>Breynia oblongifolia</i>	1(1-2)	60	1(1-1)	11
<i>Bulbophyllum exiguum</i>	2(1-3)	4	1(1-1)	<1
<i>Callitriche muelleri</i>	1(1-1)	4	1(1-2)	<1
<i>Callicoma serratifolia</i>	2(1-3)	13	1(1-2)	3
<i>Calochlaena dubia</i>	1(1-2)	25	1(1-3)	9
<i>Cassinia trinerva</i>	1(1-1)	10	1(1-1)	3
<i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i>	1(1-2)	6	3(1-3)	1
<i>Celastrus australis</i>	1(1-2)	12	1(1-1)	2
<i>Ceratopetalum apetalum</i>	1(1-3)	10	3(1-3)	3
<i>Cissus antarctica</i>	1(1-1)	13	1(1-2)	3
<i>Cissus hypoglauca</i>	2(1-2)	65	1(1-2)	9
<i>Citronella moorei</i>	1(1-1)	5	1(1-2)	1
<i>Claoxylon australe</i>	2(1-3)	26	1(1-2)	3
<i>Clematis aristata</i>	1(1-2)	50	1(1-1)	20
<i>Commersonia fraseri</i>	1(1-2)	7	1(1-1)	1
<i>Coprosma quadrifida</i>	1(1-2)	19	1(1-1)	9
<i>Cyathea australis</i>	1(1-1)	41	1(1-2)	8
<i>Dendrobium speciosum</i>	1(1-1)	6	1(1-1)	1
<i>Dicksonia antarctica</i>	1(1-1)	15	2(1-3)	4
<i>Diospyros australis</i>	2(1-3)	8	1(1-2)	3
<i>Diplazium australe</i>	1(1-1)	12	1(1-2)	1
<i>Doodia aspera</i>	2(1-3)	94	1(1-2)	10
<i>Elaeocarpus reticulatus</i>	1(1-1)	35	1(1-1)	11
<i>Elatostema reticulatum</i>	1(1-1)	3	1(1-3)	1
<i>Eucalyptus botryoides</i>	2(1-2)	8	2(1-3)	3
<i>Eupomatia laurina</i>	2(1-2)	24	1(1-2)	4
<i>Eustrephus latifolius</i>	1(1-2)	69	1(1-1)	18
<i>Ficus coronata</i>	1(1-2)	41	1(1-2)	3
<i>Ficus rubiginosa</i>	1(1-2)	6	1(1-2)	1
<i>Gahnia aspera</i>	1(1-1)	24	1(1-1)	4
<i>Gahnia clarkei</i>	1(1-2)	15	1(1-2)	2
<i>Gahnia melanocarpa</i>	1(1-1)	17	1(1-1)	5
<i>Galium gaudichaudii</i>	1(1-2)	18	1(1-1)	3
<i>Geitonoplesium cymosum</i>	1(1-1)	66	1(1-1)	15
<i>Hedycarya angustifolia</i>	2(1-3)	19	1(1-2)	4
<i>Hibbertia dentata</i>	1(1-1)	15	1(1-1)	6
<i>Histiopteris incisa</i>	1(1-1)	6	1(1-1)	1
<i>Hydrocotyle geraniifolia</i>	1(1-1)	7	1(1-1)	2
<i>Hymenophyllum cupressiforme</i>	1(1-2)	15	1(1-1)	1
<i>Hymenanthera dentata</i>	1(1-1)	27	1(1-1)	6
<i>Lastreopsis acuminata</i>	1(1-2)	7	1(1-2)	2
<i>Lastreopsis decomposita</i>	2(1-3)	44	2(1-3)	2
<i>Lastreopsis microsora</i> subsp. <i>microsora</i>	2(1-3)	48	2(1-3)	3
<i>Lepidosperma urophorum</i>	2(1-2)	18	1(1-2)	7

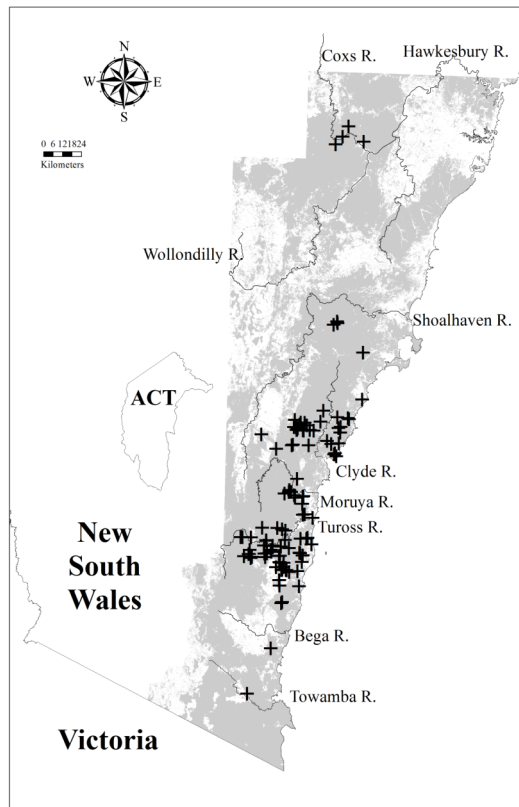
<i>Libertia paniculata</i>	1(1-1)	6	1(1-1)	2
<i>Liparis reflexa</i>	1(1-1)	3	1(1-1)	<1
<i>Livistona australis</i>	1(1-1)	17	1(1-1)	6
<i>Marsdenia flavescens</i>	1(1-2)	23	1(1-1)	2
<i>Marsdenia rostrata</i>	2(1-2)	77	1(1-1)	11
<i>Microsorium scandens</i>	2(1-3)	13	2(1-3)	4
<i>Morinda jasminoides</i>	2(1-3)	90	1(1-2)	8
<i>Notelaea venosa</i>	2(1-2)	80	1(1-1)	11
<i>Omalanthus populifolius</i>	1(1-2)	6	1(1-1)	1
<i>Oplismenus imbecillis</i>	2(1-2)	79	1(1-2)	13
<i>Pandorea pandorana</i>	2(1-2)	75	1(1-1)	18
<i>Parsonsia brownii</i>	1(1-1)	6	1(1-2)	2
<i>Parsonsia straminea</i>	1(1-2)	48	1(1-1)	6
<i>Pellaea falcata</i>	1(1-2)	56	1(1-1)	10
<i>Pellaea nana</i>	1(1-2)	10	1(1-1)	2
<i>Pittosporum multiflorum</i>	2(1-3)	25	1(1-2)	3
<i>Pittosporum revolutum</i>	1(1-2)	61	1(1-1)	7
<i>Pittosporum undulatum</i>	1(1-2)	74	1(1-1)	13
<i>Plectranthus parviflorus</i>	1(1-2)	33	1(1-1)	7
<i>Plectorrhiza tridentata</i>	2(1-3)	34	1(1-1)	1
<i>Polystichum australiense</i>	1(1-1)	7	1(1-2)	1
<i>Polyscias murrayi</i>	1(1-1)	19	1(1-1)	1
<i>Polystichum proliferum</i>	1(1-2)	12	1(1-2)	4
<i>Pomaderris cinerea</i>	2(1-2)	6	1(1-2)	1
<i>Prostanthera incisa</i>	1(1-1)	18	1(1-1)	1
<i>Prostanthera lasianthos</i>	1(1-1)	16	1(1-1)	2
<i>Pseuderanthemum variabile</i>	2(1-2)	52	1(1-2)	8
<i>Psychotria loniceroides</i>	1(1-2)	45	1(1-1)	3
<i>Pteris tremula</i>	1(1-1)	6	1(1-1)	1
<i>Pteris umbrosa</i>	1(1-1)	8	2(1-3)	2
<i>Pyrrosia rupestris</i>	1(1-2)	52	1(1-2)	6
<i>Rapanea howittiana</i>	1(1-1)	63	1(1-1)	4
<i>Ripogonum album</i>	1(1-3)	9	1(1-2)	1
<i>Rubus moluccanus</i> var. <i>trilobus</i>	1(1-1)	15	1(1-1)	2
<i>Rubus nebulosus</i>	1(1-1)	9	1(1-1)	1
<i>Rubus rosifolius</i>	1(1-1)	27	1(1-1)	2
<i>Sambucus australasica</i>	1(1-1)	12	1(1-1)	1
<i>Sarcochilus falcatus</i>	1(1-2)	13	1(1-2)	<1
<i>Sarcopetalum harveyanum</i>	1(1-1)	28	1(1-1)	4
<i>Sarcochilus hillii</i>	1(1-1)	6	1(1-1)	<1
<i>Sarcochilus olivaceus</i>	1(1-3)	5	1(1-1)	<1
<i>Schizomeria ovata</i>	1(1-2)	10	1(1-2)	1
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-2)	26	1(1-1)	7
<i>Smilax australis</i>	1(1-2)	73	1(1-1)	15
<i>Solanum aviculare</i>	1(1-1)	10	1(1-1)	1
<i>Solanum pungetium</i>	1(1-1)	31	1(1-1)	5

<i>Solanum stelligerum</i>	1(1-1)	3	1(1-1)	1
<i>Stellaria flaccida</i>	1(1-2)	47	1(1-1)	10
<i>Stenocarpus salignus</i>	2(1-2)	8	1(1-1)	2
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	29	1(1-1)	6
<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	1(1-2)	39	1(1-2)	6
<i>Tasmania insipida</i>	1(1-3)	8	1(1-2)	2
<i>Tristaniopsis laurina</i>	1(1-2)	10	1(1-3)	1
<i>Trophis scandens</i> subsp. <i>scandens</i>	1(1-1)	5	1(1-2)	1
<i>Tylophora barbata</i>	1(1-1)	33	1(1-1)	17
<i>Urtica incisa</i>	1(1-1)	13	1(1-1)	5
<i>Zieria smithii</i>	1(1-1)	8	1(1-1)	2

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	2(1-2)	5	1(1-2)	9
<i>Angophora subvelutina</i>	1(1-1)	1	3(1-3)	<1
<i>Corymbia maculata</i>	1(1-2)	6	2(1-3)	3
<i>Eucalyptus baueriana</i>	2(1-2)	2	2(1-2)	1
<i>Eucalyptus bosistoana</i>	3(3-3)	1	1(1-2)	3
<i>Eucalyptus cypellocarpa</i>	1(1-2)	4	2(1-2)	10
<i>Eucalyptus deanei</i>	1(1-1)	1	3(1-3)	1
<i>Eucalyptus elata</i>	2(2-3)	4	2(1-3)	5
<i>Eucalyptus eugenioides</i>	2(2-2)	1	2(1-3)	4
<i>Eucalyptus fastigata</i>	1(1-1)	2	2(1-3)	6
<i>Eucalyptus fibrosa</i>	1(1-1)	1	2(1-3)	3
<i>Eucalyptus longifolia</i>	1(1-2)	4	1(1-2)	2
<i>Eucalyptus maidenii</i>	2(1-2)	2	2(1-2)	2
<i>Eucalyptus muelleriana</i>	2(1-2)	5	2(1-2)	6
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-1)	2	1(1-2)	3
<i>Eucalyptus pilularis</i>	1(1-1)	2	2(1-3)	5
<i>Eucalyptus robusta</i>	2(2-2)	1	3(1-3)	<1
<i>Eucalyptus saligna</i> X <i>botryoides</i>	3(1-3)	2	2(1-3)	2
<i>Eucalyptus smithii</i>	1(1-1)	2	1(1-2)	2
<i>Eucalyptus tereticornis</i>	1(1-1)	1	2(1-3)	7
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	2(1-2)	2	2(1-3)	8





Locations of survey sites allocated to RF p40. Grey shading indicates extant native vegetation cover within the study area.

#### FoW p44: Sydney Swamp Forest



Plate p44. Sydney Swamp Forest (Map Unit p44) along Cripple Creek at Mount Riverview. A canopy of *Melaleuca linariifolia* grows above a shrub layer including *Leptospermum polygalifolium* and a dense tall ground layer including *Pteridium esculentum*, *Gahnia sieberiana* and *Entolasia marginata*.

Sample Sites: 16

Area Extant (ha): 160

Estimated % remaining: 70-85%

Area in conservation reserves (ha): 20

Estimated % of pre-clearing area in conservation reserves: <10%

No. taxa (total / unique): 185 / 1

No. taxa per plot ( $\pm$ sd): 36.6 (23.9)

Class: Coastal Swamp Forests

Related TEC: Swamp Sclerophyll Forest on Coastal Floodplains EEC (TSC); includes Maroota Sands Swamp Forest EEC (TSC).

Sydney Swamp Forest (FoW p44) is equivalent to FoW 44 identified by Tindall *et al.* (2004), and is a dense scrub with emergent trees and a sparse groundcover of sedges and forbs. This unit has a distribution restricted to narrow strips of sandy clay alluvium along drainage lines below 50m around the margins of Cumberland plain. Examples are found in Little Cattai Creek and Blue Gum Creek near Maroota, in the Berowra valley and in the lower Georges River system (e.g. along Williams Creek). Insufficient data were available to reliably model FoW p44 in that area. Sydney Swamp Forest shares a number of species with Coastal Sand Swamp Forest (FoW p45), which is found on soils with sandier texture. Sydney Swamp Forest is likely to occur in low-lying tributaries of the Hawkesbury River estuary immediately to the north of the study area boundary, possibly extending to the Gosford-Wyong district.

Sydney Swamp Forest's naturally restricted range has been reduced by clearing, and remaining stands are threatened by fragmentation and weed invasion.

#### Floristic Summary:

**Trees:** *Eucalyptus robusta*. **Shrubs:** *Melaleuca linariifolia*, *Leptospermum polygalifolium*. **Climbers:** *Glycine tabacina*, *Morinda jasminoides*. **Groundcover:** *Pteridium esculentum*, *Pratia purpurascens*, *Gahnia sieberiana*, *Hypolepis muelleri*, *Entolasia marginata*, *Adiantum aethiopicum*, *Calochlaena dubia*, *Centella asiatica*, *Viola hederacea*.

#### Vegetation structure:

Stratum	Frequency (n=2)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	100	25 (14.1)	30 (7.1)
Small tree	100	18.5 (9.2)	60 (42.4)
Shrub	-	- (-)	- (-)
Ground cover	100	1.3 (0.4)	40 (42.4)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 9 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 17 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 9 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia floribunda</i>	1(1-2)	38	1(1-2)	2
<i>Acacia parramattensis</i>	1(1-1)	25	1(1-2)	4
<i>Adiantum aethiopicum</i>	1(1-1)	63	1(1-2)	9
<i>Blechnum nudum</i>	1(1-2)	25	1(1-2)	3
<i>Breynia oblongifolia</i>	1(1-1)	44	1(1-1)	12
<i>Callicoma serratifolia</i>	1(1-1)	44	1(1-2)	3
<i>Calochlaena dubia</i>	1(1-3)	56	1(1-3)	9
<i>Centella asiatica</i>	1(1-1)	69	1(1-1)	4
<i>Ceratopetalum apetalum</i>	1(1-2)	44	3(1-3)	3
<i>Cissus hypoglauca</i>	1(1-1)	56	1(1-2)	10
<i>Entolasia marginata</i>	1(1-2)	63	1(1-1)	11
<i>Eucalyptus deanei</i>	2(2-3)	31	3(1-3)	1
<i>Eucalyptus robusta</i>	3(1-3)	50	3(1-3)	<1
<i>Gahnia clarkei</i>	2(2-3)	31	1(1-2)	2
<i>Gahnia sieberiana</i>	1(1-1)	63	1(1-1)	4
<i>Glycine tabacina</i>	1(1-1)	50	1(1-1)	7
<i>Hypolepis muelleri</i>	3(1-4)	81	1(1-1)	1
<i>Leptospermum polygalifolium</i>	1(1-1)	63	1(1-2)	8
<i>Melaleuca linariifolia</i>	3(1-3)	75	1(1-1)	1
<i>Morinda jasminoides</i>	1(1-1)	63	1(1-2)	9

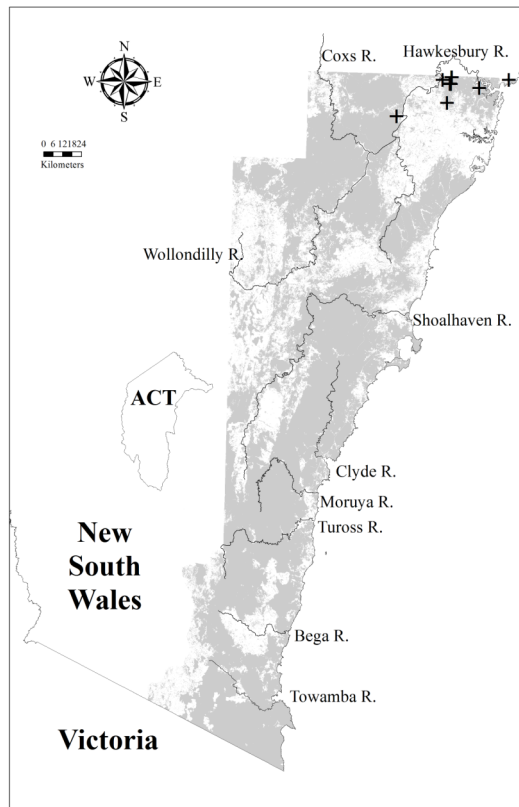
<i>Oplismenus aemulus</i>	1(1-2)	44	1(1-2)	5
<i>Parsonsia straminea</i>	1(1-1)	31	1(1-1)	7
<i>Paspalum distichum</i>	1(1-2)	25	1(1-1)	<1
<i>Pratia purpurascens</i>	1(1-1)	75	1(1-1)	17
<i>Pteridium esculentum</i>	1(1-2)	81	1(1-2)	37
<i>Rubus moluccanus</i> var. <i>trilobus</i>	1(1-1)	44	1(1-1)	2
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	56	1(1-1)	7
<i>Trema tomentosa</i> var. <i>viridis</i>	1(1-1)	25	1(1-1)	1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Clematis aristata</i>	1(1-2)	31	1(1-1)	20
<i>Dianella caerulea</i>	1(1-1)	38	1(1-1)	28
<i>Glycine clandestina</i>	1(1-1)	31	1(1-1)	26
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-1)	31	1(1-2)	10
<i>Lomandra longifolia</i>	1(1-1)	38	1(1-1)	44
<i>Microlaena stipoides</i>	2(1-2)	44	1(1-2)	36
<i>Oplismenus imbecillis</i>	1(1-1)	38	1(1-2)	14
<i>Pseuderanthemum variabile</i>	1(1-1)	31	1(1-2)	9
<i>Tylophora barbata</i>	1(1-1)	38	1(1-1)	17
<i>Viola hederacea</i>	1(1-1)	50	1(1-1)	22

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	1(1-1)	6	1(1-2)	2
<i>Angophora costata</i>	1(1-1)	6	1(1-3)	7
<i>Angophora floribunda</i>	2(1-3)	19	1(1-2)	9
<i>Eucalyptus agglomerata</i>	1(1-1)	6	2(1-3)	7
<i>Eucalyptus notabilis</i>	1(1-1)	6	1(1-2)	1
<i>Eucalyptus piperita</i>	3(3-3)	6	2(1-3)	9
<i>Eucalyptus punctata</i>	1(1-1)	6	2(1-3)	9
<i>Eucalyptus saligna</i> X <i>botryoides</i>	3(3-3)	6	2(1-3)	2
<i>Eucalyptus sclerophylla</i>	1(1-1)	6	2(1-3)	4
<i>Eucalyptus tereticornis</i>	1(1-1)	6	2(1-3)	7
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-1)	13	2(1-3)	8



Locations of survey sites allocated to FoW p44. Grey shading indicates extant native vegetation cover within the study area.

#### FoW p45: Coastal Sand Swamp Forest



Plate p45. Coastal Sand Swamp Forest (Map Unit p45) beside Windang Road at Primbee, with a canopy of *Eucalyptus robusta* and scattered shrub patches including *Viminaria juncea* and *Acacia longifolia*. The dense groundcover is dominated by *Schoenus brevifolius*, *Pteridium esculentum*, *Baumea juncea* and *Imperata cylindrica* var. *major*.

Sample Sites: 18

Area Extant (ha): 1400

Estimated % remaining: 50-70%

Area in conservation reserves (ha): 370

Estimated % of pre-clearing area in conservation reserves: 5-25%

No. taxa (total / unique): 169 / 0

No. taxa per plot ( $\pm$ sd): 24.6 (8.2)

Class: Coastal Swamp Forests

Related TEC: Swamp Sclerophyll Forest on Coastal Floodplains EEC

Coastal Sand Swamp Forest (FoW p45) is equivalent to FoW 45 identified by Tindall *et al.* (2004). This unit is a low eucalypt forest with an open shrub layer and a dense groundcover of sedges and forbs, and occurs as scattered patches along the coastline at elevations below 15m ASL in drainage lines and depressions on sandy alluvium and coastal sand flats. Examples occur at Cockle Bay, Jibbon Lagoon, Korrongulla Swamp, Coomonderry Swamp and Lake Tabourie. On better drained sandy soils Coastal Sand Swamp Forest is replaced by Coastal Sand Forest (DSF p64). In poorly drained sites with a high water table Coastal Sand Swamp Forest grades into Coastal Freshwater Lagoon (FrW p313) or Floodplain Swamp Forest (FoW p105). Coastal Sand Swamp Forest has a restricted range within the study area from Sydney to Kiola and has been drained, cleared and fragmented by coastal development.

#### Floristic Summary:

**Trees:** *Eucalyptus robusta*. **Shrubs:** *Leptospermum polygalifolium*, *Acacia longifolia*, *Melaleuca linariifolia*, *M. ericifolia*, *Leptospermum continentale*. **Groundcover:** *Gahnia clarkei*, *Selaginella uliginosa*, *Imperata cylindrica*, *Baumea juncea*, *B. articulata*.

#### Vegetation structure:

Stratum	Frequency (n=10)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	10	15 (-)	5 (-)
Tree canopy	100	15 (5.4)	33.5 (21)
Small tree	70	6.4 (3.9)	38.6 (30.2)
Shrub	50	2.6 (0.5)	25.6 (33.2)
Ground cover	100	1.4 (0.7)	84 (16.6)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 5 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 18 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 5 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia longifolia</i>	1(1-1)	67	1(1-2)	9
<i>Baumea articulata</i>	1(1-3)	33	1(1-2)	<1
<i>Baumea juncea</i>	2(1-4)	39	2(1-3)	1
<i>Casuarina glauca</i>	1(1-3)	28	2(1-3)	1
<i>Centella asiatica</i>	1(1-1)	28	1(1-1)	4
<i>Entolasia marginata</i>	2(1-3)	39	1(1-1)	11
<i>Entolasia stricta</i>	1(1-1)	67	1(1-2)	34
<i>Eucalyptus botryoides</i>	2(1-2)	22	2(1-3)	3
<i>Eucalyptus robusta</i>	3(2-4)	56	2(1-3)	<1
<i>Gahnia clarkei</i>	2(1-3)	67	1(1-2)	2
<i>Gleichenia dicarpa</i>	2(1-4)	22	1(1-2)	2
<i>Gonocarpus micranthus</i>	1(1-6)	28	1(1-1)	1
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-2)	50	1(1-2)	10
<i>Leptospermum continentale</i>	1(1-3)	39	1(1-1)	3
<i>Leptospermum polygalifolium</i>	2(1-2)	67	1(1-2)	8
<i>Leptocarpus tenax</i>	3(1-5)	22	1(1-2)	2
<i>Lobelia anceps</i>	1(1-1)	28	1(1-1)	1
<i>Melaleuca ericifolia</i>	2(1-2)	50	3(1-4)	1
<i>Melaleuca linariifolia</i>	1(1-2)	44	1(1-2)	1
<i>Melaleuca thymifolia</i>	1(1-2)	22	1(1-1)	1
<i>Parsonsia straminea</i>	1(1-3)	28	1(1-1)	7
<i>Schoenus brevifolius</i>	2(1-5)	28	1(1-3)	1



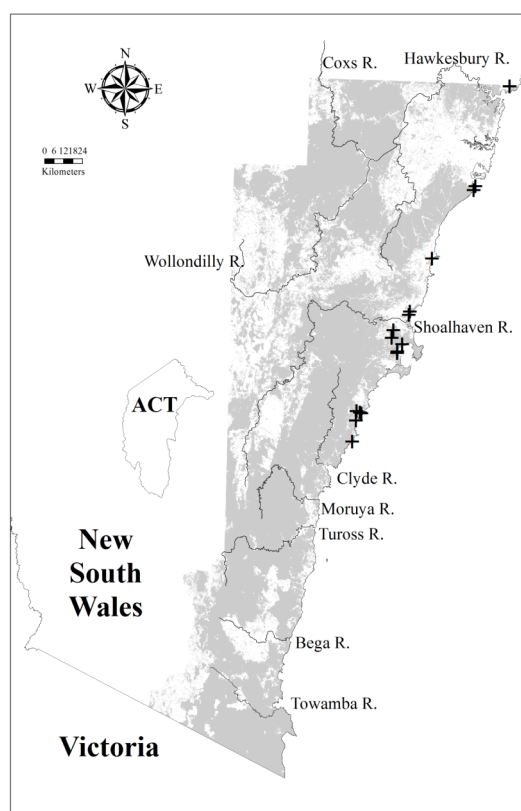
<i>Selaginella uliginosa</i>	1(1-1)	50	1(1-1)	2
<i>Villarsia exaltata</i>	2(1-2)	22	1(1-1)	<1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Allocasuarina littoralis</i>	1(1-1)	33	1(1-2)	17
<i>Dianella caerulea</i>	1(1-2)	50	1(1-1)	28
<i>Lomandra longifolia</i>	1(1-3)	72	1(1-1)	44
<i>Pteridium esculentum</i>	1(1-2)	67	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	6	1(1-2)	9
<i>Corymbia gummifera</i>	1(1-1)	17	2(1-2)	16
<i>Corymbia maculata</i>	1(1-1)	6	2(1-3)	3
<i>Eucalyptus globoidea</i>	1(1-1)	6	2(1-2)	12
<i>Eucalyptus longifolia</i>	1(1-1)	6	1(1-2)	2
<i>Eucalyptus pilularis</i>	1(1-1)	6	2(1-3)	5
<i>Eucalyptus piperita</i>	1(1-1)	6	2(1-3)	9
<i>Eucalyptus sclerophylla</i>	1(1-1)	6	2(1-3)	4
<i>Eucalyptus sieberi</i>	1(1-1)	6	2(1-3)	16
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-1)	6	2(1-3)	8



Locations of survey sites allocated to FoW p45. Grey shading indicates extant native vegetation cover within the study area.

**HL p46: Basalt Hilltop Scrub**

Plate p46. Basalt Hilltop Scrub (Map Unit p46) beside Wallaby Hill Road south of Jamberoo, with an interrupted low canopy of *Melaleuca armillaris* and *Dodonaea viscosa*, scattered shrubs of *Indigofera australis* and *Leucopogon juniperinus* and groundcover dominated by *Notodanthonia longifolia*, *Eragrostis leptostachya* and *Poa labillardierei* var. *labillardierei*.

Sample Sites: 3

Area Extant (ha): 390

Estimated % remaining: <30%

Area in conservation reserves (ha): 0

Estimated % of pre-clearing area in conservation reserves: <1%

No. taxa (total / unique): 46 / 0

No. taxa per plot ( $\pm$ sd): 21.3 (12.2)

Class: Southern Montane Heaths

Related TEC: included within *Melaleuca armillaris* Tall Shrubland EEC (TSC)

Basalt Hilltop Scrub (HL p46) is equivalent to HL 46 identified by Tindall *et al.* (2004), and is characterised by a dense but patchy tall shrub canopy with low shrubs and dense grassy groundcover. This unit is restricted to 100-200m ASL on exposed ridgetops on shallow rocky soil derived from volcanic geologies (Bombo Latite and Milton Monzonite). All occurrences are in the coastal hinterland near Jamberoo and west of Milton, where mean annual rainfall varies between 1200 and 1500mm.

Most of Basalt Hilltop Scrub's original range has been cleared, and the remaining patches are degraded by grazing and weed invasion. Some patches are threatened by expansion of quarrying operations.

**Floristic Summary:**

**Shrubs:** *Leucopogon juniperinus*, *Acacia parvipinnula*, *Melaleuca armillaris*, *Indigofera australis*, *Zieria granulata*.

**Groundcover:** *Bracteantha bracteata*, *Cheilanthes sieberi*, *Notodanthonia longifolia*, *Eragrostis leptostachya*, *Fimbristylis dichotoma*, *Plectranthus graveolens*, *Sporobolus creber*.

**Vegetation structure:**

Stratum	Frequency (n=3)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	67	9.5 (4.9)	19 (15.6)
Small tree	33	8 (-)	30 (-)
Shrub	100	1.6 (1.2)	41.7 (16.1)
Ground cover	100	0.5 (0.1)	37 (31.6)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 8 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 12 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 8 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
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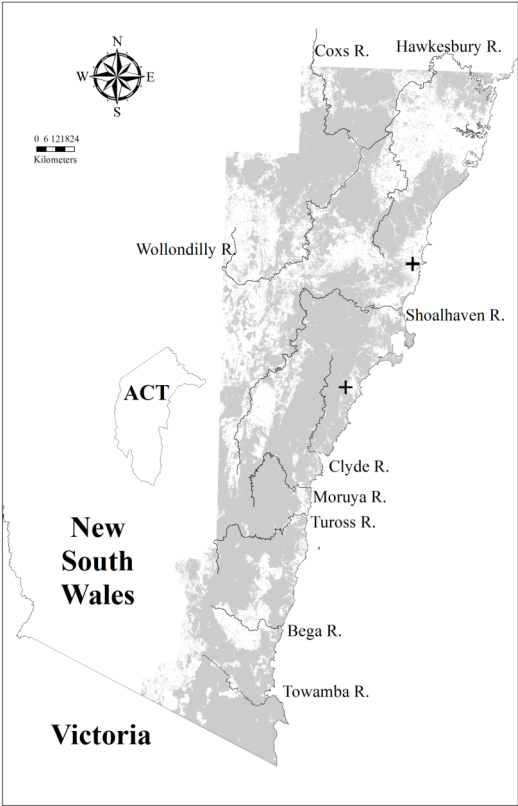


<i>Acacia parvipinnula</i>	1(1-1)	67	1(1-1)	1
<i>Arthropodium minus</i>	2(2-2)	33	1(1-1)	1
<i>Calandrinia pickeringii</i>	1(1-1)	33	1(1-1)	<1
<i>Cheilanthes sieberi</i>	2(1-3)	100	1(1-1)	14
<i>Commersonia fraseri</i>	1(1-1)	33	1(1-1)	1
<i>Eragrostis leptostachya</i>	4(4-4)	67	1(1-1)	4
<i>Fimbristylis dichotoma</i>	2(1-2)	67	1(1-1)	1
<i>Haloragis exalata</i>	1(1-1)	33	1(1-1)	<1
<i>Hibiscus heterophyllus</i> subsp. <i>heterophyllus</i>	1(1-1)	33	1(1-1)	<1
<i>Indigofera australis</i>	3(2-3)	67	1(1-1)	9
<i>Leucopogon juniperinus</i>	1(1-3)	100	1(1-1)	6
<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	4(4-4)	67	1(1-2)	1
<i>Notodanthonia longifolia</i>	1(1-3)	100	1(1-2)	5
<i>Oxalis chnoodes</i>	1(1-1)	33	1(1-1)	1
<i>Pelargonium inodorum</i>	1(1-1)	33	1(1-1)	1
<i>Phyllanthus gunnii</i>	1(1-1)	33	1(1-1)	2
<i>Plectranthus graveolens</i>	4(1-4)	67	1(1-1)	1
<i>Scaevola aemula</i>	2(2-2)	33	1(1-1)	<1
<i>Solanum vescum</i>	1(1-1)	33	1(1-2)	<1
<i>Sporobolus creber</i>	3(1-3)	67	1(1-1)	1
<i>Xerochrysum bracteatum</i>	1(1-1)	100	1(1-1)	2
<i>Zieria granulata</i>	1(1-1)	33	1(1-1)	<1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Cayratia clematidea</i>	1(1-1)	33	1(1-1)	3
<i>Commelina cyanea</i>	1(1-1)	33	1(1-1)	4
<i>Dianella longifolia</i>	1(1-1)	33	1(1-1)	4
<i>Dichelachne micrantha</i>	1(1-1)	33	1(1-1)	9
<i>Digitaria parviflora</i>	3(3-3)	33	1(1-1)	2
<i>Einadia hastata</i>	1(1-1)	33	1(1-1)	3
<i>Entolasia stricta</i>	2(1-2)	67	1(1-2)	34
<i>Eucalyptus tereticornis</i>	3(3-3)	33	2(1-3)	7
<i>Euchiton gymnocephalus</i>	1(1-1)	33	1(1-1)	7
<i>Geitonoplesium cymosum</i>	1(1-1)	33	1(1-1)	16
<i>Glycine microphylla</i>	2(2-2)	33	1(1-1)	5
<i>Helichrysum scorpioides</i>	1(1-1)	33	1(1-1)	7
<i>Hydrocotyle peduncularis</i>	1(1-1)	33	1(1-1)	9
<i>Kennedia rubicunda</i>	1(1-1)	33	1(1-1)	6
<i>Kunzea ambigua</i>	5(5-5)	33	1(1-2)	4
<i>Microlaena stipoides</i>	3(2-3)	67	1(1-2)	36
<i>Notelaea venosa</i>	1(1-1)	33	1(1-1)	12
<i>Oplismenus imbecillis</i>	2(2-2)	33	1(1-2)	14
<i>Pellaea falcata</i>	1(1-1)	33	1(1-1)	10
<i>Pittosporum undulatum</i>	1(1-1)	33	1(1-1)	14
<i>Plectranthus parviflorus</i>	2(2-2)	33	1(1-1)	8

<i>Poa labillardierei</i> var. <i>labillardierei</i>	3(1-3)	67	1(1-2)	12
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	3(3-3)	33	1(1-1)	7
<i>Themeda australis</i>	2(2-2)	33	1(1-3)	17



Locations of survey sites allocated to HL p46. Grey shading indicates extant native vegetation cover within the study area.

**HL p50: Sandstone Cliff Soak**

Plate p50. Sandstone Cliff Soak (Map Unit p50) on Hawkesbury sandstone cliffs at Sublime Point above Bulli. A dense, continuous, low cover of shrubs including *Pimelea linifolia*, *Tristania nerifolia*, *Dracophyllum secundum* and *Bauera rubioides* is closely packed with a diverse mix of ferns including *Todea barbara*, *Blechnum* spp. and *Gleichenia rupestris*.

Sample Sites: 2

Area Extant (ha): n/a (not modelled)

Estimated % remaining: n/a

Area in conservation reserves (ha): n/a

Estimated % of pre-clearing area in conservation reserves: n/a

No. Taxa (total / unique): 43 / 3

No. Taxa per Plot ( $\pm$ sd): 25.0 (1.4)

Class: Sydney Montane Heaths

Related TEC: n/a

Sandstone Cliff Soak (HL p50) is equivalent to HL 50 identified by Tindall *et al.* (2004), and comprises an open shrub layer intermixed with a patchy cover of ferns, forbs, sedges and considerable areas of wet rock face often covered in mosses and algae. This unit is restricted to sandstone cliff faces receiving seepage moisture, and is widespread throughout the Sydney basin at altitudes up to 1000m ASL, occurring as very small/localised patches. The distribution of Sandstone Cliff Soak on vertical cliff faces precluded mapping by conventional techniques at 1:100 000 scale. Examples can be found on the cliff faces at the base of Horseshoe and Bridal Veil Falls, Blackheath.

While the habitat of Sandstone Cliff Soak has largely escaped land clearing, some stands are threatened by polluted urban runoff and weed invasion.

**Floristic Summary:**

**Shrubs:** *Baeckea linifolia*, *Callicoma serratifolia*, *Ceratopetalum apetalum*, *Dracophyllum secundum*, *Bauera rubioides*, *Epacris obtusifolia*. **Groundcover:** *Drosera binata*, *Gleichenia rupestris*, *Todea barbara*, *Blechnum* spp.

**Vegetation structure:**

Stratum	Frequency (n=1)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	-	- (-)	- (-)
Small tree	-	- (-)	- (-)
Shrub	100	1 (-)	7 (-)
Ground cover	100	0.2 (-)	7 (-)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 16 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 24 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 16 positive diagnostic species.

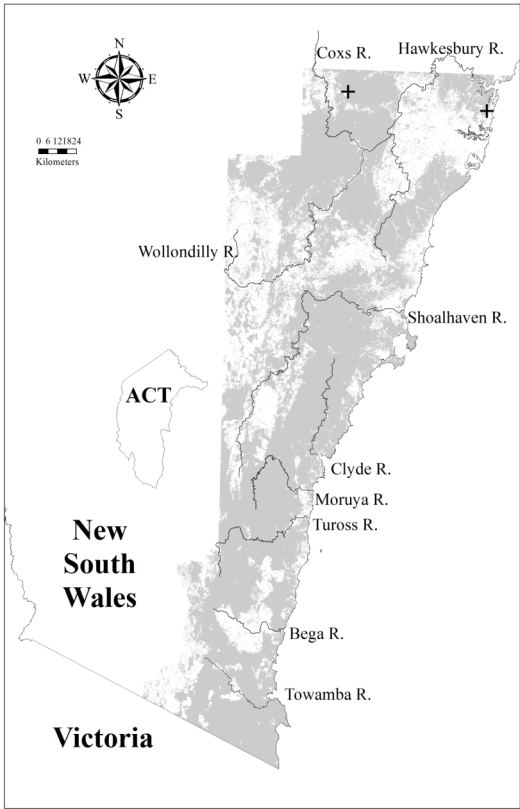
**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Baeckea linifolia</i>	2(1-2)	100	1(1-2)	1
<i>Bauera rubioides</i>	1(1-1)	50	1(1-2)	1
<i>Blechnum ambiguum</i>	1(1-1)	50	1(1-2)	<1
<i>Blechnum minus</i>	1(1-1)	50	1(1-1)	<1
<i>Blechnum wattsii</i>	1(1-1)	50	1(1-2)	2
<i>Callicoma serratifolia</i>	2(1-2)	100	1(1-2)	3
<i>Centrolepis fascicularis</i>	3(3-3)	50	1(1-1)	<1
<i>Ceratopetalum apetalum</i>	1(1-1)	100	3(1-3)	3
<i>Dracophyllum secundum</i>	1(1-1)	100	1(1-1)	<1
<i>Drosera binata</i>	1(1-1)	100	1(1-1)	1
<i>Drosera peltata</i>	1(1-1)	50	1(1-1)	2
<i>Drosera spatulata</i>	1(1-1)	50	1(1-1)	1
<i>Empodisma minus</i>	1(1-1)	50	1(1-2)	3
<i>Epacris crassifolia</i>	1(1-1)	50	1(1-1)	<1
<i>Epacris obtusifolia</i>	1(1-1)	50	1(1-1)	2
<i>Eucalyptus longifolia</i>	1(1-1)	50	1(1-2)	2
<i>Fieldia australis</i>	2(2-2)	50	1(1-3)	2
<i>Gleichenia rupestris</i>	2(2-2)	100	1(1-2)	<1
<i>Hymenophyllum flabellatum</i>	1(1-1)	50	1(1-2)	<1
<i>Lepidosperma evansianum</i>	2(2-2)	50	0(0-0)	<1
<i>Leptopteris fraseri</i>	2(2-2)	50	1(1-1)	<1
<i>Libertia pulchella</i>	2(2-2)	50	2(2-2)	<1
<i>Lobelia anceps</i>	1(1-1)	50	1(1-1)	1
<i>Nertera granadensis</i>	2(2-2)	50	1(1-1)	<1
<i>Notochloe microdon</i>	1(1-1)	50	0(0-0)	<1
<i>Pultenaea retusa</i>	1(1-1)	50	1(1-1)	2
<i>Quintinia sieberi</i>	1(1-1)	50	1(1-2)	<1
<i>Rimacola elliptica</i>	1(1-1)	50	0(0-0)	<1
<i>Selaginella uliginosa</i>	1(1-1)	50	1(1-1)	2
<i>Sprengelia incarnata</i>	1(1-1)	50	1(1-2)	1
<i>Sticherus flabellatus</i> var. <i>flabellatus</i>	1(1-1)	50	1(1-2)	1
<i>Sticherus lobatus</i>	1(1-1)	50	1(1-3)	1
<i>Todea barbara</i>	2(2-2)	100	1(1-2)	1
<i>Tristania neriifolia</i>	1(1-1)	50	1(1-3)	<1
<i>Xyris operculata</i>	2(2-2)	50	1(1-1)	1

**Constant:**

Species	C/A	Freq	C/A O	Freq O
<i>Blechnum nudum</i>	1(1-1)	50	1(1-2)	3
<i>Dianella caerulea</i>	1(1-1)	50	1(1-1)	28
<i>Dillwynia retorta</i>	1(1-1)	50	1(1-2)	7

<i>Epacris pulchella</i>	1(1-1)	50	1(1-1)	5
<i>Gahnia melanocarpa</i>	2(2-2)	50	1(1-1)	5
<i>Leptospermum polygalifolium</i>	1(1-1)	50	1(1-2)	8
<i>Petrophile pulchella</i>	1(1-1)	50	1(1-1)	6
<i>Viola hederacea</i>	1(1-1)	50	1(1-1)	22



Locations of survey sites allocated to HL p50. Grey shading indicates extant native vegetation cover within the study area.

**FrW p51: Tableland Lacustrine Herbfield**



Plate p51. Tableland Lacustrine Herb field (Map Unit p51) on the exposed bed of Lake Bathurst during a drying phase. Vegetation here is exclusively the sprawling salt-tolerant sub-shrub *Wilsonia rotundifolia*.

Sample Sites: 2  
 Area Extant (ha): 2600  
 Estimated % remaining: <15%  
 Area in conservation reserves (ha): 0  
 Estimated % of pre-clearing area in conservation reserves: <1%  
 No. taxa (total / unique): 9 / 3  
 No. taxa per plot ( $\pm$ sd): 5 (1.4)  
 Class: Montane Lakes  
 Related TEC: n/a

Tableland Lacustrine Herbfield (FrW p51) is equivalent to FrW 51 identified by Tindall *et al.* (2004), and is a low open ephemeral herbfield. This unit is found at approximately 670 – 750 m elevation on deep alluvium subject to alternate wetting and drying periods, on the shores of Lake Bathurst, The Morass, and Breadalbane, Wollogorang and Rowes Lagoons south and south-west of Goulburn. Mean annual rainfall is approximately 700-750 mm in this area. Tableland Lacustrine Herbfield also occurs on Lake George. The species composition of these herbfields is likely to vary substantially with sequences of wetting and drying. The lake beds have been grazed since the 1820s and consequently the vegetation is now highly modified and includes a large component of exotic species. It is likely that the lake margins originally supported a fringe of emergent perennial plants. *Lepidosperma longitudinale* and *Eleocharis sphacelata* can be seen at Rowes Lagoon, which is less affected by agriculture than other lakes, while patches of *Phragmites australis* persist on the shores of Lake George.

#### Floristic Summary:

**Groundcover:** *Wilsonia rotundifolia*, *Agrostis avenacea*, *Austrodanthonia duttoniana*, *A. pilosa*, *Myriophyllum crispum*, *Ranunculus diminutus*, *Schoenus nitens*, *Selliera radicans*, *Spergularia marina*.

#### Vegetation structure:

Stratum	Frequency (n=2)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	-	- (-)	- (-)
Small tree	-	- (-)	- (-)
Shrub	-	- (-)	- (-)
Ground cover	100	0.2 (0.1)	32.5 (38.9)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 1 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 4 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 1 positive diagnostic species.

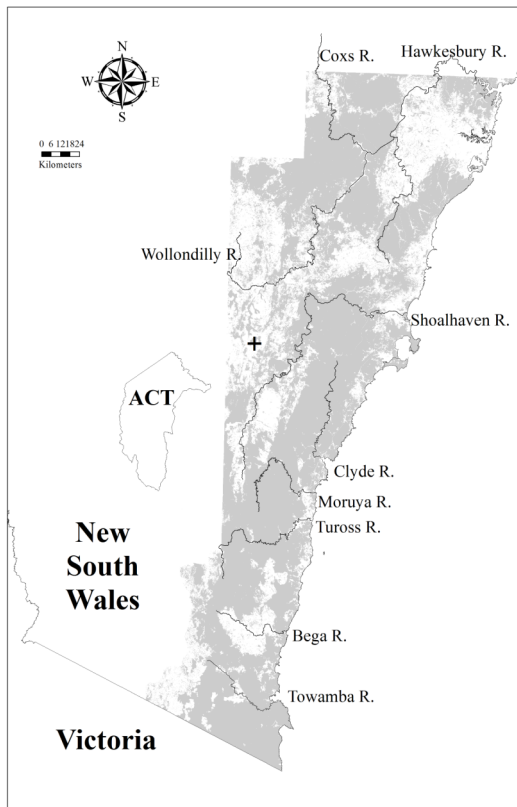
#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Austrodanthonia duttoniana</i>	2(2-2)	50	3(2-3)	<1
<i>Myriophyllum crispum</i>	1(1-1)	50	2(2-2)	<1
<i>Ranunculus diminutus</i>	1(1-1)	50	2(1-3)	<1
<i>Schoenus nitens</i>	3(3-3)	50	0(0-0)	<1
<i>Selliera radicans</i>	3(3-3)	50	1(1-2)	<1
<i>Spergularia marina</i>	2(2-2)	50	0(0-0)	<1
<i>Wilsonia rotundifolia</i>	2(1-2)	100	0(0-0)	<1

#### Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	1(1-1)	50	1(1-2)	6
<i>Lachnagrostis filiformis</i>	1(1-1)	50	1(1-1)	3





Locations of survey sites allocated to FrW p51. Grey shading indicates extant native vegetation cover within the study area.

### FrW p53: Tableland Bog



Plate p53. Tableland Bog (Map Unit p53) at Hanging Rock Swamp in Penrose State Forest. Scattered taller patches of *Eucalyptus aquatica* and *Leptospermum continentale* are interspersed with dense lower shrubs including *L. myrtifolium*, *Epacris microphylla*, and *Lepidosperma limicola*.

Sample Sites: 12

Area Extant (ha): 730

Estimated % remaining: 65-85%

Area in conservation reserves (ha): 170



Estimated % of pre-clearing area in conservation reserves: 5-25%

No. taxa (total / unique): 156 / 5

No. taxa per plot ( $\pm$ sd): 25.4 (7.4)

Class: Montane Bogs and Fens

Related TEC: includes areas of Montane Peatlands and Swamps EEC (TSC) and Temperate Highland Peat Swamps on Sandstone (EPBC).

Tableland Bog (FrW p53) is equivalent to FrW 53 identified by Tindall *et al.* (2004), and is characterised by an open to sparse shrub canopy with a dense groundcover of sedges and forbs. This unit is found on humic loams and peats in headwater valleys from 500m to 1200m ASL, typically on sandstone or granite substrates. Tableland Bogs are scattered between Boyd and Morton plateaux, and examples include Dingo Swamp near Kanangra Tops, Lannigans Swamp at Mount Werrong, Hanging Rock Swamp near Wingello and Lizard Flat in Morton NP.

Some Tableland Bogs have been degraded following clearing of their catchments, frequent burning, and grazing and trampling by domestic livestock. Some examples are represented within conservation reserves (e.g. Kanangra-Boyd National Park), though many of these were grazed in the past.

#### Floristic Summary:

**Shrubs:** *Epacris microphylla*, *Leptospermum continentale*, *L. myrtifolium*. **Groundcover:** *Empodisma minus*, *Gonocarpus micranthus*, *Lepyrodia anarthria*, *Mitrasacme serpyllifolia*, *Hydrocotyle peduncularis*, *Lepidosperma limicola*.

#### Vegetation structure:

Stratum	Frequency (n=11)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	9	8 (-)	3 (-)
Tree canopy	45	7.4 (4.4)	3.6 (4)
Small tree	9	4 (-)	35 (-)
Shrub	55	2.1 (0.8)	24.7 (22)
Ground cover	100	0.6 (0.4)	83.6 (21.1)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 6 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 20 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 6 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia rubida</i>	1(1-1)	33	1(1-1)	1
<i>Amphipogon strictus</i> var. <i>strictus</i>	2(2-4)	25	1(1-1)	<1
<i>Baeckea linifolia</i>	1(1-3)	25	1(1-2)	1
<i>Baloskion fimbriatum</i>	3(1-5)	33	1(1-2)	<1
<i>Banksia marginata</i>	1(1-1)	25	1(1-1)	3
<i>Baumea rubiginosa</i>	3(2-4)	50	1(1-2)	1
<i>Chorizandra sphaerocephala</i>	4(2-4)	33	2(1-2)	<1
<i>Drosera binata</i>	1(1-2)	33	1(1-1)	1
<i>Drosera spatulata</i>	1(1-1)	42	1(1-1)	1
<i>Empodisma minus</i>	4(2-5)	50	1(1-2)	3
<i>Epacris microphylla</i> var. <i>microphylla</i>	2(1-3)	67	1(1-1)	5
<i>Eucalyptus cinerea</i>	1(1-2)	25	1(1-2)	1
<i>Eucalyptus mannifera</i>	3(1-3)	25	2(1-3)	4
<i>Gleichenia dicarpa</i>	1(1-2)	42	1(1-2)	2
<i>Gonocarpus micranthus</i>	1(1-2)	58	1(1-1)	1
<i>Goodenia paniculata</i>	1(1-1)	33	1(1-1)	1
<i>Hypericum japonicum</i>	1(1-2)	25	1(1-1)	2
<i>Juncus continuus</i>	1(1-1)	25	1(1-1)	1
<i>Juncus planifolius</i>	1(1-2)	42	1(1-1)	1

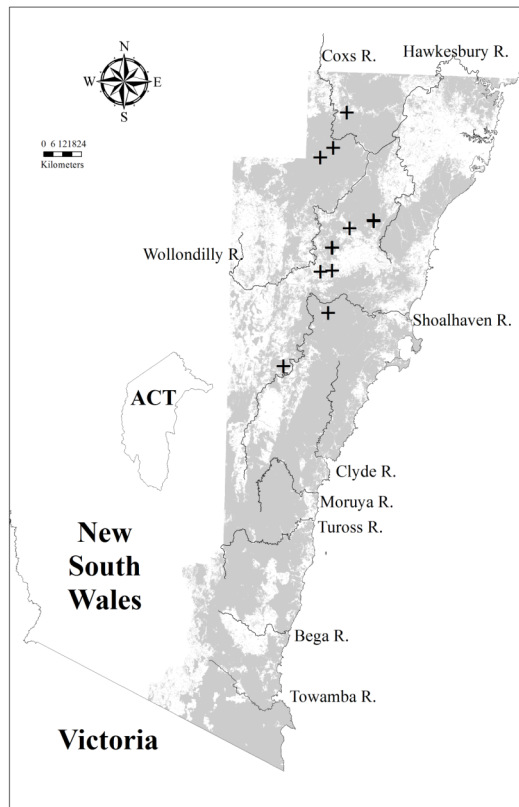
<i>Lepidosperma limicola</i>	1(1-3)	50	2(1-2)	1
<i>Leptospermum continentale</i>	2(1-4)	33	1(1-1)	3
<i>Leptospermum juniperinum</i>	4(2-5)	42	1(1-1)	2
<i>Leptospermum myrtifolium</i>	2(1-4)	25	1(1-1)	1
<i>Lepyrodia anarthria</i>	3(1-4)	67	1(1-2)	<1
<i>Mitrasacme serpyllifolia</i>	2(1-3)	50	1(1-1)	<1
<i>Pultenaea dentata</i>	1(1-2)	33	1(1-1)	<1
<i>Pultenaea divaricata</i>	2(2-3)	25	1(1-2)	<1
<i>Schoenus apogon</i>	1(1-2)	33	1(1-1)	2
<i>Selaginella uliginosa</i>	1(1-1)	50	1(1-1)	2
<i>Tetrarrhena turfosa</i>	3(1-3)	33	1(1-2)	1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Hydrocotyle peduncularis</i>	1(1-2)	33	1(1-1)	9
<i>Microlaena stipoides</i>	1(1-4)	42	1(1-2)	36
<i>Pteridium esculentum</i>	1(1-2)	33	1(1-2)	37
<i>Stylidium graminifolium</i>	1(1-1)	33	1(1-1)	9

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus apiculata</i>	1(1-1)	8	3(2-3)	<1
<i>Eucalyptus bridgesiana</i>	1(1-1)	8	1(1-3)	1
<i>Eucalyptus camphora</i>	2(2-2)	8	1(1-1)	<1
<i>Eucalyptus elata</i>	2(2-2)	8	2(1-3)	5
<i>Eucalyptus ovata</i>	1(1-1)	17	2(1-3)	1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	3(1-3)	17	2(1-3)	6
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-1)	8	1(1-2)	2
<i>Eucalyptus viminalis</i>	1(1-1)	8	2(1-3)	5



Locations of survey sites allocated to FrW p53. Grey shading indicates extant native vegetation cover within the study area.

#### FoW p54: Tableland Swamp Woodland



Plate p54. Tableland Swamp Forest (Map Unit p54) at Tomat Swamp on the Bindook Highlands, with *Eucalyptus ovata* and scattered patches of *Leptospermum continentale* over a groundcover dominated by *Poa sieberiana* var. *sieberiana*, *Lomandra longifolia* and *Microlaena stipoides* var. *stipoides*.

Sample Sites: 18

Area Extant (ha): 1700

Estimated % remaining: 20-50%

Area in conservation reserves (ha): 1100

Estimated % of pre-clearing area in conservation reserves: 50-70%

No. taxa (total / unique): 224 / 2

No. taxa per plot ( $\pm$ sd): 29.5 (7.7)

Class: Temperate Swamp Forests  
Related TEC: n/a

Tableland Swamp Woodland (FoW p54) is equivalent to FoW 54 identified by Tindall *et al.* (2004). This unit is a low woodland with an open shrub layer and a dense groundcover of grasses and forbs, restricted to poorly-drained flats in headwaters of tableland streams and the margins of Tableland Bogs (FrW p53) and Tableland Swamp Meadows (FrW p57). Suitable habitats are found on a variety of substrates at altitudes of 600m to 1100m ASL where mean annual rainfall is 800-1000mm. Stands of Tableland Swamp Woodland are scattered throughout the tablelands from Jenolan to Tallaganda, with examples including Bent Hook Swamp, Egans Swamp and Tomat Swamps on the Bindook Highlands, Lizard Flat near Tolwong, Long Flat at Majors Creek, Cleatmore Swamp in Deua National Park, and headwater tributaries of Long Swamp Creek in Jenolan State Forest, Frying Pan Creek, Joadja Creek, Mongarlowe River and Jerrabattgulla Creek. Not all of these stands could be mapped, and the extent of this unit is underestimated on the vegetation map. This is because its habitat corresponds with fine-scale drainage patterns that are not well-differentiated by the available topographic data. Tableland Swamp Woodland may also be structurally similar to adjacent map units (e.g. GW p220), particularly in the south of its range, and so could not be distinguished readily on aerial photographs.

Tableland Swamp Woodland is limited to small fragments due to its naturally restricted habitat and the effects of land clearing for pastoral development, and remaining stands are threatened by livestock grazing and trampling, disturbance by feral pigs, frequent burning and removal of woody plants.

#### Floristic Summary:

**Trees:** *Eucalyptus ovata*, *E. viminalis*. **Shrubs:** *Epacris microphylla*, *Leptospermum continentale*. **Groundcover:** *Gonocarpus tetragynus*, *Lomandra longifolia*, *Microlaena stipoides*, *Poa sieberiana*, *Hydrocotyle peduncularis*, *Themeda australis*, *Centella asiatica*, *Helichrysum scorpioides*.

#### Vegetation structure:

Stratum	Frequency (n=14)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	93	17.2 (8.4)	13.8 (12.5)
Small tree	57	6.5 (2.6)	37.8 (28.7)
Shrub	36	2.4 (0.5)	37 (31.7)
Ground cover	100	0.7 (0.3)	68.2 (22.3)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 7 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 23 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 7 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Austrostipa rudis</i>	1(1-2)	28	1(1-2)	6
<i>Baloskion fimbriatum</i>	2(1-2)	22	1(1-3)	<1
<i>Bossiaea prostrata</i>	1(1-2)	28	1(1-1)	3
<i>Centella asiatica</i>	1(1-2)	44	1(1-1)	4
<i>Dichelachne inaequiglumis</i>	1(1-1)	22	1(1-1)	3
<i>Epacris microphylla</i> var. <i>microphylla</i>	1(1-1)	61	1(1-1)	5
<i>Eucalyptus ovata</i>	3(2-3)	61	2(1-2)	1
<i>Eucalyptus pauciflora</i>	1(1-2)	28	1(1-2)	3
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-2)	28	2(1-3)	6
<i>Eucalyptus viminalis</i>	2(1-2)	33	2(1-3)	4
<i>Gonocarpus micranthus</i>	1(1-2)	28	1(1-1)	1
<i>Gonocarpus tetragynus</i>	1(1-2)	94	1(1-1)	20
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-2)	44	1(1-2)	14
<i>Haloragis heterophylla</i>	1(1-1)	22	1(1-1)	1
<i>Helichrysum scorpioides</i>	1(1-2)	44	1(1-1)	7
<i>Hydrocotyle peduncularis</i>	1(1-2)	50	1(1-1)	9
<i>Hypericum japonicum</i>	1(1-1)	39	1(1-1)	2

<i>Leptospermum continentale</i>	2(1-2)	33	1(1-1)	3
<i>Leptospermum myrtifolium</i>	2(1-4)	22	1(1-1)	1
<i>Leptospermum obovatum</i>	3(2-5)	22	1(1-2)	<1
<i>Leptospermum polygalifolium</i>	2(1-3)	39	1(1-2)	8
<i>Lomandra longifolia</i>	2(1-2)	94	1(1-1)	44
<i>Microlaena stipoides</i>	2(1-2)	72	1(1-2)	36
<i>Mitrasacme serpyllifolia</i>	1(1-1)	22	1(1-2)	<1
<i>Poa sieberiana</i> var. <i>sieberiana</i>	2(1-3)	61	1(1-2)	10
<i>Poa labillardierei</i> var. <i>labillardierei</i>	1(1-1)	39	1(1-2)	12
<i>Schoenus apogon</i>	2(1-3)	22	1(1-1)	2
<i>Stylidium graminifolium</i>	2(1-2)	33	1(1-1)	9
<i>Themeda australis</i>	1(1-3)	56	1(1-3)	17
<i>Viola betonicifolia</i>	1(1-2)	39	1(1-1)	5

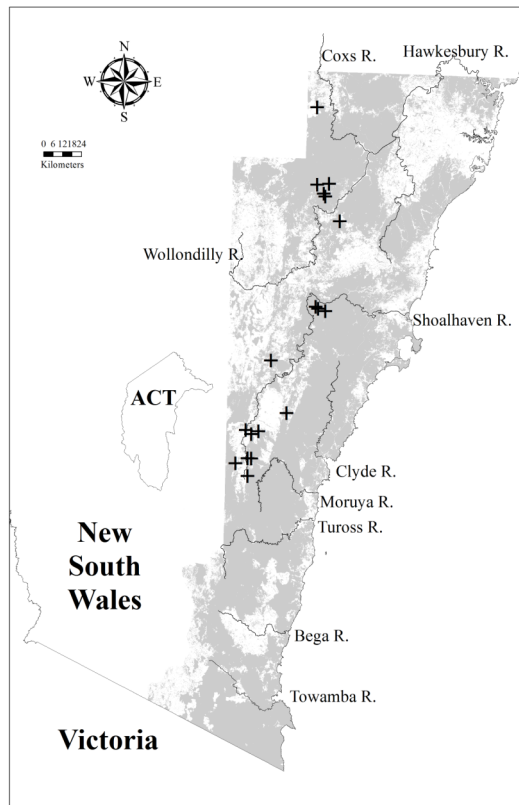
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Dichondra</i> spp.	1(1-2)	39	1(1-2)	25
<i>Entolasia stricta</i>	1(1-1)	39	1(1-2)	34
<i>Hypericum gramineum</i>	1(1-2)	39	1(1-1)	16
<i>Poranthera microphylla</i>	1(1-1)	39	1(1-1)	15
<i>Pratia purpurascens</i>	1(1-1)	33	1(1-1)	17

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus aggregata</i>	3(3-3)	6	2(1-3)	<1
<i>Eucalyptus bridgesiana</i>	1(1-1)	6	1(1-3)	1
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-2)	17	1(1-2)	3
<i>Eucalyptus mannifera</i>	2(1-2)	11	2(1-3)	4
<i>Eucalyptus obliqua</i>	1(1-1)	6	2(1-3)	4
<i>Eucalyptus punctata</i>	1(1-1)	6	2(1-3)	9
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	2(1-2)	11	1(1-2)	2
<i>Eucalyptus stellulata</i>	1(1-1)	6	1(1-2)	1





Locations of survey sites allocated to FoW p54. Grey shading indicates extant native vegetation cover within the study area.

### FrW p55: Riparian Herbfield



Plate p55. Riparian Herb field (Map Unit p55) on the Shoalhaven River at Gundillion. A range of aquatic herbs are growing in a gravelly substratum.

Sample Sites: 6

Area Extant (ha): n/a (not mapped)

Estimated % remaining: n/a

Area in conservation reserves (ha): n/a

Estimated % of pre-clearing area in conservation reserves: n/a

No. Taxa (total / unique): 57 / 2

No. Taxa per Plot ( $\pm$ sd): 13.5 (6.9)

Class: Montane Bogs and Fens

Related TEC: may include areas matching Montane Peatlands and Swamps EEC (TSC).

Riparian Herbfield (FrW p55) is characterised by a closed to open layer of aquatic and semi-aquatic herbs, sedges and rushes, sometimes with scattered shrubs. It is found on damp flats associated with rivers and creeks on humic loams and clays in low relief terrain, usually on the tablelands at 600-1100 m elevation, although it may also occur on the coastal hinterland as low as 30 m elevation. Mean annual rainfall varies from 700 to 1000 mm. The locally restricted occurrence of this unit within an extensive but sparse distribution that spans a wide range of environments meant that it could not be mapped in this study.

The floristic composition of Riparian Herbfield is highly variable, with only a few species occurring frequently. This may reflect the dynamic nature of these herbfields in relation to variable flood regimes and drought cycles. Examples of Riparian Herbfields are widely scattered across the study area, with records from the tablelands (Wollondilly River, Wollogorang Lagoon, west of Crookwell) and coastal rainshadow valleys (Nurragingy Creek on the Cumberland plain and Candelo Creek in the Bega Valley). These sites represent very localised patches of the community (less than a few hectares in extent), many of which are degraded by livestock and runoff from improved pastures.

#### Floristic Summary:

**Shrubs:** *Callistemon sieberi*. **Groundcover:** *Carex appressa*, *Centipeda minima*, *Glyceria australis*, *Hydrocotyle peduncularis*, *H. tripartita*, *Juncus usitatus*, *Paspalum distichum*, *Persicaria decipiens*, *Poa labillardieri*, *Ranunculus inundatus*, *Stellaria angustifolia*.

#### Vegetation structure:

Stratum	Frequency (n=5)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	60	12.6 (16.9)	34 (52.8)
Small tree	20	10 (-)	15 (-)
Shrub	60	1.8 (0.3)	26.7 (15.3)
Ground cover	80	0.4 (0.2)	52.5 (26)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 2 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 8 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 2 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Alternanthera denticulata</i>	3(2-3)	33	1(1-1)	1
<i>Cardamine paucijuga</i>	1(1-1)	33	1(1-1)	1
<i>Carex gaudichaudiana</i>	3(1-3)	33	1(1-2)	1
<i>Centipeda cunninghamii</i>	2(1-2)	33	1(1-2)	<1
<i>Centipeda minima</i> var. <i>minima</i>	2(1-2)	33	1(1-1)	<1
<i>Cynodon dactylon</i>	1(1-3)	67	1(1-2)	2
<i>Eleocharis acuta</i>	1(1-1)	33	2(1-3)	1
<i>Juncus usitatus</i>	1(1-1)	67	1(1-1)	2
<i>Lachnagrostis filiformis</i>	2(1-2)	33	1(1-1)	3
<i>Paspalum distichum</i>	1(1-2)	67	1(1-1)	<1
<i>Persicaria decipiens</i>	2(1-2)	67	1(1-1)	1
<i>Ranunculus inundatus</i>	1(1-1)	33	1(1-1)	1
<i>Schoenoplectus validus</i>	2(2-2)	33	1(1-3)	<1
<i>Typha orientalis</i>	2(2-2)	33	1(1-1)	<1

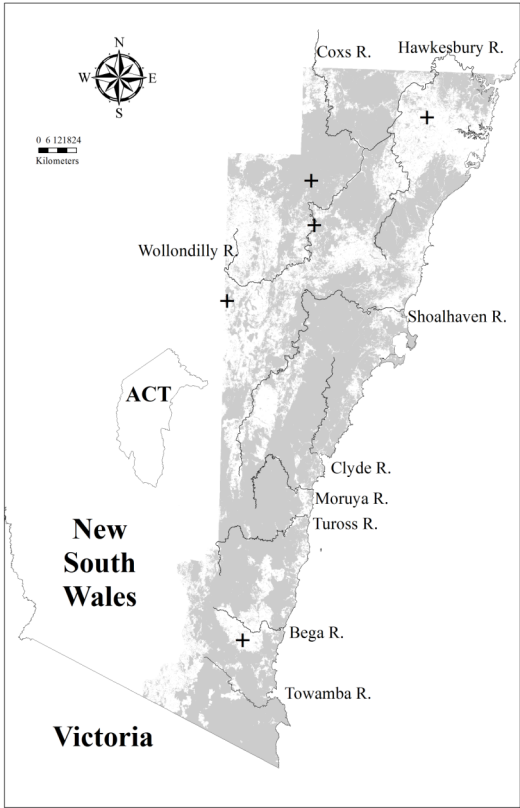
#### Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Carex appressa</i>	5(2-5)	33	1(1-1)	4
<i>Hydrocotyle peduncularis</i>	3(2-3)	33	1(1-1)	9



Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	3(3-3)	17	2(1-3)	1



Locations of survey sites allocated to FrW p55. Grey shading indicates extant native vegetation cover within the study area.

**FrW p56: Shoalhaven Riparian Scrub**



Plate p56. Shoalhaven Riparian Scrub (Map Unit p56) on the Shoalhaven River at the Warri Bridge crossing, showing a sparse, low shrub layer including *Leptospermum obovatum*, *Melaleuca ericifolia* and *Hakea microcarpa* clinging to pockets of alluvium over bedrock.

Sample Sites: 8  
Area Extant (ha): 1300

Estimated % remaining: >80%  
 Area in conservation reserves (ha): 30  
 Estimated % of pre-clearing area in conservation reserves: <5%  
 No. taxa (total / unique): 77 / 0  
 No. taxa per plot ( $\pm$ sd): 19.9 (5.9)  
 Class: Montane Bogs and Fens  
 Related TEC: n/a

Shoalhaven Riparian Scrub (FrW p56) represents a revision and extension of FrW 56 identified by Tindall *et al.* (2004), based on additional samples over a larger study area. The revised FrW p56 includes a number of additional sites classified by Beukers (undated) as Tableland Riparian Scrub.

The revised FrW 56 is characterised by an open but clumped shrub canopy and patchy groundcover of sedges and forbs. It is restricted to shallow alluvial sediments over rock along regularly flooded sections of the beds of higher southern tableland rivers, including the upper Shoalhaven River upstream of Oallen, the Big Badja River and Tuross Rivers above Tuross Falls, the MacLaughlin and Bombala Rivers, and White Rock River at Genoa. It occurs on alluvium derived from a range of metasediment and granitoid substrates, at elevations 500-1000m ASL. Representation of this unit on the vegetation map was dependent upon API delineation of narrow strips of riparian scrub, which in some situations may not have been separated from adjacent forest vegetation. As a result, the extent of FrW p56 is likely to be underestimated, and some of the sampled locations of this unit may be mapped as surrounding vegetation types (e.g. GW p220, GW p520). Shoalhaven Riparian Scrub is restricted to a very specialised habitat and is vulnerable to disturbances within the catchment and degradation of the riparian corridor.

#### Floristic Summary:

**Shrubs:** *Leptospermum obovatum*, *Melaleuca ericifolia*, *Callistemon sieberi*, *Leptospermum grandifolium*, *Hakea microcarpa*, *Acacia dealbata*. **Groundcover:** *Carex gaudichaudiana*, *Scirpus polystachyus*, *Carex tereticaulis*, *Chenopodium pumilio*, *Dichelachne inaequiglumis*, *Hydrocotyle peduncularis*, *Juncus usitatus*, *Lomandra longifolia*, *Microlaena stipoides*, *Persicaria hydropiper*, *Poa labillardierei*, *Senecio diascidides*.

#### Vegetation structure:

Stratum	Frequency (n=7)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	43	7.8 (6.4)	13 (14.7)
Small tree	14	5 (-)	70 (-)
Shrub	71	2.8 (0.4)	49 (21.3)
Ground cover	100	0.7 (0.3)	28.6 (12.1)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 8 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 15 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 8 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	1(1-2)	33	1(1-2)	5
<i>Acacia rubida</i>	1(1-1)	22	1(1-1)	1
<i>Acacia siculiformis</i>	1(1-1)	22	1(1-2)	<1
<i>Acaena novae-zelandiae</i>	1(1-1)	44	1(1-1)	7
<i>Blechnum minus</i>	1(1-1)	22	1(1-1)	<1
<i>Callistemon subulatus</i>	1(1-1)	33	1(1-1)	<1
<i>Carex appressa</i>	1(1-1)	33	1(1-1)	4
<i>Carex gaudichaudiana</i>	2(1-2)	78	1(1-2)	1
<i>Elatine gratioloides</i>	1(1-1)	33	1(1-2)	<1
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-1)	33	1(1-1)	5
<i>Epacris breviflora</i>	1(1-1)	22	1(1-1)	<1
<i>Eucalyptus viminalis</i>	1(1-1)	78	2(1-3)	4
<i>Gratiola peruviana</i>	1(1-1)	22	1(1-1)	1
<i>Grevillea lanigera</i>	1(1-2)	44	1(1-1)	<1
<i>Hakea microcarpa</i>	1(1-2)	78	1(1-1)	<1

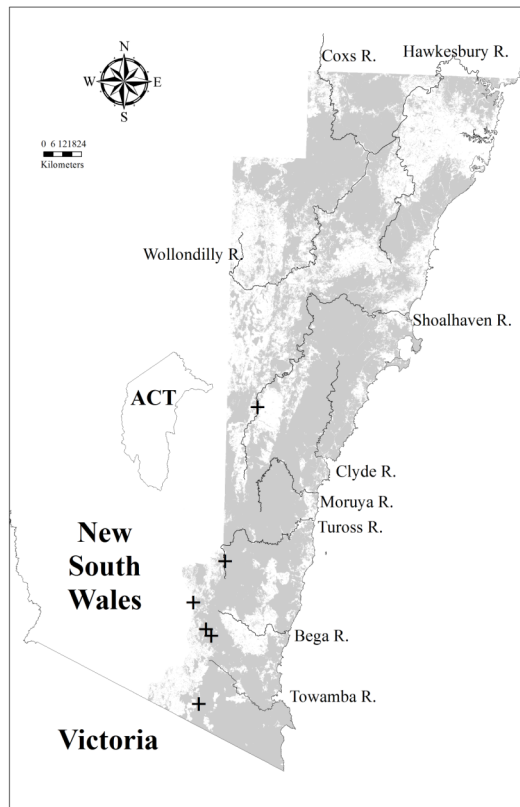
<i>Hypericum japonicum</i>	1(1-2)	56	1(1-1)	2
<i>Juncus falcatus</i>	1(1-1)	22	1(1-3)	<1
<i>Juncus gregiflorus</i>	1(1-1)	22	1(1-1)	<1
<i>Leptospermum grandifolium</i>	3(1-3)	78	1(1-1)	<1
<i>Leptospermum lanigerum</i>	4(1-4)	22	1(1-2)	1
<i>Leptospermum myrtifolium</i>	1(1-1)	22	1(1-1)	1
<i>Leptospermum obovatum</i>	4(3-4)	44	1(1-2)	<1
<i>Lomatia myricoides</i>	1(1-1)	67	1(1-1)	4
<i>Micrantheum hexandrum</i>	1(1-1)	22	1(1-1)	<1
<i>Ozothamnus ferrugineus</i>	1(1-1)	22	1(1-1)	<1
<i>Poa labillardierei</i> var. <i>labillardierei</i>	1(1-2)	78	1(1-2)	12
<i>Pomaderris phyllifolia</i> subsp. <i>ericoides</i>	1(1-1)	22	2(1-2)	<1
<i>Pultenaea altissima</i>	1(1-2)	33	1(1-2)	<1
<i>Ranunculus amphitrichus</i>	1(1-1)	44	1(1-1)	<1
<i>Scirpus polystachyus</i>	1(1-2)	56	1(1-1)	<1
<i>Scleranthus biflorus</i>	1(1-1)	22	1(1-1)	2
<i>Typha orientalis</i>	1(1-1)	22	1(1-2)	<1
<i>Wahlenbergia communis</i>	1(1-1)	22	1(1-1)	2

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Hydrocotyle peduncularis</i>	1(1-3)	33	1(1-1)	9
<i>Lomandra longifolia</i>	1(1-2)	67	1(1-1)	44

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus ovata</i>	1(1-1)	11	2(1-3)	1
<i>Eucalyptus pauciflora</i>	1(1-1)	11	1(1-2)	3



Locations of survey sites allocated to FrW p56. Grey shading indicates extant native vegetation cover within the study area.

### FrW p57: Tableland Swamp Meadow



Plate p57. Tableland Swamp Meadow (Map Unit p57) at Bent Hook Swamp on the Bindook Highlands. Dominant species include *Leptospermum obovatum*, *Epacris microphylla* var. *microphylla*, *Pultenaea dentata*, *Lepyrodia anarthria* and *Baumea rubiginosa*.

Sample Sites: 17

Area Extant (ha): 3800

Estimated % remaining: 15-25%

Area in conservation reserves (ha): 470

Estimated % of pre-clearing area in conservation reserves: <5%

No. taxa (total / unique): 126 / 0

No. taxa per plot ( $\pm$ sd): 19.3 (8.5)

Class: Montane Bogs and Fens

Related TEC: included within the Montane Peatlands and Swamps EEC (TSC); includes areas of Temperate Highland Peat Swamps on Sandstone EEC (EPBC).

Tableland Swamp Meadow (FrW p57) represents a revision and extension of FrW 57 identified by Tindall *et al.* (2004), based on additional samples over a larger study area. The revised FrW p57 includes a number of additional sites previously classified by Keith & Bedward (1999) as Swamp Forest (unit 58) and by Beukers (undated) as Hinterland and Escarpment Swamp Forests.

This map unit is characterised by a dense groundcover of water-tolerant, soft-leaved sedges and forbs. Scattered trees may be present, and an open to dense shrub layer is occasionally present. Vegetation structure and species composition varies locally in response to water table gradients. Tableland Swamp Meadow is restricted to deep, waterlogged peats and humic loams in sediment-filled valleys 200-1100m ASL where mean annual rainfall is 700-1300mm. Examples are scattered throughout the tablelands, from the Blue Mountains south to the Shoalhaven headwaters, and in the far south at Genoa and Yambulla. Examples include Burralow Swamp in Blue Mountains NP; Burra Burra Lake north of Taralga; Bent Hook Swamp in the Bindook Highlands; Wingecarribee Swamp on the Robertson plateau; Long Swamp on the Southern Highlands; Jembaicumbene Swamp near Braidwood; Sheep Station Creek swamp in Bondi State Forest, and Snob Creek swamp at Yambulla.

Clearing and habitat degradation is widespread throughout the distribution of Tableland Swamp Meadow. Domestic livestock and feral pigs have major impacts on the structure of vegetation and soils. Frequent burning to encourage green pick also reduces cover of woody plants. Clearing, logging and burning in swamp catchments may accelerate sedimentation and alter hydrological cycles. Wingecarribee Swamp suffered a major collapse following peat mining (Whinam and Chilcott 2002).

#### Floristic Summary:

**Shrubs:** *Leptospermum juniperinum*, *L. obovatum*, *Lythrum salicaria*. **Groundcover:** *Baumea rubiginosa*, *Carex gaudichaudiana*, *Eleocharis sphacelata*, *Hydrocotyle peduncularis*, *Isachne globosa*, *Juncus usitatus*, *Lepyrodia anarthria*, *Phragmites australis*, *Ranunculus inundatus*.

#### Vegetation structure:

Stratum	Frequency (n=12)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	67	5.9 (5.6)	29.9 (31.5)
Shrub	58	1.4 (0.4)	23.3 (24.5)
Ground cover	92	0.6 (0.3)	68.5 (31.4)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 6 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 13 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 6 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Baumea rubiginosa</i>	2(2-4)	76	1(1-2)	<1
<i>Blechnum minus</i>	1(1-2)	24	1(1-1)	<1
<i>Carex gaudichaudiana</i>	3(2-4)	76	1(1-2)	1
<i>Centella asiatica</i>	1(1-2)	24	1(1-1)	4
<i>Centella cordifolia</i>	1(1-1)	24	1(1-2)	<1
<i>Cyperus lucidus</i>	1(1-1)	29	1(1-1)	1
<i>Eleocharis gracilis</i>	1(1-2)	24	1(1-2)	<1
<i>Eleocharis sphacelata</i>	2(1-3)	41	1(1-2)	<1
<i>Eucalyptus ovata</i>	1(1-3)	29	2(1-3)	1
<i>Geranium neglectum</i>	1(1-1)	29	1(1-1)	1
<i>Gratiola peruviana</i>	1(1-1)	41	1(1-1)	1
<i>Hemarthria uncinata</i> var. <i>uncinata</i>	1(1-2)	35	1(1-1)	<1
<i>Hydrocotyle peduncularis</i>	1(1-2)	76	1(1-1)	9
<i>Hypericum japonicum</i>	1(1-1)	41	1(1-1)	2
<i>Isachne globosa</i>	2(1-4)	65	1(1-1)	<1
<i>Isolepis inundata</i>	1(1-2)	24	1(1-1)	1



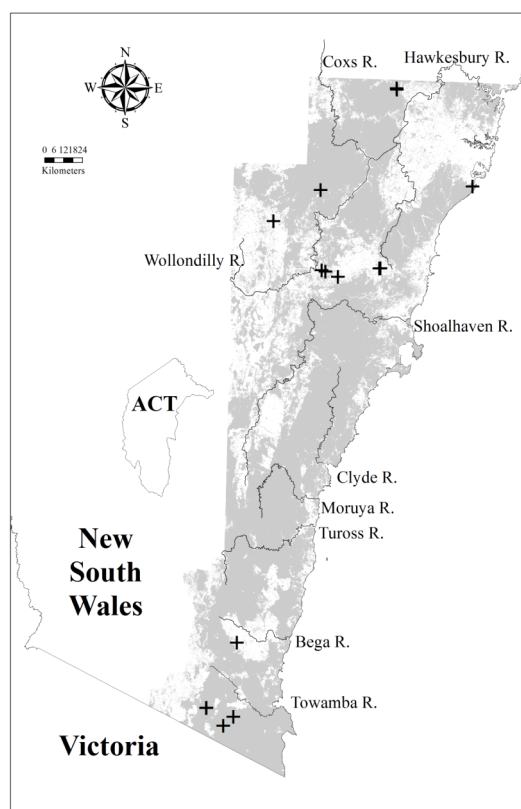
<i>Juncus sarophorus</i>	1(1-3)	29	1(1-2)	<1
<i>Lachnagrostis filiformis</i>	1(1-1)	29	1(1-1)	3
<i>Leptospermum juniperinum</i>	2(1-3)	41	1(1-1)	2
<i>Leptospermum obovatum</i>	2(1-3)	35	1(1-2)	<1
<i>Lepyrodia anarthria</i>	3(1-4)	29	1(1-2)	<1
<i>Lycopus australis</i>	1(1-2)	35	1(1-2)	<1
<i>Lythrum salicaria</i>	1(1-2)	41	1(1-1)	<1
<i>Phragmites australis</i>	1(1-2)	47	1(1-2)	1
<i>Poa labillardierei</i> var. <i>labillardierei</i>	2(1-2)	41	1(1-2)	12
<i>Ranunculus inundatus</i>	1(1-2)	41	1(1-1)	1
<i>Stellaria angustifolia</i>	1(1-1)	24	1(1-1)	<1

Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Lomandra longifolia</i>	1(1-1)	41	1(1-1)	44

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	12	2(1-3)	6
<i>Eucalyptus stellulata</i>	1(1-1)	6	1(1-2)	1



Locations of survey sites allocated to FrW p57. Grey shading indicates extant native vegetation cover within the study area.

**FoW p58: Sandstone Riparian Scrub**

Plate p58. Sandstone Riparian Scrub (Map Unit p58) on the Hacking River near the upper causeway showing a dense low tree cover of *Tristaniopsis laurina*, with scattered shrubs including *Lomatia myricoides* and a groundcover dominated by *Lomandra longifolia*.

Sample Sites: 22

Area Extant (ha): 2900

Estimated % remaining: >90%

Area in conservation reserves (ha): 1300

Estimated % of pre-clearing area in conservation reserves: 30-50%

No. taxa (total / unique): 263 / 0

No. taxa per plot ( $\pm$ sd): 34 (11.4)

Class: Eastern Riverine Forests

Related TEC: n/a

Sandstone Riparian Scrub (FoW p58) is equivalent to FoW 58 identified by Tindall *et al.* (2004). This distinctive unit is a scrub or low forest with clumped shrubs and a clumped groundcover dominated by sedges and ferns. It is distributed around the edges of the Sydney basin on streams draining Triassic Hawkesbury and Narrabeen sandstone, in the Blue Mountains, Hornsby, Woronora and Nattai Plateaux. Outlying occurrences of this unit are also mapped in Morton National Park (Holland Creek Gorge and Clyde River gorge), where Sandstone Riparian Scrub was sampled on Ordovician sediments below Permian Shoalhaven Group sandstone and conglomerate geologies. Within this distribution Sandstone Riparian Scrub is restricted to shallow sand and gravel alluvium over rock on the bed and banks of streams subjected to occasional high-velocity floods. Elevation of sampled sites varies between 10m and 450m ASL, while mean annual rainfall is 800-1500mm.

Several examples are represented within conservation reserves, though these are susceptible to polluted runoff and weed invasion from urban areas in the stream catchments.

Representation of this unit on the vegetation map was dependent upon API delineation of narrow strips of riparian scrub, which may have been undetected in some situations (e.g. in deep gorges). As a result, the extent of FoW p58 is likely to be underestimated, and some of the sampled locations of this unit will be mapped as surrounding vegetation types (e.g. DSF p140, DSF p142, WSF p102).

**Floristic Summary:**

**Trees:** *Tristaniopsis laurina*, *Ceratopetalum apetalum*. **Shrubs:** *Lomatia myricoides*, *Tristania neriifolia*, *Leptospermum morrisonii*. **Groundcover:** *Lomandra longifolia*, *Entolasia stricta*, *Schoenus melanostachys*, *Lomandra fluviatilis*, *Sticherus flabellatus*.



**Vegetation structure:**

Stratum	Frequency (n=6)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	17	13 (-)	4 (-)
Tree canopy	83	11.8 (8)	24.2 (26.6)
Small tree	33	9 (1.4)	20 (14.1)
Shrub	83	2.5 (1)	8.6 (4.7)
Ground cover	100	0.6 (0.3)	7.7 (3)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 8 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 25 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 8 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia floribunda</i>	1(1-1)	27	1(1-2)	2
<i>Acacia obtusifolia</i>	3(2-3)	32	1(1-2)	9
<i>Angophora costata</i>	1(1-1)	27	1(1-3)	7
<i>Austromyrtus tenuifolia</i>	1(1-3)	23	1(1-2)	<1
<i>Backhousia myrtifolia</i>	1(1-1)	27	2(1-3)	5
<i>Bauera rubioides</i>	1(1-2)	32	1(1-2)	1
<i>Callistemon citrinus</i>	1(1-1)	27	1(1-2)	1
<i>Callicoma serratifolia</i>	2(1-3)	32	1(1-2)	3
<i>Cassytha glabella</i>	1(1-1)	32	1(1-1)	8
<i>Ceratopetalum apetalum</i>	1(1-3)	68	3(1-3)	3
<i>Daviesia corymbosa</i>	1(1-1)	23	1(1-1)	2
<i>Dodonaea triquetra</i>	1(1-2)	41	1(1-2)	6
<i>Entolasia stricta</i>	1(1-1)	68	1(1-2)	34
<i>Gahnia clarkei</i>	1(1-1)	23	1(1-2)	2
<i>Gleichenia dicarpa</i>	1(1-1)	36	1(1-2)	2
<i>Grevillea oleoides</i>	1(1-2)	36	1(1-1)	2
<i>Guringalia dimorpha</i>	2(1-3)	23	1(1-2)	1
<i>Leionema dentatum</i>	1(1-1)	36	1(1-1)	<1
<i>Leptospermum morrisonii</i>	1(1-2)	45	1(1-2)	<1
<i>Leptospermum polygalifolium</i>	1(1-2)	45	1(1-2)	8
<i>Lomandra fluviatilis</i>	2(2-2)	50	1(1-1)	<1
<i>Lomandra longifolia</i>	1(1-2)	77	1(1-1)	44
<i>Lomatia myricoides</i>	2(1-2)	86	1(1-1)	4
<i>Micrantheum hexandrum</i>	1(1-4)	23	1(1-1)	<1
<i>Monotoca scoparia</i>	1(1-1)	36	1(1-1)	12
<i>Persoonia pinifolia</i>	1(1-1)	23	1(1-1)	4
<i>Pseudanthus pimeleoides</i>	1(1-3)	27	2(1-3)	<1
<i>Schoenus melanostachys</i>	1(1-1)	55	1(1-2)	2
<i>Smilax glycyphylla</i>	1(1-1)	36	1(1-1)	8
<i>Stenocarpus salignus</i>	1(1-1)	32	1(1-1)	2
<i>Sticherus flabellatus</i> var. <i>flabellatus</i>	3(1-3)	50	1(1-2)	1
<i>Todea barbara</i>	1(1-1)	23	1(1-2)	1
<i>Tristaniopsis laurina</i>	3(2-4)	86	1(1-2)	1

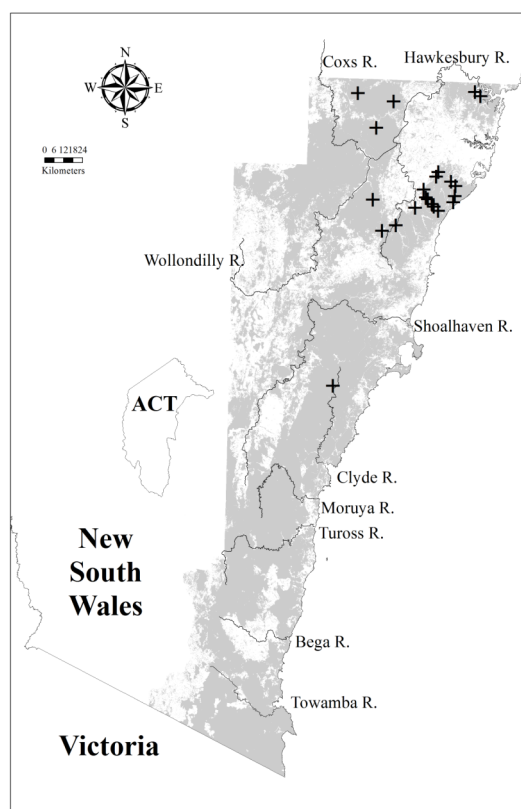
<i>Tristania nerifolia</i>	1(1-3)	55	1(1-2)	<1
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## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Allocasuarina littoralis</i>	1(1-3)	41	1(1-2)	17
<i>Lepidosperma laterale</i>	1(1-1)	50	1(1-1)	29
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	32	1(1-1)	24
<i>Pteridium esculentum</i>	1(1-2)	45	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus agglomerata</i>	2(1-2)	14	2(1-3)	7
<i>Eucalyptus deanei</i>	1(1-1)	5	3(1-3)	1
<i>Eucalyptus elata</i>	1(1-1)	5	2(1-3)	5
<i>Eucalyptus piperita</i>	1(1-2)	23	2(1-3)	9
<i>Eucalyptus punctata</i>	1(1-1)	5	2(1-3)	9
<i>Eucalyptus saligna</i> X <i>botryoides</i>	1(1-1)	9	2(1-3)	2
<i>Eucalyptus umbra</i>	1(1-1)	9	1(1-2)	<1



Locations of survey sites allocated to FoW p58. Grey shading indicates extant native vegetation cover within the study area.

**HL p63: Littoral Thicket**

Plate p63. Littoral Thicket (Map Unit p63) behind Stanwell Park surf life saving club. The dense continuous canopy includes *Leptospermum laevigatum*, *Backhousia myrtifolia* and *Banksia integrifolia*, above a sub canopy including *Notelaea longifolia* and *Tristaniopsis collina* and groundcover dominated by *Lomandra longifolia*.

Sample Sites: 34

Area Extant (ha): 1800

Estimated % remaining: 50-70%

Area in conservation reserves (ha): 1100

Estimated % of pre-clearing area in conservation reserves: 20-40%

No. taxa (total / unique): 241 / 1

No. taxa per plot ( $\pm$ sd): 27.4 (10)

Class: transitional between Littoral Rainforests and Coastal Headland Heaths.

Related TEC: may include patches of Littoral Rainforest EEC (TSC).

Littoral Thicket (HL p63) represents a slight revision and extension of HL 63 identified by Tindall *et al.* (2004), based on additional samples over a larger study area.

This unit is an open to dense scrub or low closed forest with an open groundcover, restricted to beach dunes and clay-soil headlands within 200m of the sea, subject to moderate wind shear and salt spray. It has been sampled along the study area coastline from McMasters Beach near Gosford to south of Potato Point, and is likely to continue as small scattered patches to the south. It is generally found at altitudes below 50m ASL, but was also recorded from higher elevations on steep exposed slopes above the sea in the northern Illawarra. On coastal sands, Littoral Thicket occupies areas of intermediate exposure and stability, grading into Coastal Foredune Scrub (HL e61) on exposed foredunes and into Coastal Sand Forest (DSF p64) in more sheltered and stable sites. In high rainfall areas Littoral Thicket may co-occur with Temperate Littoral Rainforest (RF p210), which develops with increasing shelter and the absence of fire. is vegetation classes (Keith 2004). About two-thirds of Littoral Thicket's original extent has been cleared for coastal development, and many of the remaining stands are small and threatened by continued small-scale clearing, fragmentation, intense recreational pressures, fires and weed invasion.

**Floristic Summary:**

**Trees:** *Banksia integrifolia*, *Leptospermum laevigatum*, *Acmena smithii*, *Eucalyptus botryoides*. **Shrubs:** *Breynia oblongifolia*, *Monotoca elliptica*, *Notelaea longifolia*. **Climbers:** *Stephania japonica*. **Groundcover:** *Lomandra longifolia*, *Commelina cyanea*, *Hibbertia scandens*, *Pteridium esculentum*, *Dichondra* spp., *Viola hederacea*, *Oplismenus imbecillis*, *Imperata cylindrica*.

**Vegetation structure:**

Stratum	Frequency (n=6)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	9.2 (4.6)	61.7 (16.3)
Small tree	17	5 (-)	8 (-)
Shrub	67	2 (-)	22.5 (6.5)
Ground cover	100	1 (0.6)	49 (29.2)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 7 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 19 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 7 positive diagnostic species.

**Positive Diagnostic Species:**

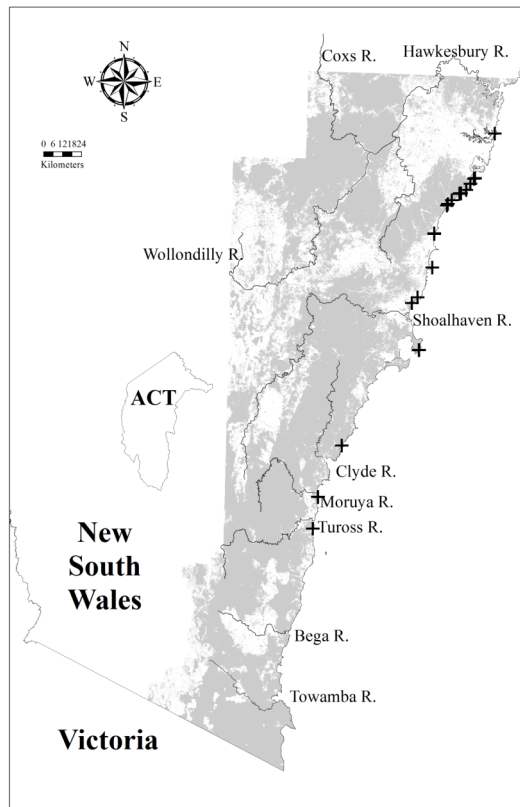
Species	C/A	Freq	C/A O	Freq O
<i>Acacia longifolia</i>	1(1-1)	29	1(1-2)	9
<i>Acmena smithii</i>	1(1-2)	32	2(1-3)	9
<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>	2(1-3)	91	1(1-1)	2
<i>Breynia oblongifolia</i>	1(1-1)	71	1(1-1)	12
<i>Cayratia clematidea</i>	1(1-1)	29	1(1-1)	2
<i>Chorizandra cymbaria</i>	1(1-2)	21	1(1-2)	<1
<i>Commelina cyanea</i>	1(1-1)	59	1(1-1)	4
<i>Cynodon dactylon</i>	1(1-2)	24	1(1-2)	2
<i>Dichondra</i> spp.	1(1-1)	53	1(1-2)	25
<i>Eucalyptus botryoides</i>	1(1-3)	35	2(1-3)	3
<i>Hibbertia scandens</i>	1(1-2)	59	1(1-1)	5
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-2)	47	1(1-2)	10
<i>Isolepis nodosa</i>	1(1-1)	24	1(1-1)	1
<i>Kennedia rubicunda</i>	1(1-1)	32	1(1-1)	6
<i>Leptospermum laevigatum</i>	3(1-4)	76	1(1-2)	1
<i>Lomandra longifolia</i>	2(1-3)	100	1(1-1)	44
<i>Monotoca elliptica</i>	1(1-2)	56	1(1-1)	2
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-1)	35	1(1-1)	7
<i>Oplismenus imbecillis</i>	1(1-1)	44	1(1-2)	14
<i>Pelargonium australe</i>	1(1-2)	24	1(1-1)	<1
<i>Pteridium esculentum</i>	1(1-2)	62	1(1-2)	37
<i>Rhagodia candolleana</i> subsp. <i>candolleana</i>	1(1-1)	24	1(1-1)	1
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	56	1(1-1)	6
<i>Viola hederacea</i>	1(1-2)	44	1(1-1)	22
<i>Westringia fruticosa</i>	1(1-2)	21	1(1-1)	<1

**Constant:**

Species	C/A	Freq	C/A O	Freq O
<i>Dianella caerulea</i>	1(1-1)	35	1(1-1)	28
<i>Geitonoplesium cymosum</i>	1(1-1)	32	1(1-1)	16
<i>Glycine clandestina</i>	1(1-1)	41	1(1-1)	26

**Other tree species occurring less frequently in this community:**

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia maculata</i>	1(1-1)	3	2(1-3)	3
<i>Eucalyptus pilularis</i>	1(1-1)	3	2(1-3)	5



Locations of survey sites allocated to HL p63. Grey shading indicates extant native vegetation cover within the study area.

#### DSF p64: Coastal Sand Forest



Plate p64. Coastal Sand Forest (Map Unit p64) at Burrewarra Point, Guerilla Bay. Here, an open tree canopy is dominated by *Eucalyptus botryoides*, above scattered tall *Banksia serrata*, *Acacia longifolia* subsp. *sophorae* and a groundcover dominated by *Pteridium esculentum*.

Sample Sites: 74

Area Extant (ha): 11200

Estimated % remaining: 50-70%

Area in conservation reserves (ha): 6500

Estimated % of pre-clearing area in conservation reserves: 20-40%

No. taxa (total / unique): 373 / 4

No. taxa per plot ( $\pm$ sd): 30.9 (12.9)



Class: South Coast Sands Dry Sclerophyll Forest

Related TECs: includes Kurnell Dune Forest EEC, Umina Coastal Sandplain Woodland EEC, and Bangalay Sand Forest EEC (TSC).

Coastal Sand Forest (DSF p64) represents a significant revision and extension of DSF 64 identified by Tindall *et al.* (2004), based on additional samples over a larger study area. The revised DSF p64 includes a number of additional sites, including sites classified by Keith & Bedward (1999) as Dune Dry Shrub Forest (unit 36) and by Beukers (undated) as Dune Dry Shrub Forest.

DSF p64 is a coastal eucalypt forest with a mixed understorey of sclerophyll shrubs, ferns, grasses and forbs. This forest is patchily distributed along the study area coastline from Umina to Nadgee, and is restricted to relatively sheltered deep sands below 100m ASL including aeolian and alluvial sands on beach hind dunes, coastal flats and sandstone headlands. With increasing exposure to salt-laden winds this unit grades into Coastal Fore-dune Scrub (HL e61) or into Littoral Thicket (HL p63) on exposed headlands and cliffs. With increasing soil moisture the transition is to Coastal Sand Swamp Forest (FoW p45).

Up to half of the original distribution of Coastal Sand Forest has been cleared, and remaining areas on private land are subject to ongoing pressures from weed invasion and clearing for development.

#### Floristic Summary:

**Trees:** *Banksia serrata*, *Eucalyptus botryoides*, *B. integrifolia*, *E. pilularis*. **Shrubs:** *Breynia oblongifolia*, *Monotoca elliptica*, *Allocasuarina littoralis*, *Acacia longifolia*. **Climbers:** *Glycine clandestina*, *Hibbertia scandens*. **Groundcover:** *Pteridium esculentum*, *Lomandra longifolia*, *Imperata cylindrica*, *Dianella caerulea*, *Gonocarpus teucroides*.

#### Vegetation structure:

Stratum	Frequency (n=38)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	100	19.6 (6.3)	33 (12.3)
Small tree	82	9.0 (3.9)	19.4 (14.2)
Shrub	53	2.4 (0.6)	26.8 (27.9)
Ground cover	95	1.0 (0.4)	56.2 (26.6)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 10 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 21 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 10 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia longifolia</i>	1(1-2)	56	1(1-2)	9
<i>Acacia maidenii</i>	1(1-1)	11	1(1-1)	3
<i>Acacia suaveolens</i>	1(1-1)	28	1(1-1)	7
<i>Acianthus fornicatus</i>	1(1-2)	7	1(1-1)	1
<i>Allocasuarina littoralis</i>	1(1-2)	46	1(1-2)	16
<i>Angophora floribunda</i>	2(1-3)	21	1(1-2)	9
<i>Aotus ericoides</i>	1(1-1)	11	1(1-1)	3
<i>Baloskion tetraphyllum</i>	1(1-3)	10	1(1-2)	<1
<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>	1(1-1)	54	1(1-2)	2
<i>Banksia serrata</i>	2(1-2)	65	1(1-2)	9
<i>Baumea juncea</i>	1(1-3)	7	2(1-3)	1
<i>Breynia oblongifolia</i>	1(1-1)	63	1(1-1)	12
<i>Commelina cyanea</i>	1(1-2)	15	1(1-1)	4
<i>Desmodium rhytidophyllum</i>	1(1-1)	11	1(1-1)	1
<i>Dianella caerulea</i>	1(1-1)	76	1(1-1)	28
<i>Duboisia myoporoides</i>	1(1-1)	8	1(1-1)	<1
<i>Elaeocarpus reticulatus</i>	1(1-1)	26	1(1-1)	12
<i>Eucalyptus botryoides</i>	3(2-3)	65	1(1-3)	2

<i>Eucalyptus pilularis</i>	3(1-3)	42	2(1-3)	4
<i>Eucalyptus robusta</i>	3(1-4)	7	2(1-3)	<1
<i>Gahnia clarkei</i>	2(2-3)	13	1(1-2)	2
<i>Glochidion ferdinandi</i> var. <i>ferdinandi</i>	1(1-2)	22	1(1-1)	2
<i>Glycine clandestina</i>	1(1-1)	61	1(1-1)	26
<i>Gonocarpus teucroides</i>	1(1-1)	68	1(1-1)	17
<i>Hardenbergia violacea</i>	1(1-1)	40	1(1-1)	17
<i>Hibbertia linearis</i>	1(1-1)	8	1(1-1)	1
<i>Hibbertia scandens</i>	1(1-1)	53	1(1-1)	4
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-2)	78	1(1-2)	9
<i>Isolepis nodosa</i>	1(1-2)	18	1(1-1)	1
<i>Kennedia rubicunda</i>	1(1-1)	29	1(1-1)	6
<i>Lepidosperma concavum</i>	2(1-2)	21	1(1-2)	2
<i>Leptospermum laevigatum</i>	1(1-3)	13	1(1-2)	1
<i>Lomandra longifolia</i>	2(1-3)	96	1(1-1)	43
<i>Macrozamia communis</i>	1(1-2)	28	1(1-2)	4
<i>Marsdenia rostrata</i>	1(1-2)	40	1(1-2)	12
<i>Monotoca elliptica</i>	1(1-2)	65	1(1-1)	1
<i>Platysace lanceolata</i>	1(1-1)	28	1(1-1)	13
<i>Podocarpus spinulosus</i>	1(1-2)	14	1(1-1)	1
<i>Pteridium esculentum</i>	3(1-3)	99	1(1-2)	37
<i>Ricinocarpos pinifolius</i>	1(1-1)	13	1(1-1)	1
<i>Schelhammiera undulata</i>	1(1-1)	31	1(1-1)	7
<i>Smilax glycyphylla</i>	1(1-1)	29	1(1-1)	8
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	19	1(1-1)	7
<i>Themeda australis</i>	1(1-2)	35	1(1-3)	17
<i>Trachymene anisocarpa</i>	1(1-1)	8	1(1-1)	<1

## Constant:

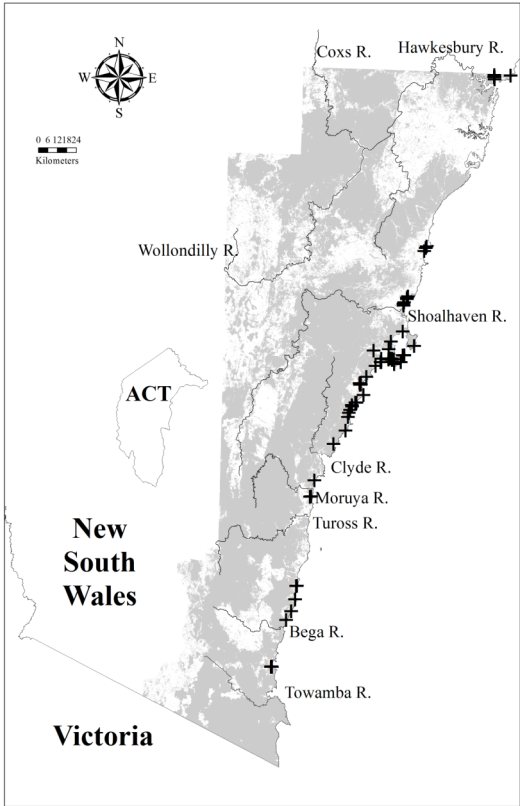
Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	42	1(1-1)	27
<i>Desmodium varians</i>	1(1-1)	33	1(1-1)	21
<i>Entolasia stricta</i>	1(1-1)	42	1(1-2)	34
<i>Microlaena stipoides</i>	1(1-2)	33	1(1-2)	36

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora costata</i>	1(1-3)	10	1(1-3)	7
<i>Corymbia gummifera</i>	2(2-3)	24	2(1-2)	16
<i>Corymbia maculata</i>	2(2-2)	3	2(1-3)	3
<i>Eucalyptus eugenioides</i>	3(3-3)	1	2(1-3)	4
<i>Eucalyptus globoidea</i>	1(1-1)	3	2(1-2)	12
<i>Eucalyptus longifolia</i>	1(1-1)	1	1(1-2)	2
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-1)	1	1(1-2)	3
<i>Eucalyptus piperita</i>	3(3-3)	1	2(1-3)	9
<i>Eucalyptus scias</i> subsp. <i>callimastha</i>	1(1-1)	1	1(1-2)	1
<i>Eucalyptus sclerophylla</i>	1(1-1)	1	2(1-3)	4



<i>Eucalyptus tereticornis</i>	1(1-1)	1	2(1-3)	7
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	2(1-3)	10	2(1-3)	8



Locations of survey sites allocated to DSF p64. Grey shading indicates extant native vegetation cover within the study area.

**WSF p66: Highland Range Sheltered Forest**



Plate p66. Highland Range Sheltered Forest (Map Unit p66) at Mount Shivering northwest of the Bindook Highlands. The tree canopy is dominated by *Eucalyptus fastigata* and *E. dalrympleana* subsp. *dalrympleana*, with scattered *Acacia melanoxylon* and a shrub layer including *Coprosma quadrifida* and *Hedycarya angustifolia*. Groundcover includes dense patches of *Polystichum australiense* and scattered *Helichrysum rutidolepis*.

Sample Sites: 60  
Area Extant (ha): 18500

Estimated % remaining: >90%

Area in conservation reserves (ha): 12500

Estimated % of pre-clearing area in conservation reserves: 55-75%

No. taxa (total / unique): 406 / 2

No. taxa per plot ( $\pm$ sd): 43.1 (10.9)

Class: Southern Tableland Wet Sclerophyll Forests

Related TEC: includes areas of Mount Gibraltar Forest EEC (TSC).

Highland Range Sheltered Forest (WSF p66) represents a slight revision of WSF 66 identified by Tindall *et al.* (2004), based on additional samples over a wider study area. This unit is a tall eucalypt forest with an open shrub layer and moist herbaceous groundcover, which generally occurs on upper slopes of high ranges 500m to 1100m ASL receiving orographic moisture. Occurrences are scattered along the eastern fall of the ranges, from the upper Kowmung River and Bindook Highlands south to Mongamulla Mountain in Deua National Park. Highland Range Sheltered Forest is recorded from sites across a wide annual rainfall band, from 750mm along the western edge of the Southern Highlands (Barralier, Hanworth, Canyonleigh) to 1200mm near Mount Shivering in the Kowmung. This unit is found on moderately fertile, fine-grained soils derived from a range of substrates.

Highland Range Sheltered Forest is closely related to Southern Highlands Basalt Forest (WSF p266), which replaces this unit on basalt-derived soils with high rainfall. At higher elevations (e.g. Bindook Highlands, Mongamulla), this unit is increasingly restricted to sheltered lower and mid-slopes, as it is replaced by Cool Montane Wet Forest (WSF p73) or in the south by Southern Range Wet Forest (WSF p338).

About one-fifth of Highland Range Sheltered Forest has been cleared, mainly in the Mittagong-Marulan district, though several examples are represented within conservation reserves north and south of that area.

#### Floristic Summary:

**Trees:** *Eucalyptus elata*, *E. radiata*, *E. fastigata*. **Shrubs:** *Leucopogon lanceolatus*, *Rubus parvifolius*. **Climbers:** *Clematis aristata*, *Glycine clandestina*. **Groundcover:** *Pteridium esculentum*, *Lomandra longifolia*, *Viola hederacea*, *Microlaena stipoides*, *Dichondra* spp., *Desmodium varians*, *Poranthera microphylla*, *Echinopogon ovatus*, *Dianella caerulea*, *Veronica plebeia*, *Stellaria pungens*, *Plantago debilis*.

#### Vegetation structure:

Stratum	Frequency (n=58)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	3	31.5 (2.1)	19 (19.8)
Tree canopy	98	27.5 (6.3)	30.2 (10.8)
Small tree	69	10.8 (4.1)	13.5 (9.9)
Shrub	52	2.2 (0.6)	15.1 (12)
Ground cover	100	0.7 (0.3)	53 (28.3)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 18 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 34 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 18 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-3)	43	1(1-2)	10
<i>Acaena novae-zelandiae</i>	1(1-2)	27	1(1-1)	7
<i>Adiantum aethiopicum</i>	2(1-2)	40	1(1-1)	9
<i>Asplenium flabellifolium</i>	1(1-1)	32	1(1-1)	11
<i>Austrostipa rudis</i>	1(1-2)	25	1(1-2)	6
<i>Blechnum cartilagineum</i>	1(1-4)	35	1(1-2)	11
<i>Brachyscome angustifolia</i>	1(1-2)	12	1(1-1)	2
<i>Carex breviculmis</i>	1(1-1)	20	1(1-1)	4
<i>Carex inversa</i>	1(1-1)	13	1(1-1)	3
<i>Cassinia aculeata</i>	1(1-1)	20	1(1-1)	6
<i>Clematis aristata</i>	1(1-2)	73	1(1-1)	20
<i>Coprosma quadrifida</i>	1(1-2)	32	1(1-1)	9
<i>Crassula sieberiana</i>	1(1-1)	17	1(1-1)	3

<i>Desmodium varians</i>	1(1-2)	62	1(1-1)	21
<i>Dianella caerulea</i>	1(1-1)	62	1(1-1)	28
<i>Dichelachne inaequiglumis</i>	1(1-1)	12	1(1-1)	3
<i>Dichondra</i> spp.	1(1-2)	78	1(1-2)	25
<i>Dichelachne parva</i>	1(1-1)	12	1(1-1)	1
<i>Echinopogon ovatus</i>	1(1-1)	65	1(1-1)	13
<i>Eucalyptus cypellocarpa</i>	3(1-3)	25	2(1-2)	10
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	3(1-3)	17	1(1-2)	3
<i>Eucalyptus elata</i>	3(2-4)	48	2(1-2)	5
<i>Eucalyptus fastigata</i>	3(3-4)	28	2(1-3)	6
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-3)	33	2(1-3)	6
<i>Eucalyptus viminalis</i>	2(1-3)	25	2(1-3)	4
<i>Euchiton gymnocephalus</i>	1(1-1)	35	1(1-1)	7
<i>Euchiton involucratus</i>	1(1-1)	12	1(1-1)	1
<i>Eustrephus latifolius</i>	1(1-1)	37	1(1-1)	19
<i>Galium binifolium</i>	1(1-1)	27	1(1-1)	3
<i>Galium propinquum</i>	1(1-1)	45	1(1-1)	7
<i>Geranium potentilloides</i>	1(1-2)	28	1(1-1)	5
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-2)	20	1(1-1)	8
<i>Glycine clandestina</i>	1(1-1)	58	1(1-1)	26
<i>Helichrysum elatum</i>	1(1-2)	12	1(1-1)	2
<i>Helichrysum rutidolepis</i>	2(1-3)	13	1(1-1)	1
<i>Helichrysum scorpioides</i>	1(1-2)	23	1(1-1)	7
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-2)	18	1(1-1)	6
<i>Hibbertia scandens</i>	1(1-1)	20	1(1-1)	5
<i>Hydrocotyle laxiflora</i>	1(1-2)	37	1(1-1)	15
<i>Hydrocotyle peduncularis</i>	2(1-3)	45	1(1-1)	8
<i>Hypericum gramineum</i>	1(1-1)	35	1(1-1)	16
<i>Indigofera australis</i>	1(1-1)	30	1(1-1)	9
<i>Lagenifera gracilis</i>	1(1-1)	18	1(1-1)	3
<i>Lagenifera stipitata</i>	1(1-2)	37	1(1-1)	14
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	57	1(1-1)	23
<i>Libertia paniculata</i>	1(1-2)	13	1(1-1)	2
<i>Lomandra longifolia</i>	1(1-2)	85	1(1-1)	43
<i>Lomatia myricoides</i>	1(1-2)	17	1(1-1)	4
<i>Luzula flaccida</i>	1(1-1)	30	1(1-1)	4
<i>Microlaena stipoides</i>	2(1-3)	83	1(1-2)	36
<i>Olearia viscidula</i>	1(1-3)	48	1(1-2)	5
<i>Oxalis exilis</i>	1(1-1)	15	1(1-1)	3
<i>Oxalis perennans</i>	1(1-1)	37	1(1-1)	13
<i>Plantago debilis</i>	1(1-2)	52	1(1-1)	7
<i>Polystichum australiense</i>	2(1-4)	12	1(1-2)	1
<i>Poranthera microphylla</i>	1(1-1)	65	1(1-1)	15
<i>Pratia purpurascens</i>	1(1-1)	40	1(1-1)	17
<i>Prostanthera lasianthos</i>	1(1-1)	12	1(1-1)	2
<i>Pteridium esculentum</i>	2(1-2)	95	1(1-2)	37

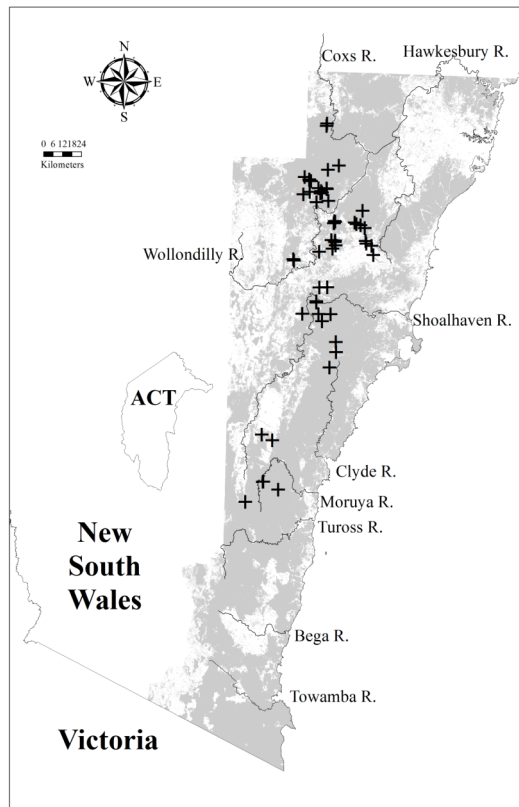
<i>Rubus parvifolius</i>	1(1-1)	50	1(1-1)	9
<i>Senecio hispidulus</i> var. <i>hispidulus</i>	1(1-1)	15	1(1-1)	3
<i>Senecio linearifolius</i>	1(1-2)	27	1(1-1)	8
<i>Senecio prenanthoides</i>	1(1-1)	38	1(1-1)	8
<i>Solanum pungetium</i>	1(1-1)	17	1(1-1)	5
<i>Stellaria pungens</i>	1(1-2)	53	1(1-1)	6
<i>Stypandra glauca</i>	2(1-2)	25	1(1-2)	5
<i>Tylophora barbata</i>	1(1-2)	33	1(1-1)	17
<i>Veronica plebeia</i>	1(1-1)	50	1(1-1)	10
<i>Viola betonicifolia</i>	1(1-1)	15	1(1-1)	5
<i>Viola hederacea</i>	1(1-2)	82	1(1-1)	21
<i>Wahlenbergia gracilis</i>	1(1-1)	40	1(1-1)	10
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	1(1-1)	32	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	42	1(1-1)	28
<i>Entolasia stricta</i>	1(1-1)	33	1(1-2)	34
<i>Gonocarpus tetragynus</i>	1(1-1)	32	1(1-1)	20
<i>Persoonia linearis</i>	1(1-1)	42	1(1-1)	29

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora costata</i>	1(1-2)	5	1(1-3)	7
<i>Angophora floribunda</i>	3(2-3)	12	1(1-2)	9
<i>Eucalyptus agglomerata</i>	1(1-3)	8	2(1-3)	7
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	1(1-1)	3	2(1-3)	1
<i>Eucalyptus blaxlandii</i>	3(3-3)	5	1(1-3)	1
<i>Eucalyptus bosistoana</i>	1(1-1)	2	1(1-2)	3
<i>Eucalyptus cinerea</i>	1(1-1)	5	1(1-2)	1
<i>Eucalyptus dives</i>	2(2-2)	2	2(1-3)	4
<i>Eucalyptus eugenioides</i>	2(1-2)	3	2(1-3)	4
<i>Eucalyptus globoidea</i>	1(1-1)	7	2(1-2)	12
<i>Eucalyptus maidenii</i>	3(1-3)	3	2(1-2)	2
<i>Eucalyptus mannifera</i>	1(1-1)	2	2(1-3)	4
<i>Eucalyptus melliodora</i>	2(2-2)	2	1(1-3)	2
<i>Eucalyptus moluccana</i>	1(1-1)	2	3(1-3)	2
<i>Eucalyptus muelleriana</i>	3(1-3)	5	2(1-2)	6
<i>Eucalyptus obliqua</i>	3(3-3)	2	2(1-3)	4
<i>Eucalyptus piperita</i>	3(1-3)	13	2(1-3)	9
<i>Eucalyptus punctata</i>	3(1-3)	17	2(1-3)	9
<i>Eucalyptus sieberi</i>	2(1-3)	5	2(1-3)	16
<i>Eucalyptus smithii</i>	3(1-4)	7	1(1-2)	2
<i>Eucalyptus tereticornis</i>	1(1-1)	2	2(1-3)	7



Locations of survey sites allocated to WSF p66. Grey shading indicates extant native vegetation cover within the study area.

### WSF p68: Nepean Shale Cap Forest



Plate p68. Nepean Shale Cap Forest (Map Unit p68) along the Picton Road east of Wilton, where a canopy of *Eucalyptus pilularis* grows above a diverse shrub layer including *Grevillea mucronulata*, *Banksia spinulosa* subsp. *spinulosa* and *Persoonia levis* and a patchy groundcover dominated by *Lomandra longifolia*.

Sample Sites: 8  
 Area Extant (ha): 660  
 Estimated % remaining: >90%  
 Area in conservation reserves (ha): 0  
 Estimated % of pre-clearing area in conservation reserves: 0  
 No. taxa (total / unique): 135 / 0  
 No. taxa per plot ( $\pm$ sd): 35.8 (10.6)



Class: Northern Hinterland Wet Sclerophyll Forests  
Related TEC: n/a

Nepean Shale Cap Forest (WSF p68) is equivalent to WSF 68 identified by Tindall *et al.* (2004). This unit is a eucalypt forest with an open shrub layer and grassy groundcover, restricted to shale lenses on the upper Woronora plateau from 300m to 600m ASL.

Nepean Shale Cap Forest shares a number of species with Southern Highlands Shale Forest (WSF p268), which occurs on deep clay soils derived from shale bedrock whereas this unit occurs on residual sandy – clay soils derived from shallow shale cappings. Further north on the Woronora plateau shale caps, Nepean Shale Cap Forest is replaced by Sydney Shale – Ironstone Cap Forest (DSF p143).

Although Nepean Shale Cap Forest is restricted to a small range and comprised of small patches, much of its original distribution remains intact within Sydney's metropolitan water catchments.

#### Floristic Summary:

**Trees:** *Eucalyptus globoidea*, *E. punctata*, *E. piperita*, *E. crebra*. **Shrubs:** *Leucopogon lanceolatus*, *Persoonia linearis*.

**Climbers:** *Clematis aristata*, *Billardiera scandens*, *Glycine clandestina*. **Groundcover:** *Dianella caerulea*, *Pteridium esculentum*, *Lomandra longifolia*, *Pratia purpurascens*, *Viola hederacea*, *Poranthera microphylla*, *Gonocarpus teucrioides*.

#### Vegetation structure:

Stratum	Frequency (n=7)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	21.7 (4.4)	30 (-)
Small tree	71	6.6 (2.6)	20 (-)
Shrub	29	3 (-)	- (-)
Ground cover	100	1 (0.2)	70 (-)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 6 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 27 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 6 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia binervata</i>	3(2-3)	25	1(1-2)	2
<i>Adiantum aethiopicum</i>	1(1-1)	50	1(1-2)	9
<i>Allocasuarina torulosa</i>	1(1-2)	38	1(1-3)	5
<i>Brachyscome angustifolia</i>	1(1-1)	25	1(1-1)	2
<i>Dianella caerulea</i>	1(1-1)	100	1(1-1)	28
<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	1(1-1)	63	1(1-1)	6
<i>Entolasia marginata</i>	1(1-1)	75	1(1-1)	11
<i>Eucalyptus globoidea</i>	2(1-2)	63	2(1-2)	12
<i>Eucalyptus punctata</i>	2(1-2)	63	1(1-3)	9
<i>Helichrysum elatum</i>	1(1-1)	50	1(1-1)	2
<i>Hibbertia diffusa</i>	1(1-1)	38	1(1-1)	3
<i>Kennedia rubicunda</i>	1(1-1)	38	1(1-1)	6
<i>Lachnagrostis filiformis</i>	1(1-1)	38	1(1-1)	3
<i>Leptomeria acida</i>	1(1-2)	38	1(1-1)	4
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-2)	88	1(1-1)	24
<i>Opercularia diphylla</i>	1(1-1)	63	1(1-1)	7
<i>Poranthera microphylla</i>	1(1-1)	75	1(1-1)	15
<i>Pratia purpurascens</i>	1(1-2)	100	1(1-1)	17
<i>Pterostylis nutans</i>	1(1-1)	25	1(1-1)	<1

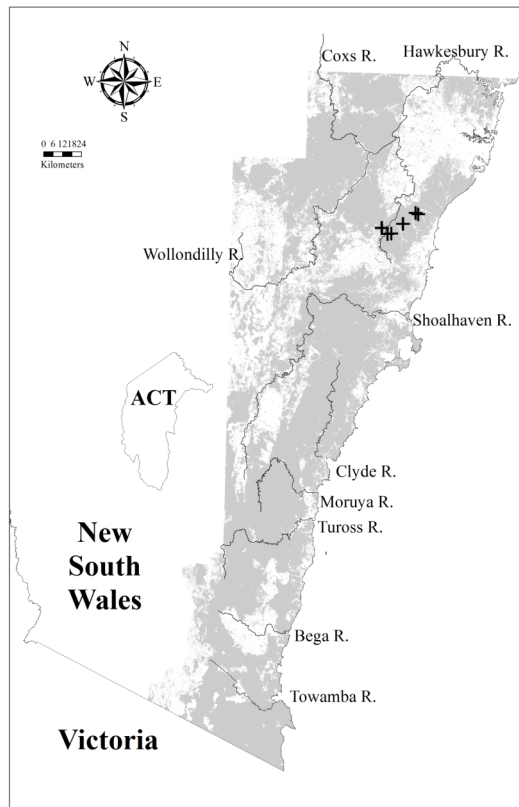
Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia longifolia</i>	2(1-2)	38	1(1-2)	10
<i>Acacia mearnsii</i>	1(1-2)	38	1(1-2)	7
<i>Billardiera scandens</i>	1(1-1)	63	1(1-1)	28
<i>Clematis aristata</i>	1(1-1)	63	1(1-1)	20
<i>Desmodium varians</i>	1(1-1)	63	1(1-1)	21
<i>Dichondra spp.</i>	2(1-3)	63	1(1-2)	25
<i>Doodia aspera</i>	1(1-1)	38	1(1-2)	12
<i>Entolasia stricta</i>	1(1-1)	38	1(1-2)	34
<i>Galium propinquum</i>	1(1-1)	38	1(1-1)	7
<i>Glycine clandestina</i>	1(1-1)	50	1(1-1)	26
<i>Gonocarpus teucroides</i>	1(1-2)	38	1(1-1)	18
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	2(1-3)	38	1(1-1)	10
<i>Hydrocotyle laxiflora</i>	1(1-1)	38	1(1-1)	16
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-1)	38	1(1-2)	10
<i>Indigofera australis</i>	1(1-1)	38	1(1-1)	9
<i>Lagenifera stipitata</i>	1(1-1)	50	1(1-1)	14
<i>Leptospermum polygalifolium</i>	1(1-1)	38	1(1-2)	8
<i>Lomandra longifolia</i>	1(1-1)	75	1(1-1)	44
<i>Microlaena stipoides</i>	1(1-2)	63	1(1-2)	36
<i>Persoonia linearis</i>	1(1-2)	63	1(1-1)	29
<i>Pteridium esculentum</i>	1(1-2)	75	1(1-2)	37
<i>Tylophora barbata</i>	1(1-1)	38	1(1-1)	17
<i>Veronica plebeia</i>	1(1-1)	38	1(1-1)	10
<i>Viola hederacea</i>	1(1-1)	38	1(1-1)	22

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia gummifera</i>	1(1-1)	25	2(1-2)	16
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	1(1-1)	13	2(1-3)	1
<i>Eucalyptus crebra</i>	2(2-2)	25	2(1-3)	3
<i>Eucalyptus cypellocarpa</i>	2(2-2)	13	2(1-2)	10
<i>Eucalyptus eugenioides</i>	2(2-2)	13	2(1-3)	4
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	2(2-2)	13	1(1-2)	3
<i>Eucalyptus piperita</i>	3(2-3)	25	2(1-3)	9
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	13	2(1-3)	6
<i>Eucalyptus saligna</i> X <i>botryoides</i>	3(3-3)	13	2(1-3)	2





Locations of survey sites allocated to WSF p68. Grey shading indicates extant native vegetation cover within the study area.

### WSF p72: Blue Mountains Basalt Forest



Plate p72. Blue Mountains Basalt Forest (Map Unit p72) at Mount Tomah with a canopy of *Eucalyptus fastigata*, a sparse sub canopy of *Doryphora sassafras*, scattered shrubs including *Prostanthera lasianthos* and *Pittosporum multiflorum*, and patches of dense groundcover dominated by *Lomandra longifolia*, *Geranium homeanum*, *Senecio linearifolius* and *Carex appressa*.

Sample Sites: 21

Area Extant (ha): 480

Estimated % remaining: 50-70%

Area in conservation reserves (ha): 160

Estimated % of pre-clearing area in conservation reserves: 10-30%

No. taxa (total / unique): 194 / 0

No. taxa per plot ( $\pm$ sd): 37.7 (7.2)

Class: Southern Escarpment Wet Sclerophyll Forests

Related TEC: n/a

Blue Mountains Basalt Forest (WSF p72) is equivalent to WSF 72 identified by Tindall *et al.* (2004). This unit is a tall eucalypt forest with a dense shrub/small tree layer and moist herbaceous groundcover, restricted to basalt caps in the upper Blue Mountains at elevations generally from 750m to 1050m ASL and with annual rainfall of 950 to 1350mm. Blue Mountains Basalt Forest occurs as small, disjunct patches scattered across the upper mountains on residual caps of Post-Triassic basalt, including Mount Wilson, Mount Bell, Mount Tomah, Mount Banks, Mount Caley and Mount Hay. On sheltered basalt slopes and gullies Blue Mountains Basalt Forest may grade into small patches of Intermediate Temperate Rainforest (RF p116). Along the basalt - shale boundary Blue Mountains Basalt Forest grades into and is then replaced by the related Shale-Basalt Sheltered Forest (WSF p168). The basalt - sandstone boundary is much more distinctive with Blue Mountains Basalt Forest grading rapidly into the surrounding sclerophyll forest (Blue Mountains Ridgetop Forest (DSF p136), however on steep, south-facing sandstone slopes this unit may grade into Sandstone Scarp Warm Temperate Rainforest (RF p114).

Blue Mountains Basalt Forest is equivalent to unit 6g Moist Basalt Cap Forest described by Keith and Benson (1988). More than two-thirds of its original distribution has been cleared and only a few hundred hectares remain. Much of this area was exposed to livestock grazing in the past, and some is now contained within Blue Mountains National Park.

#### Floristic Summary:

**Trees:** *Acacia melanoxylon*, *Doryphora sassafras*, *Eucalyptus blaxlandii*, *E. oreades*, *E. radiata*. **Shrubs:** *Senecio linearifolius*, *Cyathea australis*, *Indigofera australis*, *Hedycarya angustifolia*, *Hymenanthera dentata*. **Climbers:** *Tylophora barbata*, *Eustrephus latifolius*, *Smilax australis*, *Clematis aristata*, *Glycine tabacina*. **Groundcover:** *Pteridium esculentum*, *Viola hederacea*, *Centella asiatica*, *Stellaria flaccida*, *Geranium homeanum*, *Echinopogon ovatus*, *Carex appressa*, *Dichondra* spp., *Ajuga australis*, *Austrocynoglossum latifolium*, *Oplismenus imbecillis*, *Pellaea falcata*.

#### Vegetation structure:

Stratum	Frequency (n=3)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	32.3 (11)	30 (18)
Small tree	67	18 (14.1)	63.5 (9.2)
Shrub	33	3 (-)	40 (-)
Ground cover	100	0.8 (0.3)	40 (25)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 15 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 32 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 15 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia elata</i>	1(1-1)	33	1(1-3)	1
<i>Acacia melanoxylon</i>	1(1-2)	81	1(1-1)	6
<i>Acaena novae-zelandiae</i>	1(1-1)	38	1(1-1)	7
<i>Ajuga australis</i>	1(1-1)	43	1(1-1)	3
<i>Austrocynoglossum latifolium</i>	1(1-1)	43	1(1-1)	1
<i>Blechnum nudum</i>	1(1-3)	24	1(1-2)	3
<i>Bursaria longisepala</i>	1(1-1)	33	1(1-1)	1
<i>Carex appressa</i>	1(1-1)	57	1(1-1)	4
<i>Centella asiatica</i>	2(1-2)	76	1(1-1)	4
<i>Clematis aristata</i>	1(1-1)	62	1(1-1)	20
<i>Cyathea australis</i>	1(1-2)	57	1(1-2)	8
<i>Cyathea leichhardtiana</i>	1(1-2)	24	1(1-2)	1
<i>Daviesia ulicifolia</i>	1(1-1)	29	1(1-1)	7
<i>Dichondra</i> spp.	1(1-2)	57	1(1-2)	25
<i>Doryphora sassafras</i>	3(1-4)	52	3(1-3)	3

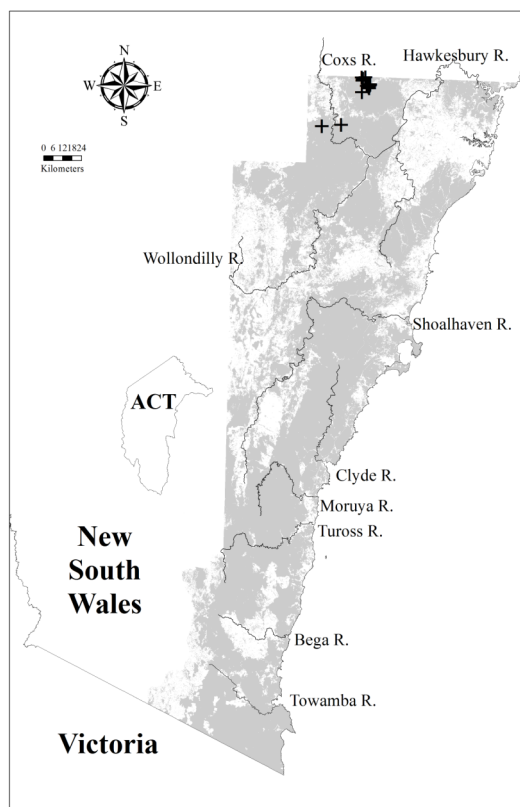
<i>Echinopogon ovatus</i>	1(1-1)	62	1(1-1)	14
<i>Eucalyptus blaxlandii</i>	2(2-3)	43	1(1-3)	1
<i>Eucalyptus oreades</i>	2(1-3)	33	3(1-4)	<1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-3)	33	2(1-3)	6
<i>Eustrephus latifolius</i>	1(1-1)	52	1(1-1)	19
<i>Geranium homeanum</i>	2(1-2)	67	1(1-1)	3
<i>Geranium potentilloides</i>	1(1-1)	38	1(1-1)	6
<i>Glycine tabacina</i>	1(1-1)	48	1(1-1)	7
<i>Hedycarya angustifolia</i>	1(1-2)	52	1(1-3)	4
<i>Hymenanthera dentata</i>	1(1-1)	52	1(1-1)	6
<i>Indigofera australis</i>	2(1-3)	57	1(1-1)	9
<i>Marsdenia flavescens</i>	1(1-1)	24	1(1-2)	2
<i>Oplismenus imbecillis</i>	1(1-2)	43	1(1-2)	14
<i>Pellaea falcata</i>	1(1-2)	43	1(1-1)	10
<i>Plantago debilis</i>	1(1-1)	29	1(1-1)	7
<i>Polystichum proliferum</i>	1(1-2)	38	1(1-2)	4
<i>Polyscias sambucifolia</i>	1(1-1)	38	1(1-1)	6
<i>Prostanthera lasianthos</i>	1(1-2)	24	1(1-1)	2
<i>Pteridium esculentum</i>	1(1-2)	81	1(1-2)	37
<i>Pyrrosia rupestris</i>	1(1-1)	29	1(1-2)	6
<i>Rapanea howittiana</i>	1(1-1)	33	1(1-1)	5
<i>Senecio linearifolius</i>	1(1-2)	62	1(1-1)	8
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	38	1(1-1)	7
<i>Smilax australis</i>	1(1-2)	62	1(1-1)	16
<i>Stellaria flaccida</i>	2(1-2)	71	1(1-1)	10
<i>Stellaria pungens</i>	2(1-2)	29	1(1-1)	6
<i>Tylophora barbata</i>	1(1-1)	86	1(1-1)	17
<i>Urtica incisa</i>	1(1-1)	29	1(1-1)	5
<i>Viola hederacea</i>	1(1-1)	81	1(1-1)	22

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Blechnum cartilagineum</i>	1(1-3)	33	1(1-2)	11
<i>Desmodium varians</i>	1(1-2)	43	1(1-1)	21
<i>Doodia aspera</i>	1(1-3)	33	1(1-2)	12
<i>Geitonoplesium cymosum</i>	1(1-1)	38	1(1-1)	16
<i>Lagenifera stipitata</i>	1(1-1)	38	1(1-1)	14
<i>Lomandra longifolia</i>	1(1-1)	52	1(1-1)	44
<i>Microlaena stipoides</i>	1(1-2)	57	1(1-2)	36
<i>Pandorea pandorana</i>	1(1-1)	43	1(1-1)	18
<i>Poranthera microphylla</i>	1(1-1)	38	1(1-1)	15

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus bicostata</i>	3(3-3)	5	1(1-1)	<1
<i>Eucalyptus cypellocarpa</i>	1(1-3)	14	2(1-2)	10
<i>Eucalyptus fastigata</i>	4(1-4)	14	2(1-3)	6
<i>Eucalyptus piperita</i>	1(1-2)	14	2(1-3)	9
<i>Eucalyptus sieberi</i>	1(1-1)	5	2(1-3)	16
<i>Eucalyptus viminalis</i>	3(1-3)	10	2(1-3)	5



Locations of survey sites allocated to WSF p72. Grey shading indicates extant native vegetation cover within the study area.

**WSF p73: Cool Montane Wet Forest**

Plate p73. Cool Montane Wet Forest (Map Unit p73) along the Jenolan Caves Road south of Hampton, where a continuous canopy of *Eucalyptus fastigata* and *E. dalrympleana* subsp. *dalrympleana* grows above scattered small trees including *Acacia dealbata* and a continuous groundcover dominated by *Lomandra longifolia* and *Pteridium esculentum*.

Sample Sites: 101

Area Extant (ha): 62600

Estimated % remaining: 70-90%

Area in conservation reserves (ha): 44200

Estimated % of pre-clearing area in conservation reserves: 35-55%

No. taxa (total / unique): 404 / 6

No. taxa per plot ( $\pm$ sd): 27 (9.2)

Class: Southern Tableland Wet Sclerophyll Forests

Related TEC: n/a

Cool Montane Wet Forest (WSF p73) is equivalent to WSF 73 identified by Tindall *et al.* (2004). This unit is a tall eucalypt forest with an open shrub layer and moist herbaceous groundcover, found on the higher, cooler parts of the Great Dividing Range in the northern and central parts of the study area. This unit occurs on soils derived from a range of granitic, low-quartz sedimentary and acid volcanic substrates, within a mean annual rainfall range of 800-1100mm and at elevations from 750m to 1300m ASL), including sites subject to occasional winter snowfall. Cool Montane Wet Forest is widespread in the far north-west of the study area, with extensive areas mapped from Lithgow south to Jenolan, Mount Werong and Mount Guineacor. Small outlying areas are found on slightly drier high peaks across the Southern Tablelands (Mount Rae, Cullerin Range and Cookbundoon Range), and in the south scattered records continue to Bombay, Mongarlowe and Wyanbene Caves, where it is replaced by Southern Range Wet Forest (WSF p338).

Cool Montane Wet Forest is often associated with Tableland Ridge Forest (DSF p8). Where they co-occur WSF p73 dominates the higher moister parts of the landscape, becoming increasingly restricted to sheltered gullies and southerly aspects with decreasing altitude and rainfall.

Substantial areas of this unit have been cleared where it occurs on flatter land, and livestock grazing continues to degrade the understorey of remnant patches. Examples are represented in conservation reserves where the terrain is more rugged.

**Floristic Summary:**

**Trees:** *Eucalyptus radiata*, *E. fastigata*, *E. dalrympleana*, *Acacia melanoxylon*. **Shrubs:** *Leucopogon lanceolatus*.

**Climbers:** *Clematis aristata*. **Groundcover:** *Pteridium esculentum*, *Lomandra longifolia*, *Viola hederacea*, *Stellaria pungens*, *Gonocarpus tetragynus*, *Poa sieberiana*, *Microlaena stipoides*, *Dianella tasmanica*, *Poranthera microphylla*.

**Vegetation structure:**

Stratum	Frequency (n=86)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	1	- (-)	10 (-)
Tree canopy	98	27.3 (6.3)	37.7 (17.1)
Small tree	76	10.6 (5.3)	19.8 (20)
Shrub	51	2.2 (0.7)	13.8 (16.6)
Ground cover	97	0.9 (0.4)	49 (35.1)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 10 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 20 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 10 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	1(1-2)	18	1(1-2)	5
<i>Acacia falciformis</i>	1(1-2)	21	1(1-2)	10
<i>Acacia melanoxylon</i>	1(1-1)	38	1(1-1)	6
<i>Acacia obliquinervia</i>	1(1-1)	11	1(1-1)	1
<i>Acaena novae-zelandiae</i>	1(1-1)	21	1(1-1)	7
<i>Arrhenechthites mixta</i>	1(1-1)	17	1(1-1)	1
<i>Asperula conferta</i>	1(1-1)	22	1(1-1)	4
<i>Blechnum nudum</i>	2(2-3)	10	1(1-2)	3
<i>Brachyscome spathulata</i>	2(1-2)	5	1(1-1)	1
<i>Chrysocephalum apiculatum</i>	1(1-2)	8	1(1-1)	2
<i>Clematis aristata</i>	1(1-1)	44	1(1-1)	20
<i>Coprosma quadrifida</i>	1(1-1)	22	1(1-1)	9
<i>Cotula alpina</i>	1(1-1)	5	1(1-1)	<1
<i>Cymbonotus lawsonianus</i>	1(1-1)	9	1(1-1)	1
<i>Daviesia ulicifolia</i>	1(1-1)	15	1(1-1)	6
<i>Deyeuxia parviseta</i>	1(1-1)	4	1(1-1)	<1
<i>Dianella tasmanica</i>	1(1-1)	32	1(1-1)	7
<i>Dichelachne inaequiglumis</i>	1(1-1)	11	1(1-1)	3
<i>Dichelachne sieberiana</i>	1(1-1)	4	1(1-2)	<1
<i>Eucalyptus blaxlandii</i>	1(1-1)	6	2(1-3)	1
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-2)	59	1(1-3)	2
<i>Eucalyptus fastigata</i>	2(2-3)	49	2(1-3)	6
<i>Eucalyptus pauciflora</i>	2(1-2)	10	1(1-2)	3
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(2-3)	71	2(1-3)	6
<i>Eucalyptus viminalis</i>	2(1-2)	17	2(1-3)	4
<i>Geranium graniticola</i>	1(1-1)	11	2(1-2)	<1
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-1)	30	1(1-1)	7
<i>Gonocarpus tetragynus</i>	1(1-1)	64	1(1-1)	20
<i>Helichrysum scorpioides</i>	1(1-2)	36	1(1-1)	7
<i>Hibbertia obtusifolia</i>	1(1-1)	29	1(1-1)	10
<i>Hydrocotyle laxiflora</i>	1(1-2)	33	1(1-1)	15
<i>Lagenifera stipitata</i>	1(1-1)	26	1(1-1)	14
<i>Leptospermum obovatum</i>	2(1-2)	4	1(1-3)	<1

<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-2)	57	1(1-1)	23
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-1)	25	1(1-2)	10
<i>Lomandra longifolia</i>	2(1-2)	82	1(1-1)	43
<i>Lomandra micrantha</i> subsp. <i>tuberculata</i>	1(1-1)	4	1(1-1)	<1
<i>Lomatia myricoides</i>	1(1-2)	45	1(1-1)	4
<i>Luzula flaccida</i>	1(1-1)	15	1(1-1)	4
<i>Monotoca scoparia</i>	1(1-1)	26	1(1-1)	12
<i>Olearia erubescens</i>	1(1-1)	19	1(1-1)	2
<i>Oreomyrrhis eriopoda</i>	1(1-1)	12	1(1-1)	1
<i>Persoonia laurina</i>	1(1-1)	10	1(1-1)	2
<i>Plantago debilis</i>	1(1-1)	16	1(1-1)	7
<i>Poa sieberiana</i> var. <i>cyanophylla</i>	1(1-1)	10	1(1-2)	2
<i>Poa sieberiana</i> var. <i>sieberiana</i>	2(1-3)	73	1(1-2)	10
<i>Podolepis hieracioides</i>	1(1-2)	8	1(1-1)	<1
<i>Polystichum australiense</i>	2(2-3)	5	1(1-2)	1
<i>Poranthera microphylla</i>	1(1-1)	36	1(1-1)	15
<i>Pteridium esculentum</i>	1(1-2)	87	1(1-2)	36
<i>Ranunculus lappaceus</i>	1(1-1)	12	1(1-1)	1
<i>Senecio hispidulus</i> var. <i>hispidulus</i>	1(1-1)	10	1(1-1)	3
<i>Senecio lautus</i> subsp. <i>dissectifolius</i>	1(1-2)	4	1(1-1)	<1
<i>Senecio prenanthoides</i>	1(1-1)	26	1(1-1)	8
<i>Stackhousia monogyna</i>	1(1-1)	10	1(1-1)	2
<i>Stellaria pungens</i>	1(1-2)	66	1(1-1)	6
<i>Veronica plebeia</i>	1(1-1)	22	1(1-1)	10
<i>Viola betonicifolia</i>	1(1-1)	35	1(1-1)	5
<i>Viola hederacea</i>	1(1-2)	65	1(1-1)	21

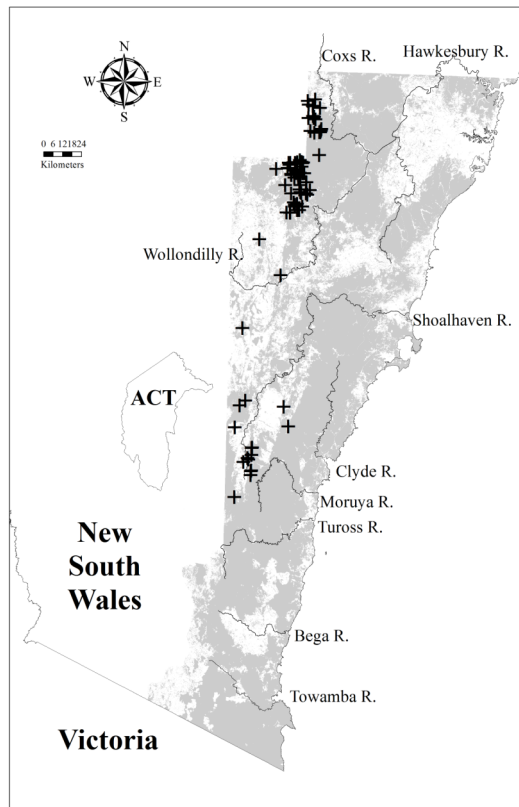
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Microlaena stipoides</i>	1(1-2)	44	1(1-2)	36

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus aggregata</i>	3(3-3)	1	2(1-3)	<1
<i>Eucalyptus blakelyi</i>	2(2-2)	1	1(1-3)	1
<i>Eucalyptus cypellocarpa</i>	2(2-3)	9	2(1-2)	10
<i>Eucalyptus dives</i>	1(1-3)	8	2(1-3)	4
<i>Eucalyptus elata</i>	1(1-1)	2	2(1-3)	5
<i>Eucalyptus goniocalyx</i>	3(3-3)	1	1(1-3)	1
<i>Eucalyptus macrorhyncha</i>	1(1-2)	4	2(1-3)	3
<i>Eucalyptus mannifera</i>	1(1-1)	3	2(1-3)	4
<i>Eucalyptus obliqua</i>	3(2-3)	10	2(1-3)	4
<i>Eucalyptus punctata</i>	3(3-3)	1	1(1-3)	9
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-1)	1	1(1-2)	2
<i>Eucalyptus sieberi</i>	1(1-3)	12	2(1-3)	16
<i>Eucalyptus smithii</i>	3(2-3)	5	1(1-2)	2





Locations of survey sites allocated to WSF p73. Grey shading indicates extant native vegetation cover within the study area.

### DSF p76: Moist Montane Sandstone Forest



Plate p76. Moist Montane Sandstone Forest (Map Unit p76) on the northeast end of Mount Bolworra on the Gangerang Plateau. Here the canopy contains *Eucalyptus sieberi* and *E. blaxlandii*, over a diverse shrub layer including *Acacia obtusifolia*, *Hakea dactyloides*, *H. salicifolia*, *Leucopogon lanceolatus* var. *lanceolatus* and *Leptospermum trinervium* and a patchy groundcover including *Pteridium esculentum* and *Patersonia glabrata*.

Sample Sites: 14

Area Extant (ha): 4800  
 Estimated % remaining: >95%  
 Area in conservation reserves (ha): 4500  
 Estimated % of pre-clearing area in conservation reserves: >85%  
 No. taxa (total / unique): 186 / 0  
 No. taxa per plot ( $\pm$ sd): 37.6 (9.4)  
 Class: Sydney Montane Dry Sclerophyll Forests  
 Related TEC: n/a

Moist Montane Sandstone Forest (DSF p76) is equivalent to DSF 76 identified by Tindall *et al.* (2004), and is a eucalypt forest with a mixed understorey of shrubs, sedges, forbs and grasses. This unit is generally found between 800m and 1150m ASL as scattered occurrences across the upper Blue Mountains plateau on sheltered slopes on Triassic Narrabeen Sandstone, and on the Gangerang Plateau and Kanangra Tops where it is associated with residual Permian sediments. Mean annual rainfall varies from 950 to 1300mm. The distribution is restricted, but negligible area has been cleared and most is within Blue Mountains National Park.

#### Floristic Summary:

**Trees:** *Eucalyptus radiata*, *E. sieberi*, *E. cypellocarpa*. **Shrubs:** *Leucopogon lanceolatus*, *Amperea xiphoclada*, *Leptospermum polygalifolium*, *Lomatia silaifolia*, *Acacia obtusifolia*, *Banksia spinulosa*, *Monotoca scoparia*, *Persoonia laurina*, *Epacris pulchella*. **Groundcover:** *Lomandra longifolia*, *Dianella caerulea*, *Pteridium esculentum*, *Gonocarpus teucroides*, *Lomandra glauca*.

#### Vegetation structure:

Stratum	Frequency (n=12)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	19.6 (4.6)	34.6 (6.6)
Small tree	67	9.6 (5.1)	29.4 (7.8)
Shrub	50	2.3 (1.1)	14.2 (13.9)
Ground cover	100	0.6 (0.2)	37.7 (33.4)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 13 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 30 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 13 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia obtusifolia</i>	2(1-3)	71	1(1-2)	9
<i>Amperea xiphoclada</i>	1(1-1)	86	1(1-1)	7
<i>Arrhenechthites mixta</i>	1(1-1)	21	1(1-1)	1
<i>Banksia cunninghamii</i> subsp. <i>cunninghamii</i>	3(1-3)	21	1(1-1)	<1
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-1)	79	1(1-2)	15
<i>Caustis flexuosa</i>	1(1-1)	36	1(1-2)	7
<i>Dampiera purpurea</i>	1(1-1)	29	1(1-1)	4
<i>Daviesia ulicifolia</i>	1(1-1)	57	1(1-1)	7
<i>Dianella caerulea</i>	1(1-2)	86	1(1-1)	28
<i>Dianella tasmanica</i>	1(1-2)	36	1(1-1)	7
<i>Drosera peltata</i>	1(1-1)	21	1(1-1)	2
<i>Elaeocarpus reticulatus</i>	1(1-1)	43	1(1-1)	12
<i>Epacris pulchella</i>	1(1-1)	57	1(1-1)	5
<i>Eucalyptus blaxlandii</i>	1(1-3)	21	1(1-3)	1
<i>Eucalyptus cypellocarpa</i>	3(1-3)	57	2(1-2)	10
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	3(3-4)	79	2(1-3)	6
<i>Eucalyptus sieberi</i>	3(1-3)	64	2(1-3)	16
<i>Eucalyptus sparsifolia</i>	1(1-3)	36	2(1-3)	2

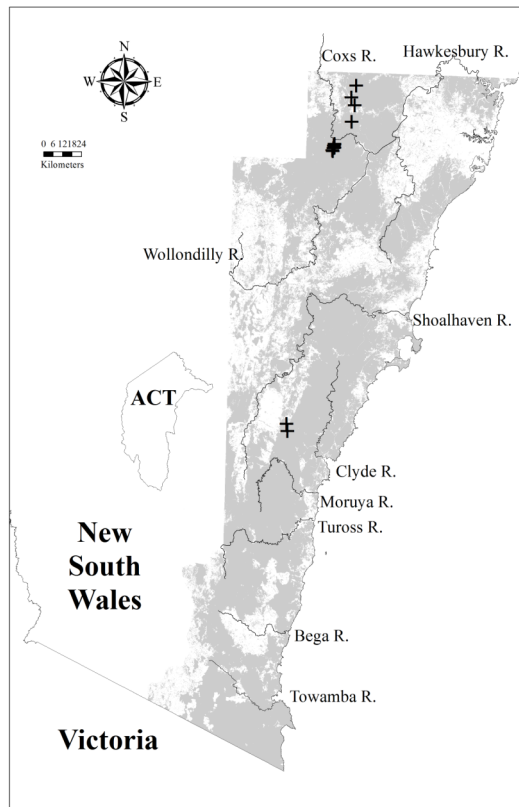
<i>Gahnia microstachya</i>	1(1-2)	21	1(1-2)	1
<i>Gleichenia dicarpa</i>	3(1-4)	21	1(1-2)	2
<i>Gonocarpus teucroides</i>	1(1-2)	57	1(1-1)	17
<i>Hakea dactyloides</i>	1(1-2)	43	1(1-1)	12
<i>Hakea salicifolia</i>	2(1-2)	43	1(1-2)	1
<i>Leptospermum polygalifolium</i>	2(1-3)	71	1(1-2)	8
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	2(1-2)	100	1(1-1)	23
<i>Lindsaea microphylla</i>	1(1-1)	29	1(1-1)	5
<i>Lomandra glauca</i>	1(1-1)	50	1(1-1)	10
<i>Lomandra gracilis</i>	1(1-1)	36	1(1-1)	3
<i>Lomandra longifolia</i>	1(1-1)	86	1(1-1)	44
<i>Lomatia silaifolia</i>	1(1-1)	71	1(1-1)	10
<i>Lycopodium deuterodensum</i>	1(1-3)	36	1(1-1)	1
<i>Monotoca scoparia</i>	1(1-2)	57	1(1-1)	12
<i>Olearia erubescens</i>	2(1-2)	29	1(1-1)	2
<i>Patersonia longifolia</i>	1(1-1)	21	1(1-1)	2
<i>Persoonia laurina</i>	1(1-1)	50	1(1-1)	2
<i>Persoonia levis</i>	1(1-1)	50	1(1-1)	13
<i>Stylidium laricifolium</i>	1(1-1)	21	1(1-1)	1
<i>Tetratheca bauerifolia</i>	1(1-1)	21	1(1-1)	1
<i>Xanthosia pilosa</i>	1(1-1)	43	1(1-1)	8
<i>Xanthorrhoea resinifera</i>	1(1-1)	36	1(1-2)	4

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	50	1(1-1)	28
<i>Persoonia linearis</i>	1(1-2)	43	1(1-1)	29
<i>Phyllanthus hirtellus</i>	1(1-1)	43	1(1-1)	14
<i>Poa meionectes</i>	2(1-3)	43	1(1-2)	16
<i>Pteridium esculentum</i>	1(1-2)	71	1(1-2)	37
<i>Viola hederacea</i>	1(1-1)	43	1(1-1)	22

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus considiana</i>	1(1-1)	7	2(1-2)	2
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-1)	7	1(1-2)	3
<i>Eucalyptus piperita</i>	3(2-3)	29	2(1-3)	9
<i>Eucalyptus smithii</i>	1(1-1)	14	1(1-2)	2



Locations of survey sites allocated to DSF p76. Grey shading indicates extant native vegetation cover within the study area.

### WSF p78: Southern Scarp Ash Forest



Plate p78. Southern Scarp Ash Forest (Map Unit p78) on White Ash Road, Tallaganda State Forest. Majestic *Eucalyptus fraxinoides* rise above a sparse, low shrub understorey dominated by *Acrotriche divaricata*, *Persoonia silvatica*, *Leucopogon lanceolata* and *Omphacomeria acerba*. *Dianella tasmanica* and *Poa meionectes* are the dominant groundcover species.

Sample Sites: 65

Area Extant (ha): 4400

Estimated % remaining: >95%

Area in conservation reserves (ha): 4100

Estimated % of pre-clearing area in conservation reserves: >95%

No. taxa (total / unique): 209 / 0

No. taxa per plot ( $\pm$ sd): 19.5 (5.5)  
 Class: Montane Wet Sclerophyll Forests  
 Related TEC: n/a

Southern Scarp Ash Forest (WSF p78) represents a significant revision and extension of WSF 78 identified by Tindall *et al.* (2004), with the addition of a large number of sites that were classified by Keith & Bedward (1999) as units 41 (Mountain Intermediate Shrub Forest) or W2 (Wadbilliga Range Shrub Forest), and classified by Beukers (undated) as Escarpment Rocky Ash Forest.

WSF p78 is a eucalypt forest with an open shrub layer and groundcover. This unit is restricted to high, wet, exposed rocky crests and upper slopes in dissected terrain, on metasediment and granitoid substrates, at elevations from 700-1250m ASL and mean annual rainfall of 900 - 1350mm. It occurs as scattered patches along the southern escarpment and tableland ranges from the Budawang and Minuma Ranges south to Dampier trig, Wadbilliga trig, Bemboka Peak, Wog Wog Mountain and Mount Imlay. Scattered outlier sites are recorded from the Turpentine Range in Morton National Park, along the high peaks of Gourrock Range in Tallaganda, and at Badja, Jilliga and Wadbilliga. This unit has also been observed on high slopes of Mount Dromedary.

Southern Scarp Ash Forest commonly grades into WSF e12 (Mountain Wet Fern Forest), WSF e10 (Southeast Mountain Wet Layered Forest) or WSF e15 (Southeast Mountain Wet Herb Forest) on sheltered slopes and gullies.

Little of Southern Scarp Ash Forest has been cleared, and most stands are within conservation reserves.

#### Floristic Summary:

**Trees:** *Eucalyptus fraxinoides*, *E. fastigata*. **Shrubs:** *Leucopogon lanceolatus*, *Platysace lanceolata*, *Acacia obliquinervia*, *Lomatia fraseri*, *Persoonia silvatica*. **Groundcover:** *Pteridium esculentum*, *Dianella tasmanica*, *Stylidium graminifolium*, *Poa meionectes*.

#### Vegetation structure:

Stratum	Frequency (n=33)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	25.3 (4.8)	37.7 (15)
Small tree	27	9.9 (3.9)	22.1 (20.4)
Shrub	88	2.4 (1.1)	23.4 (20.9)
Ground cover	97	0.7 (0.3)	25.2 (20.3)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 7 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 15 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 7 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia obliquinervia</i>	1(1-1)	34	1(1-1)	1
<i>Acacia rubida</i>	1(1-1)	14	1(1-1)	1
<i>Acrotriche serrulata</i>	1(1-1)	22	1(1-1)	3
<i>Banksia canei</i>	1(1-1)	12	1(1-2)	<1
<i>Blechnum watsii</i>	1(1-1)	32	1(1-2)	2
<i>Choretrum candollei</i>	1(1-1)	23	1(1-1)	1
<i>Coprosma hirtella</i>	1(1-1)	29	1(1-1)	<1
<i>Derwentia perfoliata</i>	1(1-1)	12	1(1-1)	1
<i>Dianella tasmanica</i>	1(1-1)	80	1(1-1)	7
<i>Epacris impressa</i>	1(1-1)	23	1(1-1)	4
<i>Eucalyptus fastigata</i>	1(1-2)	22	2(2-3)	6
<i>Eucalyptus fraxinoides</i>	3(1-3)	97	2(1-2)	<1
<i>Eucalyptus sieberi</i>	1(1-2)	42	2(1-3)	16
<i>Gahnia sieberiana</i>	1(1-1)	17	1(1-1)	5
<i>Gonocarpus teucroides</i>	1(1-1)	34	1(1-1)	17
<i>Hierochloe rariflora</i>	1(1-2)	25	1(1-2)	4
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	89	1(1-1)	23

<i>Lomatia fraseri</i>	1(1-1)	22	1(1-1)	1
<i>Lomandra longifolia</i>	1(1-1)	65	1(1-1)	44
<i>Lomatia myricoides</i>	1(1-1)	14	1(1-1)	4
<i>Monotoca elliptica</i>	1(1-1)	11	1(1-1)	2
<i>Oxylobium ellipticum</i>	1(1-1)	34	1(1-1)	<1
<i>Ozothamnus cuneifolius</i>	1(1-1)	11	1(1-1)	1
<i>Persoonia silvatica</i>	1(1-1)	43	1(1-1)	1
<i>Platysace lanceolata</i>	1(1-1)	74	1(1-1)	12
<i>Poa meionectes</i>	1(1-1)	32	1(1-2)	16
<i>Polyscias sambucifolia</i>	1(1-1)	34	1(1-1)	6
<i>Pteridium esculentum</i>	1(1-2)	77	1(1-2)	37
<i>Sticherus lobatus</i>	1(1-4)	14	1(1-2)	1
<i>Stylidium graminifolium</i>	1(1-1)	51	1(1-1)	9
<i>Tasmania lanceolata</i>	1(1-1)	20	1(1-2)	1
<i>Tetrarrhena juncea</i>	1(1-2)	17	1(1-2)	5

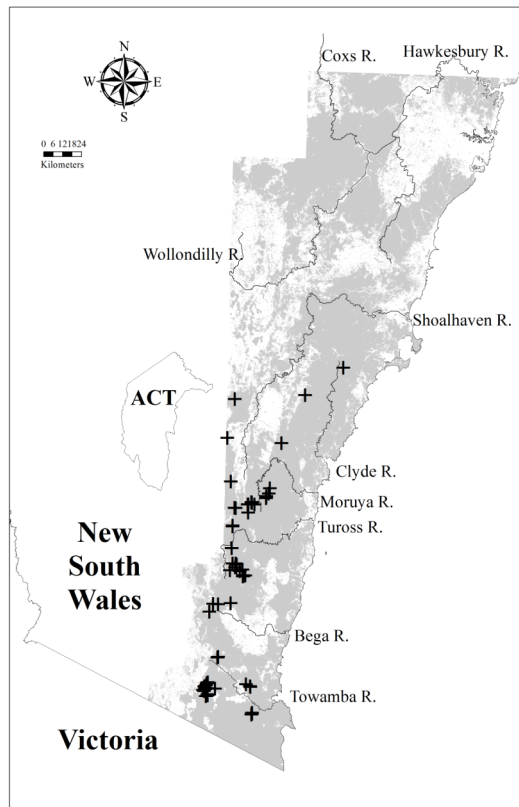
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	34	1(1-1)	28

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus cypellocarpa</i>	1(1-1)	9	2(1-2)	10
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-1)	3	1(1-2)	3
<i>Eucalyptus elata</i>	2(1-2)	3	2(1-3)	5
<i>Eucalyptus globoidea</i>	1(1-1)	2	2(1-2)	12
<i>Eucalyptus latiuscula</i>	1(1-1)	2	1(1-1)	<1
<i>Eucalyptus nitens</i>	1(1-1)	6	2(2-3)	<1
<i>Eucalyptus obliqua</i>	1(1-2)	9	2(1-3)	4
<i>Eucalyptus pauciflora</i>	1(1-1)	3	1(1-2)	3
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	12	2(1-3)	6
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-1)	2	1(1-2)	2
<i>Eucalyptus smithii</i>	2(1-2)	3	1(1-2)	2





Locations of survey sites allocated to WSF p78. Grey shading indicates extant native vegetation cover within the study area.

#### DSF p84: Ettrema Gorge Forest



Plate p84. Ettrema Gorge Forest (Map Unit p84) along the Shoalhaven River near Coolendel. *Eucalyptus punctata* grows above *Backhousia myrtifolia*, scattered *Astrotricha latifolia* and a sparse groundcover including ferns and vines.

Sample Sites: 3

Area Extant (ha): 8800

Estimated % remaining: >90%

Area in conservation reserves (ha): 7400

Estimated % of pre-clearing area in conservation reserves: 65-85%

No. taxa (total / unique): 55 / 0

No. taxa per plot ( $\pm$ sd): 31.7 (2.3)

Class: Central Gorge Dry Sclerophyll Forests



Related TEC: n/a

Ettrema Gorge Forest (DSF p84) is equivalent to DSF 85 identified by Tindall *et al.* (2004), and is an open eucalypt forest with a dense mixed mesophyll-sclerophyll shrub stratum and an open groundcover. This unit occurs on the rocky slopes of the Ettrema, Shoalhaven, Danjera and Yarramunmun Gorges where sediments underlying the Sydney Basin are exposed between 150-500m ASL. Plentiful surface rocks and shallow loam soils dictate a sparse groundcover and rock scree slopes are common in areas of low stability. In sheltered gullies and on fire protected rocky screes, dry rainforest taxa may become increasingly dominant, and Temperate Dry Rainforest (RF p40) frequently adjoins this unit. Steep slopes and inaccessibility have largely precluded clearing, and the distribution of Ettrema Gorge Forest is entirely within Morton National Park.

#### Floristic Summary:

**Trees:** *Eucalyptus paniculata*, *E. punctata*. **Shrubs:** *Acacia cognata*, *Babingtonia pluriflora*, *Lomatia myricoides*, *Notelaea longifolia*, *Olearia viscidula*, *Pittosporum undulatum*, *Prostanthera incana*, *Stenocarpus salignus*, *Astrotricha latifolia*, *Backhousia myrtifolia*, *Goodenia ovata*, *Leucopogon attenuatus*. **Climber:** *Geitonoplesium cymosum*. **Groundcover:** *Lepidosperma laterale*, *Notodanthonia longifolia*, *Deyeuxia decipiens*, *Pellaea falcata*, *Plectranthus parviflorus*, *Pyrrosia rupestris*.

#### Vegetation structure:

Stratum	Frequency (n=3)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	18 (2)	28.3 (2.9)
Small tree	67	8 (-)	14 (8.5)
Shrub	100	2.2 (0.8)	51.7 (12.6)
Ground cover	100	0.6 (0.2)	16.7 (20.2)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 30 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

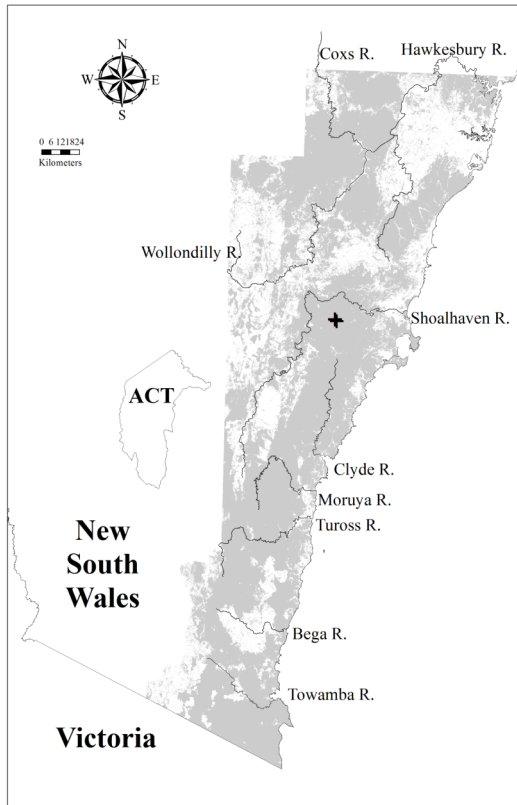
#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia cognata</i>	2(1-3)	100	1(1-2)	1
<i>Astrotricha latifolia</i>	1(1-1)	67	1(1-1)	2
<i>Babingtonia pluriflora</i>	1(1-1)	100	1(1-1)	1
<i>Backhousia myrtifolia</i>	1(1-1)	67	2(1-3)	5
<i>Beyeria viscosa</i>	4(4-4)	33	1(1-1)	<1
<i>Bursaria longisepala</i>	1(1-1)	33	1(1-1)	2
<i>Clematis microphylla</i> var. <i>leptophylla</i>	1(1-1)	33	1(1-1)	<1
<i>Cyperus gracilis</i>	1(1-1)	33	1(1-1)	2
<i>Deyeuxia decipiens</i>	1(1-1)	67	1(1-2)	<1
<i>Diospyros australis</i>	3(1-3)	67	1(1-2)	3
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	3(3-4)	100	1(1-2)	3
<i>Eucalyptus punctata</i>	3(1-3)	100	1(1-3)	9
<i>Geitonoplesium cymosum</i>	1(1-2)	100	1(1-1)	16
<i>Goodenia ovata</i>	1(1-1)	67	1(1-1)	7
<i>Hovea longifolia</i>	1(1-1)	33	1(1-1)	<1
<i>Lepidosperma laterale</i>	2(1-2)	100	1(1-1)	29
<i>Leucopogon attenuatus</i>	1(1-1)	67	1(1-1)	<1
<i>Logania albiflora</i>	1(1-1)	33	1(1-1)	1
<i>Lomatia myricoides</i>	1(1-1)	100	1(1-1)	4
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-2)	100	1(1-1)	8

<i>Notodanthonia longifolia</i>	2(1-2)	100	1(1-2)	5
<i>Olearia viscidula</i>	1(1-1)	100	1(1-2)	5
<i>Pellaea nana</i>	1(1-1)	33	1(1-1)	2
<i>Philotheca trachyphylla</i>	3(3-3)	33	1(1-1)	<1
<i>Pittosporum undulatum</i>	1(1-1)	100	1(1-1)	14
<i>Plectranthus graveolens</i>	1(1-1)	33	1(1-1)	1
<i>Plectranthus parviflorus</i>	2(1-2)	67	1(1-1)	8
<i>Prostanthera incana</i>	4(3-4)	100	1(1-2)	<1
<i>Pyrrosia rupestris</i>	1(1-1)	67	1(1-2)	6
<i>Stenocarpus salignus</i>	1(1-1)	100	1(1-1)	2

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Asplenium flabellifolium</i>	1(1-1)	67	1(1-1)	12
<i>Breynia oblongifolia</i>	1(1-1)	33	1(1-1)	12
<i>Bursaria spinosa</i>	2(2-2)	67	1(1-2)	14
<i>Cassytha pubescens</i>	1(1-1)	33	1(1-1)	8
<i>Cissus antarctica</i>	1(1-1)	33	1(1-2)	3
<i>Claoxylon australe</i>	1(1-1)	33	1(1-2)	3
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	33	1(1-1)	10
<i>Dichondra</i> spp.	1(1-1)	33	1(1-2)	25
<i>Einadia hastata</i>	1(1-1)	33	1(1-1)	3
<i>Elaeocarpus reticulatus</i>	1(1-1)	67	1(1-1)	12
<i>Entolasia marginata</i>	1(1-1)	33	1(1-1)	11
<i>Entolasia stricta</i>	1(1-1)	67	1(1-2)	34
<i>Eucalyptus agglomerata</i>	3(3-3)	33	2(1-3)	7
<i>Eustrephus latifolius</i>	1(1-1)	33	1(1-1)	19
<i>Indigofera australis</i>	1(1-1)	33	1(1-1)	9
<i>Lepidosperma urophorum</i>	4(4-4)	33	1(1-2)	7
<i>Marsdenia flavescens</i>	1(1-1)	33	1(1-2)	2
<i>Microlaena stipoides</i>	1(1-1)	33	1(1-2)	36
<i>Notelaea venosa</i>	3(3-3)	33	1(1-1)	12
<i>Opercularia diphyllo</i>	1(1-1)	33	1(1-1)	7
<i>Pellaea falcata</i>	1(1-1)	67	1(1-1)	10
<i>Persoonia linearis</i>	1(1-1)	33	1(1-1)	29
<i>Platysace lanceolata</i>	2(2-2)	33	1(1-1)	13
<i>Podolobium ilicifolium</i>	1(1-1)	33	1(1-1)	9
<i>Tylophora barbata</i>	1(1-1)	67	1(1-1)	17



Locations of survey sites allocated to DSF p84. Grey shading indicates extant native vegetation cover within the study area.

#### DSF p85: Currumbene-Batemans Lowlands Forest



Plate p85. Currumbene-Batemans Lowlands Forest (Map Unit p85) at the intersection of Albatross Road and Yalwal Road, West Nowra. A tall canopy of *Corymbia maculata* stands over a sub canopy of *Eucalyptus longifolia* and *Melaleuca styphelioides*, scattered shrubs of *Acacia longifolia* subsp. *longifolia*, and a groundcover dominated by *Lomandra longifolia*, *Imperata cylindrica* var. *major* and *Entolasia stricta*.

Sample Sites: 49

Area Extant (ha): 24700

Estimated % remaining: 55-75%

Area in conservation reserves (ha): 5800

Estimated % of pre-clearing area in conservation reserves: 5-20%

No. taxa (total / unique): 361 / 2

No. taxa per plot ( $\pm$ sd): 45.2 (22.3)

Class: South East Dry Sclerophyll Forests

Related TEC: n/a

Currambene-Batemans Lowlands Forest (DSF p85) is equivalent to DSF 85 identified by Tindall *et al.* (2004). This unit is a eucalypt forest with an open shrub layer and a dense grassy groundcover, found on coastal lowlands on sandstones and shales below 100m ASL. Its distribution is primarily between Bomaderry and Cudmirrah, with the largest stands around Currambene State Forest between Nowra and Culburra. Small woodlots and remnant trees suggest the distribution may have extended northward along the extensively cleared footslopes between Bomaderry and Berry and on the lower slopes of Kangaroo Valley. Isolated records also exist to the south, from Tabourie and Termeil Lakes, Batemans Bay and Mogo areas, but these were not mapped by the current project.

Currambene-Batemans Lowlands Forest shares a number of species with Murramarang Lowlands Forest (WSF p86) found further south. Examples are represented in a number of small conservation reserves, though the expansion of Nowra and its satellites and high frequency fires and grazing pose threats to some stands.

#### Floristic Summary:

**Trees:** *Allocasuarina littoralis*, *Corymbia gummifera*, *C. maculata*, *Eucalyptus pilularis*. **Shrubs:** *Pimelea linifolia*, *Banksia spinulosa*, *Persoonia linearis*, *Lomatia ilicifolia*. **Climbers:** *Billardiera scandens*, *Hardenbergia violacea*. **Groundcover:** *Entolasia stricta*, *Lomandra longifolia*, *Dianella caerulea*, *Lepidosperma laterale*, *Pteridium esculentum*, *Imperata cylindrica*, *Themeda australis*, *Lomandra multiflora*, *L. obliqua*.

#### Vegetation structure:

Stratum	Frequency (n=35)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	23.9 (3.9)	27.8 (11.8)
Small tree	83	11 (5)	19.9 (13.7)
Shrub	51	2 (0.8)	20.7 (15.8)
Ground cover	100	0.9 (0.2)	56 (25.7)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 27 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia binervata</i>	1(1-2)	14	1(1-2)	2
<i>Acacia longifolia</i>	1(1-2)	33	1(1-2)	9
<i>Acacia myrtifolia</i>	1(1-1)	20	1(1-1)	4
<i>Acacia terminalis</i>	1(1-2)	33	1(1-1)	11
<i>Acacia ulicifolia</i>	1(1-1)	27	1(1-1)	10
<i>Allocasuarina littoralis</i>	2(1-2)	86	1(1-2)	16
<i>Amperea xiphoclada</i>	1(1-1)	31	1(1-1)	7
<i>Anisopogon avenaceus</i>	1(1-3)	29	1(1-2)	5
<i>Aristida vagans</i>	1(1-1)	39	1(1-2)	8
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-1)	63	1(1-2)	15
<i>Billardiera scandens</i>	1(1-1)	78	1(1-1)	27
<i>Boronia polygalifolia</i>	1(1-1)	18	1(1-1)	1
<i>Brunoniella pumilio</i>	1(1-1)	27	1(1-1)	4
<i>Cassytha glabella</i>	1(1-1)	24	1(1-1)	8
<i>Corymbia gummifera</i>	1(1-2)	71	2(1-2)	15
<i>Corymbia maculata</i>	3(1-4)	35	2(1-3)	3
<i>Daviesia ulicifolia</i>	1(1-1)	31	1(1-1)	6
<i>Dianella caerulea</i>	1(1-2)	76	1(1-1)	28

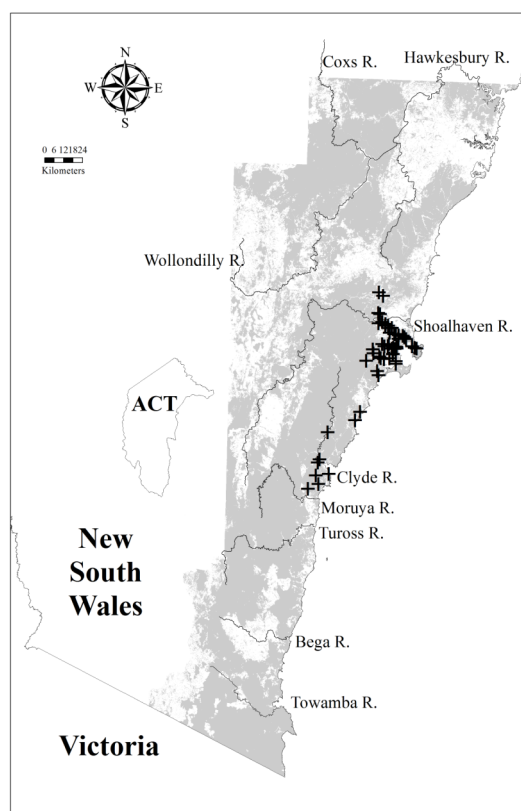
<i>Dodonaea triquetra</i>	1(1-3)	20	1(1-2)	6
<i>Entolasia stricta</i>	2(2-3)	94	1(1-2)	33
<i>Eucalyptus eugenioides</i>	1(1-2)	20	2(1-3)	4
<i>Eucalyptus globoidea</i>	2(1-2)	31	2(1-2)	12
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	2(1-3)	22	1(1-2)	3
<i>Eucalyptus pilularis</i>	2(1-3)	43	2(1-3)	5
<i>Eucalyptus sclerophylla</i>	2(1-3)	27	2(1-3)	4
<i>Goodenia heterophylla</i>	1(1-2)	18	1(1-1)	2
<i>Hakea sericea</i>	1(1-2)	20	1(1-1)	7
<i>Hardenbergia violacea</i>	1(1-1)	65	1(1-1)	17
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-2)	27	1(1-1)	6
<i>Hypericum gramineum</i>	1(1-1)	35	1(1-1)	16
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-1)	63	1(1-2)	9
<i>Lagenifera gracilis</i>	1(1-1)	20	1(1-1)	3
<i>Lepidosperma laterale</i>	1(1-2)	76	1(1-1)	28
<i>Leptospermum polygalifolium</i>	1(1-2)	29	1(1-2)	8
<i>Leucopogon juniperinus</i>	1(1-2)	18	1(1-1)	5
<i>Lindsaea linearis</i>	1(1-2)	39	1(1-1)	7
<i>Logania pusilla</i>	1(1-1)	18	1(1-1)	1
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	1(1-2)	16	1(1-1)	4
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1(1-1)	29	1(1-1)	11
<i>Lomatia ilicifolia</i>	1(1-1)	53	1(1-1)	6
<i>Lomandra longifolia</i>	1(1-2)	73	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	47	1(1-1)	25
<i>Lomandra obliqua</i>	1(1-1)	51	1(1-1)	14
<i>Macrozamia communis</i>	1(1-2)	18	1(1-2)	4
<i>Opercularia aspera</i>	1(1-2)	29	1(1-1)	8
<i>Opercularia diphylla</i>	1(1-2)	35	1(1-1)	7
<i>Patersonia glabrata</i>	1(1-1)	35	1(1-1)	10
<i>Patersonia sericea</i>	1(1-1)	24	1(1-1)	9
<i>Persoonia linearis</i>	1(1-1)	57	1(1-1)	29
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	61	1(1-1)	13
<i>Platylobium formosum</i>	1(1-1)	27	1(1-1)	3
<i>Podolobium scandens</i>	1(1-2)	14	1(1-2)	<1
<i>Pteridium esculentum</i>	1(1-2)	71	1(1-2)	37
<i>Pultenaea daphnoides</i>	1(1-1)	20	1(1-1)	4
<i>Pultenaea linophylla</i>	1(1-1)	14	1(1-1)	2
<i>Pultenaea retusa</i>	1(1-1)	39	1(1-1)	1
<i>Pultenaea villosa</i>	1(1-2)	27	1(1-2)	1
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	2(1-3)	35	2(1-3)	7
<i>Themeda australis</i>	1(1-2)	59	1(1-3)	17
<i>Xanthorrhoea concava</i>	1(1-2)	35	1(1-1)	4
<i>Xanthosia tridentata</i>	1(1-1)	22	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Glycine clandestina</i>	1(1-1)	45	1(1-1)	26
<i>Leptospermum trinervium</i>	1(1-1)	31	1(1-2)	16
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	31	1(1-1)	24
<i>Microlaena stipoides</i>	1(1-2)	43	1(1-2)	36

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	12	1(1-2)	9
<i>Eucalyptus agglomerata</i>	3(1-3)	8	2(1-3)	7
<i>Eucalyptus botryoides</i>	1(1-1)	6	2(1-3)	3
<i>Eucalyptus considaniana</i>	2(1-2)	8	2(1-2)	2
<i>Eucalyptus elata</i>	1(1-1)	2	2(1-3)	5
<i>Eucalyptus longifolia</i>	3(2-3)	10	1(1-2)	2
<i>Eucalyptus muelleriana</i>	1(1-1)	2	2(1-2)	6
<i>Eucalyptus piperita</i>	2(1-3)	16	2(1-3)	9
<i>Eucalyptus punctata</i>	1(1-3)	20	2(1-3)	9
<i>Eucalyptus resinifera</i> subsp. <i>resinifera</i>	1(1-1)	4	1(1-2)	1
<i>Eucalyptus scias</i> subsp. <i>callimastha</i>	2(1-2)	6	1(1-2)	1
<i>Eucalyptus sieberi</i>	2(2-3)	6	2(1-3)	16
<i>Eucalyptus sparsifolia</i>	1(1-1)	2	2(1-3)	2



Locations of survey sites allocated to DSF p85. Grey shading indicates extant native vegetation cover within the study area.



**WSF p86: Murramarang-Bega Lowlands Forest**

Plate p86. Murramarang-Bega Lowlands Forest (Map Unit p86) beside the Princes Highway at north Batemans Bay. The canopy here is dominated by *Corymbia maculata* and *Eucalyptus longifolia*, with a patchy cover of small trees and shrubs including *Allocasuarina littoralis*, *Notelaea longifolia* and *Leucopogon juniperinus*. Groundcover is also patchy and dominated by *Lomandra longifolia*, *Lepidosperma laterale* and *Entolasia stricta*.

Sample Sites: 31

Area Extant (ha): 7100

Estimated % remaining: 65-80%

Area in conservation reserves (ha): 1500

Estimated % of pre-clearing area in conservation reserves: 5-15%

No. taxa (total / unique): 269 / 0

No. taxa per plot ( $\pm$ sd): 44.2 (18.4)

Class: Southern Lowlands Wet Sclerophyll Forests

Related TEC: n/a

Murramarang-Bega Lowlands Forest (WSF p86) represents a revision and extension of WSF 86 identified by Tindall *et al.* (2004), based on additional samples over a larger study area. The revised WSF p86 includes a number of recent sites that were classified as Coastal Lowlands Grassy Forest by Beukers (undated).

WSF p86 is a eucalypt forest with an open shrub stratum and a prominent grassy groundcover. This unit is patchily distributed from Termeil and Tabourie Lakes south to Durras, Moruya, Bermagui and Kalaru, with northern outlying occurrences also recorded from the Jervis Bay hinterland near Callala and Currambene Creek. Within this distribution, Murramarang-Bega Lowlands Forest occurs close to the coast on loamy flats and along drainage lines below about 50m ASL, where mean annual rainfall ranges from 1000 to 1250mm. Murramarang-Bega Lowlands Forest is replaced on more elevated parts of the landscape by Batemans Bay Cycad Forest (WSF p90) in the Batemans Bay region, by Southern Lowland Wet Forest (WSF p104) in the Murramarang area and by Currambene – Batemans Lowlands Forest (DSF p85) near Jervis Bay.

Land clearing has reduced Murramarang-Bega Lowlands Forest to about half of its original extent. The occurrence of the remaining stands primarily on flat freehold land exposes this vegetation to continuing attrition as population pressures increase along the coastal lowlands.

**Floristic Summary:**

**Trees:** *Eucalyptus paniculata*, *Allocasuarina littoralis*, *E. longifolia*, *Corymbia maculata*. **Shrubs:** *Hibbertia aspera*, *Leucopogon juniperinus*, *Notelaea longifolia*. **Climbers:** *Glycine clandestina*, *Billardiera scandens*. **Groundcover:** *Lomandra longifolia*, *Imperata cylindrica*, *Pratia purpurascens*, *Entolasia stricta*, *Dianella caerulea*, *Lepidosperma laterale*, *Dichondra* spp., *Lagenifera stipitata*, *Oplismenus imbecillis*, *Brunoniella pumilio*, *Schelhammera undulata*.



**Vegetation structure:**

Stratum	Frequency (n=18)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	94	21.7 (6.2)	31.6 (17.7)
Small tree	78	10.2 (4.7)	22.7 (20)
Shrub	67	1.9 (0.5)	16.3 (16.9)
Ground cover	100	0.9 (0.2)	54.4 (31.2)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 14 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 29 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 14 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia longifolia</i>	1(1-1)	55	1(1-2)	9
<i>Allocasuarina littoralis</i>	1(1-2)	68	1(1-2)	17
<i>Austrostipa rudis</i>	1(1-2)	29	1(1-2)	6
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-1)	39	1(1-2)	15
<i>Billardiera scandens</i>	1(1-1)	74	1(1-1)	27
<i>Brunoniella pumilio</i>	1(1-1)	61	1(1-1)	4
<i>Corymbia maculata</i>	2(1-3)	45	2(1-3)	3
<i>Dianella caerulea</i>	1(1-1)	77	1(1-1)	28
<i>Echinopogon ovatus</i>	1(1-1)	48	1(1-1)	14
<i>Entolasia stricta</i>	1(1-2)	87	1(1-2)	34
<i>Eucalyptus botryoides</i>	1(1-2)	39	2(1-3)	3
<i>Eucalyptus longifolia</i>	2(2-3)	42	1(1-2)	2
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-2)	45	1(1-2)	3
<i>Eucalyptus pilularis</i>	2(2-2)	29	2(1-3)	5
<i>Gahnia radula</i>	1(1-3)	29	1(1-2)	3
<i>Gahnia sieberiana</i>	2(1-2)	45	1(1-1)	4
<i>Glycine clandestina</i>	1(1-1)	71	1(1-1)	26
<i>Hardenbergia violacea</i>	1(1-1)	42	1(1-1)	17
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	65	1(1-1)	10
<i>Hibbertia scandens</i>	1(1-1)	23	1(1-1)	5
<i>Hydrocotyle peduncularis</i>	1(1-1)	26	1(1-1)	9
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-1)	71	1(1-2)	9
<i>Kennedia rubicunda</i>	1(1-1)	39	1(1-1)	6
<i>Lagenifera stipitata</i>	1(1-1)	65	1(1-1)	14
<i>Lepidosperma laterale</i>	1(1-1)	68	1(1-1)	28
<i>Lepidosperma urophorum</i>	3(3-5)	23	1(1-2)	7
<i>Leptospermum continentale</i>	1(1-1)	23	1(1-1)	3
<i>Leptospermum polygalifolium</i>	1(1-3)	29	1(1-2)	8
<i>Leucopogon juniperinus</i>	1(1-1)	42	1(1-1)	5
<i>Lindsaea linearis</i>	1(1-1)	26	1(1-1)	7
<i>Lomandra longifolia</i>	1(1-2)	94	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	52	1(1-1)	25
<i>Macrozamia communis</i>	1(1-2)	32	1(1-2)	4

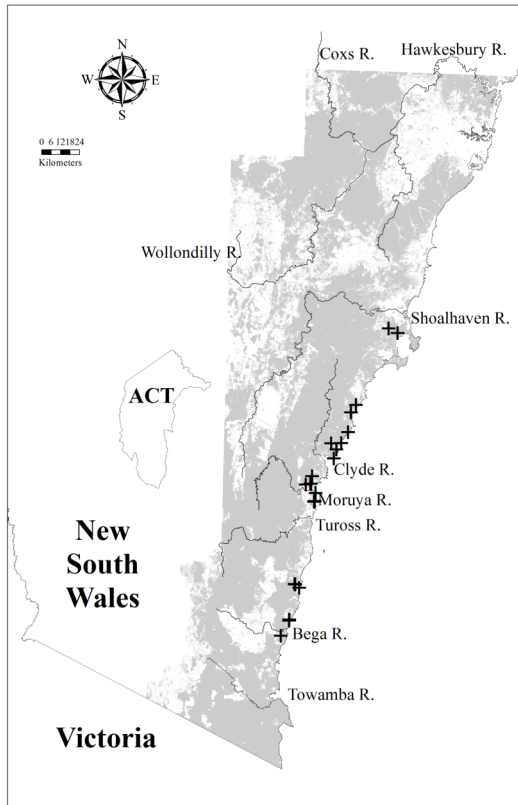
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-1)	32	1(1-1)	8
<i>Opercularia aspera</i>	1(1-1)	29	1(1-1)	8
<i>Oplismenus imbecillis</i>	1(1-1)	48	1(1-2)	14
<i>Panicum simile</i>	1(1-1)	32	1(1-1)	6
<i>Polymeria calycina</i>	1(1-1)	23	1(1-1)	1
<i>Pratia purpurascens</i>	1(1-1)	81	1(1-1)	17
<i>Pultenaea linophylla</i>	1(1-1)	29	1(1-1)	2
<i>Schelhammera undulata</i>	1(1-1)	48	1(1-1)	7
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-1)	32	1(1-1)	4

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Dichondra</i> spp.	1(1-1)	48	1(1-2)	25
<i>Gonocarpus teucrioides</i>	1(1-1)	32	1(1-1)	18
<i>Hypericum gramineum</i>	1(1-1)	35	1(1-1)	16
<i>Microlaena stipoides</i>	1(1-1)	42	1(1-2)	36
<i>Persoonia linearis</i>	1(1-1)	35	1(1-1)	29
<i>Pittosporum undulatum</i>	1(1-1)	32	1(1-1)	14
<i>Pteridium esculentum</i>	1(1-2)	58	1(1-2)	37
<i>Themeda australis</i>	1(1-1)	35	1(1-3)	17

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-2)	16	1(1-2)	9
<i>Corymbia gummifera</i>	1(1-2)	19	2(1-2)	16
<i>Eucalyptus agglomerata</i>	2(2-2)	6	2(1-3)	7
<i>Eucalyptus baueriana</i>	1(1-1)	3	2(1-2)	1
<i>Eucalyptus bosistoana</i>	1(1-1)	3	1(1-2)	3
<i>Eucalyptus cypellocarpa</i>	1(1-1)	3	2(1-2)	10
<i>Eucalyptus eugenioides</i>	1(1-2)	13	2(1-3)	4
<i>Eucalyptus fibrosa</i>	1(1-1)	6	2(1-3)	3
<i>Eucalyptus globoidea</i>	2(1-2)	29	2(1-2)	12
<i>Eucalyptus muelleriana</i>	1(1-1)	3	2(1-2)	6
<i>Eucalyptus ovata</i>	1(1-1)	3	2(1-3)	1
<i>Eucalyptus piperita</i>	2(1-2)	6	2(1-3)	9
<i>Eucalyptus saligna</i> X <i>botryoides</i>	1(1-1)	3	2(1-3)	2
<i>Eucalyptus sieberi</i>	2(1-2)	10	2(1-3)	16
<i>Eucalyptus tereticornis</i>	2(1-2)	13	2(1-3)	7
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-1)	3	2(1-3)	8



Locations of survey sites allocated to WSF p86. Grey shading indicates extant native vegetation cover within the study area.

### WSF p87: Sydney Turpentine Ironbark Forest



Plate p87. Sydney Turpentine Ironbark Forest (Map Unit p87) at the end of Eucalypt Road in Deanei Reserve, Springwood. Here a canopy of *Eucalyptus deanei* towers above an intermittent sub canopy of *Syncarpia glomulifera* subsp. *glomulifera*, a sparse but moderately diverse shrub layer including *Pittosporum revolutum*, *Persoonia linearis* and *Allocasuarina torulosa* and a dense grassy groundcover dominated by *Themeda australis*, *Lomandra longifolia*, *Oplismenus imbecillis* and *Echinopogon ovatus*.

Sample Sites: 74

Area Extant (ha): 2300

Estimated % remaining: <10%

Area in conservation reserves (ha): 250

Estimated % of pre-clearing area in conservation reserves: <2%

No. taxa (total / unique): 401 / 2

No. taxa per plot ( $\pm$ sd): 47.2 (9.3)

Class: Northern Hinterland Wet Sclerophyll Forests

Related TECs: Sydney Turpentine-Ironbark Forest EEC (TSC) and Turpentine Ironbark Forest CEEC (EPBC).

Sydney Turpentine Ironbark Forest (WSF p87) is equivalent to WSF 87 identified by Tindall *et al.* (2004), and is a diverse eucalypt forest with an open shrub layer and grassy groundcover. Having been extensively cleared this unit now occurs predominantly as scattered remnants on shale derived soils on the rim of the Cumberland plain and in the lower Blue Mountains. Local concentrations remain near Thirlmere, Oakdale, Kurrajong, Dural and Pennant Hills. Within this distribution Sydney Turpentine Ironbark Forest occupies undulating terrain and broad ridgetops on shale up to 500m ASL with a mean annual rainfall between 850 and 1250mm. Sydney Turpentine Ironbark Forest shares a number of species with adjoining stands of Blue Gum High Forest (WSF p153) with higher rainfall.

Sydney Turpentine Ironbark Forest includes Turpentine Ironbark Forest and Turpentine Ironbark Margin Forest (Map Units 15 and 43) of Tozer 2003. Less than one-quarter of its original distribution remains, and the remaining fragments are threatened by continuing urban expansion, recreational overuse and weed invasion.

#### Floristic Summary:

**Trees:** *Syncarpia glomulifera*, *Eucalyptus punctata*, *E. pilularis*, *E. paniculata*. **Shrubs:** *Pittosporum undulatum*, *Polyscias sambucifolia* ssp A, *Acacia parramattensis*, *Breynia oblongifolia*, *Ozothamnus diosmifolius*, *Pittosporum revolutum*, *Allocasuarina torulosa*, *Leucopogon juniperinus*, *Notelaea longifolia*. **Climbers:** *Eustrephus latifolius*, *Pandorea pandorana*, *Glycine clandestina*. **Groundcover:** *Dianella caerulea*, *Lomandra longifolia*, *Microlaena stipoides*, *Pratia purpurascens*, *Entolasia marginata*, *Dichondra* spp., *Entolasia stricta*, *Pseuderanthemum variabile*, *Imperata cylindrica*, *Oplismenus imbecillis*.

#### Vegetation structure:

Stratum	Frequency (n=36)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	3	20 (-)	5 (-)
Tree canopy	100	23.5 (5.7)	30.1 (14.1)
Small tree	94	11.2 (3.7)	26.6 (19.1)
Shrub	58	2.3 (0.6)	11.7 (11.3)
Ground cover	100	0.9 (0.2)	53.2 (26.9)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 23 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 40 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 23 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falcata</i>	1(1-1)	11	1(1-1)	1
<i>Acacia floribunda</i>	1(1-1)	27	1(1-2)	2
<i>Acacia implexa</i>	1(1-1)	16	1(1-1)	6
<i>Acacia parramattensis</i>	1(1-1)	58	1(1-2)	4
<i>Adiantum aethiopicum</i>	1(1-2)	41	1(1-1)	9
<i>Allocasuarina torulosa</i>	1(1-2)	50	1(1-3)	4
<i>Angophora costata</i>	1(1-2)	39	2(1-3)	7
<i>Anisopogon avenaceus</i>	1(1-2)	16	1(1-2)	5
<i>Aristida vagans</i>	1(1-1)	24	1(1-2)	8
<i>Arthropodium milleflorum</i>	1(1-1)	15	1(1-1)	5
<i>Austrostipa rudis</i>	1(1-2)	22	1(1-2)	6
<i>Billardiera scandens</i>	1(1-1)	49	1(1-1)	27
<i>Breynia oblongifolia</i>	1(1-1)	53	1(1-1)	12
<i>Brunoniella australis</i>	1(1-1)	15	2(1-2)	4
<i>Brunoniella pumilio</i>	1(1-2)	20	1(1-1)	4
<i>Bursaria spinosa</i>	1(1-1)	47	1(1-2)	14

<i>Cayratia clematidea</i>	1(1-2)	18	1(1-1)	2
<i>Centella asiatica</i>	1(1-1)	26	1(1-1)	4
<i>Cheilanthes sieberi</i>	1(1-2)	27	1(1-1)	14
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-2)	39	1(1-1)	10
<i>Clerodendrum tomentosum</i>	1(1-1)	22	1(1-1)	5
<i>Commelina cyanea</i>	1(1-1)	15	1(1-1)	4
<i>Desmodium rhytidophyllum</i>	1(1-1)	11	1(1-1)	1
<i>Dianella caerulea</i>	1(1-1)	81	1(1-1)	28
<i>Dianella longifolia</i>	1(1-1)	16	1(1-1)	4
<i>Dichelachne inaequiglumis</i>	1(1-2)	11	1(1-1)	3
<i>Dichondra</i> spp.	1(1-2)	69	1(1-2)	25
<i>Digitaria parviflora</i>	1(1-1)	19	1(1-1)	2
<i>Dodonaea triquetra</i>	1(1-2)	24	1(1-2)	6
<i>Doodia aspera</i>	1(1-2)	27	1(1-2)	11
<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	1(1-1)	42	1(1-1)	6
<i>Echinopogon ovatus</i>	1(1-2)	42	1(1-1)	14
<i>Einadia hastata</i>	1(1-1)	12	1(1-1)	3
<i>Entolasia marginata</i>	1(1-2)	69	1(1-1)	11
<i>Entolasia stricta</i>	1(1-2)	64	1(1-2)	33
<i>Eucalyptus acmenoides</i>	2(1-3)	9	2(1-2)	<1
<i>Eucalyptus deanei</i>	3(2-3)	14	3(1-3)	1
<i>Eucalyptus eugenioides</i>	1(1-3)	12	2(1-3)	4
<i>Eucalyptus fibrosa</i>	1(1-3)	12	2(1-3)	3
<i>Eucalyptus globoidea</i>	1(1-2)	24	2(1-2)	12
<i>Eucalyptus notabilis</i>	1(1-1)	8	1(1-2)	1
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	2(1-3)	27	1(1-2)	3
<i>Eucalyptus pilularis</i>	2(1-3)	28	2(1-3)	5
<i>Eucalyptus punctata</i>	2(1-2)	35	2(1-3)	8
<i>Eucalyptus resinifera</i> subsp. <i>resinifera</i>	1(1-3)	15	1(1-1)	1
<i>Eucalyptus saligna</i> X <i>botryoides</i>	3(1-3)	19	2(1-3)	2
<i>Eustrephus latifolius</i>	1(1-1)	64	1(1-1)	19
<i>Exocarpos cupressiformis</i>	1(1-1)	20	1(1-1)	5
<i>Gahnia aspera</i>	1(1-3)	16	1(1-1)	4
<i>Glochidion ferdinandi</i> var. <i>ferdinandi</i>	1(1-1)	8	1(1-1)	2
<i>Glycine clandestina</i>	1(1-2)	55	1(1-1)	26
<i>Glycine microphylla</i>	1(1-2)	34	1(1-1)	5
<i>Glycine tabacina</i>	1(1-1)	26	1(1-1)	7
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	43	1(1-1)	10
<i>Hibbertia diffusa</i>	1(1-2)	18	1(1-1)	3
<i>Hydrocotyle peduncularis</i>	1(1-2)	27	1(1-1)	9
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-2)	47	1(1-2)	9
<i>Kennedia rubicunda</i>	1(1-1)	23	1(1-1)	6
<i>Kunzea ambigua</i>	1(1-1)	12	1(1-2)	4
<i>Leucopogon juniperinus</i>	1(1-1)	47	1(1-1)	5
<i>Lindsaea microphylla</i>	1(1-1)	15	1(1-1)	5
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1(1-1)	27	1(1-1)	11

<i>Lomandra longifolia</i>	1(1-2)	81	1(1-1)	43
<i>Maytenus silvestris</i>	1(1-1)	30	1(1-1)	1
<i>Microlaena stipoides</i>	2(1-3)	84	1(1-2)	36
<i>Notelaea longifolia forma longifolia</i>	1(1-1)	50	1(1-1)	7
<i>Omalanthus populifolius</i>	1(1-1)	12	1(1-1)	1
<i>Oplismenus aemulus</i>	1(1-2)	43	1(1-2)	5
<i>Oplismenus imbecillis</i>	1(1-2)	47	1(1-2)	14
<i>Oxalis exilis</i>	1(1-2)	19	1(1-1)	3
<i>Ozothamnus diosmifolius</i>	1(1-1)	53	1(1-1)	8
<i>Pandorea pandorana</i>	1(1-1)	58	1(1-1)	18
<i>Panicum simile</i>	1(1-1)	30	1(1-1)	6
<i>Paspalidium distans</i>	1(1-2)	9	1(1-2)	3
<i>Passiflora herbertiana subsp. herbertiana</i>	1(1-1)	19	1(1-1)	1
<i>Persoonia linearis</i>	1(1-1)	47	1(1-1)	29
<i>Pittosporum revolutum</i>	1(1-1)	53	1(1-1)	8
<i>Pittosporum undulatum</i>	1(1-2)	70	1(1-1)	14
<i>Poa affinis</i>	1(1-2)	36	1(1-2)	1
<i>Polyscias sambucifolia</i>	1(1-1)	65	1(1-1)	6
<i>Pomaderris intermedia</i>	1(1-1)	8	1(1-1)	<1
<i>Pratia purpurascens</i>	1(1-2)	81	1(1-1)	17
<i>Pseuderanthemum variabile</i>	1(1-2)	64	1(1-2)	8
<i>Pultenaea villosa</i>	1(1-1)	8	1(1-2)	1
<i>Rapanea variabilis</i>	1(1-1)	27	1(1-1)	3
<i>Sigesbeckia orientalis subsp. orientalis</i>	1(1-1)	19	1(1-1)	7
<i>Solanum prinophyllum</i>	1(1-1)	41	1(1-1)	6
<i>Syncarpia glomulifera subsp. glomulifera</i>	3(1-3)	76	2(1-3)	7
<i>Themeda australis</i>	1(1-3)	45	1(1-3)	17
<i>Trema tomentosa var. viridis</i>	1(1-2)	16	1(1-1)	1
<i>Tylophora barbata</i>	1(1-2)	42	1(1-1)	17
<i>Veronica plebeia</i>	1(1-1)	30	1(1-1)	10
<i>Zieria smithii</i>	1(1-2)	12	1(1-1)	2

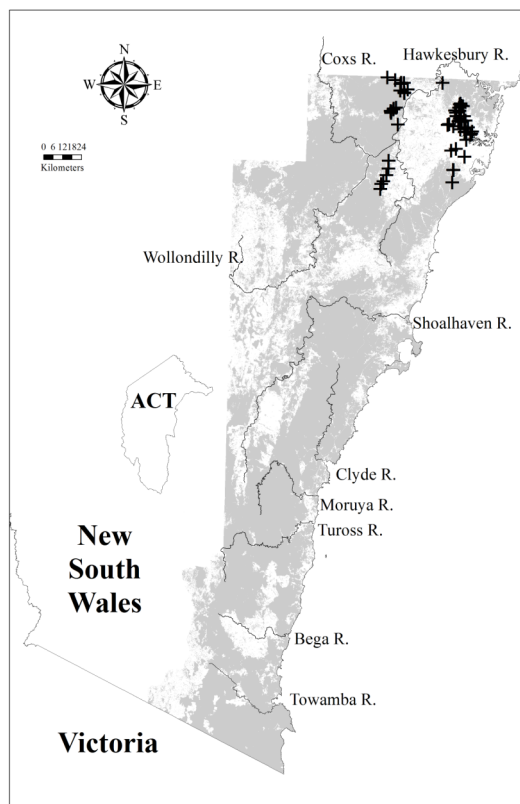
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Desmodium varians</i>	1(1-1)	35	1(1-1)	21
<i>Gonocarpus tetragynus</i>	1(1-1)	34	1(1-1)	20
<i>Lepidosperma laterale</i>	1(1-1)	45	1(1-1)	28

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	2(2-2)	1	1(1-2)	2
<i>Angophora floribunda</i>	2(1-3)	14	1(1-2)	9
<i>Corymbia eximia</i>	1(1-1)	1	1(1-2)	2
<i>Corymbia gummifera</i>	1(1-1)	14	2(1-2)	16
<i>Corymbia maculata</i>	4(4-4)	1	2(1-3)	3
<i>Eucalyptus agglomerata</i>	1(1-1)	3	2(1-3)	7
<i>Eucalyptus crebra</i>	2(1-3)	5	2(1-3)	3

<i>Eucalyptus haemastoma</i>	1(1-1)	1	1(1-2)	2
<i>Eucalyptus moluccana</i>	1(1-1)	3	3(1-3)	2
<i>Eucalyptus piperita</i>	1(1-3)	7	2(1-3)	9
<i>Eucalyptus siderophloia</i>	3(3-3)	1	2(1-2)	<1
<i>Eucalyptus sparsifolia</i>	1(1-3)	4	2(1-3)	2
<i>Eucalyptus sturgissiana</i>	2(2-2)	1	2(1-2)	<1
<i>Eucalyptus tereticornis</i>	2(1-2)	5	2(1-3)	7
<i>Eucalyptus umbra</i>	2(2-2)	1	1(1-2)	<1



Locations of survey sites allocated to WSF p87. Grey shading indicates extant native vegetation cover within the study area.



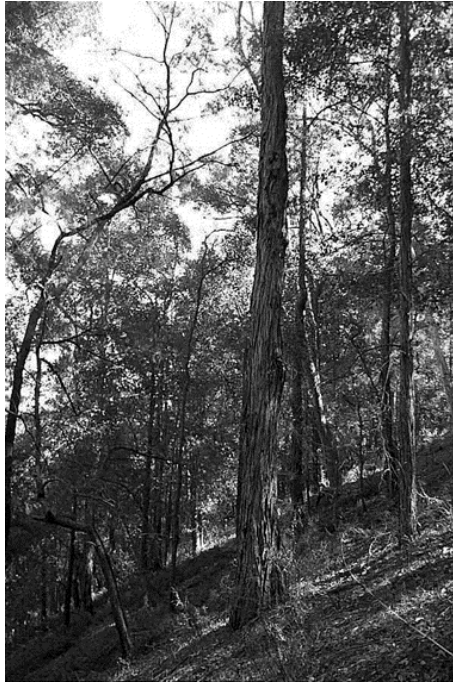
**DSF p88: Burragorang Escarpment Forest**

Plate p88. Burragorang Escarpment Forest (Map Unit p88) on a steep upper slope above Ritson Elbow on the lower Kowmung River. A canopy dominated by *Syncarpia glomulifera* subsp. *glomulifera* and *Eucalyptus punctata* grows above a small tree layer of *Allocasuarina torulosa*, scattered shrubs including *Breynia oblongifolia* and *Olearia viscidula* and a sparse but diverse groundcover including *Stypandra glauca*, *Doodia aspera* and *Geitonoplesium cymosum*.

Sample Sites: 74

Area Extant (ha): 13200

Estimated % remaining: >95%

Area in conservation reserves (ha): 12700

Estimated % of pre-clearing area in conservation reserves: >90%

No. taxa (total / unique): 447 / 3

No. taxa per plot ( $\pm$ sd): 51.9 (12.1)

Class: Central Gorge Dry Sclerophyll Forests

Related TEC: n/a

Burragorang Escarpment Forest (DSF p88) is equivalent to DSF 88 identified by Tindall *et al.* (2004), and is an open eucalypt forest with a mixed understorey of shrubs, vines, forbs and grasses. This forest is distributed along the escarpment slopes of the Burragorang, Grose, Jamison, Kedumba, Nattai and Little valleys, where mean annual rainfall is 820 - 1000mm and sediments from the Permian Illawarra Coal measures and the Berry Formation are exposed. These substrates yield loamy soils, and Burragorang Escarpment Forest generally occupies the dry rocky slopes between 100 and 650m elevation.

Large areas of Burragorang Escarpment Forest are represented in Blue Mountains National Park.

**Floristic Summary:**

**Trees:** *Allocasuarina torulosa*, *Eucalyptus punctata*. **Shrubs:** *Indigofera australis*, *Breynia oblongifolia*, *Persoonia linearis*, *Olearia viscidula*. **Climbers:** *Tylophora barbata*, *Geitonoplesium cymosum*, *Glycine clandestina*, *Billardiera scandens*, *Pandorea pandorana*, *Eustrephus latifolius*. **Groundcover:** *Desmodium gunnii*, *Lomandra longifolia*, *Dichondra* spp., *Adiantum aethiopicum*, *Dianella caerulea*, *Pratia purpurascens*, *Microlaena stipoides*, *Oplismenus imbecillis*, *Pteridium esculentum*, *Lepidosperma laterale*.

**Vegetation structure:**

Stratum	Frequency (n=67)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	6	22.5 (7.7)	8 (5.6)
Tree canopy	99	26.2 (7.5)	29.6 (16.3)
Small tree	88	13.3 (4.5)	26.9 (21.3)
Shrub	63	2.2 (0.7)	17.2 (17.6)
Ground cover	100	0.8 (0.3)	42.1 (27)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 26 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 42 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 26 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia implexa</i>	1(1-1)	28	1(1-1)	6
<i>Acacia paradoxa</i>	1(1-2)	12	1(1-2)	<1
<i>Acacia parramattensis</i>	1(1-2)	31	1(1-2)	4
<i>Adiantum aethiopicum</i>	1(1-2)	72	1(1-1)	9
<i>Adiantum hispidulum</i>	1(1-1)	11	1(1-1)	2
<i>Allocasuarina torulosa</i>	2(1-3)	77	1(1-3)	4
<i>Angophora floribunda</i>	1(1-3)	30	1(1-2)	9
<i>Astrotricha latifolia</i>	2(1-2)	36	1(1-1)	2
<i>Austrostipa ramosissima</i>	1(1-1)	15	1(1-2)	1
<i>Backhousia myrtifolia</i>	1(1-5)	22	2(1-3)	5
<i>Billardiera scandens</i>	1(1-1)	57	1(1-1)	27
<i>Brachychiton populneus</i> subsp. <i>populneus</i>	1(1-1)	19	1(1-1)	3
<i>Brachyscome angustifolia</i>	1(1-1)	20	1(1-1)	2
<i>Brachyscome graminea</i>	1(1-1)	8	1(1-1)	<1
<i>Breynia oblongifolia</i>	1(1-1)	57	1(1-1)	12
<i>Brunoniella australis</i>	1(1-2)	12	2(1-2)	4
<i>Brunoniella pumilio</i>	1(1-1)	12	1(1-1)	4
<i>Bursaria longisepala</i>	1(1-2)	12	1(1-1)	1
<i>Bursaria spinosa</i>	1(1-2)	28	1(1-2)	14
<i>Cayratia clematidea</i>	1(1-1)	27	1(1-1)	2
<i>Cheilanthes austrotenuifolia</i>	1(1-2)	15	1(1-1)	1
<i>Cheilanthes sieberi</i>	1(1-1)	30	1(1-1)	14
<i>Cissus antarctica</i>	1(1-1)	15	1(1-2)	3
<i>Cissus hypoglauca</i>	1(1-1)	47	1(1-2)	9
<i>Clematis aristata</i>	1(1-1)	35	1(1-1)	20
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	30	1(1-1)	10
<i>Clerodendrum tomentosum</i>	1(1-1)	35	1(1-1)	5
<i>Cymbidium suave</i>	1(1-1)	9	1(1-1)	2
<i>Desmodium varians</i>	1(1-2)	78	1(1-1)	21
<i>Dianella caerulea</i>	1(1-1)	73	1(1-1)	28
<i>Dichondra</i> spp.	2(1-2)	76	1(1-2)	25
<i>Dodonaea triquetra</i>	1(1-3)	15	1(1-2)	6

<i>Doodia aspera</i>	1(1-2)	46	1(1-2)	11
<i>Elaeocarpus reticulatus</i>	1(1-1)	26	1(1-1)	12
<i>Entolasia marginata</i>	1(1-2)	46	1(1-1)	11
<i>Eucalyptus crebra</i>	1(1-3)	19	2(1-3)	3
<i>Eucalyptus deanei</i>	3(1-3)	35	3(1-3)	1
<i>Eucalyptus eugenioides</i>	3(1-3)	31	2(1-3)	4
<i>Eucalyptus fibrosa</i>	3(1-3)	28	2(1-3)	3
<i>Eucalyptus hypostomatica</i>	1(1-3)	12	3(1-3)	<1
<i>Eucalyptus punctata</i>	3(1-3)	72	1(1-3)	8
<i>Eucalyptus tereticornis</i>	1(1-3)	18	2(1-3)	7
<i>Eustrephus latifolius</i>	1(1-1)	50	1(1-1)	19
<i>Exocarpos strictus</i>	1(1-1)	36	1(1-1)	9
<i>Ficus rubiginosa</i>	1(1-1)	9	1(1-3)	1
<i>Gahnia aspera</i>	1(1-1)	12	1(1-1)	4
<i>Gahnia melanocarpa</i>	1(1-2)	42	1(1-1)	5
<i>Galium binifolium</i>	1(1-1)	11	1(1-1)	3
<i>Galium propinquum</i>	1(1-1)	20	1(1-1)	7
<i>Geitonoplesium cymosum</i>	1(1-1)	70	1(1-1)	15
<i>Geranium homeanum</i>	1(1-2)	19	1(1-1)	3
<i>Glycine clandestina</i>	1(1-2)	59	1(1-1)	26
<i>Glycine microphylla</i>	1(1-2)	28	1(1-1)	5
<i>Goodenia ovata</i>	2(1-4)	28	1(1-1)	7
<i>Hardenbergia violacea</i>	1(1-1)	47	1(1-1)	17
<i>Helichrysum rutidolepis</i>	1(1-2)	12	1(1-1)	1
<i>Helichrysum scorpioides</i>	1(1-1)	22	1(1-1)	7
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	30	1(1-1)	10
<i>Hibbertia scandens</i>	1(1-1)	24	1(1-1)	5
<i>Howittia trilocularis</i>	1(1-2)	9	1(1-1)	1
<i>Hydrocotyle geraniifolia</i>	1(1-2)	15	1(1-1)	2
<i>Indigofera australis</i>	1(1-2)	59	1(1-1)	9
<i>Jacksonia scoparia</i>	1(1-1)	9	1(1-1)	2
<i>Kennedia rubicunda</i>	1(1-2)	41	1(1-1)	6
<i>Lepidosperma laterale</i>	1(1-2)	53	1(1-1)	28
<i>Leucopogon juniperinus</i>	1(1-1)	22	1(1-1)	5
<i>Libertia paniculata</i>	1(1-1)	19	1(1-1)	2
<i>Lissanthe strigosa</i>	1(1-1)	20	1(1-1)	8
<i>Lomandra longifolia</i>	1(1-2)	80	1(1-1)	43
<i>Melaleuca styphelioides</i>	1(1-3)	43	2(1-3)	1
<i>Microlaena stipoides</i>	2(1-2)	61	1(1-2)	36
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-1)	45	1(1-1)	7
<i>Olearia viscidula</i>	1(1-1)	54	1(1-2)	5
<i>Opercularia hispida</i>	1(1-1)	19	1(1-1)	3
<i>Oplismenus aemulus</i>	1(1-2)	19	1(1-2)	5
<i>Oplismenus imbecillis</i>	1(1-2)	57	1(1-2)	14
<i>Oxalis chnoodes</i>	1(1-1)	8	1(1-1)	1
<i>Oxalis exilis</i>	1(1-1)	14	1(1-1)	3

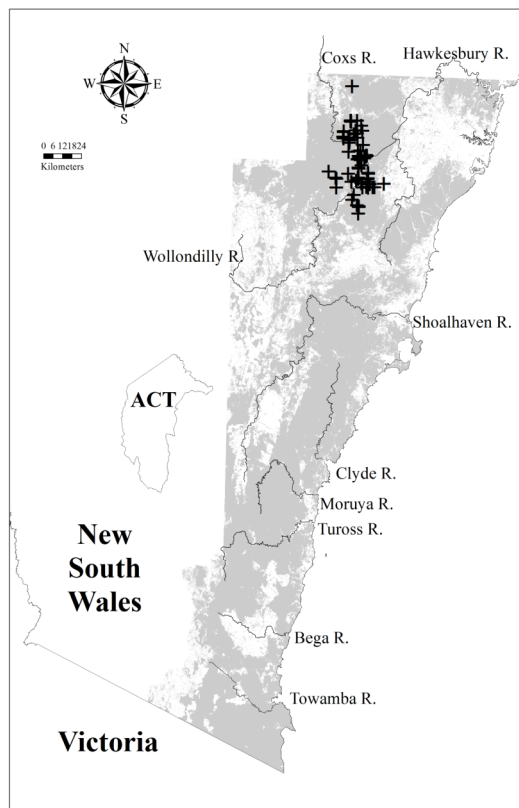
<i>Pandorea pandorana</i>	1(1-1)	50	1(1-1)	18
<i>Passiflora herbertiana</i> subsp. <i>herbertiana</i>	1(1-2)	12	1(1-1)	1
<i>Persoonia linearis</i>	1(1-1)	55	1(1-1)	28
<i>Phyllanthus gunnii</i>	1(1-1)	19	1(1-1)	2
<i>Pittosporum revolutum</i>	1(1-1)	30	1(1-1)	8
<i>Plantago debilis</i>	1(1-1)	32	1(1-1)	7
<i>Plectranthus parviflorus</i>	1(1-2)	41	1(1-1)	7
<i>Podocarpus spinulosus</i>	1(1-1)	8	1(1-2)	1
<i>Pomaderris ferruginea</i>	1(1-2)	9	1(1-1)	1
<i>Poranthera corymbosa</i>	1(1-1)	9	1(1-1)	1
<i>Pratia purpurascens</i>	1(1-1)	64	1(1-1)	17
<i>Pseuderanthemum variabile</i>	2(1-2)	42	1(1-2)	9
<i>Rapanea variabilis</i>	1(1-2)	12	1(1-1)	4
<i>Rubus parvifolius</i>	1(1-1)	45	1(1-1)	9
<i>Sarcopetalum harveyanum</i>	1(1-1)	27	1(1-1)	4
<i>Schoenus melanostachys</i>	1(1-3)	12	1(1-2)	2
<i>Senecio vagus</i> subsp. <i>eglandulosus</i>	1(1-2)	11	1(1-2)	<1
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	22	1(1-1)	7
<i>Smilax australis</i>	1(1-2)	39	1(1-1)	16
<i>Solanum prinophyllum</i>	1(1-1)	36	1(1-1)	6
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	39	1(1-1)	6
<i>Stypania glauca</i>	2(1-2)	30	1(1-2)	5
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	3(1-4)	31	2(1-3)	7
<i>Trema tomentosa</i> var. <i>viridis</i>	1(1-1)	12	1(1-1)	1
<i>Tylophora barbata</i>	2(1-2)	73	1(1-1)	16
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-1)	22	1(1-1)	4
<i>Veronica plebeia</i>	1(1-2)	43	1(1-1)	10

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Entolasia stricta</i>	1(1-1)	49	1(1-2)	34
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	32	1(1-1)	25
<i>Pteridium esculentum</i>	1(1-2)	51	1(1-2)	37
<i>Viola hederacea</i>	1(1-1)	34	1(1-1)	22

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	1(1-1)	1	1(1-2)	2
<i>Angophora costata</i>	1(1-1)	5	1(1-3)	7
<i>Eucalyptus agglomerata</i>	3(1-3)	11	2(1-3)	7
<i>Eucalyptus bosistoana</i>	1(1-1)	1	1(1-2)	3
<i>Eucalyptus cypellocarpa</i>	2(1-3)	7	2(1-2)	10
<i>Eucalyptus elata</i>	3(3-3)	1	2(1-3)	5
<i>Eucalyptus globoidea</i>	3(1-3)	3	2(1-2)	12
<i>Eucalyptus moluccana</i>	3(1-3)	8	3(1-3)	2
<i>Eucalyptus piperita</i>	1(1-3)	9	2(1-3)	9
<i>Eucalyptus sclerophylla</i>	1(1-1)	3	2(1-3)	4



Locations of survey sites allocated to DSF p88. Grey shading indicates extant native vegetation cover within the study area.

### DSF p89: Batemans Bay Foothills Forest



Plate p89. Batemans Bay Foothills Dry Forest (Map Unit p89) on a dry ridge adjacent to the Kings Highway east of Government Bend. The overstorey is dominated by *Eucalyptus sieberi*, *A. agglomerata* and *Angophora floribunda*, the shrub layer contains *Persoonia linearis*, *Acacia obtusifolia* and *Allocasuarina littoralis*, and tussocks of *Lepidosperma urophorum* are prominent in the sparse ground layer.

Sample Sites: 95

Area Extant (ha): 67100

Estimated % remaining: >90%

Area in conservation reserves (ha): 35200

Estimated % of pre-clearing area in conservation reserves: 45-65%

No. taxa (total / unique): 301 / 1  
 No. taxa per plot ( $\pm$ sd): 28.5 (10.2)  
 Class: South East Dry Sclerophyll Forests  
 Related TEC: n/a

Batemans Bay Foothills Forest (DSF p89) represents a revision and extension of DSF 89 identified by Tindall *et al.* (2004), based on a larger sample pool over a larger study area. The revised DSF p89 includes a small number of sites that were classified by Keith & Bedward (1999) as unit 49 Coastal Dry Shrub Forest, and a number of recent sites that were classified by Beukers (undated) as Lowlands Bloodwood Dry Shrub Forest or Coastal Silvertop-Stringybark Dry Slopes Forest.

DSF p89 is a eucalypt woodland with an open understorey of sclerophyll shrubs, grasses and forbs. This unit is distributed from the Yadboro River and southern slopes of the Morton plateau to the eastern foothills of the Budawang Range and the Deua valley, south to Nerrigundah and Cobargo. Within this distribution, Batemans Bay Foothills Forest occurs on ridges and dry slopes with sandy loams generally between 100-600m ASL and within a mean annual rainfall range of 850 - 1200mm. Batemans Bay Foothills Forest is replaced by Batemans Bay Cycad Forest (WSF p90) to the east, and on lower slopes and in gullies where the two units overlap.

Most of Batemans Bay Foothills Forest's distribution has escaped land clearing in conservation reserves and state forests.

#### Floristic Summary:

**Trees:** *Eucalyptus agglomerata*, *E. sieberi*, *E. consideniana*, *Corymbia gummifera*. **Shrubs:** *Persoonia linearis*, *Acacia obtusifolia*, *Platysace lanceolata*, *Podolobium ilicifolium*, *Tetratheca thymifolia*, *Banksia spinulosa*, *Allocasuarina littoralis*. **Groundcover:** *Entolasia stricta*, *Dianella caerulea*, *Lomandra confertifolia* ssp *similis*, *Pomax umbellata*.

#### Vegetation structure:

Stratum	Frequency (n=55)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	21.6 (4.9)	22.9 (10.2)
Small tree	73	9.2 (3.7)	17.2 (14.3)
Shrub	58	2 (0.6)	19.8 (14.6)
Ground cover	98	0.9 (0.2)	31 (21.7)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 12 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 20 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 12 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia obtusifolia</i>	2(1-2)	81	1(1-2)	9
<i>Acacia terminalis</i>	1(1-1)	34	1(1-1)	11
<i>Allocasuarina littoralis</i>	1(1-2)	56	1(1-2)	16
<i>Amperea xiphoclada</i>	1(1-1)	32	1(1-1)	7
<i>Angophora costata</i>	2(1-2)	18	1(1-3)	7
<i>Angophora floribunda</i>	1(1-1)	35	1(1-2)	9
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-1)	45	1(1-2)	15
<i>Bossiaea obcordata</i>	1(1-2)	40	1(1-2)	7
<i>Cooperookia barbata</i>	1(1-1)	16	1(1-1)	1
<i>Correa reflexa</i>	1(1-1)	19	1(1-1)	5
<i>Corymbia gummifera</i>	2(1-2)	39	2(1-2)	15
<i>Daviesia mimosoides</i>	2(1-3)	7	1(1-2)	2
<i>Daviesia ulicifolia</i>	1(1-1)	23	1(1-1)	6
<i>Dianella caerulea</i>	1(1-1)	69	1(1-1)	28
<i>Entolasia stricta</i>	1(1-1)	81	1(1-2)	33
<i>Eucalyptus agglomerata</i>	2(1-2)	49	2(1-3)	7
<i>Eucalyptus consideniana</i>	2(1-2)	39	1(1-2)	2

<i>Eucalyptus globoidea</i>	1(1-2)	29	2(1-2)	12
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-2)	15	1(1-2)	3
<i>Eucalyptus sieberi</i>	2(1-2)	66	2(1-3)	15
<i>Gompholobium latifolium</i>	1(1-1)	15	1(1-1)	3
<i>Hardenbergia violacea</i>	1(1-1)	36	1(1-1)	17
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	26	1(1-1)	10
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-1)	24	1(1-1)	6
<i>Joycea pallida</i>	2(1-3)	22	1(1-2)	8
<i>Kennedia rubicunda</i>	1(1-1)	15	1(1-1)	6
<i>Lepidosperma laterale</i>	1(1-1)	45	1(1-1)	28
<i>Lepidosperma urophorum</i>	1(1-2)	43	1(1-2)	6
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	51	1(1-1)	23
<i>Logania pusilla</i>	1(1-1)	8	1(1-1)	1
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	1(1-1)	19	1(1-2)	4
<i>Lomandra confertifolia</i> subsp. <i>similis</i>	1(1-2)	64	1(1-1)	2
<i>Lomandra cylindrica</i>	1(1-1)	16	1(1-1)	4
<i>Lomatia ilicifolia</i>	1(1-1)	41	1(1-1)	6
<i>Macrozamia communis</i>	1(1-1)	23	1(1-2)	4
<i>Marsdenia suaveolens</i>	1(1-1)	25	1(1-1)	2
<i>Patersonia glabrata</i>	1(1-1)	45	1(1-1)	9
<i>Persoonia linearis</i>	1(1-1)	92	1(1-1)	28
<i>Phyllanthus hirtellus</i>	1(1-1)	27	1(1-1)	14
<i>Platysace lanceolata</i>	1(1-1)	77	1(1-1)	12
<i>Podolobium ilicifolium</i>	1(1-1)	60	1(1-1)	8
<i>Pomax umbellata</i>	1(1-1)	42	1(1-1)	13
<i>Pteridium esculentum</i>	1(1-1)	54	1(1-2)	37
<i>Pultenaea ferruginea</i>	1(1-2)	5	1(1-2)	1
<i>Pultenaea spinosa</i>	1(1-1)	5	1(1-2)	<1
<i>Scaevola ramosissima</i>	1(1-1)	17	1(1-1)	3
<i>Tetradlea thymifolia</i>	1(1-1)	68	1(1-1)	6
<i>Xanthosia atkinsoniana</i>	1(1-1)	14	1(1-1)	<1
<i>Xanthorrhoea australis</i>	1(1-1)	6	1(1-2)	1
<i>Xanthorrhoea concava</i>	1(1-1)	31	1(1-1)	4
<i>Xanthosia pilosa</i>	1(1-1)	29	1(1-1)	7

## Constant:

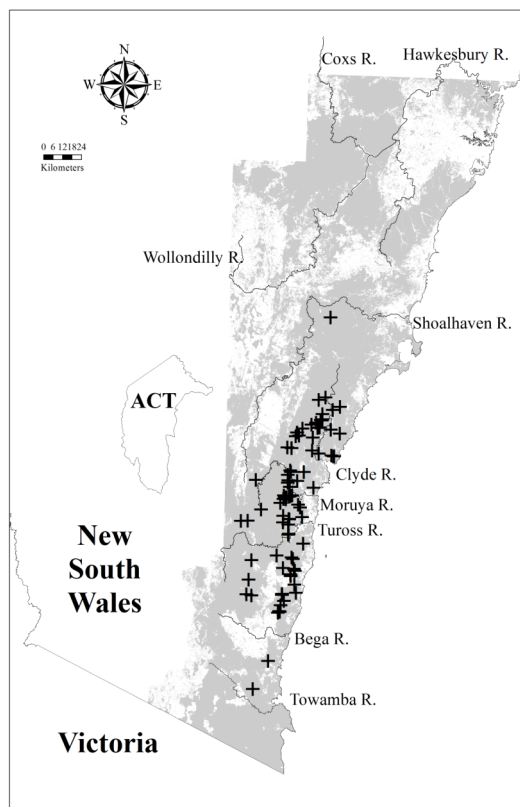
Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	40	1(1-1)	27

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia maculata</i>	1(1-2)	7	2(1-3)	3
<i>Eucalyptus blaxlandii</i>	2(2-2)	1	1(1-3)	1
<i>Eucalyptus cypellocarpa</i>	1(1-1)	2	2(1-2)	10
<i>Eucalyptus fibrosa</i>	1(1-1)	2	2(1-3)	3
<i>Eucalyptus longifolia</i>	1(1-2)	5	1(1-2)	2
<i>Eucalyptus muelleriana</i>	1(1-2)	14	2(1-2)	6



<i>Eucalyptus pilularis</i>	2(1-3)	5	2(1-3)	5
<i>Eucalyptus piperita</i>	2(1-3)	8	2(1-3)	9
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	2	2(1-3)	6
<i>Eucalyptus saligna</i> X <i>botryoides</i>	1(1-1)	1	2(1-3)	2
<i>Eucalyptus scias</i> subsp. <i>callimastha</i>	1(1-1)	1	1(1-2)	1
<i>Eucalyptus smithii</i>	3(3-3)	1	1(1-2)	2
<i>Eucalyptus stenostoma</i>	1(1-1)	1	2(1-2)	<1
<i>Eucalyptus tricarpa</i>	1(1-1)	1	1(1-2)	1



Locations of survey sites allocated to DSF p89. Grey shading indicates extant native vegetation cover within the study area.

**WSF p90: Batemans Bay Cycad Forest**

Plate p90. Batemans Bay Cycad Forest (Map Unit p90) beside the Kings Highway near its junction with the Western Distributor Road, Monga National Park. An overstorey of *Corymbia maculata* grows over a sparse small tree layer of *Acacia irrorata* subsp. *irrorata*, occasional tall shrubs including *Persoonia linearis*, a prominent layer of *Macrozamia communis*, and a sparse groundcover including *Lomandra longifolia* and *Lepidosperma urophorum*.

Sample Sites: 90

Area Extant (ha): 56100

Estimated % remaining: >85%

Area in conservation reserves (ha): 14000

Estimated % of pre-clearing area in conservation reserves: 15-25%

No. taxa (total / unique): 375 / 0

No. taxa per plot ( $\pm$ sd): 39.7 (10.2)

Class: Southern Lowland Wet Sclerophyll Forests

Related TEC: n/a

Batemans Bay Cycad Forest (WSF p90) represents a revision and extension of WSF 90 identified by Tindall *et al.* (2004), based on additional samples over a larger study area. The revised WSF p90 includes a number of sites that were classified by Beukers (undated) as Coastal Spotted Gum-Ironbark Forest.

WSF p90 is a eucalypt forest with an open shrub stratum and a grassy groundcover. This unit is most extensive north-west to south-west of Batemans Bay, from Currowan State Forest south to the Moruya River and west along the Deua River to Merricumbene. It is also extensive in Bodalla State Forest, and scattered occurrences continue as far north as Yadboro in Morton National Park, and south to Narooma and Bermagui. It dominates large areas of forest on the coastal lowlands (below 250m ASL) surrounding Nelligen, Batemans Bay, Mogo and to the west of Moruya where mean annual rainfall is between 950 and 1250mm. Batemans Bay Cycad Forest shares a number of species with Batemans Bay Foothills Dry Forest (DSF p89), which is generally found further west and at higher elevations. Where the distribution of these two units overlap Batemans Bay Cycad Forest tends to occupy lower slopes and gullies while Batemans Bay Foothills Dry Forest occurs on ridgetops and exposed slopes.

About four-fifths of the original distribution of Batemans Bay Cycad Forest remains, including significant areas in state forest and conservation reserves.

**Floristic Summary:**

**Trees:** *Eucalyptus globoidea*, *Corymbia maculata*, *Allocasuarina littoralis*, and *Eucalyptus paniculata*. **Shrubs:** *Macrozamia communis*, *Persoonia linearis*, *Platysace lanceolata*, *Hibbertia aspera*, *Podolobium ilicifolium*, and *Leucopogon lanceolatus*. **Climbers:** *Hardenbergia violacea*, *Glycine clandestina*. **Groundcover:** *Entolasia stricta*, *Dianella caerulea*, *Lepidosperma laterale*, *Lomandra multiflora*, and *Imperata cylindrica*.

**Vegetation structure:**

Stratum	Frequency (n=69)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	3	37.5 (3.5)	3 (-)
Tree canopy	99	24.4 (5.4)	27.3 (11.3)
Small tree	65	11.2 (4.2)	15.7 (13)
Shrub	67	2.2 (0.5)	18.6 (12.9)
Ground cover	90	1 (0.5)	34 (21.4)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 18 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 32 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 18 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia implexa</i>	1(1-1)	28	1(1-1)	6
<i>Acacia irrorata</i> subsp. <i>irrorata</i>	1(1-1)	16	1(1-1)	2
<i>Acacia longissima</i>	1(1-1)	6	1(1-1)	1
<i>Acacia mabelliae</i>	1(1-2)	21	1(1-2)	1
<i>Acacia obtusifolia</i>	1(1-2)	22	1(1-2)	9
<i>Allocasuarina littoralis</i>	1(1-2)	53	1(1-2)	16
<i>Aristida vagans</i>	1(1-1)	24	1(1-2)	8
<i>Arthropodium milleflorum</i>	1(1-1)	16	1(1-1)	5
<i>Arthropodium minus</i>	1(1-1)	7	1(1-1)	1
<i>Billardiera scandens</i>	1(1-1)	44	1(1-1)	27
<i>Breynia oblongifolia</i>	1(1-1)	28	1(1-1)	12
<i>Brunoniella pumilio</i>	1(1-1)	12	1(1-1)	4
<i>Correa reflexa</i>	1(1-1)	14	1(1-1)	5
<i>Corymbia maculata</i>	2(2-3)	71	2(1-3)	3
<i>Cymbopogon refractus</i>	1(1-1)	16	1(1-1)	4
<i>Daviesia ulicifolia</i>	1(1-1)	19	1(1-1)	6
<i>Desmodium varians</i>	1(1-1)	52	1(1-1)	21
<i>Dianella caerulea</i>	1(1-1)	84	1(1-1)	28
<i>Dichelachne micrantha</i>	1(1-1)	26	1(1-1)	9
<i>Entolasia stricta</i>	1(1-1)	89	1(1-2)	33
<i>Eucalyptus fibrosa</i>	1(1-2)	11	2(1-3)	3
<i>Eucalyptus globoidea</i>	2(1-2)	62	2(1-2)	11
<i>Eucalyptus longifolia</i>	2(1-2)	10	1(1-2)	2
<i>Eucalyptus muelleriana</i>	2(1-2)	23	2(1-2)	6
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	2(1-2)	52	1(1-2)	2
<i>Eucalyptus pilularis</i>	1(1-2)	22	2(1-3)	5
<i>Eustrephus latifolius</i>	1(1-1)	40	1(1-1)	19
<i>Exocarpos strictus</i>	1(1-1)	27	1(1-1)	9
<i>Gahnia melanocarpa</i>	1(1-1)	14	1(1-1)	5
<i>Glycine clandestina</i>	1(1-1)	59	1(1-1)	26
<i>Gonocarpus teucroides</i>	1(1-1)	32	1(1-1)	17
<i>Hardenbergia violacea</i>	1(1-1)	77	1(1-1)	17
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	71	1(1-1)	10

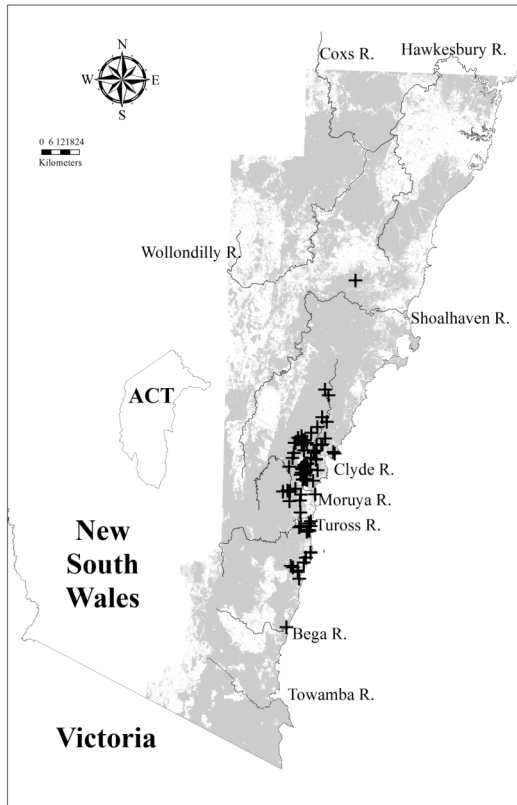
<i>Hibbertia diffusa</i>	1(1-1)	13	1(1-1)	3
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-2)	62	1(1-2)	9
<i>Joycea pallida</i>	1(1-1)	28	1(1-2)	8
<i>Kennedia rubicunda</i>	1(1-1)	23	1(1-1)	6
<i>Lagenifera stipitata</i>	1(1-1)	37	1(1-1)	14
<i>Lepidosperma laterale</i>	1(1-1)	76	1(1-1)	28
<i>Lepidosperma urophorum</i>	1(1-1)	32	1(1-2)	6
<i>Leucopogon juniperinus</i>	1(1-1)	18	1(1-1)	5
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	57	1(1-1)	23
<i>Logania pusilla</i>	1(1-1)	9	1(1-1)	1
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	1(1-1)	27	1(1-2)	4
<i>Lomandra confertifolia</i> subsp. <i>similis</i>	2(1-2)	9	1(1-1)	2
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1(1-1)	26	1(1-1)	11
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	72	1(1-1)	24
<i>Macrozamia communis</i>	2(1-2)	93	1(1-2)	4
<i>Marsdenia suaveolens</i>	1(1-1)	19	1(1-1)	2
<i>Notelaea venosa</i>	1(1-1)	29	1(1-1)	12
<i>Notodanthonia longifolia</i>	1(1-1)	14	1(1-2)	5
<i>Opercularia hispida</i>	1(1-1)	11	1(1-1)	3
<i>Ozothamnus argophyllus</i>	1(1-1)	10	1(1-1)	2
<i>Ozothamnus diosmifolius</i>	1(1-1)	29	1(1-1)	8
<i>Pandorea pandorana</i>	1(1-1)	34	1(1-1)	18
<i>Panicum simile</i>	1(1-1)	16	1(1-1)	6
<i>Patersonia glabrata</i>	1(1-1)	21	1(1-1)	10
<i>Persoonia linearis</i>	1(1-1)	76	1(1-1)	28
<i>Phyllanthus hirtellus</i>	1(1-1)	39	1(1-1)	14
<i>Pimelea linifolia</i> subsp. <i>collina</i>	1(1-1)	6	1(1-1)	1
<i>Pittosporum revolutum</i>	1(1-1)	18	1(1-1)	8
<i>Platysace lanceolata</i>	1(1-1)	70	1(1-1)	12
<i>Poa meionectes</i>	1(1-2)	37	1(1-2)	16
<i>Podolobium ilicifolium</i>	1(1-1)	53	1(1-1)	8
<i>Pomax umbellata</i>	1(1-1)	32	1(1-1)	14
<i>Pratia purpurascens</i>	1(1-1)	46	1(1-1)	17
<i>Pseuderanthemum variabile</i>	1(1-1)	19	1(1-2)	9
<i>Santalum obtusifolium</i>	1(1-1)	6	1(1-1)	1
<i>Scaevola ramosissima</i>	1(1-1)	11	1(1-1)	3
<i>Schelhammera undulata</i>	1(1-1)	52	1(1-1)	7
<i>Tetradlea thymifolia</i>	1(1-1)	27	1(1-1)	6
<i>Themeda australis</i>	1(1-2)	33	1(1-3)	17
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-1)	27	1(1-1)	4
<i>Xanthosia atkinsoniana</i>	1(1-1)	6	1(1-1)	<1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Dichondra</i> spp.	1(1-1)	32	1(1-2)	25
<i>Lomandra longifolia</i>	1(1-1)	58	1(1-1)	44
<i>Microlaena stipoides</i>	1(1-1)	47	1(1-2)	36

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora costata</i>	1(1-2)	4	1(1-3)	7
<i>Angophora floribunda</i>	1(1-2)	17	1(1-2)	9
<i>Corymbia gummifera</i>	1(1-2)	19	2(1-2)	16
<i>Eucalyptus agglomerata</i>	2(1-2)	8	2(1-3)	7
<i>Eucalyptus angophoroides</i>	2(1-3)	3	1(1-2)	1
<i>Eucalyptus bosistoana</i>	1(1-1)	3	1(1-2)	3
<i>Eucalyptus botryoides</i>	1(1-1)	2	2(1-3)	3
<i>Eucalyptus consideniana</i>	1(1-3)	4	2(1-2)	2
<i>Eucalyptus elata</i>	3(3-3)	1	2(1-3)	5
<i>Eucalyptus eugenioides</i>	2(2-2)	2	2(1-3)	4
<i>Eucalyptus maidenii</i>	2(1-2)	2	2(1-2)	2
<i>Eucalyptus piperita</i>	3(1-3)	4	2(1-3)	9
<i>Eucalyptus punctata</i>	3(3-3)	1	1(1-3)	9
<i>Eucalyptus saligna</i> X <i>botryoides</i>	1(1-1)	1	2(1-3)	2
<i>Eucalyptus scias</i> subsp. <i>callimastha</i>	1(1-1)	1	1(1-2)	1
<i>Eucalyptus sieberi</i>	1(1-2)	9	2(1-3)	16
<i>Eucalyptus tricarpa</i>	1(1-1)	1	1(1-2)	1
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-1)	1	2(1-3)	8



Locations of survey sites allocated to WSF p90. Grey shading indicates extant native vegetation cover within the study area.

### DSF p91: Clyde-Deua Open Forest



Plate p91. Clyde-Deua Open Forest (Map Unit p91) on an upper slope north of the Kings Highway between Sugarloaf Mountain and Government bend. The canopy here contains *Eucalyptus muelleriana*, *E. cypellocarpa* and *E. sieberi*, with a sparse understorey of *Acacia obtusifolia* and *Persoonia linearis* and very sparse groundcover including *Pteridium esculentum* and *Lepidosperma urophorum*.

Sample Sites: 73

Area Extant (ha): 34100

Estimated % remaining: >95%

Area in conservation reserves (ha): 24500

Estimated % of pre-clearing area in conservation reserves: 65-75%

No. taxa (total / unique): 258 / 0

No. taxa per plot ( $\pm$ sd): 26.3 (9.9)

Class: South East Dry Sclerophyll Forests

Related TEC: n/a

Clyde-Deua Open Forest (DSF p91) represents a revision of DSF 91 identified by Tindall *et al.* (2004), including amalgamation with a number of sites previously classified by Keith & Bedward (1999) as assemblage 33 (Coastal Range Dry Shrub Forest) and with a number of recent sites collated by Beukers (undated a,b). DSF p91 is a tall eucalypt forest with an open understorey of sclerophyll shrubs, ferns and forbs. This forest is found on sandy loams on dry slopes of the southern escarpment and coastal ranges, at elevations between 0-800m ASL. It occurs along the escarpment ranges south from the Yaboro River, along the Budawang Range east of Monga, south to Burragate and the Towamba River catchment. Within this distribution mean annual rainfall varies from 900 to 1150mm. Clyde-Deua Open Forest grades into South East Coast Range Dry Forest (DSF e33) in the southern part of its range, occupying the steeper, more rugged upper slopes and ridges while DSF e33 occurs on the less rugged terrain of the mid-lower slopes. Further north, DSF p91 grades into South Coast Hinterland Wet Forest (WSF n183) on the lower slopes and gullies. A substantial area of Clyde-Deua Open Forest is represented within Deua National Park, while minor clearing and logging has occurred in the northern part of the distribution.

#### Floristic Summary:

**Trees:** *Eucalyptus muelleriana*, *E. cypellocarpa*, *E. sieberi*, *Angophora floribunda*. **Shrubs:** *Acacia falciformis*, *Persoonia linearis*, *Leucopogon lanceolatus*, *Acacia obtusifolia*, *Platysace lanceolata*. **Climbers:** *Clematis aristata*. **Groundcover:** *Pteridium esculentum*, *Dianella caerulea*.

#### Vegetation structure:

Stratum	Frequency (n=46)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	24.5 (5.4)	28.8 (13)
Small tree	91	11.7 (6.1)	18.1 (14.8)
Shrub	78	2.1 (0.9)	14.7 (12.1)
Ground cover	85	0.7 (0.4)	15.2 (14.6)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 8 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 18 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 8 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia falciformis</i>	1(1-2)	81	1(1-2)	10
<i>Acacia obtusifolia</i>	1(1-2)	49	1(1-2)	9
<i>Allocasuarina littoralis</i>	1(1-2)	38	1(1-2)	17
<i>Angophora floribunda</i>	1(1-2)	44	1(1-2)	8
<i>Cassinia aculeata</i>	1(1-1)	18	1(1-1)	6
<i>Cassinia longifolia</i>	1(1-2)	23	1(1-2)	6
<i>Clematis aristata</i>	1(1-1)	45	1(1-1)	20
<i>Correa reflexa</i>	1(1-1)	25	1(1-1)	5
<i>Daviesia mimosoides</i>	2(1-2)	8	1(1-2)	2
<i>Dianella caerulea</i>	1(1-1)	77	1(1-1)	28
<i>Eucalyptus agglomerata</i>	1(1-2)	33	2(1-3)	7
<i>Eucalyptus bosistoana</i>	1(1-1)	15	1(1-2)	3
<i>Eucalyptus cypellocarpa</i>	1(1-1)	30	2(1-2)	10
<i>Eucalyptus muelleriana</i>	2(2-2)	93	2(1-2)	6
<i>Eucalyptus sieberi</i>	2(1-2)	62	2(1-3)	16
<i>Eucalyptus smithii</i>	1(1-2)	33	1(1-2)	2
<i>Hakea eriantha</i>	1(1-1)	11	1(1-1)	2
<i>Hibbertia dentata</i>	1(1-1)	25	1(1-1)	6
<i>Kennedia rubicunda</i>	1(1-1)	34	1(1-1)	6



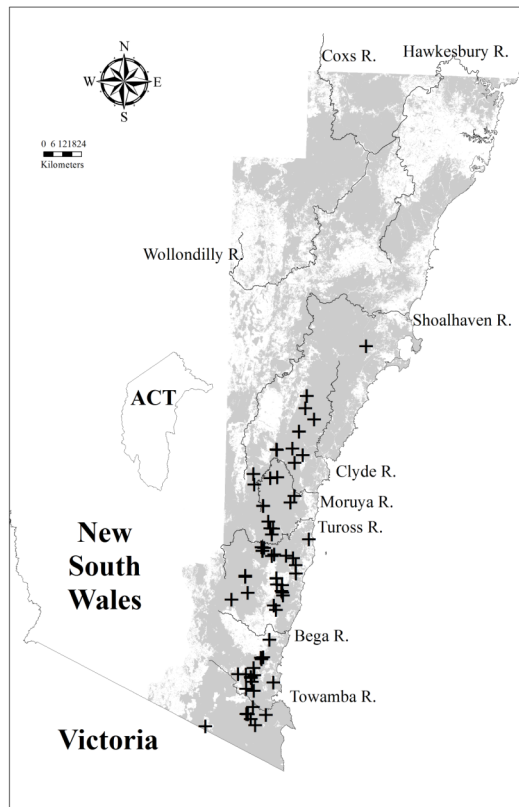
<i>Lepidosperma urophorum</i>	1(1-1)	29	1(1-2)	7
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	55	1(1-1)	23
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	1(1-2)	14	1(1-1)	4
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	51	1(1-1)	25
<i>Notelaea venosa</i>	1(1-1)	30	1(1-1)	12
<i>Ozothamnus argophyllus</i>	1(1-1)	26	1(1-1)	2
<i>Persoonia linearis</i>	1(1-1)	88	1(1-1)	28
<i>Platysace lanceolata</i>	1(1-1)	74	1(1-1)	12
<i>Poa meionectes</i>	1(1-1)	38	1(1-2)	16
<i>Podolobium ilicifolium</i>	1(1-1)	45	1(1-1)	8
<i>Polyscias sambucifolia</i>	1(1-1)	32	1(1-1)	6
<i>Pomax umbellata</i>	1(1-1)	30	1(1-1)	14
<i>Poranthera microphylla</i>	1(1-1)	34	1(1-1)	15

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	34	1(1-1)	28
<i>Entolasia stricta</i>	1(1-1)	30	1(1-2)	34
<i>Hardenbergia violacea</i>	1(1-1)	32	1(1-1)	17
<i>Lepidosperma laterale</i>	1(1-1)	34	1(1-1)	29
<i>Lomandra longifolia</i>	1(1-1)	58	1(1-1)	44
<i>Microlaena stipoides</i>	1(1-1)	38	1(1-2)	36
<i>Pteridium esculentum</i>	1(1-1)	51	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia maculata</i>	2(2-2)	1	2(1-3)	3
<i>Eucalyptus angophoroides</i>	1(1-1)	1	1(1-2)	1
<i>Eucalyptus blaxlandii</i>	2(2-2)	1	1(1-3)	1
<i>Eucalyptus botryoides</i>	1(1-1)	4	2(1-3)	3
<i>Eucalyptus considiniana</i>	1(1-1)	1	2(1-2)	2
<i>Eucalyptus elata</i>	1(1-1)	5	2(1-3)	5
<i>Eucalyptus eugenoides</i>	1(1-1)	1	2(1-3)	4
<i>Eucalyptus fraxinoides</i>	1(1-1)	1	2(1-3)	1
<i>Eucalyptus globoidea</i>	1(1-1)	11	2(1-2)	12
<i>Eucalyptus longifolia</i>	2(1-2)	7	1(1-2)	2
<i>Eucalyptus maidenii</i>	2(1-2)	3	2(1-2)	2
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	2(1-2)	3	1(1-2)	3
<i>Eucalyptus pilularis</i>	1(1-1)	1	2(1-3)	5
<i>Eucalyptus piperita</i>	1(1-3)	4	2(1-3)	9
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	3	2(1-3)	6
<i>Eucalyptus saligna</i> X <i>botryoides</i>	1(1-1)	4	2(1-3)	2
<i>Eucalyptus tricarpa</i>	2(1-2)	3	1(1-2)	1



Locations of survey sites allocated to DSF p91. Grey shading indicates extant native vegetation cover within the study area.

### WSF p95: Southern Turpentine Forest



Plate p95. Southern Turpentine Forest (Map Unit p95) along Deans Gap Road in Colymea State Conservation Area, showing a canopy of *Syncarpia glomulifera* subsp. *glomulifera* and *Eucalyptus scias* subsp. *callimastha*, a shrub layer including *Persoonia linearis* and *Acacia longifolia*, and a groundcover dominated by grasses and sedges.

Sample Sites: 55

Area Extant (ha): 62400

Estimated % remaining: >85%

Area in conservation reserves (ha): 38300

Estimated % of pre-clearing area in conservation reserves: 45-65%

No. taxa (total / unique): 310 / 0

No. taxa per plot ( $\pm$ sd): 34.7 (9.5)

Class: Southern Lowland Wet Sclerophyll Forests  
Related TEC: n/a

Southern Turpentine Forest (WSF p95) is equivalent to WSF 95 identified by Tindall *et al.* (2004). This unit is a rather dense eucalypt forest with an open shrubby understorey, found between Bundanoon and the Upper Clyde River area on loamy soils derived from Permian Shoalhaven group sediments. It is widespread east of the Morton plateau on coastal lowlands near Conjola and Wandandian, and is also common in steep gorge country along tributaries of the Shoalhaven and upper Clyde Rivers including Kangaroo River, Bundanoon, Ettrema, Yarramunmun, Danjera, Yarrunga, Yalwal and Pigeon House Creeks. Within this distribution Southern Turpentine Forest typically occurs on sheltered slopes below 600 m ASL with an annual rainfall between 950 and 1300mm. On lower slopes adjacent Tallowa Dam this unit grades into Yalwal Shale-Sandstone Transition Forest (DSF p246) and in moist sheltered locations may grade into Escarpment Foothills Wet Forest (WSF p100) or Coastal Warm Temperate Rainforest (RF p113). On the coastal plain near Wandandian, Southern Turpentine Forest grades into Currumbene Lowlands Forest (DSF p85). Here there has been some clearing on the fringe of the rural districts, although large areas occur in Morton and Conjola National Parks and adjacent state forests.

#### Floristic Summary:

**Trees:** *Syncarpia glomulifera*, *Corymbia gummifera*, *Eucalyptus piperita*, *E. scias*. **Shrubs:** *Persoonia linearis*, *Leucopogon lanceolatus*, *Acacia obtusifolia*, *Tetratheca thymifolia*, *Elaeocarpus reticulatus*, *Banksia spinulosa*. **Climbers:** *Billardiera scandens*. **Groundcover:** *Dianella caerulea*, *Entolasia stricta*, *Pteridium esculentum*, *Lepidosperma urophorum*.

#### Vegetation structure:

Stratum	Frequency (n=45)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	93	29 (7.1)	33.6 (9.2)
Small tree	76	12.2 (5.3)	34.3 (26)
Shrub	67	2.2 (0.7)	31.8 (25.9)
Ground cover	96	0.7 (0.3)	25 (19.1)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 14 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 27 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 14 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia irrorata</i> subsp. <i>irrorata</i>	1(1-2)	16	1(1-1)	2
<i>Acacia longifolia</i>	1(1-2)	35	1(1-2)	9
<i>Acacia obtusifolia</i>	1(1-2)	73	1(1-2)	9
<i>Acacia terminalis</i>	1(1-1)	36	1(1-1)	11
<i>Amperea xiphioclada</i>	1(1-1)	20	1(1-1)	7
<i>Angophora floribunda</i>	2(1-3)	22	1(1-2)	9
<i>Aotus ericoides</i>	1(1-2)	18	1(1-1)	3
<i>Astrotricha species B</i>	1(1-1)	13	1(1-1)	<1
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-2)	53	1(1-2)	15
<i>Billardiera scandens</i>	1(1-1)	55	1(1-1)	27
<i>Calochlaena dubia</i>	2(1-3)	25	1(1-3)	9
<i>Ceratopetalum gummiferum</i>	1(1-2)	24	1(1-2)	3
<i>Corymbia gummifera</i>	2(1-2)	80	2(1-2)	15
<i>Cymbidium suave</i>	1(1-1)	20	1(1-1)	2
<i>Dampiera purpurea</i>	1(1-1)	15	1(1-1)	4
<i>Dianella caerulea</i>	1(1-1)	89	1(1-1)	28
<i>Dodonaea triquetra</i>	1(1-1)	20	1(1-2)	6
<i>Elaeocarpus reticulatus</i>	1(1-1)	55	1(1-1)	12

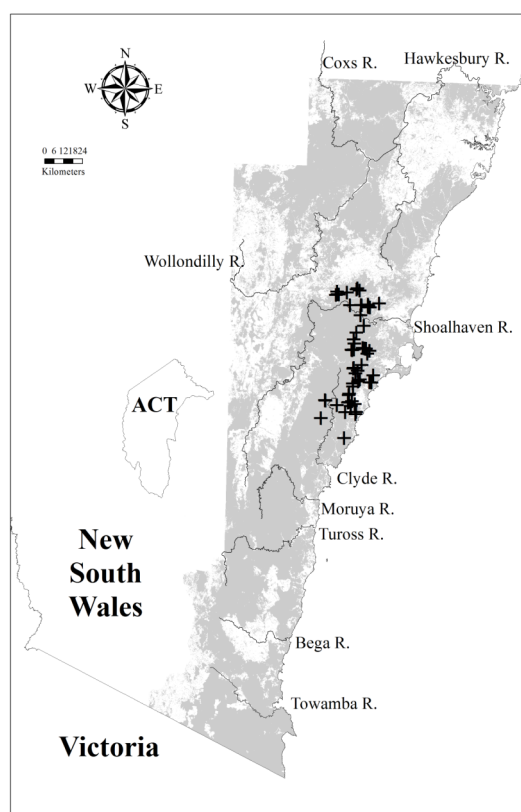
<i>Entolasia stricta</i>	1(1-2)	78	1(1-2)	33
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-2)	20	1(1-2)	3
<i>Eucalyptus pilularis</i>	2(2-2)	22	2(1-3)	5
<i>Eucalyptus piperita</i>	2(2-3)	80	2(1-3)	8
<i>Eucalyptus scias</i> subsp. <i>callimastha</i>	1(1-2)	31	1(1-2)	<1
<i>Gompholobium latifolium</i>	1(1-1)	31	1(1-1)	3
<i>Gonocarpus teucrioides</i>	1(1-1)	40	1(1-1)	17
<i>Goodenia heterophylla</i>	1(1-1)	13	1(1-1)	2
<i>Hibbertia dentata</i>	1(1-1)	18	1(1-1)	6
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-1)	25	1(1-1)	6
<i>Kennedia rubicunda</i>	1(1-2)	18	1(1-1)	6
<i>Lepidosperma urophorum</i>	1(1-2)	56	1(1-2)	6
<i>Leptospermum polygalifolium</i>	1(1-1)	24	1(1-2)	8
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	78	1(1-1)	23
<i>Lindsaea microphylla</i>	1(1-1)	29	1(1-1)	5
<i>Lomatia ilicifolia</i>	1(1-1)	44	1(1-1)	6
<i>Macrozamia communis</i>	1(1-2)	20	1(1-2)	4
<i>Marsdenia suaveolens</i>	1(1-1)	36	1(1-1)	2
<i>Olearia tomentosa</i>	1(1-1)	24	1(1-1)	1
<i>Opercularia aspera</i>	1(1-1)	27	1(1-1)	8
<i>Patersonia glabrata</i>	1(1-1)	31	1(1-1)	10
<i>Persoonia linearis</i>	1(1-1)	87	1(1-1)	28
<i>Persoonia mollis</i> subsp. <i>caleyi</i>	1(1-2)	20	1(1-1)	1
<i>Phyllanthus hirtellus</i>	1(1-1)	36	1(1-1)	14
<i>Platylobium formosum</i>	1(1-1)	16	1(1-1)	3
<i>Platysace lanceolata</i>	1(1-1)	31	1(1-1)	13
<i>Podolobium ilicifolium</i>	1(1-1)	24	1(1-1)	9
<i>Pteridium esculentum</i>	1(1-1)	67	1(1-2)	37
<i>Pultenaea daphnoides</i>	1(1-1)	40	1(1-1)	4
<i>Schelhammera undulata</i>	1(1-1)	29	1(1-1)	7
<i>Smilax glyciphylla</i>	1(1-1)	49	1(1-1)	8
<i>Stylidium laricifolium</i>	1(1-1)	13	1(1-1)	1
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	2(2-3)	85	2(1-3)	7
<i>Tetratheca thymifolia</i>	1(1-1)	58	1(1-1)	6
<i>Tristaniopsis collina</i>	1(1-3)	15	1(1-2)	2
<i>Xanthorrhoea concava</i>	1(1-1)	16	1(1-1)	4
<i>Xanthosia pilosa</i>	1(1-1)	25	1(1-1)	8
<i>Zieria arborescens</i>	1(1-2)	13	1(1-2)	<1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Lepidosperma laterale</i>	1(1-1)	47	1(1-1)	28
<i>Lomandra longifolia</i>	1(1-1)	62	1(1-1)	44
<i>Microlaena stipoides</i>	1(1-1)	33	1(1-2)	36

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	3(1-3)	4	1(1-2)	2
<i>Corymbia maculata</i>	2(2-2)	2	2(1-3)	3
<i>Eucalyptus agglomerata</i>	2(1-2)	15	2(1-3)	7
<i>Eucalyptus considaniana</i>	2(1-3)	7	1(1-2)	2
<i>Eucalyptus eugenioides</i>	2(1-2)	11	2(1-3)	4
<i>Eucalyptus globoidea</i>	2(1-2)	18	2(1-2)	12
<i>Eucalyptus obliqua</i>	1(1-1)	2	2(1-3)	4
<i>Eucalyptus punctata</i>	1(1-3)	9	2(1-3)	9
<i>Eucalyptus resinifera</i> subsp. <i>resinifera</i>	1(1-1)	2	1(1-2)	1
<i>Eucalyptus sieberi</i>	2(1-3)	24	2(1-3)	16



Locations of survey sites allocated to WSF p95. Grey shading indicates extant native vegetation cover within the study area.



**DSF p98: Clyde-Deua Ridgetop Forest**

Plate p98. Clyde-Deua Ridgetop Forest (Map Unit p98) beside the Kings Highway east of the Corn Trail on Clyde Mountain. *Eucalyptus sieberi* and *E. radiata* subsp. *radiata* dominate the canopy, with scattered tall shrubs of *Acacia obtusifolia*. Lower shrubs include *Banksia spinulosa* subsp. *spinulosa* and *Leucopogon lanceolatus* var. *lanceolatus* and the groundcover contains clumps of *Pteridium esculentum* and *Lepidosperma urophorum* interspersed with dense patches of *Gleichenia dicarpa*.

Sample Sites: 48  
 Area Extant (ha): 30400  
 Estimated % remaining: >90%  
 Area in conservation reserves (ha): 23000  
 Estimated % of pre-clearing area in conservation reserves: 65-85%  
 No. taxa (total / unique): 226 / 0  
 No. taxa per plot ( $\pm$ sd): 24.6 (9)  
 Class: South East Dry Sclerophyll Forests  
 Related TEC: n/a

Clyde-Deua Ridgetop Forest (DSF p98) represents a slight revision and extension of DSF 98 identified by Tindall *et al.* (2004) based on additional samples over a larger area. This unit is an open eucalypt forest with an open understorey of sclerophyll shrubs, sedges & forbs. DSF p98 is distributed south from Wog Wog mountain along the Budawang range to the Bendoura and Minuma ranges, continuing east through the Deua foothills and south to Dampier State Forest. Within this distribution mean annual rainfall varies from 950 to 1200mm. Clyde-Deua Ridgetop Forest occupies sandy loams on dry ridges varying in elevation from 250 to 1100m ASL. Extensive stands are represented within Budawang, Monga and Deua National Parks and little of the original range has been cleared.

**Floristic Summary:**

**Trees:** *Eucalyptus sieberi*. **Shrubs:** *Acacia obtusifolia*, *Persoonia linearis*, *Amperea xiphoclada*, *Leucopogon lanceolatus* var. *lanceolatus*, *Platysace lanceolata*, *Podolobium ilicifolium*, *Tetratheca thymifolia*. **Groundcover:** *Pteridium esculentum*, *Dianella caerulea*.

**Vegetation structure:**

Stratum	Frequency (n=38)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	23.3 (5.2)	26.8 (12.4)
Small tree	63	9.5 (5.6)	23.2 (17.1)
Shrub	39	2.6 (0.5)	24.3 (15.3)
Ground cover	97	1.1 (0.2)	37.2 (23.8)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 7 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 18 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 7 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia obtusifolia</i>	2(1-2)	98	1(1-2)	9
<i>Amperea xiphoclada</i>	1(1-1)	71	1(1-1)	7
<i>Daviesia ulicifolia</i>	1(1-1)	23	1(1-1)	6
<i>Dianella caerulea</i>	1(1-1)	75	1(1-1)	28
<i>Epacris impressa</i>	1(1-1)	19	1(1-1)	4
<i>Eucalyptus globoidea</i>	1(1-2)	29	2(1-2)	12
<i>Eucalyptus muelleriana</i>	1(1-1)	21	2(1-2)	6
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-3)	27	2(1-3)	6
<i>Eucalyptus sieberi</i>	2(2-3)	92	2(1-3)	16
<i>Hibbertia dentata</i>	1(1-1)	19	1(1-1)	6
<i>Lepidosperma urophorum</i>	1(1-1)	33	1(1-2)	7
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	69	1(1-1)	23
<i>Lomandra confertifolia</i> subsp. <i>similis</i>	1(1-2)	29	1(1-1)	2
<i>Lomatia ilicifolia</i>	1(1-1)	27	1(1-1)	6
<i>Marsdenia suaveolens</i>	1(1-1)	19	1(1-1)	3
<i>Persoonia linearis</i>	1(1-1)	85	1(1-1)	28
<i>Platysace lanceolata</i>	1(1-1)	71	1(1-1)	13
<i>Podolobium ilicifolium</i>	1(1-1)	54	1(1-1)	8
<i>Polyscias sambucifolia</i>	1(1-1)	27	1(1-1)	6
<i>Pteridium esculentum</i>	1(1-2)	83	1(1-2)	37
<i>Pultenaea daphnoides</i>	1(1-1)	17	1(1-1)	4
<i>Stylidium graminifolium</i>	1(1-1)	29	1(1-1)	9
<i>Tetratheca thymifolia</i>	1(1-2)	58	1(1-1)	6
<i>Xanthorrhoea australis</i>	2(1-3)	17	1(1-1)	1
<i>Xanthorrhoea concava</i>	1(1-2)	17	1(1-1)	4
<i>Xanthosia pilosa</i>	1(1-1)	23	1(1-1)	8

**Constant:**

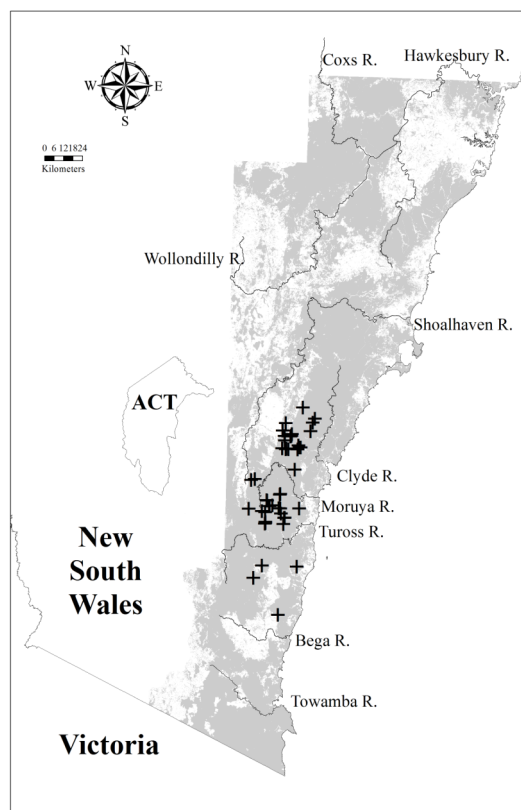
Species	C/A	Freq	C/A O	Freq O
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-2)	31	1(1-2)	15
<i>Billardiera scandens</i>	1(1-1)	40	1(1-1)	28
<i>Entolasia stricta</i>	1(1-1)	31	1(1-2)	34
<i>Lomandra longifolia</i>	1(1-1)	50	1(1-1)	44
<i>Viola hederacea</i>	1(1-1)	33	1(1-1)	22

**Other tree species occurring less frequently in this community:**

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-2)	17	1(1-2)	9
<i>Corymbia gummifera</i>	2(1-3)	8	2(1-2)	16
<i>Eucalyptus agglomerata</i>	1(1-2)	8	2(1-3)	7
<i>Eucalyptus consideniana</i>	1(1-2)	6	2(1-2)	2
<i>Eucalyptus cypellocarpa</i>	1(1-2)	10	2(1-2)	10



<i>Eucalyptus dives</i>	1(1-1)	2	2(1-3)	4
<i>Eucalyptus elata</i>	1(1-1)	4	2(1-3)	5
<i>Eucalyptus fraxinoides</i>	1(1-1)	2	2(1-3)	1
<i>Eucalyptus longifolia</i>	1(1-1)	2	1(1-2)	2
<i>Eucalyptus obliqua</i>	2(1-2)	8	2(1-3)	4
<i>Eucalyptus paliformis</i>	1(1-1)	2	0(0-0)	<1
<i>Eucalyptus piperita</i>	3(1-3)	4	2(1-3)	9
<i>Eucalyptus scias</i> subsp. <i>callimastha</i>	2(1-2)	6	1(1-2)	1
<i>Eucalyptus stenostoma</i>	2(2-2)	4	1(1-1)	<1
<i>Eucalyptus tricarpa</i>	1(1-1)	2	1(1-2)	1
<i>Eucalyptus triflora</i>	1(1-1)	2	3(3-3)	<1



Locations of survey sites allocated to DSF p98. Grey shading indicates extant native vegetation cover within the study area.

**WSF p99: Illawarra Gully Wet Forest**

Plate p99. Illawarra Gully Wet Forest (Map Unit p99) on a steep north-facing slope above Stanwell Park Creek. The overstorey is dominated by *Eucalyptus pilularis*, with a sparse sub canopy of *Acacia maidenii* and a sparse groundcover including *Pteridium esculentum*, *Lomandra longifolia* and *Imperata cylindrica* var. *major*.

Sample Sites: 87

Area Extant (ha): 7100

Estimated % remaining: 50-70%

Area in conservation reserves (ha): 1900

Estimated % of pre-clearing area in conservation reserves: 5-20%

No. taxa (total / unique): 422 / 0

No. taxa per plot ( $\pm$ sd): 39.3 (11.8)

Class: North Coast Wet Sclerophyll Forests

Related TEC: includes areas of Pittwater Spotted Gum Forest EEC (TSC).

Illawarra Wet Gully Forest (WSF p99) is equivalent to WSF 99 identified by Tindall *et al.* (2004). This unit is a tall eucalypt forest with a moist open understorey, primarily distributed from the Hacking River catchment along the Illawarra scarp south to Mt Keira, on coastal lowlands near Berry and scattered through coastal foothills and lowlands from Nowra south to Batemans Bay. A disjunct occurrence is recorded in the north at Pittwater. Within this distribution Illawarra Wet Gully Forest occurs on sheltered slopes and gullies with loamy soils with an annual rainfall in the range of 1000-1700mm. On the northern Illawarra escarpment, Illawarra Wet Gully Forest occupies elevations up to 400m ASL however south of Nowra it rarely exceeds 200m ASL. With increasing soil fertility Illawarra Wet Gully Forest grades into Warm Temperate Layered Forest (WSF p110) and may be replaced by rainforest units (RF p112 and RF p113) in areas long protected from fire.

Illawarra Wet Gully Forest is related to Central Coast Wet Forest (WSF p599), but lacks several taxa restricted to the north coast forests. More than a third of its original range has been cleared, mainly in the Illawarra lowlands. Highly fragmented stands amongst the suburbs at its disjunct north-east limit include an abundance of *Corymbia maculata* (spotted gum) and are identified as Pittwater Spotted Gum Forest listed on Schedule 1 of the NSW *Threatened Species Conservation Act* (1995).

**Floristic Summary:**

**Trees:** *Livistona australis*, *Syncarpia glomulifera*, *Eucalyptus pilularis*, *E. paniculata*. **Shrubs:** *Synoum glandulosum*, *Breynia oblongifolia*, *Notelaea longifolia*. **Climbers:** *Eustrephus latifolius*, *Tylophora barbata*, *Hibbertia scandens*, *Glycine clandestina*, *Hibbertia dentata*, *Geitonoplesium cymosum*. **Groundcover:** *Lomandra longifolia*, *Pteridium esculentum*, *Dianella caerulea*, *Entolasia stricta*, *Oplismenus imbecillis*, *Imperata cylindrica*, *Pseuderanthemum variabile*.

**Vegetation structure:**

Stratum	Frequency (n=58)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	98	26.2 (7.4)	37.3 (15.6)
Small tree	90	10 (5.1)	29.1 (21.5)
Shrub	28	2.3 (0.6)	18.1 (20)
Ground cover	97	1 (0.4)	49.9 (33.1)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 19 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 30 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 19 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia binervata</i>	2(1-2)	38	1(1-2)	2
<i>Acacia irrorata</i> subsp. <i>irrorata</i>	1(1-3)	17	1(1-1)	2
<i>Acacia maidenii</i>	1(1-2)	36	1(1-1)	2
<i>Acmena smithii</i>	1(1-1)	20	2(1-3)	9
<i>Adiantum aethiopicum</i>	1(1-1)	24	1(1-2)	9
<i>Allocasuarina torulosa</i>	3(1-3)	16	1(1-3)	5
<i>Alphitonia excelsa</i>	1(1-2)	7	1(1-1)	1
<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>	3(1-3)	9	1(1-1)	2
<i>Billardiera scandens</i>	1(1-1)	43	1(1-1)	27
<i>Blechnum cartilagineum</i>	1(1-2)	24	1(1-2)	11
<i>Brachychiton acerifolius</i>	1(1-1)	6	1(1-1)	1
<i>Breynia oblongifolia</i>	1(1-1)	45	1(1-1)	12
<i>Calochlaena dubia</i>	2(1-4)	40	1(1-3)	9
<i>Centella asiatica</i>	1(1-1)	11	1(1-1)	4
<i>Cissus hypoglauca</i>	1(1-2)	41	1(1-2)	9
<i>Clerodendrum tomentosum</i>	1(1-1)	34	1(1-1)	4
<i>Commelina cyanea</i>	1(1-1)	17	1(1-1)	4
<i>Desmodium rhytidophyllum</i>	1(1-1)	14	1(1-1)	1
<i>Dianella caerulea</i>	1(1-1)	70	1(1-1)	28
<i>Dichondra</i> spp.	1(1-1)	46	1(1-2)	25
<i>Diospyros australis</i>	1(1-1)	9	1(1-2)	3
<i>Doodia aspera</i>	1(1-2)	43	1(1-2)	11
<i>Doryanthes excelsa</i>	2(1-2)	8	1(1-2)	1
<i>Duboisia myoporoides</i>	1(1-1)	6	1(1-1)	<1
<i>Elaeocarpus reticulatus</i>	1(1-1)	25	1(1-1)	12
<i>Endiandra sieberi</i>	2(2-4)	6	1(1-3)	<1
<i>Entolasia marginata</i>	1(1-1)	39	1(1-1)	11
<i>Entolasia stricta</i>	1(1-2)	57	1(1-2)	33
<i>Eucalyptus botryoides</i>	3(1-3)	31	1(1-3)	3
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	3(1-3)	26	1(1-2)	3
<i>Eucalyptus pilularis</i>	3(2-4)	55	2(1-3)	4
<i>Eucalyptus saligna</i> X <i>botryoides</i>	2(1-3)	28	2(1-3)	2
<i>Eustrephus latifolius</i>	1(1-1)	68	1(1-1)	19

<i>Gahnia melanocarpa</i>	1(1-2)	26	1(1-1)	5
<i>Gahnia sieberiana</i>	1(1-2)	15	1(1-1)	4
<i>Geitonoplesium cymosum</i>	1(1-1)	54	1(1-1)	16
<i>Glochidion ferdinandi</i> var. <i>ferdinandi</i>	1(1-1)	21	1(1-1)	2
<i>Glycine clandestina</i>	1(1-1)	56	1(1-1)	26
<i>Goodenia ovata</i>	2(1-2)	18	1(1-1)	7
<i>Gymnostachys anceps</i>	1(1-1)	18	1(1-2)	3
<i>Helichrysum elatum</i>	1(1-1)	14	1(1-1)	2
<i>Hibbertia dentata</i>	1(1-2)	60	1(1-1)	6
<i>Hibbertia scandens</i>	1(1-1)	63	1(1-1)	4
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-2)	54	1(1-2)	9
<i>Indigofera australis</i>	1(1-1)	22	1(1-1)	9
<i>Kennedia rubicunda</i>	1(1-1)	32	1(1-1)	6
<i>Lepidosperma laterale</i>	1(1-1)	45	1(1-1)	28
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	38	1(1-1)	23
<i>Livistona australis</i>	1(1-1)	62	1(1-1)	5
<i>Lomandra longifolia</i>	2(1-3)	90	1(1-1)	43
<i>Marsdenia rostrata</i>	1(1-1)	26	1(1-2)	12
<i>Morinda jasminoides</i>	1(1-1)	21	1(1-2)	9
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-1)	34	1(1-1)	7
<i>Notelaea venosa</i>	1(1-1)	28	1(1-1)	12
<i>Nyssanthes diffusa</i>	1(1-2)	6	1(1-1)	<1
<i>Oplismenus imbecillis</i>	1(1-2)	55	1(1-2)	14
<i>Parsonsia straminea</i>	1(1-1)	22	1(1-1)	7
<i>Passiflora herbertiana</i> subsp. <i>herbertiana</i>	1(1-1)	7	1(1-1)	1
<i>Phyllanthus gunnii</i>	1(1-1)	7	1(1-1)	2
<i>Pittosporum revolutum</i>	1(1-1)	32	1(1-1)	8
<i>Pittosporum undulatum</i>	1(1-2)	28	1(1-1)	14
<i>Plectranthus parviflorus</i>	1(1-1)	20	1(1-1)	8
<i>Poa labillardierei</i> var. <i>labillardierei</i>	2(1-3)	28	1(1-2)	12
<i>Pseuderanthemum variabile</i>	1(1-1)	48	1(1-2)	8
<i>Pteridium esculentum</i>	1(1-2)	77	1(1-2)	37
<i>Pultenaea blakelyi</i>	1(1-3)	8	1(1-2)	<1
<i>Rapanea variabilis</i>	1(1-1)	34	1(1-1)	3
<i>Rhodamnia rubescens</i>	1(1-3)	8	1(1-1)	1
<i>Rubus moluccanus</i> var. <i>trilobus</i>	1(1-1)	14	1(1-1)	2
<i>Rubus parvifolius</i>	1(1-1)	29	1(1-1)	9
<i>Santalum obtusifolium</i>	1(1-1)	7	1(1-1)	1
<i>Sarcopetalum harveyanum</i>	1(1-1)	21	1(1-1)	4
<i>Schelhammera undulata</i>	1(1-2)	33	1(1-1)	7
<i>Smilax australis</i>	1(1-1)	44	1(1-1)	16
<i>Smilax glyciphylla</i>	1(1-1)	37	1(1-1)	8
<i>Stenocarpus salignus</i>	1(1-2)	8	1(1-1)	2
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	39	1(1-1)	6
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	3(2-3)	55	2(1-3)	7
<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	1(1-1)	53	1(1-2)	6

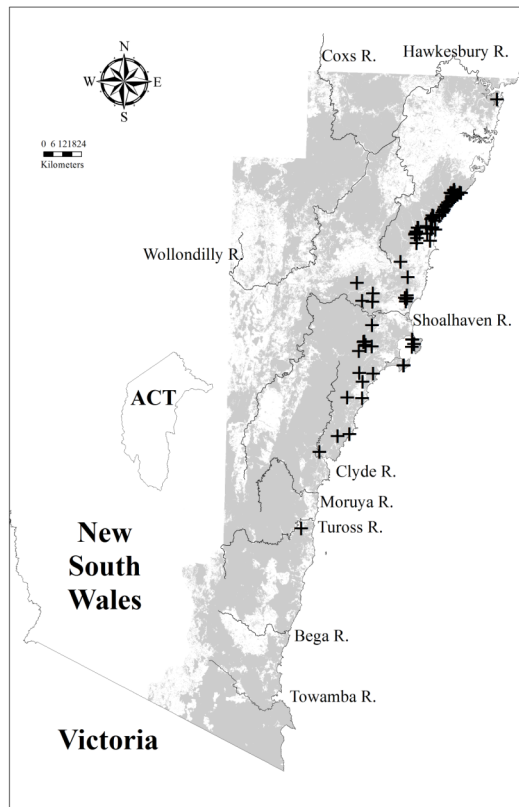
<i>Tristaniopsis collina</i>	2(1-2)	11	1(1-2)	2
<i>Trochocarpa laurina</i>	1(1-2)	9	1(1-1)	1
<i>Tylophora barbata</i>	1(1-2)	68	1(1-1)	16
<i>Zieria smithii</i>	1(1-1)	26	1(1-1)	2

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Clematis aristata</i>	1(1-1)	31	1(1-1)	20
<i>Desmodium varians</i>	1(1-1)	31	1(1-1)	21
<i>Microlaena stipoides</i>	1(1-2)	36	1(1-2)	36
<i>Persoonia linearis</i>	1(1-1)	41	1(1-1)	29
<i>Viola hederacea</i>	1(1-1)	31	1(1-1)	22

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora costata</i>	1(1-2)	15	1(1-3)	7
<i>Angophora floribunda</i>	1(1-3)	15	1(1-2)	9
<i>Corymbia gummifera</i>	1(1-2)	8	2(1-2)	16
<i>Corymbia maculata</i>	1(1-1)	2	2(1-3)	3
<i>Eucalyptus cypellocarpa</i>	2(1-2)	2	2(1-2)	10
<i>Eucalyptus elata</i>	2(2-2)	1	2(1-3)	5
<i>Eucalyptus eugenioides</i>	1(1-1)	5	2(1-3)	4
<i>Eucalyptus globoidea</i>	2(1-2)	3	2(1-2)	12
<i>Eucalyptus longifolia</i>	2(2-2)	1	1(1-2)	2
<i>Eucalyptus muelleriana</i>	3(2-4)	5	2(1-2)	6
<i>Eucalyptus piperita</i>	2(1-3)	15	2(1-3)	9
<i>Eucalyptus quadrangulata</i>	2(1-2)	2	3(1-3)	1
<i>Eucalyptus scias</i> subsp. <i>callimastha</i>	1(1-3)	3	1(1-2)	1
<i>Eucalyptus smithii</i>	2(2-2)	1	1(1-2)	2
<i>Eucalyptus tereticornis</i>	1(1-1)	1	2(1-3)	7



Locations of survey sites allocated to WSF p99. Grey shading indicates extant native vegetation cover within the study area.

### WSF p100: Escarpment Foothills Wet Forest



Plate p100. Escarpment Foothills Wet Forest (Map Unit p100) at Kembla Heights, near the intersection of Harry Graham Drive and Morans Road. A very tall canopy dominated by *Eucalyptus cypellocarpa*, *E. smithii* and *E. saligna* *X botryoides*, overlies a small tree layer of *Acacia binervata*, with shrubs including *Trochocarpa laurina*, *Tristaniopsis collina* and *Notelaea venosa*, and groundcover dominated by *Microlaena stipoides* var. *stipoides* and *Lomandra longifolia*.

Sample Sites: 35

Area Extant (ha): 31500

Estimated % remaining: >90%

Area in conservation reserves (ha): 12000

Estimated % of pre-clearing area in conservation reserves: 25-40%

No. taxa (total / unique): 263 / 1  
 No. taxa per plot ( $\pm$ sd): 39.1 (10.6)  
 Class: South Coast Wet Sclerophyll Forests  
 Related TEC: n/a

Escarpment Foothills Wet Forest (WSF p100) represents a revision and contraction of WSF 100 identified by Tindall *et al.* (2004). Of the sites originally allocated to WSF 100, those generally north of the Turpentine Range are retained as WSF p100 while those few to the south joined with new units WSF n183 (South Coast Hinterland Wet Forest) or WSF n184 (Clyde-Tuross Hinterland Forest). As a result the revised WSF p100 has a reduced range.

WSF p100 is a eucalypt forest with a mesophyll shrub/small tree stratum and an understorey of vines & ferns. This unit is distributed from Lake Cataract south to the Morton Plateau, occupying moist sheltered escarpment slopes between 100m and 650m ASL. South from Macquarie Pass this unit follows scarp slopes around the edges of the Southern highlands and Morton plateaux through Kangaroo Valley west to Bundanoon and south to Yarramunmun and Danjera. Over most of this range, mean annual rainfall typically varies between 1000 and 1200mm, though it reaches up to 1800mm in the Illawarra-Kangaroo Valley region.

Escarpment Foothills Wet Forest shares several species with Illawarra Gully Wet Forest (WSF p99), but where their distributions overlap Escarpment Foothills Wet Forest occupies higher elevations and more southerly aspects. South of the Morton plateau, Escarpment Foothills Wet Forest is replaced by South Coast Hinterland Wet Forest (WSF n183) or Clyde-Tuross Hinterland Forest (WSF n184) along the Budawang-Deua escarpment and the slopes and foothills south from Corang peak.

Extensive areas of Escarpment Foothills Wet Forest occur in conservation reserves and protected catchment areas.

#### Floristic Summary:

**Trees:** *Livistona australis*, *Eucalyptus smithii*, *E. piperita*. **Shrubs:** *Synoum glandulosum*, *Notelaea venosa*, *Elaeocarpus reticulatus*. **Climbers:** *Smilax australis*, *Tylophora barbata*, *Eustrephus latifolius*, *Geitonoplesium cymosum*, *Hibbertia dentata*, *Pandorea pandorana*. **Groundcover:** *Pteridium esculentum*, *Microlaena stipoides*, *Dianella caerulea*, *Oplismenus imbecillis*.

#### Vegetation structure:

Stratum	Frequency (n=32)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	94	32.7 (8.5)	36.7 (12.9)
Small tree	94	9.8 (4.3)	31.9 (20.6)
Shrub	16	1.9 (1.2)	21 (16.4)
Ground cover	100	1.1 (0.4)	42.4 (27)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 15 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 31 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 15 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia binervata</i>	2(2-3)	60	1(1-2)	2
<i>Acmena smithii</i>	1(1-1)	31	2(1-3)	9
<i>Astrotricha latifolia</i>	1(1-1)	26	1(1-1)	2
<i>Calochlaena dubia</i>	2(1-3)	40	1(1-3)	9
<i>Cissus hypoglauca</i>	1(1-1)	40	1(1-2)	10
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	29	1(1-1)	10
<i>Clerodendrum tomentosum</i>	1(1-2)	46	1(1-1)	5
<i>Commersonia fraseri</i>	1(1-1)	23	1(1-1)	1
<i>Cryptocarya glaucescens</i>	1(1-1)	23	2(1-3)	3
<i>Dianella caerulea</i>	1(1-1)	60	1(1-1)	28
<i>Diospyros australis</i>	1(1-1)	20	1(1-2)	3
<i>Doodia aspera</i>	1(1-1)	31	1(1-2)	12
<i>Elaeocarpus reticulatus</i>	1(1-1)	46	1(1-1)	12
<i>Entolasia marginata</i>	1(1-2)	34	1(1-1)	11
<i>Eucalyptus muelleriana</i>	3(3-4)	26	2(1-2)	6



<i>Eucalyptus piperita</i>	2(1-2)	40	2(1-3)	9
<i>Eucalyptus smithii</i>	2(1-3)	51	1(1-2)	2
<i>Eustrephus latifolius</i>	1(1-1)	94	1(1-1)	19
<i>Gahnia melanocarpa</i>	1(1-1)	23	1(1-1)	5
<i>Galium binifolium</i>	1(1-1)	26	1(1-1)	3
<i>Geitonoplesium cymosum</i>	1(1-1)	69	1(1-1)	16
<i>Goodenia ovata</i>	1(1-2)	40	1(1-1)	7
<i>Gymnostachys anceps</i>	1(1-1)	26	1(1-2)	3
<i>Helichrysum elatum</i>	1(1-1)	23	1(1-1)	2
<i>Hibbertia dentata</i>	1(1-2)	71	1(1-1)	6
<i>Hibbertia scandens</i>	1(1-1)	46	1(1-1)	5
<i>Hydrocotyle peduncularis</i>	1(1-1)	40	1(1-1)	9
<i>Kennedia rubicunda</i>	1(1-1)	29	1(1-1)	6
<i>Livistona australis</i>	1(1-1)	57	1(1-1)	6
<i>Lomandra longifolia</i>	2(1-3)	69	1(1-1)	44
<i>Marsdenia rostrata</i>	1(1-1)	46	1(1-2)	12
<i>Morinda jasminoides</i>	1(1-1)	40	1(1-2)	9
<i>Notelaea venosa</i>	1(1-1)	63	1(1-1)	12
<i>Oplismenus imbecillis</i>	1(1-1)	54	1(1-2)	14
<i>Pandorea pandorana</i>	1(1-1)	63	1(1-1)	18
<i>Pellaea falcata</i>	1(1-2)	31	1(1-1)	10
<i>Plectranthus parviflorus</i>	1(1-1)	31	1(1-1)	8
<i>Pteridium esculentum</i>	1(1-1)	77	1(1-2)	37
<i>Pyrrosia rupestris</i>	1(1-1)	23	1(1-2)	6
<i>Sarcopetalum harveyanum</i>	1(1-1)	34	1(1-1)	4
<i>Smilax australis</i>	1(1-1)	89	1(1-1)	16
<i>Stellaria flaccida</i>	1(1-2)	40	1(1-1)	10
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	26	1(1-1)	7
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	2(1-3)	31	2(1-3)	7
<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	1(1-2)	77	1(1-2)	7
<i>Tristaniaopsis collina</i>	1(1-2)	31	1(1-2)	2
<i>Tylophora barbata</i>	1(1-2)	94	1(1-1)	16
<i>Zieria smithii</i>	1(1-1)	26	1(1-1)	2

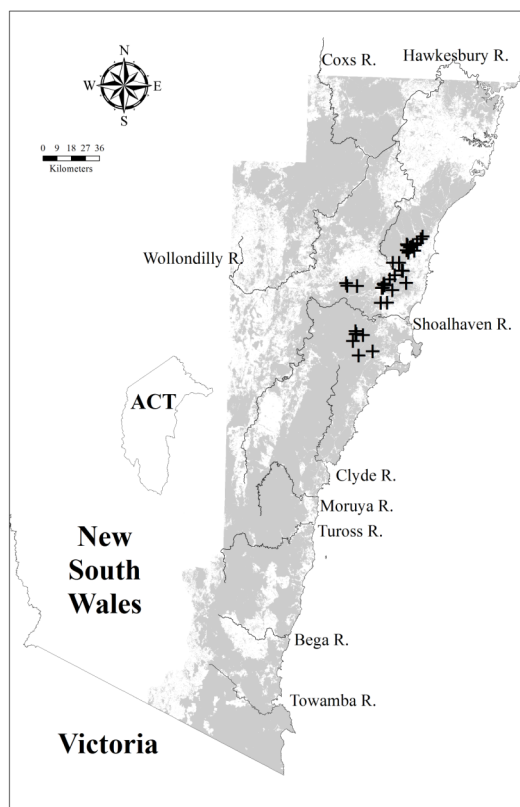
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Clematis aristata</i>	1(1-1)	40	1(1-1)	20
<i>Lepidosperma laterale</i>	1(1-1)	40	1(1-1)	29
<i>Microlaena stipoides</i>	1(1-1)	57	1(1-2)	36
<i>Viola hederacea</i>	1(1-1)	40	1(1-1)	22

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	3(1-3)	6	1(1-2)	9
<i>Corymbia gummifera</i>	1(1-1)	3	2(1-2)	16
<i>Eucalyptus agglomerata</i>	1(1-1)	3	2(1-3)	7
<i>Eucalyptus cypellocarpa</i>	3(2-3)	17	2(1-2)	10

<i>Eucalyptus elata</i>	3(1-3)	9	2(1-3)	5
<i>Eucalyptus eugenioides</i>	3(3-3)	3	2(1-3)	4
<i>Eucalyptus fastigata</i>	4(3-4)	14	2(1-3)	6
<i>Eucalyptus fibrosa</i>	1(1-1)	3	2(1-3)	3
<i>Eucalyptus obliqua</i>	3(3-3)	3	2(1-3)	4
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	3(1-3)	14	1(1-2)	3
<i>Eucalyptus quadrangulata</i>	2(1-4)	14	3(1-3)	1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	3(3-3)	3	2(1-3)	6
<i>Eucalyptus saligna</i> X <i>botryoides</i>	3(1-3)	17	2(1-3)	2



Locations of survey sites allocated to WSF p100. Grey shading indicates extant native vegetation cover within the study area.

**WSF p102: Lower Blue Mountains Wet Forest**

Plate p102. Lower Blue Mountains Wet Forest (Map Unit p102) on Wild Goat Plateau, northern Nattai Tableland. A tall canopy of *Eucalyptus deanei* is present with a sub canopy of *Acacia elata*, *Ceratopetalum gummiferum* and *C. apetalum* and a tall shrub layer of *Stenocarpus salignus* and *Elaeocarpus reticulatus*. The dense ferny groundcover is dominated by *Calochlaena dubia*, *Pteridium esculentum* and *Blechnum cartilagineum*.

Sample Sites: 83

Area Extant (ha): 23400

Estimated % remaining: >95%

Area in conservation reserves (ha): 19800

Estimated % of pre-clearing area in conservation reserves: 75-90%

No. taxa (total / unique): 456 / 3

No. taxa per plot ( $\pm$ sd): 43.2 (10.7)

Class: North Coast Wet Sclerophyll Forests

Related TEC: n/a

Lower Blue Mountains Wet Forest (WSF p102) is equivalent to WSF 102 identified by Tindall *et al.* (2004), and is a tall eucalypt forest with a moist open understorey of shrubs, climbers and ferns. This unit is widely distributed in the sheltered sandstone slopes and gullies of the Greater Blue Mountains, with localised occurrences in tributaries of the Hawkesbury River north of Sydney and the upper Georges River. Typically, it occurs up to 700m ASL, where mean annual rainfall varies from 850 to 1200mm, and is likely to extend north of the study area into sandstone country in the Colo and Macdonald River catchments. Lower Blue Mountains Wet Forest shares closer floristic relationships to wet forests of the south coast (Clyde Gully Wet Forest WSF p103 and Southern Lowland Wet Forest WSF p104) than to those on the lowlands immediately to the east (WSF p99, WSF p100 and WSF p110). In smaller gullies and with decreasing soil depth and shelter, Lower Blue Mountains Wet Forest is typically replaced by Hinterland Sandstone Gully Forest (DSF p142) or Wingecarribee-Burraborang Sandstone Forest (DSF p144).

Most of the original distribution of Lower Blue Mountains Wet Forest remains intact, and substantial areas are represented within conservation reserves.

**Floristic Summary:**

**Trees:** *Syncarpia glomulifera*, *Angophora costata*, *Acacia elata*, *Eucalyptus deanei*, *Allocasuarina torulosa*. **Shrubs:** *Elaeocarpus reticulatus*, *Leucopogon lanceolatus*, *Persoonia linearis*. **Climbers:** *Cissus hypoglauca*, *Smilax glycyphylla*, *Eustrephus latifolius*, *Tylophora barbata*, *Clematis aristata*, *Billardiera scandens*, *Geitonoplesium cymosum*, *Pandorea pandorana*. **Groundcover:** *Lomandra longifolia*, *Calochlaena dubia*, *Blechnum cartilagineum*, *Dianella caerulea*, *Pteridium esculentum*, *Viola hederacea*, *Lepidosperma laterale*.

**Vegetation structure:**

Stratum	Frequency (n=60)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	2	40 (-)	10 (-)
Tree canopy	100	28.7 (6.8)	33.9 (14.6)
Small tree	90	12.7 (5.1)	38.1 (25.7)
Shrub	30	2.6 (0.5)	24.8 (20.2)
Ground cover	97	1.1 (0.3)	54.6 (26.7)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 20 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 35 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 20 positive diagnostic species.

**Positive Diagnostic Species:**

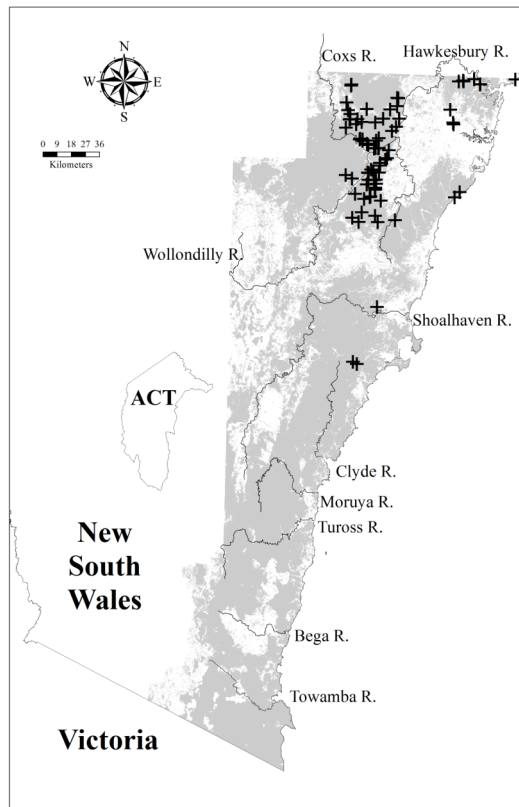
Species	C/A	Freq	C/A O	Freq O
<i>Acacia elata</i>	1(1-3)	49	1(1-2)	1
<i>Acmena smithii</i>	1(1-1)	29	2(1-3)	9
<i>Acrotriche divaricata</i>	1(1-2)	22	1(1-1)	1
<i>Adiantum aethiopicum</i>	1(1-1)	35	1(1-2)	9
<i>Adiantum hispidulum</i>	1(1-1)	11	1(1-1)	2
<i>Allocasuarina torulosa</i>	2(1-3)	43	1(1-3)	4
<i>Angophora costata</i>	2(1-3)	49	1(1-3)	7
<i>Angophora floribunda</i>	2(1-3)	19	1(1-2)	9
<i>Astrotricha floccosa</i>	1(1-1)	6	1(1-2)	1
<i>Astrotricha latifolia</i>	1(1-1)	33	1(1-1)	2
<i>Austromyrtus tenuifolia</i>	1(1-2)	6	1(1-3)	<1
<i>Backhousia myrtifolia</i>	2(1-2)	17	2(1-3)	5
<i>Billardiera scandens</i>	1(1-1)	51	1(1-1)	27
<i>Blechnum cartilagineum</i>	2(1-3)	80	1(1-2)	11
<i>Breynia oblongifolia</i>	1(1-1)	29	1(1-1)	12
<i>Callicoma serratifolia</i>	1(1-3)	39	1(1-2)	2
<i>Calochlaena dubia</i>	3(2-4)	83	1(1-3)	9
<i>Ceratopetalum apetalum</i>	2(1-3)	28	3(1-4)	3
<i>Ceratopetalum gummiferum</i>	2(1-3)	35	1(1-2)	3
<i>Cissus hypoglauca</i>	1(1-2)	58	1(1-2)	9
<i>Clematis aristata</i>	1(1-1)	49	1(1-1)	20
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	25	1(1-1)	10
<i>Cyathea australis</i>	1(1-2)	27	1(1-1)	8
<i>Cymbidium suave</i>	1(1-1)	16	1(1-1)	2
<i>Dendrobium speciosum</i>	1(1-1)	8	1(1-1)	1
<i>Dianella caerulea</i>	1(1-1)	80	1(1-1)	28
<i>Dodonaea triquetra</i>	1(1-2)	22	1(1-2)	6
<i>Dracophyllum secundum</i>	1(1-1)	10	1(1-1)	<1
<i>Elaeocarpus reticulatus</i>	1(1-2)	77	1(1-1)	11
<i>Entolasia stricta</i>	1(1-1)	59	1(1-2)	33
<i>Eucalyptus deanei</i>	3(1-3)	45	3(1-3)	1
<i>Eucalyptus piperita</i>	2(1-3)	41	2(1-3)	9
<i>Eustrephus latifolius</i>	1(1-1)	55	1(1-1)	19

<i>Galium binifolium</i>	1(1-1)	20	1(1-1)	3
<i>Geitonoplesium cymosum</i>	1(1-1)	52	1(1-1)	16
<i>Glochidion ferdinandi</i> var. <i>ferdinandi</i>	1(1-1)	7	1(1-1)	2
<i>Glycine microphylla</i>	1(1-1)	14	1(1-2)	5
<i>Gompholobium latifolium</i>	1(1-1)	13	1(1-1)	3
<i>Goodenia ovata</i>	1(1-2)	22	1(1-1)	7
<i>Grevillea arenaria</i> subsp. <i>arenaria</i>	1(1-1)	7	1(1-1)	1
<i>Hakea salicifolia</i>	1(1-1)	17	1(1-2)	1
<i>Helichrysum elatum</i>	1(1-1)	11	1(1-1)	2
<i>Hibbertia dentata</i>	1(1-2)	36	1(1-1)	6
<i>Hymenophyllum cupressiforme</i>	1(1-1)	17	1(1-1)	1
<i>Lepidosperma laterale</i>	1(1-1)	59	1(1-1)	28
<i>Leptospermum polygalifolium</i>	1(1-1)	24	1(1-2)	8
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	64	1(1-1)	23
<i>Libertia paniculata</i>	1(1-1)	10	1(1-1)	2
<i>Lindsaea microphylla</i>	1(1-1)	22	1(1-1)	5
<i>Liparis reflexa</i>	1(1-2)	6	1(1-1)	<1
<i>Lissanthe sapida</i>	1(1-1)	17	1(1-1)	1
<i>Logania albiflora</i>	1(1-1)	8	1(1-1)	1
<i>Lomandra longifolia</i>	1(1-2)	86	1(1-1)	43
<i>Lomatia silaifolia</i>	1(1-1)	31	1(1-1)	10
<i>Marsdenia suaveolens</i>	1(1-1)	16	1(1-1)	2
<i>Melaleuca linariifolia</i>	1(1-2)	6	1(1-2)	1
<i>Morinda jasminoides</i>	1(1-1)	33	1(1-2)	9
<i>Nematolepis squamea</i> subsp. <i>squamea</i>	1(1-1)	7	1(1-1)	<1
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-1)	42	1(1-1)	7
<i>Olearia tomentosa</i>	1(1-1)	10	1(1-1)	1
<i>Opercularia aspera</i>	1(1-2)	18	1(1-1)	8
<i>Opercularia hispida</i>	1(1-1)	11	1(1-1)	3
<i>Pandorea pandorana</i>	1(1-1)	45	1(1-1)	18
<i>Persoonia linearis</i>	1(1-1)	58	1(1-1)	28
<i>Persoonia mollis</i> subsp. <i>mollis</i>	1(1-1)	11	1(1-1)	1
<i>Pittosporum revolutum</i>	1(1-1)	25	1(1-1)	8
<i>Platylobium formosum</i>	1(1-1)	13	1(1-1)	3
<i>Poa affinis</i>	1(1-1)	7	1(1-2)	2
<i>Pomaderris ferruginea</i>	1(1-4)	6	1(1-1)	1
<i>Pratia purpurascens</i>	1(1-1)	33	1(1-1)	17
<i>Pteridium esculentum</i>	1(1-2)	71	1(1-2)	37
<i>Pterostylis longifolia</i>	1(1-1)	17	1(1-1)	1
<i>Pultenaea flexilis</i>	1(1-2)	14	1(1-2)	2
<i>Rapanea variabilis</i>	1(1-2)	36	1(1-1)	3
<i>Rubus moluccanus</i> var. <i>trilobus</i>	1(1-1)	12	1(1-1)	2
<i>Schoenus melanostachys</i>	1(1-2)	19	1(1-2)	2
<i>Smilax australis</i>	1(1-2)	42	1(1-1)	16
<i>Smilax glyciophylla</i>	1(1-1)	57	1(1-1)	8
<i>Stenocarpus salignus</i>	1(1-1)	12	1(1-1)	2

<i>Sticherus flabellatus</i> var. <i>flabellatus</i>	1(1-2)	17	1(1-2)	1
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	3(2-4)	61	2(1-3)	7
<i>Todea barbara</i>	1(1-1)	12	1(1-2)	1
<i>Tristaniopsis collina</i>	1(1-2)	39	1(1-2)	2
<i>Tristaniopsis laurina</i>	1(1-3)	7	1(1-3)	2
<i>Tylophora barbata</i>	1(1-2)	53	1(1-1)	16
<i>Viola hederacea</i>	1(1-1)	63	1(1-1)	21
<i>Xanthorrhoea arborea</i>	2(1-2)	10	1(1-2)	1
<i>Zieria smithii</i>	1(1-1)	14	1(1-1)	2

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora euryphylla</i>	3(3-3)	1	0(0-0)	0
<i>Corymbia gummifera</i>	1(1-2)	8	2(1-2)	16
<i>Eucalyptus agglomerata</i>	2(1-3)	7	2(1-3)	7
<i>Eucalyptus beyeriana</i>	2(2-2)	1	2(1-2)	<1
<i>Eucalyptus blaxlandii</i>	1(1-1)	1	1(1-3)	1
<i>Eucalyptus botryoides</i>	1(1-1)	2	2(1-3)	3
<i>Eucalyptus consideniana</i>	3(3-3)	1	1(1-2)	2
<i>Eucalyptus cypellocarpa</i>	3(1-3)	10	2(1-2)	10
<i>Eucalyptus elata</i>	2(1-3)	8	2(1-3)	5
<i>Eucalyptus eugenioides</i>	1(1-1)	1	2(1-3)	4
<i>Eucalyptus fibrosa</i>	1(1-1)	1	2(1-3)	3
<i>Eucalyptus notabilis</i>	1(1-1)	2	1(1-2)	1
<i>Eucalyptus pilularis</i>	1(1-2)	4	2(1-3)	5
<i>Eucalyptus punctata</i>	3(1-3)	12	2(1-3)	9
<i>Eucalyptus resinifera</i> subsp. <i>resinifera</i>	1(1-1)	1	1(1-2)	1
<i>Eucalyptus saligna</i> X <i>botryoides</i>	3(3-3)	1	2(1-3)	2
<i>Eucalyptus scias</i> subsp. <i>callimastha</i>	1(1-1)	1	1(1-2)	1
<i>Eucalyptus tereticornis</i>	1(1-1)	1	2(1-3)	7
<i>Eucalyptus umbra</i>	2(1-2)	4	1(1-2)	<1



Locations of survey sites allocated to WSF p102. Grey shading indicates extant native vegetation cover within the study area.

### WSF p103: Clyde Gully Wet Forest



Plate p103. Clyde Gully Wet Forest (Map Unit p103) at Benandarah north of Batemans Bay. *Corymbia maculata* dominates the tall canopy, with a sub canopy of *Synoum glandulosum*, *Acmena smithii*, *Acacia mabellae*, weighed down with dense shrouds of *Cissus hypoglauca*. Groundcover is dominated by ferns including *Calochlaena dubia*, *Blechnum cartilagineum* and *Doodia aspera*.

Sample Sites: 31

Area Extant (ha): 17900

Estimated % remaining: >90%

Area in conservation reserves (ha): 6600

Estimated % of pre-clearing area in conservation reserves: 25-40%

No. taxa (total / unique): 253 / 0



No. taxa per plot ( $\pm$ sd): 37 (11.9)

Class: Southern Lowland Wet Sclerophyll Forests

Related TEC: n/a

Clyde Gully Wet Forest (WSF p103) represents a revision of WSF 103 identified by Tindall *et al.* (2004), including a contraction in the range of this unit. A number of sites originally allocated to WSF 103 joined additional sites to the south to form a new unit WSF n183 (South Coast Hinterland Wet Forest), and as a result the revised WSF p103 has a reduced range.

WSF p103 is a mixed forest of eucalypts and rainforest trees with mesophyll shrubs, vines and ferns. It is found predominantly below 200m ASL on sandy loams in moist sheltered gullies and slopes on the low coastal ranges east of the Clyde River between Ulladulla and Benandarah, where mean annual rainfall is between 1000 and 1300mm. A few outliers are recorded from the Yadboro and Endrick areas.

Further to the west and south this unit is replaced by the slightly drier, cooler WSF n183 (South Coast Hinterland Wet Forest). A related unit, Lower Blue Mountains Wet Forest (WSF p102), shares several species with Clyde Gully Wet Forest and occupies similar topographic positions within the same rainfall range further north.

Large stands of Clyde Gully Wet Forest occur in state forests and conservation reserves.

#### Floristic Summary:

**Trees:** *Acacia mabelliae*, *Livistona australis*, *Acmena smithii*, *Eucalyptus piperita*. **Shrubs:** *Elaeocarpus reticulatus*, *Callicoma serratifolia*, *Cyathea australis*, *Synoum glandulosum*, *Tristaniopsis collina*. **Climbers:** *Cissus hypoglauca*, *Smilax australis*, *Hibbertia dentata*, *Pandorea pandorana*, *Eustrephus latifolius*, *Tylophora barbata*. **Groundcover:** *Blechnum cartilagineum*, *Calochlaena dubia*, *Lomandra longifolia*, *Pteridium esculentum*, *Dianella caerulea*, *Schelhammra undulata*, *Oplismenus imbecillis*.

#### Vegetation structure:

Stratum	Frequency (n=25)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	8	32.5 (3.5)	4.5 (0.7)
Tree canopy	96	33.9 (13.3)	33.3 (14.2)
Small tree	92	14.5 (6.7)	50 (22)
Shrub	28	2.3 (0.8)	24.3 (20.3)
Ground cover	92	1.1 (0.4)	36.3 (22.8)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 15 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 28 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 15 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia mabelliae</i>	1(1-2)	55	1(1-2)	1
<i>Acmena smithii</i>	1(1-1)	61	2(1-3)	9
<i>Backhousia myrtifolia</i>	3(2-3)	29	2(1-3)	5
<i>Blechnum cartilagineum</i>	2(1-3)	87	1(1-2)	11
<i>Callicoma serratifolia</i>	2(1-3)	71	1(1-2)	3
<i>Calochlaena dubia</i>	1(1-2)	90	1(1-3)	9
<i>Cissus hypoglauca</i>	1(1-2)	87	1(1-2)	9
<i>Clematis aristata</i>	1(1-1)	45	1(1-1)	20
<i>Clerodendrum tomentosum</i>	1(1-1)	23	1(1-1)	5
<i>Corymbia maculata</i>	2(1-3)	39	2(1-3)	3
<i>Cyathea australis</i>	1(1-1)	55	1(1-2)	8
<i>Doodia aspera</i>	1(1-1)	45	1(1-2)	11
<i>Elaeocarpus reticulatus</i>	1(1-2)	97	1(1-1)	12
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-2)	23	1(1-2)	3
<i>Eucalyptus pilularis</i>	2(1-3)	26	2(1-3)	5
<i>Eucalyptus piperita</i>	2(1-2)	39	2(1-3)	9

<i>Eupomatia laurina</i>	1(1-1)	26	1(1-2)	4
<i>Eustrephus latifolius</i>	1(1-1)	61	1(1-1)	19
<i>Gahnia melanocarpa</i>	1(1-1)	32	1(1-1)	5
<i>Geitonoplesium cymosum</i>	1(1-1)	42	1(1-1)	16
<i>Hibbertia dentata</i>	1(1-1)	65	1(1-1)	6
<i>Hibbertia scandens</i>	1(1-1)	23	1(1-1)	5
<i>Lepidosperma urophorum</i>	1(1-2)	35	1(1-2)	7
<i>Livistona australis</i>	1(1-1)	71	1(1-1)	6
<i>Marsdenia rostrata</i>	1(1-1)	42	1(1-2)	12
<i>Morinda jasminoides</i>	1(1-1)	61	1(1-2)	9
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-1)	29	1(1-1)	8
<i>Notelaea venosa</i>	1(1-1)	35	1(1-1)	12
<i>Oplismenus imbecillis</i>	1(1-1)	48	1(1-2)	14
<i>Pandorea pandorana</i>	1(1-1)	55	1(1-1)	18
<i>Parsonsia straminea</i>	1(1-1)	26	1(1-1)	7
<i>Pittosporum revolutum</i>	1(1-1)	26	1(1-1)	8
<i>Pseuderanthemum variabile</i>	1(1-1)	39	1(1-2)	9
<i>Psychotria loniceroides</i>	1(1-1)	52	1(1-1)	3
<i>Rhodamnia rubescens</i>	1(1-2)	26	1(1-1)	1
<i>Schelhammera undulata</i>	1(1-1)	52	1(1-1)	7
<i>Smilax australis</i>	1(1-1)	65	1(1-1)	16
<i>Smilax glyciphylla</i>	1(1-1)	55	1(1-1)	8
<i>Sticherus flabellatus</i> var. <i>flabellatus</i>	1(1-2)	23	1(1-2)	1
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	2(1-2)	35	2(1-3)	7
<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	1(1-1)	68	1(1-2)	7
<i>Tristaniopsis collina</i>	1(1-3)	42	1(1-2)	2
<i>Tylophora barbata</i>	1(1-1)	48	1(1-1)	17

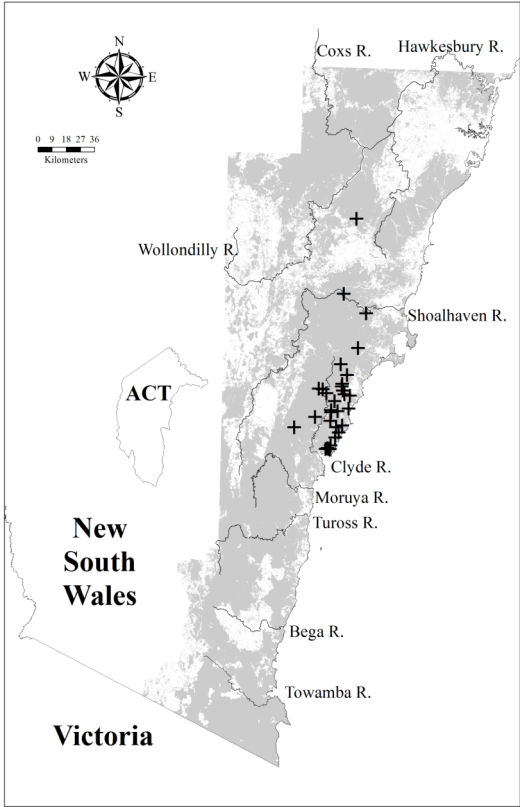
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Dianella caerulea</i>	1(1-1)	48	1(1-1)	28
<i>Entolasia stricta</i>	1(1-1)	35	1(1-2)	34
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	32	1(1-1)	24
<i>Lomandra longifolia</i>	1(1-1)	61	1(1-1)	44
<i>Persoonia linearis</i>	1(1-1)	35	1(1-1)	29
<i>Pteridium esculentum</i>	1(1-1)	42	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	2(1-2)	10	1(1-2)	9
<i>Corymbia gummifera</i>	1(1-2)	29	2(1-2)	16
<i>Eucalyptus agglomerata</i>	1(1-1)	3	2(1-3)	7
<i>Eucalyptus botryoides</i>	1(1-3)	16	2(1-3)	3
<i>Eucalyptus cypellocarpa</i>	3(3-3)	3	2(1-2)	10
<i>Eucalyptus elata</i>	2(2-2)	3	2(1-3)	5
<i>Eucalyptus globoidea</i>	1(1-2)	19	2(1-2)	12
<i>Eucalyptus longifolia</i>	1(1-1)	3	1(1-2)	2

<i>Eucalyptus muelleriana</i>	2(2-2)	3	2(1-2)	6
<i>Eucalyptus quadrangulata</i>	1(1-1)	3	3(1-3)	1
<i>Eucalyptus saligna</i> X <i>botryoides</i>	1(1-1)	19	2(1-3)	2
<i>Eucalyptus scias</i> subsp. <i>callimastha</i>	2(2-2)	19	1(1-2)	1
<i>Eucalyptus sclerophylla</i>	1(1-1)	3	2(1-3)	4



Locations of survey sites allocated to WSF p103. Grey shading indicates extant native vegetation cover within the study area.

**WSF p104: Southern Lowland Wet Forest**

Plate p104. Southern Lowland Wet Forest (Map Unit p104) beside Mill Fire Break Road in Boyne State Forest between Benandarah and East Lynne. The canopy is dominated by *Corymbia maculata* and *C. gummifera*, with a sub canopy of *Allocasuarina littoralis*, a sparse shrub layer including *Persoonia linearis*, *Acacia mabellae*, and groundcover dominated by *Lomandra longifolia* and *Lepidosperma urophorum* with occasional *Macrozamia communis*.

Sample Sites: 88

Area Extant (ha): 25900

Estimated % remaining: >85%

Area in conservation reserves (ha): 9200

Estimated % of pre-clearing area in conservation reserves: 25-45%

No. taxa (total / unique): 365 / 1

No. taxa per plot ( $\pm$ sd): 41.8 (10.1)

Class: Southern Lowland Wet Sclerophyll Forests

Related TEC: n/a

Southern Lowland Wet Forest (WSF p104) is equivalent to WSF 104 identified by Tindall *et al.* (2004). This unit is a rather dense eucalypt forest with an understorey of shrubs and grasses, and is distributed from Conjola to Batemans Bay, predominantly east of the Clyde River, with northern outliers at Tapitallee and Colymea. Within this distribution Southern Lowland Wet Forest occurs below 250m ASL on open hillslopes and gullies with loamy soils where mean annual rainfall ranges from 1000 to 1300mm. On more sheltered slopes, Southern Lowland Wet Forest grades into Clyde Gully Wet Forest (WSF p103), which generally occupies sheltered gullies of more elevated terrain to the west. Most of the original distribution of Southern Lowland Wet Forest is included within state forests and conservation reserves.

**Floristic Summary:**

**Trees:** *Corymbia maculata*, *Eucalyptus pilularis*, *E. paniculata*. **Shrubs:** *Elaeocarpus reticulatus*, *Persoonia linearis*, *Leucopogon lanceolatus*, *Macrozamia communis*, *Breynia oblongifolia*, *Notelaea longifolia*, *Hibbertia aspera*, *Synoum glandulosum*. **Climbers:** *Cissus hypoglauca*, *Eustrephus latifolius*, *Tylophora barbata*, *Pandorea pandorana*. **Groundcover:** *Dianella caerulea*, *Entolasia stricta*, *Lomandra longifolia*, *Pteridium esculentum*, *Schelhammera undulata*, *Lepidosperma urophorum*.

**Vegetation structure:**

Stratum	Frequency (n=79)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	3	45 (-)	5 (-)
Tree canopy	99	28.7 (7)	35.3 (14.7)
Small tree	91	11.2 (5.1)	25.2 (18.2)
Shrub	48	2.3 (0.6)	21.6 (17.6)
Ground cover	96	1 (0.3)	36.4 (23.7)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 22 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 34 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 22 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia irrorata</i> subsp. <i>irrorata</i>	1(1-2)	24	1(1-1)	2
<i>Acacia longifolia</i>	1(1-1)	23	1(1-2)	9
<i>Acacia longissima</i>	1(1-2)	9	1(1-1)	1
<i>Acacia mabelliae</i>	2(1-2)	43	1(1-2)	1
<i>Acacia obtusifolia</i>	1(1-1)	22	1(1-2)	9
<i>Allocasuarina littoralis</i>	1(1-3)	31	1(1-2)	17
<i>Astrotricha latifolia</i>	1(1-2)	8	1(1-1)	2
<i>Babingtonia pluriflora</i>	1(1-2)	11	1(1-1)	1
<i>Billardiera scandens</i>	1(1-1)	43	1(1-1)	27
<i>Blechnum cartilagineum</i>	1(1-2)	45	1(1-2)	11
<i>Breynia oblongifolia</i>	1(1-1)	60	1(1-1)	12
<i>Brunoniella pumilio</i>	1(1-1)	25	1(1-1)	4
<i>Calochlaena dubia</i>	1(1-2)	38	1(1-3)	9
<i>Cissus hypoglauca</i>	1(1-2)	78	1(1-2)	9
<i>Clematis aristata</i>	1(1-1)	44	1(1-1)	20
<i>Corymbia gummifera</i>	1(1-2)	38	2(1-2)	15
<i>Corymbia maculata</i>	2(1-3)	78	2(1-3)	2
<i>Cryptostylis erecta</i>	1(1-1)	6	1(1-1)	1
<i>Cymbidium suave</i>	1(1-1)	20	1(1-1)	2
<i>Desmodium varians</i>	1(1-1)	39	1(1-1)	21
<i>Deyeuxia nudiflora</i>	1(1-1)	6	1(1-1)	<1
<i>Dianella caerulea</i>	1(1-1)	86	1(1-1)	28
<i>Dodonaea triquetra</i>	1(1-2)	18	1(1-2)	6
<i>Doodia aspera</i>	1(1-1)	33	1(1-2)	11
<i>Elaeocarpus reticulatus</i>	1(1-1)	84	1(1-1)	11
<i>Entolasia stricta</i>	1(1-1)	84	1(1-2)	33
<i>Eucalyptus globoidea</i>	1(1-2)	34	2(1-2)	12
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-2)	45	1(1-2)	3
<i>Eucalyptus pilularis</i>	2(1-2)	59	2(1-3)	4
<i>Eucalyptus saligna</i> X <i>botryoides</i>	1(1-2)	11	2(1-3)	2
<i>Eucalyptus scias</i> subsp. <i>callimastha</i>	1(1-3)	6	1(1-2)	1
<i>Eustrephus latifolius</i>	1(1-1)	65	1(1-1)	19
<i>Gahnia clarkei</i>	1(1-1)	10	1(1-2)	2
<i>Gahnia melanocarpa</i>	1(1-1)	41	1(1-1)	5
<i>Geitonoplesium cymosum</i>	1(1-1)	49	1(1-1)	16
<i>Glochidion ferdinandi</i> var. <i>ferdinandi</i>	1(1-2)	9	1(1-1)	2
<i>Gonocarpus teucroides</i>	1(1-1)	32	1(1-1)	17
<i>Hardenbergia violacea</i>	1(1-1)	33	1(1-1)	17
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	58	1(1-1)	10
<i>Hibbertia dentata</i>	1(1-1)	40	1(1-1)	6

<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-1)	23	1(1-1)	6
<i>Hibbertia scandens</i>	1(1-1)	31	1(1-1)	4
<i>Howittia trilocularis</i>	1(1-2)	7	1(1-1)	1
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-1)	49	1(1-2)	9
<i>Lepidosperma laterale</i>	1(1-1)	47	1(1-1)	28
<i>Lepidosperma urophorum</i>	2(1-3)	64	1(1-1)	6
<i>Leptospermum polygalifolium</i>	1(1-1)	22	1(1-2)	8
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	78	1(1-1)	23
<i>Livistona australis</i>	1(1-1)	25	1(1-1)	6
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	1(1-2)	15	1(1-1)	4
<i>Lomandra confertifolia</i> subsp. <i>similis</i>	1(1-2)	10	1(1-1)	2
<i>Lomandra longifolia</i>	1(1-1)	75	1(1-1)	43
<i>Macrozamia communis</i>	1(1-2)	66	1(1-2)	4
<i>Marsdenia suaveolens</i>	1(1-1)	16	1(1-1)	2
<i>Morinda jasminoides</i>	1(1-1)	33	1(1-2)	9
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-1)	59	1(1-1)	7
<i>Notelaea venosa</i>	1(1-1)	34	1(1-1)	12
<i>Oplismenus imbecillis</i>	1(1-1)	36	1(1-2)	14
<i>Pandorea pandorana</i>	1(1-1)	50	1(1-1)	18
<i>Parsonsia straminea</i>	1(1-1)	41	1(1-1)	6
<i>Persoonia linearis</i>	1(1-1)	80	1(1-1)	28
<i>Pittosporum revolutum</i>	1(1-1)	32	1(1-1)	8
<i>Platylobium formosum</i>	1(1-1)	9	1(1-1)	3
<i>Pseuderanthemum variabile</i>	1(1-1)	33	1(1-2)	9
<i>Psychotria loniceroides</i>	1(1-1)	34	1(1-1)	3
<i>Pteridium esculentum</i>	1(1-2)	75	1(1-2)	37
<i>Pultenaea villosa</i>	1(1-1)	10	1(1-2)	1
<i>Rapanea howittiana</i>	1(1-1)	14	1(1-1)	5
<i>Santalum obtusifolium</i>	1(1-1)	9	1(1-1)	1
<i>Schelhammera undulata</i>	1(1-1)	70	1(1-1)	7
<i>Smilax australis</i>	1(1-1)	41	1(1-1)	16
<i>Smilax glycyphylla</i>	1(1-1)	42	1(1-1)	8
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	2(1-2)	20	2(1-3)	7
<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	1(1-1)	50	1(1-2)	6
<i>Tristaniopsis collina</i>	1(1-2)	11	1(1-2)	2
<i>Tylophora barbata</i>	1(1-1)	57	1(1-1)	16
<i>Viola hederacea</i>	1(1-1)	39	1(1-1)	22
<i>Zieria smithii</i>	1(1-1)	10	1(1-1)	2

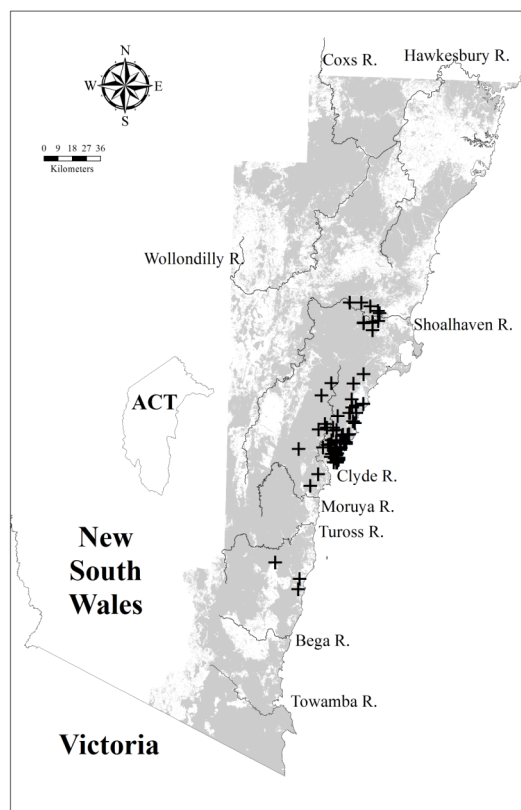
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Glycine clandestina</i>	1(1-1)	40	1(1-1)	26

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-2)	13	1(1-2)	9
<i>Eucalyptus agglomerata</i>	2(1-2)	5	2(1-3)	7

<i>Eucalyptus bosistoana</i>	1(1-1)	1	1(1-2)	3
<i>Eucalyptus botryoides</i>	1(1-2)	9	2(1-3)	3
<i>Eucalyptus considaniana</i>	2(1-2)	2	2(1-2)	2
<i>Eucalyptus cypellocarpa</i>	1(1-3)	3	2(1-2)	10
<i>Eucalyptus eugenioides</i>	1(1-1)	1	2(1-3)	4
<i>Eucalyptus fibrosa</i>	1(1-1)	6	2(1-3)	3
<i>Eucalyptus longifolia</i>	3(1-3)	2	1(1-2)	2
<i>Eucalyptus macrorhyncha</i>	2(2-2)	1	2(1-3)	3
<i>Eucalyptus muelleriana</i>	1(1-2)	8	2(1-2)	6
<i>Eucalyptus piperita</i>	2(1-3)	17	2(1-3)	9
<i>Eucalyptus sieberi</i>	1(1-3)	6	2(1-3)	16



Locations of survey sites allocated to WSF p104. Grey shading indicates extant native vegetation cover within the study area.



**FoW p105: Floodplain Swamp Forest**

Plate p105. Floodplain Swamp Forest (Map Unit p105) at Rocklow Creek, Dunmore. The canopy is dominated by *Casuarina glauca*, frequently supporting the woody climber *Parsonsia straminea*. Dense grassy groundcover is dominated by *Microlaena stipoides* interspersed with tussocks of *Lomandra longifolia* and *Commelina cyanea*.

Sample Sites: 29

Area Extant (ha): 2400

Estimated % remaining: 5-20%

Area in conservation reserves (ha): 480

Estimated % of pre-clearing area in conservation reserves: <5%

No. taxa (total / unique): 160 / 2

No. taxa per plot ( $\pm$ sd): 17.6 (7.1)

Class: Coastal Floodplain Wetlands

Related TECs: includes areas of Swamp Oak Forest on Coastal Floodplains EEC and River Flat Eucalypt Forest on Coastal Floodplains EEC (TSC).

Floodplain Swamp Forest (FoW p105) represents a revision and extension of FoW 105 identified by Tindall *et al.* (2004), based on additional samples over a larger study area. It includes unit 63 (Estuarine Wetland Scrub) of Keith & Bedward (1999) and some recent sites classified by Beukers (undated) as Coastal She-Oak Swamp Forest and as Estuarine Tea Tree Scrub. This unit is a low, rather dense forest characterised by a non-eucalypt tree canopy, an open shrub layer and a semi-continuous groundcover dominated by taxa tolerant of brackish groundwater. This Map Unit is scattered throughout the coast and is likely to extend further to the north and south of the study area. Floodplain Swamp Forest is found on the floodplains of the Towamba, Bega, Bermagui, Clyde, Shoalhaven, Georges and Hawkesbury Rivers, and smaller alluvial plains adjacent to coastal lakes, lagoons and inlets such as Wallaga Lake, Lake Conjola, St Georges Basin and Lake Illawarra. Though typically coastal, this forest may occur some distance inland along floodplains of larger river estuaries in brackish drainage lines and depressions below 10m ASL. Floodplain Swamp Forest is closely related to, and grades into Estuarine Fringe Forest (FoW p106) below 5m ASL with increasing groundwater salinity.

The distribution of Floodplain Swamp Forest has been greatly reduced by coastal development and remaining stands are threatened by further clearing, fragmentation, weed invasion and grazing.

**Floristic Summary:**

**Trees:** *Casuarina glauca*. **Climbers:** *Parsonsia straminea*. **Groundcover:** *Commelina cyanea*, *Phragmites australis*, *Alternanthera denticulata*, *Carex appressa*, *Centella asiatica*, *Cynodon dactylon*, *Juncus kraussii*.

**Vegetation structure:**

Stratum	Frequency (n=16)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	15.6 (4.5)	41.6 (14.5)
Small tree	25	11 (2.6)	35 (10)
Shrub	50	2 (1)	26.9 (20.5)
Ground cover	100	0.8 (0.4)	45.8 (33)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 3 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 12 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 3 positive diagnostic species.

**Positive Diagnostic Species:**

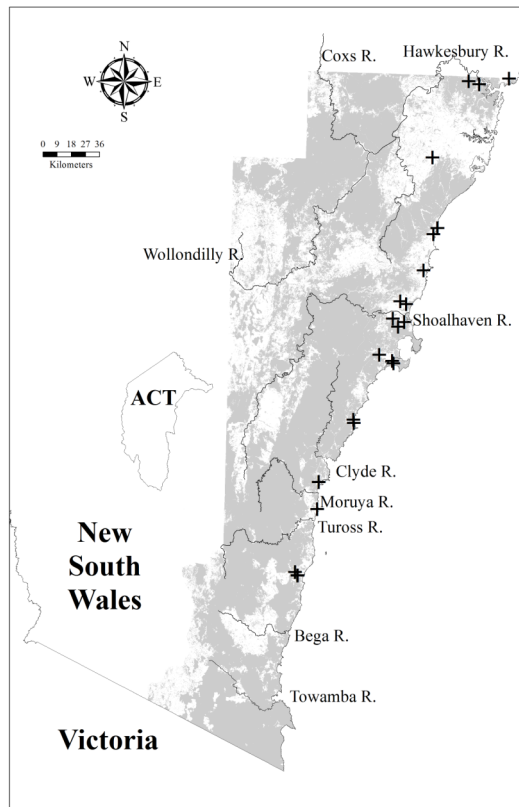
Species	C/A	Freq	C/A O	Freq O
<i>Alternanthera denticulata</i>	1(1-1)	41	1(1-1)	<1
<i>Carex appressa</i>	1(1-2)	48	1(1-1)	4
<i>Casuarina glauca</i>	3(3-4)	79	1(1-3)	1
<i>Centella asiatica</i>	1(1-1)	38	1(1-1)	4
<i>Commelina cyanea</i>	1(1-1)	55	1(1-1)	4
<i>Cynodon dactylon</i>	1(1-2)	31	1(1-2)	1
<i>Entolasia marginata</i>	1(1-1)	38	1(1-1)	11
<i>Gahnia clarkei</i>	2(1-3)	24	1(1-2)	2
<i>Juncus kraussii</i> subsp. <i>australiensis</i>	1(1-1)	24	2(1-3)	1
<i>Juncus usitatus</i>	1(1-1)	21	1(1-1)	2
<i>Lobelia anceps</i>	1(1-1)	28	1(1-1)	1
<i>Melaleuca ericifolia</i>	2(1-3)	28	2(1-4)	1
<i>Oplismenus imbecillis</i>	1(1-1)	38	1(1-2)	14
<i>Parsonsia straminea</i>	1(1-2)	86	1(1-1)	6
<i>Phragmites australis</i>	1(1-2)	41	1(1-2)	1
<i>Rumex brownii</i>	1(1-1)	21	1(1-1)	5
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	31	1(1-1)	7

**Constant:**

Species	C/A	Freq	C/A O	Freq O
<i>Microlaena stipoides</i>	1(1-2)	45	1(1-2)	36
<i>Viola hederacea</i>	1(1-1)	34	1(1-1)	22

**Other tree species occurring less frequently in this community:**

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	3(3-3)	3	2(1-3)	1
<i>Eucalyptus bosistoana</i>	1(1-1)	7	1(1-2)	3
<i>Eucalyptus botryoides</i>	3(1-3)	14	2(1-3)	3
<i>Eucalyptus robusta</i>	2(1-3)	10	3(1-3)	<1
<i>Eucalyptus tereticornis</i>	1(1-1)	3	2(1-3)	7



Locations of survey sites allocated to FoW p105. Grey shading indicates extant native vegetation cover within the study area.

### FoW p106: Estuarine Fringe Forest



Plate p106. Estuarine Fringe Forest (Map Unit 106) beside Captain Cook Drive at Towra Point, with a dense canopy of *Casuarina glauca* above a continuous groundcover of *Juncus kraussii* subsp. *australiensis*.

Sample Sites: 33  
 Area Extant (ha): 840  
 Estimated % remaining: 5-20%  
 Area in conservation reserves (ha): 140  
 Estimated % of pre-clearing area in conservation reserves: <5%  
 No. taxa (total / unique): 58 / 0  
 No. taxa per plot ( $\pm$ sd): 5.7 (4.5)  
 Class: Coastal Floodplain Wetlands

Related TEC: included within the Swamp Oak Forest on Coastal Floodplains EEC (TSC).

Estuarine Fringe Forest (FoW p106) represents a revision and extension of FoW 106 identified by Tindall *et al.* (2004), based on additional samples over a larger study area. It includes some recent sites classified by Beukers (undated) as Estuarine Tea Tree Scrub. This unit is a low forest characterised by a rather dense non-eucalypt tree canopy, an open shrub stratum and a continuous groundcover tolerant of saline groundwater. This unit is restricted to sandy saline sediments fringing the high tide mark on the margins of tidal lakes, lagoons, inlets and river estuaries at elevations less than 5m ASL. It occurs in estuaries and tidal lakes along the length of the study area coastline, including the Hawkesbury, Georges, Hacking, Shoalhaven, Clyde, Moruya, Bermagui, Bega and Pambula rivers, and near the tidal mouths of St Georges Basin and Lake Illawarra. It is likely to also extend north and south of the study area. Estuarine Fringe Forest shares several species with Floodplain Swamp Forest (FoW p105), but occupies increasingly saline environments, indicated by its increased dominance of halophytic taxa.

Estuarine Fringe Forest has been greatly reduced by coastal development. It continues to be threatened by landfill and further clearing, weed invasion and recreational pressures.

#### Floristic Summary:

**Trees:** *Casuarina glauca*. **Shrubs:** *Myoporum australis*. **Groundcover:** *Juncus kraussii ssp. australiensis*, *Samolus repens*, *Sarcocornia quinqueflora*, *Suaeda australis*, *Baumea juncea*, *Cynodon dactylon*.

#### Vegetation structure:

Stratum	Frequency (n=11)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	73	9.8 (7.9)	43.8 (29.1)
Small tree	18	7 (4.2)	25 (21.2)
Shrub	18	2.5 (0.7)	22 (25.5)
Ground cover	91	1 (0.4)	65.5 (21)

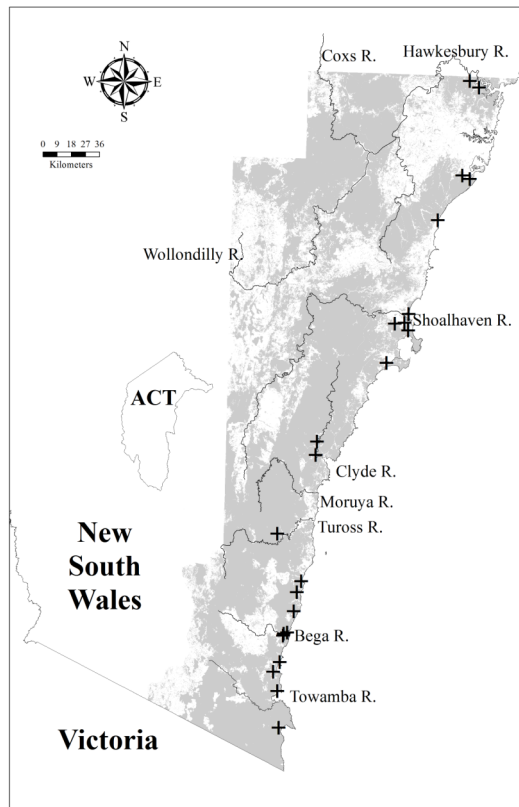
#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 1 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 2 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 1 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Baumea juncea</i>	2(1-2)	30	2(1-3)	1
<i>Casuarina glauca</i>	3(2-3)	42	2(1-3)	1
<i>Juncus kraussii</i> subsp. <i>australiensis</i>	3(3-4)	100	1(1-2)	1
<i>Lobelia anceps</i>	1(1-1)	21	1(1-1)	1
<i>Myoporum acuminatum</i>	1(1-3)	21	1(1-2)	<1
<i>Phragmites australis</i>	2(2-4)	27	1(1-2)	1
<i>Samolus repens</i>	1(1-2)	61	1(1-2)	1
<i>Sarcocornia quinqueflora</i> subsp. <i>quinqueflora</i>	1(1-1)	36	2(1-4)	1





Locations of survey sites allocated to FoW p106. Grey shading indicates extant native vegetation cover within the study area.

### FoW p107: Estuarine Creekflat Scrub



Plate p107. Estuarine Creek flat Scrub (Map Unit p107) at Brundee Swamp east of Nowra, where a dense thicket of *Melaleuca ericifolia* and *M. linariifolia* hides a sparse groundcover of sedges and salt-tolerant forbs.

Sample Sites: 35  
 Area Extant (ha): 3700  
 Estimated % remaining: 70-85%  
 Area in conservation reserves (ha): 1200  
 Estimated % of pre-clearing area in conservation reserves: 15-30%  
 No. taxa (total / unique): 139 / 0  
 No. taxa per plot ( $\pm$ sd): 10.5 (6.6)  
 Class: Coastal Floodplain Wetlands

Related TEC: included within Swamp Oak Forest on Coastal Floodplains EEC (TSC).

Estuarine Creekflat Scrub (FoW p107) represents an extension of FoW 107 identified by Tindall *et al.* (2004), based on additional samples over a larger study area. It includes some recent sites classified by Beukers (undated) as Estuarine Tea Tree Scrub.

This unit is a dense scrub with a continuous groundcover of sedges and forbs, and is recorded from scattered localities along the entire study area coastline from Cockle Bay (Brisbane Water) in the north to Nadgee Lake in the south. Within this distribution Estuarine Creekflat Scrub is restricted to shores of estuarine lagoons and brackish lakes, wetlands and creek flats below 10m ASL. Other occurrences include Botany Bay, Lake Illawarra, Minnamurra estuary, Brundee Swamp and Comerong Island, Tabourie, Termiel, Meroo, Durras and Wallagoot lakes, and at Tathra and Merimbula, and at Pedro Swamp near Moruya. Estuarine Creekflat Scrub shares a number of species with Estuarine Fringe Forest (FoW p106) but is found at sites that are likely to have marginally lower soil salinity.

Estuarine Creekflat Scrub's naturally restricted distribution has been reduced by coastal development.

#### Floristic Summary:

**Trees:** *Melaleuca ericifolia*, *Casuarina glauca*. **Climbers:** *Parsonsia straminea*. **Groundcover:** *Baumea juncea*, *Lobelia alata*, *Baumea articulata*, *Leptinella longipes*, *Samolus repens*, *Selliera radicans*.

#### Vegetation structure:

Stratum	Frequency (n=10)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	10	12 (-)	5 (-)
Tree canopy	90	10.6 (7.1)	32 (26.6)
Small tree	50	8.2 (4)	44 (23.8)
Shrub	30	2.2 (0.8)	16.7 (5.8)
Ground cover	100	1.1 (0.2)	66 (27.9)

#### Diagnostic Species:

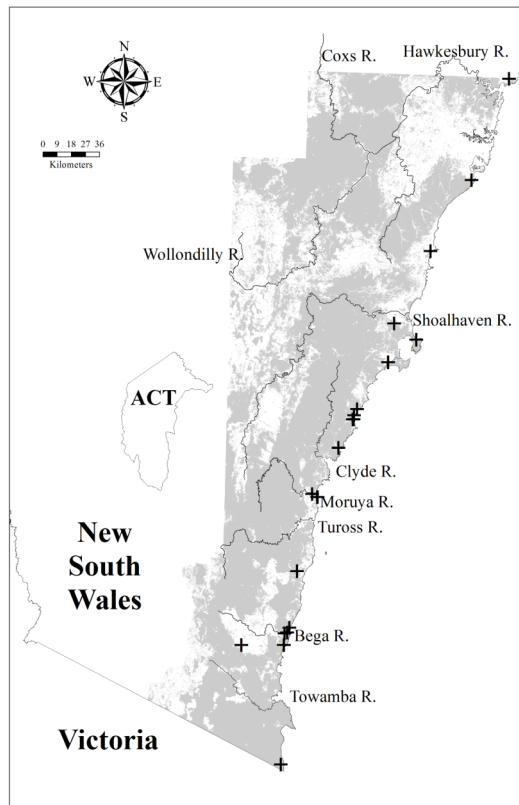
A 0.04ha plot located in this Map Unit is expected to contain at least 1 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 5 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 1 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Apium prostratum</i>	1(1-2)	31	1(1-1)	<1
<i>Baumea articulata</i>	1(1-2)	20	1(1-2)	<1
<i>Baumea juncea</i>	3(2-4)	69	1(1-2)	<1
<i>Casuarina glauca</i>	1(1-2)	40	2(1-3)	1
<i>Gahnia sieberiana</i>	1(1-1)	20	1(1-1)	5
<i>Isolepis nodosa</i>	1(1-1)	26	1(1-1)	1
<i>Juncus kraussii</i> subsp. <i>australiensis</i>	1(1-1)	26	2(1-3)	1
<i>Lobelia anceps</i>	1(1-1)	37	1(1-1)	1
<i>Melaleuca ericifolia</i>	4(3-5)	71	2(1-3)	1
<i>Parsonsia straminea</i>	1(1-1)	31	1(1-1)	7
<i>Phragmites australis</i>	2(1-2)	31	1(1-2)	1
<i>Samolus repens</i>	1(1-2)	34	1(1-2)	1
<i>Selliera radicans</i>	1(1-2)	29	1(1-2)	<1

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus bosistoana</i>	1(1-1)	6	1(1-2)	3
<i>Eucalyptus botryoides</i>	2(1-4)	11	2(1-3)	3
<i>Eucalyptus tereticornis</i>	3(3-3)	3	2(1-3)	7



Locations of survey sites allocated to FoW p107. Grey shading indicates extant native vegetation cover within the study area.

### SL p109: Estuarine Mangrove Forest



Plate p109. Estuarine Mangrove Forest (Map Unit p109), with *Avicennia marina* subsp. *australasica* on tidal mud flats at Narooma.

Sample Sites: 44  
 Area Extant (ha): 3700  
 Estimated % remaining: 50-75%  
 Area in conservation reserves (ha): 740  
 Estimated % of pre-clearing area in conservation reserves: <15%  
 No. taxa (total / unique): 47 / 0  
 No. taxa per plot ( $\pm$ sd): 4.3 (5.4)  
 Class: Mangrove Forests



Related TEC: Protected Marine Vegetation under the *Fisheries Management Act 1994*.

Estuarine Mangrove Forest (SL p109) represents the merging of SL 109 of Tindall *et al.* (2004) with unit 66 (Estuarine Wetland - Grey Mangrove) of Keith & Bedward (1999), and some recent sites classified by Beukers (undated) as Mangrove Forest.

This map unit is a low forest characterised by a dense tree/scrub canopy over bare mud or a patchy herbaceous groundcover. It has a scattered coastal distribution extending the length of the study area and continuing to the north and south. Estuarine Mangrove Forest is restricted to mudflats exposed to daily tidal inundation. The largest occurrences are found in the estuaries of the Clyde and Shoalhaven Rivers and in Botany Bay, and smaller areas are dotted along the entire coastline in estuaries, sheltered bays and tidal lakes.

Estuarine Mangrove Forest shares some species with Estuarine Saltmarsh (SL p509), and these two units intergrade readily over short distances with small changes in elevation and soil salinity. Estuarine Mangrove Forest is readily distinguished from Estuarine Saltmarsh by its mangrove tree canopy.

Although relatively robust to disturbance, some mangrove areas have been lost to landfill and urban development., mostly in the Sydney-Illawarra region.

#### Floristic Summary:

**Trees:** *Avicennia marina* subsp. *australasica*, *Aegiceras corniculata*. **Groundcover:** *Sarcocornia quinqueflora*.

#### Vegetation structure:

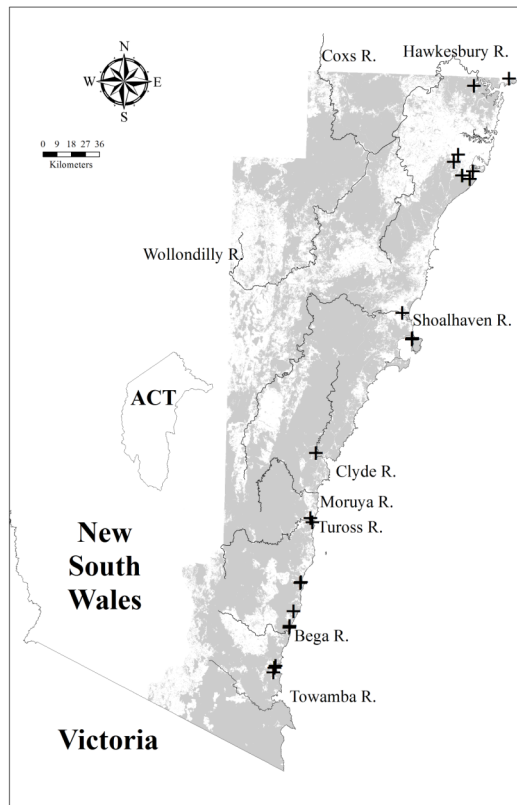
Stratum	Frequency (n=9)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	78	7 (4.6)	47.9 (27.2)
Small tree	-	- (-)	- (-)
Shrub	22	2 (1.4)	17.5 (3.5)
Ground cover	100	0.8 (0.6)	35.2 (29.7)

#### Diagnostic Species:

This unit is typically species-poor, therefore a 0.04ha sample plot may not contain any of the diagnostic species listed. In that case the characteristic mangrove tree or shrub canopy will usually be evident in adjacent areas and is distinctive enough that it is unlikely to be confused with other units.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Aegiceras corniculatum</i>	2(1-3)	55	2(2-2)	<1
<i>Avicennia marina</i> subsp. <i>australasica</i>	3(2-4)	89	2(1-2)	<1
<i>Samolus repens</i>	2(1-4)	45	1(1-2)	1
<i>Sarcocornia quinqueflora</i> subsp. <i>quinqueflora</i>	1(1-2)	66	3(2-4)	1
<i>Sclerostegia arbuscula</i>	3(3-4)	18	3(2-3)	<1



Locations of survey sites allocated to SL p109. Grey shading indicates extant native vegetation cover within the study area.

### WSF p110: Warm Temperate Layered Forest



Plate p110. Warm Temperate Layered Forest (Map Unit p110) at Knights Hill on the Budderoo Plateau, showing a very tall canopy dominated by *Eucalyptus fastigata* and *E. smithii*, a dense sub canopy of *Acmena smithii*, *Doryphora sassafras* and emergent *Cyathea australis*. Vines including *Eustrephus latifolius*, *Smilax australis*, *Pandorea pandorana* and *Stephania japonica* are prolific. The sparse groundcover is dominated by small ferns and herbs such as *Doodia aspera*, *Pseuderanthemum variable* and *Oplismenus imbecillis*.

Sample Sites: 103  
 Area Extant (ha): 21500  
 Estimated % remaining: 55-70%  
 Area in conservation reserves (ha): 4500  
 Estimated % of pre-clearing area in conservation reserves: 5-20%  
 No. taxa (total / unique): 344 / 6  
 No. taxa per plot ( $\pm$ sd): 41.3 (12.4)  
 Class: North Coast Wet Sclerophyll Forests  
 Related TEC: n/a

Warm Temperate Layered Forest (WSF p110) is equivalent to WSF 110 identified by Tindall *et al.* (2004). This unit is a tall eucalypt forest characterised by an open eucalypt canopy, a dense small tree subcanopy and a moist shrubby understorey. Warm Temperate Layered Forest occurs predominantly south from the Hacking River along the Illawarra scarp, to Nowra and throughout the Kangaroo Valley. Localised occurrences are also recorded from sites as far south as Durras Mountain and as far north as Ku-ring-gai Chase National Park. Within this area it is found below 400m on sheltered slopes in gullies and on escarpments with loamy soils where mean annual rainfall exceeds 1000mm. Warm Temperate Layered Forest frequently adjoins Subtropical and Warm Temperate rainforest map units, and contains several rainforest taxa below its eucalypt canopy.

About half of the original range of Warm Temperate Layered Forest has been cleared, mainly in the Illawarra lowlands, adjoining lower slopes of the escarpment and in the Kangaroo Valley.

#### Floristic Summary:

**Trees:** *Acmena smithii*, *Livistona australis*, *Synoum glandulosum*, *Pittosporum undulatum*, *Cryptocarya glaucescens*, *Eucalyptus saligna* X *botryoides*, *E. quadrangulata*. **Shrubs:** *Notelaea venosa*, *Clerodendrum tomentosum*, *Eupomatia laurina*. **Climbers:** *Eustrephus latifolius*, *Smilax australis*, *Pandorea pandorana*, *Geitonoplesium cymosum*, *Morinda jasminoides*, *Marsdenia rostrata*, *Tylophora barbata*, *Stephania japonica*. **Groundcover:** *Doodia aspera*, *Pseuderanthemum variabile*, *Oplismenus imbecillis*, *Gymnostachys anceps*, *Blechnum cartilagineum*.

#### Vegetation structure:

Stratum	Frequency (n=87)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	9	30.6 (9)	25 (13.2)
Tree canopy	100	29.7 (8.5)	40.9 (16.8)
Small tree	93	12.4 (5.1)	61.2 (26.4)
Shrub	14	2.4 (0.6)	30.8 (28.7)
Ground cover	97	1 (0.4)	29.4 (27.4)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 25 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 31 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 25 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia binervata</i>	2(1-3)	20	1(1-2)	2
<i>Acacia maidenii</i>	1(1-2)	28	1(1-1)	2
<i>Acmena smithii</i>	2(1-3)	81	2(1-3)	8
<i>Acronychia oblongifolia</i>	1(1-3)	15	1(1-3)	1
<i>Adiantum formosum</i>	2(1-3)	49	2(1-3)	2
<i>Adiantum hispidulum</i>	1(1-2)	13	1(1-1)	2
<i>Alectryon subcinereus</i>	1(1-1)	22	1(1-1)	2
<i>Alphitonia excelsa</i>	1(1-1)	16	1(1-2)	1
<i>Aneilema acuminatum</i>	1(1-1)	10	1(1-1)	<1
<i>Aneilema biflorum</i>	1(1-2)	5	1(1-1)	<1
<i>Aphanopetalum resinosum</i>	1(1-2)	15	2(1-3)	4
<i>Archontophoenix cunninghamiana</i>	1(1-1)	4	2(1-3)	<1
<i>Arthropteris tenella</i>	1(1-1)	12	2(1-2)	2
<i>Asplenium flabellifolium</i>	1(1-1)	33	1(1-1)	11

<i>Backhousia myrtifolia</i>	1(1-3)	23	2(1-3)	5
<i>Blechnum cartilagineum</i>	1(1-1)	50	1(1-2)	11
<i>Brachychiton acerifolius</i>	1(1-1)	15	1(1-1)	<1
<i>Breynia oblongifolia</i>	1(1-1)	42	1(1-1)	12
<i>Calochlaena dubia</i>	2(1-3)	44	1(1-3)	9
<i>Calystegia marginata</i>	1(1-1)	4	1(1-1)	<1
<i>Carex appressa</i>	1(1-1)	13	1(1-1)	4
<i>Carex brunnea</i>	2(1-3)	4	1(1-2)	<1
<i>Carex longebrachiata</i>	1(1-1)	14	1(1-2)	3
<i>Cassine australis</i> var. <i>australis</i>	1(1-2)	38	1(1-3)	2
<i>Cayratia clematidea</i>	1(1-1)	16	1(1-1)	2
<i>Ceratopetalum apetalum</i>	1(1-3)	17	3(1-3)	3
<i>Cinnamomum oliveri</i>	1(1-3)	4	1(1-4)	<1
<i>Cissus antarctica</i>	1(1-1)	33	1(1-2)	2
<i>Cissus hypoglaucia</i>	1(1-1)	48	1(1-2)	9
<i>Claoxylon australe</i>	1(1-2)	36	1(1-2)	3
<i>Clerodendrum tomentosum</i>	1(1-1)	64	1(1-1)	4
<i>Commersonia fraseri</i>	1(1-1)	10	1(1-1)	1
<i>Coprosma quadrifida</i>	1(1-1)	22	1(1-1)	9
<i>Croton verreauxii</i>	2(1-3)	13	2(1-3)	1
<i>Cryptocarya glaucescens</i>	3(1-3)	51	2(1-2)	2
<i>Cryptocarya microneura</i>	2(1-3)	44	1(1-2)	1
<i>Cyathea australis</i>	1(1-2)	26	1(1-2)	8
<i>Cyperus imbecillis</i>	1(1-1)	4	1(1-1)	<1
<i>Cyperus tetraphyllus</i>	1(1-1)	9	1(1-1)	<1
<i>Davallia solida</i> var. <i>pyxidata</i>	1(1-1)	4	1(1-1)	<1
<i>Diospyros australis</i>	1(1-1)	44	1(1-2)	2
<i>Dioscorea transversa</i>	1(1-1)	11	1(1-1)	<1
<i>Diploglottis australis</i>	1(1-1)	25	1(1-1)	1
<i>Doodia aspera</i>	2(1-2)	72	1(1-2)	11
<i>Doryphora sassafras</i>	2(1-3)	42	3(2-3)	3
<i>Duboisia myoporoides</i>	1(1-1)	6	1(1-1)	<1
<i>Ehretia acuminata</i> var. <i>acuminata</i>	1(1-1)	11	1(1-1)	1
<i>Elaeocarpus kirtonii</i>	1(1-1)	4	1(1-3)	<1
<i>Eucalyptus acmenoides</i>	2(1-2)	7	2(1-3)	<1
<i>Eucalyptus pilularis</i>	3(2-3)	24	2(1-3)	5
<i>Eucalyptus quadrangulata</i>	3(2-3)	29	3(1-3)	1
<i>Eucalyptus saligna</i> X <i>botryoides</i>	3(2-4)	45	2(1-3)	2
<i>Eucalyptus smithii</i>	3(1-4)	8	1(1-2)	2
<i>Eupomatia laurina</i>	1(1-2)	54	1(1-2)	3
<i>Eustrephus latifolius</i>	1(1-1)	88	1(1-1)	18
<i>Ficus coronata</i>	1(1-2)	28	1(1-2)	3
<i>Flagellaria indica</i>	1(1-2)	4	1(1-2)	<1
<i>Gahnia melanocarpa</i>	1(1-1)	15	1(1-1)	5
<i>Geitonoplesium cymosum</i>	1(1-1)	76	1(1-1)	15
<i>Glochidion ferdinandi</i> var. <i>ferdinandi</i>	1(1-3)	17	1(1-1)	2

<i>Glochidion ferdinandi</i> var. <i>pubens</i>	1(1-1)	4	1(1-2)	<1
<i>Guioa semiglauca</i>	1(1-3)	27	1(1-2)	1
<i>Gymnostachys anceps</i>	1(1-1)	56	1(1-2)	2
<i>Hedycarya angustifolia</i>	1(1-2)	12	1(1-3)	4
<i>Hibbertia dentata</i>	1(1-1)	17	1(1-1)	6
<i>Hibbertia scandens</i>	1(1-1)	22	1(1-1)	5
<i>Hypolepis muelleri</i>	1(1-1)	6	1(1-2)	1
<i>Lastreopsis decomposita</i>	2(1-2)	27	2(1-3)	3
<i>Lastreopsis microsora</i> subsp. <i>microsora</i>	1(1-3)	15	2(1-3)	4
<i>Litsea reticulata</i>	1(1-1)	6	1(1-3)	<1
<i>Livistona australis</i>	1(1-2)	79	1(1-1)	5
<i>Maclura cochinchinensis</i>	1(1-1)	8	1(1-2)	1
<i>Marsdenia flavescens</i>	1(1-1)	11	1(1-2)	2
<i>Marsdenia rostrata</i>	1(1-2)	65	1(1-2)	11
<i>Melicope micrococca</i>	1(1-2)	31	1(1-1)	1
<i>Melodinus australis</i>	1(1-1)	8	1(1-2)	<1
<i>Morinda jasminoides</i>	1(1-2)	74	1(1-2)	9
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-1)	20	1(1-1)	7
<i>Notelaea venosa</i>	1(1-3)	65	1(1-1)	11
<i>Omalanthus populifolius</i>	1(1-1)	20	1(1-1)	1
<i>Oplismenus imbecillis</i>	1(1-2)	61	1(1-2)	14
<i>Oxalis chnoodes</i>	1(1-1)	10	1(1-1)	1
<i>Palmeria scandens</i>	1(1-2)	19	2(1-2)	2
<i>Pandorea pandorana</i>	1(1-1)	77	1(1-1)	18
<i>Parsonsia straminea</i>	1(1-1)	28	1(1-1)	6
<i>Pellaea falcata</i>	1(1-1)	45	1(1-1)	10
<i>Pennantia cunninghamii</i>	1(1-1)	7	1(1-3)	1
<i>Piper novae-hollandiae</i>	1(1-1)	6	2(1-3)	1
<i>Pittosporum multiflorum</i>	1(1-2)	46	1(1-2)	3
<i>Pittosporum revolutum</i>	1(1-1)	38	1(1-1)	8
<i>Pittosporum undulatum</i>	1(1-3)	64	1(1-1)	14
<i>Polystichum australiense</i>	1(1-2)	15	1(1-2)	1
<i>Polyscias murrayi</i>	1(1-1)	7	1(1-1)	1
<i>Pseuderanthemum variabile</i>	1(1-2)	63	1(1-2)	8
<i>Psychotria loniceroides</i>	1(1-1)	32	1(1-1)	3
<i>Pteris tremula</i>	1(1-2)	4	1(1-1)	1
<i>Pyrrosia rupestris</i>	1(1-1)	26	1(1-2)	6
<i>Rapanea howittiana</i>	1(1-1)	22	1(1-1)	5
<i>Rapanea variabilis</i>	1(1-1)	31	1(1-1)	3
<i>Rhodamnia rubescens</i>	1(1-1)	36	1(1-1)	1
<i>Ripogonum fawcettianum</i>	1(1-1)	8	1(1-1)	<1
<i>Rubus moluccanus</i> var. <i>trilobus</i>	1(1-1)	17	1(1-1)	2
<i>Rubus nebulosus</i>	1(1-1)	15	1(1-1)	1
<i>Sarcopetalum harveyanum</i>	1(1-1)	34	1(1-1)	4
<i>Schizomeria ovata</i>	1(1-3)	15	1(1-2)	1
<i>Scolopia braunii</i>	1(1-1)	4	1(1-1)	<1

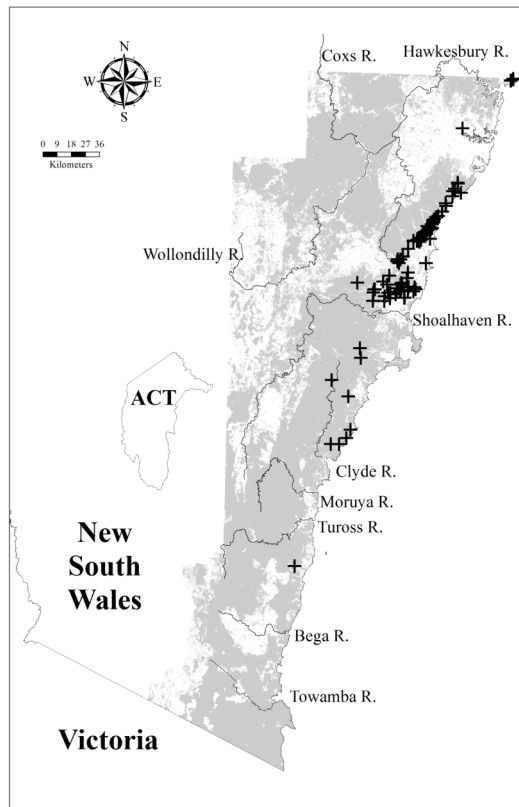
<i>Smilax australis</i>	1(1-2)	86	1(1-1)	15
<i>Stenocarpus salignus</i>	1(1-2)	22	1(1-1)	1
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	50	1(1-1)	6
<i>Streblus brunonianus</i>	1(1-1)	12	2(1-3)	1
<i>Symplocos thwaitesii</i>	1(1-1)	8	1(1-1)	<1
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	3(1-3)	41	2(1-3)	7
<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	1(1-2)	77	1(1-2)	6
<i>Tetrastigma nitens</i>	1(1-1)	6	1(1-1)	<1
<i>Toona ciliata</i>	1(1-3)	14	3(1-3)	1
<i>Tristaniopsis collina</i>	1(1-1)	11	1(1-2)	2
<i>Trochocarpa laurina</i>	1(1-2)	20	1(1-1)	<1
<i>Tylophora barbata</i>	1(1-1)	55	1(1-1)	16
<i>Wilkiea huegeliana</i>	1(1-1)	30	1(1-1)	1
<i>Zieria smithii</i>	1(1-1)	11	1(1-1)	2

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Lomandra longifolia</i>	1(1-1)	40	1(1-1)	44

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	5	1(1-2)	9
<i>Corymbia maculata</i>	1(1-1)	1	2(1-3)	3
<i>Eucalyptus botryoides</i>	3(1-3)	8	2(1-3)	3
<i>Eucalyptus cypellocarpa</i>	3(1-3)	2	2(1-2)	10
<i>Eucalyptus elata</i>	3(3-3)	2	2(1-2)	5
<i>Eucalyptus fastigata</i>	3(2-4)	8	2(1-3)	6
<i>Eucalyptus muelleriana</i>	3(3-4)	7	2(1-2)	6
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	3(1-3)	2	1(1-2)	3
<i>Eucalyptus punctata</i>	2(1-2)	3	1(1-3)	9
<i>Eucalyptus siderophloia</i>	1(1-1)	1	3(2-3)	<1



Locations of survey sites allocated to WSF p110. Grey shading indicates extant native vegetation cover within the study area.

### RF p111: Subtropical Dry Rainforest



Plate p111. Subtropical Dry Rainforest (Map Unit p111) at the end of Emperor's Crescent in Berkeley, with a highly modified, dense, low canopy of *Dendrocnide excelsa* and *Backhousia myrtifolia*. The sub canopy and groundcover contain a mix of species including *Pittosporum revolutum*, *Melicope micrococca*, *Adiantum formosum* and *Geitonoplesium cymosum*.

Sample Sites: 55

Area Extant (ha): 2400

Estimated % remaining: 10-20%

Area in conservation reserves (ha): 130

Estimated % of pre-clearing area in conservation reserves: <2%

No. taxa (total / unique): 234 / 6



No. taxa per plot ( $\pm$ sd): 40.1 (8.5)

Class: Subtropical Rainforests

Related TECs: Illawarra Subtropical Rainforest EEC and Milton Ulladulla Subtropical Rainforest EEC (TSC).

Subtropical Dry Rainforest (RF p111) is equivalent to RF 111 identified by Tindall *et al.* (2004), and represents a low closed forest characterised by a dense tree canopy, a prominent small tree/shrub stratum and a sparse groundcover. This rainforest occurs on coastal lowlands between Mt Kiera and Nowra with a southern occurrence near Milton. Within this range it is largely restricted to dry slopes on fertile soils associated with Gerringong volcanics, Milton Monzonite or Cordeaux Crinanite at altitudes less than 350m ASL and with a mean annual rainfall of 1000-1600mm.

Subtropical Dry Rainforest is closely related to Subtropical Complex Rainforest (RF p112), both occurring on fertile soils in the Kiama and Milton areas, however Subtropical Dry Rainforest replaces Complex rainforest in sites experiencing lower moisture availability due to either rainfall, aspect, topographic position and soil depth or some combination of these factors.

The original distribution of Subtropical Dry Rainforest is now highly fragmented by land clearing. Remaining fragments tend to be degraded and continue to be threatened by weed invasion, grazing, fire and urban expansion.

#### Floristic Summary:

**Trees:** *Streblus brunonianus*, *Alectryon subcinereus*, *Pittosporum undulatum*, *Diospyros australis*. **Shrubs:** *Notelaea venosa*, *Cassine australis*, *Clerodendrum tomentosum*, *Pittosporum multiflorum*, *Breynia oblongifolia*, *Croton verreauxii*, *Rapanea variabilis*, *Maclura cochinchinensis*, *Pittosporum revolutum*. **Climbers:** *Geitonoplesium cymosum*, *Eustrephus latifolius*, *Pandorea pandorana*, *Parsonsia straminea*, *Marsdenia rostrata*, *Smilax australis*. **Groundcover:** *Oplismenus imbecillis*, *Pellaea falcata*, *Pseuderanthemum variabile*, *Asplenium flabellifolium*, *Gymnostachys anceps*, *Doodia aspera*.

#### Vegetation structure:

Stratum	Frequency (n=51)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	14	23.4 (6.5)	15.8 (9.7)
Tree canopy	98	20.6 (7.2)	48 (23.8)
Small tree	82	11.2 (3.7)	68.7 (27.9)
Shrub	29	2.4 (0.7)	15.5 (14.1)
Ground cover	96	0.9 (0.3)	24.4 (19)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 25 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 33 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 25 positive diagnostic species.

#### Positive Diagnostic Species:

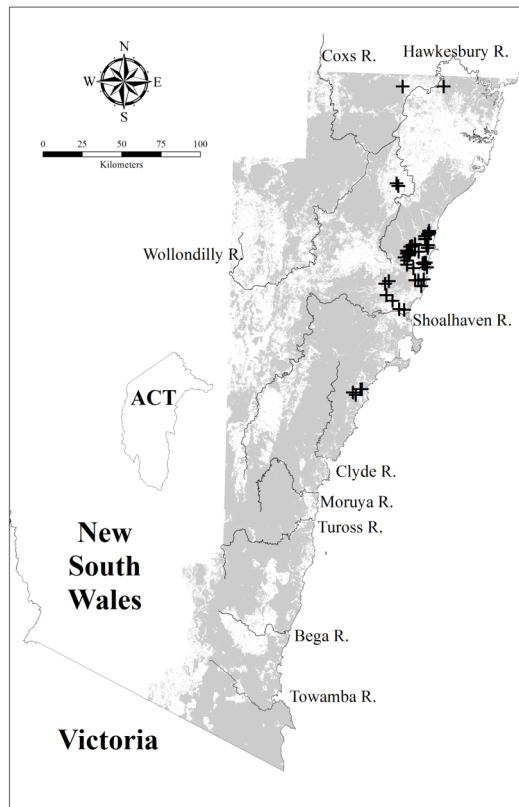
Species	C/A	Freq	C/A O	Freq O
<i>Abutilon oxycarpum</i> var. <i>oxycarpum</i>	1(1-1)	20	1(1-1)	<1
<i>Acacia maidenii</i>	1(1-1)	40	1(1-1)	2
<i>Acmena smithii</i>	1(1-3)	35	2(1-3)	9
<i>Acronychia oblongifolia</i>	3(1-3)	20	1(1-2)	1
<i>Adiantum aethiopicum</i>	2(1-2)	29	1(1-1)	9
<i>Adiantum formosum</i>	2(1-3)	44	2(1-3)	3
<i>Adiantum hispidulum</i>	1(1-2)	18	1(1-1)	2
<i>Alectryon subcinereus</i>	1(1-2)	75	1(1-1)	2
<i>Alphitonia excelsa</i>	1(1-3)	42	1(1-1)	1
<i>Aneilema acuminatum</i>	1(1-1)	20	1(1-1)	<1
<i>Aphanopetalum resinosum</i>	1(1-2)	49	2(1-3)	4
<i>Arthropteris tenella</i>	1(1-2)	31	2(1-2)	2
<i>Asplenium australasicum</i> forma <i>australasicum</i>	1(1-1)	18	1(1-2)	2
<i>Asplenium flabellifolium</i>	1(1-2)	71	1(1-1)	11
<i>Backhousia myrtifolia</i>	3(3-4)	31	2(1-3)	5
<i>Baloghia inophylla</i>	3(3-3)	15	3(1-3)	1

<i>Breynia oblongifolia</i>	1(1-1)	65	1(1-1)	12
<i>Callistemon salignus</i>	1(1-3)	24	1(1-3)	<1
<i>Carex longebrachiata</i>	2(1-2)	40	1(1-2)	3
<i>Cassine australis</i> var. <i>australis</i>	3(2-3)	80	1(1-2)	2
<i>Cayratia clematidea</i>	1(1-1)	42	1(1-1)	2
<i>Celastrus australis</i>	1(1-2)	36	1(1-1)	2
<i>Cissus antarctica</i>	2(1-2)	24	1(1-1)	3
<i>Claoxylon australe</i>	1(1-1)	36	1(1-2)	3
<i>Clerodendrum tomentosum</i>	1(1-1)	71	1(1-1)	4
<i>Commelina cyanea</i>	1(1-1)	25	1(1-1)	4
<i>Croton verreauxii</i>	3(1-3)	53	1(1-3)	<1
<i>Cryptocarya microneura</i>	2(1-3)	29	1(1-2)	2
<i>Cynanchum elegans</i>	1(1-1)	18	2(1-2)	<1
<i>Cyperus laevis</i>	1(1-1)	13	1(1-1)	1
<i>Cyperus tetraphyllus</i>	1(1-1)	25	1(1-1)	<1
<i>Dendrocnide excelsa</i>	2(1-3)	18	2(1-3)	1
<i>Diospyros australis</i>	1(1-3)	60	1(1-2)	3
<i>Doodia aspera</i>	2(1-3)	60	1(1-2)	11
<i>Ehretia acuminata</i> var. <i>acuminata</i>	1(1-3)	25	1(1-1)	1
<i>Eucalyptus quadrangulata</i>	3(2-4)	25	3(1-3)	1
<i>Eucalyptus tereticornis</i>	3(1-4)	27	2(1-3)	7
<i>Eustrephus latifolius</i>	1(1-1)	91	1(1-1)	19
<i>Ficus coronata</i>	2(1-3)	18	1(1-2)	4
<i>Geitonoplesium cymosum</i>	1(1-1)	93	1(1-1)	15
<i>Glochidion ferdinandi</i> var. <i>ferdinandi</i>	1(1-3)	13	1(1-1)	2
<i>Guioa semiglauca</i>	1(1-2)	47	1(1-2)	1
<i>Gymnostachys anceps</i>	1(1-2)	64	1(1-2)	3
<i>Hibiscus heterophyllus</i> subsp. <i>heterophyllus</i>	1(1-1)	24	1(1-1)	<1
<i>Hymenanthera dentata</i>	1(1-2)	33	1(1-1)	6
<i>Lastreopsis decomposita</i>	1(1-3)	16	2(1-3)	3
<i>Legnephora moorei</i>	1(1-1)	22	1(1-1)	<1
<i>Maclura cochinchinensis</i>	1(1-2)	49	1(1-1)	<1
<i>Marsdenia flavescens</i>	1(1-2)	35	1(1-1)	2
<i>Marsdenia rostrata</i>	1(1-1)	62	1(1-2)	12
<i>Melaleuca styphelioides</i>	3(3-4)	18	2(1-3)	1
<i>Melicope micrococca</i>	1(1-3)	36	1(1-1)	1
<i>Morinda jasminoides</i>	1(1-2)	40	1(1-2)	9
<i>Notelaea venosa</i>	3(1-3)	82	1(1-1)	11
<i>Oplismenus aemulus</i>	1(1-3)	16	1(1-2)	5
<i>Oplismenus imbecillis</i>	2(1-2)	78	1(1-2)	14
<i>Pandorea pandorana</i>	1(1-1)	87	1(1-1)	18
<i>Parsonsia straminea</i>	1(1-2)	64	1(1-1)	6
<i>Pellaea falcata</i>	1(1-2)	75	1(1-1)	10
<i>Pittosporum multiflorum</i>	2(1-2)	69	1(1-2)	3
<i>Pittosporum revolutum</i>	1(1-1)	53	1(1-1)	8
<i>Pittosporum undulatum</i>	1(1-3)	64	1(1-1)	14

<i>Plectranthus parviflorus</i>	1(1-1)	33	1(1-1)	7
<i>Pouteria australis</i>	3(1-3)	38	2(1-3)	<1
<i>Pseuderanthemum variabile</i>	1(1-2)	75	1(1-2)	8
<i>Pyrrosia rupestris</i>	1(1-1)	24	1(1-2)	6
<i>Rapanea variabilis</i>	1(1-3)	53	1(1-1)	3
<i>Rhodamnia rubescens</i>	1(1-1)	20	1(1-1)	1
<i>Sarcopetalum harveyanum</i>	1(1-1)	20	1(1-1)	4
<i>Sarcomelicope simplicifolia</i> subsp. <i>simplicifolia</i>	1(1-3)	18	1(1-2)	<1
<i>Scolopia braunii</i>	1(1-3)	16	1(1-1)	<1
<i>Smilax australis</i>	1(1-2)	53	1(1-1)	16
<i>Stellaria flaccida</i>	1(1-2)	33	1(1-1)	10
<i>Stenocarpus salignus</i>	1(1-3)	15	1(1-1)	2
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	44	1(1-1)	6
<i>Streblus brunonianus</i>	3(1-3)	87	1(1-2)	1
<i>Toona ciliata</i>	2(1-3)	25	3(1-3)	1
<i>Trophis scandens</i> subsp. <i>scandens</i>	1(1-2)	27	1(1-2)	1
<i>Wilkiea huegeliana</i>	1(1-2)	35	1(1-1)	1

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	3(1-3)	5	1(1-2)	9
<i>Corymbia maculata</i>	3(3-3)	2	2(1-3)	3
<i>Eucalyptus bosistoana</i>	3(3-3)	2	1(1-2)	3
<i>Eucalyptus botryoides</i>	3(3-3)	2	2(1-3)	3
<i>Eucalyptus deanei</i>	2(2-2)	2	3(1-3)	1
<i>Eucalyptus eugenioides</i>	3(3-3)	2	2(1-3)	4
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	4(3-4)	4	1(1-2)	3
<i>Eucalyptus pilularis</i>	1(1-1)	2	2(1-3)	5
<i>Eucalyptus saligna</i> X <i>botryoides</i>	3(3-3)	11	2(1-3)	2
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	4(3-4)	7	2(1-3)	8



Locations of survey sites allocated to RF p111. Grey shading indicates extant native vegetation cover within the study area.

### RF p112: Subtropical Complex Rainforest



Plate p112. Subtropical Complex Rainforest (Map Unit p112) at Thirroul below Bulli Lookout. *Ficus obliqua*, *Pittosporum undulatum* and *Ceratopetalum apetalum* dominate the canopy, decorated by numerous lianes such as *Palmeria scandens*, and *Pandorea pandorana*, with a groundcover dominated by palms and ferns including *Livistona australis*, *Calochlaena dubia* and *Microsorium scandens*.

Sample Sites: 62

Area Extant (ha): 4100

Estimated % remaining: 50-65%

Area in conservation reserves (ha): 440

Estimated % of pre-clearing area in conservation reserves: <10%

No. taxa (total / unique): 188 / 0

No. taxa per plot ( $\pm$ sd): 38.7 (8.3)

Class: Subtropical Rainforests

Related TEC: includes areas of Illawarra Subtropical Rainforest EEC and Milton Ulladulla Subtropical Rainforest EEC (TSC).

Subtropical Complex Rainforest (RF p112) is equivalent to RF 112 identified by Tindall *et al.* (2004). This unit is a complex closed forest characterised by a dense and diverse tree canopy supporting various lianas, a subcanopy layer of small trees, a sparse shrub layer, an open fern dominated groundcover and occasional large trees emerging above the closed canopy. This unit is distributed in the Illawarra between Scarborough and Cambewarra, with a disjunct occurrence further south at Milton. Within this distribution Subtropical Complex Rainforest is restricted to soils derived from Gerringong Volcanics near Kiama, soils derived from monzonite in gullies around Milton, and slopes and benches of the Illawarra scarp from 0 - 300m ASL where latite, shale and coal seams are exposed and annual rainfall is greater than 1300mm. With decreasing moisture availability Subtropical Complex Rainforest intergrades with the closely related Subtropical Dry Rainforest (RF p111). On poorer soils Subtropical Complex Rainforest is replaced by Coastal Warm Temperate Rainforest (RF p113).

Being restricted to moist, fertile lowland sites, much of the original extent of Subtropical Complex Rainforest has been cleared for agriculture, and remaining fragments tend to be degraded and continue to be threatened by weed invasion, grazing, fire and urban expansion.

#### Floristic Summary:

**Trees:** *Livistona australis*, *Doryphora sassafras*, *Acmena smithii*, *Diospyros australis*, *Claoxylon australe*, *Dendrocnide excelsa*, *Pittosporum undulatum*, *Streblus brunonianus*, *Diploglottis australis*, *Ficus coronata*, *Alectryon subcinereus*, *Toona ciliata*. **Small Trees:** *Cassine australis*, *Clerodendrum tomentosum*, *Pennantia cunninghamii*, *Eupomatia laurina*. **Shrubs:** *Pittosporum multiflorum*. **Climbers:** *Eustrephus latifolius*, *Arthropteris tenella*, *Marsdenia rostrata*, *Microsorium scandens*, *Pandorea pandorana*, *Piper novae-hollandiae*, *Smilax australis*. **Groundcover:** *Gymnostachys anceps*, *Adiantum formosum*, *Pseuderanthemum variabile*, *Doodia aspera*.

#### Vegetation structure:

Stratum	Frequency (n=58)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	17	32.8 (7.1)	12 (14.3)
Tree canopy	100	27.2 (9.2)	65.9 (19.8)
Small tree	79	15.3 (7.4)	53.4 (32.5)
Shrub	26	2.2 (0.7)	18.4 (21.6)
Ground cover	98	0.9 (0.3)	26 (19.2)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 27 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 32 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 27 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia maidenii</i>	1(1-1)	11	1(1-1)	3
<i>Acmena smithii</i>	3(1-3)	74	2(1-3)	8
<i>Acronychia oblongifolia</i>	3(1-3)	13	1(1-3)	1
<i>Adiantum formosum</i>	2(1-3)	76	2(1-3)	2
<i>Adiantum hispidulum</i>	1(1-1)	10	1(1-1)	2
<i>Alectryon subcinereus</i>	1(1-1)	52	1(1-1)	2
<i>Alphitonia excelsa</i>	1(1-3)	11	1(1-1)	1
<i>Aneilema biflorum</i>	1(1-1)	11	1(1-1)	<1
<i>Aphanopetalum resinosum</i>	1(1-2)	19	2(1-3)	4
<i>Arthropteris tenella</i>	2(1-2)	87	1(1-2)	2
<i>Asplenium australasicum forma australasicum</i>	1(1-2)	39	1(1-2)	2
<i>Asplenium flabellifolium</i>	1(1-1)	32	1(1-1)	11
<i>Baloghia inophylla</i>	3(1-3)	44	3(2-3)	<1
<i>Blechnum patersonii</i> subsp. <i>patersonii</i>	1(1-2)	13	1(1-2)	2
<i>Brachychiton acerifolius</i>	1(1-3)	32	1(1-1)	<1

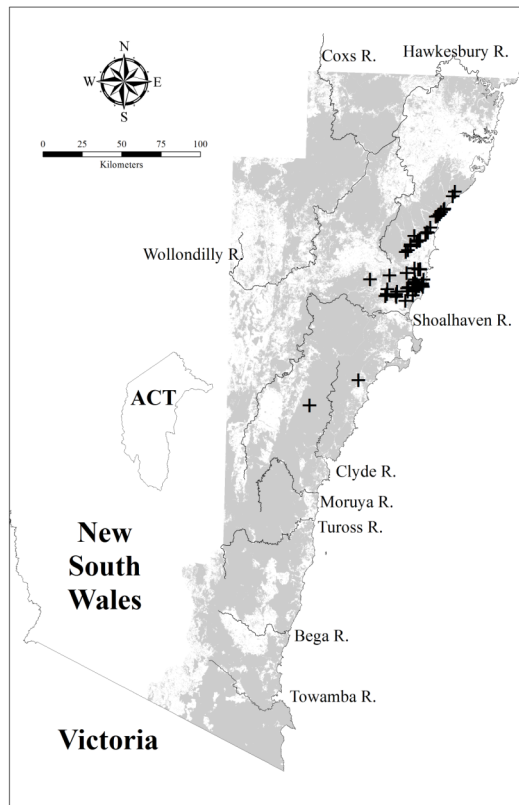
<i>Cassine australis</i> var. <i>australis</i>	1(1-2)	63	1(1-3)	2
<i>Celastrus australis</i>	1(1-2)	27	1(1-1)	2
<i>Cephalalaria cephalobotrys</i>	1(1-1)	10	1(1-1)	<1
<i>Ceratopetalum apetalum</i>	3(3-3)	26	3(1-3)	3
<i>Cinnamomum oliveri</i>	1(1-4)	15	1(1-3)	<1
<i>Cissus antarctica</i>	1(1-2)	37	1(1-2)	2
<i>Cissus hypoglauca</i>	1(1-3)	35	1(1-2)	9
<i>Citronella moorei</i>	1(1-3)	23	1(1-2)	1
<i>Claoxylon australe</i>	1(1-2)	61	1(1-2)	3
<i>Clerodendrum tomentosum</i>	1(1-1)	55	1(1-1)	4
<i>Croton verreauxii</i>	1(1-3)	11	2(1-3)	1
<i>Cryptocarya glaucescens</i>	2(1-3)	47	2(1-3)	3
<i>Cryptocarya microneura</i>	1(1-3)	48	1(1-2)	2
<i>Dendrocide excelsa</i>	3(1-3)	61	1(1-3)	1
<i>Diospyros australis</i>	1(1-1)	71	1(1-2)	2
<i>Diospyros pentamera</i>	1(1-3)	15	1(1-2)	<1
<i>Diploglottis australis</i>	1(1-1)	53	1(1-1)	1
<i>Doodia aspera</i>	1(1-2)	53	1(1-2)	11
<i>Doryphora sassafras</i>	3(3-4)	81	3(1-3)	3
<i>Ehretia acuminata</i> var. <i>acuminata</i>	1(1-3)	32	1(1-1)	1
<i>Elaeocarpus kirtonii</i>	3(1-3)	18	1(1-1)	<1
<i>Eucalyptus quadrangulata</i>	3(2-3)	18	3(1-3)	1
<i>Eucalyptus saligna</i> X <i>botryoides</i>	3(3-3)	10	2(1-3)	2
<i>Eupomatia laurina</i>	1(1-2)	52	1(1-2)	4
<i>Eustrephus latifolius</i>	1(1-1)	84	1(1-1)	19
<i>Ficus coronata</i>	3(1-3)	53	1(1-2)	3
<i>Ficus macrophylla</i> subsp. <i>macrophylla</i>	4(1-4)	13	1(1-3)	<1
<i>Ficus obliqua</i>	3(1-4)	13	1(1-1)	<1
<i>Geitonoplesium cymosum</i>	1(1-1)	50	1(1-1)	16
<i>Guioa semiglauc</i>	1(1-3)	44	1(1-2)	1
<i>Gymnostachys anceps</i>	1(1-2)	92	1(1-1)	2
<i>Lastreopsis acuminata</i>	1(1-1)	10	1(1-2)	2
<i>Lastreopsis decomposita</i>	3(2-3)	34	2(1-3)	3
<i>Lastreopsis microsora</i> subsp. <i>microsora</i>	1(1-3)	31	2(1-3)	4
<i>Legnephora moorei</i>	1(1-2)	27	1(1-1)	<1
<i>Litsea reticulata</i>	1(1-3)	23	1(1-1)	<1
<i>Livistona australis</i>	2(1-3)	87	1(1-1)	5
<i>Maclura cochinchinensis</i>	1(1-2)	16	1(1-2)	1
<i>Marsdenia flavescent</i>	1(1-1)	40	1(1-2)	2
<i>Marsdenia rostrata</i>	1(1-1)	77	1(1-2)	12
<i>Melicope micrococca</i>	1(1-1)	23	1(1-2)	1
<i>Melodinus australis</i>	2(1-2)	10	1(1-2)	<1
<i>Microsorium scandens</i>	2(1-2)	77	2(1-3)	3
<i>Morinda jasminoides</i>	1(1-2)	65	1(1-2)	9
<i>Notelaea venosa</i>	1(1-1)	34	1(1-1)	12
<i>Oplismenus imbecillis</i>	1(1-1)	34	1(1-2)	14

<i>Palmeria scandens</i>	1(1-2)	45	1(1-2)	1
<i>Pandorea pandorana</i>	2(1-3)	74	1(1-1)	18
<i>Parsonsia straminea</i>	1(1-1)	27	1(1-1)	7
<i>Pellaea falcata</i>	1(1-2)	31	1(1-1)	10
<i>Pennantia cunninghamii</i>	3(1-3)	53	1(1-1)	<1
<i>Piper novae-hollandiae</i>	1(1-3)	66	1(1-2)	<1
<i>Pittosporum multiflorum</i>	1(1-2)	65	1(1-2)	3
<i>Pittosporum undulatum</i>	1(1-3)	61	1(1-1)	14
<i>Podocarpus elatus</i>	1(1-3)	19	1(1-2)	<1
<i>Polyosma cunninghamii</i>	1(1-1)	34	1(1-2)	1
<i>Pouteria australis</i>	3(1-3)	35	1(1-3)	<1
<i>Pseuderanthemum variabile</i>	1(1-2)	66	1(1-2)	8
<i>Pteris umbrosa</i>	1(1-2)	34	2(1-3)	2
<i>Pyrrosia rupestris</i>	1(1-1)	21	1(1-2)	6
<i>Rapanea howittiana</i>	1(1-1)	19	1(1-1)	5
<i>Sarcopetalum harveyanum</i>	1(1-1)	19	1(1-1)	4
<i>Schizomeria ovata</i>	1(1-4)	11	1(1-2)	1
<i>Sloanea australis</i>	3(1-3)	19	1(1-3)	<1
<i>Smilax australis</i>	1(1-1)	66	1(1-1)	16
<i>Stenocarpus salignus</i>	1(1-1)	24	1(1-1)	2
<i>Streblus brunonianus</i>	1(1-3)	60	1(1-3)	1
<i>Symplocos thwaitesii</i>	1(1-1)	11	1(1-1)	<1
<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	1(1-1)	19	1(1-2)	7
<i>Syzygium australe</i>	3(1-3)	29	1(1-1)	<1
<i>Toona ciliata</i>	3(1-4)	52	1(1-3)	<1
<i>Trophis scandens</i> subsp. <i>scandens</i>	1(1-2)	42	1(1-2)	1
<i>Wilkiea huegeliana</i>	1(1-2)	47	1(1-1)	1

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus botryoides</i>	3(1-3)	5	2(1-3)	3
<i>Eucalyptus fastigata</i>	3(3-3)	2	2(1-3)	6
<i>Eucalyptus pilularis</i>	1(1-1)	2	2(1-3)	5
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	3(3-3)	3	2(1-3)	8





Locations of survey sites allocated to RF p112. Grey shading indicates extant native vegetation cover within the study area.

### RF p113: Coastal Warm Temperate Rainforest



Plate p113. Coastal Warm Temperate Rainforest (Map Unit p113) below Jamberoo Mountain Road at Dhruwalgha Mountain. Canopy includes *Ceratopetalum apetalum* and *Cryptocarya glaucescens*, while species visible in the understorey include *Gymnostachys anceps*, *Cyathea australis*, *Backhousia myrtifolia* and *Todea barbara*.

Sample Sites: 149

Area Extant (ha): 15200

Estimated % remaining: 85-95%

Area in conservation reserves (ha): 7900

Estimated % of pre-clearing area in conservation reserves: 35-50%

No. taxa (total / unique): 285 / 2

No. taxa per plot ( $\pm$ sd): 39.3 (16)

Class: Northern Warm Temperate Rainforests  
Related TEC: n/a

Coastal Warm Temperate Rainforest (RF p113) is equivalent to RF 113 identified by Tindall *et al.* (2004). This unit is a closed forest with a dense tree canopy, a subcanopy of small trees, lianas, an open layer of mesic shrubs and a fern-dominated groundcover. This rainforest is widely distributed across the study area in small patches, with local concentrations along the Illawarra scarp north from Cambewarra, along the escarpment in the Clyde district and along the Murrumbidgee Range on the coast north of Durras. It is found in moist sheltered gullies and on sheltered escarpment slopes on loam to clay loam soils from 0 - 400m ASL with a mean annual rainfall greater than 900mm. Coastal Warm Temperate Rainforest is related to Sandstone Scarp Warm Temperate Rainforest (RF p114) which can be differentiated from this unit by its restriction to higher elevations (above 400m ASL), and the absence of lowland taxa (e.g. *Livistona*). Much of Coastal Warm Temperate Rainforest's original distribution remains extant and it is represented within several large conservation reserves. Repeated fires may pose a threat to some stands.

#### Floristic Summary:

**Trees:** *Acmena smithii*, *Livistona australis*, *Ceratopetalum apetalum*, *Cryptocarya glaucescens*, *Synoum glandulosum*. **Small Trees:** *Tasmannia insipida*, *Eupomatia laurina*, *Ficus coronata*, *Psychotria loniceroides*. **Shrubs:** *Cyathea australis*. **Climbers:** *Morinda jasminoides*, *Smilax australis*, *Microsorium scandens*, *Marsdenia rostrata*, *Palmeria scandens*, *Pandorea pandorana*, *Parsonsia straminea*, *Cissus hypoglauca*, *Pyrrosia rupestris*, *Arthropteris tenella*, *Eustrephus latifolius*. **Groundcover:** *Lastreopsis microsora*, *Blechnum cartilagineum*, *B. patersonii*, *Asplenium australasicum*, *Doodia aspera*.

#### Vegetation structure:

Stratum	Frequency (n=63)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	8	23.6 (7.2)	13.8 (7.5)
Tree canopy	100	28.2 (9.2)	63.3 (22.8)
Small tree	78	12 (5.6)	47.4 (30.3)
Shrub	33	2.5 (0.6)	13.8 (10.2)
Ground cover	97	1 (0.5)	22.3 (18.5)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 27 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 26 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 27 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Abrophyllum ornans</i>	1(1-1)	3	1(1-1)	<1
<i>Acacia binervata</i>	1(1-2)	7	1(1-2)	2
<i>Acacia trachyphloia</i>	1(1-1)	5	1(1-1)	<1
<i>Acmena smithii</i>	3(1-3)	97	2(1-3)	7
<i>Acronychia oblongifolia</i>	1(1-2)	5	1(1-3)	1
<i>Adiantum formosum</i>	3(1-3)	17	2(1-3)	3
<i>Adiantum hispidulum</i>	1(1-1)	8	1(1-1)	2
<i>Alectryon subcinereus</i>	1(1-1)	12	1(1-1)	2
<i>Alectryon subdentatus forma subdentatus</i>	1(1-2)	11	1(1-2)	1
<i>Alphitonia excelsa</i>	1(1-1)	5	1(1-2)	1
<i>Aphanopetalum resinum</i>	2(1-3)	31	2(1-3)	3
<i>Archontophoenix cunninghamiana</i>	2(1-3)	9	1(1-1)	<1
<i>Arthropteris beckeri</i>	1(1-1)	6	1(1-3)	<1
<i>Arthropteris tenella</i>	1(1-2)	53	2(1-2)	2
<i>Asplenium australasicum forma australasicum</i>	1(1-2)	63	1(1-2)	1
<i>Asplenium flabellifolium</i>	1(1-2)	32	1(1-1)	11
<i>Asplenium polyodon</i>	1(1-2)	12	1(1-2)	<1
<i>Australina pusilla</i>	1(1-1)	6	1(1-2)	2

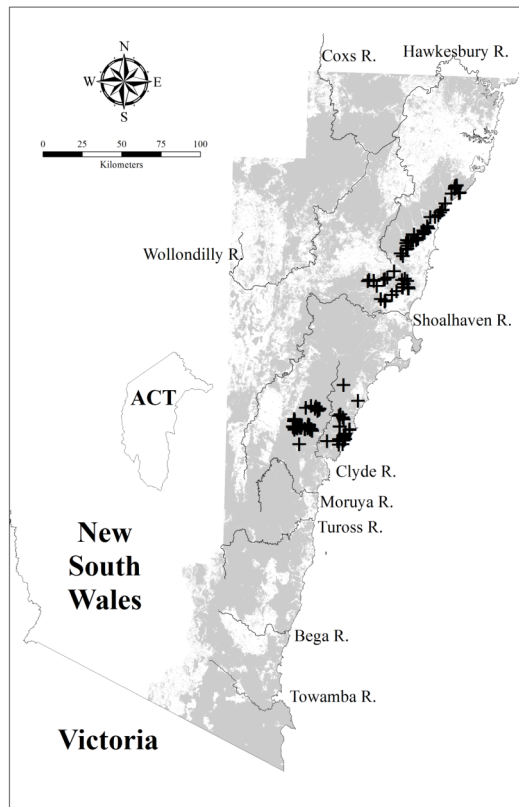
<i>Backhousia myrtifolia</i>	1(1-2)	30	3(1-3)	5
<i>Baloghia inophylla</i>	2(1-3)	5	3(2-3)	1
<i>Blechnum cartilagineum</i>	1(1-2)	67	1(1-2)	10
<i>Blechnum nudum</i>	1(1-1)	10	1(1-2)	3
<i>Blechnum patersonii</i> subsp. <i>patersonii</i>	2(1-2)	50	1(1-2)	2
<i>Blechnum wattsii</i>	2(1-2)	9	1(1-2)	2
<i>Bulbophyllum exiguum</i>	1(1-1)	7	1(1-2)	<1
<i>Callicoma serratifolia</i>	1(1-2)	32	1(1-2)	2
<i>Calochlaena dubia</i>	1(1-1)	23	1(1-3)	9
<i>Celastrus australis</i>	1(1-1)	7	1(1-1)	2
<i>Cephalalaria cephalobotrys</i>	1(1-1)	2	1(1-1)	<1
<i>Ceratopetalum apetalum</i>	3(2-4)	83	3(1-3)	2
<i>Cissus antarctica</i>	1(1-2)	27	1(1-2)	2
<i>Cissus hypoglauca</i>	2(1-2)	60	1(1-2)	9
<i>Citronella moorei</i>	2(1-2)	31	1(1-2)	<1
<i>Claoxylon australe</i>	1(1-2)	38	1(1-2)	3
<i>Clerodendrum tomentosum</i>	1(1-1)	15	1(1-1)	5
<i>Cryptocarya glaucescens</i>	2(1-2)	77	2(1-3)	2
<i>Cryptocarya microneura</i>	1(1-1)	30	1(1-3)	2
<i>Cyathea australis</i>	1(1-1)	58	1(1-2)	8
<i>Cyathea leichhardtiana</i>	1(1-3)	25	1(1-1)	<1
<i>Dendrocide excelsa</i>	1(1-2)	24	2(1-3)	1
<i>Dendrobium pugioniforme</i>	1(1-2)	15	1(1-2)	1
<i>Dennstaedtia davallioides</i>	1(1-2)	18	1(1-2)	1
<i>Dicksonia antarctica</i>	1(1-1)	40	2(1-3)	3
<i>Diospyros australis</i>	1(1-2)	32	1(1-2)	2
<i>Diplazium australe</i>	1(1-1)	19	1(1-2)	1
<i>Diploglottis australis</i>	1(1-1)	8	1(1-1)	1
<i>Doodia aspera</i>	1(1-2)	54	1(1-2)	11
<i>Doryphora sassafras</i>	3(2-3)	48	3(1-3)	3
<i>Ehretia acuminata</i> var. <i>acuminata</i>	1(1-1)	9	1(1-1)	1
<i>Elaeocarpus kirtonii</i>	1(1-1)	3	1(1-3)	<1
<i>Elatostema reticulatum</i>	1(1-3)	11	1(1-3)	<1
<i>Emmenosperma alphonseioides</i>	1(1-1)	3	1(1-3)	<1
<i>Eucalyptus quadrangulata</i>	2(1-2)	4	3(1-3)	1
<i>Eupomatia laurina</i>	2(1-2)	58	1(1-2)	3
<i>Eustrephus latifolius</i>	1(1-1)	52	1(1-1)	18
<i>Ficus coronata</i>	2(1-2)	50	1(1-2)	3
<i>Ficus obliqua</i>	1(1-1)	4	1(1-3)	<1
<i>Fieldia australis</i>	1(1-2)	19	2(1-3)	2
<i>Flagellaria indica</i>	1(1-2)	2	1(1-2)	<1
<i>Gahnia aspera</i>	1(1-2)	14	1(1-1)	4
<i>Grammitis billardierei</i>	1(1-2)	6	1(1-1)	<1
<i>Guioa semiglauca</i>	1(1-2)	10	1(1-2)	1
<i>Gymnostachys anceps</i>	1(1-2)	28	1(1-2)	3
<i>Hedycarya angustifolia</i>	3(2-3)	47	1(1-2)	3

<i>Histiopteris incisa</i>	1(1-1)	7	1(1-1)	1
<i>Hymenophyllum cupressiforme</i>	1(1-1)	9	1(1-1)	1
<i>Hypolepis glandulifera</i>	1(1-1)	6	1(1-1)	1
<i>Lastreopsis acuminata</i>	1(1-2)	38	2(1-2)	1
<i>Lastreopsis decomposita</i>	2(1-3)	44	2(1-3)	2
<i>Lastreopsis microsora</i> subsp. <i>microsora</i>	3(2-3)	67	2(1-3)	3
<i>Livistona australis</i>	1(1-2)	89	1(1-1)	4
<i>Macroglena caudata</i>	1(1-1)	3	1(1-1)	<1
<i>Marsdenia flavescens</i>	1(1-2)	19	1(1-1)	2
<i>Marsdenia rostrata</i>	1(1-2)	70	1(1-1)	11
<i>Melodinus australis</i>	1(1-1)	5	1(1-2)	<1
<i>Microsorium pustulatum</i>	1(1-2)	9	1(1-2)	1
<i>Microsorium scandens</i>	2(1-3)	72	2(1-3)	3
<i>Morinda jasminoides</i>	2(1-3)	91	1(1-2)	8
<i>Nertera granadensis</i>	1(1-1)	2	1(1-1)	<1
<i>Notelaea venosa</i>	1(1-1)	44	1(1-1)	11
<i>Omalanthus populifolius</i>	1(1-1)	5	1(1-1)	1
<i>Palmeria scandens</i>	2(1-3)	64	1(1-2)	1
<i>Pandorea pandorana</i>	1(1-2)	66	1(1-1)	18
<i>Parsonsia straminea</i>	1(1-2)	64	1(1-1)	6
<i>Passiflora herbertiana</i> subsp. <i>herbertiana</i>	1(1-1)	5	1(1-1)	1
<i>Pellaea falcata</i>	1(1-1)	26	1(1-2)	10
<i>Pellaea nana</i>	1(1-1)	23	1(1-2)	1
<i>Pennantia cunninghamii</i>	1(1-2)	13	1(1-3)	1
<i>Peperomia tetraphylla</i>	1(1-1)	2	1(1-1)	<1
<i>Piper novae-hollandiae</i>	2(1-3)	11	1(1-3)	1
<i>Pittosporum multiflorum</i>	1(1-2)	37	1(1-2)	3
<i>Pittosporum revolutum</i>	1(1-1)	28	1(1-1)	8
<i>Pittosporum undulatum</i>	1(1-1)	40	1(1-1)	14
<i>Platycerium bifurcatum</i>	1(1-1)	11	1(1-1)	1
<i>Plectorrhiza tridentata</i>	1(1-1)	13	1(1-2)	1
<i>Polystichum australiense</i>	1(1-2)	8	1(1-2)	1
<i>Polyosma cunninghamii</i>	1(1-2)	40	1(1-1)	1
<i>Polyscias murrayi</i>	1(1-1)	15	1(1-1)	1
<i>Polyphlebium venosum</i>	1(1-1)	8	2(1-3)	1
<i>Pouteria australis</i>	1(1-3)	3	3(1-3)	1
<i>Pseuderanthemum variabile</i>	2(1-2)	42	1(1-2)	8
<i>Psychotria loniceroides</i>	1(1-2)	50	1(1-1)	3
<i>Pteris umbrosa</i>	2(1-3)	36	2(1-3)	1
<i>Pyrrosia rupestris</i>	1(1-2)	58	1(1-2)	5
<i>Quintinia sieberi</i>	1(1-2)	5	1(1-2)	<1
<i>Rapanea howittiana</i>	1(1-1)	29	1(1-1)	5
<i>Rhodamnia rubescens</i>	1(1-1)	7	1(1-1)	1
<i>Ripogonum album</i>	1(1-2)	18	1(1-2)	1
<i>Rubus moluccanus</i> var. <i>trilobus</i>	1(1-1)	13	1(1-1)	2
<i>Rubus nebulosus</i>	1(1-1)	30	1(1-1)	1

<i>Rubus rosifolius</i>	1(1-1)	16	1(1-1)	3
<i>Sambucus australasica</i>	1(1-1)	7	1(1-1)	1
<i>Sarcochilus falcatus</i>	1(1-1)	9	1(1-2)	1
<i>Sarcopetalum harveyanum</i>	1(1-1)	23	1(1-1)	4
<i>Sarcochilus olivaceus</i>	1(1-1)	2	1(1-2)	<1
<i>Schizomeria ovata</i>	1(1-2)	36	1(1-2)	1
<i>Scolopia braunii</i>	1(1-1)	3	1(1-1)	<1
<i>Sloanea australis</i>	1(1-3)	5	3(1-3)	<1
<i>Smilax australis</i>	1(1-2)	77	1(1-1)	15
<i>Smilax glyciophylla</i>	1(1-1)	22	1(1-1)	8
<i>Solanum aviculare</i>	1(1-1)	6	1(1-1)	1
<i>Stenocarpus salignus</i>	1(1-1)	19	1(1-1)	1
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	30	1(1-1)	6
<i>Sticherus flabellatus</i> var. <i>flabellatus</i>	1(1-1)	6	1(1-2)	1
<i>Symplocos thwaitesii</i>	1(1-1)	5	1(1-1)	<1
<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	1(1-2)	59	1(1-2)	6
<i>Tasmannia insipida</i>	1(1-2)	68	1(1-2)	1
<i>Tmesipteris parva</i>	1(1-1)	7	1(1-1)	<1
<i>Todea barbara</i>	1(1-3)	6	1(1-2)	1
<i>Tristaniopsis laurina</i>	1(1-1)	9	1(1-3)	1
<i>Trochocarpa laurina</i>	1(1-1)	14	1(1-1)	<1
<i>Trophis scandens</i> subsp. <i>scandens</i>	1(1-2)	22	1(1-2)	1
<i>Wilkiea huegeliana</i>	1(1-1)	13	1(1-1)	1

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus botryoides</i>	1(1-2)	5	2(1-3)	3
<i>Eucalyptus fastigata</i>	3(1-3)	5	2(1-3)	6
<i>Eucalyptus pilularis</i>	1(1-1)	5	2(1-3)	5
<i>Eucalyptus robusta</i>	1(1-1)	1	3(1-3)	<1
<i>Eucalyptus saligna</i> X <i>botryoides</i>	3(1-3)	3	2(1-3)	2
<i>Eucalyptus smithii</i>	2(2-2)	2	1(1-2)	2
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-3)	9	2(1-3)	8



Locations of survey sites allocated to RF p113. Grey shading indicates extant native vegetation cover within the study area.

#### RF p114: Sandstone Scarp Warm Temperate Rainforest



Plate p114. Sandstone Scarp Warm Temperate Rainforest (Map Unit p114) southwest of Cedar Gap, Blue Mountains National Park. A dense canopy of *Backhousia myrtifolia*, *Ceratopetalum apetalum* and *Doryphora sassafras* is punctuated by emergent specimens of *Syncarpia glomulifera* subsp. *glomulifera*. The open shrub layer contains *Tasmannia insipida*, *Ficus coronata* and *Cyathea australis*, while the groundcover is dominated by *Blechnum cartilagineum*, *Doodia aspera* and *Carex brunnea*.

Sample Sites: 32  
 Area Extant (ha): 6800  
 Estimated % remaining: >95%  
 Area in conservation reserves (ha): 5900  
 Estimated % of pre-clearing area in conservation reserves: 80-95%  
 No. taxa (total / unique): 209 / 3  
 No. taxa per plot ( $\pm$ sd): 27.1 (7.7)  
 Class: Northern Warm Temperate Rainforests  
 Related TEC: n/a

Sandstone Scarp Warm Temperate Rainforest (RF p114) is equivalent to RF 114 identified by Tindall *et al.* (2004). This unit is a closed forest characterised by a dense tree canopy with occasional emergents, lianas, a mesic shrub and small tree stratum and an open fern-dominated groundcover. This unit is distributed as small occurrences within the dissected sandstone plateaux of the Sydney Basin, from 400 - 800m ASL, in areas receiving more than 850mm annual rainfall. These conditions are found mainly on the escarpments of the Blue Mountains, Budderoo and Morton plateaux. Within these areas Sandstone Scarp Warm Temperate Rainforest is restricted to moist gully heads and sheltered slopes below sandstone cliff-lines. Sandstone Scarp Warm Temperate Rainforest is related to Coastal Warm Temperate Rainforest (RF p113) which differs in being restricted to sandstone substrates below 400m ASL. Little of the original extent of Sandstone Scarp Warm Temperate Rainforest has been cleared and it is represented in several large conservation reserves.

#### Floristic Summary:

**Trees:** *Ceratopetalum apetalum*, *Acmena smithii*, *Doryphora sassafras*. **Shrubs:** *Cyathea australis*, *Todea barbara*, *Tasmannia insipida*. **Climbers:** *Morinda jasminoides*, *Smilax australis*. **Groundcover:** *Blechnum cartilagineum*.

#### Vegetation structure:

Stratum	Frequency (n=30)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	47	29.9 (4.9)	11.9 (9.4)
Tree canopy	93	24.3 (7.6)	65.2 (24)
Small tree	80	9.5 (5.5)	35.3 (30.5)
Shrub	23	2.9 (0.4)	11.7 (8.6)
Ground cover	100	1 (0.3)	22 (15.8)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 10 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 21 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 10 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia elata</i>	1(1-3)	47	1(1-3)	1
<i>Acmena smithii</i>	3(1-3)	78	2(1-3)	9
<i>Adiantum hispidulum</i>	1(1-1)	28	1(1-1)	2
<i>Asplenium flabellifolium</i>	1(1-2)	41	1(1-1)	11
<i>Backhousia myrtifolia</i>	2(1-3)	44	2(1-3)	5
<i>Blechnum cartilagineum</i>	2(1-3)	97	1(1-2)	11
<i>Blechnum nudum</i>	1(1-2)	41	1(1-2)	3
<i>Blechnum patersonii</i> subsp. <i>patersonii</i>	1(1-1)	25	1(1-2)	2
<i>Callicoma serratifolia</i>	1(1-2)	47	1(1-2)	3
<i>Calochlaena dubia</i>	1(1-2)	28	1(1-3)	9
<i>Ceratopetalum apetalum</i>	4(3-4)	100	3(1-3)	3
<i>Cissus hypoglauca</i>	1(1-2)	44	1(1-2)	10
<i>Cyathea australis</i>	1(1-1)	72	1(1-2)	8
<i>Doryphora sassafras</i>	3(3-3)	69	3(1-3)	3
<i>Eustrephus latifolius</i>	1(1-1)	44	1(1-1)	19
<i>Geitonoplesium cymosum</i>	1(1-1)	38	1(1-1)	16



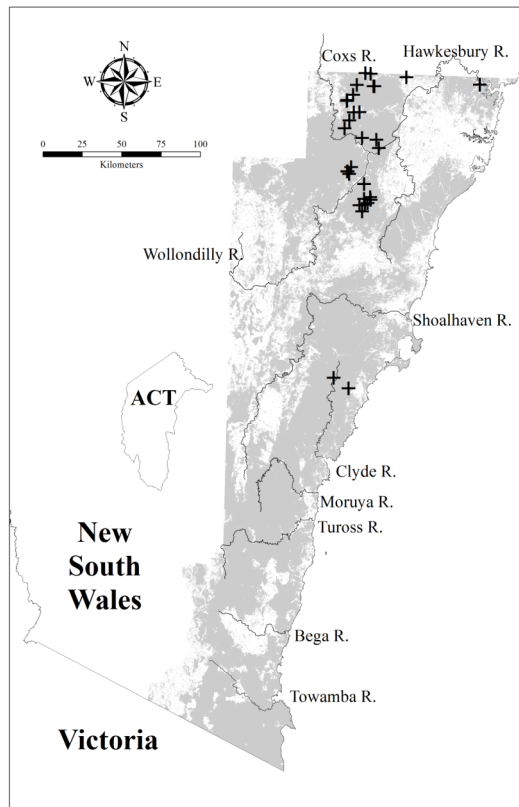
<i>Hymenophyllum cupressiforme</i>	1(1-2)	47	1(1-1)	1
<i>Morinda jasminoides</i>	1(1-2)	66	1(1-2)	9
<i>Pandorea pandorana</i>	1(1-2)	41	1(1-1)	18
<i>Parsonsia brownii</i>	1(1-1)	22	1(1-2)	2
<i>Parsonsia straminea</i>	1(1-2)	22	1(1-1)	7
<i>Pellaea nana</i>	1(1-1)	34	1(1-1)	2
<i>Pittosporum revolutum</i>	1(1-1)	41	1(1-1)	8
<i>Polystichum australiense</i>	1(1-2)	22	1(1-2)	1
<i>Pyrrosia rupestris</i>	1(1-1)	38	1(1-2)	6
<i>Smilax australis</i>	1(1-2)	53	1(1-1)	16
<i>Smilax glyciophylla</i>	1(1-1)	50	1(1-1)	8
<i>Stenocarpus salignus</i>	1(1-1)	34	1(1-1)	2
<i>Sticherus flabellatus</i> var. <i>flabellatus</i>	2(1-3)	47	1(1-2)	1
<i>Tasmania insipida</i>	2(1-3)	47	1(1-2)	2
<i>Todea barbara</i>	2(1-3)	63	1(1-1)	1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Clematis aristata</i>	1(1-1)	31	1(1-1)	20
<i>Viola hederacea</i>	1(1-1)	31	1(1-1)	22

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	6	1(1-2)	9
<i>Eucalyptus cypellocarpa</i>	3(1-3)	13	2(1-2)	10
<i>Eucalyptus deanei</i>	3(1-3)	6	3(1-3)	1
<i>Eucalyptus elata</i>	1(1-1)	9	2(1-3)	5
<i>Eucalyptus hypostomatica</i>	1(1-1)	3	2(1-3)	<1
<i>Eucalyptus oreades</i>	3(3-3)	3	3(1-3)	<1
<i>Eucalyptus piperita</i>	1(1-3)	13	2(1-3)	9
<i>Eucalyptus punctata</i>	1(1-1)	3	2(1-3)	9
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	3	2(1-3)	6
<i>Eucalyptus scias</i> subsp. <i>callimastha</i>	1(1-1)	3	1(1-2)	1
<i>Eucalyptus sieberi</i>	3(3-3)	3	2(1-3)	16
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-4)	16	2(1-3)	8



Locations of survey sites allocated to RF p114. Grey shading indicates extant native vegetation cover within the study area.

### RF p116: Intermediate Temperate Rainforest



Plate p116. Intermediate Temperate Rainforest (Map Unit p116) in The Jungle at Mount Tomah Botanic Gardens, with *Doryphora sassafras*, *Ceratopetalum apetalum*, and *Acmena smithii* draped in a variety of lianes and a ferny understorey.

Sample Sites: 36

Area Extant (ha): 3000

Estimated % remaining: 75-90%

Area in conservation reserves (ha): 1600

Estimated % of pre-clearing area in conservation reserves: 35-50%

No. taxa (total / unique): 196 / 0

No. taxa per plot ( $\pm$ sd): 38.1 (15.8)

Class: Southern Warm Temperate Rainforests  
Related TEC: n/a

Intermediate Temperate Rainforest (RF p116) is modified from RF 116 identified by Tindall *et al.* (2004). This revised classification is based on a significantly larger pool of samples over a larger study area. The revised unit RF p116 includes retention of warmer northern sites originally assigned to RF 116 by Tindall *et al.* (2004), and addition of a large number of recent south coast sites classified by Beukers (undated) as Subtropical-Warm Temperate Rainforest.

RF p116 is a closed forest characterised by a dense tree canopy, lianas, a mesic shrub/small tree stratum and a sparse fern-dominated groundcover. This rainforest is scattered over a wide distribution as small occurrences on relatively fertile, moist sites between 10m ASL (in the far south) and 750m ASL (western Blue Mountains), where annual rainfall exceeds 900mm. Within this distribution this unit is restricted to moist sheltered gullies among foothills and scarps. Local concentrations occur on the footslopes of Mount Dromedary, along the southern escarpment in the Morton-Deua area, at Cambewarra and Barren Grounds, and in the western Blue Mountains.

RF p116 occupies similar altitudinal and rainfall zones to RF p114 (Sandstone Scarp Warm Temperate Rainforest), however RF p114 is restricted to lower-fertility sandstone substrates. The closely-related RF p516 (Yarrawa Temperate Rainforest) is restricted to basalt-derived soils on the Robertson plateau where annual rainfall exceeds 1300mm. In the south of the study area, RF p116 is increasingly restricted to the coast and lower elevations, replaced by RF e6e7 (Southeast Warm Temperate Rainforest) at intermediate elevations and RF p317 (Southeast Cool Temperate Rainforest) at higher, cooler sites.

Much of the original distribution of Intermediate Temperate Rainforest survives in conservation reserves and state forests. Frequent fires may be a threat in some areas.

#### Floristic Summary:

**Trees:** *Acmena smithii*, *Pittosporum undulatum*, *Ficus coronata*, *Doryphora sassafras*, *Dendrocnide excelsa*. **Shrubs:** *Cyathea australis*, *Coprosma quadrifida*, *Notelaea venosa*, *Rapanea howittiana*. **Climbers:** *Pandorea pandorana*, *Smilax australis*, *Marsdenia rostrata*, *Eustrephus latifolius*, *Tylophora barbata*, *Microsorium scandens*, *Morinda jasminoides*. **Groundcover:** *Asplenium flabellifolium*, *Lastreopsis acuminata*.

#### Vegetation structure:

Stratum	Frequency (n=15)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	40	31.3 (6.8)	7.5 (8.9)
Tree canopy	100	27.3 (8.7)	55 (23.1)
Small tree	87	11.4 (7)	33.3 (29.8)
Shrub	20	2.8 (0.3)	6.7 (7.2)
Ground cover	100	0.8 (0.5)	22 (20.2)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 21 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 25 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 21 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia melanoxylon</i>	1(1-2)	33	1(1-1)	6
<i>Acmena smithii</i>	3(1-3)	86	2(1-3)	9
<i>Adiantum formosum</i>	3(2-3)	53	2(1-3)	3
<i>Alectryon subdentatus</i> forma <i>subdentatus</i>	1(1-2)	31	1(1-2)	1
<i>Aphanopetalum resinosum</i>	3(2-3)	67	2(1-3)	4
<i>Arthropteris tenella</i>	2(1-3)	58	1(1-2)	2
<i>Asplenium australasicum</i> forma <i>australasicum</i>	1(1-2)	56	1(1-2)	2
<i>Asplenium flabellifolium</i>	1(1-2)	58	1(1-1)	11
<i>Backhousia myrtifolia</i>	2(1-3)	22	2(1-3)	5
<i>Blechnum cartilagineum</i>	2(1-3)	39	1(1-2)	11
<i>Blechnum patersonii</i> subsp. <i>patersonii</i>	2(1-2)	22	1(1-2)	2
<i>Celastrus australis</i>	1(1-1)	39	1(1-1)	2
<i>Cissus antarctica</i>	1(1-2)	28	1(1-2)	3
<i>Cissus hypoglauca</i>	2(1-3)	53	1(1-2)	9

<i>Claoxylon australe</i>	2(1-3)	50	1(1-2)	3
<i>Coprosma quadrifida</i>	1(1-1)	36	1(1-1)	10
<i>Cryptocarya glaucescens</i>	2(2-2)	25	2(1-3)	3
<i>Cyathea australis</i>	1(1-2)	58	1(1-1)	8
<i>Dendrocide excelsa</i>	2(2-3)	50	1(1-3)	1
<i>Dendrobium pugioniforme</i>	1(1-2)	22	1(1-2)	1
<i>Dennstaedtia davallioides</i>	1(1-2)	28	1(1-2)	1
<i>Dicksonia antarctica</i>	1(1-2)	47	2(1-3)	4
<i>Diplazium australe</i>	1(1-2)	31	1(1-2)	1
<i>Doodia aspera</i>	2(1-2)	50	1(1-2)	11
<i>Doryphora sassafras</i>	3(3-4)	58	3(1-3)	3
<i>Ehretia acuminata</i> var. <i>acuminata</i>	1(1-2)	28	1(1-1)	1
<i>Eupomatia laurina</i>	2(2-2)	28	1(1-2)	4
<i>Eustrephus latifolius</i>	1(1-1)	72	1(1-1)	19
<i>Ficus coronata</i>	2(1-3)	64	1(1-2)	3
<i>Geitonoplesium cymosum</i>	1(1-1)	36	1(1-1)	16
<i>Hedycarya angustifolia</i>	3(1-3)	53	1(1-2)	4
<i>Hymenanthera dentata</i>	1(1-2)	44	1(1-1)	6
<i>Lastreopsis acuminata</i>	1(1-2)	36	1(1-2)	2
<i>Lastreopsis decomposita</i>	3(1-3)	53	2(1-3)	3
<i>Lastreopsis microsora</i> subsp. <i>microsora</i>	2(1-3)	64	2(1-3)	4
<i>Livistona australis</i>	1(1-1)	31	1(1-1)	6
<i>Marsdenia flavescens</i>	1(1-2)	28	1(1-1)	2
<i>Marsdenia rostrata</i>	2(1-3)	81	1(1-2)	12
<i>Microsorium scandens</i>	3(2-3)	61	2(1-3)	4
<i>Morinda jasminoides</i>	2(1-3)	83	1(1-2)	9
<i>Notelaea venosa</i>	1(1-2)	42	1(1-1)	12
<i>Oplismenus imbecillis</i>	1(1-2)	42	1(1-2)	14
<i>Pandorea pandorana</i>	2(1-2)	86	1(1-1)	18
<i>Parsonsia straminea</i>	1(1-2)	47	1(1-1)	7
<i>Pellaea falcata</i>	1(1-2)	64	1(1-1)	10
<i>Pellaea nana</i>	1(1-2)	33	1(1-1)	2
<i>Pittosporum undulatum</i>	1(1-1)	50	1(1-1)	14
<i>Pseuderanthemum variabile</i>	2(1-2)	28	1(1-2)	9
<i>Psychotria loniceroides</i>	1(1-2)	31	1(1-1)	4
<i>Pteris umbrosa</i>	2(2-3)	42	2(1-3)	2
<i>Pyrrosia rupestris</i>	2(1-2)	61	1(1-2)	6
<i>Rapanea howittiana</i>	1(1-2)	47	1(1-1)	5
<i>Ripogonum album</i>	2(1-2)	22	1(1-2)	1
<i>Rubus rosifolius</i>	1(1-2)	22	1(1-1)	3
<i>Sambucus australasica</i>	1(1-1)	25	1(1-1)	1
<i>Sarcopetalum harveyanum</i>	1(1-1)	22	1(1-1)	4
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-2)	25	1(1-1)	7
<i>Smilax australis</i>	2(1-2)	83	1(1-1)	16
<i>Stellaria flaccida</i>	2(1-2)	39	1(1-1)	10
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	36	1(1-1)	7

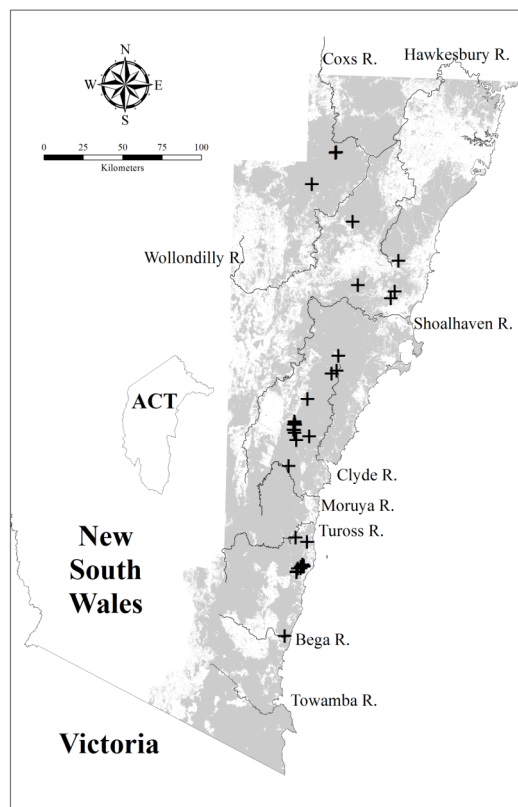
<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	2(1-3)	44	1(1-2)	7
<i>Urtica incisa</i>	1(1-2)	47	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Clematis aristata</i>	1(1-1)	33	1(1-1)	20

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus bosistoana</i>	2(2-2)	3	1(1-2)	3
<i>Eucalyptus cypellocarpa</i>	1(1-1)	3	2(1-2)	10
<i>Eucalyptus elata</i>	2(2-2)	3	2(1-3)	5
<i>Eucalyptus fastigata</i>	3(1-3)	11	2(1-3)	6
<i>Eucalyptus quadrangulata</i>	3(3-3)	3	3(1-3)	1
<i>Eucalyptus saligna</i> X <i>botryoides</i>	1(1-1)	3	2(1-3)	2
<i>Eucalyptus sieberi</i>	3(3-3)	3	2(1-3)	16
<i>Eucalyptus smithii</i>	1(1-1)	6	1(1-2)	2
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-1)	3	2(1-3)	8



Locations of survey sites allocated to RF p116. Grey shading indicates extant native vegetation cover within the study area.

**HL p117: Coastal Sandstone Plateau Heath**

Plate p117. Coastal Sandstone Plateau Heath (Map Unit p117) near Garie Trig, Royal National Park. The dense shrub layer contains a diverse array of species including *Banksia ericifolia*, *Hakea teretifolia* and *Allocasuarina distyla*, with scattered individuals of *Banksia serrata*, *Angophora hispida* and the mallee *Eucalyptus obstans* emerging in places.

Sample Sites: 136

Area Extant (ha): 16100

Estimated % remaining: >90%

Area in conservation reserves (ha): 11300

Estimated % of pre-clearing area in conservation reserves: 50-70%

No. taxa (total / unique): 460 / 8

No. taxa per plot ( $\pm$ sd): 43.9 (12)

Class: Sydney Coastal Heaths

Related TEC: n/a

Coastal Sandstone Plateau Heath (HL p117) is equivalent to HL 117 identified by Tindall *et al.* (2004), and is characterised by an open to dense shrub canopy with emergent mallees and groundcover of sedges and forbs. This unit occurs as widespread but scattered occurrences across the Hornsby and Woronora plateaux, with southern outliers on Beecroft peninsula. Within this distribution Coastal Sandstone Plateau Heath is restricted to shallow damp sandy loams on coastal and near-coastal sandstone plateaux (Hawkesbury Sandstone and Conjola Sandstone) below 600m ASL, within a wide range of rainfall (mean 900-1600mm per annum). On Hawkesbury Sandstone this Map Unit commonly occurs as patches scattered within a matrix of Coastal Sandstone Ridgetop Woodland (DSF p131). On skeletal soils and rock outcrops Coastal Sandstone Plateau Heath is replaced by Coastal Rock Plate Heath (HL p126), and where drainage is impeded it is replaced by Coastal Upland Swamp (FrW p129). Coastal Sandstone Plateau Heath was generally not separable from surrounding vegetation using any of the available abiotic modelling variables, and consequently this unit was largely delineated by aerial photograph interpretation.

Much of the original distribution of Coastal Sandstone Plateau Heath remains intact, although substantial areas were cleared in the northern beaches and eastern suburbs of the Sydney metropolitan area.

**Floristic Summary:**

**Trees:** *Corymbia gummifera*. **Shrubs:** *Isopogon anemonifolius*, *Banksia ericifolia*, *Lambertia formosa*, *Epacris microphylla*, *Leptospermum trinervium*, *Hakea teretifolia*, *Pimelea linifolia*, *Hakea laevipes*, *Banksia oblongifolia*, *Pultenaea elliptica*, *Petrophile pulchella*, *Xanthorrhoea resinifera*. **Groundcover:** *Dampiera stricta*, *Lepyrodia scariosa*, *Actinotus minor*, *Cyathochaeta diandra*, *Lindsaea linearis*, *Lomandra obliqua*.

**Vegetation structure:**

Stratum	Frequency (n=34)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	7.1 (4.4)	13.4 (9.7)
Small tree	15	4.3 (0.5)	12.5 (3.5)
Shrub	85	1.7 (0.8)	31.6 (29.3)
Ground cover	94	0.7 (0.3)	49.6 (23.6)

**Diagnostic Species:**



A 0.04ha plot located in this Map Unit is expected to contain at least 26 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 34 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 26 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia myrtifolia</i>	1(1-1)	28	1(1-1)	4
<i>Acacia suaveolens</i>	1(1-1)	46	1(1-1)	7
<i>Actinotus minor</i>	1(1-2)	57	1(1-1)	4
<i>Allocasuarina diminuta</i> subsp. <i>diminuta</i>	2(1-3)	2	0(0-0)	0
<i>Allocasuarina distyla</i>	1(1-1)	30	1(1-2)	2
<i>Allocasuarina paludosa</i>	1(1-2)	10	2(1-3)	1
<i>Amphipogon strictus</i> var. <i>strictus</i>	1(1-1)	6	1(1-2)	<1
<i>Angophora hispida</i>	2(1-2)	31	1(1-2)	1
<i>Anisopogon avenaceus</i>	1(1-2)	27	1(1-2)	5
<i>Austrostipa pubescens</i>	1(1-1)	14	1(1-2)	5
<i>Babingtonia densifolia</i>	1(1-1)	4	1(1-1)	<1
<i>Baeckea diosmifolia</i>	1(1-1)	11	1(1-1)	1
<i>Baeckea imbricata</i>	1(1-1)	21	1(1-1)	1
<i>Baloskion gracile</i>	1(1-2)	7	1(1-2)	<1
<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	1(1-2)	76	1(1-2)	6
<i>Banksia marginata</i>	1(1-2)	18	1(1-1)	3
<i>Banksia oblongifolia</i>	1(1-2)	51	1(1-1)	2
<i>Banksia paludosa</i>	1(1-2)	27	1(1-2)	2
<i>Banksia serrata</i>	1(1-1)	37	1(1-2)	9
<i>Baumea acuta</i>	1(1-1)	4	1(1-1)	<1
<i>Blandfordia nobilis</i>	1(1-1)	12	1(1-1)	<1
<i>Boronia barkeriana</i>	1(1-1)	10	1(1-1)	<1
<i>Boronia ledifolia</i>	1(1-1)	13	1(1-1)	3
<i>Boronia parviflora</i>	1(1-1)	2	1(1-1)	<1
<i>Boronia pinnata</i>	1(1-1)	14	1(1-1)	1
<i>Boronia serrulata</i>	1(1-1)	6	1(1-1)	<1
<i>Bossiaea ensata</i>	1(1-1)	28	1(1-1)	2
<i>Bossiaea heterophylla</i>	1(1-1)	21	1(1-1)	6
<i>Bossiaea scolopendria</i>	1(1-1)	13	1(1-1)	1
<i>Burchardia umbellata</i>	1(1-1)	23	1(1-1)	2
<i>Callistemon linearis</i>	2(1-3)	5	1(1-1)	<1
<i>Calytrix tetragona</i>	1(1-2)	13	1(1-2)	1
<i>Cassytha glabella</i>	1(1-1)	40	1(1-1)	7
<i>Caustis pentandra</i>	1(1-2)	13	1(1-1)	1
<i>Caustis recurvata</i>	1(1-1)	7	1(1-1)	<1
<i>Comesperma ericinum</i>	1(1-1)	9	1(1-1)	1
<i>Conospermum ellipticum</i>	2(1-3)	3	1(1-1)	<1
<i>Conospermum ericifolium</i>	1(1-1)	10	1(1-1)	<1
<i>Conospermum longifolium</i> subsp. <i>angustifolium</i>	1(1-1)	4	1(1-1)	<1
<i>Conospermum taxifolium</i>	1(1-2)	16	1(1-1)	1
<i>Corymbia gummifera</i>	1(1-2)	43	2(1-2)	15



<i>Cryptandra amara</i>	1(1-1)	5	1(1-1)	1
<i>Cryptandra ericoides</i>	1(1-2)	10	1(1-1)	<1
<i>Cryptostylis subulata</i>	1(1-1)	8	1(1-1)	1
<i>Cyathochaeta diandra</i>	1(1-2)	53	1(1-2)	7
<i>Dampiera stricta</i>	1(1-1)	71	1(1-1)	7
<i>Darwinia diminuta</i>	1(1-1)	4	1(1-1)	<1
<i>Darwinia fascicularis</i> subsp. <i>fascicularis</i>	1(1-2)	22	1(1-1)	<1
<i>Darwinia grandiflora</i>	1(1-1)	3	2(1-2)	<1
<i>Darwinia leptantha</i>	1(1-1)	18	1(1-1)	1
<i>Daviesia corymbosa</i>	1(1-1)	14	1(1-1)	2
<i>Dillwynia brunioides</i>	1(1-1)	2	1(1-1)	<1
<i>Dillwynia elegans</i>	1(1-1)	2	1(1-2)	<1
<i>Dillwynia floribunda</i>	1(1-2)	31	1(1-1)	1
<i>Dillwynia retorta</i>	1(1-1)	20	1(1-2)	6
<i>Drosera auriculata</i>	1(1-1)	4	1(1-1)	1
<i>Drosera peltata</i>	1(1-1)	26	1(1-1)	2
<i>Drosera pygmaea</i>	1(1-1)	4	1(1-1)	<1
<i>Drosera spatulata</i>	1(1-1)	9	1(1-1)	1
<i>Empodisma minus</i>	1(1-1)	12	2(1-2)	3
<i>Entolasia stricta</i>	1(1-1)	47	1(1-2)	33
<i>Epacris microphylla</i> var. <i>microphylla</i>	1(1-1)	65	1(1-1)	4
<i>Epacris obtusifolia</i>	1(1-1)	10	1(1-1)	1
<i>Epacris pulchella</i>	1(1-1)	16	1(1-1)	5
<i>Eriostemon australasius</i>	1(1-1)	20	1(1-1)	3
<i>Eucalyptus camfieldii</i>	1(1-1)	2	2(2-5)	<1
<i>Eucalyptus capitellata</i>	1(1-1)	2	3(2-3)	<1
<i>Eucalyptus haemastoma</i>	1(1-2)	15	1(1-2)	1
<i>Eucalyptus luehmanniana</i>	3(2-3)	6	3(1-3)	<1
<i>Eucalyptus oblonga</i>	1(1-1)	10	1(1-2)	2
<i>Eucalyptus obstans</i>	1(1-2)	15	1(1-2)	<1
<i>Eucalyptus racemosa</i>	2(1-2)	21	2(1-2)	1
<i>Eucalyptus squamosa</i>	1(1-2)	5	1(1-1)	<1
<i>Eurychorda complanata</i>	1(1-1)	6	1(1-1)	1
<i>Euryomyrtus ramosissima</i>	1(1-1)	9	1(1-1)	<1
<i>Glossodia minor</i>	1(1-2)	4	1(1-1)	<1
<i>Gompholobium glabratum</i>	1(1-1)	21	1(1-1)	2
<i>Gompholobium grandiflorum</i>	1(1-1)	11	1(1-1)	3
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	1(1-1)	21	1(1-1)	4
<i>Goodenia dimorpha</i> var. <i>angustifolia</i>	1(1-1)	4	1(1-1)	<1
<i>Grevillea buxifolia</i> subsp. <i>buxifolia</i>	1(1-1)	11	1(1-1)	3
<i>Grevillea diffusa</i>	1(1-1)	10	1(1-1)	1
<i>Grevillea oleoides</i>	1(1-2)	31	1(1-1)	1
<i>Grevillea patulifolia</i>	1(1-1)	2	1(1-1)	<1
<i>Grevillea sericea</i>	1(1-1)	20	1(1-1)	2
<i>Grevillea speciosa</i>	2(1-2)	6	1(1-1)	<1
<i>Grevillea sphacelata</i>	1(1-2)	21	1(1-1)	1

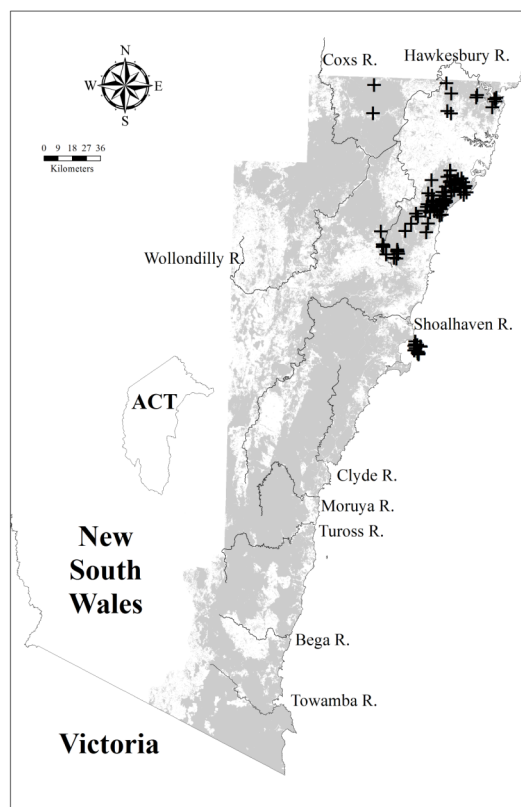
<i>Guringalia dimorpha</i>	2(1-2)	13	1(1-2)	1
<i>Haemodorum corymbosum</i>	1(1-2)	12	1(1-1)	1
<i>Haemodorum planifolium</i>	1(1-1)	6	1(1-1)	1
<i>Hakea dactyloides</i>	1(1-2)	76	1(1-1)	11
<i>Hakea gibbosa</i>	1(1-1)	11	1(1-1)	1
<i>Hakea teretifolia</i>	1(1-2)	53	1(1-2)	4
<i>Hemigenia purpurea</i>	1(1-1)	21	1(1-1)	<1
<i>Hibbertia fasciculata</i>	1(1-1)	5	1(1-1)	<1
<i>Hibbertia riparia</i>	1(1-1)	28	1(1-1)	2
<i>Hibbertia rufa</i>	1(1-1)	4	1(1-1)	1
<i>Hibbertia serpyllifolia</i>	1(1-2)	23	1(1-1)	1
<i>Hybanthus monopetalus</i>	1(1-1)	10	1(1-1)	2
<i>Hypolaena fastigiata</i>	1(1-1)	5	1(1-1)	1
<i>Isopogon anemonifolius</i>	1(1-1)	64	1(1-1)	7
<i>Isopogon anethifolius</i>	1(1-2)	16	1(1-1)	2
<i>Kunzea capitata</i>	1(1-2)	38	1(1-1)	1
<i>Lambertia formosa</i>	1(1-1)	64	1(1-2)	8
<i>Lepidosperma filiforme</i>	2(1-3)	18	1(1-2)	2
<i>Lepidosperma neesii</i>	1(1-3)	9	1(1-2)	1
<i>Lepidosperma viscidum</i>	1(1-1)	4	1(1-2)	1
<i>Leptospermum squarrosum</i>	1(1-1)	11	1(1-1)	1
<i>Leptospermum arachnoides</i>	1(1-1)	35	1(1-1)	2
<i>Leptospermum epacridoideum</i>	1(1-2)	7	1(1-2)	<1
<i>Leptospermum juniperinum</i>	1(1-1)	17	1(1-2)	1
<i>Leptospermum parvifolium</i>	1(1-1)	4	1(1-1)	1
<i>Leptospermum polygalifolium</i>	1(1-1)	18	1(1-2)	8
<i>Leptocarpus tenax</i>	1(1-1)	28	2(1-2)	2
<i>Leptospermum trinervium</i>	1(1-2)	55	1(1-2)	15
<i>Lepyrodia scariosa</i>	1(1-3)	55	1(1-2)	5
<i>Leucopogon esquamatus</i>	1(1-1)	32	1(1-1)	1
<i>Leucopogon microphyllus</i>	1(1-2)	33	1(1-1)	2
<i>Lindsaea linearis</i>	1(1-1)	55	1(1-1)	6
<i>Lomandra cylindrica</i>	1(1-1)	15	1(1-1)	4
<i>Lomandra glauca</i>	1(1-1)	36	1(1-1)	10
<i>Lomandra obliqua</i>	1(1-1)	54	1(1-1)	13
<i>Lomatia silaifolia</i>	1(1-1)	18	1(1-1)	10
<i>Lycopodiella lateralis</i>	1(1-1)	2	1(1-1)	<1
<i>Melaleuca thymifolia</i>	1(1-1)	10	1(1-1)	1
<i>Micrantheum hexandrum</i>	1(1-1)	4	1(1-1)	<1
<i>Micromyrtus ciliata</i>	1(1-1)	5	1(1-1)	<1
<i>Micrantheum ericoides</i>	1(1-1)	18	1(1-1)	2
<i>Mirbelia baueri</i>	1(1-1)	3	2(2-2)	<1
<i>Mirbelia rubiifolia</i>	1(1-1)	44	1(1-1)	2
<i>Mirbelia speciosa</i> subsp. <i>speciosa</i>	1(1-1)	7	1(1-1)	<1
<i>Mitrasacme polymorpha</i>	1(1-1)	35	1(1-1)	3
<i>Olax stricta</i>	1(1-1)	7	1(1-1)	1

<i>Patersonia glabrata</i>	1(1-1)	28	1(1-1)	10
<i>Patersonia sericea</i>	1(1-1)	42	1(1-1)	8
<i>Persoonia lanceolata</i>	1(1-1)	25	1(1-1)	2
<i>Persoonia levis</i>	1(1-1)	31	1(1-1)	13
<i>Persoonia pinifolia</i>	1(1-1)	19	1(1-1)	3
<i>Petrophile pulchella</i>	1(1-1)	49	1(1-1)	5
<i>Petrophile sessilis</i>	1(1-2)	17	1(1-1)	1
<i>Philotheca buxifolia</i>	1(1-1)	18	1(1-1)	<1
<i>Philotheca salsolifolia</i> subsp. <i>salsolifolia</i>	1(1-2)	4	1(1-2)	<1
<i>Phyllota phyllicoides</i>	1(1-2)	24	1(1-2)	3
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	56	1(1-1)	13
<i>Platysace ericoides</i>	1(1-2)	9	1(1-1)	3
<i>Platysace linearifolia</i>	1(1-1)	35	1(1-1)	8
<i>Poranthera ericifolia</i>	1(1-1)	9	1(1-1)	1
<i>Prostanthera densa</i>	1(1-1)	4	1(1-1)	<1
<i>Ptilothrix deusta</i>	1(1-2)	34	1(1-2)	2
<i>Pultenaea aristata</i>	1(1-2)	4	1(1-1)	<1
<i>Pultenaea tuberculata</i>	1(1-2)	47	1(1-1)	2
<i>Pultenaea villifera</i> var. <i>villifera</i>	1(1-1)	4	1(1-3)	<1
<i>Rhytidosporum procumbens</i>	1(1-1)	9	1(1-1)	3
<i>Saropsis fastigiata</i>	1(1-3)	18	1(1-3)	<1
<i>Scaevola ramosissima</i>	1(1-1)	15	1(1-1)	3
<i>Schizaea bifida</i>	1(1-1)	5	1(1-1)	1
<i>Schoenus ericetorum</i>	1(1-2)	13	1(1-1)	1
<i>Schoenus imberbis</i>	1(1-1)	8	1(1-1)	1
<i>Schoenus lepidosperma</i> subsp. <i>pachylepis</i>	1(1-3)	7	1(1-2)	<1
<i>Schoenus paludosus</i>	1(1-1)	4	1(1-2)	<1
<i>Schoenus turbinatus</i>	1(1-1)	4	1(1-1)	<1
<i>Selaginella uliginosa</i>	1(1-1)	16	1(1-1)	2
<i>Sowerbaea juncea</i>	1(1-2)	7	1(1-1)	1
<i>Sphaerolobium vimineum</i>	1(1-1)	5	1(1-1)	<1
<i>Sprengelia incarnata</i>	1(1-1)	4	1(1-2)	1
<i>Stylidium lineare</i>	1(1-1)	25	1(1-1)	1
<i>Styphelia tubiflora</i>	1(1-1)	7	1(1-1)	1
<i>Tetratheca neglecta</i>	1(1-1)	13	1(1-1)	1
<i>Tetratheca shiressii</i>	2(1-2)	4	1(1-1)	<1
<i>Thelymitra ixiioides</i> var. <i>ixiioides</i>	1(1-1)	3	1(1-1)	<1
<i>Thelionema umbellatum</i>	1(1-1)	2	1(1-1)	<1
<i>Thysanotus juncifolius</i>	1(1-1)	4	1(1-1)	<1
<i>Thysanotus tuberosus</i> subsp. <i>tuberosus</i>	1(1-1)	15	1(1-1)	1
<i>Tricostularia pauciflora</i>	1(1-1)	10	1(1-1)	<1
<i>Tricoryne simplex</i>	1(1-1)	4	1(1-1)	<1
<i>Viminaria juncea</i>	1(1-1)	4	1(1-1)	<1
<i>Woollsia pungens</i>	1(1-1)	7	1(1-1)	2
<i>Xanthorrhoea media</i>	2(1-2)	21	1(1-2)	4
<i>Xanthorrhoea resinifera</i>	1(1-2)	43	1(1-1)	3

<i>Xanthosia tridentata</i>	1(1-1)	32	1(1-1)	5
<i>Xyris bracteata</i>	1(1-1)	11	1(1-1)	<1
<i>Xyris gracilis</i>	1(1-2)	16	1(1-1)	<1
<i>Zieria laevigata</i>	1(1-1)	3	1(1-1)	<1

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia eximia</i>	1(1-1)	1	1(1-2)	2
<i>Eucalyptus apiculata</i>	3(3-3)	1	2(1-3)	<1
<i>Eucalyptus multicaulis</i>	2(2-2)	1	1(1-3)	<1
<i>Eucalyptus parramattensis</i> subsp. <i>parramattensis</i>	1(1-1)	1	1(1-3)	<1
<i>Eucalyptus sclerophylla</i>	2(1-3)	5	2(1-3)	4
<i>Eucalyptus sieberi</i>	1(1-2)	15	2(1-3)	16
<i>Eucalyptus</i> sp. 'Cattai'	1(1-1)	1	0(0-0)	0
<i>Eucalyptus stricta</i>	2(1-2)	3	1(1-2)	1



Locations of survey sites allocated to HL p117. Grey shading indicates extant native vegetation cover within the study area.

### HL p120: Kanangra-Ti Willa Montane Heath



Plate p120. Kanangra-Ti Willa Montane Heath (Map Unit p120) on the Ti Willa Plateau dominated by a dense shrub layer *Allocasuarina nana* and *Leptospermum trinervium* with occasional individuals of *Banksia ericifolia* and *Eucalyptus stricta* emergent. The sparse ground cover is dominated by sedges and rushes such as *Lepyrodia scariosa* and *Schoenus villosus*.

Sample Sites: 8

Area Extant (ha): 1100

Estimated % remaining: >95%

Area in conservation reserves (ha): 1100

Estimated % of pre-clearing area in conservation reserves: >95%

No. taxa (total / unique): 94 / 0

No. taxa per plot ( $\pm$ sd): 26.5 (8.4)

Class: Sydney Montane Heaths

Related TEC: n/a

Kanangra-Ti Willa Montane Heath (HL p120) is equivalent to HL 120 identified by Tindall *et al.* (2004), and has an open to dense shrub canopy with scattered emergent mallees and a thick groundcover of sedges and forbs. This unit is restricted to high exposed plateaux on residual Permian sediments (Berry Formation and Illawarra Coal Measures) and underlying Devonian Lambie Group sediments in the Kanangra area. The main occurrences are on Gangerang Plateau, Ti Willa Tops, Thurat Tops, Kanangra Tops, Mount Merrimerrigal and Mount Guouogang. All of these areas are remote locations within conservation reserves, beyond the influence of major threats. Within this distribution Kanangra-Ti Willa Montane Heath occurs on damp shallow sandy loams at altitudes generally between 800m and 1150m ASL, where mean annual rainfall is 1000-1150mm.

#### Floristic Summary:

**Trees:** *Eucalyptus stricta*. **Shrubs:** *Baeckea brevifolia*, *Allocasuarina nana*, *Isopogon anemonifolius*, *Platysace linearifolia*, *Banksia ericifolia*, *Brachyloma daphnoides*, *Epacris microphylla*, *Hakea laevipes*, *Isopogon anethifolius*, *Mirbelia rubiifolia*, *Platysace lanceolata*. **Groundcover:** *Dampiera stricta*, *Lepyrodia scariosa*, *Drosera peltata*, *Schoenus villosus*, *Goodenia bellidifolia*, *Amphipogon strictus*, *Gahnia microstachya*, *Lindsaea linearis*.

#### Vegetation structure:

Stratum	Frequency (n=6)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	50	3.2 (0.8)	7 (5.2)
Small tree	100	2.8 (1.6)	56.7 (34.6)
Shrub	50	2 (-)	40.7 (18.3)
Ground cover	100	0.5 (0.1)	42.5 (26.6)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 13 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 20 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 13 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Allocasuarina nana</i>	5(3-5)	75	2(1-4)	1
<i>Amphipogon strictus</i> var. <i>strictus</i>	2(1-2)	50	1(1-1)	<1
<i>Baeckea brevifolia</i>	3(2-4)	100	1(1-2)	<1
<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	3(1-4)	50	1(1-2)	7
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-1)	63	1(1-2)	15
<i>Brachyloma daphnoides</i>	2(1-2)	50	1(1-1)	7
<i>Dampiera stricta</i>	1(1-1)	88	1(1-1)	8
<i>Dillwynia brunioides</i>	1(1-2)	38	1(1-1)	<1
<i>Drosera peltata</i>	2(1-2)	75	1(1-1)	2
<i>Epacris microphylla</i> var. <i>microphylla</i>	3(1-3)	50	1(1-1)	5
<i>Eucalyptus stricta</i>	1(1-2)	50	1(1-2)	1
<i>Gahnia microstachya</i>	1(1-3)	50	1(1-2)	1
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	1(1-2)	63	1(1-1)	4
<i>Hakea dactyloides</i>	3(1-3)	75	1(1-1)	12
<i>Hibbertia riparia</i>	1(1-2)	38	1(1-1)	2
<i>Isopogon anemonifolius</i>	1(1-1)	75	1(1-1)	8
<i>Isopogon anethifolius</i>	1(1-1)	50	1(1-1)	2
<i>Lepidosperma viscidum</i>	2(1-4)	38	1(1-2)	1
<i>Leptospermum trinervium</i>	2(1-3)	63	1(1-2)	16
<i>Lepyrodia scariosa</i>	3(1-3)	88	1(1-2)	6
<i>Lindsaea linearis</i>	2(1-3)	50	1(1-1)	7
<i>Lomandra glauca</i>	1(1-1)	50	1(1-1)	10
<i>Mirbelia rubrifolia</i>	2(2-2)	50	1(1-1)	3
<i>Patersonia longifolia</i>	2(1-2)	25	1(1-1)	2
<i>Phyllota squarrosa</i>	1(1-1)	25	1(1-2)	<1
<i>Platysace linearifolia</i>	1(1-1)	63	1(1-1)	8
<i>Prostanthera saxicola</i>	2(1-2)	25	1(1-1)	<1
<i>Pseudanthus divaricatissimus</i>	1(1-1)	25	1(1-1)	<1
<i>Schoenus melanostachys</i>	4(1-4)	25	1(1-2)	2
<i>Schoenus moorei</i>	3(2-3)	38	1(1-2)	<1
<i>Schoenus villosus</i>	3(3-3)	75	1(1-1)	<1
<i>Sphaerolobium vimineum</i>	2(2-2)	25	1(1-1)	<1
<i>Tetratheca bauerifolia</i>	1(1-1)	25	1(1-1)	1
<i>Thelymitra ixioides</i> var. <i>ixioides</i>	1(1-1)	38	1(1-1)	<1
<i>Xanthorrhoea resinifera</i>	1(1-1)	38	1(1-2)	4

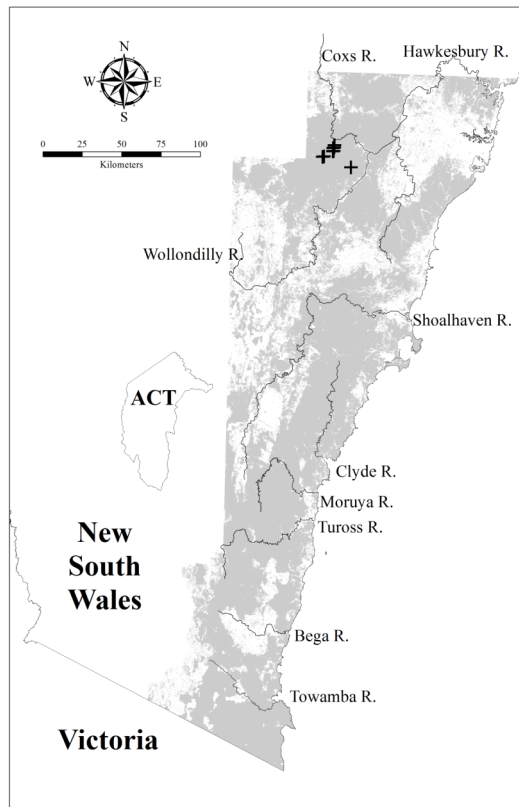
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Leptospermum polygalifolium</i>	3(2-3)	38	1(1-2)	8
<i>Platysace lanceolata</i>	1(1-2)	50	1(1-1)	13

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia gummifera</i>	1(1-1)	13	2(1-2)	16
<i>Eucalyptus burgessiana</i>	1(1-1)	13	1(1-3)	0





Locations of survey sites allocated to HL p120. Grey shading indicates extant native vegetation cover within the study area.

### HL p121: Loombah Plateau Heath



Plate p121. Loombah Plateau Heath (Map Unit p121) on the Murrumbidgee Range east of Mount Werrong. Scattered clumps of the mallee *Eucalyptus stricta* are shown interspersed with large shrub species such as *Leptospermum grandifolium*, *Banksia marginata* and *Hakea laevipes* subsp. *laevipes* and smaller species such as *Kunzea cambagei*, *Epacris microphylla* var. *microphylla* and *Gahnia filifolia*.

Sample Sites: 4

Area Extant (ha): 340

Estimated % remaining: >95%

Area in conservation reserves (ha): 330

Estimated % of pre-clearing area in conservation reserves: >95%

No. taxa (total / unique): 76 / 1



No. taxa per plot ( $\pm$ sd): 35 (6.7)  
 Class: Sydney Montane Heaths  
 Related TEC: n/a

Loombah Plateau Heath (HL p121) is equivalent to HL 121 identified by Tindall *et al.* (2004). This unit is characterised by an open shrub canopy with scattered patches of emergent mallees and a thick groundcover of sedges and forbs. This unit was only sampled on the Loombah Plateau in the western Blue Mountains, where it occupies damp, shallow to skeletal sandy loams with mean annual rainfall of 1050mm and elevations of 1100m to 1200m ASL. Loombah Plateau Heath appears to be associated with the Thurat Tops soil landscape, characterised by gently inclined plateau crests and sideslopes on Devonian Lambie Group metasediments (King 1994). In areas of poor drainage Loombah Plateau Heath may grade into Tableland Bog (FrW p53). The surrounding forest is Cool Montane Wet Forest (WSF p73) in sheltered areas or Tableland Ridge Forest (DSF p8) on drier slopes and ridges. Loombah Plateau Heath occurs within a relatively remote part of Blue Mountains National Park beyond the influence of major threats.

**Floristic Summary:**

**Trees:** *Eucalyptus dalrympleana*, *Eucalyptus stricta*. **Shrubs:** *Banksia marginata*, *Epacris microphylla*, *Hibbertia serpyllifolia*, *Leptospermum continentale*, *Lomatia silaifolia*, *Platysace linearifolia*, *Kunzea cambagei*, *Leucopogon microphyllus*, *Lomatia ilicifolia*, *Rhytidosporum procumbens*. **Groundcover:** *Gahnia filifolia*, *Grevillea laurifolia*, *Lepyrodia scariosa*, *Drosera peltata*, *Goodenia bellidifolia*, *Lindsaea linearis*, *Patersonia fragilis*, *Sowerbaea juncea*, *Sphaerolobium minus*, *Stackhousia viminea*, *Thelymitra ixioides*.

**Vegetation structure:**

Stratum	Frequency (n=4)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	25	6.5 (-)	1 (-)
Tree canopy	100	9 (6.1)	23.3 (10.4)
Small tree	50	7.5 (0.7)	24.5 (29)
Shrub	75	1.5 (0.5)	48.3 (62.1)
Ground cover	100	0.4 (0.1)	35 (35.4)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 30 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

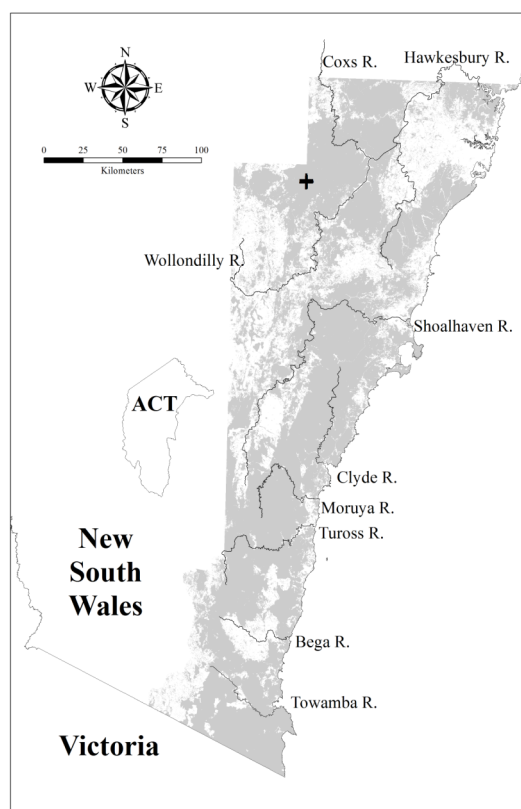
**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Arrhenechthites mixta</i>	1(1-1)	25	1(1-1)	1
<i>Baloskion australe</i>	2(2-2)	25	1(1-2)	<1
<i>Banksia cunninghamii</i> subsp. <i>cunninghamii</i>	1(1-1)	25	1(1-1)	<1
<i>Banksia marginata</i>	3(3-4)	75	1(1-1)	3
<i>Baumea acuta</i>	1(1-1)	25	1(1-1)	<1
<i>Choretrum pauciflorum</i>	1(1-1)	25	1(1-1)	1
<i>Cryptostylis erecta</i>	1(1-1)	25	1(1-1)	1
<i>Dillwynia brunioides</i>	1(1-1)	25	1(1-1)	<1
<i>Drosera peltata</i>	1(1-1)	50	1(1-1)	2
<i>Epacris microphylla</i> var. <i>microphylla</i>	2(1-3)	75	1(1-1)	5
<i>Epacris purpurascens</i> var. <i>onosmiflora</i>	2(1-2)	50	1(1-1)	<1
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-2)	100	1(1-2)	3
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	3(3-3)	50	2(1-3)	6
<i>Eucalyptus stricta</i>	3(1-4)	100	1(1-2)	1
<i>Gahnia filifolia</i>	3(1-3)	75	1(1-1)	<1
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	2(1-2)	50	1(1-1)	4
<i>Grevillea laurifolia</i>	1(1-2)	100	1(1-1)	<1
<i>Hakea dactyloides</i>	2(1-2)	100	1(1-1)	12
<i>Hibbertia serpyllifolia</i>	2(1-2)	100	1(1-1)	1
<i>Kunzea cabbagei</i>	5(5-5)	50	1(1-2)	<1
<i>Lepidosperma tortuosum</i>	1(1-1)	25	1(1-1)	<1
<i>Leptospermum continentale</i>	1(1-1)	75	1(1-1)	3
<i>Leptospermum grandifolium</i>	2(2-2)	25	1(1-2)	1
<i>Leptospermum macrocarpum</i>	1(1-1)	25	0(0-0)	0
<i>Lepyrodia scariosa</i>	2(2-3)	75	1(1-2)	6
<i>Leucopogon microphyllus</i>	1(1-2)	75	1(1-1)	3
<i>Lomatia ilicifolia</i>	1(1-1)	75	1(1-1)	6
<i>Lomatia silaifolia</i>	2(1-2)	100	1(1-1)	10
<i>Patersonia fragilis</i>	1(1-1)	50	1(1-1)	<1
<i>Persoonia microphylla</i>	1(1-1)	25	1(1-1)	<1
<i>Persoonia oxycoccoides</i>	1(1-1)	25	1(1-2)	<1
<i>Platysace linearifolia</i>	1(1-1)	75	1(1-1)	8
<i>Plinthanthesis paradoxa</i>	1(1-1)	25	1(1-1)	<1

<i>Poa sieberiana</i> var. <i>sieberiana</i>	2(1-2)	75	1(1-2)	11
<i>Rhytidosporum procumbens</i>	1(1-1)	75	1(1-1)	3
<i>Sowerbaea juncea</i>	1(1-1)	50	1(1-1)	1
<i>Sphaerolobium minus</i>	1(1-1)	50	1(1-1)	<1
<i>Stackhousia viminea</i>	1(1-1)	75	1(1-1)	3
<i>Thelymitra ixioides</i> var. <i>ixioides</i>	1(1-1)	50	1(1-1)	<1
<i>Thelymitra pauciflora</i>	1(1-1)	25	1(1-1)	<1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-1)	50	1(1-2)	15
<i>Dampiera stricta</i>	1(1-1)	50	1(1-1)	8
<i>Dianella caerulea</i>	1(1-1)	50	1(1-1)	28
<i>Eucalyptus sieberi</i>	3(3-3)	50	2(1-3)	16
<i>Gonocarpus tetragynus</i>	1(1-1)	75	1(1-1)	20
<i>Joycea pallida</i>	1(1-1)	50	1(1-2)	8
<i>Leptospermum polygalifolium</i>	3(1-3)	50	1(1-2)	8
<i>Lindsaea linearis</i>	1(1-1)	50	1(1-1)	7
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	2(1-2)	50	1(1-2)	10
<i>Lomandra glauca</i>	1(1-1)	50	1(1-1)	10
<i>Lomandra longifolia</i>	2(1-2)	50	1(1-1)	44
<i>Monotoca scoparia</i>	2(1-2)	50	1(1-1)	12
<i>Stylidium graminifolium</i>	1(1-1)	50	1(1-1)	9
<i>Xanthosia pilosa</i>	1(1-1)	50	1(1-1)	8



Locations of survey sites allocated to HL p121. Grey shading indicates extant native vegetation cover within the study area.

**HL p122: Morton Mallee-Heath**

Plate p122. Morton Mallee-Heath (Map Unit p122) near Tolwong, Moreton National Park, shown in the early stages of post-fire recovery. Scattered resprouting species such as mallee Eucalypts and *Leptospermum trinervium* are shown interspersed with a diverse array of juvenile or smaller resprouting shrubs including *Isopogon anemonifolius*, *Allocasuarina distyla*, *Banksia ericifolia* and *Hakea teretifolia*. The diverse ground layer, soon to be over-topped, includes *Lepyrodia scariosa*, *Goodenia bellidifolia*, *Entolasia stricta* and *Patersonia sericea*.

Sample Sites: 47

Area Extant (ha): 37600

Estimated % remaining: >95%

Area in conservation reserves (ha): 33700

Estimated % of pre-clearing area in conservation reserves: 80-95%

No. taxa (total / unique): 361 / 8

No. taxa per plot ( $\pm$ sd): 45.7 (15.8)

Class: transitional between the Sydney Montane Heaths and Sydney Montane Dry Sclerophyll Forests.

Related TEC: n/a

Morton Mallee-Heath (HL p122) is equivalent to HL 122 identified by Tindall *et al.* (2004), and has an open to dense shrub canopy with emergent mallees and a thick groundcover of sedges and forbs. This unit occurs on damp shallow sandy loams on sandstone, at elevations from 10m to 750m, where mean annual rainfall varies from 900-1400mm. Morton Mallee-Heath is widespread on Permian Shoalhaven Group sandstones on the Morton plateau from Tallong south to Wog Wog and east to Yerrilyong and Porters Creek, extending east to the coast, where it is scattered from Booderee to Meroo Point on Shoalhaven Conjola Formation sandstones.

Much of Morton Mallee-Heath's original distribution is within conservation reserves, where altered fire regimes and unauthorised use of off-road vehicles pose the main threats.

**Floristic Summary:**

**Trees:** *Eucalyptus sclerophylla*, *Corymbia gummifera*. **Shrubs:** *Leptospermum trinervium*, *Hakea teretifolia*, *Banksia ericifolia*, *B. spinulosa*, *Epacris microphylla*, *Hakea laevipes*, *Banksia paludosa*, *Isopogon anemonifolius*, *Lambertia formosa*, *Persoonia mollis* ssp *leptophylla*. **Groundcover:** *Lepyrodia scariosa*, *Patersonia sericea*, *Lindsaea linearis*, *Gonocarpus tetragynus*, *Goodenia bellidifolia*, *Ptilothrix deusta*.

**Vegetation structure:**

Stratum	Frequency (n=35)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	97	10.2 (4.4)	15.7 (12.6)
Small tree	31	4.5 (0.7)	24.3 (21.3)
Shrub	80	2.2 (0.7)	39.8 (20.3)
Ground cover	97	0.8 (0.3)	48.1 (26.8)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 19 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 33 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 19 positive diagnostic species.

### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia elongata</i>	1(1-1)	28	1(1-1)	1
<i>Acacia suaveolens</i>	1(1-1)	21	1(1-1)	7
<i>Acacia ulicifolia</i>	1(1-1)	26	1(1-1)	10
<i>Actinotus minor</i>	1(1-1)	40	1(1-1)	4
<i>Allocasuarina distyla</i>	2(1-3)	30	1(1-1)	2
<i>Allocasuarina paludosa</i>	1(1-3)	17	2(1-3)	1
<i>Anisopogon avenaceus</i>	1(1-1)	21	1(1-2)	5
<i>Aotus ericoides</i>	1(1-1)	28	1(1-1)	3
<i>Austrostipa pubescens</i>	1(1-1)	21	1(1-2)	5
<i>Baeckea brevifolia</i>	1(1-3)	17	1(1-3)	<1
<i>Baeckea diosmifolia</i>	1(1-1)	26	1(1-1)	1
<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	2(1-2)	62	1(1-2)	6
<i>Banksia paludosa</i>	1(1-2)	55	1(1-2)	2
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-2)	60	1(1-2)	15
<i>Bossiaea ensata</i>	1(1-1)	23	1(1-1)	2
<i>Bossiaea heterophylla</i>	1(1-1)	23	1(1-1)	6
<i>Burchardia umbellata</i>	1(1-1)	30	1(1-1)	2
<i>Cassutha glabella</i>	1(1-1)	38	1(1-1)	8
<i>Corymbia gummifera</i>	2(1-2)	53	2(1-2)	15
<i>Cyathochaeta diandra</i>	2(1-3)	26	1(1-2)	8
<i>Dampiera stricta</i>	1(1-1)	43	1(1-1)	8
<i>Dillwynia brunioides</i>	1(1-1)	19	1(1-1)	<1
<i>Dillwynia ramosissima</i>	1(1-1)	17	1(1-1)	<1
<i>Drosera peltata</i>	1(1-1)	17	1(1-1)	2
<i>Drosera spatulata</i>	1(1-1)	23	1(1-1)	1
<i>Empodisma minus</i>	2(2-3)	17	1(1-2)	3
<i>Entolasia stricta</i>	1(1-1)	64	1(1-2)	34
<i>Epacris microphylla</i> var. <i>microphylla</i>	1(1-2)	53	1(1-1)	4
<i>Eucalyptus considieniana</i>	1(1-3)	28	2(1-2)	2
<i>Eucalyptus obstans</i>	2(1-2)	17	1(1-2)	<1
<i>Eucalyptus sclerophylla</i>	1(1-2)	64	2(1-3)	3
<i>Gompholobium glabratum</i>	1(1-1)	28	1(1-1)	2
<i>Gonocarpus tetragynus</i>	1(1-2)	53	1(1-1)	20
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	1(1-1)	55	1(1-1)	4
<i>Grevillea patulifolia</i>	1(1-1)	19	1(1-1)	<1
<i>Hakea dactyloides</i>	1(1-2)	70	1(1-1)	12
<i>Hakea teretifolia</i>	1(1-2)	64	1(1-2)	4
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-1)	19	1(1-1)	6
<i>Hibbertia riparia</i>	1(1-1)	28	1(1-1)	2
<i>Isopogon anemonifolius</i>	1(1-1)	53	1(1-1)	8
<i>Isopogon anethifolius</i>	1(1-2)	43	1(1-1)	2

<i>Kunzea capitata</i>	1(1-1)	47	1(1-2)	1
<i>Lambertia formosa</i>	1(1-2)	47	1(1-2)	9
<i>Lepidosperma filiforme</i>	1(1-2)	21	1(1-2)	2
<i>Leptospermum squarrosum</i>	1(1-1)	26	1(1-1)	1
<i>Leptospermum continentale</i>	1(1-1)	23	1(1-1)	3
<i>Leptospermum polygalifolium</i>	2(1-2)	38	1(1-2)	8
<i>Leptospermum rotundifolium</i>	2(1-2)	32	1(1-2)	1
<i>Leptospermum trinervium</i>	1(1-2)	81	1(1-2)	15
<i>Lepyrodia scariosa</i>	1(1-2)	72	1(1-2)	5
<i>Leucopogon esquamatus</i>	1(1-1)	28	1(1-1)	1
<i>Lindsaea linearis</i>	1(1-1)	64	1(1-1)	7
<i>Lomandra cylindrica</i>	1(1-2)	17	1(1-1)	4
<i>Lomandra glauca</i>	1(1-1)	55	1(1-1)	10
<i>Lomatia ilicifolia</i>	1(1-1)	43	1(1-1)	6
<i>Lomandra obliqua</i>	1(1-1)	43	1(1-1)	14
<i>Melaleuca capitata</i>	1(1-1)	19	1(1-1)	<1
<i>Mirbelia rubiifolia</i>	1(1-1)	36	1(1-1)	3
<i>Mitrasacme polymorpha</i>	1(1-1)	32	1(1-1)	3
<i>Patersonia sericea</i>	1(1-1)	68	1(1-1)	9
<i>Persoonia levis</i>	1(1-1)	40	1(1-1)	13
<i>Persoonia mollis</i> subsp. <i>leptophylla</i>	1(1-1)	49	1(1-1)	1
<i>Persoonia mollis</i> subsp. <i>caleyi</i>	1(1-1)	19	1(1-1)	1
<i>Petrophile sessilis</i>	1(1-1)	49	1(1-1)	1
<i>Phyllota phyllicoides</i>	1(1-1)	23	1(1-2)	3
<i>Pimelea linifolia</i> subsp. <i>collina</i>	1(1-1)	19	1(1-1)	1
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	38	1(1-1)	13
<i>Ptilothrix deusta</i>	1(1-2)	53	1(1-2)	2
<i>Stylidium lineare</i>	1(1-1)	26	1(1-1)	2
<i>Xanthorrhoea concava</i>	1(1-1)	23	1(1-1)	4
<i>Xanthosia tridentata</i>	1(1-2)	28	1(1-1)	5

## Constant:

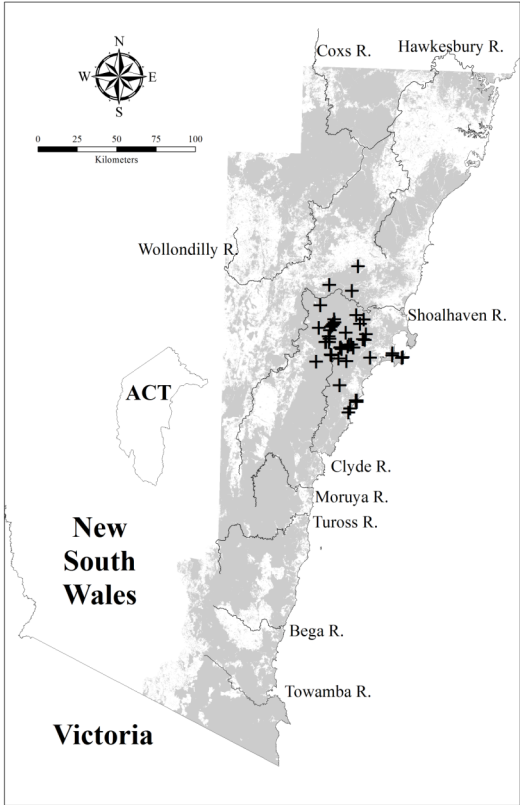
Species	C/A	Freq	C/A O	Freq O
<i>Lomandra longifolia</i>	1(1-1)	32	1(1-1)	44

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus agglomerata</i>	3(1-3)	6	2(1-3)	7
<i>Eucalyptus botryoides</i>	1(1-1)	4	2(1-3)	3
<i>Eucalyptus dives</i>	1(1-1)	2	2(1-3)	4
<i>Eucalyptus imitans</i>	3(3-3)	2	1(1-1)	<1
<i>Eucalyptus langleyi</i>	2(2-2)	2	0(0-0)	0
<i>Eucalyptus mannifera</i>	1(1-1)	9	2(1-3)	4
<i>Eucalyptus multicaulis</i>	1(1-1)	2	2(1-3)	<1
<i>Eucalyptus piperita</i>	1(1-2)	6	2(1-3)	9
<i>Eucalyptus punctata</i>	3(1-3)	9	2(1-3)	9
<i>Eucalyptus sieberi</i>	1(1-1)	17	2(1-3)	16



<i>Eucalyptus stricta</i>	1(1-2)	15	1(1-2)	1
<i>Eucalyptus sturgissiana</i>	2(1-2)	4	2(2-2)	<1
<i>Eucalyptus tenella</i>	1(1-1)	6	0(0-0)	0
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-1)	2	2(1-3)	8



Locations of survey sites allocated to HL p122. Grey shading indicates extant native vegetation cover within the study area.

**HL p124: Blue Mountains Heath**



Plate p124. Blue Mountains Heath (Map Unit p124) in Glen Raphael Swamp, Narrow Neck Plateau, Blue Mountains National Park. The taller shrubs include *Banksia ericifolia* and *Leptospermum polygalifolium* subsp. *polygalifolium* interspersed with small species such as *Allocasuarina nana* and *Petrophile pulchella*. The mallee *Eucalyptus stricta* is also present while the groundcover is dominated by dense swards of *Saropsis fastigiata*.



Sample Sites: 25  
 Area Extant (ha): 7900  
 Estimated % remaining: >95%  
 Area in conservation reserves (ha): 6200  
 Estimated % of pre-clearing area in conservation reserves: 70-85%  
 No. taxa (total / unique): 203 / 3  
 No. taxa per plot ( $\pm$ sd): 37.3 (11.3)  
 Class: Sydney Montane Heaths  
 Related TEC: n/a

Blue Mountains Heath (HL p124) is equivalent to HL 124 identified by Tindall *et al.* (2004), and is characterised by an open to dense shrub canopy with emergent mallees and a groundcover of sedges and forbs. This unit has a widespread distribution as scattered patches across the upper Blue Mountains, from Hassans Walls to Bell, east to Linden Ridge and south to Narrowneck Plateau and Kedumba Walls. It was also recorded from residual Triassic sandstone plateaux on the Tonalli Range. Blue Mountains Heath occupies areas of shallow, damp sandy loam on exposed Narrabeen sandstone plateaux at 600-1150m ASL, where mean annual rainfall varies from 1000 to 1350mm. Blue Mountains Heath is floristically related to Upper Shoalhaven Montane Heath (HL p123), however the two communities have clearly disjunct distributions. Blue Mountains Heath is commonly associated with a matrix of Blue Mountains Ridgetop Forest (DSF p136).

While some areas of Blue Mountains Heath have been cleared during the development of Blue Mountains towns, most of its distribution is within conservation reserves.

#### Floristic Summary:

**Trees:** *Eucalyptus stricta*. **Shrubs:** *Isopogon anemonifolius*, *Allocasuarina nana*, *Leptospermum trinervium*, *Lomandra glauca*, *Platysace linearifolia*, *Petrophile pulchella*, *Banksia ericifolia*, *Hakea laevipes*, *Brachyloma daphnoides*, *Conospermum taxifolium*, *Epacris microphylla*, *Leptospermum arachnoides*. **Groundcover:** *Dampiera stricta*, *Goodenia bellidifolia*, *Lepidosperma viscidum*, *Patersonia sericea*.

#### Vegetation structure:

Stratum	Frequency (n=2)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	50	4 (-)	5 (-)
Tree canopy	-	- (-)	- (-)
Small tree	-	- (-)	- (-)
Shrub	100	1.8 (0.4)	42.5 (3.5)
Ground cover	100	0.8 (0.4)	40 (14.1)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 28 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Actinotus minor</i>	1(1-2)	20	1(1-1)	5
<i>Allocasuarina distyla</i>	1(1-2)	24	1(1-2)	2
<i>Allocasuarina nana</i>	2(1-3)	92	2(1-4)	1
<i>Amphipogon strictus</i> var. <i>strictus</i>	1(1-1)	24	1(1-2)	<1
<i>Austrostipa pubescens</i>	1(1-1)	24	1(1-2)	5
<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	1(1-3)	68	1(1-2)	7
<i>Banksia serrata</i>	1(1-1)	32	1(1-2)	9
<i>Bossiaea heterophylla</i>	1(1-1)	28	1(1-1)	6
<i>Brachyloma daphnoides</i>	1(1-1)	56	1(1-1)	6
<i>Conospermum taxifolium</i>	1(1-1)	56	1(1-1)	1
<i>Dampiera stricta</i>	1(1-1)	96	1(1-1)	8
<i>Darwinia fascicularis</i> subsp. <i>oligantha</i>	1(1-3)	20	2(1-2)	<1
<i>Dillwynia brunioides</i>	1(1-2)	20	1(1-1)	<1

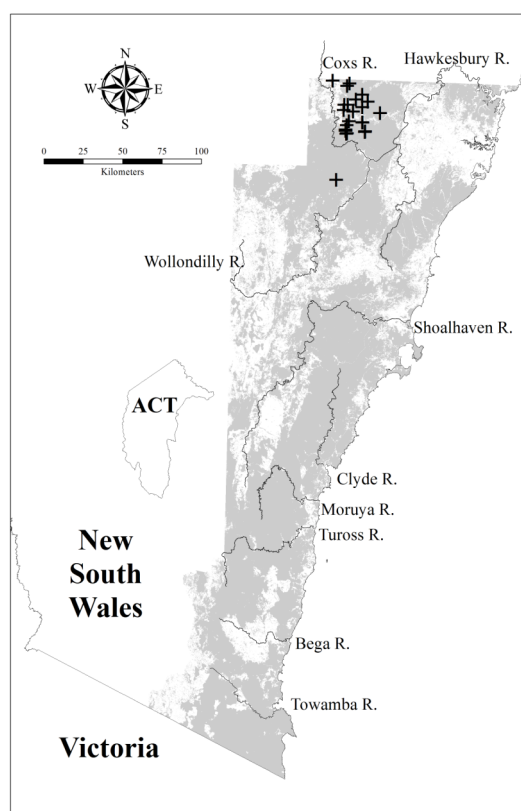
<i>Epacris microphylla</i> var. <i>microphylla</i>	1(1-1)	52	1(1-1)	5
<i>Epacris obtusifolia</i>	1(1-2)	20	1(1-1)	2
<i>Eucalyptus stricta</i>	1(1-2)	60	1(1-2)	<1
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	1(1-1)	68	1(1-1)	4
<i>Haemodorum planifolium</i>	1(1-1)	24	1(1-1)	1
<i>Hakea dactyloides</i>	1(1-1)	84	1(1-1)	12
<i>Hakea propinqua</i>	1(1-1)	28	1(1-1)	1
<i>Hakea teretifolia</i>	1(1-2)	44	1(1-2)	4
<i>Hibbertia cistiflora</i> subsp. <i>cistiflora</i>	1(1-1)	36	1(1-1)	<1
<i>Isopogon anemonifolius</i>	1(1-1)	96	1(1-1)	8
<i>Joycea pallida</i>	1(1-1)	32	1(1-2)	8
<i>Kunzea capitata</i>	1(1-2)	32	1(1-2)	1
<i>Lambertia formosa</i>	1(1-1)	48	1(1-2)	9
<i>Lepidosperma filiforme</i>	1(1-1)	24	1(1-2)	2
<i>Lepidosperma viscidum</i>	1(1-2)	64	1(1-2)	1
<i>Leptospermum arachnoides</i>	1(1-1)	52	1(1-1)	2
<i>Leptospermum trinervium</i>	1(1-2)	88	1(1-2)	15
<i>Lepyrodia scariosa</i>	1(1-1)	44	1(1-2)	6
<i>Lindsaea linearis</i>	1(1-1)	48	1(1-1)	7
<i>Lomandra cylindrica</i>	1(1-1)	32	1(1-1)	4
<i>Lomandra glauca</i>	1(1-1)	88	1(1-1)	10
<i>Mirbelia rubiifolia</i>	1(1-1)	32	1(1-1)	3
<i>Mitrasacme polymorpha</i>	1(1-1)	32	1(1-1)	3
<i>Patersonia longifolia</i>	1(1-1)	36	1(1-1)	2
<i>Patersonia sericea</i>	1(1-1)	56	1(1-1)	9
<i>Petrophile pulchella</i>	1(1-1)	84	1(1-1)	6
<i>Phyllota squarrosa</i>	1(1-1)	28	1(1-2)	<1
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	36	1(1-1)	13
<i>Platysace linearifolia</i>	1(1-1)	88	1(1-1)	8
<i>Ptilothrix deusta</i>	1(1-1)	20	1(1-2)	2
<i>Rhytidosporum procumbens</i>	1(1-1)	40	1(1-1)	3
<i>Schoenus ericetorum</i>	1(1-1)	44	1(1-1)	1
<i>Schoenus imberbis</i>	1(1-1)	32	1(1-1)	1
<i>Schoenus turbinatus</i>	1(1-1)	24	1(1-1)	<1
<i>Schoenus villosus</i>	1(1-1)	48	1(1-3)	<1
<i>Sowerbaea juncea</i>	1(1-1)	32	1(1-1)	1
<i>Stylidium lineare</i>	1(1-2)	36	1(1-1)	2
<i>Tricostularia pauciflora</i>	1(1-1)	20	1(1-1)	<1
<i>Xanthorrhoea media</i>	1(1-2)	20	1(1-2)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Entolasia stricta</i>	1(1-1)	44	1(1-2)	34
<i>Gonocarpus tetragynus</i>	1(1-1)	44	1(1-1)	20
<i>Monotoca scoparia</i>	1(1-1)	32	1(1-1)	12

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	1(1-1)	8	1(1-2)	2
<i>Corymbia gummifera</i>	1(1-1)	12	2(1-2)	16
<i>Eucalyptus apiculata</i>	2(2-2)	4	3(1-3)	<1
<i>Eucalyptus baueriana</i>	1(1-1)	4	2(1-2)	1
<i>Eucalyptus gregsoniana</i>	2(2-2)	4	2(1-2)	<1
<i>Eucalyptus ligustrina</i>	1(1-2)	12	2(1-2)	<1
<i>Eucalyptus mannifera</i>	1(1-1)	12	2(1-3)	4
<i>Eucalyptus moorei</i>	3(3-3)	4	3(2-3)	<1
<i>Eucalyptus oblonga</i>	1(1-1)	4	1(1-2)	2
<i>Eucalyptus piperita</i>	1(1-1)	8	2(1-3)	9
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	4	2(1-3)	6
<i>Eucalyptus sclerophylla</i>	1(1-1)	8	2(1-3)	4
<i>Eucalyptus sieberi</i>	1(1-2)	20	2(1-3)	16



Locations of survey sites allocated to HL p124. Grey shading indicates extant native vegetation cover within the study area.

**HL p125: Morton Rock Plate Heath**

Plate p125. Morton Rock Plate Heath (Map Unit p125) shown on the Touga Fire Trail, Morton National Park. Abundant *Kunzea parvifolia* is flowering in the foreground interspersed with *Grevillea baueri* subsp. *baueri*, *Leptospermum rotundifolium*, *Isopogon anemonifolius* and *Calytrix tetragona*. Larger individuals of *Allocasuarina distyla* can be seen emerging from cracks in the pavement.

Sample Sites: 4

Area Extant (ha): 4700

Estimated % remaining: >95%

Area in conservation reserves (ha): 4200

Estimated % of pre-clearing area in conservation reserves: 80-95%

No. taxa (total / unique): 69 / 0

No. taxa per plot ( $\pm$ sd): 24 (12.7)

Class: Sydney Montane Heaths

Related TEC: n/a

Morton Rock Plate Heath (HL p125) is equivalent to HL 125 identified by Tindall *et al.* (2004), and has an open to clumped shrub canopy with a patchy groundcover of sedges and forbs. This unit is restricted to the central Morton plateau, particularly between the Nerriga Road and Tullyangela Clearing, where mean annual rainfall is 950-1050mm and elevation 650-750m ASL. It occurs on small patches of skeletal sandy soil over massive Permian sandstone pavements (Nowra Sandstone and Berry Formation). Morton Rock Plate Heath is related to Coastal Rock Plate Heath (HL p126) and Sandstone Headland Scrub (HL p127), however has a significantly disjunct distribution from these coastal assemblages.

Although highly restricted, the original distribution of Morton Rock Plate Heath is largely intact within Morton National Park, and its principal threat is likely to be high frequency fire.

**Floristic Summary:**

**Trees:** *Eucalyptus stricta*. **Shrubs:** *Calytrix tetragona*, *Baeckea imbricata*, *Kunzea ambigua*, *Leucopogon ericoides*, *Allocasuarina distyla*, *Epacris calvertiana*, *Grevillea baueri* subsp. *asperula*, *Isopogon anethifolius*, *Leptospermum rotundifolium*. **Groundcover:** *Lepyrodia scariosa*, *Stylidium lineare*, *Austrodanthonia pilosa*, *Gonocarpus micranthus*, *Goodenia bellidifolia*, *Lomandra gracilis*, *Thelymitra pauciflora*.

**Vegetation structure:**

Stratum	Frequency (n=4)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	25	5 (-)	- (-)
Tree canopy	100	3.9 (4.3)	20.3 (19.2)
Small tree	25	5 (-)	25 (-)
Shrub	25	1.6 (-)	40 (-)
Ground cover	100	0.6 (0.3)	6 (2.9)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 11 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 14 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 11 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia elongata</i>	1(1-1)	25	1(1-1)	1
<i>Acacia hamiltoniana</i>	1(1-1)	25	1(1-1)	<1
<i>Actinotus gibbonsii</i>	1(1-1)	25	1(1-1)	<1
<i>Allocasuarina distyla</i>	2(2-2)	50	1(1-2)	2
<i>Austrodanthonia pilosa</i>	2(1-2)	50	1(1-1)	3
<i>Baeckea imbricata</i>	3(1-4)	75	1(1-1)	1
<i>Bossiaea kiamensis</i>	2(2-2)	25	2(1-3)	<1
<i>Calytrix tetragona</i>	2(1-4)	100	1(1-2)	2
<i>Centrolepis strigosa</i> subsp. <i>strigosa</i>	2(2-2)	25	1(1-1)	<1
<i>Cooperhooia barbata</i>	1(1-1)	25	1(1-1)	1
<i>Cryptandra amara</i>	1(1-1)	25	1(1-1)	1
<i>Dillwynia glaberrima</i>	1(1-1)	25	1(1-1)	1
<i>Dillwynia ramosissima</i>	1(1-1)	25	1(1-1)	<1
<i>Drosera pygmaea</i>	1(1-1)	25	1(1-1)	<1
<i>Drosera spatulata</i>	2(2-2)	25	1(1-1)	1
<i>Epacris calvertiana</i> var. <i>calvertiana</i>	1(1-1)	50	1(1-2)	<1
<i>Eucalyptus stricta</i>	1(1-3)	75	1(1-2)	1
<i>Gonocarpus micranthus</i>	1(1-1)	50	1(1-1)	1
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	2(1-2)	50	1(1-1)	4
<i>Grevillea baueri</i> subsp. <i>asperula</i>	1(1-1)	50	1(1-1)	<1
<i>Grevillea lanigera</i>	1(1-1)	25	1(1-1)	<1
<i>Isopogon anethifolius</i>	1(1-1)	50	1(1-1)	2
<i>Kunzea ambigua</i>	1(1-1)	75	1(1-2)	4
<i>Kunzea parvifolia</i>	2(2-2)	25	1(1-2)	1
<i>Lepidosperma tortuosum</i>	1(1-1)	25	1(1-1)	<1
<i>Lepidosperma viscidum</i>	1(1-1)	25	1(1-2)	1
<i>Leptospermum rotundifolium</i>	3(1-3)	50	1(1-2)	1
<i>Lepyrodia scariosa</i>	2(1-2)	100	1(1-2)	6
<i>Leucopogon attenuatus</i>	1(1-1)	25	1(1-1)	<1
<i>Leucopogon ericoides</i>	1(1-1)	75	1(1-1)	2
<i>Leucopogon fraseri</i>	2(2-2)	25	1(1-1)	<1
<i>Lomandra gracilis</i>	1(1-1)	50	1(1-1)	3
<i>Melaleuca capitata</i>	1(1-1)	25	1(1-1)	<1
<i>Philotheca scabra</i>	1(1-1)	25	1(1-2)	<1
<i>Prostanthera saxicola</i>	1(1-1)	25	1(1-2)	<1
<i>Schoenus ericetorum</i>	1(1-1)	25	1(1-1)	1
<i>Schoenus villosus</i>	1(1-1)	25	1(1-2)	<1
<i>Stylidium lineare</i>	1(1-1)	75	1(1-1)	2
<i>Tetrarrhena turfosa</i>	1(1-1)	25	1(1-2)	1
<i>Thelymitra pauciflora</i>	1(1-1)	50	1(1-1)	<1

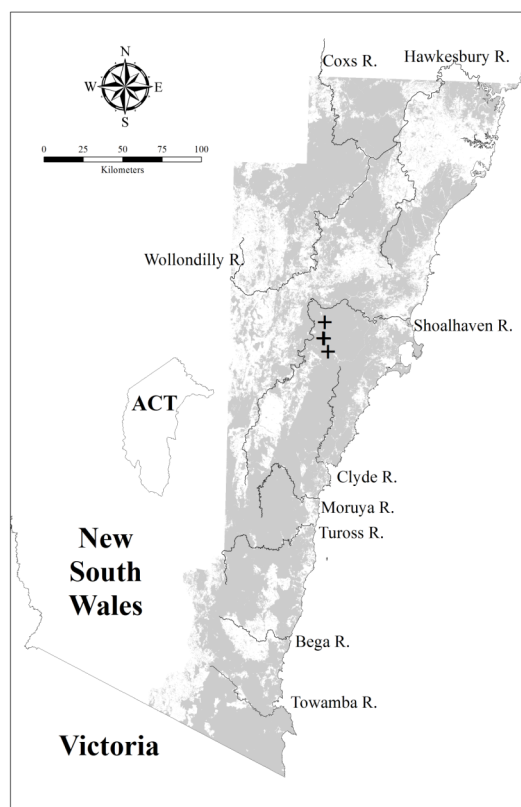
<i>Todea barbara</i>	1(1-1)	25	1(1-2)	1
<i>Velleia paradoxa</i>	2(2-2)	25	1(1-1)	<1

Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Hakea dactyloides</i>	1(1-1)	50	1(1-1)	12

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus sclerophylla</i>	1(1-1)	25	2(1-3)	4
<i>Eucalyptus sieberi</i>	1(1-1)	25	2(1-3)	16



Locations of survey sites allocated to HL p125. Grey shading indicates extant native vegetation cover within the study area.

**HL p126: Coastal Rock Plate Heath**

Plate p126. Coastal Rock Plate Heath (Map Unit p126) adjacent to Maianbar Road, Royal National Park. The low shrub stratum is dominated by *Kunzea ambigua*, *Darwinia fascicularis* and *Allocasuarina distyla* and is interspersed with clumps of *Lepidosperma viscidum*.

Sample Sites: 15

Area Extant (ha): 260

Estimated % remaining: >95%

Area in conservation reserves (ha): 50

Estimated % of pre-clearing area in conservation reserves: 10-30%

No. taxa (total / unique): 171 / 1

No. taxa per plot ( $\pm$ sd): 29.1 (13)

Class: Sydney Coastal Heaths

Related TEC: n/a

Coastal Rock Plate Heath (HL p126) is equivalent to HL 126 identified by Tindall *et al.* (2004), and has an open to clumped shrub canopy with a patchy groundcover of sedges and forbs. This unit is distributed on areas of sandstone from Broken Bay to Cataract dam, with outlying stands on Beecroft Peninsula at Jervis Bay. Coastal Rock Plate Heath is restricted to skeletal sandy soils on massive sandstone pavements in coastal and near-coastal areas 50 - 400m ASL where mean annual rainfall varies from 1200 to 1450mm. These sandstone pavements are not differentiated by any of the available abiotic modelling variables and the modelled distribution of this unit is therefore reliant on aerial photograph interpretation (API) of structurally distinct rock plate heath vegetation. Given the mapping scale and the variety of sources used to compile the API layer, in some areas Coastal Rock Plate Heath may not be distinguished from surrounding vegetation. Coastal Rock Plate Heath occurs most commonly as small patches within a widespread matrix of Coastal Sandstone Ridgetop Woodland (DSF p131). With increasing soil depth Coastal Rock Plate Heath is replaced by Coastal Sandstone Plateau Heath (HL p117), and in poorly drained areas it is replaced by Coastal Upland Swamp (FrW p129).

Most occurrences of Coastal Rock Plate Heath are no more than a few hectares in extent, though the majority are included within conservation reserves. High fire frequency may threaten the diversity of these stands because many of the plant species are killed by fire and the regenerating seedlings may suffer high mortality rates if the shallow soils they inhabit are desiccated during drought.

**Floristic Summary:**

**Shrubs:** *Allocasuarina distyla*, *Darwinia fascicularis*, *Epacris microphylla*, *Leucopogon microphyllus*, *Acacia suaveolens*, *Banksia ericifolia*, *Kunzea ambigua*, *Leptospermum squarrosum*, *Dillwynia floribunda*, *Zieria laevigata*.

**Groundcover:** *Lepyrodia scariosa*, *Lepidosperma viscidum*, *Actinotus minor*.



**Vegetation structure:**

Stratum	Frequency (n=2)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	50	4 (-)	10 (-)
Tree canopy	-	- (-)	- (-)
Small tree	-	- (-)	- (-)
Shrub	100	2.5 (0.7)	25 (21.2)
Ground cover	100	0.6 (0.2)	44 (12.7)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 10 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 19 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 10 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia suaveolens</i>	1(1-1)	53	1(1-1)	7
<i>Actinotus minor</i>	1(1-1)	40	1(1-1)	4
<i>Allocasuarina distyla</i>	1(1-2)	73	1(1-2)	2
<i>Angophora hispida</i>	1(1-1)	20	1(1-2)	1
<i>Baeckea brevifolia</i>	3(1-3)	27	1(1-3)	1
<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	1(1-1)	67	1(1-2)	7
<i>Banksia oblongifolia</i>	1(1-1)	20	1(1-1)	2
<i>Callistemon rigidus</i>	1(1-2)	20	1(1-1)	<1
<i>Calytrix tetragona</i>	1(1-2)	47	1(1-2)	2
<i>Caustis pentandra</i>	1(1-1)	20	1(1-1)	1
<i>Darwinia fascicularis</i> subsp. <i>fascicularis</i>	2(1-3)	53	1(1-1)	1
<i>Darwinia leptantha</i>	1(1-1)	20	1(1-1)	1
<i>Dillwynia floribunda</i>	1(1-1)	40	1(1-1)	2
<i>Drosera peltata</i>	1(1-2)	33	1(1-1)	2
<i>Epacris microphylla</i> var. <i>microphylla</i>	1(1-2)	67	1(1-1)	5
<i>Gonocarpus micranthus</i>	1(1-1)	33	1(1-1)	1
<i>Goodenia stelligera</i>	2(1-3)	27	1(1-1)	<1
<i>Hakea teretifolia</i>	1(1-1)	47	1(1-2)	4
<i>Hibbertia serpyllifolia</i>	2(1-2)	27	1(1-1)	1
<i>Hypolaena fastigiata</i>	1(1-3)	27	1(1-1)	1
<i>Kunzea ambigua</i>	2(1-3)	73	1(1-2)	3
<i>Lasiopetalum parviflorum</i>	1(1-1)	20	1(1-1)	<1
<i>Laxmannia gracilis</i>	1(1-1)	27	1(1-1)	4
<i>Lepidosperma viscidum</i>	3(2-3)	47	1(1-2)	1
<i>Leptospermum squarrosum</i>	1(1-2)	60	1(1-1)	1
<i>Leptospermum arachnoides</i>	1(1-2)	33	1(1-1)	2
<i>Leptospermum epacridoideum</i>	2(1-2)	27	1(1-2)	<1
<i>Lepyrodia scariosa</i>	3(1-3)	87	1(1-2)	6
<i>Leucopogon ericoides</i>	1(1-1)	20	1(1-1)	2
<i>Leucopogon microphyllus</i>	1(1-1)	53	1(1-1)	3
<i>Mirbelia rubiifolia</i>	1(1-1)	33	1(1-1)	3
<i>Mitrasacme polymorpha</i>	2(1-2)	33	1(1-1)	3
<i>Platysace stephensonii</i>	2(1-3)	27	1(1-1)	<1

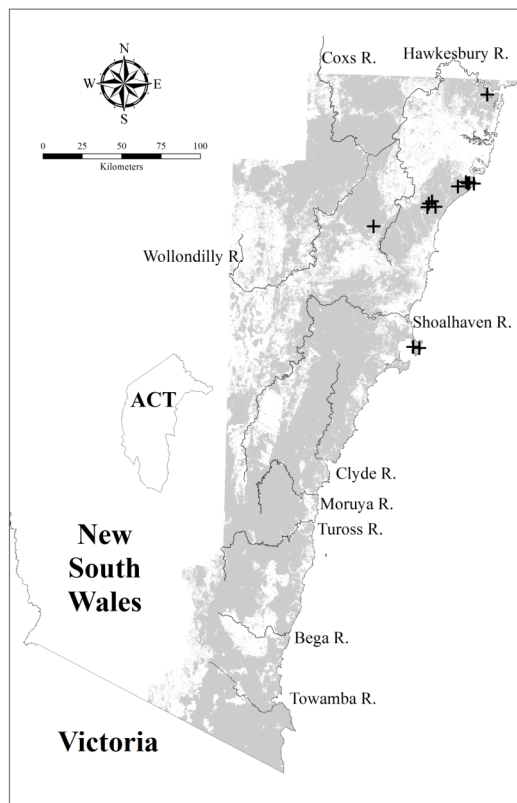
<i>Ptilothrix deusta</i>	1(1-3)	27	1(1-2)	2
<i>Schoenus ericetorum</i>	1(1-1)	27	1(1-1)	1
<i>Thelionema umbellatum</i>	2(1-3)	27	1(1-1)	<1
<i>Thysanotus juncifolius</i>	1(1-1)	20	1(1-1)	<1
<i>Xanthorrhoea resinifera</i>	1(1-2)	33	1(1-2)	4
<i>Xanthosia tridentata</i>	1(1-1)	40	1(1-1)	5
<i>Zieria laevigata</i>	1(1-1)	40	1(1-1)	<1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Entolasia stricta</i>	1(1-2)	33	1(1-2)	34
<i>Lepidosperma laterale</i>	1(1-2)	33	1(1-1)	29
<i>Lomandra glauca</i>	1(1-1)	33	1(1-1)	10

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia gummifera</i>	1(1-1)	20	2(1-2)	16
<i>Eucalyptus apiculata</i>	3(3-3)	13	2(1-3)	<1
<i>Eucalyptus botryoides</i>	1(1-1)	7	2(1-3)	3
<i>Eucalyptus piperita</i>	1(1-1)	7	2(1-3)	9
<i>Eucalyptus racemosa</i>	1(1-1)	7	2(1-2)	1



Locations of survey sites allocated to HL p126. Grey shading indicates extant native vegetation cover within the study area.

**HL p127: Sandstone Headland Scrub**

Plate p127. Sandstone Headland Scrub (Map Unit p127) clinging to a cliff above the sea at Wottamolla, Royal National Park. The dense, wind-sculpted shrub layer contains an even mix of species including *Westringia fruticosa*, *Baeckea imbricata*, *Banksia ericifolia*, *Allocasuarina distyla* and *Darwinia fascicularis*.

Sample Sites: 11

Area Extant (ha): 290

Estimated % remaining: >95%

Area in conservation reserves (ha): 200

Estimated % of pre-clearing area in conservation reserves: 60-80%

No. taxa (total / unique): 115 / 0

No. taxa per plot ( $\pm$ sd): 23 (6.5)

Class: Sydney Coastal Heaths

Related TEC: n/a

Sandstone Headland Scrub (HL p127) is equivalent to HL 127 identified by Tindall *et al.* (2004), and is characterised by a dense shrub canopy with a sparse groundcover of sedges and forbs. This unit is distributed on coastal headlands formed by Hawkesbury Sandstone between Bouddi and Otford including Sydney Heads, Cape Banks and Royal National Park. Outlying stands occur further south on Beecroft Peninsula at Jervis Bay. Within this distribution Sandstone Headland Scrub is highly restricted to small patches of shallow to skeletal soil on sandstone headlands exposed to sea winds and salt spray. Its coastal habitat receives high annual rainfall, averaging 1250-1450mm, and it has been recorded at elevations up to 100m ASL.

Most occurrences of Sandstone Headland Scrub within the northern beaches and eastern suburbs of Sydney have been cleared, and the remaining areas throughout its limited range are exposed to recreational pressures.

**Floristic Summary:**

**Shrubs:** *Allocasuarina distyla*, *Banksia ericifolia*, *Melaleuca armillaris*, *Phebalium squamulosum ssp argenteum*, *Baeckea imbricata*, *Darwinia fascicularis*, *Rulingia hermanniifolia*, *Epacris longiflora*, *Westringia fruticosa*.

**Groundcover:** *Isolepis nodosa*.

**Vegetation structure:**

\* Structural information is unavailable for this Map Unit. This heathland is characterised by a dense shrub canopy with an open groundcover of forbs & sedges.

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 6 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 18 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 6 positive diagnostic species.

**Positive Diagnostic Species:**

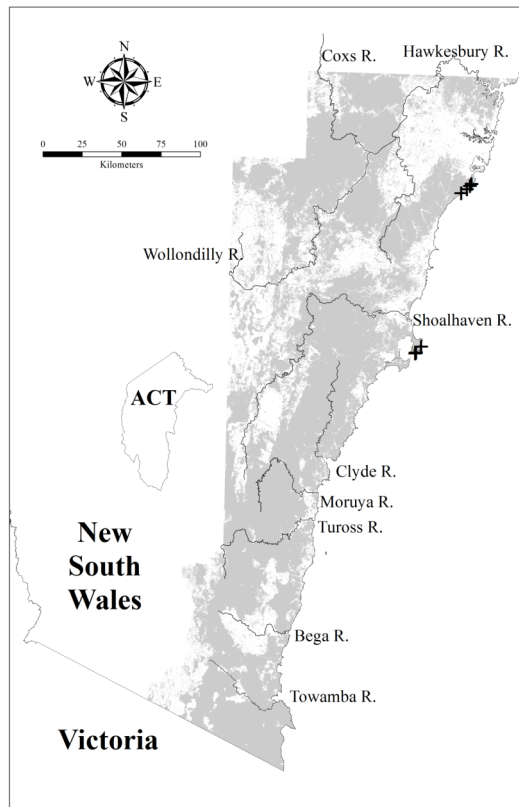
Species	C/A	Freq	C/A O	Freq O
<i>Allocasuarina distyla</i>	1(1-2)	100	1(1-2)	2
<i>Baeckea brevifolia</i>	1(1-1)	27	1(1-3)	1
<i>Baeckea imbricata</i>	2(1-2)	36	1(1-1)	1
<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	1(1-1)	91	1(1-2)	7
<i>Calytrix tetragona</i>	1(1-1)	27	1(1-2)	2
<i>Caustis flexuosa</i>	1(1-1)	36	1(1-2)	7
<i>Caustis recurvata</i>	1(1-1)	27	1(1-1)	<1
<i>Darwinia fascicularis</i> subsp. <i>fascicularis</i>	1(1-2)	27	1(1-2)	1
<i>Darwinia leptantha</i>	1(1-1)	45	1(1-1)	1
<i>Dillwynia floribunda</i>	1(1-1)	27	1(1-1)	2
<i>Dillwynia ramosissima</i>	1(1-1)	27	1(1-1)	<1
<i>Dodonaea camfieldii</i>	1(1-1)	45	1(1-1)	<1
<i>Epacris longiflora</i>	1(1-1)	27	1(1-2)	1
<i>Lasiopetalum ferrugineum</i>	1(1-3)	27	1(1-2)	2
<i>Lepidosperma laterale</i>	1(1-1)	82	1(1-1)	29
<i>Leptospermum squarrosum</i>	1(1-1)	36	1(1-1)	2
<i>Leptospermum epacridoideum</i>	1(1-3)	36	1(1-2)	<1
<i>Leptospermum laevigatum</i>	1(1-3)	36	1(1-2)	1
<i>Leptospermum rotundifolium</i>	1(1-1)	27	1(1-2)	1
<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	2(1-2)	55	1(1-2)	1
<i>Melaleuca capitata</i>	1(1-1)	36	1(1-1)	<1
<i>Phebalium squamulosum</i> subsp. <i>argenteum</i>	1(1-1)	64	1(1-1)	<1
<i>Rulingia hermanniifolia</i>	1(1-2)	55	1(1-1)	<1
<i>Westringia fruticosa</i>	1(1-1)	27	1(1-2)	<1
<i>Xanthosia tridentata</i>	1(1-2)	36	1(1-1)	5

**Constant:**

Species	C/A	Freq	C/A O	Freq O
<i>Entolasia stricta</i>	2(1-3)	36	1(1-2)	34
<i>Gonocarpus teucrioides</i>	3(1-4)	36	1(1-1)	18
<i>Lomandra longifolia</i>	2(1-2)	45	1(1-1)	44

**Other tree species occurring less frequently in this community:**

Species	C/A	Freq	C/A O	Freq O
<i>Angophora hispida</i>	2(2-2)	9	1(1-2)	1
<i>Corymbia gummifera</i>	1(1-1)	18	2(1-2)	16
<i>Eucalyptus obstans</i>	1(1-1)	9	1(1-2)	1



Locations of survey sites allocated to HL p127. Grey shading indicates extant native vegetation cover within the study area.

### FrW p129: Coastal Upland Swamp



Plate p129. Coastal Upland Swamp (Map Unit p129) at Maddens Plains near the coastal escarpment above Wombarra. The dominant shrub species is *Hakea teretifolia*, co-occurring with clumps of *Banksia robur* (foreground) and *Banksia ericifolia* (background). The dense and diverse ground cover includes the prominent species *Gleichenia dicarpa* and *Gymnoschoenus sphaerocephalus*.

Sample Sites: 78

Area Extant (ha): 4800

Estimated % remaining: >90%

Area in conservation reserves (ha): 1300

Estimated % of pre-clearing area in conservation reserves: 15-30%

No. taxa (total / unique): 308 / 1

No. taxa per plot ( $\pm$ sd): 29.7 (12)

Class: Coastal Heath Swamps

Related TEC: n/a

Coastal Upland Swamp (FrW p129) represents a slight revision of FrW 129 identified by Tindall *et al.* (2004), with the addition of a small number of sites originally allocated to FrW 303 (Booderee Heath Swamp)(no longer recognised as a separate unit). The revised FrW p129 is characterised by an open to dense shrub canopy with dense groundcover of sedges and forbs. This unit is locally restricted to swampy areas on humic sandy loams in headwater valleys and seepage zones on coastal sandstone plateaux. Its distribution extends from Brisbane Water to Bhewerre Peninsula, and it has been sampled at elevations up to 600m ASL and over a mean annual rainfall range from 1000 to 1700mm. Coastal Upland Swamps are restricted to Hawkesbury and Shoalhaven Group sandstones, and peaty alluvium derived from these substrates. Coastal Upland Swamp generally occurs as small patches within a matrix of Coastal Sandstone Ridgetop Woodland (DSF p131) or Coastal Sandstone Plateau Heath (HL p117), however larger occurrences are common at Maddens Plains west of Bulli. It shares a number of its most abundant species with Blue Mountains - Shoalhaven Hanging Swamps (FrW p130), which is generally found on sandstone plateaux extending to higher elevations. The overall floristic differences between the two units relate to increasing plant diversity as altitude declines and some local endemism in the upper altitudinal range of Blue Mountains - Shoalhaven Hanging Swamps (FrW p130). These units tend to intergrade on the Woronora Plateau.

Frequent and infrequent fire regimes, peat fires, subsidence related to underground mining, surface quarrying, polluted runoff and climate change pose threats to Coastal Upland Swamp. While much of the distribution is within conservation reserves or protected water catchment areas, mining leases for underground coal which exist across tenures, fire management and climate change present ongoing challenges for the conservation of the community.

#### Floristic Summary:

**Shrubs:** *Hakea teretifolia*, *Banksia ericifolia*, *Epacris obtusifolia*, *Sprengelia incarnata*, *Xanthorrhoea resinifera*, *Baeckea imbricata*, *Leptospermum juniperinum*, *Banksia oblongifolia*, *B. robur*. **Climbers:** *Cassytha glabella*. **Groundcover:** *Leptocarpus tenax*, *Empodisma minus*, *Lepyrodia scariosa*, *Selaginella uliginosa*, *Drosera spathulata*, *Dampiera stricta*, *Mitrasacme polymorpha*, *Lindsaea linearis*.

#### Vegetation structure:

Stratum	Frequency (n=27)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	4	- (-)	3 (-)
Tree canopy	96	2.8 (3)	54.2 (39.7)
Small tree	4	4 (-)	- (-)
Shrub	56	1.2 (0.7)	25.8 (32)
Ground cover	93	0.7 (0.5)	72.6 (34.3)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 14 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 20 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 14 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Actinotus minor</i>	1(1-1)	23	1(1-1)	4
<i>Allocasuarina distyla</i>	1(1-1)	14	1(1-2)	2
<i>Allocasuarina paludosa</i>	1(1-1)	6	2(1-3)	1
<i>Almaleea paludosa</i>	1(1-1)	8	1(1-1)	<1
<i>Baeckea imbricata</i>	1(1-1)	38	1(1-1)	1
<i>Baeckea linifolia</i>	2(1-2)	8	1(1-2)	1
<i>Baloskion tetraphyllum</i>	1(1-1)	9	1(1-2)	<1
<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	1(1-2)	74	1(1-2)	6
<i>Banksia oblongifolia</i>	1(1-2)	29	1(1-1)	2
<i>Banksia paludosa</i>	1(1-2)	15	1(1-2)	3
<i>Banksia robur</i>	2(1-3)	27	1(1-1)	<1
<i>Bauera microphylla</i>	1(1-1)	18	1(1-2)	<1
<i>Bauera rubioides</i>	1(1-1)	12	1(1-2)	1

<i>Baumea acuta</i>	1(1-1)	10	1(1-1)	<1
<i>Baumea articulata</i>	2(2-2)	13	1(1-1)	<1
<i>Baumea nuda</i>	1(1-1)	6	1(1-3)	<1
<i>Baumea rubiginosa</i>	1(1-1)	15	2(1-3)	<1
<i>Baumea teretifolia</i>	1(1-1)	23	1(1-2)	<1
<i>Blandfordia nobilis</i>	1(1-1)	21	1(1-1)	<1
<i>Boronia barkeriana</i>	1(1-1)	15	1(1-1)	<1
<i>Boronia parviflora</i>	1(1-1)	15	1(1-1)	<1
<i>Boronia pinnata</i>	1(1-1)	9	1(1-1)	1
<i>Burchardia umbellata</i>	1(1-1)	29	1(1-1)	2
<i>Callistemon citrinus</i>	1(1-2)	13	1(1-1)	1
<i>Cassytha glabella</i>	1(1-1)	47	1(1-1)	7
<i>Chorizandra sphaerocephala</i>	2(1-2)	21	1(1-2)	<1
<i>Comesperma ericinum</i>	1(1-1)	6	1(1-1)	1
<i>Conospermum ericifolium</i>	1(1-1)	8	1(1-1)	<1
<i>Cyathochaeta diandra</i>	1(1-2)	22	1(1-2)	8
<i>Dampiera stricta</i>	1(1-1)	36	1(1-1)	8
<i>Darwinia leptantha</i>	1(1-1)	24	1(1-1)	1
<i>Dillwynia floribunda</i>	1(1-1)	33	1(1-1)	2
<i>Drosera binata</i>	1(1-1)	23	1(1-1)	<1
<i>Drosera peltata</i>	1(1-1)	10	1(1-1)	2
<i>Drosera spatulata</i>	1(1-1)	37	1(1-1)	1
<i>Eleocharis sphacelata</i>	1(1-1)	10	2(1-3)	<1
<i>Empodisma minus</i>	2(1-2)	65	1(1-2)	2
<i>Epacris microphylla</i> var. <i>microphylla</i>	1(1-1)	28	1(1-1)	5
<i>Epacris obtusifolia</i>	1(1-1)	63	1(1-1)	1
<i>Eurychorda complanata</i>	1(1-1)	29	1(1-1)	1
<i>Euryomyrtus ramosissima</i>	1(1-2)	9	1(1-1)	<1
<i>Gahnia sieberiana</i>	2(1-3)	13	1(1-1)	5
<i>Gleichenia dicarpa</i>	2(1-3)	36	1(1-2)	2
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	1(1-1)	17	1(1-1)	4
<i>Grevillea oleoides</i>	1(1-1)	8	1(1-1)	2
<i>Gymnoschoenus sphaerocephalus</i>	1(1-1)	28	3(1-3)	1
<i>Haemodorum corymbosum</i>	1(1-1)	9	1(1-1)	1
<i>Haemodorum planifolium</i>	1(1-1)	13	1(1-1)	1
<i>Hakea teretifolia</i>	1(1-2)	73	1(1-2)	4
<i>Hibbertia riparia</i>	1(1-1)	18	1(1-1)	2
<i>Hibbertia rufa</i>	1(1-1)	6	1(1-1)	1
<i>Hypolaena fastigiata</i>	1(1-1)	13	1(1-1)	1
<i>Isopogon anemonifolius</i>	1(1-1)	37	1(1-1)	8
<i>Kunzea capitata</i>	1(1-1)	9	1(1-2)	1
<i>Lachnagrostis filiformis</i>	1(1-1)	12	1(1-1)	3
<i>Lepidosperma filiforme</i>	1(1-1)	23	1(1-2)	2
<i>Lepidosperma forsythii</i>	1(1-1)	18	1(1-3)	<1
<i>Lepidosperma limicola</i>	2(1-2)	22	1(1-2)	<1
<i>Lepidosperma neesii</i>	1(1-1)	10	1(1-2)	1



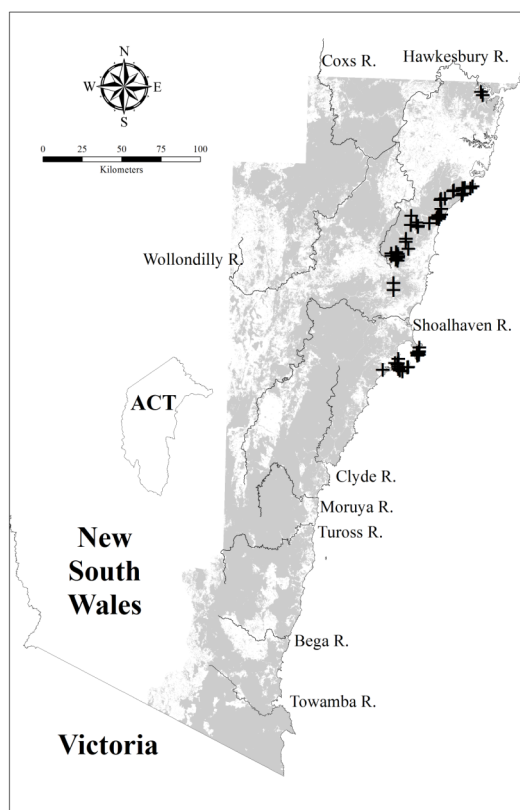
<i>Leptospermum squarrosum</i>	1(1-1)	28	1(1-1)	1
<i>Leptospermum arachnoides</i>	1(1-1)	12	1(1-1)	2
<i>Leptospermum juniperinum</i>	1(1-1)	44	1(1-2)	1
<i>Leptocarpus tenax</i>	2(1-2)	77	1(1-2)	2
<i>Lepyrodia scariosa</i>	1(1-2)	54	1(1-2)	5
<i>Leucopogon esquamatus</i>	1(1-1)	9	1(1-1)	1
<i>Lindsaea linearis</i>	1(1-1)	38	1(1-1)	7
<i>Melaleuca linariifolia</i>	1(1-2)	6	1(1-2)	1
<i>Melaleuca squarrosa</i>	1(1-4)	13	2(1-3)	1
<i>Melaleuca thymifolia</i>	1(1-1)	22	1(1-1)	1
<i>Mirbelia rubiifolia</i>	1(1-1)	13	1(1-1)	3
<i>Mitrasacme polymorpha</i>	1(1-1)	42	1(1-1)	3
<i>Petrophile pulchella</i>	1(1-1)	18	1(1-1)	6
<i>Philothea buxifolia</i>	1(1-1)	6	1(1-1)	1
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	33	1(1-1)	13
<i>Ptilothrix deusta</i>	1(1-2)	23	1(1-2)	2
<i>Pultenaea divaricata</i>	1(1-2)	6	1(1-2)	<1
<i>Pultenaea rosmarinifolia</i>	1(1-1)	6	1(1-1)	<1
<i>Pultenaea tuberculata</i>	1(1-1)	14	1(1-1)	3
<i>Saropsis fastigiata</i>	2(1-3)	10	1(1-2)	1
<i>Schoenus brevifolius</i>	1(1-1)	28	1(1-3)	1
<i>Selaginella uliginosa</i>	1(1-1)	50	1(1-1)	2
<i>Sowerbaea juncea</i>	1(1-1)	17	1(1-1)	1
<i>Sphaerolobium vimineum</i>	1(1-1)	13	1(1-1)	<1
<i>Sprengelia incarnata</i>	1(1-2)	47	1(1-2)	1
<i>Stackhousia nuda</i>	1(1-1)	13	1(1-1)	<1
<i>Stylidium lineare</i>	1(1-1)	8	1(1-1)	2
<i>Tetrarrhena turfosa</i>	1(1-2)	18	1(1-2)	1
<i>Tricostularia pauciflora</i>	1(1-2)	12	1(1-1)	<1
<i>Utricularia dichotoma</i>	1(1-1)	9	1(1-1)	<1
<i>Villarsia exaltata</i>	1(1-1)	10	1(1-1)	<1
<i>Viminaria juncea</i>	1(1-1)	27	1(1-1)	<1
<i>Xanthorrhoea resinifera</i>	1(1-2)	46	1(1-1)	4
<i>Xanthosia tridentata</i>	1(1-1)	15	1(1-1)	5
<i>Xyris bracteata</i>	1(1-1)	21	1(1-1)	<1
<i>Xyris gracilis</i>	1(1-1)	6	1(1-1)	1
<i>Xyris operculata</i>	1(1-1)	33	1(1-2)	1

Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Entolasia stricta</i>	1(1-1)	33	1(1-2)	34

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus haemastoma</i>	1(1-1)	3	1(1-2)	2
<i>Eucalyptus ligustrina</i>	2(2-2)	1	2(1-2)	<1
<i>Eucalyptus oblonga</i>	1(1-1)	3	1(1-2)	2
<i>Eucalyptus obstans</i>	1(1-1)	4	1(1-2)	<1
<i>Eucalyptus piperita</i>	1(1-1)	3	2(1-3)	9
<i>Eucalyptus racemosa</i>	2(2-2)	1	2(1-2)	1
<i>Eucalyptus sclerophylla</i>	1(1-1)	3	2(1-3)	4
<i>Eucalyptus stricta</i>	1(1-1)	1	1(1-2)	1



Locations of survey sites allocated to FrW p129. Grey shading indicates extant native vegetation cover within the study area.

**FrW p130: Blue Mountains – Shoalhaven Hanging Swamps**

Plate p130. Blue Mountains - Shoalhaven Hanging Swamps (Map Unit p130) shown at Lawson, Blue Mountains National Park. Shrubs such as *Hakea teretifolia*, *Acacia ptychoclada* and *Leptospermum continentale* are packed tightly with the dominant sedge and restioid species including *Lepidosperma limicola*, *Gymnoschoenus sphaerocephala* and *Leptocarpus tenax*.

Sample Sites: 36

Area Extant (ha): 5000

Estimated % remaining: >95%

Area in conservation reserves (ha): 3500

Estimated % of pre-clearing area in conservation reserves: 60-75%

No. taxa (total / unique): 196 / 5

No. taxa per plot ( $\pm$ sd): 22.3 (8.5)

Class: Coastal Heath Swamp

Related TECs: Blue Mountains Swamps VEC (TSC); part of the Temperate Highland Peat Swamps on Sandstone EEC (EPBC).

Blue Mountains - Shoalhaven Hanging Swamps (FrW p130) is equivalent to FrW 130 identified by Tindall *et al.* (2004). This unit has an open canopy of tall shrubs, scattered low shrubs and a dense groundcover of sedges and forbs. This unit is restricted to humic sandstone soils in headwater valleys and seepage areas on Hawkesbury, Narrabeen and Shoalhaven Group sandstones, generally at elevations of 500-1100m ASL in areas receiving 1000-1850mm mean annual rainfall, although a number of sites have been recorded at lower elevations. It is widely but patchily distributed from the upper Blue Mountains to the Morton plateau near Tolwong. Examples occur on Narrowneck Plateau, Kings and Lacys Tablelands, Tolwong, Meryla SF, Bellawongarah Mountain and the Budderoo Plateau, extending north to the Woronora Plateau, where it intergrades with Coastal Upland Swamps (FrW p129).

Blue Mountains - Shoalhaven Hanging Swamps generally occur as small patches within a matrix of drier sandstone plateau map units, including Blue Mountains Ridgetop Forest (DSF p136), Morton Mallee-Heath (HL p122), Shoalhaven Sandstone Forest (DSF p148) or Morton Sandstone Heath Woodland (DSF p149). Blue Mountains - Shoalhaven Hanging Swamps shares a number of common species with Coastal Upland Swamps (FrW p129), which is generally occurs at lower elevation sandstone plateaux. These two units tend to intergrade at intermediate elevations such as on the Woronora Plateau. With increasing substrate fertility, Blue Mountains - Shoalhaven Hanging Swamps are replaced by Tableland Bog (FrW p53) and Tableland Swamp Meadow (FrW p57).

Many examples of Blue Mountains - Shoalhaven Hanging Swamps are represented within Blue Mountains and Morton National Parks. Some areas of this unit may be threatened by sedimentation and changes to drainage and water quality below urban developments. Fire regimes and climate change also pose significant threats, while longwall mining may affect localised areas where underground mining leases exist.

**Floristic Summary:**

**Shrubs:** *Leptospermum juniperinum*, *Baeckea linifolia*, *Sprengelia incarnata*, *Epacris obtusifolia*, *Hakea teretifolia*, *Banksia ericifolia*. **Groundcover:** *Empodisma minus*, *Leptocarpus tenax*, *Gymnoschoenus sphaerocephalus*, *Lepidosperma limicola*, *Drosera binata*, *Xyris operculata*.

**Vegetation structure:**

Stratum	Frequency (n=25)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	12	8 (4)	5 (-)
Tree canopy	84	3.4 (2.3)	45.4 (31.2)
Small tree	4	4 (-)	60 (-)
Shrub	36	1.6 (0.7)	50.6 (24.7)
Ground cover	92	1 (0.5)	78.4 (27.4)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 6 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 16 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 6 positive diagnostic species.

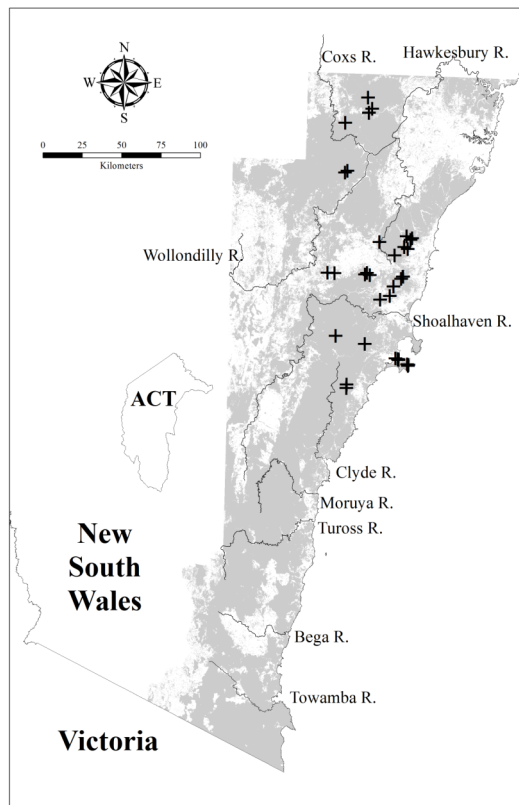
**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Baeckea linifolia</i>	1(1-2)	64	1(1-1)	1
<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	2(1-2)	39	1(1-2)	7
<i>Boronia barkeriana</i>	1(1-1)	22	1(1-1)	<1
<i>Chorizandra sphaerocephala</i>	1(1-2)	39	2(1-2)	<1
<i>Dillwynia floribunda</i>	1(1-2)	22	1(1-1)	2
<i>Drosera binata</i>	1(1-1)	42	1(1-1)	<1
<i>Empodisma minus</i>	2(2-3)	97	1(1-2)	2
<i>Epacris microphylla</i> var. <i>microphylla</i>	1(1-2)	25	1(1-1)	5
<i>Epacris obtusifolia</i>	1(1-2)	44	1(1-1)	1
<i>Epacris paludosa</i>	1(1-2)	22	1(1-2)	<1
<i>Eurychorda complanata</i>	1(1-2)	25	1(1-1)	1
<i>Gleichenia dicarpa</i>	2(1-3)	31	1(1-2)	2
<i>Gymnoschoenus sphaerocephalus</i>	3(2-4)	53	1(1-3)	1
<i>Hakea teretifolia</i>	1(1-2)	44	1(1-2)	4
<i>Hibbertia rufa</i>	1(1-2)	25	1(1-1)	1
<i>Lepidosperma limicola</i>	2(1-2)	53	1(1-2)	<1
<i>Leptospermum juniperinum</i>	2(1-3)	75	1(1-1)	1
<i>Leptospermum lanigerum</i>	2(1-2)	22	1(1-1)	1
<i>Leptocarpus tenax</i>	2(2-3)	67	1(1-2)	2
<i>Lepyrodia anarthria</i>	1(1-3)	22	1(1-3)	<1
<i>Lindsaea linearis</i>	1(1-1)	22	1(1-1)	7
<i>Melaleuca squarrosa</i>	2(1-3)	33	2(1-3)	1
<i>Pultenaea divaricata</i>	1(1-2)	25	1(1-2)	<1
<i>Selaginella uliginosa</i>	1(1-1)	33	1(1-1)	2
<i>Sprengelia incarnata</i>	1(1-3)	47	1(1-1)	1
<i>Xyris operculata</i>	1(1-1)	42	1(1-2)	1
<i>Xyris ustulata</i>	1(1-3)	25	1(1-1)	<1

**Other tree species occurring less frequently in this community:**

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia gummifera</i>	1(1-1)	3	2(1-2)	16
<i>Eucalyptus aquatica</i>	2(1-2)	6	0(0-0)	0
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-1)	3	1(1-2)	3

<i>Eucalyptus dendromorpha</i>	2(2-2)	3	2(1-2)	<1
<i>Eucalyptus mannifera</i>	1(1-3)	14	2(1-3)	4
<i>Eucalyptus obstans</i>	1(1-1)	3	1(1-2)	1
<i>Eucalyptus ovata</i>	2(1-2)	6	2(1-3)	1
<i>Eucalyptus piperita</i>	1(1-1)	8	2(1-3)	9
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	6	2(1-3)	6
<i>Eucalyptus sclerophylla</i>	1(1-1)	8	2(1-3)	4
<i>Eucalyptus sieberi</i>	1(1-1)	8	2(1-3)	16
<i>Eucalyptus sparsifolia</i>	1(1-1)	3	2(1-3)	2



Locations of survey sites allocated to FrW p130. Grey shading indicates extant native vegetation cover within the study area.

**DSF p131: Coastal Sandstone Ridgetop Woodland**

Plate p131. Coastal Sandstone Ridgetop Woodland (Map Unit p131) shown near Martins Creek Fire Trail on the Nattai Tableland. *Corymbia eximia* and *Eucalyptus sieberi* form a discontinuous overstorey interspersed with large shrubs such as *Banksia serrata*, *Leptospermum trinervium* and *Hakea dactyloides*. Smaller shrubs including *Leucopogon setiger* and *Dillwynia floribunda* are prominent towards the edge of the rock shelf.

Sample Sites: 319

Area Extant (ha): 111000

Estimated % remaining: 75-90%

Area in conservation reserves (ha): 49900

Estimated % of pre-clearing area in conservation reserves: 25-45%

No. taxa (total / unique): 585 / 9

No. taxa per plot ( $\pm$ sd): 48.6 (9.8)

Class: Sydney Coastal Dry Sclerophyll Forests

Related TEC: n/a

Coastal Sandstone Ridgetop Woodland (DSF p131) is equivalent to DSF 131 identified by Tindall *et al.* (2004). This unit is a low eucalypt forest with a diverse sclerophyll shrub layer and open groundcover of sedges. It is extensively distributed on the Triassic Hawkesbury sandstone plateaux surrounding the Sydney Basin, and is widespread on ridgetops and upper valley slopes of the Hornsby and Woronora Plateaux and the lower Blue Mountains. Coastal Sandstone Ridgetop Woodland occurs up to 600m ASL in areas receiving an average annual rainfall ranging from 850 – 1650mm. Coastal Sandstone Ridgetop Woodland grades into heath (e.g. Coastal Sandstone Plateau Heath HL p117) where soils become shallower, or upland swamps in areas of impeded drainage (e.g. Coastal Upland Swamp FrW p129). Coastal Sandstone Ridgetop Woodland is replaced by Coastal Sandstone Gully Forest (DSF p140) or its drier western counterpart Hinterland Sandstone Gully Forest (DSF p142) in the deeply incised drainage lines dissecting the plateaux. In the upper Blue Mountains it is replaced by Blue Mountains Ridgetop Woodland on the more elevated Narrabeen Sandstone. Coastal Sandstone Ridgetop Woodland is one of the most intensively sampled units in the study area and is variable and diverse in composition across its range. About one-quarter of its area has been cleared for urban development, but large areas are represented in conservation reserves. High frequency fires, weeds and fragmentation associated with urban encroachment are likely to pose localised threats.

**Floristic Summary:**

**Trees:** *Corymbia gummifera*, *E. sieberi*, *E. racemosa*. **Shrubs:** *Leptospermum trinervium*, *Lambertia formosa*, *Persoonia levis*, *Banksia serrata*, *Platysace linearifolia*, *Acacia suaveolens*, *Isopogon anemonifolius*, *Dillwynia retorta*, *Petrophile pulchella*, *Banksia spinulosa*, *Bossiaea heterophylla*, *Banksia ericifolia*, *Acacia ulicifolia*, *Monotoca scoparia*, *Hakea dactyloides*. **Groundcover:** *Caustis flexuosa*, *Lomandra obliqua*, *Dampiera stricta*, *Entolasia stricta*, *Actinotus minor*, *Cyathochaeta diandra*, *Lomandra glauca*.

**Vegetation structure:**

Stratum	Frequency (n=117)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	99	13.4 (4.4)	20.9 (12.2)
Small tree	60	5.7 (1.6)	29.7 (18.8)
Shrub	62	2.4 (0.7)	36.7 (19.7)
Ground cover	95	0.8 (0.3)	24.3 (19.9)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 31 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 41 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 31 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia echinula</i>	1(1-1)	2	1(1-1)	<1
<i>Acacia gordonii</i>	1(1-1)	1	2(2-2)	<1
<i>Acacia hispidula</i>	1(1-1)	3	1(1-1)	<1
<i>Acacia linifolia</i>	1(1-1)	34	1(1-1)	5
<i>Acacia myrtifolia</i>	1(1-1)	30	1(1-1)	3
<i>Acacia oxycedrus</i>	1(1-1)	3	1(1-1)	<1
<i>Acacia suaveolens</i>	1(1-1)	68	1(1-1)	5
<i>Acacia terminalis</i>	1(1-1)	22	1(1-1)	11
<i>Acacia ulicifolia</i>	1(1-1)	50	1(1-1)	9
<i>Actinotus helianthi</i>	1(1-1)	10	1(1-1)	1
<i>Actinotus minor</i>	1(1-1)	51	1(1-1)	3
<i>Allocasuarina distyla</i>	1(1-1)	14	1(1-2)	2
<i>Angophora costata</i>	1(1-2)	23	2(1-3)	6
<i>Angophora hispida</i>	1(1-2)	16	1(1-2)	1
<i>Anisopogon avenaceus</i>	1(1-2)	28	1(1-1)	5
<i>Aotus ericoides</i>	1(1-1)	8	1(1-1)	3
<i>Austrostipa pubescens</i>	1(1-1)	18	1(1-2)	5
<i>Babingtonia densifolia</i>	1(1-1)	2	1(1-1)	<1
<i>Baeckea brevifolia</i>	1(1-3)	3	1(1-3)	<1
<i>Baeckea diosmifolia</i>	1(1-1)	9	1(1-1)	<1
<i>Baeckea imbricata</i>	1(1-1)	5	1(1-1)	1
<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	2(1-3)	55	1(1-2)	5
<i>Banksia marginata</i>	1(1-1)	17	1(1-1)	2
<i>Banksia oblongifolia</i>	1(1-1)	23	1(1-2)	2
<i>Banksia serrata</i>	1(1-2)	72	1(1-2)	7
<i>Banksia spinulosa</i> var. <i>collina</i>	1(1-1)	1	1(1-1)	<1
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-1)	61	1(1-2)	14
<i>Bauera rubioides</i>	1(1-1)	4	1(1-2)	1
<i>Boronia floribunda</i>	1(1-2)	5	1(1-2)	<1
<i>Boronia fraseri</i>	1(1-1)	1	1(1-1)	<1
<i>Boronia ledifolia</i>	1(1-1)	39	1(1-1)	2
<i>Boronia pinnata</i>	1(1-1)	14	1(1-1)	1



<i>Boronia serrulata</i>	1(1-2)	3	1(1-1)	<1
<i>Bossiaea ensata</i>	1(1-1)	21	1(1-1)	2
<i>Bossiaea heterophylla</i>	1(1-1)	55	1(1-1)	4
<i>Bossiaea lenticularis</i>	1(1-2)	3	1(1-2)	<1
<i>Bossiaea obcordata</i>	1(1-1)	24	1(1-2)	6
<i>Bossiaea rhombifolia</i> subsp. <i>rhombifolia</i>	2(1-2)	7	1(1-3)	1
<i>Bossiaea scolopendria</i>	1(1-1)	19	1(1-1)	1
<i>Bossiaea stephensonii</i>	2(1-2)	4	1(1-3)	<1
<i>Brachyloma daphnoides</i>	1(1-1)	13	1(1-1)	6
<i>Callitris muelleri</i>	1(1-2)	2	1(1-1)	<1
<i>Calytrix tetragona</i>	1(1-1)	12	1(1-2)	1
<i>Cassytha glabella</i>	1(1-1)	18	1(1-1)	7
<i>Cassytha pubescens</i>	1(1-1)	32	1(1-1)	7
<i>Caustis flexuosa</i>	1(1-2)	60	1(1-2)	5
<i>Caustis pentandra</i>	1(1-1)	14	1(1-1)	1
<i>Caustis recurvata</i>	1(1-1)	2	1(1-1)	<1
<i>Ceratopetalum gummiferum</i>	1(1-1)	12	1(1-2)	3
<i>Chloanthes stoechadis</i>	1(1-2)	3	1(1-1)	<1
<i>Comesperma ericinum</i>	1(1-1)	4	1(1-1)	1
<i>Conospermum longifolium</i> subsp. <i>angustifolium</i>	1(1-1)	5	1(1-1)	<1
<i>Conospermum longifolium</i> subsp. <i>longifolium</i>	1(1-1)	24	1(1-1)	<1
<i>Conospermum longifolium</i> subsp. <i>mediale</i>	1(1-1)	1	1(1-1)	<1
<i>Conospermum taxifolium</i>	1(1-1)	5	1(1-1)	1
<i>Conospermum tenuifolium</i>	1(1-1)	5	1(1-2)	<1
<i>Corymbia eximia</i>	1(1-2)	16	1(1-2)	1
<i>Corymbia gummifera</i>	2(1-2)	85	2(1-3)	13
<i>Crowea saligna</i>	1(1-1)	2	1(1-2)	<1
<i>Cryptandra amara</i>	1(1-1)	6	1(1-1)	1
<i>Cryptandra ericoides</i>	1(1-1)	2	1(1-1)	<1
<i>Cyathochaeta diandra</i>	1(1-2)	53	1(1-2)	6
<i>Dampiera scottiana</i>	1(1-1)	1	1(1-1)	<1
<i>Dampiera stricta</i>	1(1-1)	55	1(1-1)	6
<i>Darwinia biflora</i>	1(1-2)	2	1(1-2)	<1
<i>Darwinia diminuta</i>	1(1-1)	2	1(1-1)	<1
<i>Darwinia fascicularis</i> subsp. <i>fascicularis</i>	1(1-1)	5	1(1-2)	1
<i>Darwinia grandiflora</i>	2(1-2)	2	1(1-1)	<1
<i>Daviesia corymbosa</i>	1(1-1)	18	1(1-1)	1
<i>Dianella prunina</i>	1(1-1)	10	1(1-1)	1
<i>Dillwynia acicularis</i>	1(1-2)	1	1(1-2)	<1
<i>Dillwynia elegans</i>	1(1-2)	3	1(1-1)	<1
<i>Dillwynia floribunda</i>	1(1-1)	9	1(1-1)	2
<i>Dillwynia retorta</i>	1(1-1)	63	1(1-2)	4
<i>Dillwynia sericea</i>	1(1-2)	5	1(1-1)	2
<i>Dodonaea camfieldii</i>	1(1-1)	3	1(1-1)	<1
<i>Doryanthes excelsa</i>	1(1-2)	9	1(1-2)	1
<i>Drosera peltata</i>	1(1-1)	5	1(1-1)	2

<i>Entolasia stricta</i>	1(1-1)	59	1(1-2)	33
<i>Epacris crassifolia</i>	1(1-1)	1	1(1-1)	<1
<i>Epacris longiflora</i>	1(1-1)	5	1(1-2)	1
<i>Epacris microphylla</i> var. <i>microphylla</i>	1(1-1)	26	1(1-1)	4
<i>Epacris pulchella</i>	1(1-1)	49	1(1-1)	3
<i>Eriostemon australasius</i>	1(1-1)	37	1(1-1)	2
<i>Eucalyptus burgessiana</i>	1(1-3)	2	1(1-2)	<1
<i>Eucalyptus camfieldii</i>	2(2-5)	2	1(1-1)	<1
<i>Eucalyptus haemastoma</i>	2(1-2)	27	1(1-2)	1
<i>Eucalyptus luehmanniana</i>	3(1-3)	3	3(2-3)	<1
<i>Eucalyptus multicaulis</i>	2(1-3)	5	1(1-3)	<1
<i>Eucalyptus oblonga</i>	1(1-2)	15	1(1-3)	1
<i>Eucalyptus piperita</i>	1(1-2)	24	2(1-3)	8
<i>Eucalyptus racemosa</i>	2(1-2)	23	1(1-2)	1
<i>Eucalyptus sclerophylla</i>	2(1-2)	11	2(1-3)	3
<i>Eucalyptus sieberi</i>	1(1-2)	32	2(1-3)	15
<i>Eucalyptus sparsifolia</i>	2(1-2)	15	2(1-3)	2
<i>Eucalyptus squamosa</i>	1(1-2)	3	1(1-1)	<1
<i>Eucalyptus umbra</i>	1(1-2)	3	2(1-2)	<1
<i>Euryomyrtus ramosissima</i>	1(1-1)	5	1(1-1)	<1
<i>Gahnia erythrocarpa</i>	1(1-1)	3	1(1-2)	<1
<i>Gompholobium glabratum</i>	1(1-1)	11	1(1-1)	2
<i>Gompholobium grandiflorum</i>	1(1-1)	38	1(1-1)	2
<i>Gompholobium latifolium</i>	1(1-1)	12	1(1-1)	3
<i>Gompholobium virgatum</i> var. <i>aspalathoides</i>	1(1-1)	2	1(1-1)	<1
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	1(1-1)	14	1(1-1)	4
<i>Goodenia decurrens</i>	2(1-2)	3	1(1-2)	<1
<i>Goodenia heterophylla</i>	1(1-1)	6	1(1-1)	2
<i>Grevillea buxifolia</i> subsp. <i>buxifolia</i>	1(1-1)	41	1(1-1)	1
<i>Grevillea capitellata</i>	1(1-2)	2	1(1-2)	<1
<i>Grevillea diffusa</i>	1(1-1)	7	1(1-1)	1
<i>Grevillea mucronulata</i>	1(1-1)	13	1(1-1)	3
<i>Grevillea oleoides</i>	1(1-1)	20	1(1-1)	1
<i>Grevillea phyllicoides</i>	1(1-2)	6	1(1-2)	<1
<i>Grevillea sericea</i>	1(1-1)	32	1(1-1)	1
<i>Grevillea speciosa</i>	1(1-1)	7	1(1-2)	<1
<i>Grevillea sphacelata</i>	1(1-1)	21	1(1-1)	1
<i>Grevillea triternata</i>	1(1-1)	1	1(1-1)	<1
<i>Guringalia dimorpha</i>	1(1-2)	10	1(1-2)	<1
<i>Hakea bakeriana</i>	1(1-2)	6	1(1-1)	<1
<i>Hakea dactyloides</i>	1(1-1)	71	1(1-1)	10
<i>Hakea gibbosa</i>	1(1-1)	12	1(1-1)	<1
<i>Hakea propinqua</i>	1(1-2)	9	1(1-1)	<1
<i>Hakea sericea</i>	1(1-1)	40	1(1-1)	5
<i>Hakea teretifolia</i>	1(1-1)	25	1(1-2)	3
<i>Hemigenia purpurea</i>	1(1-1)	8	1(1-1)	<1

<i>Hibbertia acicularis</i>	1(1-1)	3	1(1-1)	1
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	17	1(1-1)	10
<i>Hibbertia bracteata</i>	1(1-1)	20	1(1-1)	1
<i>Hibbertia cistiflora</i> subsp. <i>cistiflora</i>	1(1-1)	6	1(1-1)	<1
<i>Hibbertia fasciculata</i>	1(1-1)	5	1(1-1)	<1
<i>Hibbertia linearis</i>	1(1-1)	9	1(1-1)	1
<i>Hibbertia monogyna</i>	1(1-1)	8	1(1-1)	<1
<i>Hibbertia nitida</i>	1(1-1)	3	1(1-1)	<1
<i>Hibbertia riparia</i>	1(1-1)	6	1(1-1)	2
<i>Hibbertia rufa</i>	1(1-1)	3	1(1-1)	1
<i>Hovea linearis</i>	1(1-1)	33	1(1-1)	9
<i>Hybanthus monopetalus</i>	1(1-1)	6	1(1-1)	2
<i>Hypolaena fastigiata</i>	1(1-3)	3	1(1-1)	1
<i>Isopogon anemonifolius</i>	1(1-1)	66	1(1-1)	6
<i>Isopogon anethifolius</i>	1(1-1)	14	1(1-1)	1
<i>Kunzea capitata</i>	1(1-2)	4	1(1-2)	1
<i>Lambertia formosa</i>	1(1-1)	80	1(1-2)	6
<i>Lasiopetalum ferrugineum</i>	1(1-2)	5	1(1-2)	2
<i>Lasiopetalum parviflorum</i>	1(1-1)	1	1(1-1)	<1
<i>Lasiopetalum rufum</i>	1(1-1)	5	1(1-1)	<1
<i>Laxmannia gracilis</i>	1(1-1)	11	1(1-1)	3
<i>Lepidosperma concavum</i>	1(1-2)	7	1(1-2)	2
<i>Lepidosperma filiforme</i>	1(1-2)	11	1(1-2)	2
<i>Leptospermum squarrosum</i>	1(1-1)	7	1(1-1)	1
<i>Leptomeria acida</i>	1(1-1)	19	1(1-1)	4
<i>Leptospermum arachnoides</i>	1(1-1)	19	1(1-1)	1
<i>Leptospermum parvifolium</i>	1(1-1)	4	1(1-1)	1
<i>Leptospermum polygalifolium</i>	1(1-1)	16	1(1-2)	8
<i>Leptospermum trinervium</i>	2(1-2)	91	1(1-2)	13
<i>Lepyrodia scariosa</i>	1(1-2)	42	1(1-2)	4
<i>Leucopogon amplexicaulis</i>	1(1-2)	2	1(1-1)	<1
<i>Leucopogon appressus</i>	1(1-1)	2	1(1-1)	<1
<i>Leucopogon ericoides</i>	1(1-1)	8	1(1-1)	2
<i>Leucopogon esquamatus</i>	1(1-1)	8	1(1-1)	1
<i>Leucopogon microphyllus</i>	1(1-1)	35	1(1-1)	1
<i>Leucopogon muticus</i>	1(1-1)	6	1(1-1)	1
<i>Leucopogon setiger</i>	1(1-1)	5	1(1-1)	1
<i>Lindsaea linearis</i>	1(1-1)	34	1(1-1)	6
<i>Lomandra brevis</i>	1(1-1)	4	1(1-1)	<1
<i>Lomandra cylindrica</i>	1(1-1)	17	1(1-1)	4
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1(1-1)	29	1(1-1)	10
<i>Lomandra glauca</i>	1(1-2)	48	1(1-1)	8
<i>Lomandra gracilis</i>	1(1-1)	10	1(1-1)	3
<i>Lomandra obliqua</i>	1(1-1)	59	1(1-1)	12
<i>Lomatia silaifolia</i>	1(1-1)	46	1(1-1)	8
<i>Lycopodium deuterodensum</i>	1(1-1)	2	1(1-1)	<1

<i>Melaleuca deanei</i>	2(1-2)	1	2(1-2)	<1
<i>Micromyrtus blakelyi</i>	1(1-1)	1	2(2-2)	<1
<i>Micromyrtus ciliata</i>	1(1-1)	5	1(1-1)	<1
<i>Micrantheum ericoides</i>	1(1-1)	23	1(1-1)	2
<i>Mirbelia rubiifolia</i>	1(1-1)	12	1(1-1)	2
<i>Mirbelia speciosa</i> subsp. <i>speciosa</i>	1(1-1)	3	1(1-1)	<1
<i>Mitrasacme pilosa</i> var. <i>pilosa</i>	1(1-1)	1	1(1-1)	<1
<i>Mitrasacme polymorpha</i>	1(1-1)	7	1(1-1)	3
<i>Monotaxis linifolia</i>	1(1-1)	1	1(1-1)	<1
<i>Monotoca scoparia</i>	1(1-1)	50	1(1-1)	11
<i>Olex stricta</i>	1(1-1)	6	1(1-1)	<1
<i>Patersonia glabrata</i>	1(1-1)	26	1(1-1)	9
<i>Patersonia longifolia</i>	1(1-1)	5	1(1-1)	2
<i>Patersonia sericea</i>	1(1-1)	33	1(1-1)	8
<i>Persoonia lanceolata</i>	1(1-1)	23	1(1-1)	1
<i>Persoonia levis</i>	1(1-1)	78	1(1-1)	10
<i>Persoonia mollis</i> subsp. <i>nectens</i>	1(1-1)	2	1(1-1)	<1
<i>Persoonia oblongata</i>	1(1-2)	2	1(1-1)	<1
<i>Persoonia pinifolia</i>	1(1-1)	41	1(1-1)	2
<i>Petrophile pedunculata</i>	1(1-1)	9	1(1-2)	3
<i>Petrophile pulchella</i>	1(1-2)	61	1(1-1)	4
<i>Petrophile sessilis</i>	1(1-2)	8	1(1-1)	1
<i>Phebalium squamulosum</i> subsp. <i>squamulosum</i>	1(1-1)	2	1(1-1)	<1
<i>Philotheca hispidula</i>	1(1-1)	8	1(1-1)	1
<i>Philotheca salsolifolia</i> subsp. <i>salsolifolia</i>	1(1-1)	3	1(1-2)	<1
<i>Philotheca scabra</i>	1(1-1)	2	1(1-2)	<1
<i>Phyllota grandiflora</i>	2(1-2)	3	1(1-3)	<1
<i>Phyllanthus hirtellus</i>	1(1-1)	47	1(1-1)	13
<i>Phyllota phyllicoides</i>	1(1-2)	33	1(1-2)	2
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	44	1(1-1)	12
<i>Platysace ericoides</i>	1(1-1)	8	1(1-1)	2
<i>Platysace linearifolia</i>	1(1-1)	72	1(1-1)	6
<i>Poranthera corymbosa</i>	1(1-1)	4	1(1-1)	1
<i>Poranthera ericifolia</i>	1(1-1)	6	1(1-1)	1
<i>Prostanthera howelliae</i>	2(1-2)	1	3(2-3)	<1
<i>Ptilothrix deusta</i>	1(1-1)	8	1(1-2)	2
<i>Pultenaea ferruginea</i>	1(1-2)	12	1(1-2)	1
<i>Pultenaea linophylla</i>	1(1-1)	6	1(1-1)	2
<i>Pultenaea stipularis</i>	1(1-1)	12	1(1-1)	1
<i>Pultenaea tuberculata</i>	1(1-1)	26	1(1-1)	2
<i>Ricinocarpos pinifolius</i>	1(1-1)	8	1(1-1)	1
<i>Scaevola ramosissima</i>	1(1-1)	14	1(1-1)	3
<i>Schizaea bifida</i>	1(1-1)	11	1(1-1)	1
<i>Schizaea dichotoma</i>	1(1-1)	3	1(1-1)	<1
<i>Schoenus ericetorum</i>	1(1-1)	11	1(1-1)	1
<i>Schoenus imberbis</i>	1(1-1)	19	1(1-1)	1

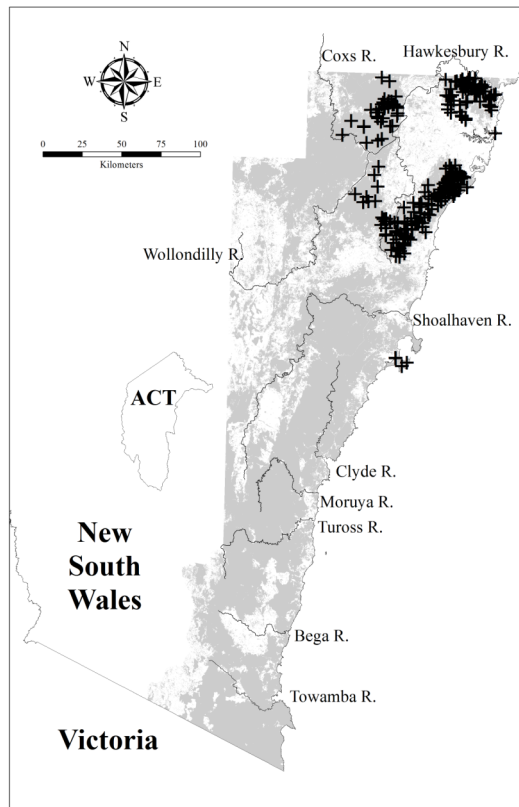
<i>Schoenus turbinatus</i>	1(1-2)	3	1(1-1)	<1
<i>Selaginella uliginosa</i>	1(1-1)	7	1(1-1)	2
<i>Stylidium lineare</i>	1(1-1)	15	1(1-1)	1
<i>Stylidium productum</i>	1(1-1)	6	1(1-2)	1
<i>Styphelia tubiflora</i>	1(1-1)	13	1(1-1)	<1
<i>Telopea speciosissima</i>	1(1-1)	11	1(1-1)	1
<i>Tetratheca ericifolia</i>	1(1-1)	10	1(1-1)	<1
<i>Tetratheca glandulosa</i>	1(1-1)	6	1(1-1)	<1
<i>Tetratheca neglecta</i>	1(1-1)	11	1(1-1)	<1
<i>Tetratheca rupicola</i>	1(1-1)	2	1(1-1)	<1
<i>Tetratheca shiressii</i>	1(1-1)	1	1(1-2)	<1
<i>Tricostularia pauciflora</i>	1(1-1)	2	1(1-1)	<1
<i>Woollsia pungens</i>	1(1-2)	16	1(1-1)	1
<i>Xanthorrhoea arborea</i>	1(1-1)	4	1(1-2)	1
<i>Xanthorrhoea media</i>	1(1-2)	49	1(1-2)	3
<i>Xanthosia pilosa</i>	1(1-1)	29	1(1-1)	7
<i>Xanthorrhoea resinifera</i>	1(1-1)	19	1(1-2)	4
<i>Xanthosia tridentata</i>	1(1-1)	33	1(1-1)	4
<i>Xylomelum pyriforme</i>	1(1-1)	14	1(1-1)	3
<i>Xyris bracteata</i>	1(1-1)	4	1(1-1)	<1
<i>Xyris complanata</i>	1(1-1)	1	1(1-1)	<1
<i>Zieria laevigata</i>	1(1-1)	3	1(1-1)	<1
<i>Zieria pilosa</i>	1(1-2)	3	1(1-1)	1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	30	1(1-1)	28
<i>Lepidosperma laterale</i>	1(1-1)	34	1(1-1)	28

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	2(1-2)	4	1(1-2)	2
<i>Angophora crassifolia</i>	2(2-2)	<1	4(2-4)	<1
<i>Eucalyptus apiculata</i>	3(1-3)	1	2(2-3)	<1
<i>Eucalyptus bridgesiana</i>	2(2-2)	<1	1(1-3)	2
<i>Eucalyptus capitellata</i>	1(1-2)	1	3(1-3)	<1
<i>Eucalyptus consideniana</i>	2(1-2)	2	2(1-2)	2
<i>Eucalyptus eugenioides</i>	2(1-3)	1	2(1-3)	4
<i>Eucalyptus obstans</i>	1(1-2)	1	1(1-2)	<1
<i>Eucalyptus oreades</i>	3(3-3)	10	3(1-3)	<1
<i>Eucalyptus punctata</i>	1(1-1)	9	2(1-3)	9
<i>Eucalyptus resinifera</i> subsp. <i>resinifera</i>	1(1-1)	<1	1(1-2)	1
<i>Eucalyptus rossii</i>	3(3-3)	<1	3(1-3)	2
<i>Eucalyptus stricta</i>	1(1-3)	2	1(1-2)	1



Locations of survey sites allocated to DSF p131. Grey shading indicates extant native vegetation cover within the study area.

### DSF p136: Blue Mountains Ridgetop Forest



Plate p136. Blue Mountains Ridgetop Forest (Map Unit p136) shown near Battleship Tops, Kings Tableland Road, Blue Mountains National Park. The overstorey is dominated by *Eucalyptus sparsifolia*, *Angophora costata* and *E. piperita* with *Banksia serrata* and *Leptospermum trinervium* forming a prominent sub-stratum. The shrub stratum includes *Lambertia formosa*, *Persoonia mollis* and *Dillwynia retorta* while *Xanthorrhoea resinosa* is prominent in the ground cover.

Sample Sites: 50  
 Area Extant (ha): 28800  
 Estimated % remaining: 80-95%  
 Area in conservation reserves (ha): 21200  
 Estimated % of pre-clearing area in conservation reserves: 55-70%  
 No. taxa (total / unique): 326 / 2  
 No. taxa per plot ( $\pm$ sd): 48.3 (6.3)  
 Class: Sydney Montane Dry Sclerophyll Forests  
 Related TEC: n/a

Blue Mountains Ridgetop Forest (DSF p136) is equivalent to DSF 136 identified by Tindall *et al.* (2004), and is a low eucalypt forest with an abundant sclerophyll shrub stratum and a groundcover dominated by sedges and forbs. This low forest is restricted to the upper Blue Mountains plateau north of the Kedumba valley, and extends beyond Bell at the northern edge of the study area. Within this distribution Blue Mountains Ridgetop Forest occurs on sandy loams derived from Narrabeen sandstone between 650 and 1050m ASL. Mean annual rainfall varies between 1000 and 1400mm. Blue Mountains Ridgetop Forest grades into Coastal Sandstone Ridgetop Woodland (DSF p131) to the east with decreasing elevation. Patches of Blue Mountains Heath (HL p124) and Blue Mountains – Shoalhaven Hanging Swamps (FrW p130) may be embedded within the forest in complex patterns related to soil depth and drainage. About one-third of the original distribution of Blue Mountains Ridgetop Forest has been cleared during the expansion of towns in the upper Blue Mountains. Further attrition and edge effects are likely, although considerable stands exist within Blue Mountains National Park.

#### Floristic Summary:

**Trees:** *Eucalyptus piperita*, *E. sieberi*. **Shrubs:** *Leptospermum trinervium*, *Platysace linearifolia*, *Banksia spinulosa*, *Persoonia levis*, *Lomatia silaifolia*, *Monotoca scoparia*, *Daviesia ulicifolia*, *Isopogon anemonifolius*, *Lambertia formosa*, *Bossiaea heterophylla*, *Banksia serrata*, *Hakea dactyloides*, *Persoonia laurina*, *Acacia terminalis*, *Petrophile pulchella*, *Amperea xiphoclada*, *Leptospermum polygalifolium*, *Telopea speciosissima*. **Climbers:** *Billardiera scandens*. **Groundcover:** *Lomandra obliqua*, *Entolasia stricta*, *Xanthosia pilosa*, *Patersonia sericea*, *Pteridium esculentum*, *Lomandra glauca*, *Dampiera stricta*, *Caustis flexuosa*.

#### Vegetation structure:

Stratum	Frequency (n=25)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	15.6 (4.6)	20.1 (11.3)
Small tree	64	5.8 (1.8)	15.2 (14.8)
Shrub	80	2 (0.7)	34.8 (16)
Ground cover	92	0.6 (0.3)	25.2 (16)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 27 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 44 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 27 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia myrtifolia</i>	1(1-1)	16	1(1-1)	4
<i>Acacia obtusifolia</i>	2(1-2)	34	1(1-2)	9
<i>Acacia terminalis</i>	1(1-1)	58	1(1-1)	11
<i>Acacia ulicifolia</i>	1(1-1)	40	1(1-1)	10
<i>Amperea xiphoclada</i>	1(1-1)	54	1(1-1)	7
<i>Angophora costata</i>	1(1-3)	22	1(1-3)	7
<i>Banksia serrata</i>	1(1-2)	58	1(1-2)	9
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-2)	88	1(1-2)	15
<i>Billardiera scandens</i>	1(1-1)	62	1(1-1)	27
<i>Boronia ledifolia</i>	1(1-1)	28	1(1-1)	3
<i>Boronia microphylla</i>	1(1-2)	20	1(1-1)	<1
<i>Bossiaea ensata</i>	1(1-1)	24	1(1-1)	2



<i>Bossiaea heterophylla</i>	1(1-1)	62	1(1-1)	5
<i>Cassytha glabella</i>	1(1-1)	30	1(1-1)	8
<i>Cassytha pubescens</i>	1(1-1)	36	1(1-1)	8
<i>Caustis flexuosa</i>	1(1-2)	46	1(1-2)	7
<i>Conospermum tenuifolium</i>	2(1-3)	14	1(1-1)	<1
<i>Cyathochaeta diandra</i>	2(1-3)	32	1(1-2)	8
<i>Dampiera purpurea</i>	1(1-1)	36	1(1-1)	4
<i>Dampiera stricta</i>	1(1-1)	50	1(1-1)	8
<i>Daviesia corymbosa</i>	1(1-1)	22	1(1-1)	2
<i>Daviesia ulicifolia</i>	1(1-2)	66	1(1-1)	6
<i>Dianella prunina</i>	1(1-1)	22	1(1-1)	1
<i>Dillwynia retorta</i>	2(1-3)	30	1(1-2)	6
<i>Entolasia stricta</i>	1(1-2)	72	1(1-2)	33
<i>Epacris microphylla</i> var. <i>microphylla</i>	1(1-1)	18	1(1-1)	5
<i>Epacris pulchella</i>	1(1-2)	20	1(1-1)	5
<i>Eriostemon australasius</i>	1(1-1)	16	1(1-1)	3
<i>Eucalyptus piperita</i>	3(2-3)	78	2(1-3)	9
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	20	2(1-3)	6
<i>Eucalyptus sclerophylla</i>	2(1-3)	34	2(1-3)	4
<i>Eucalyptus sieberi</i>	2(1-3)	72	2(1-3)	16
<i>Eucalyptus sparsifolia</i>	3(1-3)	22	2(1-3)	2
<i>Gahnia microstachya</i>	2(1-2)	30	1(1-2)	<1
<i>Gompholobium glabratum</i>	1(1-1)	14	1(1-1)	2
<i>Gonocarpus teucroides</i>	1(1-1)	40	1(1-1)	17
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	1(1-1)	40	1(1-1)	4
<i>Goodenia heterophylla</i>	1(1-1)	14	1(1-1)	2
<i>Hakea dactyloides</i>	1(1-2)	90	1(1-1)	11
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	28	1(1-1)	10
<i>Hibbertia rufa</i>	1(1-1)	22	1(1-1)	1
<i>Hovea linearis</i>	1(1-1)	48	1(1-1)	9
<i>Hybanthus monopetalus</i>	1(1-1)	22	1(1-1)	2
<i>Isopogon anemonifolius</i>	1(1-1)	76	1(1-1)	8
<i>Joycea pallida</i>	2(1-3)	24	1(1-2)	8
<i>Lachnagrostis filiformis</i>	1(1-2)	18	1(1-1)	3
<i>Lambertia formosa</i>	2(2-3)	74	1(1-2)	8
<i>Leptomeria acida</i>	1(1-1)	14	1(1-1)	4
<i>Leptospermum arachnoides</i>	1(1-1)	14	1(1-1)	2
<i>Leptospermum polygalifolium</i>	1(1-2)	48	1(1-2)	8
<i>Leptospermum trinervium</i>	2(2-3)	94	1(1-2)	15
<i>Lepyrodia scariosa</i>	1(1-1)	26	1(1-2)	6
<i>Lindsaea linearis</i>	1(1-1)	26	1(1-1)	7
<i>Lindsaea microphylla</i>	1(1-1)	20	1(1-1)	5
<i>Lomandra cylindrica</i>	1(1-1)	34	1(1-1)	4
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1(1-2)	28	1(1-1)	11
<i>Lomandra glauca</i>	1(1-2)	54	1(1-1)	10
<i>Lomandra gracilis</i>	1(1-1)	28	1(1-1)	3

<i>Lomandra obliqua</i>	1(1-2)	80	1(1-1)	14
<i>Lomatia silaifolia</i>	1(1-1)	74	1(1-1)	10
<i>Mirbelia platylobioides</i>	1(1-1)	14	1(1-1)	1
<i>Mirbelia rubiifolia</i>	1(1-1)	20	1(1-1)	3
<i>Mitrasacme polymorpha</i>	1(1-1)	14	1(1-1)	3
<i>Monotoca scoparia</i>	1(1-1)	74	1(1-1)	12
<i>Olearia erubescens</i>	1(1-1)	14	1(1-1)	2
<i>Patersonia glabrata</i>	1(1-2)	52	1(1-1)	10
<i>Patersonia sericea</i>	1(1-2)	66	1(1-1)	9
<i>Persoonia laurina</i>	1(1-1)	52	1(1-1)	2
<i>Persoonia levis</i>	1(1-1)	84	1(1-1)	13
<i>Persoonia mollis</i> subsp. <i>mollis</i>	1(1-1)	18	1(1-1)	1
<i>Petrophile pedunculata</i>	1(1-1)	30	1(1-2)	3
<i>Petrophile pulchella</i>	1(1-2)	54	1(1-1)	5
<i>Petrophile sessilis</i>	1(1-1)	14	1(1-1)	2
<i>Phyllanthus hirtellus</i>	1(1-1)	50	1(1-1)	14
<i>Phyllota squarrosa</i>	2(1-2)	34	1(1-1)	<1
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	48	1(1-1)	13
<i>Platysace linearifolia</i>	1(1-2)	88	1(1-1)	8
<i>Poa sieberiana</i> var. <i>sieberiana</i>	1(1-2)	32	1(1-2)	10
<i>Poranthera corymbosa</i>	1(1-1)	18	1(1-1)	1
<i>Pultenaea scabra</i>	2(2-3)	16	1(1-2)	1
<i>Pultenaea tuberculata</i>	1(1-1)	20	1(1-1)	3
<i>Rhytidosporum procumbens</i>	1(1-1)	16	1(1-1)	3
<i>Scaevola ramosissima</i>	1(1-1)	16	1(1-1)	3
<i>Stylidium lineare</i>	1(1-1)	18	1(1-1)	2
<i>Telopea speciosissima</i>	1(1-1)	44	1(1-1)	2
<i>Tetratheca ericifolia</i>	1(1-3)	14	1(1-1)	1
<i>Tetratheca rupicola</i>	1(1-2)	18	1(1-1)	<1
<i>Xanthorrhoea media</i>	1(1-2)	34	1(1-2)	5
<i>Xanthosia pilosa</i>	1(1-1)	68	1(1-1)	7
<i>Xanthorrhoea resinifera</i>	1(1-1)	40	1(1-2)	4
<i>Xylomelum pyriforme</i>	1(1-1)	16	1(1-1)	3

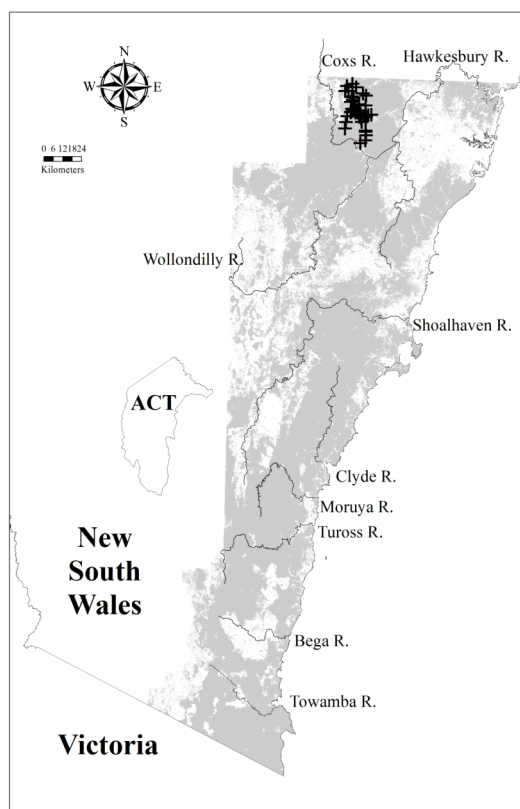
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Lomandra longifolia</i>	1(1-1)	30	1(1-1)	44
<i>Pteridium esculentum</i>	1(1-1)	56	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	3(3-3)	2	1(1-2)	2
<i>Corymbia eximia</i>	1(1-1)	2	1(1-2)	2
<i>Corymbia gummifera</i>	2(1-3)	18	2(1-2)	16
<i>Eucalyptus agglomerata</i>	1(1-1)	2	2(1-3)	7
<i>Eucalyptus apiculata</i>	1(1-1)	2	3(2-3)	<1
<i>Eucalyptus blaxlandii</i>	1(1-3)	6	1(1-3)	1

<i>Eucalyptus consideriana</i>	3(1-3)	4	2(1-2)	2
<i>Eucalyptus globoidea</i>	3(1-3)	4	2(1-2)	12
<i>Eucalyptus ligustrina</i>	2(1-2)	6	2(1-2)	<1
<i>Eucalyptus oblonga</i>	1(1-1)	4	1(1-2)	2
<i>Eucalyptus oreades</i>	4(3-4)	6	3(1-3)	<1
<i>Eucalyptus stricta</i>	2(2-3)	10	1(1-2)	1
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-1)	4	2(1-3)	8



Locations of survey sites allocated to DSF p136. Grey shading indicates extant native vegetation cover within the study area.

**HL p139: Coastal Sandplain Heath**

Plate p139. Coastal Sand plain Heath (Map Unit p139) at Wottamolla, Royal National Park. The dense shrub layer includes *Banksia ericifolia*, *Leptospermum laevigatum*, *Allocasuarina distyla*, *Banksia serrata* and *Conospermum taxifolium*.

Sample Sites: 42

Area Extant (ha): 1000

Estimated % remaining: >90%

Area in conservation reserves (ha): 530

Estimated % of pre-clearing area in conservation reserves: 20-40%

No. taxa (total / unique): 243 / 1

No. taxa per plot ( $\pm$ sd): 38.6 (10.3)

Class: Wallum Sand Heaths

Related TEC: n/a

Coastal Sandplain Heath (HL p139) is equivalent to HL 139 identified by Tindall *et al.* (2004), and is a dense to open shrubland with an open groundcover of forbs and sedges. This unit is found at Port Hacking (Kurnell and Jibbon) and at Jervis Bay (Beecroft and Booderee) where mean annual rainfall is between 1200 and 1470mm. It is restricted to podsolised sand dunes, usually perched on coastal sandstone plateaux up to 150m ASL. Coastal Sandplain Heath shares some species with Agnes Banks Woodland (DSF p239) which is found on podsolised sand deposits adjacent to the Hawkesbury river near Windsor at much lower rainfall and some distance from the coast.

Parts of Coastal Sandplain Heath's original distribution at Kurnell and in the Illawarra have been cleared for urban and industrial development. The remaining stands are under considerable recreational pressures and vulnerable to localised dune erosion.

**Floristic Summary:**

**Shrubs:** *Banksia serrata*, *Bossiaea ensata*, *Acacia suaveolens*, *Ricinocarpos pinifolius*, *Isopogon anemonifolius*, *Lambertia formosa*, *Bossiaea heterophylla*, *Leptospermum laevigatum*, *Allocasuarina distyla*, *Persoonia levis*, *Pimelea linifolia*. **Groundcover:** *Xanthosia pilosa*, *Gonocarpus teucroides*, *Hypolaena fastigiata*, *Lomandra glauca*, *Dampiera stricta*, *Lepidosperma concavum*.

**Vegetation structure:**

\* Structural information is unavailable for this Map Unit. This heathland is characterised by a dense to open shrub canopy with an open groundcover of forbs & sedges.

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 18 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 30 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 18 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia suaveolens</i>	1(1-1)	64	1(1-1)	7
<i>Acacia ulicifolia</i>	1(1-1)	33	1(1-1)	10
<i>Actinotus helianthi</i>	1(1-1)	31	1(1-1)	2
<i>Actinotus minor</i>	1(1-1)	36	1(1-1)	4
<i>Allocasuarina distyla</i>	1(1-2)	64	1(1-2)	2
<i>Amperea xiphoclada</i>	1(1-1)	24	1(1-1)	7
<i>Anisopogon avenaceus</i>	1(1-2)	24	1(1-2)	5
<i>Aotus ericoides</i>	1(1-2)	21	1(1-1)	3
<i>Astrotricha linearis</i>	1(1-1)	19	1(1-1)	<1
<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	1(1-1)	31	1(1-2)	7
<i>Banksia paludosa</i>	1(1-1)	50	1(1-2)	3
<i>Banksia serrata</i>	2(1-2)	98	1(1-2)	9
<i>Boronia ledifolia</i>	1(1-1)	21	1(1-1)	3
<i>Boronia pinnata</i>	1(1-1)	52	1(1-1)	1
<i>Bossiaea ensata</i>	1(1-1)	79	1(1-1)	2
<i>Bossiaea heterophylla</i>	1(1-1)	60	1(1-1)	6
<i>Brachyloma daphnoides</i>	1(1-2)	33	1(1-1)	6
<i>Cassytha glabella</i>	1(1-1)	24	1(1-1)	8
<i>Caustis flexuosa</i>	1(1-1)	48	1(1-2)	7
<i>Caustis pentandra</i>	1(1-2)	19	1(1-1)	1
<i>Caustis recurvata</i>	1(1-1)	19	1(1-1)	<1
<i>Conospermum taxifolium</i>	1(1-1)	21	1(1-1)	1
<i>Corymbia gummifera</i>	3(1-4)	45	2(1-2)	16
<i>Dampiera stricta</i>	1(1-1)	62	1(1-1)	8
<i>Darwinia leptantha</i>	1(1-1)	33	1(1-1)	1
<i>Dillwynia glaberrima</i>	1(1-1)	31	1(1-1)	1
<i>Dodonaea camfieldii</i>	1(1-1)	26	1(1-1)	<1
<i>Gompholobium glabratum</i>	1(1-1)	24	1(1-1)	2
<i>Gonocarpus teucrioides</i>	1(1-1)	52	1(1-1)	17
<i>Haemodorum planifolium</i>	1(1-1)	21	1(1-1)	1
<i>Hibbertia diffusa</i>	1(1-1)	26	1(1-1)	3
<i>Hibbertia fasciculata</i>	1(1-1)	26	1(1-1)	<1
<i>Hibbertia linearis</i>	1(1-1)	19	1(1-1)	1
<i>Hibbertia riparia</i>	1(1-1)	29	1(1-1)	2
<i>Hybanthus monopetalus</i>	1(1-1)	24	1(1-1)	2
<i>Hypolaena fastigiata</i>	1(1-2)	50	1(1-1)	1
<i>Isopogon anemonifolius</i>	1(1-1)	60	1(1-1)	8
<i>Lambertia formosa</i>	1(1-2)	45	1(1-2)	9
<i>Lepidosperma concavum</i>	2(2-3)	33	1(1-2)	2
<i>Lepidosperma laterale</i>	1(1-2)	60	1(1-1)	28
<i>Leptomeria acida</i>	1(1-1)	21	1(1-1)	4
<i>Leptospermum epacridoideum</i>	1(1-1)	21	1(1-2)	<1
<i>Leptospermum laevigatum</i>	1(1-2)	38	1(1-3)	1
<i>Leptospermum rotundifolium</i>	1(1-1)	24	1(1-2)	1

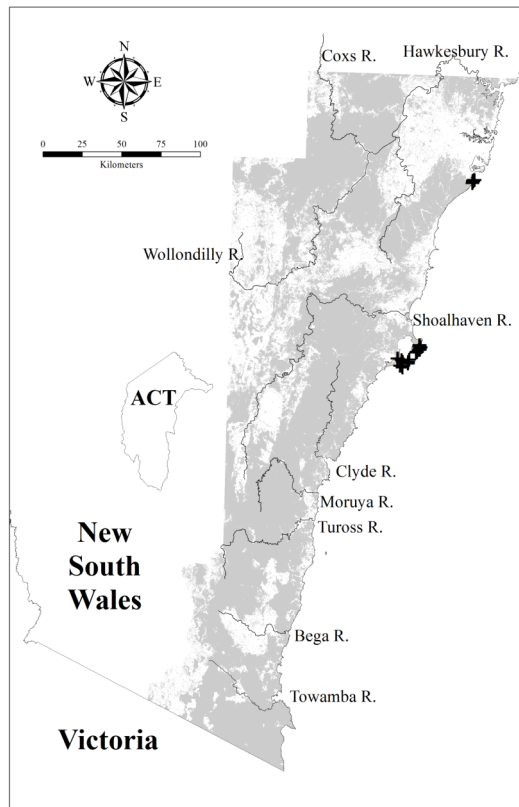
<i>Leptospermum trinervium</i>	1(1-2)	50	1(1-2)	15
<i>Leucopogon ericoides</i>	1(1-1)	36	1(1-1)	2
<i>Leucopogon virgatus</i>	1(1-1)	31	1(1-1)	1
<i>Lindsaea linearis</i>	1(1-1)	29	1(1-1)	7
<i>Lomandra glauca</i>	1(1-1)	64	1(1-1)	10
<i>Melaleuca capitata</i>	1(1-1)	26	1(1-1)	<1
<i>Mitrasacme polymorpha</i>	1(1-1)	19	1(1-1)	3
<i>Monotoca scoparia</i>	1(1-1)	31	1(1-1)	12
<i>Patersonia glabrata</i>	1(1-2)	33	1(1-1)	10
<i>Patersonia sericea</i>	1(1-1)	26	1(1-1)	9
<i>Persoonia levis</i>	1(1-1)	36	1(1-1)	13
<i>Petrophile pulchella</i>	1(1-1)	19	1(1-1)	6
<i>Philotheca buxifolia</i>	1(1-1)	26	1(1-1)	<1
<i>Phyllota phyllicoides</i>	1(1-1)	45	1(1-2)	3
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	45	1(1-1)	13
<i>Poranthera ericifolia</i>	1(1-1)	21	1(1-1)	1
<i>Prostanthera densa</i>	1(1-1)	29	1(1-1)	<1
<i>Ricinocarpos pinifolius</i>	1(1-1)	67	1(1-1)	1
<i>Scaevola ramosissima</i>	1(1-1)	24	1(1-1)	3
<i>Selaginella uliginosa</i>	1(1-1)	31	1(1-1)	2
<i>Woollsia pungens</i>	1(1-1)	52	1(1-1)	1
<i>Xanthorrhoea australis</i>	1(1-2)	52	1(1-1)	1
<i>Xanthorrhoea media</i>	1(1-2)	19	1(1-2)	5
<i>Xanthosia pilosa</i>	1(1-1)	62	1(1-1)	7
<i>Xanthosia tridentata</i>	1(1-1)	29	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Entolasia stricta</i>	1(1-1)	31	1(1-2)	34
<i>Pteridium esculentum</i>	2(1-2)	33	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora costata</i>	1(1-1)	2	1(1-3)	7
<i>Eucalyptus obstans</i>	1(1-1)	5	1(1-2)	<1
<i>Eucalyptus pilularis</i>	3(3-3)	2	2(1-3)	5
<i>Eucalyptus sclerophylla</i>	2(1-2)	7	2(1-3)	4
<i>Eucalyptus sieberi</i>	2(2-2)	26	2(1-3)	16
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	2(2-2)	2	2(1-3)	8



Locations of survey sites allocated to HL p139. Grey shading indicates extant native vegetation cover within the study area.

#### DSF p140: Coastal Sandstone Gully Forest



Plate p140. Coastal Sandstone Gully Forest (Map Unit p140) along the creek line adjacent to McKell Avenue east of Waterfall. The overstorey is dominated by the smooth-barked *Angophora costata* with a diverse tall shrub layer including *Telopea speciosissima*, *Ceratopetalum gummiferum* and *Banksia spinulosa* interspersed with clumps of *Doryanthes excelsa*.

Sample Sites: 127

Area Extant (ha): 24400

Estimated % remaining: 70-85%

Area in conservation reserves (ha): 7700

Estimated % of pre-clearing area in conservation reserves: 15-35%

No. taxa (total / unique): 478 / 2



No. taxa per plot ( $\pm$ sd): 49.5 (13.7)

Class: Sydney Coastal Dry Sclerophyll Forests

Related TEC: includes areas matching Southern Sydney Sheltered Forest on Transitional Sandstone Soils EEC (TSC).

Coastal Sandstone Gully Forest (DSF p140) is equivalent to DSF 140 identified by Tindall *et al.* (2004). This unit is an open eucalypt forest with a diverse sclerophyll shrub stratum and an open groundcover dominated by sedges. This forest is distributed along the eastern portion of the Hornsby and Woronora plateaux (below 500m ASL) where it occurs on the lower slopes of sandstone gullies within an annual average rainfall band of 1000 - 1550mm. Coastal Sandstone Gully Forest grades into Sandstone Riparian Scrub (Map Unit FoW p58) immediately adjacent to creeklines, and grades into Coastal Sandstone Ridgetop Woodland (DSF p131) on upperslopes and in less sheltered positions. Hinterland Sandstone Gully Forest (DSF p142) replaces this unit in similar landforms and substrates as rainfall declines with distance from the coast.

Several examples of Coastal Sandstone Gully Forest are represented in conservation reserves and about one-third of the distribution has been cleared for urban development. Weeds, high frequency fires and fragmentation associated with the urban fringe pose localised threats.

#### Floristic Summary:

**Trees:** *Banksia serrata*, *Eucalyptus piperita*, *Angophora costata*, *Corymbia gummifera*. **Shrubs:** *Persoonia levis*, *Leptospermum polygalifolium*, *Lomatia silaifolia*, *Persoonia pinifolia*, *Banksia ericifolia*, *Acacia terminalis*, *Leptospermum trinervium*, *Platysace linearifolia*, *Banksia spinulosa*, *Ceratopetalum gummiferum*, *Acacia suaveolens*. **Climbers:** *Smilax glyciphylla*. **Groundcover:** *Lomandra longifolia*, *Pteridium esculentum*, *Gonocarpus teucrioides*, *Entolasia stricta*, *Caustis flexuosa*, *Dianella caerulea*, *Doryanthes excelsa*, *Lepidosperma laterale*.

#### Vegetation structure:

Stratum	Frequency (n=38)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	18.7 (5.9)	24.8 (14.4)
Small tree	68	6.5 (2.9)	20.6 (14.7)
Shrub	53	2.6 (0.5)	42.8 (34.1)
Ground cover	92	1 (0.5)	30.1 (24.4)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 23 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 38 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 23 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia elongata</i>	1(1-1)	10	1(1-1)	1
<i>Acacia linifolia</i>	1(1-1)	35	1(1-1)	6
<i>Acacia suaveolens</i>	1(1-1)	39	1(1-1)	7
<i>Acacia terminalis</i>	1(1-1)	51	1(1-1)	11
<i>Acacia ulicifolia</i>	1(1-1)	37	1(1-1)	10
<i>Acianthus fornicatus</i>	1(1-2)	8	1(1-1)	1
<i>Actinotus helianthi</i>	1(1-1)	9	1(1-1)	2
<i>Actinotus minor</i>	1(1-1)	20	1(1-1)	4
<i>Allocasuarina distyla</i>	1(1-1)	7	1(1-2)	2
<i>Angophora costata</i>	2(1-3)	53	1(1-3)	6
<i>Aotus ericoides</i>	1(1-2)	26	1(1-1)	3
<i>Astroloma pinifolium</i>	1(1-2)	5	1(1-1)	<1
<i>Baeckea linifolia</i>	1(1-1)	17	1(1-2)	1
<i>Baloskion gracile</i>	2(1-3)	3	1(1-1)	<1
<i>Baloskion tetraphyllum</i>	1(1-2)	4	1(1-2)	<1
<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	1(1-2)	65	1(1-2)	6
<i>Banksia marginata</i>	1(1-1)	24	1(1-1)	3

<i>Banksia oblongifolia</i>	1(1-1)	13	1(1-2)	2
<i>Banksia serrata</i>	1(1-2)	65	1(1-2)	9
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-1)	58	1(1-2)	15
<i>Bauera rubioides</i>	1(1-2)	32	1(1-1)	1
<i>Blandfordia nobilis</i>	1(1-2)	3	1(1-1)	<1
<i>Boronia ledifolia</i>	1(1-1)	18	1(1-1)	3
<i>Bossiaea heterophylla</i>	1(1-1)	31	1(1-1)	5
<i>Bossiaea stephensonii</i>	1(1-2)	9	2(1-2)	<1
<i>Callicoma serratifolia</i>	1(1-2)	14	1(1-2)	3
<i>Cassytha pubescens</i>	1(1-1)	24	1(1-1)	8
<i>Caustis flexuosa</i>	1(1-2)	51	1(1-2)	6
<i>Caustis pentandra</i>	1(1-1)	5	1(1-1)	1
<i>Ceratopetalum gummiferum</i>	1(1-2)	40	1(1-2)	3
<i>Conospermum longifolium</i> subsp. <i>angustifolium</i>	1(1-1)	4	1(1-1)	<1
<i>Conospermum tenuifolium</i>	1(1-1)	6	1(1-1)	<1
<i>Corymbia gummifera</i>	1(1-2)	56	2(1-2)	15
<i>Crowea saligna</i>	1(1-2)	7	1(1-1)	<1
<i>Cryptostylis erecta</i>	1(1-2)	4	1(1-1)	1
<i>Dampiera purpurea</i>	1(1-1)	13	1(1-1)	4
<i>Dampiera stricta</i>	1(1-1)	18	1(1-1)	8
<i>Darwinia fascicularis</i> subsp. <i>fascicularis</i>	1(1-1)	4	1(1-2)	1
<i>Dendrobium linguiforme</i>	1(1-2)	5	1(1-1)	<1
<i>Dianella caerulea</i>	1(1-1)	50	1(1-1)	28
<i>Dillwynia floribunda</i>	1(1-1)	7	1(1-1)	2
<i>Dillwynia retorta</i>	1(1-2)	40	1(1-2)	6
<i>Dodonaea triquetra</i>	1(1-2)	35	1(1-2)	5
<i>Doryanthes excelsa</i>	1(1-2)	37	1(1-2)	1
<i>Dracophyllum secundum</i>	1(1-2)	3	1(1-1)	<1
<i>Drosera spatulata</i>	1(1-1)	9	1(1-1)	1
<i>Empodisma minus</i>	1(1-1)	11	2(1-2)	3
<i>Entolasia stricta</i>	1(1-1)	54	1(1-2)	33
<i>Epacris longiflora</i>	1(1-1)	28	1(1-2)	1
<i>Epacris microphylla</i> var. <i>microphylla</i>	1(1-1)	13	1(1-1)	5
<i>Epacris pulchella</i>	1(1-1)	32	1(1-1)	5
<i>Eriostemon australasius</i>	1(1-1)	12	1(1-1)	3
<i>Eucalyptus haemastoma</i>	1(1-2)	6	1(1-2)	1
<i>Eucalyptus piperita</i>	2(1-3)	64	2(1-3)	8
<i>Eurychorda complanata</i>	1(1-2)	4	1(1-1)	1
<i>Gahnia erythrocarpa</i>	1(1-1)	6	1(1-1)	<1
<i>Gahnia sieberiana</i>	1(1-2)	22	1(1-1)	4
<i>Gleichenia dicarpa</i>	1(1-2)	33	1(1-3)	2
<i>Gleichenia microphylla</i>	1(1-2)	8	1(1-3)	1
<i>Gompholobium grandiflorum</i>	1(1-1)	9	1(1-1)	3
<i>Gompholobium latifolium</i>	1(1-1)	15	1(1-1)	3
<i>Gonocarpus teucrioides</i>	1(1-1)	54	1(1-1)	17
<i>Grevillea buxifolia</i> subsp. <i>buxifolia</i>	1(1-1)	16	1(1-1)	2

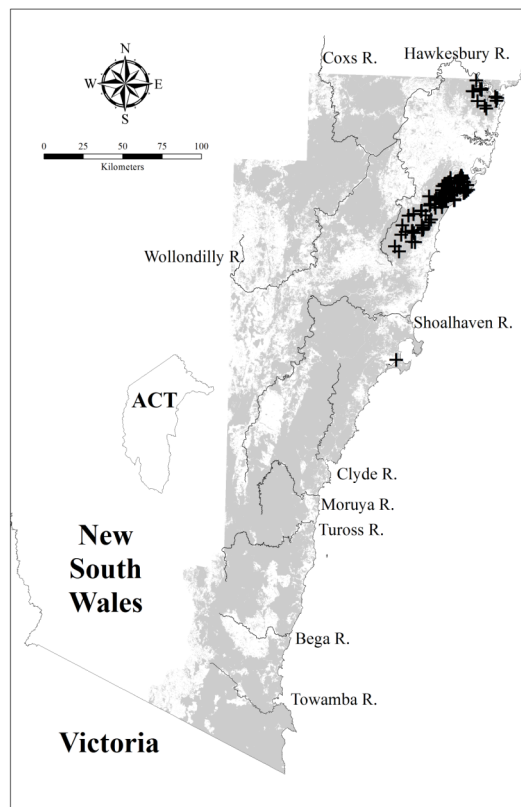
<i>Grevillea capitellata</i>	1(1-2)	12	1(1-2)	<1
<i>Grevillea diffusa</i>	1(1-2)	15	1(1-1)	1
<i>Grevillea mucronulata</i>	1(1-1)	17	1(1-1)	3
<i>Grevillea oleoides</i>	1(1-1)	13	1(1-1)	2
<i>Grevillea sericea</i>	1(1-2)	10	1(1-1)	2
<i>Guringalia dimorpha</i>	1(1-2)	6	1(1-2)	1
<i>Hakea bakeriana</i>	1(1-2)	4	1(1-1)	<1
<i>Hakea dactyloides</i>	1(1-1)	43	1(1-1)	11
<i>Hakea gibbosa</i>	1(1-1)	13	1(1-1)	1
<i>Hakea propinqua</i>	1(1-1)	5	1(1-1)	1
<i>Hakea sericea</i>	1(1-1)	35	1(1-1)	6
<i>Hakea teretifolia</i>	1(1-1)	20	1(1-2)	4
<i>Hibbertia bracteata</i>	1(1-1)	8	1(1-1)	1
<i>Hibbertia linearis</i>	1(1-1)	16	1(1-1)	1
<i>Hibbertia monogyna</i>	1(1-1)	8	1(1-1)	1
<i>Hibbertia nitida</i>	1(1-1)	15	1(1-1)	<1
<i>Isopogon anemonifolius</i>	1(1-1)	25	1(1-1)	8
<i>Isopogon anethifolius</i>	1(1-2)	7	1(1-1)	2
<i>Lambertia formosa</i>	1(1-1)	35	1(1-2)	8
<i>Lasiopetalum ferrugineum</i>	1(1-2)	13	1(1-2)	2
<i>Leionema dentatum</i>	1(1-2)	5	1(1-1)	<1
<i>Lepidosperma laterale</i>	1(1-1)	43	1(1-1)	28
<i>Leptospermum squarrosum</i>	1(1-1)	11	1(1-1)	1
<i>Leptomeria acida</i>	1(1-1)	28	1(1-1)	4
<i>Leptospermum grandifolium</i>	1(1-1)	8	1(1-2)	<1
<i>Leptospermum polygalifolium</i>	1(1-1)	67	1(1-2)	7
<i>Leptospermum trinervium</i>	1(1-2)	57	1(1-2)	15
<i>Lepyrodia scariosa</i>	1(1-2)	25	1(1-2)	5
<i>Leucopogon amplexicaulis</i>	1(1-1)	18	1(1-2)	<1
<i>Leucopogon ericoides</i>	1(1-2)	13	1(1-1)	2
<i>Leucopogon microphyllus</i>	1(1-1)	8	1(1-1)	3
<i>Leucopogon setiger</i>	1(1-1)	5	1(1-1)	1
<i>Lindsaea linearis</i>	1(1-1)	17	1(1-1)	7
<i>Lindsaea microphylla</i>	1(1-1)	19	1(1-1)	5
<i>Logania albiflora</i>	1(1-1)	9	1(1-1)	1
<i>Lomandra longifolia</i>	1(1-2)	65	1(1-1)	43
<i>Lomandra obliqua</i>	1(1-1)	30	1(1-1)	14
<i>Lomatia silaifolia</i>	1(1-1)	53	1(1-1)	9
<i>Lycopodium deuterodensum</i>	1(1-1)	9	1(1-1)	<1
<i>Marsdenia suaveolens</i>	1(1-1)	9	1(1-1)	3
<i>Micrantheum ericoides</i>	1(1-1)	9	1(1-1)	2
<i>Monotoca scoparia</i>	1(1-1)	24	1(1-1)	12
<i>Patersonia glabrata</i>	1(1-1)	26	1(1-1)	10
<i>Persoonia lanceolata</i>	1(1-1)	7	1(1-1)	2
<i>Persoonia levis</i>	1(1-1)	54	1(1-1)	12
<i>Persoonia pinifolia</i>	1(1-1)	49	1(1-1)	3

<i>Petrophile pulchella</i>	1(1-1)	31	1(1-1)	5
<i>Phebalium squamulosum</i> subsp. <i>squamulosum</i>	1(1-2)	3	1(1-1)	<1
<i>Philotheca scabra</i>	1(1-2)	6	1(1-2)	<1
<i>Phyllota phyllicoides</i>	1(1-2)	9	1(1-2)	3
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	40	1(1-1)	13
<i>Platylobium formosum</i>	1(1-2)	12	1(1-1)	3
<i>Platysace linearifolia</i>	1(1-1)	43	1(1-1)	8
<i>Podocarpus spinulosus</i>	2(1-3)	4	1(1-1)	1
<i>Pomaderris andromedifolia</i>	1(1-1)	3	1(1-1)	<1
<i>Pomaderris discolor</i>	1(1-2)	3	1(1-1)	<1
<i>Pomaderris ferruginea</i>	1(1-1)	5	1(1-1)	1
<i>Prostanthera linearis</i>	1(1-1)	6	1(1-2)	<1
<i>Pseudanthus pimeleoides</i>	2(1-3)	3	1(1-3)	<1
<i>Pteridium esculentum</i>	1(1-2)	62	1(1-2)	37
<i>Pultenaea daphnoides</i>	1(1-1)	28	1(1-1)	4
<i>Pultenaea linophylla</i>	1(1-1)	15	1(1-1)	2
<i>Pultenaea stipularis</i>	1(1-2)	25	1(1-1)	1
<i>Pultenaea tuberculata</i>	1(1-1)	9	1(1-1)	3
<i>Ricinocarpos pinifolius</i>	1(1-1)	17	1(1-1)	1
<i>Schoenus melanostachys</i>	1(1-2)	13	1(1-2)	2
<i>Selaginella uliginosa</i>	1(1-1)	18	1(1-1)	2
<i>Smilax glycyphylla</i>	1(1-1)	57	1(1-1)	8
<i>Sticherus flabellatus</i> var. <i>flabellatus</i>	1(1-3)	13	1(1-2)	1
<i>Stylidium productum</i>	1(1-1)	14	1(1-1)	1
<i>Styphelia tubiflora</i>	1(1-2)	9	1(1-1)	1
<i>Telopea speciosissima</i>	1(1-1)	15	1(1-1)	2
<i>Todea barbara</i>	1(1-1)	6	1(1-2)	1
<i>Tristania neriifolia</i>	1(1-2)	6	1(1-3)	<1
<i>Viminaria juncea</i>	1(1-1)	5	1(1-1)	<1
<i>Woollsia pungens</i>	1(1-1)	24	1(1-1)	1
<i>Xanthorrhoea arborea</i>	1(1-1)	25	1(1-2)	1
<i>Xanthorrhoea media</i>	1(1-1)	31	1(1-2)	4
<i>Xanthosia pilosa</i>	1(1-1)	39	1(1-1)	7
<i>Xanthosia tridentata</i>	1(1-1)	31	1(1-1)	5
<i>Zieria laevigata</i>	1(1-1)	4	1(1-1)	<1
<i>Zieria pilosa</i>	1(1-1)	17	1(1-1)	1

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora hispida</i>	1(1-1)	2	1(1-2)	1
<i>Corymbia eximia</i>	1(1-2)	2	1(1-2)	2
<i>Eucalyptus agglomerata</i>	1(1-2)	4	2(1-3)	8
<i>Eucalyptus botryoides</i>	1(1-1)	2	2(1-3)	3
<i>Eucalyptus multicaulis</i>	3(1-3)	2	2(1-3)	<1
<i>Eucalyptus obstans</i>	1(1-3)	2	1(1-2)	<1
<i>Eucalyptus pilularis</i>	2(1-3)	4	2(1-3)	5

<i>Eucalyptus punctata</i>	1(1-2)	6	2(1-3)	9
<i>Eucalyptus racemosa</i>	3(1-3)	5	2(1-2)	1
<i>Eucalyptus scias</i> subsp. <i>callimastha</i>	1(1-1)	1	1(1-2)	1
<i>Eucalyptus sieberi</i>	1(1-2)	25	2(1-3)	16
<i>Eucalyptus umbra</i>	1(1-1)	2	1(1-2)	<1
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	2(1-2)	2	2(1-3)	8



Locations of survey sites allocated to DSF p140. Grey shading indicates extant native vegetation cover within the study area.

**DSF p141: Budderoo-Morton Plateau Forest**

Sample Sites: 29  
 Area Extant (ha): 5500  
 Estimated % remaining: 80-95%  
 Area in conservation reserves (ha): 5200  
 Estimated % of pre-clearing area in conservation reserves: 70-90%  
 No. taxa (total / unique): 210 / 2  
 No. taxa per plot ( $\pm$ sd): 30.4 (8.7)  
 Class: Sydney Montane Dry Sclerophyll Forests  
 Related TEC: n/a

Budderoo-Morton Plateau Forest (DSF p141) is equivalent to DSF 141 identified by Tindall *et al.* (2004), and is a low eucalypt forest with a dense sclerophyll shrub stratum and an open groundcover dominated by sedges. Budderoo-Morton Plateau Forest is found on sheltered, periodically damp parts of elevated sandstone plateaux between 550 and 1000m ASL, primarily on the Budderoo, Little Forest, Tianjara and the southern Morton plateaux. Budderoo-Morton Plateau Forest grades into heath with decreasing soil depths (e.g. Morton Mallee-Heath, HL p122), or upland swamps in areas of impeded drainage (Blue Mountains-Shoalhaven Hanging Swamps, FrW p130). It is replaced by Shoalhaven Sandstone Forest (DSF p148) in areas receiving lower rainfall.

The majority of the distribution of Budderoo-Morton Plateau Forest is within Budderoo and Morton National Parks.

**Floristic Summary:**

**Trees:** *Corymbia gummifera*, *Eucalyptus sieberi*, *E. piperita*. **Shrubs:** *Bossiaea kiamensis*, *Aotus ericoides*, *Banksia paludosa*, *Leptospermum trinervium*, *Amperea xiphoclada*, *Acacia obtusifolia*, *Banksia serrata*, *Epacris longifolia*. **Groundcover:** *Lomandra longifolia*, *Gahnia sieberiana*, *Gleichenia dicarpa*, *Empodisma minus*.

**Vegetation structure:**

Stratum	Frequency (n=28)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	17.9 (6.5)	29.6 (15.1)
Small tree	82	5.8 (1.7)	40.2 (27.1)
Shrub	54	2.1 (0.6)	52.3 (24.2)
Ground cover	89	0.9 (0.5)	42.8 (22.5)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 11 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 24 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 11 positive diagnostic species.

**Positive**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia obtusifolia</i>	2(1-2)	48	1(1-2)	9
<i>Actinotus minor</i>	1(1-1)	24	1(1-1)	4
<i>Amperea xiphoclada</i>	1(1-1)	52	1(1-1)	7
<i>Aotus ericoides</i>	1(1-2)	69	1(1-1)	3
<i>Baeckea linifolia</i>	1(1-2)	34	1(1-2)	1
<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	1(1-2)	38	1(1-2)	7
<i>Banksia paludosa</i>	2(1-2)	69	1(1-2)	3
<i>Banksia serrata</i>	2(1-2)	48	1(1-2)	9
<i>Bauera rubioides</i>	1(1-1)	21	1(1-2)	1
<i>Boronia thujona</i>	2(2-2)	31	2(1-2)	<1
<i>Bossiaea kiamensis</i>	2(1-3)	76	2(2-2)	<1
<i>Cassytha pubescens</i>	1(1-1)	28	1(1-1)	8
<i>Corymbia gummifera</i>	2(1-2)	62	2(1-2)	16
<i>Dracophyllum secundum</i>	1(1-1)	24	1(1-1)	<1
<i>Empodisma minus</i>	2(1-2)	48	1(1-2)	2
<i>Epacris longiflora</i>	2(1-2)	48	1(1-1)	1
<i>Eucalyptus dendromorpha</i>	2(1-2)	24	2(2-2)	<1
<i>Eucalyptus piperita</i>	2(2-3)	55	2(1-3)	9
<i>Eucalyptus sieberi</i>	2(1-2)	62	2(1-3)	16
<i>Gahnia sieberiana</i>	1(1-2)	72	1(1-1)	4
<i>Gleichenia dicarpa</i>	2(1-3)	59	1(1-2)	2
<i>Gleichenia microphylla</i>	2(1-3)	21	1(1-2)	1
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-1)	24	1(1-1)	6
<i>Isopogon anemonifolius</i>	1(1-1)	34	1(1-1)	8
<i>Leptospermum polygalifolium</i>	1(1-2)	38	1(1-2)	8
<i>Leptospermum rotundifolium</i>	1(1-2)	45	1(1-2)	1
<i>Leptospermum subglabratum</i>	2(1-2)	21	2(1-2)	<1
<i>Leptospermum trinervium</i>	2(1-2)	55	1(1-2)	15
<i>Lepyrodia scariosa</i>	1(1-2)	34	1(1-2)	6
<i>Lindsaea linearis</i>	1(1-1)	34	1(1-1)	7
<i>Lomandra longifolia</i>	1(1-2)	72	1(1-1)	44
<i>Melaleuca squarrosa</i>	1(1-2)	38	2(1-3)	1
<i>Persoonia levis</i>	1(1-1)	34	1(1-1)	13
<i>Persoonia mollis</i> subsp. <i>ledifolia</i>	1(1-1)	24	1(1-1)	1
<i>Platysace lanceolata</i>	1(1-1)	48	1(1-1)	13
<i>Smilax glyciphylla</i>	1(1-1)	38	1(1-1)	8
<i>Tetratheca thymifolia</i>	1(1-2)	45	1(1-1)	6
<i>Todea barbara</i>	1(1-1)	24	1(1-2)	1
<i>Tristaniopsis collina</i>	1(1-1)	24	1(1-2)	2
<i>Xanthosia pilosa</i>	1(1-1)	28	1(1-1)	8

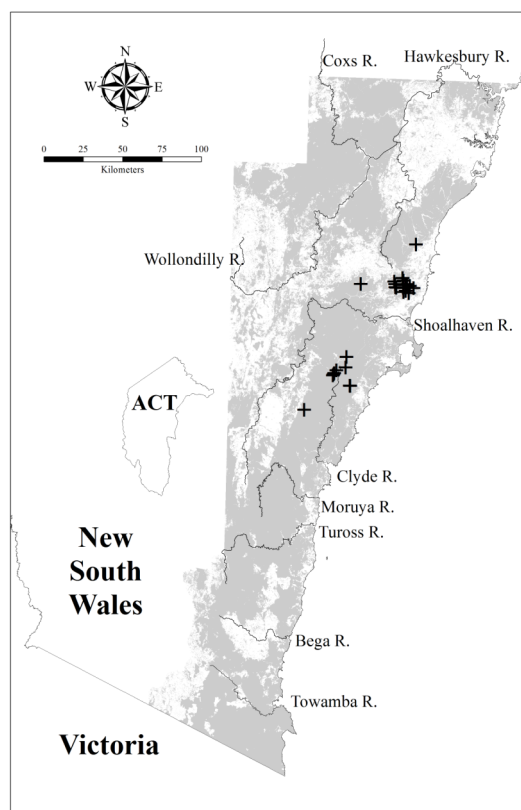


## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-2)	31	1(1-2)	15
<i>Billardiera scandens</i>	1(1-1)	31	1(1-1)	28
<i>Entolasia stricta</i>	1(1-1)	31	1(1-2)	34
<i>Gonocarpus teucrioides</i>	1(1-1)	38	1(1-1)	17
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	45	1(1-1)	24
<i>Pteridium esculentum</i>	1(1-1)	55	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus dives</i>	1(1-1)	3	2(1-3)	4
<i>Eucalyptus obstans</i>	4(4-4)	3	1(1-2)	1
<i>Eucalyptus stricta</i>	2(2-2)	3	1(1-2)	1
<i>Eucalyptus triflora</i>	3(3-3)	3	1(1-1)	<1



Locations of survey sites allocated to DSF p141. Grey shading indicates extant native vegetation cover within the study area.

**DSF p142: Hinterland Sandstone Gully Forest**

Plate p142. Hinterland Sandstone Gully Forest (Map Unit p142) in Blue Mountains National Park off Winbourne Rd in Hazelbrook. A canopy dominated by *Eucalyptus agglomerata*, *Syncarpia glomulifera* subsp. *glomulifera* and *E. piperita* subsp. *piperita* grows above a diverse shrub layer including *Bossiaea rhombifolia*, *Pultenaea flexilis*, *Banksia spinulosa* var. *spinulosa* and *Acacia terminalis*, and a sparse groundcover dominated by grasses and sedges.

Sample Sites: 152

Area Extant (ha): 90900

Estimated % remaining: 80-95%

Area in conservation reserves (ha): 46800

Estimated % of pre-clearing area in conservation reserves: 35-55%

No. taxa (total / unique): 524 / 3

No. taxa per plot ( $\pm$ sd): 45.2 (11.6)

Class: Sydney Hinterland Dry Sclerophyll Forests

Related TEC: n/a

Hinterland Sandstone Gully Forest (DSF p142) is equivalent to DSF 142 identified by Tindall *et al.* (2004), and is an open eucalypt forest with an abundant sclerophyll shrub stratum and a groundcover dominated by sedges. This forest surrounds the Cumberland plain, occurring along the western portion of the Hornsby and Woronora plateaux and in the lower Blue Mountains. Within this distribution Hinterland Sandstone Gully Forest occurs on lower slopes of dry sandstone gullies up to 600m ASL where average annual rainfall ranges from 850 to 1300mm. Hinterland Sandstone Gully Forest grades into Sandstone Riparian Scrub (FoW p58) immediately adjacent to creeklines and is replaced by Coastal Sandstone Ridgetop Woodland (DSF p131) or Wingecarribee-Burratorang Sandstone Forest (DSF p144) on upper slopes and exposed positions. As rainfall increases toward the coast, it is replaced by Coastal Sandstone Gully Forest (DSF p140).

About one third of Hinterland Sandstone Gully Forest's original extent has been supplanted by urban development. Large areas remain, including examples in conservation reserves, though edge effects such as weed invasion and high fire frequency are evident in some locations.

**Floristic Summary:**

**Trees:** *Angophora costata*, *Corymbia gummifera*, *Banksia serrata*, *Eucalyptus piperita*. **Shrubs:** *Persoonia linearis*, *P. levis*, *Phyllanthus hirtellus*, *Leptospermum trinervium*, *Lomatia silaifolia*, *Banksia spinulosa*, *Platysace linearifolia*, *Ceratopetalum gummiferum*, *Acacia ulicifolia*, *Acacia terminalis*. **Climbers:** *Billardiera scandens*. **Groundcover:** *Entolasia stricta*, *Pteridium esculentum*, *Dianella caerulea*, *Smilax glycyphylla*, *Xanthosia pilosa*, *Lomandra longifolia*, *Lepidosperma laterale*, *Lomandra obliqua*.

**Vegetation structure:**

Stratum	Frequency (n=100)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	2	20 (2.8)	5 (-)
Tree canopy	99	22.1 (5.2)	26.5 (12.8)
Small tree	80	9.1 (3.8)	26 (18.2)
Shrub	54	2.4 (0.6)	27 (21.4)
Ground cover	100	1 (0.3)	23.7 (23.8)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 26 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 36 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 26 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia hispidula</i>	1(1-3)	2	1(1-1)	<1
<i>Acacia linifolia</i>	1(1-2)	46	1(1-1)	5
<i>Acacia longifolia</i>	1(1-1)	18	1(1-2)	9
<i>Acacia parvipinnula</i>	1(1-1)	3	1(1-1)	1
<i>Acacia suaveolens</i>	1(1-1)	27	1(1-1)	7
<i>Acacia terminalis</i>	1(1-1)	49	1(1-1)	11
<i>Acacia ulicifolia</i>	1(1-1)	52	1(1-1)	9
<i>Acianthus fornicatus</i>	1(1-1)	15	1(1-2)	1
<i>Acianthus pusillus</i>	1(1-1)	2	1(1-2)	<1
<i>Acrotriche divaricata</i>	1(1-1)	7	1(1-1)	1
<i>Actinotus helianthi</i>	1(1-1)	20	1(1-1)	1
<i>Allocasuarina littoralis</i>	1(1-2)	39	1(1-2)	16
<i>Allocasuarina torulosa</i>	2(1-3)	30	1(1-3)	4
<i>Amperea xiphoclada</i>	1(1-1)	17	1(1-1)	7
<i>Angophora bakeri</i>	1(1-2)	7	1(1-2)	2
<i>Angophora costata</i>	2(1-3)	72	1(1-3)	6
<i>Anisopogon avenaceus</i>	1(1-2)	12	1(1-2)	5
<i>Asterolasia correifolia</i>	1(1-3)	3	2(2-2)	<1
<i>Astrotricha floccosa</i>	1(1-2)	11	1(1-2)	<1
<i>Astrotricha latifolia</i>	1(1-1)	11	1(1-1)	2
<i>Astrotricha longifolia</i>	1(1-2)	4	1(1-1)	<1
<i>Austrostipa pubescens</i>	1(1-1)	24	1(1-2)	5
<i>Banksia serrata</i>	1(1-2)	51	1(1-2)	9
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-2)	62	1(1-2)	14
<i>Billardiera scandens</i>	1(1-1)	56	1(1-1)	27
<i>Boronia ledifolia</i>	1(1-1)	21	1(1-1)	3
<i>Bossiaea heterophylla</i>	1(1-1)	20	1(1-1)	6
<i>Bossiaea lenticularis</i>	1(1-2)	5	1(1-2)	<1
<i>Bossiaea neo-anglica</i>	1(1-3)	3	1(1-2)	<1
<i>Bossiaea obcordata</i>	1(1-1)	22	1(1-2)	7
<i>Bossiaea rhombifolia</i> subsp. <i>rhombifolia</i>	2(1-3)	10	1(1-3)	1
<i>Calochlaena dubia</i>	2(1-3)	20	1(1-3)	9

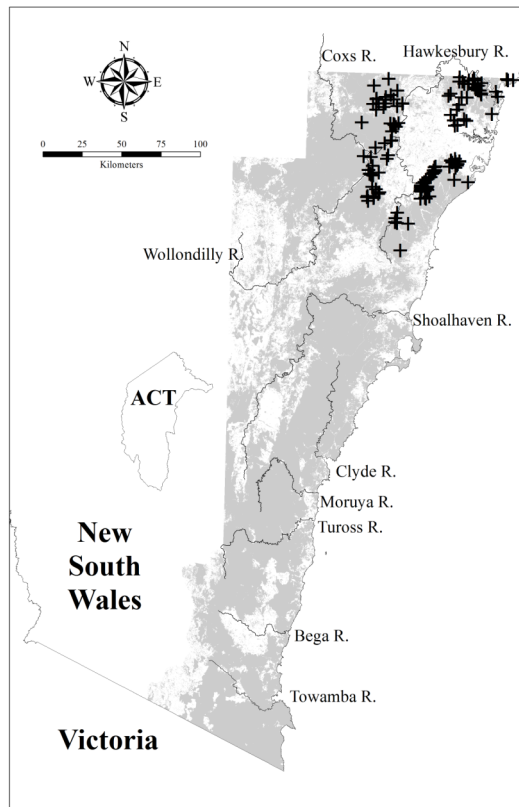
<i>Cassytha glabella</i>	1(1-1)	16	1(1-1)	8
<i>Cassytha pubescens</i>	1(1-1)	23	1(1-1)	8
<i>Caustis flexuosa</i>	1(1-2)	30	1(1-2)	7
<i>Ceratopetalum gummiferum</i>	1(1-2)	54	1(1-2)	3
<i>Cheilanthes distans</i>	1(1-1)	7	1(1-1)	2
<i>Chloanthes stoechadis</i>	1(1-2)	3	1(1-1)	<1
<i>Correa reflexa</i>	1(1-1)	13	1(1-1)	5
<i>Corymbia eximia</i>	2(1-3)	13	1(1-2)	2
<i>Corymbia gummifera</i>	1(1-3)	72	2(1-2)	15
<i>Crowea exalata</i> subsp. <i>exalata</i>	2(1-2)	2	1(1-2)	<1
<i>Crowea saligna</i>	1(1-2)	2	1(1-2)	<1
<i>Dampiera purpurea</i>	1(1-1)	20	1(1-1)	4
<i>Dendrobium linguiforme</i>	1(1-1)	5	1(1-1)	<1
<i>Dianella caerulea</i>	1(1-1)	75	1(1-1)	28
<i>Dillwynia retorta</i>	1(1-2)	44	1(1-2)	6
<i>Dodonaea pinnata</i>	1(1-1)	2	1(1-1)	<1
<i>Dodonaea triquetra</i>	1(1-2)	39	1(1-2)	5
<i>Dracophyllum secundum</i>	1(1-2)	3	1(1-1)	<1
<i>Elaeocarpus reticulatus</i>	1(1-1)	41	1(1-1)	11
<i>Entolasia stricta</i>	1(1-2)	83	1(1-2)	33
<i>Epacris pulchella</i>	1(1-1)	20	1(1-1)	5
<i>Eriostemon australasius</i>	1(1-1)	20	1(1-1)	3
<i>Eucalyptus agglomerata</i>	3(1-3)	25	2(1-3)	7
<i>Eucalyptus notabilis</i>	1(1-1)	3	1(1-2)	1
<i>Eucalyptus pilularis</i>	3(1-3)	26	2(1-3)	4
<i>Eucalyptus piperita</i>	3(1-3)	47	2(1-3)	8
<i>Eucalyptus punctata</i>	2(1-3)	33	2(1-3)	8
<i>Eucalyptus resinifera</i> subsp. <i>resinifera</i>	1(1-2)	3	1(1-2)	1
<i>Eucalyptus umbra</i>	2(1-2)	3	1(1-2)	<1
<i>Gompholobium grandiflorum</i>	1(1-1)	12	1(1-1)	3
<i>Gompholobium latifolium</i>	1(1-2)	21	1(1-1)	3
<i>Gonocarpus teucroides</i>	1(1-2)	38	1(1-1)	17
<i>Goodenia decurrens</i>	2(1-2)	6	1(1-2)	<1
<i>Grevillea buxifolia</i> subsp. <i>buxifolia</i>	1(1-2)	9	1(1-1)	3
<i>Grevillea mucronulata</i>	1(1-1)	42	1(1-1)	3
<i>Grevillea phyllicoides</i>	1(1-3)	3	1(1-2)	1
<i>Grevillea sericea</i>	1(1-1)	10	1(1-1)	2
<i>Haemodorum planifolium</i>	1(1-1)	5	1(1-1)	1
<i>Hakea dactyloides</i>	1(1-1)	34	1(1-1)	12
<i>Hakea sericea</i>	1(1-1)	20	1(1-1)	6
<i>Hibbertia bracteata</i>	1(1-1)	10	1(1-1)	1
<i>Hibbertia monogyna</i>	1(1-1)	4	1(1-1)	1
<i>Hibbertia saligna</i>	2(1-2)	2	1(1-3)	<1
<i>Hovea linearis</i>	1(1-1)	21	1(1-1)	9
<i>Hovea purpurea</i>	1(1-1)	5	1(1-1)	<1
<i>Lambertia formosa</i>	1(1-2)	36	1(1-2)	8

<i>Lasiopetalum ferrugineum</i>	1(1-1)	9	1(1-2)	2
<i>Lasiopetalum parviflorum</i>	1(1-1)	3	1(1-1)	<1
<i>Leionema dentatum</i>	1(1-1)	3	1(1-1)	<1
<i>Lepidosperma filiforme</i>	1(1-1)	8	1(1-2)	2
<i>Lepidosperma laterale</i>	1(1-1)	59	1(1-1)	28
<i>Leptomeria acida</i>	1(1-1)	16	1(1-1)	4
<i>Leptospermum polygalifolium</i>	1(1-1)	18	1(1-2)	8
<i>Leptospermum trinervium</i>	1(1-2)	68	1(1-2)	15
<i>Leucopogon ericoides</i>	1(1-1)	9	1(1-1)	2
<i>Leucopogon exolasius</i>	1(1-1)	3	1(1-1)	<1
<i>Leucopogon muticus</i>	1(1-1)	6	1(1-1)	1
<i>Leucopogon setiger</i>	1(1-1)	5	1(1-1)	1
<i>Lindsaea microphylla</i>	1(1-1)	36	1(1-1)	5
<i>Liparis reflexa</i>	1(1-2)	3	1(1-1)	<1
<i>Lissanthe sapida</i>	1(1-2)	5	1(1-1)	1
<i>Logania albiflora</i>	1(1-1)	13	1(1-1)	1
<i>Lomandra brevis</i>	1(1-1)	3	1(1-1)	<1
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	1(1-2)	16	1(1-1)	4
<i>Lomandra cylindrica</i>	1(1-1)	28	1(1-1)	4
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1(1-1)	27	1(1-1)	10
<i>Lomandra gracilis</i>	1(1-1)	36	1(1-1)	3
<i>Lomandra longifolia</i>	1(1-1)	63	1(1-1)	43
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	39	1(1-1)	25
<i>Lomandra obliqua</i>	1(1-1)	49	1(1-1)	13
<i>Lomatia silaifolia</i>	1(1-1)	62	1(1-1)	9
<i>Marsdenia suaveolens</i>	1(1-1)	14	1(1-1)	2
<i>Monotoca scoparia</i>	1(1-1)	26	1(1-1)	12
<i>Olearia tomentosa</i>	1(1-1)	3	1(1-1)	1
<i>Opercularia aspera</i>	1(1-1)	17	1(1-1)	8
<i>Patersonia glabrata</i>	1(1-1)	28	1(1-1)	10
<i>Patersonia sericea</i>	1(1-1)	28	1(1-1)	9
<i>Persoonia levis</i>	1(1-1)	67	1(1-1)	12
<i>Persoonia linearis</i>	1(1-1)	74	1(1-1)	28
<i>Persoonia mollis</i> subsp. <i>mollis</i>	2(1-3)	5	1(1-1)	1
<i>Persoonia myrtilloides</i>	1(1-3)	2	1(1-1)	<1
<i>Persoonia pinifolia</i>	1(1-1)	14	1(1-1)	3
<i>Petrophile pulchella</i>	1(1-1)	13	1(1-1)	6
<i>Philotheca hispidula</i>	1(1-1)	9	1(1-1)	1
<i>Philotheca scabra</i>	1(1-2)	6	1(1-1)	<1
<i>Phyllanthus hirtellus</i>	1(1-1)	66	1(1-1)	13
<i>Platysace linearifolia</i>	1(1-1)	61	1(1-1)	7
<i>Poa affinis</i>	1(1-2)	9	1(1-2)	2
<i>Polyscias sambucifolia</i>	1(1-1)	13	1(1-1)	6
<i>Pomaderris discolor</i>	1(1-2)	5	1(1-1)	<1
<i>Pomaderris intermedia</i>	1(1-1)	3	1(1-1)	<1
<i>Pomaderris lanigera</i>	1(1-3)	7	1(1-1)	1

<i>Pomax umbellata</i>	1(1-1)	32	1(1-1)	13
<i>Prostanthera linearis</i>	1(1-2)	2	1(1-1)	<1
<i>Pterostylis acuminata</i>	1(1-1)	3	1(1-1)	<1
<i>Pteridium esculentum</i>	1(1-2)	84	1(1-2)	36
<i>Pterostylis longifolia</i>	1(1-1)	5	1(1-1)	1
<i>Pultenaea daphnoides</i>	1(1-1)	14	1(1-1)	4
<i>Pultenaea ferruginea</i>	1(1-2)	7	1(1-2)	1
<i>Pultenaea flexilis</i>	1(1-3)	31	1(1-2)	1
<i>Pultenaea scabra</i>	2(1-3)	9	1(1-2)	1
<i>Ricinocarpos pinifolius</i>	1(1-1)	13	1(1-1)	1
<i>Schizaea bifida</i>	1(1-1)	5	1(1-1)	1
<i>Schoenus imberbis</i>	1(1-1)	5	1(1-1)	1
<i>Schoenus melanostachys</i>	1(1-1)	11	1(1-2)	2
<i>Smilax glycyphylla</i>	1(1-1)	67	1(1-1)	7
<i>Stylidium laricifolium</i>	1(1-1)	11	1(1-1)	1
<i>Stylidium productum</i>	1(1-2)	23	1(1-1)	1
<i>Styphelia viridis</i> subsp. <i>viridis</i>	1(1-1)	3	1(1-1)	<1
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-3)	35	2(1-3)	7
<i>Telopea speciosissima</i>	1(1-1)	13	1(1-1)	2
<i>Tristaniopsis collina</i>	1(1-1)	7	1(1-2)	2
<i>Woollsia pungens</i>	1(1-1)	9	1(1-1)	2
<i>Xanthorrhoea arborea</i>	2(1-2)	34	1(1-2)	1
<i>Xanthorrhoea media</i>	1(1-1)	16	1(1-2)	5
<i>Xanthosia pilosa</i>	1(1-1)	63	1(1-1)	7
<i>Xanthosia tridentata</i>	1(1-1)	20	1(1-1)	5
<i>Xylomelum pyriforme</i>	1(1-1)	35	1(1-1)	3
<i>Zieria laevigata</i>	1(1-2)	3	1(1-1)	<1
<i>Zieria pilosa</i>	1(1-1)	8	1(1-1)	1

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-2)	3	1(1-2)	9
<i>Angophora hispida</i>	1(1-1)	1	1(1-2)	1
<i>Eucalyptus botryoides</i>	1(1-1)	1	2(1-3)	3
<i>Eucalyptus consideniana</i>	1(1-1)	2	2(1-2)	2
<i>Eucalyptus deanei</i>	1(1-3)	3	3(1-3)	1
<i>Eucalyptus eugenioides</i>	1(1-1)	1	2(1-3)	4
<i>Eucalyptus multicaulis</i>	1(1-1)	1	2(1-3)	<1
<i>Eucalyptus oblonga</i>	2(1-3)	3	1(1-2)	2
<i>Eucalyptus racemosa</i>	1(1-1)	1	2(1-2)	1
<i>Eucalyptus robusta</i>	1(1-1)	1	3(1-3)	<1
<i>Eucalyptus scias</i> subsp. <i>scias</i>	1(1-1)	1	1(1-2)	<1
<i>Eucalyptus sclerophylla</i>	1(1-1)	1	2(1-3)	4
<i>Eucalyptus sparsifolia</i>	3(3-3)	1	2(1-3)	2



Locations of survey sites allocated to DSF p142. Grey shading indicates extant native vegetation cover within the study area.

### DSF p143: Sydney Shale-Ironstone Cap Forest



Plate p143. Sydney Shale-Ironstone Cap Forest (Map Unit p143) at Dharawal National Park near Darkes Forest. The dominant tree species present are *Corymbia gummifera* and *Angophora costata*, while species prominent in the understorey include *Gompholobium latifolium*, *Doryanthes excelsa*, *Banksia spinulosa* var. *spinulosa*, *Pteridium esculentum* and *Lomandra longifolia*.

Sample Sites: 59

Area Extant (ha): 2600

Estimated % remaining: 50-70%

Area in conservation reserves (ha): 1600

Estimated % of pre-clearing area in conservation reserves: 30-50%

No. taxa (total / unique): 346 / 3



No. taxa per plot ( $\pm$ sd): 50.9 (10.5)

Class: Northern Hinterland Wet Sclerophyll Forests

Related TECs: includes Duffy's Forest EEC and O'Hares Creek Shale Forest EEC (TSC).

Sydney Shale-Ironstone Cap Forest (DSF p143) is equivalent to DSF 143 identified by Tindall *et al.* (2004). This unit is usually a low eucalypt forest with a very diverse, mixed understorey of shrubs, forbs and grasses. Sydney Shale-Ironstone Cap Forest occurs on coastal sandstone plateaux (Woronora and Hornsby plateaux) between Lake Cataract and Duffy's Forest. In this area Sydney Shale-Ironstone Cap Forest is restricted to shale lenses and ironstone mantles on ridges up to 400m ASL with an average annual rainfall from 1100-1550mm. Sydney Shale-Ironstone Cap Forest is generally associated with ridgetop units of the surrounding sandstone plateaux (DSF p131 Coastal Sandstone Ridgetop Woodland, and HL p117 Coastal Sandstone Plateau Heath).

Much of this naturally restricted vegetation type was cleared for orchards and small farms during the early development of Sydney. The small remnants are mainly associated with the urban and rural-residential interface and are exposed to continuing degradation through high fire frequencies, rubbish dumping, polluted runoff and weed invasion.

#### Floristic Summary:

**Trees:** *Corymbia gummifera*, *Angophora costata*, *Ceratopetalum gummiferum*, *Eucalyptus sieberi*, *E. capitellata*, *E. globoidea*. **Shrubs:** *Lomatia silaifolia*, *Banksia spinulosa*, *Persoonia levis*, *Acacia myrtifolia*, *Phyllanthus hirtellus*, *Micrantheum ericoides*, *Xanthosia tridentata*, *Epacris pulchella*, *Xanthorrhoea media*, *Lasiopetalum ferrugineum*, *Hakea sericea*, *Persoonia pinifolia*, *Platysace linearifolia*, *Bossiaea obcordata*. **Climbers:** *Billardiera scandens*, *Cassytha pubescens*. **Groundcover:** *Entolasia stricta*, *Dianella caerulea*, *Pteridium esculentum*, *Austrostipa pubescens*, *Lomandra obliqua*, *Cyathochaeta diandra*, *Lepidosperma laterale*, *Lindsaea linearis*, *Patersonia glabrata*, *Brunoniella pumilio*, *Gonocarpus teucroides*, *Imperata cylindrica* var. *major*, *Lomandra multiflora*, *Dampiera stricta*.

#### Vegetation structure:

Stratum	Frequency (n=5)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	16.6 (2.3)	26.7 (11.5)
Small tree	40	7.5 (3.5)	30 (14.1)
Shrub	80	1.7 (0.5)	32.5 (17.7)
Ground cover	100	0.8 (0.3)	25 (21.8)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 26 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 43 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 26 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia floribunda</i>	1(1-1)	12	1(1-2)	2
<i>Acacia linifolia</i>	2(1-2)	36	1(1-1)	6
<i>Acacia myrtifolia</i>	2(1-3)	71	1(1-1)	4
<i>Acianthus fornicatus</i>	2(1-2)	15	1(1-1)	1
<i>Allocasuarina littoralis</i>	1(1-2)	41	1(1-2)	17
<i>Angophora costata</i>	3(2-3)	69	1(1-3)	7
<i>Anisopogon avenaceus</i>	1(1-2)	19	1(1-2)	5
<i>Austrostipa pubescens</i>	1(1-2)	63	1(1-2)	5
<i>Banksia ericifolia</i> subsp. <i>ericifolia</i>	1(1-1)	20	1(1-2)	7
<i>Banksia marginata</i>	1(1-2)	15	1(1-1)	3
<i>Banksia oblongifolia</i>	1(1-1)	15	1(1-1)	2
<i>Banksia serrata</i>	1(1-3)	29	1(1-2)	9
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-2)	80	1(1-2)	15
<i>Billardiera scandens</i>	1(1-1)	75	1(1-1)	27
<i>Boronia pinnata</i>	2(1-2)	24	1(1-1)	1

<i>Bossiaea obcordata</i>	2(1-2)	39	1(1-2)	7
<i>Brunoniella pumilio</i>	1(1-1)	51	1(1-1)	4
<i>Cassylia glabella</i>	1(1-1)	22	1(1-1)	8
<i>Cassylia pubescens</i>	1(1-1)	53	1(1-1)	8
<i>Ceratopetalum gummiferum</i>	2(1-2)	39	1(1-2)	3
<i>Comesperma ericinum</i>	1(1-1)	25	1(1-1)	1
<i>Comesperma volubile</i>	1(1-1)	14	1(1-1)	2
<i>Conospermum longifolium</i> subsp. <i>longifolium</i>	1(1-2)	14	1(1-1)	1
<i>Corymbia gummifera</i>	3(2-3)	83	2(1-2)	15
<i>Cryptostylis subulata</i>	1(1-1)	25	1(1-1)	1
<i>Cyathochaeta diandra</i>	2(1-3)	54	1(1-2)	8
<i>Dampiera purpurea</i>	1(1-1)	14	1(1-1)	4
<i>Dampiera stricta</i>	1(1-1)	44	1(1-1)	8
<i>Dianella caerulea</i>	1(1-2)	80	1(1-1)	28
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	32	1(1-1)	15
<i>Dillwynia retorta</i>	1(1-3)	29	1(1-2)	6
<i>Dodonaea triquetra</i>	1(1-2)	25	1(1-2)	6
<i>Doryanthes excelsa</i>	2(1-3)	29	1(1-2)	1
<i>Entolasia stricta</i>	3(1-3)	93	1(1-2)	33
<i>Epacris pulchella</i>	1(1-2)	53	1(1-1)	5
<i>Eucalyptus capitellata</i>	3(3-4)	25	1(1-1)	<1
<i>Eucalyptus globoidea</i>	3(3-3)	34	1(1-2)	12
<i>Eucalyptus haemastoma</i>	2(1-2)	17	1(1-2)	1
<i>Eucalyptus oblonga</i>	3(1-3)	14	1(1-2)	2
<i>Eucalyptus pilularis</i>	3(2-4)	17	2(1-3)	5
<i>Eucalyptus piperita</i>	3(1-3)	31	2(1-3)	9
<i>Eucalyptus resinifera</i> subsp. <i>resinifera</i>	1(1-3)	17	1(1-1)	1
<i>Eucalyptus sieberi</i>	3(2-3)	39	2(1-3)	16
<i>Gompholobium grandiflorum</i>	1(1-1)	19	1(1-1)	3
<i>Gompholobium latifolium</i>	1(1-1)	12	1(1-1)	3
<i>Gonocarpus teucroides</i>	1(1-1)	53	1(1-1)	17
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	1(1-1)	15	1(1-1)	4
<i>Goodenia heterophylla</i>	1(1-1)	37	1(1-1)	2
<i>Grevillea buxifolia</i> subsp. <i>buxifolia</i>	1(1-2)	15	1(1-1)	3
<i>Grevillea linearifolia</i>	2(1-3)	24	1(1-1)	<1
<i>Grevillea sericea</i>	1(1-2)	17	1(1-1)	2
<i>Hakea sericea</i>	1(1-2)	46	1(1-1)	6
<i>Hakea teretifolia</i>	1(1-1)	24	1(1-2)	4
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	29	1(1-1)	10
<i>Hibbertia bracteata</i>	1(1-2)	32	1(1-1)	1
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-1)	36	1(1-1)	6
<i>Hybanthus monopteralus</i>	1(1-1)	15	1(1-1)	2
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-3)	56	1(1-2)	9
<i>Lambertia formosa</i>	1(1-2)	22	1(1-2)	9
<i>Lasiopetalum ferrugineum</i>	1(1-2)	47	1(1-2)	2
<i>Lepidosperma laterale</i>	1(1-1)	59	1(1-1)	28

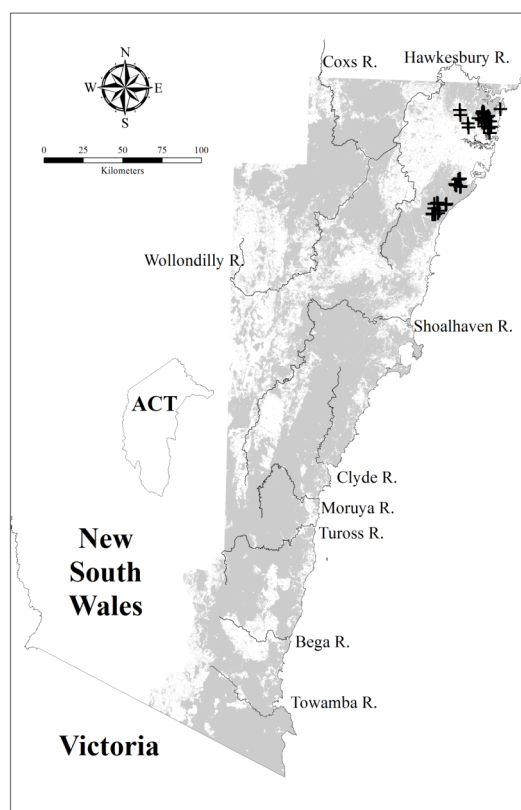
<i>Leptomeria acida</i>	1(1-1)	14	1(1-1)	4
<i>Leptospermum polygalifolium</i>	1(1-2)	25	1(1-2)	8
<i>Lindsaea linearis</i>	1(1-2)	49	1(1-1)	7
<i>Lindsaea microphylla</i>	1(1-1)	32	1(1-1)	5
<i>Lomandra brevis</i>	1(1-1)	12	1(1-1)	<1
<i>Lomandra gracilis</i>	1(1-1)	20	1(1-1)	3
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	46	1(1-1)	25
<i>Lomandra obliqua</i>	1(1-2)	56	1(1-1)	14
<i>Lomatia silaifolia</i>	1(1-1)	78	1(1-1)	9
<i>Micrantheum ericoides</i>	2(1-3)	51	1(1-1)	2
<i>Opercularia varia</i>	1(1-1)	15	1(1-1)	3
<i>Patersonia glabrata</i>	1(1-2)	49	1(1-1)	10
<i>Patersonia sericea</i>	1(1-1)	27	1(1-1)	9
<i>Persoonia lanceolata</i>	1(1-1)	12	1(1-1)	2
<i>Persoonia laurina</i>	1(1-1)	25	1(1-1)	2
<i>Persoonia levis</i>	1(1-1)	69	1(1-1)	13
<i>Persoonia pinifolia</i>	1(1-1)	47	1(1-1)	3
<i>Petrophile pulchella</i>	1(1-1)	20	1(1-1)	6
<i>Phyllota grandiflora</i>	1(1-2)	12	2(1-2)	<1
<i>Phyllanthus hirtellus</i>	1(1-1)	63	1(1-1)	14
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	2(1-3)	29	1(1-1)	13
<i>Platylobium formosum</i>	1(1-2)	12	1(1-1)	3
<i>Platysace linearifolia</i>	1(1-2)	44	1(1-1)	8
<i>Prostanthera denticulata</i>	1(1-3)	17	0(0-0)	0
<i>Pteridium esculentum</i>	2(1-3)	76	1(1-2)	37
<i>Ptilothrix deusta</i>	2(1-3)	14	1(1-2)	2
<i>Pultenaea daphnoides</i>	1(1-3)	25	1(1-1)	4
<i>Pultenaea hispidula</i>	2(1-3)	29	1(1-2)	<1
<i>Pultenaea linophylla</i>	1(1-2)	36	1(1-1)	2
<i>Pultenaea tuberculata</i>	2(1-3)	27	1(1-1)	3
<i>Smilax glyciphylla</i>	1(1-1)	47	1(1-1)	8
<i>Telopea speciosissima</i>	1(1-1)	20	1(1-1)	2
<i>Tetrarrhena juncea</i>	2(1-3)	32	1(1-2)	5
<i>Themeda australis</i>	2(1-3)	36	1(1-3)	17
<i>Xanthorrhoea media</i>	1(1-2)	49	1(1-2)	4
<i>Xanthosia tridentata</i>	1(1-1)	51	1(1-1)	5
<i>Xylomelum pyriforme</i>	1(1-1)	17	1(1-1)	3

Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Glycine clandestina</i>	1(1-1)	34	1(1-1)	26
<i>Lomandra longifolia</i>	1(1-3)	54	1(1-1)	44
<i>Microlaena stipoides</i>	2(1-3)	41	1(1-2)	36

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	1(1-1)	2	1(1-2)	2
<i>Angophora crassifolia</i>	4(2-4)	3	2(2-2)	<1
<i>Angophora floribunda</i>	2(2-2)	2	1(1-2)	9
<i>Corymbia eximia</i>	4(4-4)	2	1(1-2)	2
<i>Eucalyptus botryoides</i>	3(3-3)	2	2(1-3)	3
<i>Eucalyptus punctata</i>	2(1-4)	7	1(1-3)	9
<i>Eucalyptus racemosa</i>	1(1-3)	5	2(1-2)	1
<i>Eucalyptus sparsifolia</i>	3(3-3)	2	2(1-3)	2
<i>Eucalyptus umbra</i>	2(1-4)	7	1(1-2)	<1
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	3(3-4)	8	2(1-3)	8



Locations of survey sites allocated to DSF p143. Grey shading indicates extant native vegetation cover within the study area.

**DSF p144: Wingecarribee-Burraborang Sandstone Forest**

Plate p144. Wingecarribee-Burraborang Sandstone Forest (Map Unit p144) near Erskine Gap west of Lake Burraborang. *Eucalyptus piperita*, *Corymbia gummifera* and *E. sparsifolia* are the dominant tree species and the tall shrubs are *Acacia obtusifolia*. Prominent smaller shrubs include *Banksia spinulosa* var. *spinulosa* and *Bossiaea rhombifolia* subsp. *rhombifolia*. Tufts of *Xanthorrhoea arborea* are visible in the foreground.

Sample Sites: 125

Area Extant (ha): 65900

Estimated % remaining: 80-95%

Area in conservation reserves (ha): 41700

Estimated % of pre-clearing area in conservation reserves: 50-65%

No. taxa (total / unique): 504 / 7

No. taxa per plot ( $\pm$ sd): 44.7 (11)

Class: Sydney Hinterland Dry Sclerophyll Forests

Related TEC: n/a

Wingecarribee-Burraborang Sandstone Forest (DSF p144) is equivalent to DSF 144 identified by Tindall *et al.* (2004), and is an open eucalypt forest with an abundant sclerophyll shrub stratum and a groundcover dominated by sedges. This unit is found in elevated sandstone country between Warragamba and Mittagong with large stands on the Burraborang, Tonalli, Wanganderry and Nattai Tablelands. Wingecarribee-Burraborang Sandstone Forest occurs on sandy loam soils between 250-800m ASL with an average annual rainfall between 800-1200mm. This unit is replaced by Coastal Sandstone Ridgetop Woodland and gully forests (DSF p131, DSF p142 and DSF p140) on the Woronora plateau to the east in the lower Blue Mountains to the north, while Megalong –Tonalli Sandstone Forest (DSF p244) occurs to its west on Narrabeen and Permian sedimentary strata. Most of the original distribution of Wingecarribee-Burraborang Sandstone Forest remains intact in Nattai and Blue Mountains National Parks.

**Floristic Summary:**

**Trees:** *Corymbia gummifera*, *Eucalyptus piperita*, *E. agglomerata*, *E. sieberi*. **Shrubs:** *Lomatia silaifolia*, *Phyllanthus hirtellus*, *Persoonia levis*, *P. linearis*, *Banksia spinulosa*, *Leptospermum trinervium*. **Climbers:** *Billardiera scandens*. **Groundcover:** *Entolasia stricta*, *Lomandra obliqua*, *Pomax umbellata*, *Gonocarpus teucroides*, *Dianella caerulea*, *Dampiera purpurea*, *Pteridium esculentum*.

**Vegetation structure:**

Stratum	Frequency (n=119)	Height (m) ( $\pm$ StDev)	Cover(%) ( $\pm$ StDev)
Emergent	1	27 (-)	7 (-)
Tree canopy	98	20.2 (4.6)	28.9 (10.3)
Small tree	68	8.8 (4)	24.8 (19.1)
Shrub	67	2.2 (0.7)	23.1 (17.5)
Ground cover	99	0.7 (0.3)	21.1 (19)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 24 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 36 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 24 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia elata</i>	1(1-1)	5	1(1-3)	1
<i>Acacia linifolia</i>	1(1-1)	39	1(1-1)	5
<i>Acacia longifolia</i>	1(1-2)	22	1(1-2)	9
<i>Acacia obtusifolia</i>	1(1-2)	34	1(1-2)	9
<i>Acacia terminalis</i>	1(1-1)	42	1(1-1)	11
<i>Acacia ulicifolia</i>	1(1-1)	42	1(1-1)	10
<i>Acrotriche divaricata</i>	1(1-1)	6	1(1-1)	1
<i>Actinotus helianthi</i>	1(1-1)	7	1(1-1)	2
<i>Amperea xiphoclada</i>	1(1-1)	40	1(1-1)	6
<i>Angophora costata</i>	3(1-3)	18	1(1-3)	7
<i>Anisopogon avenaceus</i>	1(1-1)	16	1(1-2)	5
<i>Astrotricha floccosa</i>	1(1-1)	5	1(1-2)	1
<i>Astrotricha latifolia</i>	1(1-2)	8	1(1-1)	2
<i>Astrotricha longifolia</i>	1(1-1)	9	1(1-1)	<1
<i>Banksia serrata</i>	1(1-2)	25	1(1-2)	9
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-2)	70	1(1-2)	14
<i>Billardiera scandens</i>	1(1-1)	70	1(1-1)	27
<i>Boronia ledifolia</i>	1(1-2)	22	1(1-1)	3
<i>Bossiaea lenticularis</i>	2(2-2)	4	1(1-2)	<1
<i>Bossiaea neo-anglica</i>	2(1-3)	11	1(1-1)	<1
<i>Bossiaea obcordata</i>	1(1-2)	45	1(1-2)	6
<i>Bossiaea rhombifolia</i> subsp. <i>rhombifolia</i>	3(1-3)	10	1(1-2)	1
<i>Brachyscome angustifolia</i>	1(1-1)	7	1(1-1)	2
<i>Bursaria longisepala</i>	1(1-1)	9	1(1-1)	1
<i>Cassinia aureonitens</i>	1(1-2)	8	1(1-2)	<1
<i>Cassytha pubescens</i>	1(1-1)	30	1(1-1)	8
<i>Caustis flexuosa</i>	1(1-2)	16	1(1-2)	7
<i>Ceratopetalum gummiferum</i>	3(1-3)	13	1(1-2)	3
<i>Choretrum candollei</i>	1(1-1)	5	1(1-1)	1
<i>Cooperookia barbata</i>	1(1-2)	9	1(1-1)	1
<i>Corymbia eximia</i>	3(1-3)	9	1(1-2)	2
<i>Corymbia gummifera</i>	2(1-3)	63	2(1-2)	15
<i>Crowea exalata</i> subsp. <i>exalata</i>	3(2-3)	3	1(1-1)	<1
<i>Cyathochaeta diandra</i>	1(1-1)	22	1(1-2)	8
<i>Dampiera purpurea</i>	1(1-1)	58	1(1-1)	3
<i>Dianella caerulea</i>	1(1-1)	58	1(1-1)	28
<i>Dianella prunina</i>	1(1-1)	10	1(1-1)	1
<i>Dillwynia phyllicoides</i>	2(1-3)	5	1(1-1)	1
<i>Dillwynia retorta</i>	1(1-2)	17	1(1-2)	6
<i>Dodonaea triquetra</i>	1(1-2)	34	1(1-2)	5
<i>Elaeocarpus reticulatus</i>	1(1-1)	30	1(1-1)	12

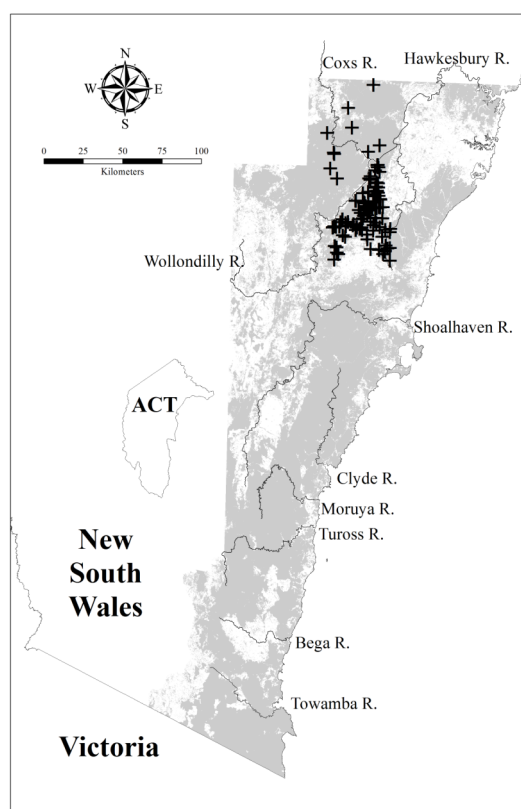
<i>Entolasia stricta</i>	1(1-2)	78	1(1-2)	33
<i>Eucalyptus agglomerata</i>	3(1-3)	43	2(1-3)	7
<i>Eucalyptus piperita</i>	3(1-3)	63	2(1-3)	8
<i>Eucalyptus punctata</i>	1(1-3)	34	2(1-3)	8
<i>Eucalyptus sieberi</i>	3(1-3)	38	2(1-3)	16
<i>Eucalyptus sparsifolia</i>	1(1-3)	7	2(1-3)	2
<i>Gompholobium grandiflorum</i>	1(1-1)	9	1(1-1)	3
<i>Gompholobium latifolium</i>	1(1-1)	17	1(1-1)	3
<i>Gonocarpus teucrioides</i>	1(1-2)	59	1(1-1)	17
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-1)	42	1(1-2)	14
<i>Grevillea arenaria</i> subsp. <i>arenaria</i>	1(1-2)	33	1(1-1)	1
<i>Grevillea mucronulata</i>	1(1-2)	22	1(1-1)	3
<i>Hakea dactyloides</i>	1(1-2)	34	1(1-1)	12
<i>Hardenbergia violacea</i>	1(1-1)	38	1(1-1)	17
<i>Hibbertia acicularis</i>	1(1-2)	6	1(1-1)	1
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-2)	20	1(1-1)	10
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-2)	39	1(1-1)	6
<i>Hibbertia vestita</i>	1(1-1)	4	1(1-1)	<1
<i>Hovea linearis</i>	1(1-1)	26	1(1-1)	9
<i>Hovea purpurea</i>	1(1-1)	3	1(1-1)	<1
<i>Hybanthus monopetalus</i>	1(1-1)	9	1(1-1)	2
<i>Isopogon anethifolius</i>	1(1-2)	6	1(1-1)	2
<i>Jacksonia scoparia</i>	1(1-1)	6	1(1-1)	2
<i>Lambertia formosa</i>	1(1-3)	21	1(1-2)	9
<i>Lepidosperma gunnii</i>	1(1-1)	12	1(1-1)	4
<i>Lepidosperma laterale</i>	1(1-1)	43	1(1-1)	28
<i>Leptomeria acida</i>	1(1-1)	29	1(1-1)	4
<i>Leptospermum polygalifolium</i>	1(1-1)	21	1(1-2)	8
<i>Leptospermum trinervium</i>	1(1-3)	58	1(1-2)	15
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	49	1(1-1)	23
<i>Leucopogon setiger</i>	1(1-1)	10	1(1-1)	1
<i>Lindsaea microphylla</i>	1(1-1)	26	1(1-1)	5
<i>Lissanthe sapida</i>	1(1-1)	13	1(1-1)	1
<i>Logania albiflora</i>	1(1-1)	8	1(1-1)	1
<i>Lomandra brevis</i>	1(1-1)	5	1(1-1)	<1
<i>Lomandra confertifolia</i> subsp. <i>pallida</i>	2(1-4)	4	1(1-2)	1
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	1(1-2)	15	1(1-1)	4
<i>Lomandra cylindrica</i>	1(1-1)	24	1(1-1)	4
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1(1-1)	30	1(1-1)	10
<i>Lomandra filiformis</i> subsp. <i>flavior</i>	1(1-1)	3	1(1-1)	<1
<i>Lomandra gracilis</i>	1(1-1)	27	1(1-1)	3
<i>Lomandra micrantha</i> subsp. <i>tuberculata</i>	1(1-1)	3	1(1-1)	<1
<i>Lomandra montana</i>	1(1-2)	7	1(1-2)	<1
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	37	1(1-1)	25
<i>Lomandra obliqua</i>	1(1-2)	68	1(1-1)	13
<i>Lomatia silaifolia</i>	1(1-2)	91	1(1-1)	9



<i>Marsdenia suaveolens</i>	1(1-1)	13	1(1-1)	2
<i>Monotoca scoparia</i>	1(1-1)	24	1(1-1)	12
<i>Olearia microphylla</i>	1(1-1)	5	1(1-1)	1
<i>Omphacomeria acerba</i>	1(1-1)	7	1(1-1)	1
<i>Opercularia hispida</i>	1(1-1)	10	1(1-1)	3
<i>Patersonia glabrata</i>	1(1-2)	41	1(1-1)	9
<i>Patersonia sericea</i>	1(1-1)	36	1(1-1)	8
<i>Persoonia laurina</i>	1(1-1)	17	1(1-1)	2
<i>Persoonia levis</i>	1(1-1)	74	1(1-1)	12
<i>Persoonia linearis</i>	1(1-2)	74	1(1-1)	28
<i>Persoonia mollis</i> subsp. <i>nectens</i>	1(1-1)	8	1(1-1)	<1
<i>Persoonia mollis</i> subsp. <i>mollis</i>	2(1-3)	9	1(1-1)	1
<i>Petrophile pedunculata</i>	1(1-2)	24	1(1-1)	2
<i>Petrophile pulchella</i>	1(1-1)	13	1(1-1)	6
<i>Philotheca hispidula</i>	1(1-2)	17	1(1-1)	1
<i>Phyllanthus hirtellus</i>	1(1-2)	84	1(1-1)	13
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	31	1(1-1)	13
<i>Platysace ericoides</i>	1(1-2)	17	1(1-1)	2
<i>Platysace linearifolia</i>	1(1-1)	22	1(1-1)	8
<i>Podolobium ilicifolium</i>	1(1-1)	43	1(1-1)	8
<i>Podocarpus spinulosus</i>	1(1-3)	8	1(1-1)	1
<i>Pomaderris ferruginea</i>	1(1-1)	6	1(1-1)	1
<i>Pomaderris lanigera</i>	1(1-3)	6	1(1-1)	1
<i>Pomax umbellata</i>	1(1-1)	66	1(1-1)	13
<i>Poranthera corymbosa</i>	1(1-2)	19	1(1-1)	1
<i>Pteridium esculentum</i>	1(1-2)	54	1(1-2)	37
<i>Pultenaea flexilis</i>	1(1-2)	18	1(1-2)	2
<i>Pultenaea retusa</i>	1(1-1)	6	1(1-1)	1
<i>Pultenaea scabra</i>	1(1-3)	6	1(1-2)	2
<i>Schoenus brevifolius</i>	1(1-3)	5	1(1-3)	1
<i>Smilax glyciphylla</i>	1(1-1)	32	1(1-1)	8
<i>Stylidium laricifolium</i>	1(1-2)	6	1(1-1)	1
<i>Stypandra glauca</i>	2(1-2)	27	1(1-2)	4
<i>Telopea speciosissima</i>	1(1-2)	16	1(1-1)	2
<i>Tetratheca thymifolia</i>	1(1-1)	42	1(1-1)	6
<i>Xanthosia atkinsoniana</i>	1(1-2)	4	1(1-1)	<1
<i>Xanthosia pilosa</i>	1(1-1)	36	1(1-1)	7
<i>Xanthorrhoea resinifera</i>	1(1-1)	10	1(1-2)	4
<i>Xanthosia tridentata</i>	1(1-1)	16	1(1-1)	5
<i>Xylomelum pyriforme</i>	1(1-1)	47	1(1-1)	2
Constant:				
Species	C/A	Freq	C/A O	Freq O
<i>Lomandra longifolia</i>	1(1-1)	33	1(1-1)	44

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	1(1-3)	6	1(1-2)	2
<i>Angophora floribunda</i>	1(1-1)	3	1(1-2)	9
<i>Eucalyptus burgessiana</i>	2(1-2)	2	1(1-3)	<1
<i>Eucalyptus considaniana</i>	3(1-3)	2	1(1-2)	2
<i>Eucalyptus elata</i>	3(1-3)	2	2(1-3)	5
<i>Eucalyptus eugenioides</i>	3(1-4)	2	2(1-3)	4
<i>Eucalyptus fibrosa</i>	1(1-1)	1	2(1-3)	3
<i>Eucalyptus globoidea</i>	3(1-3)	20	2(1-2)	12
<i>Eucalyptus oblonga</i>	1(1-2)	5	1(1-2)	2
<i>Eucalyptus oreades</i>	3(1-3)	2	3(1-3)	<1
<i>Eucalyptus racemosa</i>	1(1-1)	3	2(1-2)	1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	3(1-3)	2	2(1-3)	6
<i>Eucalyptus resinifera</i> subsp. <i>resinifera</i>	3(1-3)	2	1(1-2)	1
<i>Eucalyptus rossii</i>	1(1-1)	1	3(1-3)	2
<i>Eucalyptus sclerophylla</i>	3(1-3)	6	2(1-3)	4
<i>Eucalyptus smithii</i>	1(1-1)	1	1(1-2)	2
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	3(3-3)	8	2(1-3)	8



Locations of survey sites allocated to DSF p144. Grey shading indicates extant native vegetation cover within the study area.

**DSF p146: Sydney Hinterland Transition Woodland**

Plate p146. Sydney Hinterland Transition Woodland (Map Unit p146) at Cripple Creek Reserve, Mount Riverview, Lower Blue Mountains. The dominant tree species are *Corymbia gummifera* and *Banksia serrata* with an open shrub stratum featuring *Dillwynia retorta*, *Grevillea mucronulata*, *Acacia terminalis*, *Bossiaea obcordata* and *Banksia spinulosa* var. *spinulosa*. *Austrostipa pubescens* and *Themda australis* are prominent in the groundcover.

Sample Sites: 214

Area Extant (ha): 41800

Estimated % remaining: 60-80%

Area in conservation reserves (ha): 13000

Estimated % of pre-clearing area in conservation reserves: 10-30%

No. taxa (total / unique): 532 / 2

No. taxa per plot ( $\pm$ sd): 49.4 (9.6)

Class: Sydney Hinterland Dry Sclerophyll Forests

Related TEC: n/a

Sydney Hinterland Transition Woodland (DSF p146) is equivalent to DSF 146 identified by Tindall *et al.* (2004), and is a eucalypt woodland with an open understorey of sclerophyll shrubs, sedges, forbs and grasses. This transition woodland encircles the Cumberland Plain rainshadow, on loamy soils typically derived from sediments belonging to the Hawkesbury or Mittagong formations.

About one-third of Sydney Hinterland Transition Woodland's original distribution has been cleared, and clearing continues in localised areas of suburban expansion including Dural-Maroota, the lower Blue Mountains and east of Campbelltown. However, considerable areas are represented within conservation reserves.

**Floristic Summary:**

**Trees:** *Corymbia gummifera*, *Eucalyptus punctata*, *Angophora costata*, *Syncarpia glomulifera*. **Shrubs:** *Phyllanthus hirtellus*, *Persoonia linearis*, *Leptospermum trinervium*, *Acacia ulicifolia*, *Persoonia levis*, *Acacia linifolia*, *Banksia spinulosa*, *Pimelea linifolia*. **Climbers:** *Billardiera scandens*. **Groundcover:** *Entolasia stricta*, *Lomandra obliqua*, *Pomax umbellata*, *Themeda australis*, *Lomandra multiflora*, *Lepidosperma laterale*, *Dianella revoluta*, *Austrostipa pubescens*, *Goodenia hederacea*.

**Vegetation structure:**

Stratum	Frequency (n=107)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	2	21.5 (0.7)	11 (5.7)
Tree canopy	100	17.7 (4.1)	21.3 (10.4)
Small tree	68	7.9 (3.5)	15.9 (13.2)
Shrub	67	2.2 (0.7)	17.6 (15.8)
Ground cover	100	0.9 (0.3)	29.9 (21.4)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 31 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 42 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 31 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia brownii</i>	1(1-1)	12	1(1-1)	1
<i>Acacia falcata</i>	1(1-1)	5	1(1-1)	1
<i>Acacia hispidula</i>	1(1-1)	3	1(1-2)	<1
<i>Acacia linifolia</i>	1(1-1)	61	1(1-1)	5
<i>Acacia longifolia</i>	1(1-1)	16	1(1-2)	9
<i>Acacia myrtifolia</i>	1(1-1)	31	1(1-1)	4
<i>Acacia parramattensis</i>	1(1-1)	11	1(1-2)	4
<i>Acacia parvipinnula</i>	1(1-1)	7	1(1-1)	<1
<i>Acacia suaveolens</i>	1(1-1)	21	1(1-1)	7
<i>Acacia terminalis</i>	1(1-2)	42	1(1-1)	11
<i>Acacia trinervata</i>	2(1-3)	2	1(1-1)	<1
<i>Acacia ulicifolia</i>	1(1-1)	66	1(1-1)	9
<i>Acianthus fornicatus</i>	1(1-1)	9	1(1-2)	1
<i>Actinotus helianthi</i>	1(1-1)	5	1(1-1)	2
<i>Allocasuarina littoralis</i>	1(1-2)	45	1(1-2)	16
<i>Allocasuarina torulosa</i>	1(1-2)	22	1(1-3)	4
<i>Angophora bakeri</i>	1(1-2)	29	1(1-3)	2
<i>Angophora costata</i>	1(1-2)	43	2(1-3)	6
<i>Anisopogon avenaceus</i>	1(1-2)	38	1(1-2)	5
<i>Aristida benthamii</i>	1(1-2)	7	1(1-1)	<1
<i>Aristida vagans</i>	1(1-1)	42	1(1-2)	7
<i>Aristida warburgii</i>	1(1-1)	3	1(1-2)	<1
<i>Astroloma humifusum</i>	1(1-1)	9	1(1-1)	4
<i>Astroloma pinifolium</i>	1(1-1)	5	1(1-1)	<1
<i>Austrodanthonia fulva</i>	1(1-2)	17	1(1-2)	1
<i>Austrostipa pubescens</i>	2(1-2)	59	1(1-1)	4
<i>Austrodanthonia tenuior</i>	1(1-1)	6	1(1-2)	2
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-1)	57	1(1-2)	14
<i>Billardiera scandens</i>	1(1-1)	82	1(1-1)	26
<i>Bossiaea lenticularis</i>	1(1-2)	5	1(1-2)	<1
<i>Bossiaea obcordata</i>	1(1-2)	52	1(1-2)	6
<i>Bossiaea rhombifolia</i> subsp. <i>rhombifolia</i>	1(1-2)	6	2(1-3)	1
<i>Brunoniella pumilio</i>	1(1-1)	29	1(1-1)	4
<i>Caesia parviflora</i>	1(1-1)	10	1(1-1)	2
<i>Callistemon linearis</i>	1(1-1)	3	1(1-1)	<1
<i>Callistemon rigidus</i>	1(1-1)	1	1(1-1)	<1
<i>Cassytha glabella</i>	1(1-1)	20	1(1-1)	7
<i>Cassytha pubescens</i>	1(1-1)	35	1(1-1)	8
<i>Caustis flexuosa</i>	1(1-2)	17	1(1-2)	7
<i>Cheilanthes sieberi</i>	1(1-1)	37	1(1-1)	13

<i>Corymbia eximia</i>	1(1-2)	23	1(1-2)	1
<i>Corymbia gummifera</i>	2(1-3)	81	2(1-2)	14
<i>Cyathochaeta diandra</i>	1(1-2)	48	1(1-2)	7
<i>Daviesia acicularis</i>	1(1-1)	2	1(1-1)	<1
<i>Daviesia corymbosa</i>	1(1-1)	6	1(1-1)	2
<i>Daviesia genistifolia</i>	1(1-1)	2	1(1-1)	<1
<i>Daviesia squarrosa</i>	1(1-1)	5	1(1-1)	<1
<i>Dianella caerulea</i>	1(1-1)	40	1(1-1)	28
<i>Dianella prunina</i>	1(1-1)	9	1(1-1)	1
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	61	1(1-1)	14
<i>Dillwynia acicularis</i>	2(1-3)	2	1(1-2)	<1
<i>Dillwynia parvifolia</i>	1(1-1)	3	1(1-2)	<1
<i>Dillwynia retorta</i>	1(1-2)	27	1(1-2)	6
<i>Dodonaea pinnata</i>	1(1-1)	1	1(1-1)	<1
<i>Dodonaea triquetra</i>	1(1-2)	21	1(1-2)	5
<i>Drosera auriculata</i>	1(1-1)	6	1(1-1)	1
<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	1(1-1)	17	1(1-1)	6
<i>Entolasia stricta</i>	2(1-3)	97	1(1-2)	32
<i>Entolasia whiteana</i>	1(1-1)	1	1(1-1)	<1
<i>Epacris pulchella</i>	1(1-1)	19	1(1-1)	5
<i>Epacris purpurascens</i> var. <i>purpurascens</i>	1(1-1)	2	1(1-3)	<1
<i>Eragrostis benthamii</i>	1(1-1)	4	1(1-1)	<1
<i>Eragrostis brownii</i>	1(1-1)	18	1(1-1)	3
<i>Eriostemon australasius</i>	1(1-1)	16	1(1-1)	3
<i>Eucalyptus beyeriana</i>	2(1-2)	2	2(2-3)	<1
<i>Eucalyptus crebra</i>	1(1-2)	9	2(1-3)	3
<i>Eucalyptus eugenoides</i>	2(1-3)	9	2(1-3)	4
<i>Eucalyptus notabilis</i>	1(1-2)	19	1(1-1)	<1
<i>Eucalyptus oblonga</i>	1(1-3)	23	1(1-2)	1
<i>Eucalyptus pilularis</i>	2(1-3)	15	2(1-3)	5
<i>Eucalyptus punctata</i>	1(1-3)	52	2(1-3)	8
<i>Eucalyptus resinifera</i> subsp. <i>resinifera</i>	1(1-1)	9	1(1-2)	1
<i>Eucalyptus scias</i> subsp. <i>scias</i>	1(1-1)	1	2(1-2)	<1
<i>Eucalyptus sclerophylla</i>	2(1-3)	15	2(1-3)	3
<i>Eucalyptus sparsifolia</i>	2(1-3)	24	2(1-3)	2
<i>Eucalyptus squamosa</i>	1(1-1)	3	1(1-2)	<1
<i>Exocarpos strictus</i>	1(1-1)	31	1(1-1)	9
<i>Glycine clandestina</i>	1(1-1)	37	1(1-1)	26
<i>Glycine tabacina</i>	1(1-1)	14	1(1-1)	7
<i>Gompholobium glabratum</i>	1(1-1)	14	1(1-1)	2
<i>Gompholobium grandiflorum</i>	1(1-1)	21	1(1-1)	3
<i>Gompholobium inconspicuum</i>	1(1-2)	2	1(1-1)	<1
<i>Gompholobium minus</i>	1(1-1)	12	1(1-1)	1
<i>Gompholobium pinnatum</i>	1(1-1)	2	1(1-1)	<1
<i>Gompholobium uncinatum</i>	2(1-2)	1	1(1-1)	<1
<i>Gonocarpus tetragynus</i>	1(1-1)	39	1(1-1)	20

<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	1(1-1)	11	1(1-1)	4
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-1)	58	1(1-2)	13
<i>Goodenia heterophylla</i>	1(1-2)	13	1(1-1)	2
<i>Grevillea buxifolia</i> subsp. <i>buxifolia</i>	1(1-1)	15	1(1-1)	2
<i>Grevillea diffusa</i>	1(1-1)	3	1(1-1)	1
<i>Grevillea longifolia</i>	1(1-2)	2	1(1-1)	<1
<i>Grevillea mucronulata</i>	1(1-1)	37	1(1-1)	3
<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	1(1-1)	1	1(1-1)	<1
<i>Grevillea phyllicoides</i>	1(1-2)	7	1(1-2)	<1
<i>Grevillea sericea</i>	1(1-1)	11	1(1-1)	2
<i>Grevillea sphacelata</i>	1(1-2)	8	1(1-1)	1
<i>Haemodorum planifolium</i>	1(1-1)	5	1(1-1)	1
<i>Hakea dactyloides</i>	1(1-1)	29	1(1-1)	11
<i>Hakea sericea</i>	1(1-1)	48	1(1-1)	6
<i>Hardenbergia violacea</i>	1(1-1)	36	1(1-1)	17
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	22	1(1-1)	10
<i>Hibbertia bracteata</i>	1(1-1)	5	1(1-1)	1
<i>Hibbertia diffusa</i>	1(1-1)	22	1(1-1)	3
<i>Hibbertia serpyllifolia</i>	1(1-1)	5	1(1-2)	1
<i>Hovea linearis</i>	1(1-1)	49	1(1-1)	8
<i>Hybanthus monopetalus</i>	1(1-1)	9	1(1-1)	2
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-2)	24	1(1-2)	9
<i>Isopogon anemonifolius</i>	1(1-1)	29	1(1-1)	8
<i>Jacksonia scoparia</i>	1(1-1)	11	1(1-1)	1
<i>Kunzea ambigua</i>	1(1-2)	22	1(1-2)	3
<i>Lagenifera gracilis</i>	1(1-1)	14	1(1-1)	3
<i>Lambertia formosa</i>	1(1-2)	22	1(1-2)	8
<i>Lasiopetalum ferrugineum</i>	1(1-2)	13	1(1-2)	2
<i>Lasiopetalum rufum</i>	1(1-1)	2	1(1-1)	<1
<i>Laxmannia gracilis</i>	1(1-1)	14	1(1-1)	3
<i>Lepidosperma laterale</i>	1(1-1)	65	1(1-1)	28
<i>Lepidosperma latens</i>	1(1-1)	3	1(1-1)	<1
<i>Leptomeria acida</i>	1(1-1)	16	1(1-1)	4
<i>Leptospermum parvifolium</i>	1(1-1)	7	1(1-1)	1
<i>Leptospermum trinervium</i>	1(1-2)	66	1(1-2)	14
<i>Leucopogon muticus</i>	1(1-1)	16	1(1-1)	1
<i>Leucopogon virgatus</i>	1(1-1)	7	1(1-1)	1
<i>Lindsaea microphylla</i>	1(1-1)	26	1(1-1)	5
<i>Lissanthe sapida</i>	1(1-1)	5	1(1-1)	1
<i>Lissanthe strigosa</i>	1(1-1)	46	1(1-1)	7
<i>Lobelia gracilis</i>	1(1-1)	5	1(1-1)	<1
<i>Logania pusilla</i>	1(1-1)	4	1(1-1)	1
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	1(1-3)	14	1(1-1)	4
<i>Lomandra cylindrica</i>	1(1-2)	32	1(1-1)	4
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-1)	26	1(1-2)	10
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1(1-1)	29	1(1-1)	10

<i>Lomandra glauca</i>	1(1-1)	17	1(1-1)	10
<i>Lomandra gracilis</i>	1(1-1)	9	1(1-1)	3
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	69	1(1-1)	24
<i>Lomandra obliqua</i>	1(1-2)	87	1(1-1)	12
<i>Lomatia silaifolia</i>	1(1-1)	45	1(1-1)	9
<i>Macrozamia spiralis</i>	1(1-1)	2	1(1-1)	<1
<i>Melaleuca nodosa</i>	1(1-2)	4	2(1-3)	1
<i>Micrantheum ericoides</i>	1(1-1)	13	1(1-1)	2
<i>Mirbelia rubiifolia</i>	1(1-2)	11	1(1-1)	3
<i>Monotoca scoparia</i>	1(1-1)	39	1(1-1)	12
<i>Olearia microphylla</i>	1(1-1)	7	1(1-1)	1
<i>Opercularia diphylla</i>	1(1-1)	18	1(1-1)	7
<i>Opercularia varia</i>	1(1-2)	10	1(1-1)	2
<i>Ozothamnus diosmifolius</i>	1(1-1)	19	1(1-1)	8
<i>Panicum simile</i>	1(1-1)	48	1(1-1)	5
<i>Patersonia glabrata</i>	1(1-1)	18	1(1-1)	10
<i>Patersonia longifolia</i>	1(1-1)	7	1(1-1)	2
<i>Patersonia sericea</i>	1(1-1)	24	1(1-1)	8
<i>Persoonia hirsuta</i>	1(1-1)	1	1(1-1)	<1
<i>Persoonia lanceolata</i>	1(1-1)	5	1(1-1)	2
<i>Persoonia laurina</i>	1(1-1)	7	1(1-1)	2
<i>Persoonia levis</i>	1(1-1)	61	1(1-1)	12
<i>Persoonia linearis</i>	1(1-1)	67	1(1-1)	28
<i>Persoonia oblongata</i>	1(1-1)	5	1(1-1)	<1
<i>Persoonia pinifolia</i>	1(1-1)	13	1(1-1)	3
<i>Petrophile pulchella</i>	1(1-1)	18	1(1-1)	5
<i>Petrophile sessilis</i>	1(1-1)	7	1(1-1)	1
<i>Philotheca hispidula</i>	1(1-1)	11	1(1-1)	1
<i>Phyllanthus hirtellus</i>	1(1-2)	90	1(1-1)	12
<i>Pimelea curviflora</i> var. <i>curviflora</i>	1(1-1)	2	1(1-1)	<1
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	55	1(1-1)	12
<i>Platysace ericoides</i>	1(1-1)	23	1(1-1)	2
<i>Platysace linearifolia</i>	1(1-1)	22	1(1-1)	8
<i>Podolobium scandens</i>	1(1-3)	3	1(1-2)	<1
<i>Pomax umbellata</i>	1(1-1)	74	1(1-1)	12
<i>Pratia purpurascens</i>	1(1-1)	39	1(1-1)	17
<i>Prostanthera howelliae</i>	3(2-3)	1	2(1-2)	<1
<i>Pterostylis acuminata</i>	1(1-1)	2	1(1-1)	<1
<i>Pterostylis longifolia</i>	1(1-1)	5	1(1-1)	1
<i>Pultenaea ferruginea</i>	1(1-3)	10	1(1-2)	1
<i>Pultenaea polifolia</i>	2(1-2)	2	1(1-2)	<1
<i>Pultenaea scabra</i>	1(1-3)	16	1(1-2)	1
<i>Pultenaea tuberculata</i>	1(1-1)	10	1(1-1)	3
<i>Pultenaea villosa</i>	1(1-1)	5	1(1-2)	1
<i>Scaevola ramosissima</i>	1(1-1)	14	1(1-1)	3
<i>Schizaea bifida</i>	1(1-1)	4	1(1-1)	1



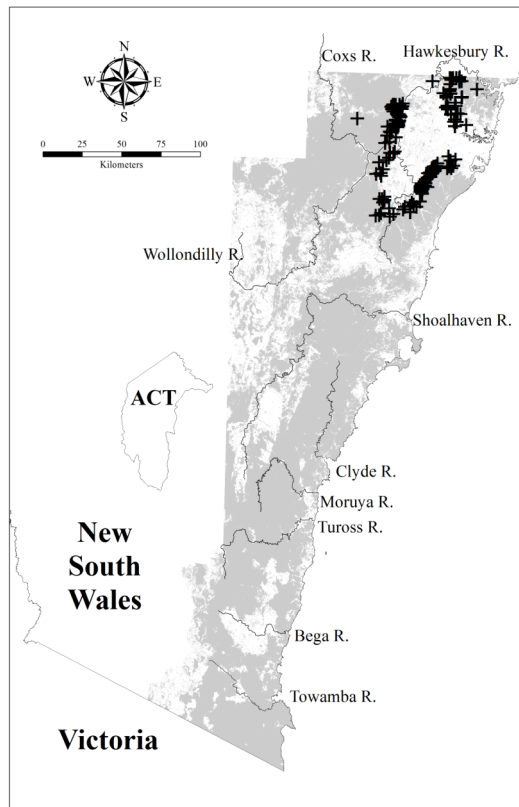
<i>Schoenus imberbis</i>	1(1-1)	5	1(1-1)	1
<i>Styphelia laeta</i> subsp. <i>laeta</i>	1(1-1)	2	1(1-1)	<1
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	2(1-3)	46	2(1-3)	7
<i>Thelymitra pauciflora</i>	1(1-1)	2	1(1-1)	<1
<i>Themeda australis</i>	2(1-3)	68	1(1-3)	16
<i>Thysanotus tuberosus</i> subsp. <i>tuberosus</i>	1(1-1)	9	1(1-1)	1
<i>Trachymene incisa</i> subsp. <i>incisa</i>	1(1-2)	4	1(1-2)	1
<i>Tricoryne simplex</i>	1(1-1)	4	1(1-1)	<1
<i>Xanthorrhoea concava</i>	1(1-1)	19	1(1-1)	4
<i>Xanthorrhoea media</i>	1(1-1)	27	1(1-2)	4
<i>Xanthorrhoea minor</i> subsp. <i>minor</i>	1(1-2)	4	1(1-1)	1
<i>Xanthosia pilosa</i>	1(1-1)	16	1(1-1)	7
<i>Xanthorrhoea resinifera</i>	1(1-1)	9	1(1-2)	4
<i>Xanthosia tridentata</i>	1(1-2)	13	1(1-1)	5
<i>Xylomelum pyriforme</i>	1(1-1)	22	1(1-1)	3

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Lomandra longifolia</i>	1(1-2)	38	1(1-1)	44
<i>Microlaena stipoides</i>	1(1-1)	41	1(1-2)	36

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora hispida</i>	1(1-1)	4	2(1-2)	1
<i>Corymbia maculata</i>	1(1-3)	2	2(1-3)	3
<i>Eucalyptus agglomerata</i>	1(1-3)	4	2(1-3)	8
<i>Eucalyptus capitellata</i>	1(1-1)	<1	3(1-3)	<1
<i>Eucalyptus fibrosa</i>	1(1-2)	5	2(1-3)	3
<i>Eucalyptus globoidea</i>	2(1-2)	14	1(1-2)	12
<i>Eucalyptus haemastoma</i>	1(1-2)	2	1(1-2)	2
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-1)	3	1(1-2)	3
<i>Eucalyptus parramattensis</i> subsp. <i>parramattensis</i>	2(2-2)	<1	1(1-3)	<1
<i>Eucalyptus piperita</i>	1(1-2)	9	2(1-3)	9
<i>Eucalyptus racemosa</i>	1(1-3)	2	2(1-2)	1
<i>Eucalyptus saligna</i> X <i>botryoides</i>	1(1-1)	<1	2(1-3)	2



Locations of survey sites allocated to DSF p146. Grey shading indicates extant native vegetation cover within the study area.

### DSF p148: Shoalhaven Sandstone Forest



Plate p148. Shoalhaven Sandstone Forest (Map Unit p148) beside Turpentine Road in Jerrawangala National Park. A low tree canopy of *Eucalyptus sclerophylla*, *E. consideniana* and *Corymbia gummifera* grows above a patchy groundcover of sedges and grasses and a diverse shrub layer including *Lambertia formosa*, *Banksia paludosa*, *Petrophile pedunculata*, *Bossiaea ensata* and *Isopogon anemonifolius*.

Sample Sites: 91

Area Extant (ha): 56500

Estimated % remaining: 80-95%

Area in conservation reserves (ha): 30900

Estimated % of pre-clearing area in conservation reserves: 40-55%

No. taxa (total / unique): 435 / 4

No. taxa per plot ( $\pm$ sd): 41.2 (9.9)

Class: Sydney Coastal Dry Sclerophyll Forests

Related TEC: n/a

Shoalhaven Sandstone Forest (DSF p148) is equivalent to DSF 148 identified by Tindall *et al.* (2004), and is an open eucalypt forest or woodland with an abundant sclerophyll shrub stratum and a groundcover dominated by sedges. This unit occurs on sandstone plateaux up to 700m ASL in the lower Shoalhaven district from Meryla south as far as Pigeon House Mountain, where average annual rainfall is 950-1600mm. Large stands occur at Meryla and Wingello State Forests, to the west of Mt Skanzi (Kangaroo Valley), west of Nowra (Bamarang and Colymea) and ascending the Morton plateau from Parma Creek Nature Reserve to Sassafras. Within this distribution Shoalhaven Sandstone Forest occurs on sandy loam soils derived primarily from Hawkesbury or Nowra sandstone, or the Berry formation.

Shoalhaven Sandstone Forest shares several species with Morton-Budawang Sandstone Woodland (DSF p248), which occurs in higher country further west on the Morton plateau and on the Budawang ranges to the south.

Examples of Shoalhaven Sandstone Forest are represented in Morton National Park and Parma Nature Reserve. Large areas outside reserves generally have not been subject to intensive land uses.

#### Floristic Summary:

**Trees:** *Corymbia gummifera*, *Eucalyptus sclerophylla*, *E. sieberi*. **Shrubs:** *Lambertia formosa*, *Persoonia levis*, *Banksia spinulosa*, *Petrophile pedunculata*, *Leptospermum trinervium*, *Lomatia ilicifolia*, *Bossiaea heterophylla*, *Hakea laevipes*, *Platysace linearifolia*, *Pimelea linifolia*, *Tetralthea thymifolia*. **Groundcover:** *Lomandra obliqua*, *Patersonia sericea*, *Entolasia stricta*, *Caustis flexuosa*, *Cyathochaeta diandra*.

#### Vegetation structure:

Stratum	Frequency (n=80)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	96	20.5 (16.9)	26.4 (11.3)
Small tree	64	6.1 (2.7)	26.1 (22.7)
Shrub	60	2.2 (0.7)	36.3 (22.6)
Ground cover	100	0.8 (0.3)	35.7 (25.5)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 21 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 33 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 21 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia brownii</i>	1(1-1)	12	1(1-1)	1
<i>Acacia elongata</i>	1(1-2)	9	1(1-1)	1
<i>Acacia obtusifolia</i>	1(1-2)	44	1(1-2)	9
<i>Acacia suaveolens</i>	1(1-1)	25	1(1-1)	7
<i>Acacia terminalis</i>	1(1-1)	44	1(1-1)	11
<i>Acacia ulicifolia</i>	1(1-1)	26	1(1-1)	10
<i>Actinotus minor</i>	1(1-2)	16	1(1-1)	4
<i>Amperea xiphoclada</i>	1(1-1)	51	1(1-1)	6
<i>Anisopogon avenaceus</i>	1(1-2)	32	1(1-2)	5
<i>Aotus ericoides</i>	1(1-2)	36	1(1-1)	3
<i>Banksia paludosa</i>	1(1-2)	32	1(1-2)	2
<i>Banksia serrata</i>	1(1-2)	27	1(1-2)	9
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-2)	88	1(1-2)	15
<i>Billardiera scandens</i>	1(1-1)	46	1(1-1)	27
<i>Boronia floribunda</i>	2(1-3)	5	1(1-1)	<1
<i>Boronia pinnata</i>	2(1-2)	7	1(1-1)	2
<i>Bossiaea ensata</i>	1(1-1)	13	1(1-1)	2

<i>Bossiaea heterophylla</i>	1(1-1)	52	1(1-1)	5
<i>Bossiaea obcordata</i>	1(1-2)	48	1(1-2)	6
<i>Bossiaea scolopendria</i>	1(1-2)	5	1(1-1)	1
<i>Calytrix tetragona</i>	1(1-2)	7	1(1-2)	2
<i>Cassytha glabella</i>	1(1-1)	19	1(1-1)	8
<i>Caustis flexuosa</i>	1(1-2)	47	1(1-2)	7
<i>Comesperma ericinum</i>	1(1-1)	10	1(1-1)	1
<i>Cooperookia barbata</i>	1(1-1)	10	1(1-1)	1
<i>Corymbia gummifera</i>	2(1-3)	68	2(1-2)	15
<i>Cyathochaeta diandra</i>	2(1-3)	43	1(1-2)	8
<i>Dampiera stricta</i>	1(1-1)	26	1(1-1)	8
<i>Dianella caerulea</i>	1(1-1)	46	1(1-1)	28
<i>Drosera auriculata</i>	1(1-1)	5	1(1-1)	1
<i>Entolasia stricta</i>	1(1-2)	73	1(1-2)	33
<i>Epacris pulchella</i>	1(1-1)	22	1(1-1)	5
<i>Eucalyptus considieniana</i>	2(1-3)	24	1(1-2)	2
<i>Eucalyptus piperita</i>	3(2-3)	29	2(1-3)	9
<i>Eucalyptus sclerophylla</i>	2(1-3)	45	2(1-3)	3
<i>Eucalyptus sieberi</i>	2(1-3)	42	2(1-3)	16
<i>Gompholobium glabratum</i>	1(1-1)	10	1(1-1)	2
<i>Gompholobium grandiflorum</i>	1(1-1)	18	1(1-1)	3
<i>Gompholobium latifolium</i>	1(1-1)	20	1(1-1)	3
<i>Gonocarpus teucroides</i>	1(1-1)	31	1(1-1)	17
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	1(1-1)	29	1(1-1)	4
<i>Grevillea linearifolia</i>	1(1-1)	5	1(1-1)	1
<i>Haemodorum corymbosum</i>	1(1-2)	8	1(1-1)	1
<i>Hakea dactyloides</i>	1(1-2)	67	1(1-1)	11
<i>Hakea sericea</i>	1(1-2)	21	1(1-1)	7
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-2)	45	1(1-1)	6
<i>Hibbertia riparia</i>	1(1-1)	12	1(1-1)	2
<i>Hibbertia serpyllifolia</i>	1(1-1)	7	1(1-2)	1
<i>Hybanthus monopetalus</i>	1(1-1)	15	1(1-1)	2
<i>Isopogon anemonifolius</i>	1(1-1)	34	1(1-1)	8
<i>Kunzea ambigua</i>	1(1-2)	11	1(1-2)	3
<i>Lambertia formosa</i>	2(1-3)	77	1(1-1)	8
<i>Lepidosperma concavum</i>	2(1-2)	8	1(1-2)	2
<i>Lepidosperma urophorum</i>	1(1-1)	18	1(1-2)	7
<i>Leptomeria acida</i>	1(1-1)	19	1(1-1)	4
<i>Leptospermum polygalifolium</i>	1(1-1)	24	1(1-2)	8
<i>Leptospermum rotundifolium</i>	1(1-2)	15	1(1-2)	1
<i>Leptospermum trinervium</i>	1(1-2)	75	1(1-2)	15
<i>Lepyrodia scariosa</i>	1(1-2)	14	1(1-2)	6
<i>Leucopogon setiger</i>	2(1-2)	5	1(1-1)	1
<i>Lindsaea linearis</i>	1(1-1)	37	1(1-1)	7
<i>Lindsaea microphylla</i>	1(1-1)	25	1(1-1)	5
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1(1-1)	33	1(1-1)	10

<i>Lomatia ilicifolia</i>	1(1-1)	74	1(1-1)	6
<i>Lomandra obliqua</i>	1(1-1)	77	1(1-1)	13
<i>Marsdenia suaveolens</i>	1(1-1)	12	1(1-1)	3
<i>Mirbelia rubrifolia</i>	1(1-2)	13	1(1-1)	3
<i>Mitrasacme polymorpha</i>	1(1-1)	14	1(1-1)	3
<i>Monotoca scoparia</i>	1(1-1)	29	1(1-1)	12
<i>Patersonia glabrata</i>	1(1-2)	52	1(1-1)	9
<i>Patersonia sericea</i>	1(1-2)	65	1(1-1)	8
<i>Persoonia laurina</i>	1(1-1)	10	1(1-1)	2
<i>Persoonia levis</i>	1(1-1)	82	1(1-1)	12
<i>Persoonia mollis</i> subsp. <i>leptophylla</i>	1(1-2)	16	1(1-1)	1
<i>Persoonia mollis</i> subsp. <i>caleyi</i>	1(1-1)	8	1(1-1)	1
<i>Persoonia mollis</i> subsp. <i>ledifolia</i>	1(1-1)	27	1(1-1)	<1
<i>Petrophile pedunculata</i>	1(1-2)	74	1(1-1)	2
<i>Petrophile sessilis</i>	2(1-2)	11	1(1-1)	2
<i>Phyllota phyllicoides</i>	1(1-2)	14	1(1-2)	3
<i>Pimelea linifolia</i> subsp. <i>collina</i>	1(1-1)	7	1(1-1)	1
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-2)	58	1(1-1)	13
<i>Platylobium formosum</i>	1(1-1)	14	1(1-1)	3
<i>Platysace linearifolia</i>	1(1-2)	54	1(1-1)	8
<i>Poranthera ericifolia</i>	1(1-1)	11	1(1-1)	1
<i>Ptilothrix deusta</i>	2(2-2)	14	1(1-2)	2
<i>Pultenaea daphnoides</i>	1(1-1)	14	1(1-1)	4
<i>Pultenaea linophylla</i>	1(1-1)	8	1(1-1)	2
<i>Pultenaea retusa</i>	1(1-1)	11	1(1-1)	1
<i>Pultenaea tuberculata</i>	1(1-1)	18	1(1-1)	3
<i>Scaevola ramosissima</i>	1(1-1)	19	1(1-1)	3
<i>Schizaea bifida</i>	1(1-1)	5	1(1-1)	1
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-2)	22	2(1-3)	7
<i>Tetradlea thymifolia</i>	1(1-2)	59	1(1-1)	6
<i>Xanthorrhoea concava</i>	1(1-1)	43	1(1-1)	4
<i>Xanthosia pilosa</i>	1(1-2)	23	1(1-1)	8
<i>Xanthorrhoea resinifera</i>	1(1-1)	12	1(1-2)	4
<i>Xanthosia tridentata</i>	1(1-1)	20	1(1-1)	5

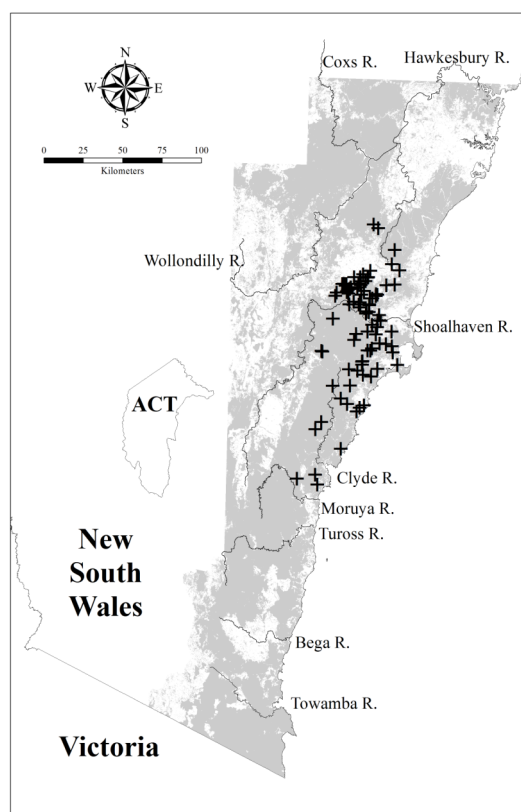
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Persoonia linearis</i>	1(1-1)	38	1(1-1)	29
<i>Pteridium esculentum</i>	1(1-1)	49	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	1(1-2)	3	1(1-2)	2
<i>Angophora floribunda</i>	1(1-2)	5	1(1-2)	9
<i>Corymbia eximia</i>	2(2-2)	1	1(1-2)	2
<i>Eucalyptus agglomerata</i>	2(1-3)	16	2(1-3)	7
<i>Eucalyptus dives</i>	4(1-4)	2	2(1-3)	4

<i>Eucalyptus elata</i>	1(1-1)	1	2(1-3)	5
<i>Eucalyptus eugenioides</i>	3(1-3)	2	2(1-3)	4
<i>Eucalyptus globoides</i>	2(1-3)	12	1(1-2)	12
<i>Eucalyptus imitans</i>	1(1-3)	3	1(1-3)	<1
<i>Eucalyptus muelleriana</i>	3(3-3)	1	2(1-2)	7
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-1)	1	1(1-2)	3
<i>Eucalyptus pilularis</i>	2(1-2)	9	2(1-3)	5
<i>Eucalyptus punctata</i>	1(1-2)	11	2(1-3)	9
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	3(1-3)	4	2(1-3)	6
<i>Eucalyptus ralla</i>	3(3-3)	1	3(3-3)	<1
<i>Eucalyptus saligna</i> X <i>botryoides</i>	1(1-1)	1	2(1-3)	2
<i>Eucalyptus sparsifolia</i>	3(3-3)	1	2(1-3)	2



Locations of survey sites allocated to DSF p148. Grey shading indicates extant native vegetation cover within the study area.



**DSF p149: Morton Sandstone Heath Woodland**

Plate p149. Morton Sandstone Heath Woodland (Map Unit p149) beside the Touga Fire Trail in western Morton National Park. A sparse low canopy of *Eucalyptus sclerophylla* and *E. considiniana* grows above a sparse groundcover of sedges and grasses including *Lepidosperma urophorum* and *Entolasia stricta*, and a diverse shrub layer including *Leptospermum trinervium*, *Banksia paludosa*, *Allocasuarina littoralis*, *Acacia elongata*, *Hibbertia empetrifolia* subsp. *empetrifolia* and *Aotus ericoides*.

Sample Sites: 20

Area Extant (ha): 18500

Estimated % remaining: >90%

Area in conservation reserves (ha): 16600

Estimated % of pre-clearing area in conservation reserves: 80-95%

No. taxa (total / unique): 266 / 1

No. taxa per plot ( $\pm$ sd): 41.3 (11.9)

Class: Sydney Montane Dry Sclerophyll Forests

Related TEC: n/a

Morton Sandstone Heath Woodland (DSF p149) is identical to DSF 149 identified by Tindall *et al.* (2004). It is a low eucalypt woodland with an abundant sclerophyll shrub strata and an open groundcover. This unit occurs predominantly on the elevated sandstone country of the Morton, Ettrema and Danjera plateaux from Penrose south to Corang Hill. It occupies sandy loams derived from Nowra sandstone and the Berry formation between 550 and 1000m elevation in areas receiving an average annual rainfall from 780-1200mm. With decreasing soil depth Morton Sandstone Heath Woodland is replaced by Morton Mallee-Heath (HL p122) and the two units form a complex mosaic interspersed with isolated patches of Morton Rock Plate Heath (HL p125). Morton Sandstone Heath Woodland is replaced to the east at lower elevations by Shoalhaven Sandstone Forest (DSF p148).

Morton Sandstone Heath Woodland occupies large areas within Morton National Park and has escaped appreciable land clearing.

**Floristic Summary:**

**Trees:** *Eucalyptus sieberi*, *E. agglomerata*, *E. sclerophylla*. **Shrubs:** *Hakea dactyloides*, *Leptospermum trinervium*, *Banksia spinulosa*, *Acacia terminalis*, *Amperea xiphoclada*, *Leptospermum polygalifolium*, *Allocasuarina littoralis*.

**Groundcover:** *Entolasia stricta*, *Microlaena stipoides*, *Lomandra obliqua*, *Lepidosperma urophorum*, *Patersonia glabrata*, *P. sericea*.

**Vegetation structure:**

Stratum	Frequency (n=19)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	95	16 (5.4)	17.4 (9.5)
Small tree	74	6 (3.7)	19.6 (16.9)
Shrub	63	2.3 (0.6)	39.4 (24.7)
Ground cover	89	0.7 (0.3)	15.1 (14.5)

**Diagnostic Species:**



A 0.04ha plot located in this Map Unit is expected to contain at least 13 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 32 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 13 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia buxifolia</i> subsp. <i>buxifolia</i>	1(1-1)	35	1(1-1)	1
<i>Acacia elongata</i>	1(1-1)	30	1(1-1)	1
<i>Acacia obtusifolia</i>	1(1-2)	40	1(1-2)	9
<i>Acacia terminalis</i>	1(1-1)	50	1(1-1)	11
<i>Acacia ulicifolia</i>	1(1-1)	35	1(1-1)	10
<i>Allocasuarina littoralis</i>	1(1-1)	50	1(1-2)	17
<i>Amperea xiphoclada</i>	1(1-1)	50	1(1-1)	7
<i>Anisopogon avenaceus</i>	1(1-1)	25	1(1-2)	5
<i>Aotus ericoides</i>	1(1-2)	50	1(1-1)	3
<i>Banksia paludosa</i>	1(1-2)	35	1(1-2)	3
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-2)	70	1(1-2)	15
<i>Bossiaea heterophylla</i>	1(1-1)	40	1(1-1)	6
<i>Dampiera purpurea</i>	1(1-1)	20	1(1-1)	4
<i>Entolasia stricta</i>	1(1-1)	75	1(1-2)	34
<i>Eucalyptus agglomerata</i>	1(1-2)	30	2(1-3)	7
<i>Eucalyptus mannifera</i>	1(1-1)	30	2(1-3)	4
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-3)	30	2(1-3)	6
<i>Eucalyptus sclerophylla</i>	1(1-3)	40	2(1-3)	4
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-2)	45	1(1-2)	14
<i>Grevillea linearifolia</i>	1(1-1)	25	1(1-1)	1
<i>Grevillea patulifolia</i>	1(1-1)	25	1(1-1)	<1
<i>Hakea dactyloides</i>	1(1-2)	85	1(1-1)	12
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-1)	35	1(1-1)	6
<i>Isopogon anemonifolius</i>	1(1-1)	30	1(1-1)	8
<i>Isopogon anethifolius</i>	1(1-1)	40	1(1-1)	2
<i>Kunzea ambigua</i>	1(1-2)	30	1(1-2)	4
<i>Lagenifera gracilis</i>	1(1-1)	20	1(1-1)	3
<i>Lepidosperma urophorum</i>	1(1-1)	50	1(1-2)	7
<i>Leptospermum polygalifolium</i>	1(1-2)	55	1(1-2)	8
<i>Leptospermum rotundifolium</i>	2(1-2)	35	1(1-2)	1
<i>Leptospermum trinervium</i>	1(1-2)	80	1(1-2)	15
<i>Leucopogon ericoides</i>	1(1-1)	20	1(1-1)	2
<i>Lomandra cylindrica</i>	2(1-2)	30	1(1-1)	4
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1(1-1)	45	1(1-1)	11
<i>Lomandra gracilis</i>	1(1-1)	20	1(1-1)	3
<i>Lomatia ilicifolia</i>	1(1-1)	40	1(1-1)	6
<i>Lomandra obliqua</i>	1(1-1)	65	1(1-1)	14
<i>Microlaena stipoides</i>	1(1-2)	75	1(1-2)	36
<i>Mitrasacme polymorpha</i>	1(1-1)	20	1(1-1)	3
<i>Patersonia glabrata</i>	1(1-2)	50	1(1-1)	10
<i>Patersonia longifolia</i>	1(1-1)	35	1(1-1)	2

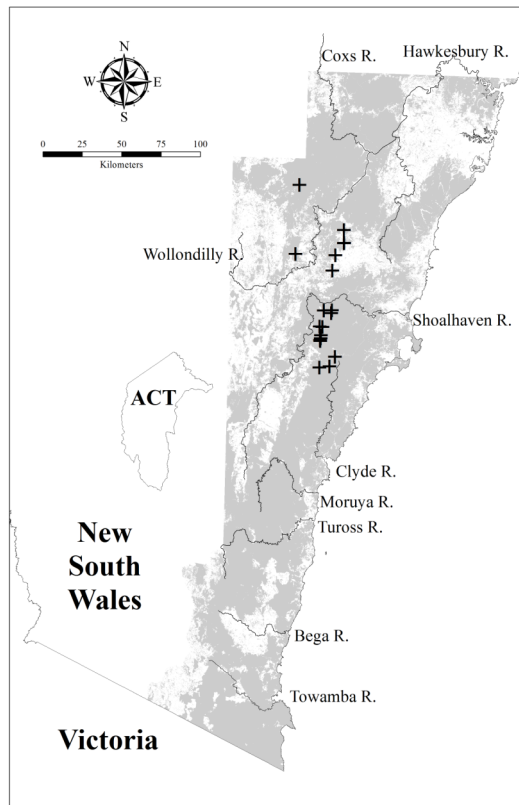
<i>Patersonia sericea</i>	1(1-1)	45	1(1-1)	9
<i>Persoonia mollis</i> subsp. <i>leptophylla</i>	1(1-1)	30	1(1-1)	1
<i>Petrophile pedunculata</i>	1(1-2)	20	1(1-1)	3
<i>Petrophile sessilis</i>	1(1-1)	35	1(1-1)	2
<i>Platysace lanceolata</i>	1(1-2)	40	1(1-1)	13
<i>Rhytidosporum procumbens</i>	1(1-1)	25	1(1-1)	3
<i>Tetratheca thymifolia</i>	1(1-1)	30	1(1-1)	6

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	50	1(1-1)	28
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	40	1(1-1)	15
<i>Eucalyptus sieberi</i>	2(1-3)	40	2(1-3)	16
<i>Gonocarpus tetragynus</i>	1(1-1)	45	1(1-1)	20
<i>Lepidosperma laterale</i>	1(1-1)	40	1(1-1)	29
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	30	1(1-1)	24
<i>Lomandra longifolia</i>	1(1-2)	65	1(1-1)	44
<i>Monotoca scoparia</i>	1(1-1)	30	1(1-1)	12
<i>Persoonia linearis</i>	1(1-1)	50	1(1-1)	29
<i>Pomax umbellata</i>	1(1-2)	30	1(1-1)	14
<i>Pteridium esculentum</i>	1(1-1)	45	1(1-2)	37
<i>Viola hederacea</i>	1(1-1)	30	1(1-1)	22

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia gummifera</i>	1(1-1)	5	2(1-2)	16
<i>Eucalyptus apiculata</i>	3(2-3)	10	2(1-3)	<1
<i>Eucalyptus blaxlandii</i>	1(1-1)	5	1(1-3)	1
<i>Eucalyptus considiniana</i>	2(1-2)	10	2(1-2)	2
<i>Eucalyptus dives</i>	2(1-2)	10	2(1-3)	4
<i>Eucalyptus elata</i>	3(1-3)	10	2(1-3)	5
<i>Eucalyptus globoidea</i>	1(1-1)	5	2(1-2)	12
<i>Eucalyptus gregsoniana</i>	1(1-1)	5	2(2-2)	<1
<i>Eucalyptus piperita</i>	3(1-3)	15	2(1-3)	9
<i>Eucalyptus punctata</i>	3(3-3)	10	1(1-3)	9
<i>Eucalyptus ralla</i>	3(3-3)	5	3(3-3)	<1
<i>Eucalyptus rossii</i>	3(1-3)	10	3(1-3)	2
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	2(1-2)	10	1(1-2)	2
<i>Eucalyptus smithii</i>	2(2-2)	5	1(1-2)	2
<i>Eucalyptus stricta</i>	1(1-1)	10	1(1-2)	1



Locations of survey sites allocated to DSF p149. Grey shading indicates extant native vegetation cover within the study area.

### WSF p153: Blue Gum High Forest



Plate p153. Blue Gum High Forest (Map Unit p153) on the Hornsby Plateau, where a canopy of majestic *Eucalyptus saligna* towers above scattered *Elaeocarpus reticulatus* and *Pittosporum undulatum* and a ferny ground layer dominated by *Calochlaena dubia* and *Lomandra longifolia*.

Sample Sites: 10  
Area Extant (ha): 180

Estimated % remaining: <10%

Area in conservation reserves (ha): 20

Estimated % of pre-clearing area in conservation reserves: <2%

No. taxa (total / unique): 177 / 1

No. taxa per plot ( $\pm$ sd): 44.4 (7.5)

Class: North Coast Wet Sclerophyll Forests

Related TECs: Blue Gum High Forest CEEC (TSC) and Blue Gum High Forest CEEC (EPBC)

Blue Gum High Forest (WSF p153) is equivalent to Map Unit 153 in Tozer (2003) and WSF 153 described by Tindall *et al.* (2004). It is a tall eucalypt forest characterised by an open mesic tree/shrub layer and an open moist groundcover. This tall forest has a restricted distribution on wet shale ridges of the Hornsby plateau in northeast Sydney where annual rainfall exceeds 1000mm and at elevations above 100m ASL. With decreasing rainfall Blue Gum High Forest grades into Sydney Turpentine Ironbark Forest (WSF p87).

Most of Blue Gum High Forest's original range has been cleared for urban development, and the remainder faces ongoing threat from weed invasion, fragmentation, altered fire regimes, rubbish dumping and recreational pressures.

#### Floristic Summary:

**Trees:** *Allocasuarina torulosa*, *Angophora costata*, *Elaeocarpus reticulatus*, *Eucalyptus saligna*, *E. pilularis*. **Shrubs:** *Breynia oblongifolia*, *Pittosporum undulatum*, *Leucopogon juniperinus*, *Pittosporum revolutum*, *Maytenus silvestris*, *Clerodendrum tomentosum*, *Platylobium formosum*, *Polyscias sambucifolia* subsp. A, *Rapanea variabilis*. **Climbers:** *Tylophora barbata*, *Eustrephus latifolius*, *Pandorea pandorana*, *Clematis aristata*. **Groundcover:** *Lomandra longifolia*, *Adiantum aethiopicum*, *Entolasia marginata*, *Pseuderanthemum variabile*, *Dianella caerulea*, *Calochlaena dubia*, *Oplismenus imbecillis*, *Poa affinis*.

#### Vegetation structure:

Stratum	Frequency (n=7)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	40.7 (14)	25.7 (15.9)
Small tree	100	14.7 (0.8)	34.3 (17.4)
Shrub	29	2 (1.4)	44 (50.9)
Ground cover	100	1 (0)	41.4 (30.6)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 15 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 39 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 15 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Adiantum aethiopicum</i>	2(1-3)	80	1(1-1)	9
<i>Adiantum hispidulum</i>	1(1-1)	20	1(1-1)	2
<i>Allocasuarina torulosa</i>	1(1-2)	70	1(1-3)	5
<i>Alphitonia excelsa</i>	1(1-1)	20	1(1-1)	1
<i>Angophora costata</i>	1(1-3)	60	1(1-3)	7
<i>Blechnum cartilagineum</i>	2(1-3)	50	1(1-2)	11
<i>Brachychiton acerifolius</i>	1(1-1)	20	1(1-1)	1
<i>Breynia oblongifolia</i>	1(1-1)	80	1(1-1)	12
<i>Brunoniella australis</i>	2(1-2)	30	2(1-2)	4
<i>Calochlaena dubia</i>	1(1-1)	60	1(1-3)	9
<i>Carex maculata</i>	1(1-1)	20	0(0-0)	0
<i>Cayratia clematidea</i>	1(1-1)	30	1(1-1)	3
<i>Clerodendrum tomentosum</i>	1(1-2)	40	1(1-1)	5
<i>Dianella caerulea</i>	1(1-1)	80	1(1-1)	28
<i>Elaeocarpus reticulatus</i>	1(1-2)	60	1(1-1)	12
<i>Entolasia marginata</i>	2(1-2)	80	1(1-1)	11

<i>Eucalyptus pilularis</i>	3(2-4)	50	2(1-3)	5
<i>Eucalyptus saligna</i> X <i>botryoides</i>	4(1-4)	40	2(1-3)	2
<i>Eustrephus latifolius</i>	2(1-2)	80	1(1-1)	19
<i>Exocarpos cupressiformis</i>	1(1-2)	30	1(1-1)	5
<i>Glochidion ferdinandi</i> var. <i>ferdinandi</i>	2(1-3)	30	1(1-1)	2
<i>Leucopogon juniperinus</i>	1(1-1)	60	1(1-1)	5
<i>Lomandra longifolia</i>	2(1-2)	100	1(1-1)	44
<i>Maytenus silvestris</i>	1(1-2)	50	1(1-1)	1
<i>Morinda jasminoides</i>	3(3-3)	50	1(1-2)	9
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-1)	50	1(1-1)	8
<i>Oplismenus aemulus</i>	2(1-2)	50	1(1-2)	5
<i>Ozothamnus diosmifolius</i>	1(1-1)	40	1(1-1)	9
<i>Pandorea pandorana</i>	2(1-2)	70	1(1-1)	18
<i>Passiflora herbertiana</i> subsp. <i>herbertiana</i>	1(1-1)	20	1(1-1)	1
<i>Pittosporum revolutum</i>	2(1-2)	60	1(1-1)	8
<i>Pittosporum undulatum</i>	2(2-4)	60	1(1-1)	14
<i>Platylobium formosum</i>	2(1-2)	40	1(1-1)	3
<i>Poa affinis</i>	2(1-3)	50	1(1-2)	2
<i>Polyscias sambucifolia</i>	2(1-2)	40	1(1-1)	6
<i>Pratia purpurascens</i>	2(1-2)	60	1(1-1)	17
<i>Pseuderanthemum variabile</i>	2(1-2)	70	1(1-2)	9
<i>Rapanea variabilis</i>	2(1-3)	40	1(1-1)	4
<i>Smilax glyciphylla</i>	1(1-1)	50	1(1-1)	8
<i>Tristaniopsis laurina</i>	1(1-1)	20	1(1-3)	2
<i>Tylophora barbata</i>	1(1-2)	90	1(1-1)	17

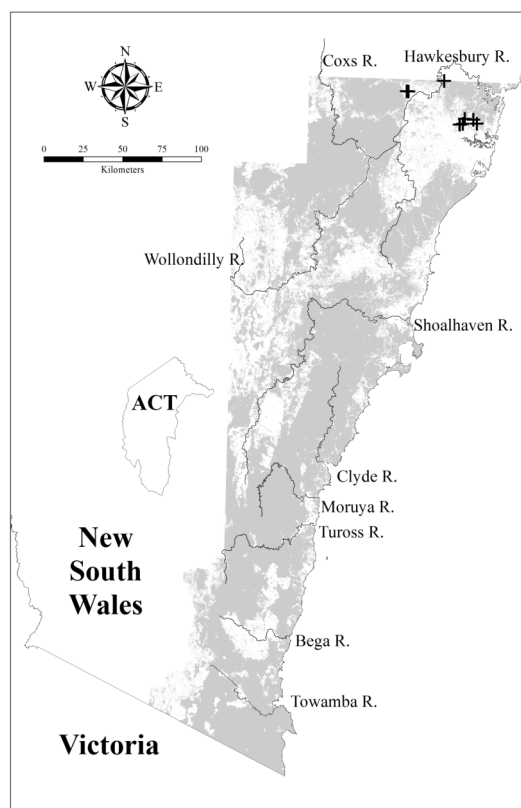
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia implexa</i>	1(1-1)	30	1(1-1)	7
<i>Acmena smithii</i>	1(1-1)	30	2(1-3)	9
<i>Angophora floribunda</i>	1(1-2)	30	1(1-2)	9
<i>Asplenium flabellifolium</i>	1(1-1)	40	1(1-1)	12
<i>Backhousia myrtifolia</i>	4(2-4)	30	2(1-3)	5
<i>Bursaria spinosa</i>	1(1-1)	30	1(1-2)	14
<i>Cassutha glabella</i>	1(1-2)	30	1(1-1)	8
<i>Cissus hypoglauca</i>	3(1-4)	30	1(1-2)	10
<i>Clematis aristata</i>	1(1-1)	50	1(1-1)	20
<i>Corymbia gummifera</i>	1(1-1)	30	2(1-2)	16
<i>Dodonaea triquetra</i>	1(1-1)	30	1(1-2)	6
<i>Doodia aspera</i>	2(1-3)	40	1(1-2)	12
<i>Echinopogon ovatus</i>	1(1-1)	30	1(1-1)	14
<i>Entolasia stricta</i>	1(1-1)	60	1(1-2)	34
<i>Geitonoplesium cymosum</i>	2(1-2)	30	1(1-1)	16
<i>Glycine clandestina</i>	1(1-2)	50	1(1-1)	26
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-2)	30	1(1-1)	10
<i>Hydrocotyle laxiflora</i>	1(1-1)	30	1(1-1)	16

<i>Imperata cylindrica</i> var. <i>major</i>	2(1-2)	30	1(1-2)	10
<i>Lepidosperma laterale</i>	1(1-1)	40	1(1-1)	29
<i>Marsdenia rostrata</i>	1(1-2)	30	1(1-2)	12
<i>Oplismenus imbecillis</i>	1(1-2)	50	1(1-2)	14
<i>Oxalis perennans</i>	1(1-1)	40	1(1-1)	13
<i>Persoonia linearis</i>	1(1-2)	40	1(1-1)	29
<i>Pteridium esculentum</i>	1(1-1)	60	1(1-2)	37
<i>Smilax australis</i>	1(1-3)	40	1(1-1)	16
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	30	1(1-1)	7
<i>Themeda australis</i>	1(1-3)	40	1(1-3)	17

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora hispida</i>	1(1-1)	10	1(1-2)	1
<i>Corymbia eximia</i>	1(1-1)	10	1(1-2)	2
<i>Eucalyptus globoidea</i>	1(1-1)	20	2(1-2)	12
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	3(1-3)	20	1(1-2)	3
<i>Eucalyptus piperita</i>	2(1-2)	20	2(1-3)	9
<i>Eucalyptus punctata</i>	1(1-1)	20	2(1-3)	9
<i>Eucalyptus tereticornis</i>	1(1-1)	10	2(1-3)	7
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-1)	10	2(1-3)	8



Locations of survey sites allocated to WSF p153. Grey shading indicates extant native vegetation cover within the study area.

**WSF p168: Shale-Basalt Sheltered Forest**

Plate p168. Shale-Basalt Sheltered Forest (Map Unit p168) on the Illawarra Range between Mount Murray Road and Macquarie Pass, where a very tall canopy of *Eucalyptus obliqua* and *E. cypellocarpa* towers above scattered *Acacia melanoxylon*, a sparse shrub layer including *Coprosma quadrifida* and *Cyathea australis*, and a dense groundcover dominated by *Poa labillardierei*, *Blechnum cartilagineum* and *Lomandra longifolia*.

Sample Sites: 51

Area Extant (ha): 2500

Estimated % remaining: 20-35%

Area in conservation reserves (ha): 350

Estimated % of pre-clearing area in conservation reserves: <10%

No. taxa (total / unique): 337 / 1

No. taxa per plot ( $\pm$ sd): 38.6 (10.8)

Class: Southern Tableland Wet Sclerophyll Forests

Related TECs: includes Blue Mountains Shale Cap Forest EEC (TSC).

Shale-Basalt Sheltered Forest (WSF p168) is identical to WSF 168 identified by Tindall *et al.* (2004). It represents a tall eucalypt forest with an open shrub layer and a moist herbaceous groundcover. This unit is distributed along moist elevated ridgetops and peaks on fertile soils in the Blue Mountains, the upper Woronora plateau and in the Southern Highlands. Examples can be found near Bilpin, Mt Wilson, Mt Banks, Mt Hay and Mt Tomah in the Blue Mountains and near Wingello and Robertson on the Southern Highlands plateau. Within this distribution Shale-Basalt Sheltered Forest occurs on shale derived soils and soils developed along the shale/basalt boundary between 450 and 900m ASL, usually in areas receiving a mean annual rainfall of more than 1200mm. On the Southern Highlands plateau Shale-Basalt Sheltered Forest grades into Southern Highlands Shale Forest (WSF p268) with decreasing rainfall. On adjacent Basalt substrates Shale-Basalt Sheltered Forest is replaced by either Southern Highlands Basalt Forest (WSF p266) or Blue Mountains Basalt Forest (WSF p72).

Substantial areas of Shale-Basalt Sheltered Forest have been cleared, particularly around Bilpin and in the Southern Highlands. Remaining areas face ongoing threats from weed invasion, grazing, and continuing small scale clearing associated with subdivision developments.

**Floristic Summary:**

**Trees:** *Eucalyptus piperita*, *E. globoidea*, *E. cypellocarpa*. **Shrubs:** *Leucopogon lanceolatus*, *Indigofera australis*, *Goodenia ovata*, *Polyscias sambucifolia* subsp. A. **Climbers:** *Tylophora barbata*, *Eustrephus latifolius*, *Glycine clandestina*, *Clematis aristata*. **Groundcover:** *Dianella caerulea*, *Microlaena stipoides*, *Lomandra longifolia*, *Pteridium esculentum*, *Viola hederacea*, *Dichondra* spp., *Pratia purpurascens*, *Doodia aspera*, *Hydrocotyle peduncularis*, *Adiantum aethiopicum*, *Blechnum cartilagineum*, *Galium binifolium*.



**Vegetation structure:**

Stratum	Frequency (n=41)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	24.5 (8)	33.3 (7.9)
Small tree	71	7.6 (4.1)	21 (22.6)
Shrub	49	2 (0.6)	15.3 (13.7)
Ground cover	100	0.9 (0.3)	53.2 (30.9)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 12 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 30 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 12 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia binervata</i>	1(1-2)	22	1(1-2)	2
<i>Acacia longifolia</i>	1(1-1)	27	1(1-2)	9
<i>Acacia melanoxylon</i>	1(1-1)	20	1(1-1)	6
<i>Adiantum aethiopicum</i>	1(1-1)	31	1(1-2)	9
<i>Billardiera scandens</i>	1(1-1)	59	1(1-1)	27
<i>Blechnum cartilagineum</i>	2(1-3)	47	1(1-2)	11
<i>Calochlaena dubia</i>	1(1-2)	24	1(1-3)	9
<i>Carex longibrachiata</i>	1(1-1)	16	1(1-2)	3
<i>Clematis aristata</i>	1(1-1)	55	1(1-1)	20
<i>Dianella caerulea</i>	1(1-1)	94	1(1-1)	28
<i>Dichondra spp.</i>	1(1-2)	49	1(1-2)	25
<i>Entolasia marginata</i>	1(1-1)	35	1(1-1)	11
<i>Eucalyptus cypellocarpa</i>	2(1-3)	33	2(1-2)	10
<i>Eucalyptus globoidea</i>	2(1-3)	39	2(1-2)	12
<i>Eucalyptus piperita</i>	2(1-3)	53	2(1-3)	9
<i>Eucalyptus smithii</i>	2(1-2)	14	1(1-2)	2
<i>Eustrephus latifolius</i>	1(1-1)	49	1(1-1)	19
<i>Galium binifolium</i>	1(1-1)	27	1(1-1)	3
<i>Glycine clandestina</i>	1(1-1)	53	1(1-1)	26
<i>Gonocarpus teucroides</i>	1(1-1)	49	1(1-1)	17
<i>Goodenia ovata</i>	1(1-2)	27	1(1-1)	7
<i>Helichrysum elatum</i>	1(1-1)	29	1(1-1)	2
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	35	1(1-1)	10
<i>Hibbertia scandens</i>	1(1-2)	33	1(1-1)	5
<i>Hydrocotyle peduncularis</i>	2(1-2)	29	1(1-1)	9
<i>Indigofera australis</i>	1(1-2)	31	1(1-1)	9
<i>Kennedia rubicunda</i>	1(1-2)	24	1(1-1)	6
<i>Lachnagrostis filiformis</i>	1(1-1)	16	1(1-1)	3
<i>Leptospermum polygalifolium</i>	1(1-2)	27	1(1-2)	8
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	86	1(1-1)	23
<i>Lomandra longifolia</i>	1(1-2)	84	1(1-1)	44
<i>Microlaena stipoides</i>	1(1-2)	67	1(1-2)	36
<i>Notelaea venosa</i>	1(1-1)	29	1(1-1)	12

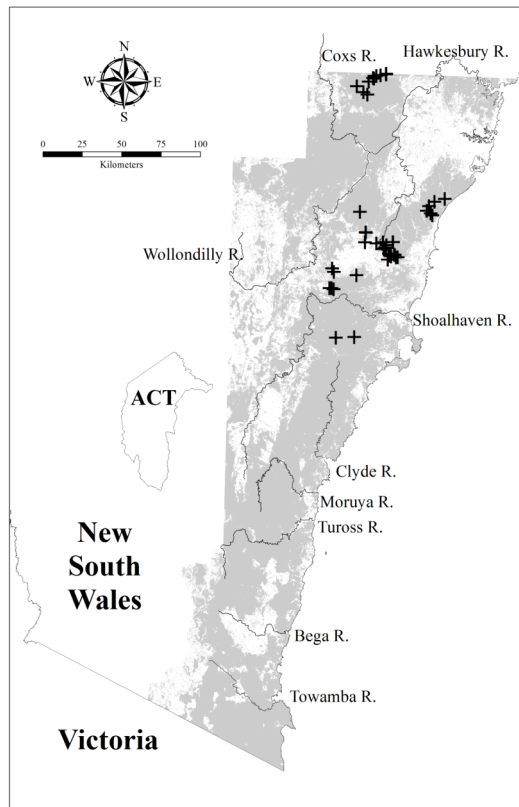
<i>Persoonia mollis</i> subsp. <i>mollis</i>	1(1-1)	16	1(1-1)	1
<i>Polyscias sambucifolia</i>	1(1-1)	37	1(1-1)	6
<i>Poranthera microphylla</i>	1(1-1)	45	1(1-1)	15
<i>Pratia purpurascens</i>	1(1-2)	69	1(1-1)	17
<i>Pteridium esculentum</i>	1(1-2)	86	1(1-2)	37
<i>Smilax australis</i>	2(1-2)	33	1(1-1)	16
<i>Tylophora barbata</i>	2(1-2)	69	1(1-1)	16
<i>Veronica plebeia</i>	1(1-1)	31	1(1-1)	10
<i>Viola hederacea</i>	1(1-1)	75	1(1-1)	22

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Entolasia stricta</i>	1(1-2)	37	1(1-2)	34
<i>Gonocarpus tetragynus</i>	1(1-1)	31	1(1-1)	20
<i>Lepidosperma laterale</i>	1(1-1)	31	1(1-1)	29
<i>Persoonia linearis</i>	1(1-1)	39	1(1-1)	29

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora costata</i>	2(1-4)	6	1(1-3)	7
<i>Angophora floribunda</i>	1(1-1)	2	1(1-2)	9
<i>Corymbia gummifera</i>	1(1-3)	6	2(1-2)	16
<i>Eucalyptus blaxlandii</i>	3(2-4)	10	1(1-3)	1
<i>Eucalyptus deanei</i>	3(1-4)	6	3(1-3)	1
<i>Eucalyptus dives</i>	3(3-3)	6	2(1-3)	4
<i>Eucalyptus elata</i>	4(3-4)	4	2(1-2)	5
<i>Eucalyptus fastigata</i>	3(3-3)	4	2(1-3)	6
<i>Eucalyptus notabilis</i>	2(2-2)	2	1(1-1)	1
<i>Eucalyptus obliqua</i>	2(1-2)	14	2(1-3)	4
<i>Eucalyptus oreades</i>	1(1-1)	2	3(1-3)	<1
<i>Eucalyptus ovata</i>	3(1-3)	6	2(1-2)	1
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	3(1-3)	8	1(1-2)	3
<i>Eucalyptus pilularis</i>	2(2-2)	2	2(1-3)	5
<i>Eucalyptus punctata</i>	3(1-3)	14	1(1-3)	9
<i>Eucalyptus quadrangulata</i>	2(1-3)	6	3(1-3)	1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-2)	12	2(1-3)	6
<i>Eucalyptus saligna</i> X <i>botryoides</i>	3(1-3)	6	2(1-3)	2
<i>Eucalyptus sieberi</i>	1(1-2)	6	2(1-3)	16
<i>Eucalyptus sparsifolia</i>	1(1-1)	2	2(1-3)	2
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	3(3-3)	14	2(1-3)	8



Locations of survey sites allocated to WSF p168. Grey shading indicates extant native vegetation cover within the study area.

### DSF p202: Burragorang Rocky Slopes Woodland



Plate p202. Burragorang Rocky Slopes Woodland (Map Unit p202) on the Douglas Scarp, Burragorang Valley. The tree canopy is comprised of *Callitris endlicheri* and *Eucalyptus crebra*, with a distinct shrub layer dominated by *Leucopogon muticus* and *Lissanthe strigosa*, and a sparse groundcover with a moderate diversity of grasses and forbs.

Sample Sites: 14

Area Extant (ha): 2200

Estimated % remaining: 45-65%

Area in conservation reserves (ha): 2200

Estimated % of pre-clearing area in conservation reserves: 45-55%

No. taxa (total / unique): 209 / 2

No. taxa per plot ( $\pm$ sd): 41.8 (7.8)

Class: Cumberland Dry Sclerophyll Forests  
Related TEC: n/a

Burraborang Rocky Slopes Woodland (DSF p202) is identical to DSF 202 identified by Tindall *et al.* (2004). It is a eucalypt woodland with an open understorey of sclerophyll shrubs and grasses. It occurs at 150 – 450m ASL on loamy soils on the dry rocky escarpment slopes of the lower Nattai and Wollondilly river valleys, and adjacent to the upper reaches of Lake Burraborang, where average annual rainfall varies from 770 to 950mm. Large areas are thus protected in the Warragamba catchment area within Blue Mountains National Park. Burraborang Rocky Slopes Woodland shows some floristic variability associated with topographic variation from the rocky Douglas Scarp to the gently sloping foreshores of Lake Burraborang. Stands in this latter area resemble Castlereagh Shale-Gravel Transition Forest (GW p502).

#### Floristic Summary:

**Trees:** *Eucalyptus crebra*, *Acacia binervia*. **Shrubs:** *Lissanthe strigosa*, *Persoonia linearis*, *Astroloma humifusum*, *Phyllanthus hirtellus*, *Leucopogon muticus*, *Olearia viscidula*, *Ozothamnus diosmifolius*. **Climbers:** *Glycine clandestina*. **Groundcover:** *Cheilanthes sieberi*, *Pomax umbellata*, *Pratia purpurascens*, *Dichondra* spp., *Lepidosperma laterale*, *Aristida vagans*, *Goodenia hederacea*, *Solanum prinophyllum*, *Lomandra filiformis* ssp *coriacea*, *Cymbopogon refractus*.

#### Vegetation structure:

Stratum	Frequency (n=11)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	22.5 (8.2)	26.8 (11.8)
Small tree	55	10.8 (5.1)	14.5 (13.6)
Shrub	91	2.3 (0.4)	16 (12.5)
Ground cover	100	0.7 (0.3)	24.5 (17.1)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 13 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 36 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 13 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia binervia</i>	1(1-3)	43	1(1-3)	<1
<i>Allocasuarina verticillata</i>	1(1-3)	21	1(1-2)	<1
<i>Aristida vagans</i>	1(1-2)	64	1(1-2)	8
<i>Astroloma humifusum</i>	1(1-2)	71	1(1-1)	4
<i>Austroanthonia tenuior</i>	1(1-2)	21	1(1-2)	2
<i>Brachychiton populneus</i> subsp. <i>populneus</i>	1(1-1)	36	1(1-1)	3
<i>Brachyscome angustifolia</i>	1(1-1)	29	1(1-1)	2
<i>Brunoniella australis</i>	1(1-3)	36	2(1-2)	4
<i>Callitris endlicheri</i>	3(1-3)	29	1(1-2)	<1
<i>Cheilanthes distans</i>	1(1-1)	21	1(1-1)	2
<i>Cheilanthes sieberi</i>	1(1-2)	86	1(1-1)	14
<i>Chloris ventricosa</i>	1(1-1)	21	1(1-2)	1
<i>Cymbopogon refractus</i>	1(1-2)	50	1(1-1)	4
<i>Dichondra</i> spp.	1(1-1)	64	1(1-2)	25
<i>Digitaria ramularis</i>	1(1-2)	21	1(1-1)	2
<i>Eragrostis brownii</i>	1(1-1)	29	1(1-1)	3
<i>Eucalyptus crebra</i>	3(2-3)	71	2(1-3)	3
<i>Eucalyptus fibrosa</i>	3(1-4)	29	2(1-3)	3
<i>Eucalyptus moluccana</i>	4(3-4)	29	3(1-3)	2
<i>Gahnia aspera</i>	2(1-3)	36	1(1-1)	4

<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-1)	64	1(1-2)	14
<i>Hibbertia diffusa</i>	1(1-1)	21	1(1-1)	3
<i>Jacksonia scoparia</i>	1(1-1)	29	1(1-1)	2
<i>Laxmannia gracilis</i>	1(1-1)	36	1(1-1)	4
<i>Lepidosperma laterale</i>	1(1-2)	71	1(1-1)	29
<i>Leucopogon muticus</i>	2(1-3)	50	1(1-1)	1
<i>Lissanthe strigosa</i>	1(1-3)	79	1(1-1)	8
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-1)	57	1(1-2)	10
<i>Notodanthonia longifolia</i>	1(1-3)	29	1(1-2)	5
<i>Olearia viscidula</i>	2(1-2)	43	1(1-2)	5
<i>Opercularia hispida</i>	1(1-1)	21	1(1-1)	3
<i>Ozothamnus diosmifolius</i>	1(1-1)	43	1(1-1)	9
<i>Panicum effusum</i>	1(1-1)	29	1(1-1)	2
<i>Persoonia linearis</i>	1(1-1)	71	1(1-1)	29
<i>Phyllanthus hirtellus</i>	1(1-1)	57	1(1-1)	14
<i>Pomax umbellata</i>	1(1-1)	86	1(1-1)	14
<i>Pratia purpurascens</i>	1(1-1)	71	1(1-1)	17
<i>Sida corrugata</i>	1(1-3)	36	1(1-1)	<1
<i>Solanum prinophyllum</i>	1(1-1)	57	1(1-1)	6
<i>Stackhousia viminea</i>	1(1-2)	29	1(1-1)	3
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-2)	36	1(1-1)	4
<i>Vittadinia cuneata</i> var. <i>cuneata</i>	1(1-2)	29	1(1-1)	1

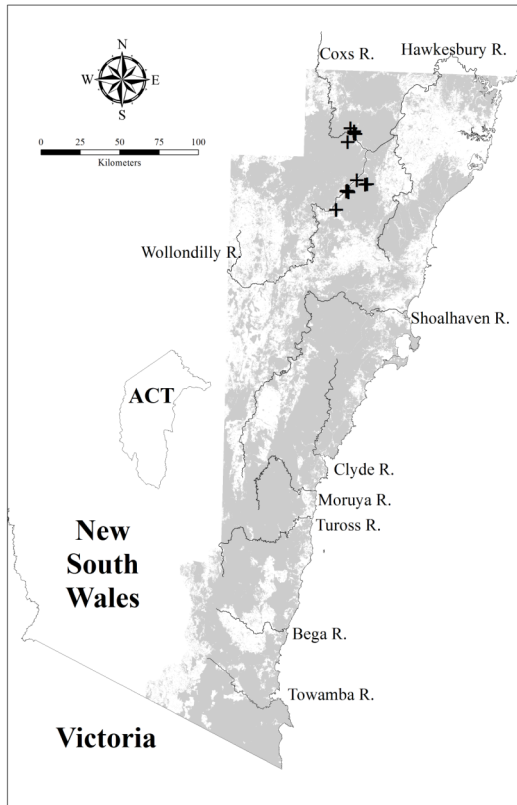
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	57	1(1-1)	28
<i>Desmodium varians</i>	1(1-3)	36	1(1-1)	21
<i>Echinopogon ovatus</i>	1(1-1)	36	1(1-1)	14
<i>Entolasia stricta</i>	1(1-1)	64	1(1-2)	34
<i>Glycine clandestina</i>	1(1-1)	57	1(1-1)	26
<i>Hypericum gramineum</i>	1(1-1)	36	1(1-1)	16
<i>Lomandra longifolia</i>	1(1-3)	36	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-2)	57	1(1-1)	25
<i>Microlaena stipoides</i>	1(1-1)	43	1(1-2)	36
<i>Poranthera microphylla</i>	1(1-1)	43	1(1-1)	15

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-3)	21	1(1-2)	9
<i>Eucalyptus eugenioides</i>	1(1-2)	21	2(1-3)	4
<i>Eucalyptus punctata</i>	1(1-1)	7	2(1-3)	9
<i>Eucalyptus sideroxylon</i>	4(4-4)	7	3(1-3)	<1
<i>Eucalyptus tereticornis</i>	1(1-3)	29	2(1-3)	7





Locations of survey sites allocated to DSF p202. Grey shading indicates extant native vegetation cover within the study area.

### RF p210: Temperate Littoral Rainforest



Plate p210. Temperate Littoral Rainforest (Map Unit p210) on a southeast-facing slope beside Lawrence Hargrave Drive south of the Seacliff Bridge at Clifton. A dense, wind-sculpted, closed canopy contains a diverse array of rainforest and coastal trees including *Acmena smithii*, *Guioa semiglaucula*, *Eucalyptus botryoides*, *Pittosporum undulatum* and *Banksia integrifolia* subsp. *integrifolia*, with vines including *Geitonoplessium cymosum* and a very sparse groundcover of ferns and grasses.

Sample Sites: 31

Area Extant (ha): 470

Estimated % remaining: 70-90%

Area in conservation reserves (ha): 360

Estimated % of pre-clearing area in conservation reserves: 50-65%

No. taxa (total / unique): 176 / 1  
 No. taxa per plot ( $\pm$ sd): 33.5 (6.3)  
 Class: Littoral Rainforests  
 Related TEC: Littoral Rainforest EEC (TSC).

Temperate Littoral Rainforest (RF p210) is an extension of RF 210 identified by Tindall *et al.* (2004) to the south to include assemblage 5 (Bunga Head Rainforest) of Keith & Bedward (1999). This revised unit includes some changes to modelling in the far south.

This unit is a closed forest characterised by a dense tree canopy, lianas, a sparse shrub stratum and an open groundcover. This rainforest is restricted to sandspits and coastal gullies within a few hundred metres of the ocean. Within the study area small occurrences are distributed along the coast south from Sutherland in places where annual rainfall exceeds 950mm. Local concentrations occur from Garie to Stanwell Park and on the Beecroft Peninsula. Temperate Littoral Rainforest shares some species with Subtropical Dry Rainforest, Subtropical Complex Rainforest and Warm Temperate Layered Forest (RF p111, RF p112 and WSF p110) and replaces these units where Littoral influences predominate.

Temperate Littoral Rainforest has been significantly depleted by clearing for coastal development and, in the Kiama district, for agricultural development. Some stands are represented within conservation reserves, but these face intense pressures from recreational use and weed invasion.

#### Floristic Summary:

**Trees:** *Acmena smithii*, *Guioa semiglaucula*, *Livistona australis*, *Diospyros australis*, *Podocarpus elatus*, *Eucalyptus botryoides*, *Pittosporum undulatum*, *Synoum glandulosum*, *Cassine australis*. **Shrubs:** *Eupomatia laurina*, *Ripogonum album*. **Climbers:** *Marsdenia rostrata*, *Sarcopetalum harveyanum*, *Stephania japonica*, *Smilax australis*, *Eustrephus latifolius*, *Cissus hypoglaucula*, *Geitonoplesium cymosum*. **Groundcover:** *Oplismenus imbecillis*, *Viola hederacea*, *Pellaea falcata*, *Gahnia aspera*.

#### Vegetation structure:

Stratum	Frequency (n=9)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	44	14.8 (3.8)	12.5 (11.9)
Tree canopy	89	14.1 (9)	63.4 (25.9)
Small tree	44	10.5 (3.3)	47.5 (26.6)
Shrub	44	2.3 (0.6)	12.5 (6.5)
Ground cover	100	1 (0.5)	30 (22.4)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 16 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 29 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 16 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia maidenii</i>	1(1-1)	26	1(1-1)	3
<i>Acmena smithii</i>	1(1-3)	74	2(1-3)	9
<i>Acronychia oblongifolia</i>	1(1-2)	23	1(1-3)	1
<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>	1(1-3)	23	1(1-2)	2
<i>Breynia oblongifolia</i>	1(1-1)	35	1(1-1)	12
<i>Cassine australis</i> var. <i>australis</i>	1(1-3)	87	1(1-3)	2
<i>Cissus antarctica</i>	1(1-1)	39	1(1-2)	3
<i>Cissus hypoglaucula</i>	1(1-1)	58	1(1-2)	9
<i>Claoxylon australe</i>	1(1-1)	35	1(1-2)	3
<i>Cryptocarya microneura</i>	1(1-1)	26	1(1-3)	2
<i>Diospyros australis</i>	2(1-3)	68	1(1-2)	3
<i>Doodia aspera</i>	2(2-3)	32	1(1-2)	12
<i>Endiandra sieberi</i>	1(1-3)	32	1(1-2)	<1
<i>Eucalyptus botryoides</i>	1(1-3)	58	2(1-3)	3
<i>Eupomatia laurina</i>	1(1-1)	61	1(1-2)	4



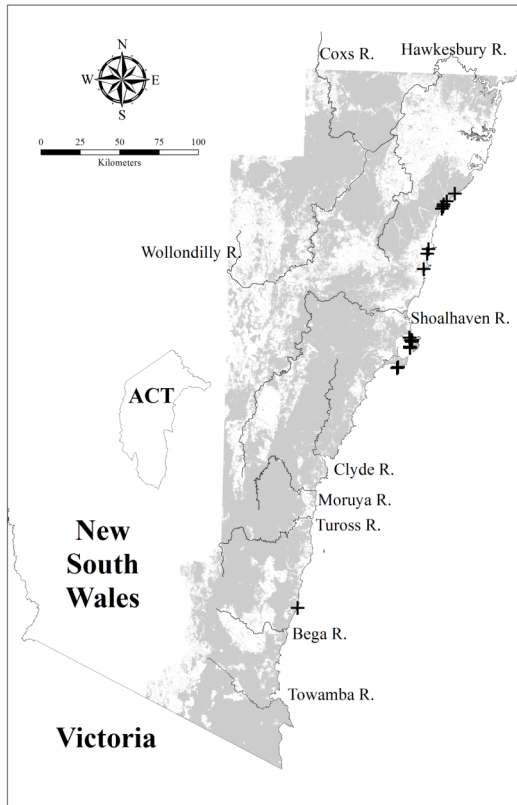
<i>Eustrephus latifolius</i>	1(1-1)	71	1(1-1)	19
<i>Ficus coronata</i>	1(1-1)	32	1(1-2)	4
<i>Gahnia aspera</i>	1(1-1)	65	1(1-1)	4
<i>Gahnia sieberiana</i>	1(1-1)	29	1(1-1)	5
<i>Geitonoplesium cymosum</i>	1(1-1)	61	1(1-1)	16
<i>Glochidion ferdinandi</i> var. <i>ferdinandi</i>	1(1-1)	32	1(1-1)	2
<i>Guioa semiglauca</i>	1(1-3)	61	1(1-2)	1
<i>Hibbertia scandens</i>	1(1-1)	32	1(1-1)	5
<i>Livistona australis</i>	1(1-3)	65	1(1-1)	6
<i>Marsdenia rostrata</i>	1(1-1)	77	1(1-2)	12
<i>Morinda jasminoides</i>	1(1-1)	39	1(1-2)	9
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-1)	52	1(1-1)	7
<i>Notelaea venosa</i>	1(1-1)	48	1(1-1)	12
<i>Oplismenus imbecillis</i>	1(1-1)	84	1(1-2)	14
<i>Parsonsia straminea</i>	1(1-1)	29	1(1-1)	7
<i>Pellaea falcata</i>	1(1-1)	71	1(1-2)	10
<i>Pittosporum revolutum</i>	1(1-1)	29	1(1-1)	8
<i>Pittosporum undulatum</i>	2(1-3)	52	1(1-1)	14
<i>Platycerium bifurcatum</i>	1(1-1)	29	1(1-1)	1
<i>Podocarpus elatus</i>	1(1-2)	52	1(1-3)	<1
<i>Pseuderanthemum variabile</i>	1(1-2)	52	1(1-2)	9
<i>Rapanea variabilis</i>	1(1-1)	35	1(1-1)	4
<i>Ripogonum album</i>	1(1-1)	45	1(1-2)	1
<i>Sarcopetalum harveyanum</i>	1(1-1)	61	1(1-1)	4
<i>Sarcomelicope simplicifolia</i> subsp. <i>simplicifolia</i>	1(1-1)	29	1(1-3)	<1
<i>Schelhammera undulata</i>	1(1-1)	26	1(1-1)	7
<i>Smilax australis</i>	1(1-1)	58	1(1-1)	16
<i>Stellaria flaccida</i>	1(1-1)	39	1(1-1)	10
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	61	1(1-1)	6
<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	1(1-1)	68	1(1-2)	7
<i>Viola hederacea</i>	1(1-1)	81	1(1-1)	22

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Lomandra longifolia</i>	1(1-1)	55	1(1-1)	44

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia gummifera</i>	2(2-2)	3	2(1-2)	16
<i>Eucalyptus longifolia</i>	1(1-1)	3	1(1-2)	2
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	3(1-3)	16	1(1-2)	3
<i>Eucalyptus pilularis</i>	3(1-3)	6	2(1-3)	5
<i>Eucalyptus punctata</i>	1(1-1)	3	2(1-3)	9
<i>Eucalyptus robusta</i>	3(3-3)	3	2(1-3)	<1
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	4(4-4)	16	2(1-3)	8



Locations of survey sites allocated to RF p210. Grey shading indicates extant native vegetation cover within the study area.

### DSF p219: Wombeyan Caves Woodland



Plate p219. Wombeyan Caves Woodland (Map Unit p219) west of Wombeyan Caves visitor centre. A sparse woodland canopy of *Eucalyptus bridgesiana* and *Brachychiton populneus* grows above scattered shrubs including *Acacia chalkeri* and *Cassinia laevis*, and groundcover dominated by tussocks of *Lomandra longifolia* and *Poa sieberiana* var. *sieberiana* between outcropping limestone.

Sample Sites: 4  
 Area Extant (ha): 310  
 Estimated % remaining: 60-80%  
 Area in conservation reserves (ha): 0  
 Estimated % of pre-clearing area in conservation reserves: <1%  
 No. taxa (total / unique): 70 / 1  
 No. taxa per plot ( $\pm$ sd): 26.5 (9.8)  
 Class: Central Gorge Dry Sclerophyll Forests  
 Related TEC: n/a

Wombeyan Caves Woodland (DSF p219) is equivalent to DSF 219 identified by Tindall *et al.* (2004). This unit is a eucalypt forest with a sparse shrub layer and a groundcover of herbs and grass. This unit occurs exclusively on dry clay soils derived from limestone. Its distribution is restricted to less than 300ha in a single location around Wombeyan Caves, representing less than two-thirds of its original extent. Average annual rainfall is approximately 750mm in this area and elevation ranges from 550 to 700m ASL. Wombeyan Caves Woodland shares some species with Abercrombie-Tarlo Foothills Woodland (DSF p19), but is distinguished by the locally endemic shrub, *Acacia chalkeri*. With an extremely small range, Wombeyan Caves Woodland may be at risk from continuing attrition and degradation.

#### Floristic Summary:

**Trees:** *Eucalyptus bridgesiana*, *Brachychiton populneus*. **Shrubs:** *Acacia chalkeri*, *Cassinia laevis*, *C. longifolia*, *Hymenanthera dentata*. **Groundcover:** *Dichondra* spp., *Lomandra longifolia*, *Hydrocotyle laxiflora*, *Poa sieberiana*, *Acaena novae-zelandiae*, *Austrostipa rudis* subsp. *nervosa*, *Cymbopogon refractus*, *Elymus scabrus*, *Galium propinquum*, *Grevillea arenaria*, *Oxalis exilis*, *Plantago hispida*, *Wahlenbergia stricta*.

#### Vegetation structure:

Stratum	Frequency (n=3)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	100	8 (6.1)	30 (18)
Small tree	33	4 (-)	5 (-)
Shrub	-	- (-)	- (-)
Ground cover	100	0.7 (0.4)	21.7 (2.9)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 9 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 19 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 9 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia buxifolia</i> subsp. <i>buxifolia</i>	1(1-1)	25	1(1-1)	1
<i>Acacia chalkeri</i>	2(1-2)	100	0(0-0)	0
<i>Austrodanthonia caespitosa</i>	1(1-1)	25	1(1-2)	1
<i>Brachychiton populneus</i> subsp. <i>populneus</i>	1(1-1)	50	1(1-1)	3
<i>Brachyscome graminea</i>	1(1-1)	25	1(1-1)	<1
<i>Bulbine bulbosa</i>	1(1-1)	25	1(1-1)	<1
<i>Cassinia laevis</i>	2(2-3)	75	1(1-1)	1
<i>Cassinia longifolia</i>	1(1-1)	50	1(1-2)	6
<i>Cassinia uncata</i>	1(1-1)	25	1(1-1)	<1
<i>Chamaesyce drummondii</i>	1(1-1)	25	1(1-1)	<1
<i>Convolvulus erubescens</i>	1(1-1)	25	1(1-1)	1
<i>Cymbopogon refractus</i>	1(1-1)	50	1(1-1)	4
<i>Dianella revoluta</i> var. <i>revoluta</i>	2(1-2)	75	1(1-1)	15
<i>Dichondra</i> spp.	2(1-2)	100	1(1-2)	25
<i>Dodonaea viscosa</i> subsp. <i>angustifolia</i>	1(1-1)	25	1(1-1)	1
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-1)	50	1(1-1)	5
<i>Eucalyptus bridgesiana</i>	1(1-2)	75	1(1-3)	1
<i>Grevillea arenaria</i> subsp. <i>arenaria</i>	4(3-4)	50	1(1-1)	1
<i>Hydrocotyle laxiflora</i>	1(1-1)	75	1(1-1)	16
<i>Lomandra longifolia</i>	2(1-2)	100	1(1-1)	44
<i>Luzula densiflora</i>	1(1-1)	25	1(1-1)	1
<i>Myoporum montanum</i>	1(1-1)	25	1(1-1)	<1
<i>Notelaea neglecta</i>	1(1-1)	25	1(1-1)	<1

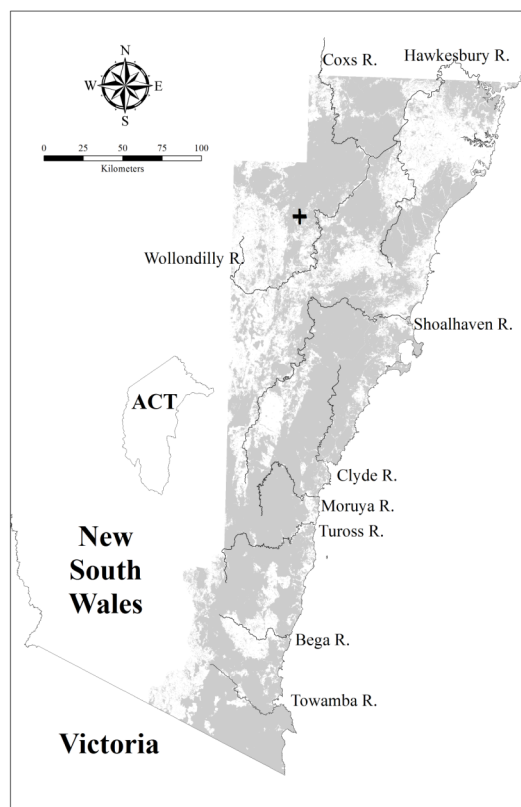
<i>Oxalis exilis</i>	1(1-1)	50	1(1-1)	3
<i>Plantago hispidula</i>	1(1-1)	50	1(1-1)	<1
<i>Poa sieberiana</i> var. <i>sieberiana</i>	1(1-1)	75	1(1-2)	11
<i>Senna odorata</i>	1(1-1)	25	1(1-2)	<1
<i>Solanum aviculare</i>	1(1-1)	25	1(1-1)	1
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	2(1-2)	50	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Acaena novae-zelandiae</i>	1(1-1)	50	1(1-1)	7
<i>Austrostipa rudis</i>	2(1-2)	50	1(1-2)	6
<i>Clematis aristata</i>	1(1-1)	50	1(1-1)	20
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	50	1(1-1)	10
<i>Galium propinquum</i>	1(1-1)	50	1(1-1)	7
<i>Hibbertia obtusifolia</i>	1(1-1)	50	1(1-1)	11
<i>Hymenanthera dentata</i>	1(1-1)	50	1(1-1)	6
<i>Lomandra glauca</i>	1(1-1)	50	1(1-1)	10
<i>Plectranthus parviflorus</i>	1(1-1)	50	1(1-1)	8

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus dives</i>	1(1-1)	25	2(1-3)	4
<i>Eucalyptus melliodora</i>	1(1-1)	25	1(1-3)	2



Locations of survey sites allocated to DSF p219. Grey shading indicates extant native vegetation cover within the study area.

**GW p220: Southern Tableland Flats Forest**

Plate p220. Southern Tableland Flats Forest (Map Unit p220) at Gilligan Park on the Araluen Road. The large tree in the centre is *Eucalyptus viminalis*, flanked on the right by *Acacia melanoxylon* and on the left by *Acacia dealbata*. Tussocks of *Poa labillardierei* var. *labillardierei* occupy the foreground.

Sample Sites: 57

Area Extant (ha): 58600

Estimated % remaining: 10-30%

Area in conservation reserves (ha): 22100

Estimated % of pre-clearing area in conservation reserves: <5%

No. taxa (total / unique): 358 / 2

No. taxa per plot ( $\pm$ sd): 33.4 (14.6)

Class: Tableland Clay Grassy Woodlands

Related TEC: n/a

Southern Tableland Flats Forest (GW p220) represents a significant revision and extension of GW 220 identified by Tindall *et al.* (2004). This revision is based on a larger dataset over a wider study area. The revised unit is defined by sites originally allocated to GW 220 and to assemblages 23A (Monaro Grassland) and part of 23B (Monaro Basalt Grass Woodland) by Keith & Bedward (1999), plus a number of new far southern tableland sites.

Southern Tableland Flats Forest is an open eucalypt forest with a sparse shrub layer and continuous grassy groundcover. This unit is distributed over a wide range, from Boro east to Reidsdale and south to Snowball, Kybeyan, Cathcart and Coolumbooka. It occurs on flat to gently undulating terrain from 600–1150m ASL and generally where average annual rainfall is at least 800mm. It is found largely on granite or acid volcanic soils, but includes a few records from basalts in the Nimmitabel, Glen Allen and Cathcart areas.

Southern Tableland Flats Forest shares a number of species with both Tableland Granite Grassy Woodland (GW p420) and Tableland Swamp Flats Forest (GW p520). These three units are all found predominantly on granite soils, but their distributions do not overlap extensively. Tableland Granite Grassy Woodland typically occurs on rolling hills and is generally restricted to areas north of Braidwood. Tableland Swamp Flats Forest occurs throughout the tablelands but is largely restricted to poorly drained alluvial soils.

Southern Tableland Flats Forest has been extensively cleared. Small extant areas are reserved in Tallaganda, Deua and Wadbilliga National Parks. Most remnants on private lands are subject to continuing degradation through grazing and weed invasion, and attrition through small scale clearing.

**Floristic Summary:**

**Trees:** *Eucalyptus viminalis*, *E. pauciflora*, *Acacia melanoxylon*, *E. radiata*. **Shrubs:** *Rubus parvifolius*.

**Groundcover:** *Microlaena stipoides*, *Dichondra* spp., *Glycine clandestina*, *Desmodium varians*, *Lomandra longifolia*, *Themeda australis*, *Pteridium esculentum*, *Acaena novae-zelandiae*, *Poa labillardierei*, *Gonocarpus tetragynus*, *Hypericum gramineum*.

**Vegetation structure:**

Stratum	Frequency (n=46)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	89	20.4 (6.3)	29 (10.6)
Small tree	63	9.5 (5.1)	20 (17.7)
Shrub	46	2.6 (1.1)	10.4 (12.1)
Ground cover	100	0.6 (0.3)	56.8 (30.9)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 13 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 22 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 13 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	1(1-2)	25	1(1-2)	5
<i>Acacia melanoxylon</i>	1(1-1)	49	1(1-1)	6
<i>Acaena echinata</i>	1(1-1)	19	1(1-1)	2
<i>Acaena novae-zelandiae</i>	1(1-1)	72	1(1-1)	7
<i>Acrotriche serrulata</i>	1(1-1)	23	1(1-1)	3
<i>Ajuga australis</i>	1(1-1)	21	1(1-1)	3
<i>Asperula conferta</i>	1(1-1)	25	1(1-1)	4
<i>Asperula scoparia</i>	1(1-1)	33	1(1-1)	2
<i>Austrodanthonia laevis</i>	1(1-1)	21	1(1-2)	1
<i>Austrodanthonia pilosa</i>	1(1-2)	19	1(1-1)	3
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	1(1-1)	26	1(1-2)	6
<i>Austrostipa rudis</i>	1(1-2)	26	1(1-2)	6
<i>Bossiaea buxifolia</i>	1(1-2)	26	1(1-1)	3
<i>Bursaria spinosa</i>	2(1-2)	33	1(1-2)	14
<i>Carex breviculmis</i>	1(1-1)	16	1(1-1)	4
<i>Carex inversa</i>	1(1-1)	14	1(1-1)	3
<i>Cymbonotus preissianus</i>	1(1-1)	16	1(1-1)	1
<i>Daviesia mimosoides</i>	1(1-2)	12	1(1-2)	2
<i>Desmodium varians</i>	1(1-1)	56	1(1-1)	21
<i>Dianella longifolia</i>	1(1-1)	21	1(1-1)	4
<i>Dichelachne inaequiglumis</i>	1(1-1)	23	1(1-1)	3
<i>Dichondra</i> spp.	1(1-2)	72	1(1-2)	25
<i>Einadia nutans</i>	1(1-1)	18	1(1-1)	3
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-1)	46	1(1-1)	5
<i>Epilobium billardioreanum</i>	1(1-1)	14	1(1-1)	2
<i>Eucalyptus pauciflora</i>	2(1-2)	72	1(1-2)	3
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	3(2-4)	30	2(1-3)	6
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-2)	12	1(1-2)	1
<i>Eucalyptus stellulata</i>	1(1-2)	19	1(1-2)	<1
<i>Eucalyptus viminalis</i>	3(2-3)	84	2(1-3)	4
<i>Euchiton gymnocephalus</i>	1(1-1)	26	1(1-1)	7
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-1)	30	1(1-1)	8
<i>Glycine clandestina</i>	1(1-2)	61	1(1-1)	26

<i>Gonocarpus tetragynus</i>	1(1-1)	53	1(1-1)	20
<i>Helichrysum scorpioides</i>	1(1-1)	33	1(1-1)	7
<i>Hibbertia obtusifolia</i>	1(1-1)	28	1(1-1)	11
<i>Hovea linearis</i>	1(1-1)	30	1(1-1)	9
<i>Hydrocotyle laxiflora</i>	1(1-1)	46	1(1-1)	15
<i>Hypericum gramineum</i>	1(1-1)	46	1(1-1)	16
<i>Microlaena stipoides</i>	2(1-3)	67	1(1-2)	36
<i>Oreomyrrhis eriopoda</i>	1(1-1)	25	1(1-1)	1
<i>Plantago varia</i>	1(1-1)	21	1(1-1)	2
<i>Poa meionectes</i>	2(1-3)	40	1(1-2)	16
<i>Poa sieberiana</i> var. <i>cyanophylla</i>	1(1-1)	14	1(1-2)	2
<i>Poa sieberiana</i> var. <i>sieberiana</i>	2(1-3)	42	1(1-2)	10
<i>Poa labillardierei</i> var. <i>labillardierei</i>	2(1-3)	63	1(1-2)	11
<i>Rubus parvifolius</i>	1(1-2)	56	1(1-1)	9
<i>Rumex brownii</i>	1(1-1)	18	1(1-1)	5
<i>Schoenus apogon</i>	1(1-1)	12	1(1-1)	2
<i>Scleranthus biflorus</i>	1(1-1)	44	1(1-1)	2
<i>Senecio prenanthoides</i>	1(1-1)	42	1(1-1)	8
<i>Stellaria pungens</i>	1(1-1)	46	1(1-1)	6
<i>Stylidium graminifolium</i>	1(1-1)	23	1(1-1)	9
<i>Themeda australis</i>	1(1-2)	74	1(1-3)	17
<i>Veronica calycina</i>	1(1-1)	37	1(1-1)	6
<i>Viola betonicifolia</i>	1(1-1)	32	1(1-1)	5

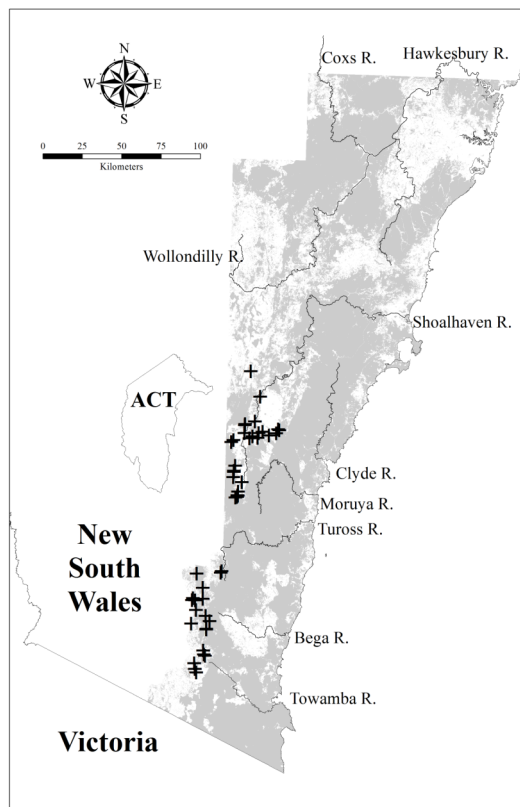
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Lomandra longifolia</i>	1(1-1)	63	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	32	1(1-1)	25
<i>Pteridium esculentum</i>	1(1-2)	46	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	2	1(1-2)	9
<i>Eucalyptus cypellocarpa</i>	2(2-2)	2	2(1-2)	10
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	2(1-2)	11	1(1-2)	3
<i>Eucalyptus dives</i>	1(1-3)	9	2(1-3)	4
<i>Eucalyptus elata</i>	1(1-1)	2	2(1-3)	5
<i>Eucalyptus fastigata</i>	4(4-4)	2	2(1-3)	6
<i>Eucalyptus macrorhyncha</i>	3(3-3)	2	2(1-3)	3
<i>Eucalyptus moorei</i>	2(2-2)	2	3(3-3)	<1
<i>Eucalyptus ovata</i>	3(2-3)	4	2(1-2)	1
<i>Eucalyptus parvula</i>	1(1-1)	4	2(1-2)	<1
<i>Eucalyptus smithii</i>	1(1-1)	2	1(1-2)	2





Locations of survey sites allocated to GW p220. Grey shading indicates extant native vegetation cover within the study area.

### DSF p239: Agnes Banks Woodland



Plate p239. Agnes Banks Woodland (Map Unit p239) at Agnes Banks, showing a tree layer of *Eucalyptus sclerophylla* and *Angophora bakeri*, *Banksia aemula* in the understorey and a diverse array of sedges dominating the groundcover.

Sample Sites: 2

Area Extant (ha): 90

Estimated % remaining: 15-25%

Area in conservation reserves (ha): 30  
 Estimated % of pre-clearing area in conservation reserves: <10%  
 No. taxa (total / unique): 52 / 0  
 No. taxa per plot ( $\pm$ sd): 33 (4.2)  
 Class: Sydney Sand Flats Dry Sclerophyll Forests  
 Related TEC: Agnes Banks Woodland EEC (TSC).

Agnes Banks Woodland (DSF p239) was identified by Tindall *et al.* (2004) as DSF 239, and is a low eucalypt woodland with a sclerophyll shrub stratum and a groundcover dominated by sedges and forbs (Benson 1981, Tozer 2003). This unit is restricted to small areas of old podsolised sand deposits overlying Tertiary clays and gravels at Agnes Banks on the east bank of the Hawkesbury River near Richmond. In low-lying, poorly drained areas with clay soils, this unit grades into Castlereagh Ironbark Forest (DSF p1). On higher ground where the sand deposits give way to alluvial sandy loams, this unit intergrades with Castlereagh Scribbly Gum Woodland (DSF p7). Agnes Banks Woodland is floristically related to Eastern Suburbs Banksia Scrub (HL p563) and Coastal Sandplain Heath (HL p139), which occur on podsolised sand dunes in higher rainfall coastal areas at Port Hacking and Jervis Bay.

The restricted natural distribution of Agnes Banks Woodland has been depleted by sand mining and rural residential development. About 170 ha persists, representing one-third of the original area, and some of this is within Agnes Banks Nature Reserve.

#### Floristic Summary:

**Trees:** *Angophora bakeri*, *Eucalyptus sclerophylla*. **Shrubs:** *Banksia aemula*, *B. oblongifolia*, *Conospermum taxifolium*, *Dillwynia sericea*, *Leptospermum trinervium*, *Monotoca scoparia*, *Persoonia nutans*, *Pimelea linifolia*, *Platysace ericoides*. **Groundcover:** *Lepidosperma urophorum*, *Stylidium graminifolium*, *Trachymene incisa*.

#### Vegetation structure:

Stratum	Frequency (n=2)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	15 (-)	12.5 (3.5)
Small tree	50	8 (-)	50 (-)
Shrub	100	2 (1.4)	25 (7.1)
Ground cover	100	- (-)	22.5 (24.7)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 20 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 30 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 20 positive diagnostic species.

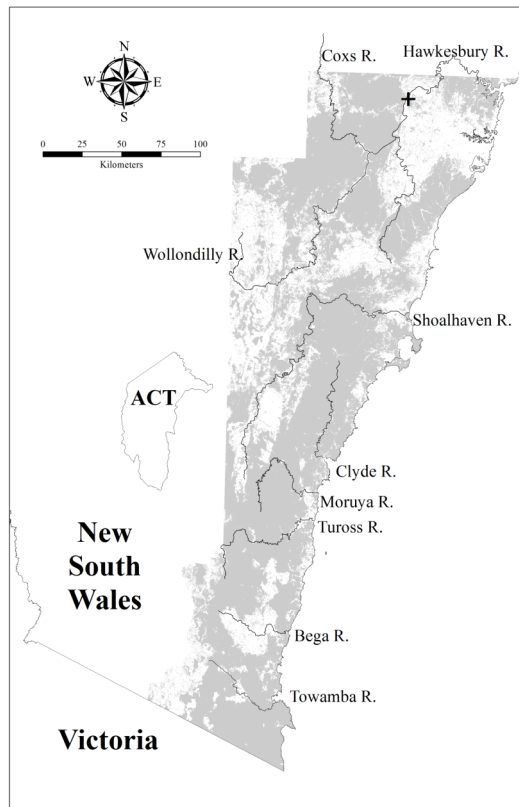
#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia brownii</i>	1(1-1)	50	1(1-1)	1
<i>Acacia elongata</i>	1(1-1)	50	1(1-1)	1
<i>Angophora bakeri</i>	4(1-4)	100	1(1-2)	2
<i>Baeckea diosmifolia</i>	1(1-1)	50	1(1-1)	1
<i>Banksia aemula</i>	3(3-3)	50	2(2-2)	<1
<i>Banksia oblongifolia</i>	2(1-2)	100	1(1-1)	2
<i>Bossiaea rhombifolia</i> subsp. <i>rhombifolia</i>	2(2-2)	50	1(1-3)	1
<i>Caleana major</i>	2(2-2)	50	1(1-1)	<1
<i>Callistemon citrinus</i>	1(1-1)	50	1(1-2)	1
<i>Callistemon linearis</i>	1(1-1)	50	1(1-1)	<1
<i>Conospermum taxifolium</i>	2(1-2)	100	1(1-1)	1
<i>Dillwynia floribunda</i>	1(1-1)	50	1(1-1)	2
<i>Dillwynia sericea</i>	1(1-1)	100	1(1-1)	2
<i>Eucalyptus sclerophylla</i>	3(3-3)	100	2(1-3)	4
<i>Gompholobium huegelii</i>	1(1-1)	50	1(1-1)	2
<i>Haemodorum corymbosum</i>	1(1-1)	50	1(1-1)	1
<i>Hibbertia fasciculata</i>	1(1-1)	50	1(1-1)	<1

<i>Isopogon anethifolius</i>	1(1-1)	50	1(1-1)	2
<i>Kunzea capitata</i>	2(2-2)	50	1(1-2)	1
<i>Lepidosperma urophorum</i>	2(2-2)	100	1(1-2)	7
<i>Leptocarpus tenax</i>	3(3-3)	50	1(1-2)	2
<i>Leptospermum trinervium</i>	2(2-2)	100	1(1-2)	16
<i>Leucopogon virgatus</i>	1(1-1)	50	1(1-1)	2
<i>Mitrasacme polymorpha</i>	1(1-1)	100	1(1-1)	3
<i>Monotoca scoparia</i>	2(1-2)	100	1(1-1)	12
<i>Olax stricta</i>	1(1-1)	50	1(1-1)	1
<i>Persoonia nutans</i>	1(1-1)	100	1(1-1)	<1
<i>Philotheca salsolifolia</i> subsp. <i>salsolifolia</i>	2(2-2)	50	1(1-2)	<1
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	2(1-2)	100	1(1-1)	13
<i>Platysace ericoides</i>	2(2-2)	100	1(1-1)	3
<i>Ricinocarpos pinifolius</i>	2(2-2)	50	1(1-1)	1
<i>Schizaea bifida</i>	1(1-1)	50	1(1-1)	1
<i>Schoenus imberbis</i>	1(1-1)	50	1(1-1)	1
<i>Stylidium graminifolium</i>	2(2-2)	100	1(1-1)	9
<i>Trachymene incisa</i> subsp. <i>incisa</i>	2(2-2)	100	1(1-2)	1
<i>Xanthorrhoea minor</i> subsp. <i>minor</i>	1(1-1)	50	1(1-1)	1

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia ulicifolia</i>	1(1-1)	50	1(1-1)	10
<i>Amperea xiphoclada</i>	2(2-2)	50	1(1-1)	7
<i>Bossiaea heterophylla</i>	1(1-1)	50	1(1-1)	6
<i>Brachyloma daphnoides</i>	2(2-2)	50	1(1-1)	7
<i>Cassytha glabella</i>	1(1-1)	50	1(1-1)	8
<i>Cassytha pubescens</i>	1(1-1)	50	1(1-1)	8
<i>Cyathochaeta diandra</i>	3(3-3)	50	1(1-2)	8
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	50	1(1-1)	15
<i>Isopogon anemonifolius</i>	1(1-1)	50	1(1-1)	8
<i>Lepidosperma laterale</i>	1(1-1)	50	1(1-1)	29
<i>Leptospermum polygalifolium</i>	3(3-3)	50	1(1-2)	8
<i>Lepyrodia scariosa</i>	4(4-4)	50	1(1-2)	6
<i>Lomandra glauca</i>	2(2-2)	50	1(1-1)	10
<i>Persoonia linearis</i>	1(1-1)	50	1(1-1)	29
<i>Petrophile pulchella</i>	1(1-1)	50	1(1-1)	6
<i>Themeda australis</i>	1(1-1)	50	1(1-3)	17



Locations of survey sites allocated to DSF p239. Grey shading indicates extant native vegetation cover within the study area.

### DSF p244: Megalong-Tonalli Sandstone Forest



Plate p244. Megalong-Tonalli Sandstone Forest (Map Unit p244) at Pope's Creek on the Cox's River arm of Lake Burragorang. Overstorey is dominated by *Angophora costata*, *Eucalyptus piperita* and *C. gummifera*, with an understorey of *Ceratopetalum gummiferum*, *Acacia linearis*, *Banksia spinulosa* var. *spinulosa* and a sparse groundcover including *Stypandra glauca*.

Sample Sites: 77

Area Extant (ha): 29500

Estimated % remaining: >90%

Area in conservation reserves (ha): 26300

Estimated % of pre-clearing area in conservation reserves: 80-95%

No. taxa (total / unique): 425 / 0

No. taxa per plot ( $\pm$ sd): 45.2 (10.3)

Class: Sydney Hinterland Dry Sclerophyll Forests

Related TEC: n/a

Megalong-Tonalli Sandstone Forest (DSF p244) was identified by Tindall *et al.* (2004) as DSF 244, and is a eucalypt forest with a sclerophyll shrub stratum and a groundcover of sedges & forbs. This forest is distributed between Bell and the Tonalli range in the western Blue Mountains between 150-800m ASL. The distribution of this unit roughly follows the outcrop of Permian sandstones and conglomerates along the western scarp of the Blue Mountains plateau south from Hartley Vale, and through the Megalong, Jamison, Kedumba, Grose and parts of the Burratorang valleys where average annual rainfall is 820-1100mm. In the area of Lacys Tableland this unit occurs on Tertiary (Hawkesbury) sandstone. With increasing clay content of the soil this unit is replaced by Burratorang Escarpment Forest (DSF p88) and Burratorang Hillslope Forest (DSF p5).

While some clearing of Megalong-Tonalli Sandstone Forest has occurred in the Megalong valley, much of this unit's original distribution is within Blue Mountains National Park.

#### Floristic Summary:

**Trees:** *Eucalyptus piperita*, *E. punctata*, *E. sclerophylla*, *Angophora costata*. **Shrubs:** *Banksia spinulosa*, *Lomatia silaifolia*, *Phyllanthus hirtellus*, *Persoonia linearis*, *Pimelea linifolia*, *Persoonia levis*, *Bossiaea obcordata*, *Leptospermum trinervium*, *Podolobium ilicifolium*, *Leucopogon lanceolatus*. **Climbers:** *Billardiera scandens*. **Groundcover:** *Entolasia stricta*, *Goodenia hederacea*, *Lomandra obliqua*, *L. multiflora*, *Dianella caerulea*, *D. revoluta*, *Pomax umbellata*, *Cyathochaeta diandra*, *Gonocarpus tetragynus*, *Patersonia glabrata*.

#### Vegetation structure:

Stratum	Frequency (n=64)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	18.2 (4)	26.9 (8.8)
Small tree	64	7.2 (2.9)	14.4 (14.2)
Shrub	89	2.2 (0.8)	27.4 (18.1)
Ground cover	100	0.7 (0.3)	24.6 (18.2)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 23 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 37 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 23 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia buxifolia</i> subsp. <i>buxifolia</i>	1(1-2)	9	1(1-1)	1
<i>Acacia linifolia</i>	1(1-2)	32	1(1-1)	6
<i>Acacia obtusifolia</i>	1(1-2)	26	1(1-2)	9
<i>Acacia terminalis</i>	1(1-1)	45	1(1-1)	11
<i>Acacia ulicifolia</i>	1(1-1)	34	1(1-1)	10
<i>Actinotus helianthi</i>	1(1-1)	8	1(1-1)	2
<i>Amperea xiphoclada</i>	1(1-2)	30	1(1-1)	7
<i>Angophora costata</i>	2(1-3)	35	1(1-3)	7
<i>Anisopogon avenaceus</i>	1(1-1)	16	1(1-2)	5
<i>Austrostipa pubescens</i>	1(1-2)	16	1(1-2)	5
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-2)	88	1(1-2)	15
<i>Billardiera scandens</i>	1(1-1)	61	1(1-1)	27
<i>Bossiaea obcordata</i>	1(1-2)	58	1(1-2)	6
<i>Bursaria longisepala</i>	1(1-2)	18	1(1-1)	1
<i>Caladenia carnea</i> var. <i>carnea</i>	1(1-2)	6	1(1-1)	<1
<i>Calochilus robertsonii</i>	1(1-1)	10	1(1-1)	<1
<i>Cassinia aureonitens</i>	1(1-2)	8	1(1-2)	<1
<i>Corymbia gummifera</i>	3(2-3)	35	2(1-2)	16

<i>Cyathochaeta diandra</i>	3(2-3)	49	1(1-2)	8
<i>Dampiera purpurea</i>	1(1-1)	36	1(1-1)	4
<i>Daviesia ulicifolia</i>	1(1-1)	26	1(1-1)	6
<i>Dianella caerulea</i>	1(1-1)	58	1(1-1)	28
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	52	1(1-1)	15
<i>Dillwynia phyllicoides</i>	1(1-3)	13	1(1-1)	1
<i>Dillwynia retorta</i>	2(1-2)	25	1(1-2)	6
<i>Drosera auriculata</i>	1(1-2)	8	1(1-1)	1
<i>Entolasia stricta</i>	1(1-2)	94	1(1-2)	33
<i>Eucalyptus agglomerata</i>	3(1-3)	26	2(1-3)	7
<i>Eucalyptus eugenioides</i>	3(1-3)	13	2(1-3)	4
<i>Eucalyptus piperita</i>	3(1-3)	64	2(1-3)	8
<i>Eucalyptus punctata</i>	1(1-3)	43	2(1-3)	8
<i>Eucalyptus sclerophylla</i>	3(1-3)	38	2(1-3)	3
<i>Eucalyptus sparsifolia</i>	2(1-3)	23	2(1-3)	2
<i>Gompholobium grandiflorum</i>	1(1-1)	10	1(1-1)	3
<i>Gompholobium latifolium</i>	1(1-1)	23	1(1-1)	3
<i>Gonocarpus tetragynus</i>	1(1-2)	44	1(1-1)	20
<i>Goodenia bellidifolia</i> subsp. <i>bellidifolia</i>	1(1-1)	18	1(1-1)	4
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-2)	73	1(1-2)	14
<i>Goodenia heterophylla</i>	1(1-2)	19	1(1-1)	2
<i>Grevillea arenaria</i> subsp. <i>arenaria</i>	1(1-1)	9	1(1-1)	1
<i>Haemodorum planifolium</i>	1(1-1)	9	1(1-1)	1
<i>Hakea dactyloides</i>	1(1-2)	32	1(1-1)	12
<i>Hakea salicifolia</i>	1(1-2)	19	1(1-2)	1
<i>Hakea sericea</i>	1(1-2)	21	1(1-1)	7
<i>Hardenbergia violacea</i>	1(1-1)	51	1(1-1)	17
<i>Helichrysum rutidolepis</i>	1(1-2)	8	1(1-2)	1
<i>Helichrysum scorpioides</i>	1(1-1)	25	1(1-1)	7
<i>Hibbertia acicularis</i>	1(1-1)	14	1(1-1)	1
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-2)	35	1(1-1)	6
<i>Hovea linearis</i>	1(1-1)	40	1(1-1)	9
<i>Hybanthus monopetalus</i>	1(1-1)	13	1(1-1)	2
<i>Isopogon anemonifolius</i>	1(1-2)	25	1(1-1)	8
<i>Lambertia formosa</i>	2(1-3)	26	1(1-2)	9
<i>Leptomeria acida</i>	1(1-1)	14	1(1-1)	4
<i>Leptospermum polygalifolium</i>	1(1-2)	42	1(1-2)	8
<i>Leptospermum trinervium</i>	1(1-2)	61	1(1-2)	15
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	49	1(1-1)	23
<i>Leucopogon muticus</i>	1(1-1)	8	1(1-1)	1
<i>Lindsaea microphylla</i>	1(1-1)	43	1(1-1)	5
<i>Lissanthe sapida</i>	1(1-1)	6	1(1-1)	1
<i>Lomandra cylindrica</i>	1(1-2)	23	1(1-1)	4
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-2)	26	1(1-2)	10
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1(1-1)	32	1(1-1)	10
<i>Lomandra glauca</i>	1(1-2)	25	1(1-1)	10



<i>Lomandra gracilis</i>	1(1-2)	27	1(1-1)	3
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	64	1(1-1)	25
<i>Lomandra obliqua</i>	1(1-2)	75	1(1-1)	13
<i>Lomatia silaifolia</i>	1(1-2)	87	1(1-1)	9
<i>Mirbelia rubiifolia</i>	1(1-2)	10	1(1-1)	3
<i>Mitrasacme polymorpha</i>	1(1-1)	18	1(1-1)	3
<i>Monotoca scoparia</i>	1(1-1)	48	1(1-1)	12
<i>Opercularia hispida</i>	2(1-2)	10	1(1-1)	3
<i>Patersonia glabrata</i>	1(1-2)	53	1(1-1)	9
<i>Patersonia longifolia</i>	1(1-1)	16	1(1-1)	2
<i>Patersonia sericea</i>	1(1-1)	22	1(1-1)	9
<i>Persoonia laurina</i>	1(1-1)	16	1(1-1)	2
<i>Persoonia levis</i>	1(1-1)	61	1(1-1)	13
<i>Persoonia linearis</i>	1(1-1)	74	1(1-1)	28
<i>Petrophile pedunculata</i>	1(1-2)	22	1(1-1)	3
<i>Phyllanthus hirtellus</i>	1(1-2)	86	1(1-1)	14
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-2)	61	1(1-1)	13
<i>Platysace ericoides</i>	1(1-2)	40	1(1-1)	2
<i>Platylobium formosum</i>	1(1-1)	10	1(1-1)	3
<i>Podolobium ilicifolium</i>	1(1-1)	51	1(1-1)	8
<i>Pomaderris ferruginea</i>	1(1-2)	6	1(1-1)	1
<i>Pomax umbellata</i>	1(1-2)	56	1(1-1)	13
<i>Poranthera corymbosa</i>	1(1-1)	19	1(1-1)	1
<i>Poranthera ericifolia</i>	1(1-2)	19	1(1-1)	1
<i>Pultenaea paleacea</i>	2(1-2)	6	1(1-2)	<1
<i>Stackhousia viminea</i>	1(1-2)	27	1(1-1)	2
<i>Stypandra glauca</i>	1(1-2)	29	1(1-2)	5
<i>Telopea speciosissima</i>	1(1-2)	8	1(1-1)	2
<i>Tetralochea decora</i>	1(1-2)	10	1(1-1)	<1
<i>Xanthosia pilosa</i>	1(1-1)	18	1(1-1)	8
<i>Xylomelum pyriforme</i>	1(1-2)	25	1(1-1)	3

## Constant:

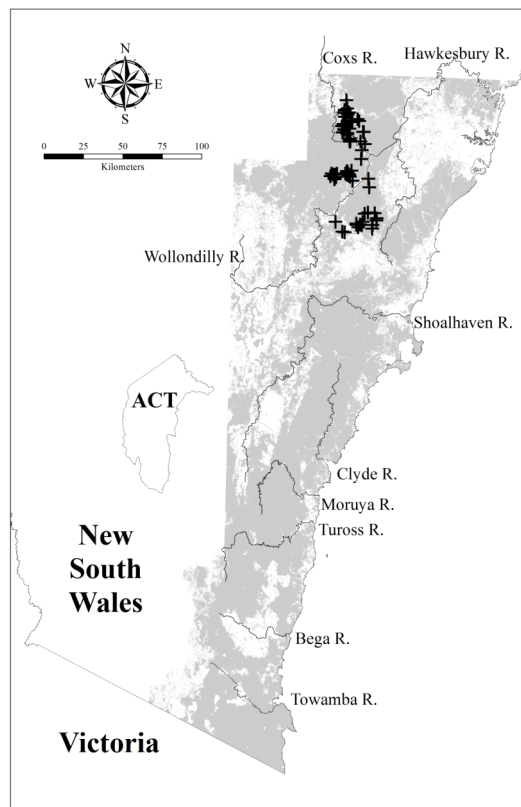
Species	C/A	Freq	C/A O	Freq O
<i>Lomandra longifolia</i>	1(1-2)	56	1(1-1)	44
<i>Pteridium esculentum</i>	1(1-2)	43	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	2(1-3)	6	1(1-2)	2
<i>Angophora floribunda</i>	2(1-3)	5	1(1-2)	9
<i>Eucalyptus apiculata</i>	2(2-2)	1	3(1-3)	<1
<i>Eucalyptus blaxlandii</i>	3(1-3)	3	1(1-3)	1
<i>Eucalyptus considiniana</i>	1(1-1)	1	2(1-2)	2
<i>Eucalyptus crebra</i>	1(1-1)	1	2(1-3)	3
<i>Eucalyptus cypellocarpa</i>	1(1-1)	6	2(1-2)	10
<i>Eucalyptus elata</i>	1(1-3)	4	2(1-3)	5



<i>Eucalyptus fibrosa</i>	1(1-3)	6	2(1-3)	3
<i>Eucalyptus globoidea</i>	3(1-3)	9	2(1-2)	12
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	3(3-3)	1	2(1-3)	6
<i>Eucalyptus rossii</i>	1(1-1)	1	3(1-3)	2
<i>Eucalyptus sieberi</i>	1(1-3)	14	2(1-3)	16
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	2(1-3)	9	2(1-3)	8



Locations of survey sites allocated to DSF p244. Grey shading indicates extant native vegetation cover within the study area.

**DSF p246: Yalwal Shale-Sandstone Transition Forest**

Plate p246. Yalwal Shale-Sandstone Transition Forest (Map Unit p246) beside the Yalwal Fire Trail in Morton National Park. Prominent tree species include *Eucalyptus punctata*, *E. tereticornis* and *E. globoidea*, with *E. fibrosa* in the background. The sparse shrub layer contains *Persoonia linearis*, *Allocasuarina littoralis* and *Macrozamia communis*, with a very sparse groundcover of scattered grasses and forbs.

Sample Sites: 22

Area Extant (ha): 21100

Estimated % remaining: >85%

Area in conservation reserves (ha): 15300

Estimated % of pre-clearing area in conservation reserves: 55-75%

No. taxa (total / unique): 246 / 2

No. taxa per plot ( $\pm$ sd): 46.5 (26.3)

Class: Sydney Hinterland Dry Sclerophyll Forests

Related TEC: n/a

Yalwal Shale-Sandstone Transition Forest (DSF p246) was identified by Tindall *et al.* (2004) as DSF 246, and is a eucalypt forest with a mixed open understorey of shrubs, sedges, forbs and grasses. This unit has a wide distribution in the valleys of the lower Shoalhaven River and its tributaries (Kangaroo River and Yarramunmun, Danjera, Bundundah, Bundanoon and Ettrema Creeks), from Lake Yarrunga through Yalwal east to Colymea Creek. Within this distribution Yalwal Shale-Sandstone Transition Forest occurs on ridges and slopes between 100-250m elevation, primarily on loamy soils derived from Conjola conglomerate and Wandrawandian siltstone. On lower valley slopes where metasediments underlying the Sydney Basin are exposed, this unit merges into Ettrema Gorge Forest (DSF p84). With increasing rainfall and/or shelter Yalwal Shale-Sandstone Transition Forest is replaced by Southern Turpentine Forest (WSF p95). Yalwal Shale-Sandstone Transition Forest shares some species with Sydney Hinterland Transition Woodland (DSF p146), both occurring on soils derived from sandstone strata with a significant clay content, though with widely separate distributions.

Only a small proportion of Yalwal Shale-Sandstone Transition Forest has been cleared, and large areas are in Morton National Park.

**Floristic Summary:**

**Trees:** *Corymbia gummifera*, *Eucalyptus punctata*, *Syncarpia glomulifera*. **Shrubs:** *Persoonia linearis*, *Lomandra obliqua*, *Macrozamia communis*, *Podolobium ilicifolium*. **Climbers:** *Glycine clandestina*, *Hardenbergia violacea*.

**Groundcover:** *Entolasia stricta*, *Pomax umbellata*, *Patersonia sericea*, *Lepidosperma laterale*, *Lomandra multiflora*, *Phyllanthus hirtellus*, *Dianella revoluta*, *Goodenia hederacea*, *Panicum simile*, *Lomandra confertifolia* ssp *rubiginosa*.

**Vegetation structure:**

Stratum	Frequency (n=20)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	75	20.9 (5.6)	29.9 (12.1)
Small tree	50	7.3 (3.6)	18.4 (19.3)
Shrub	60	2.3 (0.7)	9.4 (6)
Ground cover	95	0.6 (0.2)	17.7 (14.1)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 25 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia ulicifolia</i>	1(1-1)	45	1(1-1)	10
<i>Allocasuarina littoralis</i>	1(1-2)	45	1(1-2)	17
<i>Aristida vagans</i>	1(1-1)	41	1(1-2)	8
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	1(1-1)	45	1(1-2)	15
<i>Bossiaea buxifolia</i>	1(1-1)	23	1(1-1)	3
<i>Bossiaea obcordata</i>	2(1-2)	36	1(1-2)	7
<i>Brunoniella pumilio</i>	1(1-1)	41	1(1-1)	4
<i>Cheilanthes sieberi</i>	1(1-1)	41	1(1-1)	14
<i>Corymbia gummifera</i>	2(1-2)	73	2(1-2)	16
<i>Corymbia maculata</i>	2(2-2)	41	2(1-3)	3
<i>Daviesia ulicifolia</i>	1(1-1)	36	1(1-1)	7
<i>Dianella caerulea</i>	1(1-2)	64	1(1-1)	28
<i>Dianella revoluta</i> var. <i>revoluta</i>	1(1-1)	55	1(1-1)	15
<i>Dillwynia sieberi</i>	1(1-3)	23	1(1-1)	1
<i>Entolasia stricta</i>	1(1-2)	91	1(1-2)	34
<i>Eucalyptus fibrosa</i>	2(1-2)	32	2(1-3)	3
<i>Eucalyptus punctata</i>	2(1-3)	73	1(1-3)	8
<i>Glycine clandestina</i>	1(1-1)	59	1(1-1)	26
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-1)	59	1(1-2)	14
<i>Hakea sericea</i>	1(1-2)	50	1(1-1)	7
<i>Hardenbergia violacea</i>	1(1-1)	59	1(1-1)	17
<i>Hovea linearis</i>	1(1-1)	36	1(1-1)	9
<i>Jacksonia scoparia</i>	1(1-1)	27	1(1-1)	2
<i>Lagenifera gracilis</i>	1(1-1)	27	1(1-1)	3
<i>Laxmannia gracilis</i>	1(1-1)	36	1(1-1)	4
<i>Lepidosperma gunnii</i>	1(1-1)	36	1(1-1)	5
<i>Lepidosperma laterale</i>	1(1-1)	68	1(1-1)	28
<i>Lindsaea microphylla</i>	1(1-1)	27	1(1-1)	5
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	1(1-2)	55	1(1-1)	4
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	1(1-1)	45	1(1-1)	11
<i>Lomandra glauca</i>	1(1-1)	41	1(1-1)	10
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	73	1(1-1)	25
<i>Lomandra obliqua</i>	1(1-1)	86	1(1-1)	14
<i>Macrozamia communis</i>	1(1-1)	77	1(1-2)	4
<i>Melichrus urceolatus</i>	1(1-1)	23	1(1-1)	4
<i>Opercularia aspera</i>	1(1-1)	41	1(1-1)	8
<i>Panicum simile</i>	1(1-1)	55	1(1-1)	6
<i>Patersonia sericea</i>	1(1-1)	73	1(1-1)	9
<i>Persoonia linearis</i>	1(1-1)	86	1(1-1)	29
<i>Persoonia mollis</i> subsp. <i>leptophylla</i>	1(1-2)	23	1(1-1)	1

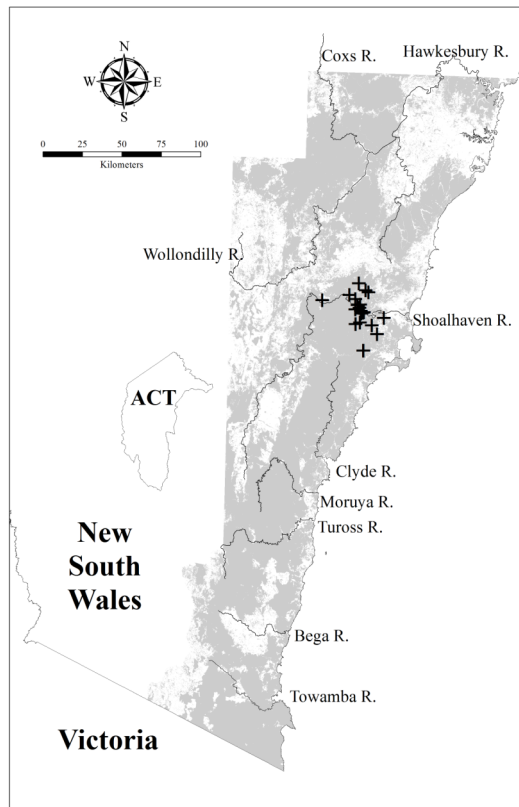
<i>Petrophile pedunculata</i>	1(1-1)	41	1(1-2)	3
<i>Phyllanthus hirtellus</i>	1(1-1)	73	1(1-1)	14
<i>Podolobium ilicifolium</i>	1(1-1)	50	1(1-1)	9
<i>Pomax umbellata</i>	1(1-1)	77	1(1-1)	14
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	2(1-3)	64	2(1-3)	7
<i>Themeda australis</i>	1(1-1)	45	1(1-3)	17

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia terminalis</i>	1(1-1)	32	1(1-1)	11
<i>Billardiera scandens</i>	1(1-1)	50	1(1-1)	28
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	41	1(1-1)	24
<i>Microlaena stipoides</i>	1(1-1)	36	1(1-2)	36
<i>Monotoca scoparia</i>	1(1-1)	32	1(1-1)	12
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	36	1(1-1)	13

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	1(1-3)	18	1(1-2)	2
<i>Corymbia eximia</i>	1(1-3)	14	1(1-2)	2
<i>Eucalyptus agglomerata</i>	2(1-3)	14	2(1-3)	7
<i>Eucalyptus beyeriana</i>	2(1-2)	9	2(2-2)	<1
<i>Eucalyptus consideniana</i>	1(1-1)	5	2(1-2)	2
<i>Eucalyptus eugenioides</i>	2(1-2)	18	2(1-3)	4
<i>Eucalyptus globoidea</i>	3(1-3)	14	2(1-2)	12
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-1)	5	1(1-2)	3
<i>Eucalyptus pilularis</i>	2(1-3)	14	2(1-3)	5
<i>Eucalyptus piperita</i>	1(1-1)	9	2(1-3)	9
<i>Eucalyptus saligna</i> X <i>botryoides</i>	1(1-1)	5	2(1-3)	2
<i>Eucalyptus sclerophylla</i>	3(1-3)	9	2(1-3)	4
<i>Eucalyptus sieberi</i>	3(3-3)	5	2(1-3)	16
<i>Eucalyptus sparsifolia</i>	3(3-3)	9	2(1-3)	2



Locations of survey sites allocated to DSF p246. Grey shading indicates extant native vegetation cover within the study area.

#### DSF p248: Morton-Budawang Sandstone Woodland



Plate p248. Morton-Budawang Sandstone Woodland (Map Unit p248) beside Tolwong Road at Bulee in Morton National Park. A low canopy of *Eucalyptus consideniana*, *E. agglomerata* and *E. sclerophylla* grows above a diverse shrub layer including *Leptospermum trinervium*, *Persoonia levis*, *Petrophile pedunculata* and *Isopogon anethifolius*, while the sparse groundcover includes the characteristic weeping tufts of *Lepidosperma urophorum*.

Sample Sites: 17

Area Extant (ha): 11600

Estimated % remaining: >90%

Area in conservation reserves (ha): 7700

Estimated % of pre-clearing area in conservation reserves: 60-80%

No. taxa (total / unique): 151 / 0

No. taxa per plot ( $\pm$ sd): 32.8 (5.9)

Class: Sydney Montane Dry Sclerophyll Forests  
Related TEC: n/a

Morton-Budawang Sandstone Woodland (DSF p248) was identified by Tindall *et al.* (2004) as DSF 248, and is a eucalypt woodland with a mixed understorey of shrubs, sedges, forbs and grasses. This unit occurs in elevated sandstone country on the Morton plateau from Tolwong south to the Nerriga road, from the Endrick River to Wog Wog Mountain and on ridges just east of the Budawang range from Yadbore Creek to Currowan Creek. Within this distribution Morton-Budawang Sandstone Woodland occurs on sandy loams on dry sandstone slopes and ridges up to 750m ASL, where average annual rainfall varies from 900 to 1100mm. Morton-Budawang Sandstone Woodland shares several species with Shoalhaven Sandstone Forest (DSF p148) which occurs at lower elevations on the eastern Morton plateau and coastal lowlands west of Nowra.

The original distribution of Morton-Budawang Sandstone Woodland remains largely intact, with several thousand hectares in Morton and Budawang National Parks.

#### Floristic Summary:

**Trees:** *Eucalyptus sieberi*, *E. consideriana*. **Shrubs:** *Banksia spinulosa*, *Lomatia ilicifolia*, *Persoonia levis*, *Leptospermum trinervium*, *Tetratheca thymifolia*, *Acacia obtusifolia*, *Isopogon anemonifolius*, *Monotoca scoparia*, *Petrophile pedunculata*, *Acacia terminalis*, *Amperea xiphoclada*, *Phyllota phyllicoides*, *Pimelea linifolia* ssp. *linifolia*, *Podolobium ilicifolium*. **Groundcover:** *Patersonia glabrata*, *Lomandra obliqua*, *L. glauca*, *Caustis flexuosa*.

#### Vegetation structure:

Stratum	Frequency (n=14)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	100	18.5 (3.1)	25.1 (13.4)
Small tree	50	10.1 (9)	19.3 (15.7)
Shrub	64	2.3 (0.4)	23.3 (19.2)
Ground cover	100	1 (0.4)	28.4 (26.2)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 15 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 28 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 15 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia obtusifolia</i>	1(1-1)	76	1(1-2)	9
<i>Acacia terminalis</i>	1(1-1)	53	1(1-1)	11
<i>Amperea xiphoclada</i>	1(1-1)	59	1(1-1)	7
<i>Banksia paludosa</i>	1(1-1)	35	1(1-2)	3
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	2(1-2)	100	1(1-2)	15
<i>Bossiaea obcordata</i>	1(1-1)	41	1(1-2)	7
<i>Caustis flexuosa</i>	1(1-1)	59	1(1-2)	7
<i>Cyathochaeta diandra</i>	2(1-3)	35	1(1-2)	8
<i>Entolasia stricta</i>	1(1-1)	76	1(1-2)	34
<i>Eucalyptus consideriana</i>	2(1-2)	65	1(1-2)	2
<i>Eucalyptus sieberi</i>	2(1-2)	88	2(1-3)	16
<i>Gompholobium glabratum</i>	1(1-1)	24	1(1-1)	2
<i>Gompholobium latifolium</i>	1(1-1)	24	1(1-1)	3
<i>Hakea dactyloides</i>	1(1-1)	47	1(1-1)	12
<i>Hibbertia empetrifolia</i> subsp. <i>empetrifolia</i>	1(1-1)	35	1(1-1)	6
<i>Isopogon anemonifolius</i>	1(1-1)	71	1(1-1)	8
<i>Lepidosperma urophorum</i>	1(1-2)	29	1(1-2)	7
<i>Leptospermum trinervium</i>	1(1-2)	82	1(1-2)	15
<i>Lomandra glauca</i>	1(1-2)	82	1(1-1)	10
<i>Lomatia ilicifolia</i>	1(1-1)	94	1(1-1)	6



<i>Lomandra obliqua</i>	1(1-1)	94	1(1-1)	14
<i>Monotoca scoparia</i>	1(1-1)	71	1(1-1)	12
<i>Patersonia glabrata</i>	1(1-2)	94	1(1-1)	10
<i>Patersonia longifolia</i>	1(1-2)	41	1(1-1)	2
<i>Persoonia levis</i>	1(1-1)	94	1(1-1)	13
<i>Petrophile pedunculata</i>	1(1-1)	65	1(1-2)	3
<i>Phyllota phyllicoides</i>	1(1-2)	53	1(1-2)	3
<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	1(1-1)	47	1(1-1)	13
<i>Podolobium ilicifolium</i>	1(1-1)	47	1(1-1)	9
<i>Pomax umbellata</i>	1(1-1)	47	1(1-1)	14
<i>Stylidium graminifolium</i>	1(1-1)	35	1(1-1)	9
<i>Tetratheca thymifolia</i>	1(1-1)	82	1(1-1)	6
<i>Xanthorrhoea concava</i>	1(1-1)	29	1(1-1)	4

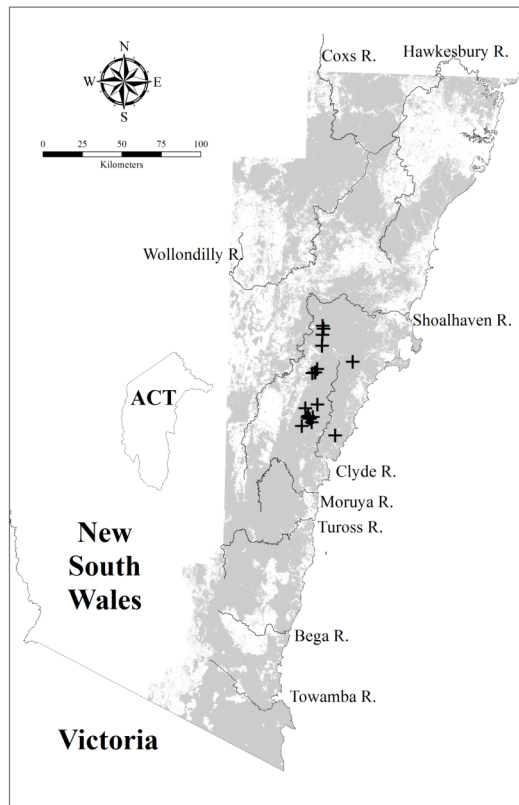
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-1)	35	1(1-2)	14
<i>Lepidosperma laterale</i>	1(1-1)	35	1(1-1)	29
<i>Persoonia linearis</i>	1(1-1)	41	1(1-1)	29
<i>Platysace lanceolata</i>	1(1-1)	35	1(1-1)	13

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia gummifera</i>	2(1-2)	12	2(1-2)	16
<i>Eucalyptus agglomerata</i>	1(1-2)	24	2(1-3)	7
<i>Eucalyptus dendromorpha</i>	2(2-2)	6	2(1-2)	<1
<i>Eucalyptus globoidea</i>	1(1-1)	18	2(1-2)	12
<i>Eucalyptus imitans</i>	1(1-1)	6	1(1-3)	<1
<i>Eucalyptus mannifera</i>	1(1-1)	6	2(1-3)	4
<i>Eucalyptus obstans</i>	2(2-2)	6	1(1-2)	1
<i>Eucalyptus piperita</i>	1(1-1)	12	2(1-3)	9
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	4(1-4)	18	2(1-3)	6
<i>Eucalyptus sclerophylla</i>	1(1-1)	6	2(1-3)	4
<i>Eucalyptus smithii</i>	1(1-1)	6	1(1-2)	2
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	2(2-2)	6	2(1-3)	8





Locations of survey sites allocated to DSF p248. Grey shading indicates extant native vegetation cover within the study area.

### GL p257: Tableland Flats Grassland



Plate p257. Tableland Flats Grassland (Map Unit p257) on the alluvial flat of a tributary of the Mulwaree River at Tarago, with the characteristic dominance of *Poa labillardierei* var. *labillardierei* tussocks.

Sample Sites: 0  
 Area Extant (ha): 10900  
 Estimated % remaining: <10%  
 Area in conservation reserves (ha): 0  
 Estimated % of pre-clearing area in conservation reserves: 0  
 No. Taxa (total / unique): n/a  
 No. Taxa per Plot ( $\pm$ sd): n/a  
 Class: Temperate Montane Grasslands

Related TEC: Natural Temperate Grasslands of the Southern Tablelands EEC (EPBC).

Tableland Flats Grassland Map unit GL p257 was identified by Tindall *et al.* (2004) as GL 257, and is a closed tussock grassland that once covered extensive flats and depressions on the southern tableland from 650 to 750 m elevation. The original community has been so heavily modified by land clearing, livestock grazing, pasture improvement and cultivation that examples still dominated by native species are extremely scarce. Consequently, no samples were recorded for Tableland Flats Grassland and this unit is not shown on the map of extant native vegetation. However, the likely pre-European distribution of this vegetation has been estimated from maps of topography and soil, aerial photographs and field reconnaissance. Extensive flat or rolling plains that lack living or dead remnant eucalypts to the south and west of Goulburn (Mulwaree and Wollogorang Plains) and south of Braidwood (Jembaicumbene valley) are likely to have been the major areas of Tableland Flats Grassland within the study area. These areas would have included stands of Riparian Herbfield (FrW p55) along drainage lines, Tableland Lacustrine Herbfield (FrW p51) in lake beds and stands of Frost Hollow Woodland (GW p22) on higher ground, such as rocky knolls or around the margins of the grassland. An understanding of the botanical character of Tableland Flats Grasslands may be gained from reference to grasslands of the Monaro Tableland, further south (Benson 1994). Likely dominant plants include *Poa* spp., *Carex* spp., *Juncus* spp., *Themeda australis*, *Austrodanthonia* spp. and *Austrostipa* spp.. Tableland Flats Grassland is also likely to have included a number of species present in the groundcover of Frost Hollow Woodland (GW p22).

### WSF p266: Southern Highlands Basalt Forest



Plate p266. Southern Highlands Basalt Forest (Map Unit p266) beside Turpentine Road at Sassafras. *Eucalyptus fastigata*, *E. radiata* subsp. *radiata*, and *E. cyphellocarpa* form a dense forest canopy above a dense grassy groundcover dominated by *Poa labillardierei* var. *labillardierei*, *Lomandra longifolia*, *Pteridium esculentum* and *Microlaena stipoides*.

Sample Sites: 15

Area Extant (ha): 2000

Estimated % remaining: 20-35%

Area in conservation reserves (ha): 690

Estimated % of pre-clearing area in conservation reserves: <15%

No. taxa (total / unique): 169 / 1

No. taxa per plot (±sd): 38.2 (8.5)

Class: Southern Escarpment Wet Sclerophyll Forests

Related TECs: includes Robertson Basalt Tall Open-forest EEC and Mount Gibraltar Forest EEC (TSC).

Southern Highlands Basalt Forest (WSF p266) was identified by Tindall *et al.* (2004) as WSF 266, and is a tall eucalypt forest with an open shrub layer and a moist herbaceous groundcover. This unit is restricted to moist, elevated areas on fertile soils associated with Tertiary volcanics on the Robertson plateau, Sassafras and at The Vines in Morton National Park. Southern Highlands Basalt Forest occurs on soils derived from Tertiary basalt, basanite and microsyenite between 650 and 850m ASL, where mean annual rainfall is between 1000-1350mm. Southern Highlands Basalt Forest grades into High Range Sheltered Forest (WSF p66) with decreasing rainfall and soil fertility.

About two-thirds of the original distribution of Southern Highlands Basalt Forest has been cleared, and remnants are exposed to the ongoing impacts of weed invasion, grazing and small-scale clearing.

### Floristic Summary:

**Trees:** *Acacia melanoxylon*, *Eucalyptus fastigata*, *E. cypellocarpa*, *E. radiata*. **Climbers:** *Clematis aristata*, *Tylophora barbata*, *Eustrephus latifolius*, *Glycine clandestina*, *Hibbertia scandens*, *Hardenbergia violacea*. **Groundcover:** *Lomandra longifolia*, *Pteridium esculentum*, *Viola hederacea*, *Dichondra* spp., *Microlaena stipoides*, *Poa labillardierei*, *Dianella caerulea*, *Hydrocotyle peduncularis*, *Poranthera microphylla*, *Echinopogon ovatus*, *Geranium potentilloides*, *Helichrysum scorpioides*, *Schelhammra undulata*, *Stellaria pungens*, *Veronica plebeia*, *Adiantum aethiopicum*, *Austrostipa rudis*, *Galium propinquum*, *Stellaria flaccida*.

#### Vegetation structure:

Stratum	Frequency (n=14)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	29 (7.2)	37.9 (11.9)
Small tree	64	9.8 (4.2)	12.4 (12.4)
Shrub	57	2 (0.7)	5.6 (6.6)
Ground cover	100	0.8 (0.3)	71.1 (22.5)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 16 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 32 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 16 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia melanoxylon</i>	1(1-1)	80	1(1-1)	6
<i>Acaena novae-zelandiae</i>	1(1-1)	47	1(1-1)	7
<i>Adiantum aethiopicum</i>	1(1-2)	47	1(1-1)	9
<i>Asperula conferta</i>	1(1-2)	33	1(1-1)	4
<i>Austrostipa rudis</i>	2(1-2)	40	1(1-2)	6
<i>Carex breviculmis</i>	1(1-1)	33	1(1-1)	4
<i>Clematis aristata</i>	1(1-2)	87	1(1-1)	20
<i>Desmodium varians</i>	1(1-2)	60	1(1-1)	21
<i>Dianella longifolia</i>	1(1-2)	27	1(1-1)	4
<i>Dichelachne inaequiglumis</i>	2(1-2)	20	1(1-1)	3
<i>Dichondra</i> spp.	2(1-2)	87	1(1-2)	25
<i>Echinopogon ovatus</i>	1(1-2)	47	1(1-1)	14
<i>Eucalyptus cypellocarpa</i>	3(1-3)	40	2(1-2)	10
<i>Eucalyptus fastigata</i>	4(3-4)	67	2(1-3)	6
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	3(1-3)	40	2(1-3)	6
<i>Eustrephus latifolius</i>	1(1-2)	67	1(1-1)	19
<i>Galium propinquum</i>	1(1-1)	40	1(1-1)	7
<i>Geranium potentilloides</i>	1(1-2)	53	1(1-1)	6
<i>Glycine clandestina</i>	1(1-1)	80	1(1-1)	26
<i>Hardenbergia violacea</i>	2(1-2)	53	1(1-1)	17
<i>Hedycarya angustifolia</i>	1(1-1)	27	1(1-3)	4
<i>Helichrysum scorpioides</i>	1(1-1)	47	1(1-1)	7
<i>Hibbertia scandens</i>	1(1-2)	67	1(1-1)	5
<i>Hydrocotyle peduncularis</i>	2(1-2)	53	1(1-1)	9
<i>Lomandra longifolia</i>	2(1-2)	100	1(1-1)	44
<i>Luzula flaccida</i>	1(1-1)	33	1(1-1)	4
<i>Microlaena stipoides</i>	2(1-3)	80	1(1-2)	36
<i>Plantago debilis</i>	1(1-1)	40	1(1-1)	7

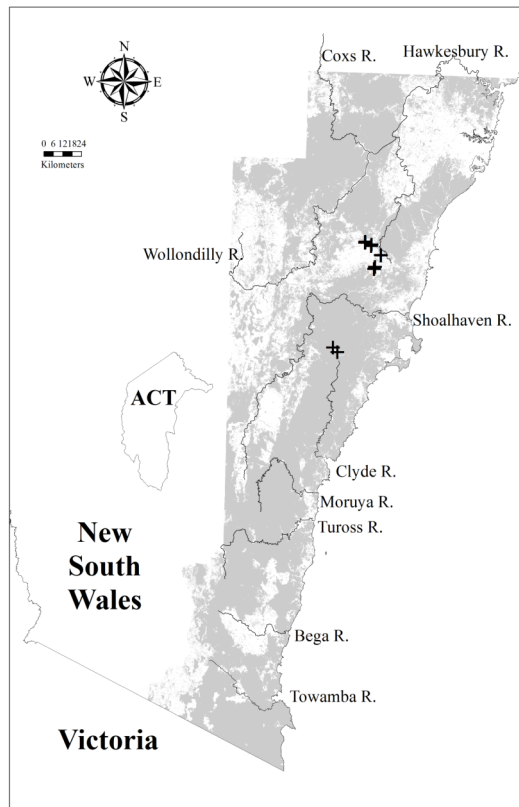
<i>Poa affinis</i>	1(1-4)	20	1(1-2)	2
<i>Poa labillardierei</i> var. <i>labillardierei</i>	3(2-3)	67	1(1-2)	12
<i>Poranthera microphylla</i>	1(1-1)	53	1(1-1)	15
<i>Pteridium esculentum</i>	2(1-2)	87	1(1-2)	37
<i>Rubus parvifolius</i>	1(1-2)	47	1(1-1)	9
<i>Schelhammera undulata</i>	2(1-2)	53	1(1-1)	7
<i>Senecio diaschides</i>	1(1-1)	20	1(1-1)	1
<i>Stellaria flaccida</i>	2(1-2)	53	1(1-1)	11
<i>Stellaria pungens</i>	2(1-2)	53	1(1-1)	6
<i>Tylophora barbata</i>	2(2-3)	73	1(1-1)	17
<i>Veronica plebeia</i>	1(1-1)	47	1(1-1)	10
<i>Viola hederacea</i>	1(1-2)	87	1(1-1)	22

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Blechnum cartilagineum</i>	2(1-5)	33	1(1-2)	11
<i>Dianella caerulea</i>	1(1-2)	60	1(1-1)	28
<i>Gonocarpus tetragynus</i>	1(1-1)	47	1(1-1)	20
<i>Hypericum gramineum</i>	1(1-1)	33	1(1-1)	16
<i>Lagenifera stipitata</i>	1(1-1)	40	1(1-1)	14
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	40	1(1-1)	24
<i>Smilax australis</i>	1(1-2)	33	1(1-1)	16
<i>Wahlenbergia gracilis</i>	1(1-1)	33	1(1-1)	11

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus elata</i>	3(3-3)	7	2(1-3)	5
<i>Eucalyptus eugenioides</i>	1(1-1)	7	2(1-3)	4
<i>Eucalyptus obliqua</i>	3(3-3)	13	2(1-3)	4
<i>Eucalyptus piperita</i>	3(1-3)	27	2(1-3)	9
<i>Eucalyptus smithii</i>	3(3-3)	7	1(1-2)	2
<i>Eucalyptus viminalis</i>	2(2-2)	7	2(1-3)	5



Locations of survey sites allocated to WSF p266. Grey shading indicates extant native vegetation cover within the study area.

### WSF p268: Southern Highlands Shale Woodland



Plate p268. Southern Highlands Shale Woodland (Map Unit p268) shown at the eastern end of its range on the Wingecarribee Plateau. Tree species include *Eucalyptus tereticornis* and *E. radiata* subsp. *radiata*. The grass-dominated ground cover has been heavily grazed.

Sample Sites: 8

Area Extant (ha): 5400

Estimated % remaining: 10-25%

Area in conservation reserves (ha): 20

Estimated % of pre-clearing area in conservation reserves: <1%

No. taxa (total / unique): 132 / 0

No. taxa per plot ( $\pm$ sd): 31.6 (9.1)

Class: Southern Tableland Wet Sclerophyll Forests

Related TEC: Southern Highlands Shale Woodland EEC (TSC).

Southern Highlands Shale Woodland (WSF p268) was identified by Tindall *et al.* (2004) as WSF 268. This unit is a eucalypt open forest or woodland with a sparse shrub stratum and a dense groundcover dominated by grasses and herbs. This unit occurs on the Southern Highlands plateau from Mittagong to Bundanoon where it is restricted to soils derived from Wianamatta group shales with an average annual rainfall below 1300mm.

In higher rainfall areas east of Wingecarribee reservoir, Southern Highlands Shale Woodland is replaced by Shale-Basalt Sheltered Forest (WSF p168). On localised outcrops of residual shale on sandstone plateaux to the northeast this unit is replaced by Nepean Shale Cap Forest (WSF p68). Occupying rich clay soils on flat land, this unit has been extensively cleared for agriculture, leaving relatively few small remnants, many of which are degraded and are threatened by continued clearing, grazing and weed invasion.

#### Floristic Summary:

**Trees:** *Eucalyptus cypellocarpa*, *E. radiata*, *E. quadrangulata*, *E. globoidea*. **Shrubs:** *Leucopogon lanceolatus*, *Ozothamnus diosmifolius*, *Persoonia linearis*. **Ground Cover:** *Hardenbergia violacea*, *Lomandra longifolia*, *L. multiflora*, *Microlaena stipoides* var. *stipoides*, *Austrostipa rudis* ssp. *nervosa*, *Dichondra* spp, *Gonocarpus tetragynus*, *Pteridium esculentum*, *Opercularia diphylla*.

#### Vegetation structure:

Stratum	Frequency (n=7)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	24 (2.2)	32 (7.6)
Small tree	57	7.8 (6.2)	3.3 (0.6)
Shrub	43	1.5 (1)	7.3 (11)
Ground cover	100	0.7 (0.3)	70 (20.9)

#### Diagnostic Species:

The relatively small number of plots available for this Map Unit may pose difficulties for definitive identification. A 0.04ha plot located in this Map Unit is expected to contain at least 3 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 25 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 3 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia binervata</i>	1(1-2)	38	1(1-2)	2
<i>Austrostipa rudis</i>	3(2-3)	38	1(1-2)	6
<i>Brachyscome angustifolia</i>	2(1-2)	25	1(1-1)	2
<i>Einadia nutans</i>	1(1-1)	25	1(1-1)	3
<i>Eucalyptus cypellocarpa</i>	3(1-3)	75	2(1-2)	10
<i>Eucalyptus quadrangulata</i>	2(1-2)	38	3(1-3)	1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	4(3-4)	38	2(1-3)	6
<i>Hardenbergia violacea</i>	1(1-1)	75	1(1-1)	17
<i>Hibbertia scandens</i>	1(1-1)	38	1(1-1)	5
<i>Hypericum gramineum</i>	1(1-1)	63	1(1-1)	16
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	75	1(1-1)	25
<i>Olearia viscidula</i>	1(1-1)	38	1(1-2)	5
<i>Opercularia diphylla</i>	1(1-1)	50	1(1-1)	7
<i>Stackhousia viminea</i>	2(1-2)	25	1(1-1)	3



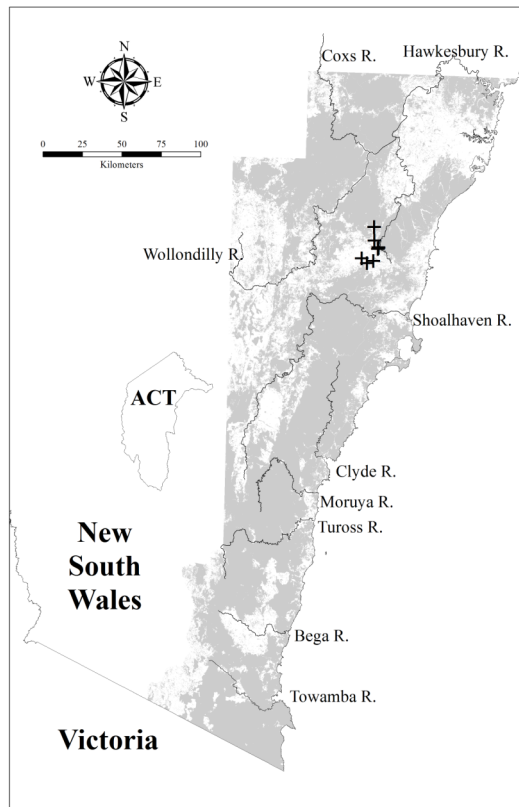
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Billardiera scandens</i>	1(1-1)	50	1(1-1)	28
<i>Clematis aristata</i>	1(1-1)	38	1(1-1)	20
<i>Desmodium varians</i>	1(1-2)	38	1(1-1)	22
<i>Dianella caerulea</i>	1(1-2)	63	1(1-1)	28
<i>Dichondra</i> spp.	2(1-2)	50	1(1-2)	25
<i>Entolasia stricta</i>	2(1-3)	38	1(1-2)	34
<i>Eucalyptus globoidea</i>	1(1-2)	38	2(1-2)	12
<i>Galium propinquum</i>	1(1-1)	38	1(1-1)	7
<i>Gonocarpus tetragynus</i>	2(1-2)	50	1(1-1)	20
<i>Gonocarpus teucrioides</i>	1(1-1)	38	1(1-1)	18
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-2)	38	1(1-2)	14
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-2)	50	1(1-1)	24
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-3)	38	1(1-2)	10
<i>Lomandra longifolia</i>	1(1-2)	88	1(1-1)	44
<i>Microlaena stipoides</i>	3(3-4)	63	1(1-2)	36
<i>Persoonia linearis</i>	1(1-1)	38	1(1-1)	29
<i>Poa sieberiana</i> var. <i>sieberiana</i>	1(1-1)	38	1(1-2)	11
<i>Poranthera microphylla</i>	1(1-1)	50	1(1-1)	15
<i>Pratia purpurascens</i>	1(1-1)	50	1(1-1)	17
<i>Pteridium esculentum</i>	1(1-3)	63	1(1-2)	37
<i>Themeda australis</i>	1(1-2)	38	1(1-3)	17
<i>Tylophora barbata</i>	1(1-2)	50	1(1-1)	17
<i>Veronica plebeia</i>	1(1-1)	38	1(1-1)	10
<i>Viola hederacea</i>	1(1-1)	50	1(1-1)	22

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	1(1-1)	25	1(1-2)	9
<i>Eucalyptus agglomerata</i>	1(1-1)	13	2(1-3)	7
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	1(1-1)	13	2(1-3)	1
<i>Eucalyptus elata</i>	3(3-3)	13	2(1-3)	5
<i>Eucalyptus piperita</i>	3(1-3)	25	2(1-3)	9
<i>Eucalyptus viminalis</i>	1(1-1)	13	2(1-3)	5





Locations of survey sites allocated to WSF p268. Grey shading indicates extant native vegetation cover within the study area.

### FrW p313: Coastal Freshwater Lagoon



Plate p313. Coastal Freshwater Lagoon (Map Unit p313) in Korrongulla Swamp at Primbee, with a dense cover of *Phragmites australis* growing over various other aquatic herbs.

Sample Sites: 6  
 Area Extant (ha): 3700  
 Estimated % remaining: 30-70%  
 Area in conservation reserves (ha): 480  
 Estimated % of pre-clearing area in conservation reserves: <15%  
 No. Taxa (total / unique): 21 / 0  
 No. Taxa per Plot ( $\pm$ sd): 6.5 (3.9)  
 Class: Coastal Freshwater Lagoons

Related TECs: Sydney Freshwater Wetland EEC and Freshwater Wetlands on Coastal Floodplains EEC (TSC).

Coastal Freshwater Lagoon (FrW p313) represents an extension of FrW 313 identified by Tindall *et al.* (2004). Areas of this unit commonly have a mosaic of tall reeds, dense patches of taller shrubs, herbfields and open water. These coastal lagoons are scattered throughout the coastline of the study area, in areas of shallow sandy alluvium inundated by freshwater or slightly brackish water below 10m ASL. Lagoons are typically permanently inundated and associated with depressions in coastal sand plains and river flats. At their margins, they may grade into Coastal Sand Swamp Forest (FoW p45) or Floodplain Swamp Forest (FoW p105). With increasing salinity and access to tidal/estuarine waters, Coastal Freshwater Lagoon is replaced by Estuarine Creekflat Scrub (FoW p107). None of the abiotic modelling variables available had sufficient precision to delineate the specific habitat of Coastal Freshwater Lagoon. The mapped distribution of this unit (both pre clearing and extant) is therefore dependent on API delineation of extant lowland swamps and is likely to be underestimated.

Many coastal lagoons have been cleared or filled during coastal development, while others may be affected by polluted runoff, weed invasion and changes to hydrology. Larger examples include Coomonderry Swamp (Nowra), Pitt Town and Longneck Lagoons (Wilberforce), Marley and Jibbon Lagoons (Royal NP), Waldron and Pedro Swamps (Moruya), Bobundara Swamp (Akolele), and Penooka and Betunga Swamps (Bega).

Lagoons on coastal sand sheets in the Sydney Basin bioregion are recognised as threatened, with many examples (such as the Lachlan and Botany Swamps) destroyed or highly modified. Lagoons on coastal floodplains are also listed as threatened in NSW.

#### Floristic Summary:

**Shrubs:** *Melaleuca ericifolia*. **Groundcover:** *Baumea articulata*, *Persicaria praetermissa*, *Phragmites australis*, *Triglochin procerum*, *Typha orientalis*, *Cladium procerum*.

#### Vegetation structure:

Stratum	Frequency (n=6)	Height (m) (±StDev)	Cover (%) (±StDev)
Tree canopy	50	16 ( - )	50 ( - )
Shrub	50	3 ( - )	95 ( - )
Ground cover	100	1.6 (2.1)	51 (69.3)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 2 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 4 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 2 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/AO	FreqO
<i>Baumea articulata</i>	1	100	1	0
<i>Baumea teretifolia</i>	1	67	2	0
<i>Melaleuca ericifolia</i>	1	83	3	1
<i>Persicaria praetermissa</i>	3	33	2	0
<i>Phragmites australis</i>	1	67	3	1
<i>Samolus repens</i>	1	33	2	1
<i>Triglochin procerum</i>	1	33	2	0
<i>Typha orientalis</i>	5	33	2	0

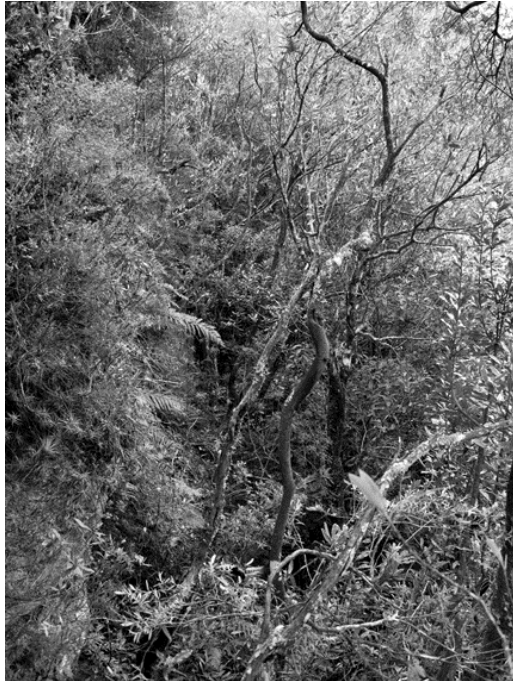
**RF p314: Budderoo Temperate Rainforest**

Plate p314. Budderoo Temperate Rainforest (Map Unit p314) hugging the base of the high, misty sandstone escarpment below Jamberoo Lookout. A tall dense canopy of *Ceratopetalum apetalum*, *Eucryphia moorei* and *Quintinia sieberi* grows beside a moist rock face supporting a jumble of shrubs and ferns including *Todea barbara*, *Blechnum indicum*, *Dracophyllum secundum* and *Pyrrosia rupestris*.

Sample Sites: 4

Area Extant (ha): 400

Estimated % remaining: >95%

Area in conservation reserves (ha): 230

Estimated % of pre-clearing area in conservation reserves: 45-65%

No. taxa (total / unique): 60 / 0

No. taxa per plot ( $\pm$ sd): 26.7 (15.3)

Class: Northern Warm Temperate Rainforests

Related TEC: n/a

Budderoo Temperate Rainforest (RF p314) is equivalent to RF 314 identified by Tindall *et al.* (2004) and represents a simple closed forest with a dense tree canopy, a prominent shrub stratum and a fern/sedge dominated groundcover. This rainforest is restricted to moist gullies below sandstone cliffs between Mt Kembla and the Budderoo plateau. It has been recorded from sites at elevations between 460 - 650m ASL and with annual rainfall greater than 1500mm. Budderoo Temperate Rainforest is closely related to Sandstone Scarp Warm Temperate Rainforest (RF p114), both occurring below sandstone cliffs at higher altitudes, however Budderoo Temperate Rainforest is restricted to the highest elevations of the very high rainfall areas on the Illawarra Scarp. Its originally small distribution is unlikely to have been depleted by land clearing.

**Floristic Summary:**

**Trees:** *Ceratopetalum apetalum*, *Quintinia sieberi*, *Eucryphia moorei*. **Shrubs:** *Coprosma quadrifida*, *Dracophyllum secundum*, *Epacris longiflora*, *Tasmannia insipida*, *Todea barbara*, *Tristaniopsis collina*. **Climbers:** *Tmesipteris truncata*. **Groundcover:** *Gleichenia microphylla*, *Grammitis billardiarei*, *Gahnia sieberiana*, *Pyrrosia rupestris*.

**Vegetation structure:**

Stratum	Frequency (n=3)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	19 (11.3)	71.7 (2.9)
Small tree	67	10 (2.8)	40 (14.1)
Shrub	33	3 (-)	60 (-)
Ground cover	100	0.8 (0.3)	26.7 (5.8)

**Diagnostic Species:**

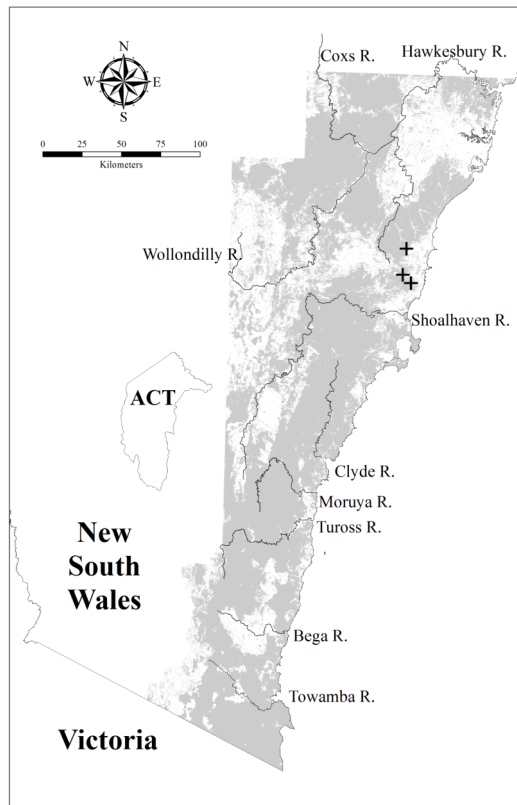
A 0.04ha plot located in this Map Unit is expected to contain at least 10 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 14 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 10 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Blechnum indicum</i>	3(3-3)	25	1(1-1)	<1
<i>Blechnum wattsii</i>	2(2-2)	50	1(1-2)	2
<i>Bossiaea kiamensis</i>	2(2-2)	25	2(1-3)	<1
<i>Bulbophyllum exiguum</i>	1(1-1)	25	1(1-2)	<1
<i>Ceratopetalum apetalum</i>	4(3-5)	100	3(1-3)	3
<i>Daviesia alata</i>	1(1-1)	25	1(1-2)	<1
<i>Dracophyllum secundum</i>	2(1-2)	50	1(1-1)	<1
<i>Epacris calvertiana</i> var. <i>versicolor</i>	1(1-1)	25	0(0-0)	0
<i>Epacris longiflora</i>	1(1-1)	50	1(1-2)	1
<i>Eucalyptus moorei</i>	3(3-3)	25	3(2-3)	<1
<i>Eucryphia moorei</i>	3(2-3)	50	3(2-3)	1
<i>Fieldia australis</i>	3(2-3)	50	1(1-3)	2
<i>Gahnia sieberiana</i>	1(1-1)	50	1(1-1)	5
<i>Gleichenia microphylla</i>	2(1-3)	75	1(1-2)	1
<i>Grammitis billardierei</i>	1(1-1)	100	1(1-1)	<1
<i>Hymenophyllum cupressiforme</i>	1(1-1)	50	1(1-1)	1
<i>Leptospermum morrisonii</i>	2(2-2)	25	1(1-2)	<1
<i>Olearia elliptica</i>	1(1-1)	25	1(1-1)	<1
<i>Parsonsia brownii</i>	1(1-1)	50	1(1-2)	2
<i>Polyosma cunninghamii</i>	2(2-2)	25	1(1-2)	1
<i>Prostanthera incisa</i>	1(1-1)	25	1(1-1)	1
<i>Pyrrosia rupestris</i>	1(1-1)	75	1(1-2)	6
<i>Quintinia sieberi</i>	3(1-3)	100	1(1-2)	<1
<i>Rapanea variabilis</i>	1(1-1)	50	1(1-1)	4
<i>Schizomeria ovata</i>	1(1-1)	25	1(1-2)	1
<i>Sticherus lobatus</i>	2(2-2)	25	1(1-3)	1
<i>Syzygium australe</i>	1(1-1)	25	1(1-3)	<1
<i>Tasmannia insipida</i>	1(1-3)	75	1(1-2)	2
<i>Tmesipteris truncata</i>	1(1-1)	50	1(1-1)	<1
<i>Todea barbara</i>	2(1-5)	75	1(1-2)	1
<i>Tristaniopsis collina</i>	3(1-3)	50	1(1-2)	2
<i>Zieria arborescens</i>	3(3-3)	25	1(1-2)	<1

Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Acmena smithii</i>	2(1-2)	50	2(1-3)	9
<i>Banksia serrata</i>	1(1-1)	50	1(1-2)	9
<i>Coprosma quadrifida</i>	1(1-1)	50	1(1-1)	10
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-1)	50	1(1-1)	24
<i>Pandorea pandorana</i>	1(1-1)	50	1(1-1)	18
<i>Parsonsia straminea</i>	1(1-1)	50	1(1-1)	7
<i>Pittosporum undulatum</i>	2(1-2)	50	1(1-1)	14
<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	2(1-2)	50	1(1-2)	7



Locations of survey sites allocated to RF p314. Grey shading indicates extant native vegetation cover within the study area.

**RF p317: Southeast Cool Temperate Rainforest**

Plate p317. Southeast Cool Temperate Rainforest (Map Unit p317) above Pooh Corner on the Kings Highway at Clyde Mountain. In this steep south-facing gully a closed canopy with *Eucryphia moorei* and *Doryphora sassafras* shelters a moist understorey dominated by vines and ferns including *Dicksonia antarctica*, and a dense groundcover of *Blechnum patersonii* subsp. *patersonii*.

Sample Sites: 69

Area Extant (ha): 3000

Estimated % remaining: >95%

Area in conservation reserves (ha): 2400

Estimated % of pre-clearing area in conservation reserves: 80-95%

No. taxa (total / unique): 158 / 3

No. taxa per plot ( $\pm$ sd): 27.7 (11.7)

Class: Cool Temperate Rainforests

Related TEC: n/a

Southeast Cool Temperate Rainforest (RF p317) represents a revision of RF 317 (Clyde-Deua Cool Temperate Rainforest) of Tindall *et al.* (2004) based on additional samples over a larger study area. This revised map unit includes original RF 317 sites and cooler southern RF 116 (Intermediate Temperate Rainforest) sites of Tindall *et al.* (2004); sites assigned to assemblage 8 (Cool Temperate Rainforest) by Keith & Bedward (1999); and a small number of additional sites assigned by Beukers (undated) to units Warm Temperate Rainforest and Cool Temperate Rainforest.

RF p317 is characterised by a simple closed forest structure, with an understorey of tree ferns, mesic shrubs and ground ferns. It is restricted to cool, higher altitude escarpment slopes and moist sheltered gullies with loamy soils, generally on sedimentary or granitic substrates, between 400 and 1050m ASL and receiving a mean annual rainfall of at least 900mm. This unit is generally restricted to small patches of less than 20 ha, scattered along the escarpment from near Wog Wog mountain on the Budawang range south to Burrigate and Narrabarba. Local concentrations include areas near Clyde Mountain and Monga State Forest, at Bumbo in Dampier State Forest, on Mount Dromedary, in the Yowrie area and in Glenbog State Forest.

Southeast Cool Temperate Rainforest is replaced at lower, warmer sites in the north of the study area by RF p116 (Intermediate Temperate Rainforest), and in the south by RF e6e7 (Southeast Warm Temperate Rainforest). All 3 of these rainforest units occur at Mount Dromedary, with p317 on the peak grading into e6e7 at intermediate elevations and p116 on lower slopes.

Most of the original distribution of Southeast Cool Temperate Rainforest remains unaffected by land clearing, and fires pose the principal threat to its diversity and extent.

**Floristic Summary:**

**Trees:** *Eucryphia moorei*, *Elaeocarpus holopetalus* in the south. **Shrubs:** *Dicksonia antarctica*, *Cyathea australis*, *Hedycarya angustifolia*. **Climbers:** *Smilax australis*, *Microsorium pustulatum*, *M. scandens*, *Parsonsia brownii*, *Pandorea pandorana*. **Groundcover:** *Fieldia australis*, *Polyphlebium venosum*, *Pyrrosia rupestris*, *Lastreopsis acuminata*, *Australina pusilla*, *Blechnum patersonii*, *B. wattsi*, *Polystichum proliferum*, *Asplenium flabellifolium*.

**Vegetation structure:**

Stratum	Frequency (n=4)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	25	20 (-)	65 (-)
Small tree	100	20 (9.7)	72.5 (18.5)
Shrub	75	3.7 (1)	26.7 (20.8)
Ground cover	100	0.6 (0.4)	41.8 (38)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 18 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

**Positive Diagnostic Species:**

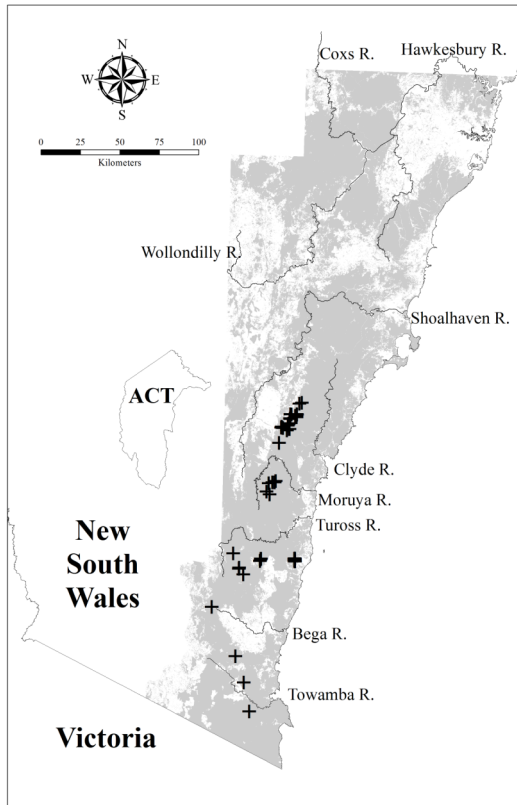
Species	C/A	Freq	C/A O	Freq O
<i>Acacia melanoxylon</i>	1(1-1)	28	1(1-1)	6
<i>Acmena smithii</i>	2(1-3)	43	2(1-3)	9
<i>Aphanopetalum resinosum</i>	2(1-3)	16	2(1-3)	4
<i>Asplenium bulbiferum</i> subsp. <i>gracillimum</i>	1(1-1)	35	1(1-1)	<1
<i>Asplenium flabellifolium</i>	2(1-3)	67	1(1-1)	11
<i>Asplenium flaccidum</i> subsp. <i>flaccidum</i>	1(1-1)	12	1(1-1)	<1
<i>Australina pusilla</i>	2(1-2)	62	1(1-1)	1
<i>Bedfordia arborescens</i>	1(1-3)	16	1(1-2)	3
<i>Blechnum patersonii</i> subsp. <i>patersonii</i>	2(1-3)	78	1(1-2)	2
<i>Blechnum wattsii</i>	2(1-3)	52	1(1-2)	2
<i>Cissus hypoglauca</i>	1(1-2)	28	1(1-2)	10
<i>Clematis aristata</i>	1(1-1)	42	1(1-1)	20
<i>Coprosma quadrifida</i>	1(1-2)	52	1(1-1)	9
<i>Cyathea australis</i>	1(1-2)	70	1(1-1)	8
<i>Dendrobium pugioniforme</i>	2(1-3)	30	1(1-1)	1
<i>Dennstaedtia davallioides</i>	1(1-2)	13	1(1-2)	1
<i>Dicksonia antarctica</i>	3(3-3)	99	1(1-2)	3
<i>Diplazium australe</i>	1(1-2)	38	1(1-2)	1
<i>Doryphora sassafras</i>	2(2-3)	19	3(1-3)	3
<i>Elaeocarpus holopetalus</i>	1(1-2)	16	1(1-1)	<1
<i>Elatostema reticulatum</i>	2(1-3)	25	1(1-2)	<1
<i>Eucryphia moorei</i>	3(3-3)	88	1(1-2)	<1
<i>Fieldia australis</i>	3(1-3)	93	1(1-2)	1
<i>Grammitis billardiarei</i>	1(1-3)	22	1(1-1)	<1
<i>Hedycarya angustifolia</i>	1(1-3)	65	1(1-2)	3
<i>Histiopteris incisa</i>	1(1-1)	46	1(1-1)	1
<i>Hymenophyllum cupressiforme</i>	1(1-2)	22	1(1-1)	1
<i>Hymenophyllum flabellatum</i>	1(1-2)	30	1(1-2)	<1
<i>Lastreopsis acuminata</i>	2(2-3)	57	1(1-2)	1
<i>Lastreopsis decomposita</i>	2(1-2)	10	2(1-3)	3
<i>Lastreopsis microsora</i> subsp. <i>microsora</i>	2(1-3)	23	2(1-3)	4
<i>Marsdenia rostrata</i>	1(1-2)	29	1(1-2)	12
<i>Microsorium pustulatum</i>	2(1-3)	70	1(1-1)	1



<i>Microsorium scandens</i>	2(2-3)	65	2(1-3)	3
<i>Morinda jasminoides</i>	2(1-2)	23	1(1-2)	9
<i>Olearia argophylla</i>	1(1-1)	42	1(1-2)	3
<i>Pandorea pandorana</i>	2(1-2)	71	1(1-1)	18
<i>Parsonsia brownii</i>	2(1-3)	62	1(1-1)	1
<i>Pellaea falcata</i>	2(1-2)	30	1(1-1)	10
<i>Pellaea nana</i>	1(1-2)	20	1(1-1)	2
<i>Pittosporum multiflorum</i>	1(1-2)	14	1(1-2)	4
<i>Plectorrhiza tridentata</i>	1(1-3)	13	1(1-2)	1
<i>Polystichum proliferum</i>	2(1-2)	62	1(1-2)	3
<i>Polyphlebium venosum</i>	2(1-3)	80	1(1-1)	<1
<i>Pteris umbrosa</i>	2(1-3)	28	2(1-3)	2
<i>Pyrrosia rupestris</i>	2(1-3)	87	1(1-2)	6
<i>Rapanea howittiana</i>	1(1-2)	26	1(1-1)	5
<i>Rubus rosifolius</i>	1(1-1)	30	1(1-1)	3
<i>Rumohra adiantiformis</i>	1(1-2)	13	1(1-1)	<1
<i>Sambucus australasica</i>	1(1-1)	14	1(1-1)	1
<i>Sarcochilus falcatus</i>	1(1-2)	26	1(1-2)	<1
<i>Smilax australis</i>	1(1-2)	81	1(1-1)	16
<i>Solanum aviculare</i>	1(1-1)	14	1(1-1)	1
<i>Stellaria flaccida</i>	1(1-2)	30	1(1-1)	10
<i>Synoum glandulosum</i> subsp. <i>glandulosum</i>	2(1-2)	25	1(1-2)	7
<i>Tasmannia insipida</i>	1(1-2)	10	1(1-2)	2
<i>Tasmannia lanceolata</i>	1(1-1)	13	1(1-2)	1
<i>Tmesipteris parva</i>	1(1-2)	19	1(1-1)	<1
<i>Tristaniopsis laurina</i>	1(1-1)	16	1(1-3)	1
<i>Urtica incisa</i>	1(1-1)	49	1(1-1)	5

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus cypellocarpa</i>	1(1-1)	1	2(1-2)	10
<i>Eucalyptus elata</i>	1(1-1)	1	2(1-3)	5
<i>Eucalyptus fastigata</i>	1(1-1)	6	2(2-3)	6
<i>Eucalyptus nitens</i>	1(1-1)	1	2(1-3)	<1



Locations of survey sites allocated to RF p317. Grey shading indicates extant native vegetation cover within the study area.

### WSF p338: Southern Range Wet Forest



Plate p338. Southern Range Wet Forest (Map Unit p338) on a moist sheltered slope above the Palerang Fire Trail in Tallaganda State Forest. A tall canopy of mighty *Eucalyptus fastigata* towers above scattered *Dicksonia antarctica* and a dense moist groundcover including *Blechnum nudum*, *Polystichum proliferum*, *Pteridium esculentum* and *Stellaria pungens* interwoven with *Smilax australis*.

Sample Sites: 135

Area Extant (ha): 87800

Estimated % remaining: >90%

Area in conservation reserves (ha): 38000

Estimated % of pre-clearing area in conservation reserves: 30-40%

No. taxa (total / unique): 381 / 8

No. taxa per plot ( $\pm$ sd): 31.5 (8.4)

Class: Southern Escarpment Wet Sclerophyll Forests

Related TEC: n/a

Southern Range Wet Forest (WSF p338) represents a substantial revision and extension of WSF 338 (Tallaganda Wet Forest) identified by Tindall *et al.* (2004). This revision is based on significant additional samples over a wider study area. The revised unit replaces WSF 338 and southern parts of WSF 73 (Cool Montane Wet Forest) of Tindall *et al.* (2004), and parts of assemblages 16 (Basalt Wet Herb Forest) and W4 (Kydra Flats Grass Forest) identified by Keith & Bedward (1999).

Southern Range Wet Forest is a tall eucalypt forest with frequent small tree and shrub layers and diverse groundcover of forbs & grasses. This forest occurs on higher elevations on tableland ranges, from the Gourock Range and Kybeyan Range south to Glenbog State Forest and Cathcart. From Tantawangalo south, WSF p338 grades into and is replaced by e15 (Southeast Mountain Wet Herb Forest). Scattered samples assigned to WSF p338 in the far south (e.g. at Coolangubra, Bondi Gulf and Rockton) were not separated from e15 and modelled by the current project.

Within the study area, Southern Range Wet Forest occurs on moist soils derived largely from granite, acid volcanic or metamorphosed sedimentary substrates. It is found on sheltered slopes and high ridges generally from 700 to 1400m ASL where mean annual rainfall varies between 800 and 1150mm. With decreasing elevation Tallaganda Wet Forest is replaced by Southern Tableland Flats Forest (WSF p220) in the north of its distribution, and in the south by Southeast Mountain Wet Herb Forest (e15).

The majority of mapped stands of Southern Range Wet Forest are within state forests and conservation reserves.

#### Floristic Summary:

**Trees:** *Eucalyptus fastigata*, *E. pauciflora*. **Shrubs:** *Acacia dealbata*, *Coprosma quadrifida*, *Persoonia silvatica*.

**Climbers:** *Clematis aristata*. **Groundcover:** *Stellaria pungens*, *Acaena novae-zelandiae*, *Poa meionectes*, *Poranthera microphylla*, *Asperula scoparia*, *Dianella tasmanica*, *Helichrysum scorpioides*, *Pteridium esculentum*, *Veronica calycina*, *Lagenifera stipitata*, *Leptinella filicula*, *Viola betonicifolia*, *V. hederacea*, *Ranunculus lappaceus*.

#### Vegetation structure:

Stratum	Frequency (n=56)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	4	37.5 (3.5)	45 (28.3)
Tree canopy	96	29 (6.6)	33.6 (13.7)
Small tree	61	10.6 (5.5)	17 (13.9)
Shrub	73	2.4 (0.9)	19.1 (17)
Ground cover	100	0.7 (0.3)	60.7 (26.9)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 25 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

#### Positive Diagnostic Species:

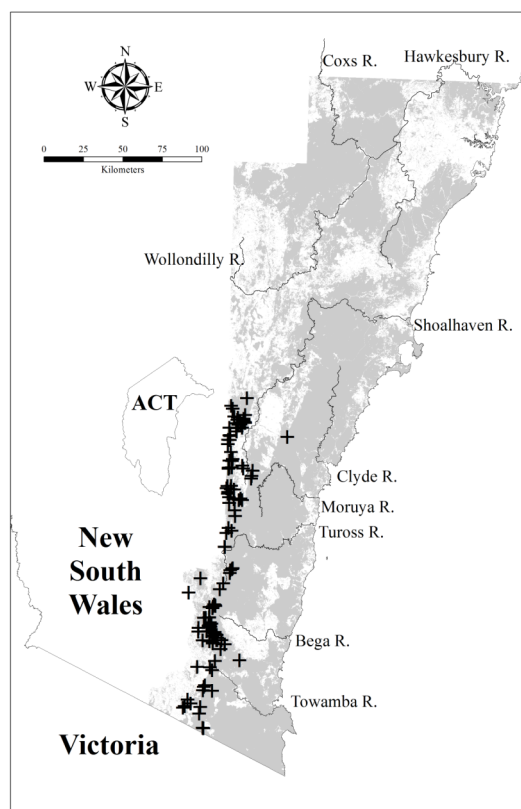
Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	1(1-2)	54	1(1-2)	4
<i>Acacia melanoxylon</i>	1(1-1)	31	1(1-2)	6
<i>Acacia obliquinervia</i>	1(1-2)	13	1(1-1)	1
<i>Acaena novae-zelandiae</i>	1(1-1)	58	1(1-1)	6
<i>Acrotriche divaricata</i>	1(1-3)	9	1(1-1)	1
<i>Acrotriche serrulata</i>	1(1-1)	12	1(1-1)	3
<i>Ajuga australis</i>	1(1-1)	10	1(1-1)	3
<i>Asperula scoparia</i>	1(1-1)	57	1(1-1)	2
<i>Austrodanthonia penicillata</i>	1(1-1)	4	1(1-2)	<1
<i>Blechnum nudum</i>	1(1-3)	11	1(1-2)	3
<i>Brachyscome spathulata</i>	1(1-1)	5	1(1-1)	1
<i>Caladenia catenata</i>	1(1-1)	2	1(1-1)	<1
<i>Caladenia gracilis</i>	1(1-1)	2	1(1-1)	<1
<i>Chiloglottis pluricallata</i>	1(1-1)	12	1(1-1)	<1

<i>Chiloglottis reflexa</i>	1(1-1)	2	1(1-1)	<1
<i>Choretrum candollei</i>	1(1-2)	4	1(1-1)	1
<i>Clematis aristata</i>	1(1-1)	70	1(1-1)	19
<i>Coprosma hirtella</i>	1(1-1)	7	1(1-1)	1
<i>Coprosma quadrifida</i>	1(1-1)	40	1(1-1)	9
<i>Cotula alpina</i>	1(1-2)	3	1(1-1)	<1
<i>Craspedia canens</i>	1(1-1)	2	1(1-1)	<1
<i>Craspedia coolaminica</i>	1(1-1)	3	0(0-0)	0
<i>Cullen microcephalum</i>	1(1-1)	2	1(1-1)	<1
<i>Cymbonotus preissianus</i>	1(1-1)	13	1(1-1)	1
<i>Daviesia ulicifolia</i>	1(1-1)	14	1(1-1)	6
<i>Deyeuxia gunniana</i>	1(1-2)	2	1(1-1)	<1
<i>Deyeuxia monticola</i>	1(1-2)	4	1(1-1)	1
<i>Deyeuxia quadriseta</i>	1(1-1)	8	1(1-1)	2
<i>Dianella tasmanica</i>	2(1-2)	86	1(1-1)	6
<i>Dichondra spp.</i>	1(1-1)	54	1(1-2)	25
<i>Drymophila cyanocarpa</i>	1(1-1)	10	1(1-1)	<1
<i>Echinopogon ovatus</i>	1(1-1)	24	1(1-1)	14
<i>Epilobium billardiereanum</i>	1(1-1)	6	1(1-1)	2
<i>Eucalyptus cypellocarpa</i>	2(1-2)	20	2(1-2)	10
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	1(1-2)	20	1(1-3)	3
<i>Eucalyptus fastigata</i>	2(1-3)	69	2(2-3)	5
<i>Eucalyptus nitens</i>	2(1-3)	8	2(1-3)	<1
<i>Eucalyptus obliqua</i>	2(1-3)	19	2(1-3)	4
<i>Eucalyptus pauciflora</i>	1(1-2)	18	1(1-3)	3
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	2(1-2)	46	2(1-3)	6
<i>Eucalyptus robertsonii</i> subsp. <i>robertsonii</i>	4(2-4)	4	3(1-3)	<1
<i>Eucalyptus viminalis</i>	2(1-2)	44	2(1-3)	4
<i>Euchiton gymnocephalus</i>	1(1-1)	27	1(1-1)	7
<i>Galium ciliare</i>	1(1-1)	2	1(1-1)	<1
<i>Galium propinquum</i>	1(1-1)	16	1(1-1)	7
<i>Geranium potentilloides</i>	1(1-1)	37	1(1-1)	5
<i>Geranium retrorsum</i>	1(1-1)	4	1(1-1)	<1
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-1)	16	1(1-1)	8
<i>Glycine clandestina</i>	1(1-1)	52	1(1-1)	26
<i>Gonocarpus tetragynus</i>	1(1-1)	55	1(1-1)	20
<i>Goodia lotifolia</i>	1(1-1)	12	1(1-1)	2
<i>Hakea eriantha</i>	1(1-1)	17	1(1-1)	2
<i>Helichrysum scorpioides</i>	1(1-1)	53	1(1-1)	7
<i>Hydrocotyle laxiflora</i>	1(1-1)	34	1(1-1)	15
<i>Juncus australis</i>	1(1-1)	4	1(1-1)	1
<i>Juncus pauciflorus</i>	1(1-1)	3	1(1-1)	<1
<i>Lagenifera stipitata</i>	1(1-1)	67	1(1-1)	13
<i>Leptinella filicula</i>	1(1-1)	24	1(1-1)	<1
<i>Leptospermum myrtifolium</i>	1(1-1)	5	1(1-1)	1
<i>Leptostigma reptans</i>	1(1-1)	4	1(1-1)	<1

<i>Leucopogon gelidus</i>	1(1-1)	4	1(1-1)	<1
<i>Leucopogon hookeri</i>	1(1-2)	19	1(1-1)	<1
<i>Leucopogon lanceolatus</i> var. <i>lanceolatus</i>	1(1-2)	57	1(1-1)	23
<i>Lomatia fraseri</i>	1(1-1)	11	1(1-1)	1
<i>Lomandra longifolia</i>	1(1-2)	68	1(1-1)	43
<i>Lomatia myricoides</i>	1(1-1)	30	1(1-1)	4
<i>Luzula flaccida</i>	1(1-1)	26	1(1-1)	3
<i>Microlaena stipoides</i>	1(1-1)	57	1(1-2)	36
<i>Nestegis ligustrina</i>	1(1-1)	2	1(1-1)	<1
<i>Olearia erubescens</i>	1(1-1)	17	1(1-1)	2
<i>Olearia megalophylla</i>	1(1-1)	13	1(1-1)	<1
<i>Olearia phlogopappa</i>	1(1-1)	4	1(1-1)	<1
<i>Oreomyrrhis eriopoda</i>	1(1-1)	15	1(1-1)	1
<i>Persoonia silvatica</i>	1(1-1)	28	1(1-1)	1
<i>Pittosporum bicolor</i>	1(1-1)	4	1(1-1)	<1
<i>Poa clivicola</i>	1(1-1)	4	3(1-3)	<1
<i>Poa ensiformis</i>	1(1-2)	8	1(1-2)	2
<i>Poa meionectes</i>	3(2-3)	82	1(1-2)	15
<i>Polystichum proliferum</i>	1(1-1)	19	1(1-2)	3
<i>Polyscias sambucifolia</i>	1(1-1)	13	1(1-1)	6
<i>Pomaderris aspera</i>	1(1-1)	13	1(1-2)	5
<i>Poranthera microphylla</i>	1(1-1)	56	1(1-1)	15
<i>Pratia pedunculata</i>	1(1-1)	5	1(1-1)	<1
<i>Pratia puberula</i>	1(1-1)	6	1(1-2)	<1
<i>Pteridium esculentum</i>	2(1-2)	86	1(1-2)	36
<i>Ranunculus lappaceus</i>	1(1-1)	18	1(1-1)	1
<i>Ranunculus pimpinellifolius</i>	1(1-1)	4	1(1-1)	<1
<i>Ranunculus plebeius</i>	1(1-1)	16	1(1-1)	1
<i>Ranunculus scapiger</i>	1(1-1)	4	1(1-1)	<1
<i>Rubus parvifolius</i>	1(1-1)	28	1(1-1)	9
<i>Senecio glomeratus</i>	1(1-1)	5	1(1-1)	<1
<i>Senecio prenanthoides</i>	1(1-1)	50	1(1-1)	8
<i>Stackhousia monogyna</i>	1(1-1)	11	1(1-1)	2
<i>Stellaria pungens</i>	1(1-1)	64	1(1-2)	5
<i>Stylidium graminifolium</i>	1(1-1)	26	1(1-1)	9
<i>Tasmania lanceolata</i>	1(1-1)	20	1(1-2)	1
<i>Veronica calycina</i>	1(1-1)	58	1(1-1)	5
<i>Veronica notabilis</i>	1(1-1)	4	1(1-1)	1
<i>Viola betonicifolia</i>	1(1-1)	31	1(1-1)	5
<i>Viola hederacea</i>	1(1-1)	83	1(1-1)	21
<i>Xerochrysum bracteatum</i>	1(1-1)	15	1(1-1)	2

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus angophoroides</i>	1(1-1)	1	1(1-2)	1
<i>Eucalyptus badjensis</i>	2(1-2)	1	2(1-3)	<1
<i>Eucalyptus bosistoana</i>	1(1-1)	1	1(1-2)	3
<i>Eucalyptus dives</i>	2(1-2)	1	2(1-3)	4
<i>Eucalyptus elata</i>	3(1-3)	2	2(1-3)	5
<i>Eucalyptus fraxinoides</i>	2(1-3)	2	2(1-3)	1
<i>Eucalyptus maidenii</i>	2(1-2)	1	2(1-2)	2
<i>Eucalyptus ovata</i>	1(1-1)	1	2(1-3)	1
<i>Eucalyptus parvula</i>	1(1-1)	1	1(1-2)	<1
<i>Eucalyptus pilularis</i>	2(2-2)	1	2(1-3)	5
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-2)	2	1(1-2)	2
<i>Eucalyptus smithii</i>	2(1-2)	1	1(1-2)	2
<i>Eucalyptus stellulata</i>	3(1-3)	1	1(1-2)	1



Locations of survey sites allocated to WSF p338. Grey shading indicates extant native vegetation cover within the study area.



**DSF p343: Araluen Scarp Grassy Forest**

Plate p343. Araluen Scarp Grassy Forest (Map Unit p343) above the Araluen Road at Bells Mountain, where a canopy of *Eucalyptus maidenii*, *E. tereticornis* and *E. melliodora* grows above scattered understorey shrubs including *Acacia mearnsii* and *Hymenanthera dentata* and a sparse groundcover of forbs, ferns and vines.

Sample Sites: 12

Area Extant (ha): 8800

Estimated % remaining: 75-90%

Area in conservation reserves (ha): 2400

Estimated % of pre-clearing area in conservation reserves: 15-30%

No. taxa (total / unique): 153 / 1

No. taxa per plot ( $\pm$ sd): 35.9 (11.8)

Class: Southern Hinterland Dry Sclerophyll Forests

Related TEC: n/a

Araluen Scarp Grassy Forest (DSF p343) was identified by Tindall *et al.* (2004) as DSF 343. It is a eucalypt woodland with an open shrub layer and a grassy groundcover, restricted to the escarpment and associated ridges bounding the northern and western sides of the Araluen valley, as far south as Moodong Creek. It occurs exclusively on sandy loams derived from granite, usually on steep slopes between 200-700m ASL. This distribution falls within a rainshadow zone, where mean annual rainfall is 890-1000mm. Similar rainshadows exist in the gorges of the Bega, Towamba, Shoalhaven, Wollondilly and Kowmung Rivers, and these support related grassy dry sclerophyll forests. Locally, Araluen Scarp Grassy Forest is replaced on the gently undulating valley floor by Araluen Valley Grassy Woodland (GW e20p229). On the summit of the escarpment, it grades into Southern Tablelands Flats Forest (GW p220), or Mountain Wet Fern Forest (WSF e12) on higher peaks.

Steep terrain has prevented extensive clearing of Araluen Scarp Grassy Forest, although much of this forest is used for rough-country cattle grazing. The understorey and erodible soils are also impacted by feral goats. These forests also suffered extensive dieback of eucalypt crowns and understorey during the 2003-04 drought, particularly on the spurs of the escarpment. Some stands of this unit are represented in conservation reserves.

**Floristic Summary:**

**Trees:** *Acacia mearnsii*, *Eucalyptus maidenii*, *E. melliodora*, *Angophora floribunda*, *E. globoidea*. **Shrubs:** *Hymenanthera dentata*, *Pittosporum undulatum*. **Climbers:** *Pandorea pandorana*, *Geitonoplesium cymosum*, *Clematis glycinoides* var. *glycinoides*. **Groundcover:** *Microlaena stipoides*, *Desmodium varians*, *Oplismenus imbecillis*, *Pellaea falcata*, *Stellaria pungens*.

**Vegetation structure:**

Stratum	Frequency (n=12)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	8	20 (-)	1 (-)
Tree canopy	100	17.9 (6.9)	35 (14.6)
Small tree	67	8.4 (3.1)	13.9 (11.7)
Shrub	67	2.5 (0.7)	13 (15.3)
Ground cover	83	0.4 (0.2)	36.5 (27.3)



**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 13 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 26 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 13 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia mearnsii</i>	2(2-3)	75	1(1-2)	7
<i>Angophora floribunda</i>	3(1-3)	50	1(1-2)	9
<i>Arthropodium minus</i>	1(1-2)	25	1(1-1)	1
<i>Carex breviculmis</i>	1(1-1)	50	1(1-1)	4
<i>Cenchrus caliculatus</i>	1(1-1)	25	1(1-1)	1
<i>Cheilanthes sieberi</i>	1(1-1)	58	1(1-1)	14
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	50	1(1-1)	10
<i>Crassula sieberiana</i>	1(1-1)	25	1(1-1)	3
<i>Daucus glochidiatus</i>	1(1-2)	33	1(1-1)	2
<i>Desmodium varians</i>	1(1-1)	67	1(1-1)	21
<i>Dichondra</i> spp.	2(1-2)	67	1(1-2)	25
<i>Echinopogon ovatus</i>	1(1-2)	58	1(1-1)	14
<i>Einadia hastata</i>	1(1-2)	50	1(1-1)	3
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-1)	33	1(1-1)	5
<i>Eucalyptus maidenii</i>	2(2-3)	67	2(1-2)	2
<i>Eucalyptus melliodora</i>	3(1-3)	67	1(1-3)	2
<i>Eucalyptus tereticornis</i>	1(1-3)	50	2(1-3)	7
<i>Euchiton gymnocephalus</i>	1(1-1)	42	1(1-1)	7
<i>Ficus rubiginosa</i>	1(1-4)	25	1(1-2)	1
<i>Geitonoplesium cymosum</i>	1(1-1)	58	1(1-1)	16
<i>Hymenanthera dentata</i>	1(1-2)	83	1(1-1)	6
<i>Microlaena stipoides</i>	1(1-2)	83	1(1-2)	36
<i>Notodanthonia longifolia</i>	1(1-2)	50	1(1-2)	5
<i>Oplismenus imbecillis</i>	1(1-2)	67	1(1-2)	14
<i>Oxalis perennans</i>	1(1-1)	58	1(1-1)	13
<i>Pandorea pandorana</i>	1(1-1)	58	1(1-1)	18
<i>Pellaea falcata</i>	1(1-1)	67	1(1-1)	10
<i>Pittosporum undulatum</i>	1(1-3)	67	1(1-1)	14
<i>Plantago debilis</i>	1(1-2)	42	1(1-1)	7
<i>Plectranthus parviflorus</i>	1(1-1)	50	1(1-1)	8
<i>Rumex brownii</i>	1(1-2)	42	1(1-1)	5
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	1(1-1)	58	1(1-1)	7
<i>Solanum pungetium</i>	1(1-1)	33	1(1-1)	6
<i>Stellaria pungens</i>	1(1-1)	42	1(1-1)	6
<i>Veronica plebeia</i>	1(1-1)	42	1(1-1)	10
<i>Xerochrysum bracteatum</i>	2(1-3)	33	1(1-1)	2

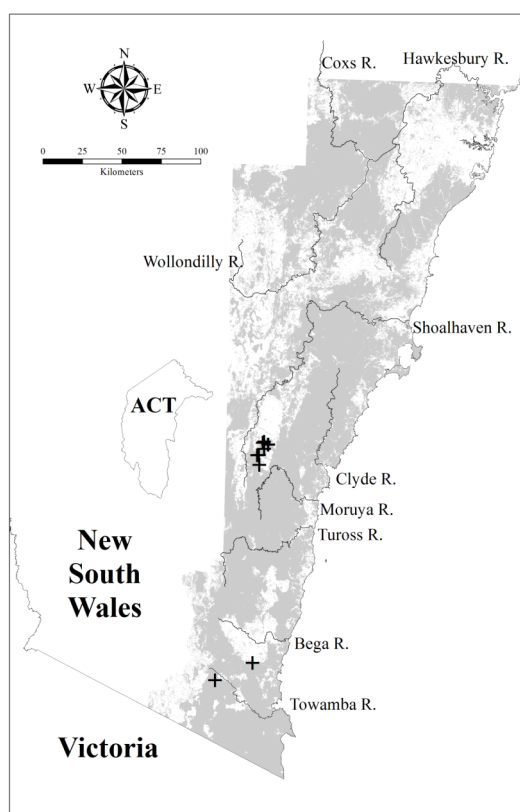
**Constant:**

Species	C/A	Freq	C/A O	Freq O
<i>Asplenium flabellifolium</i>	1(1-1)	33	1(1-1)	12
<i>Clematis aristata</i>	1(1-1)	42	1(1-1)	20

<i>Glycine clandestina</i>	1(1-1)	42	1(1-1)	26
<i>Hydrocotyle laxiflora</i>	1(1-1)	42	1(1-1)	16
<i>Lagenifera stipitata</i>	1(1-2)	33	1(1-1)	14
<i>Lomandra longifolia</i>	1(1-1)	67	1(1-1)	44
<i>Marsdenia rostrata</i>	1(1-1)	33	1(1-2)	12
<i>Tylophora barbata</i>	1(1-1)	33	1(1-1)	17

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus polyanthemos</i> subsp. <i>tarda</i>	1(1-1)	8	1(1-2)	<1
<i>Eucalyptus angophoroides</i>	1(1-1)	8	1(1-2)	1
<i>Eucalyptus elata</i>	2(2-3)	25	2(1-3)	5
<i>Eucalyptus eugenioides</i>	3(1-3)	17	2(1-3)	4
<i>Eucalyptus globoidea</i>	2(1-2)	25	2(1-2)	12
<i>Eucalyptus kartzoffiana</i>	1(1-1)	8	0(0-0)	0
<i>Eucalyptus muelleriana</i>	1(1-1)	8	2(1-2)	6
<i>Eucalyptus pilularis</i>	1(1-1)	8	2(1-3)	5



Locations of survey sites allocated to DSF p343. Grey shading indicates extant native vegetation cover within the study area.

**GW p420: Tableland Granite Grassy Woodland**

Plate p420. Tableland Granite Grassy Woodland (Map Unit p420) beside the Jenolan Caves Road, south of Hampton, where a tall canopy of *Eucalyptus viminalis* and *E. pauciflora* grows above a sparse small tree layer of *Acacia melanoxylon* and a dense groundcover dominated by *Poa labillardierei* var. *labillardierei*, *Lomandra longifolia*, *Pteridium esculentum* and *Microlaena stipoides*.

Sample Sites: 24

Area Extant (ha): 8400

Estimated % remaining: 20-35%

Area in conservation reserves (ha): 20

Estimated % of pre-clearing area in conservation reserves: <1%

No. taxa (total / unique): 194 / 0

No. taxa per plot ( $\pm$ sd): 29.7 (9.3)

Class: Southern Tableland Grassy Woodland

Related TEC: n/a

Tableland Granite Grassy Woodland (GW p420) is equivalent to GW 420 identified by Tindall *et al.* (2004). This unit is a eucalypt woodland with a sparse shrub layer and grassy groundcover, found on the tablelands in the Coffs River valley south of Lithgow and the Crookwell and Taralga districts. Scattered records also exist from granite areas near Durrant Durra and Braidwood, however these occurrences are not mapped separately from Southern Tablelands Flats Forest (Map Unit 220). Throughout its distribution this woodland occurs on rolling terrain on granite-derived soils, at elevations from 550 to 1050m ASL and with average annual rainfall ranging from 700 to 950mm.

Tableland Granite Grassy Woodland shares species with both Southern Tableland Flats Forest (GW p220), which is only found south of the Mount Fairy/Larbert area, and Tableland Swamp Flats Forest (GW p520), which is generally restricted to poorly drained alluvial soils.

Though once extensive, Tableland Granite Grassy Woodland is now highly fragmented by land clearing. The remaining areas are almost exclusively on freehold land, where they are exposed to continued small-scale clearing, grazing and weed invasion.

**Floristic Summary:**

**Trees:** *Eucalyptus viminalis*, *E. melliodora*. **Shrubs:** *Rubus parviflorus*, *Acacia melanoxylon*. **Climbers:** *Glycine clandestina*. **Groundcover:** *Hydrocotyle laxiflora*, *Microlaena stipoides*, *Acaena novae-zelandiae*, *Geranium solanderi*, *Lomandra filiformis* ssp. *coriacea*, *Rumex brownii*, *Dichondra* spp., *Desmodium varians*, *Stellaria pungens*, *Themeda australis*, *Austrodanthonia racemosa*, *Hypericum gramineum*.

**Vegetation structure:**

Stratum	Frequency (n=23)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	96	20.3 (4.9)	20.7 (7.6)
Small tree	52	10.2 (3.5)	9.8 (8.7)
Shrub	57	1.8 (0.7)	6.8 (7.7)
Ground cover	100	0.5 (0.3)	45.4 (23.9)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 10 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 22 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 10 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia melanoxylon</i>	1(1-1)	33	1(1-1)	6
<i>Acaena novae-zelandiae</i>	2(1-2)	71	1(1-1)	7
<i>Asperula conferta</i>	1(1-2)	42	1(1-1)	4
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	2(2-2)	46	1(1-2)	6
<i>Austrostipa rudis</i>	1(1-2)	29	1(1-2)	6
<i>Carex incomitata</i>	1(1-1)	25	1(1-1)	<1
<i>Carex inversa</i>	1(1-1)	25	1(1-1)	3
<i>Cheilanthes sieberi</i>	1(1-1)	38	1(1-1)	14
<i>Cymbonotus lawsonianus</i>	1(1-1)	33	1(1-1)	1
<i>Cynoglossum australe</i>	1(1-1)	29	1(1-1)	2
<i>Desmodium varians</i>	1(1-2)	58	1(1-1)	21
<i>Dianella longifolia</i>	1(1-1)	25	1(1-1)	4
<i>Dichondra</i> spp.	2(1-2)	54	1(1-2)	25
<i>Einadia hastata</i>	1(1-1)	25	1(1-1)	3
<i>Einadia nutans</i>	1(1-2)	21	1(1-1)	3
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	3(3-3)	25	1(1-2)	3
<i>Eucalyptus melliodora</i>	2(1-3)	38	1(1-3)	2
<i>Eucalyptus pauciflora</i>	3(3-3)	25	1(1-2)	3
<i>Eucalyptus viminalis</i>	3(3-3)	71	2(1-3)	4
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-2)	71	1(1-1)	8
<i>Gonocarpus tetragynus</i>	1(1-1)	50	1(1-1)	20
<i>Hydrocotyle laxiflora</i>	2(1-2)	92	1(1-1)	15
<i>Hypericum gramineum</i>	1(1-2)	50	1(1-1)	16
<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	1(1-2)	58	1(1-2)	10
<i>Microlaena stipoides</i>	2(1-3)	88	1(1-2)	36
<i>Oxalis exilis</i>	1(1-1)	33	1(1-1)	3
<i>Plantago varia</i>	2(2-2)	25	1(1-1)	2
<i>Poa sieberiana</i> var. <i>sieberiana</i>	2(1-3)	42	1(1-2)	10
<i>Poa labillardierei</i> var. <i>labillardierei</i>	1(1-2)	38	1(1-2)	12
<i>Rubus parvifolius</i>	1(1-2)	42	1(1-1)	9
<i>Rumex brownii</i>	1(1-1)	63	1(1-1)	5
<i>Senecio prenanthoides</i>	1(1-1)	29	1(1-1)	8
<i>Stellaria pungens</i>	2(1-2)	50	1(1-1)	6

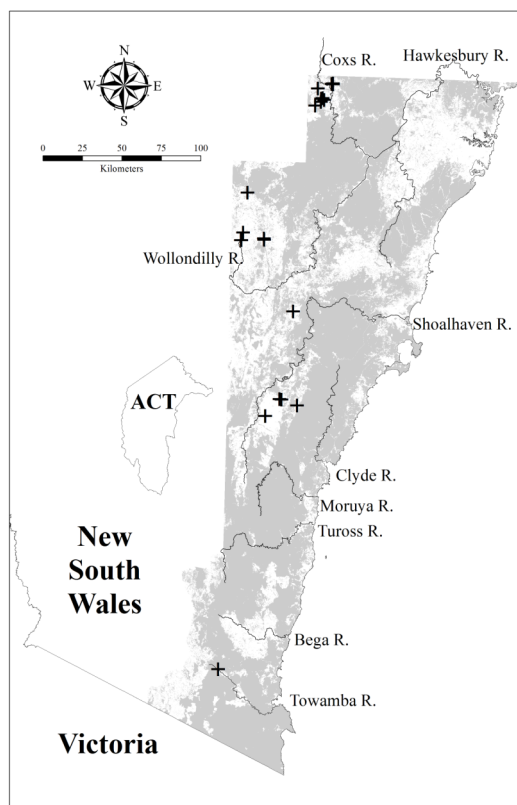
<i>Themeda australis</i>	2(1-3)	54	1(1-3)	17
<i>Viola betonicifolia</i>	1(1-1)	25	1(1-1)	5
<i>Wahlenbergia communis</i>	1(1-2)	33	1(1-1)	2

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Glycine clandestina</i>	1(1-1)	50	1(1-1)	26
<i>Lomandra longifolia</i>	1(1-3)	50	1(1-1)	44
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-1)	33	1(1-1)	25
<i>Pteridium esculentum</i>	2(1-2)	42	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus bridgesiana</i>	1(1-3)	13	1(1-3)	1
<i>Eucalyptus dives</i>	1(1-3)	13	2(1-3)	4
<i>Eucalyptus nortonii</i>	2(2-2)	4	2(1-2)	<1
<i>Eucalyptus ovata</i>	3(1-3)	8	2(1-2)	1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	3(3-3)	4	2(1-3)	6
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-1)	4	1(1-2)	2
<i>Eucalyptus stellulata</i>	4(3-4)	8	1(1-2)	1
<i>Eucalyptus tereticornis</i>	1(1-1)	4	2(1-3)	7



Locations of survey sites allocated to GW p420. Grey shading indicates extant native vegetation cover within the study area.

**GL p434: Headland Grassland**

Plate p434. Headland Grassland (Map Unit p434) on the south slope of Moruya Head in Eurobodalla National Park. Scattered *Banksia integrifolia* subsp. *integrifolia* stand above a dense continuous cover of *Themeda australis* and a variety of other small herbs.

Sample Sites: 15

Area Extant (ha): 30

Estimated % remaining: <30%

Area in conservation reserves (ha): 20

Estimated % of pre-clearing area in conservation reserves: 10-20%

No. taxa (total / unique): 170 / 1

No. taxa per plot ( $\pm$ sd): 31.7 (11.3)

Class: Maritime Grasslands

Related TEC: *Themeda* grassland on seacliffs and coastal headlands EEC (TSC).

Map unit GL p434 is broadly similar to GL 434 identified by Tindall *et al.* (2004), with its description updated for an expanded range. Headland Grassland is a dense tussock grassland, typically less than 0.3 m tall, with occasional shrubs up to 4 m tall. Individual stands are highly restricted (most are <5 ha), and are scattered over a broad coastal distribution from Sydney to south of Narooma. Headland Grassland is found within a few hundred metres of the sea on exposed rocky coastlines and offshore islands with shallow, black-brown, clay-loam soils derived from basic and acid volcanic rocks and from claystones. The terrain may be steep to flat and elevation is generally less than 100 m ASL. Headland Grassland has been highly modified by grazing and pasture improvement throughout its range. Some stands show signs of invasion by native and exotic shrubs where grazing regimes have changed, while all stands contain a variable component of introduced grasses and forbs. Many of the remaining stands are now threatened by urban expansion and coastal development, particularly north from Nowra, and by ongoing degradation from recreational use and weed invasion on public lands.

**Floristic Summary:**

**Shrubs:** *Banksia integrifolia* subsp. *integrifolia*, *Casuarina glauca*, *Acacia sophorae*, *Westringia fruticosa*.

**Groundcover:** *Themeda australis*, *Cynodon dactylon*, *Microlaena stipoides*, *Poa poiformis*, *Lomandra longifolia*, *Isolepis nodosa*, *Centella asiatica*, *Glycine microphylla*, *Hibbertia scandens*, *Kennedia rubicunda*, *Commelina cyanea*, *Plectranthus parviflorus*, *Viola betonicifolia*.

**Vegetation structure:**

Stratum	Frequency (n=6)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	17	4 (-)	10 (-)
Small tree	33	4 (-)	16.5 (12)
Shrub	33	1.7 (1.9)	2 (-)
Ground cover	100	0.7 (0.3)	92.2 (11.8)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 10 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 23 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 10 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia longifolia</i>	1(1-1)	100	1(1-2)	9
<i>Allocasuarina verticillata</i>	1(1-2)	20	1(1-2)	<1
<i>Banksia integrifolia</i> subsp. <i>integrifolia</i>	1(1-2)	80	1(1-2)	2
<i>Bossiaea prostrata</i>	1(1-2)	27	1(1-1)	3
<i>Carex longebrachiata</i>	1(1-2)	53	1(1-2)	3
<i>Casuarina glauca</i>	1(1-2)	40	2(1-3)	1
<i>Centella asiatica</i>	1(1-1)	60	1(1-1)	4
<i>Commelina cyanea</i>	1(1-1)	27	1(1-1)	4
<i>Cynodon dactylon</i>	1(1-1)	53	1(1-2)	2
<i>Dichondra</i> spp.	1(1-1)	80	1(1-2)	25
<i>Entolasia marginata</i>	1(1-1)	60	1(1-1)	11
<i>Eucalyptus botryoides</i>	1(1-4)	33	2(1-3)	3
<i>Euchiton gymnocephalus</i>	1(1-1)	33	1(1-1)	7
<i>Glycine clandestina</i>	1(1-1)	67	1(1-1)	26
<i>Glycine tabacina</i>	1(1-1)	47	1(1-1)	7
<i>Hibbertia aspera</i> subsp. <i>aspera</i>	1(1-1)	47	1(1-1)	10
<i>Hydrocotyle peduncularis</i>	1(1-1)	47	1(1-1)	9
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-2)	60	1(1-2)	10
<i>Isolepis nodosa</i>	1(1-1)	40	1(1-1)	1
<i>Juncus homalocaulis</i>	1(1-1)	20	1(1-1)	<1
<i>Lomandra longifolia</i>	1(1-2)	87	1(1-1)	44
<i>Monotoca elliptica</i>	1(1-3)	20	1(1-1)	2
<i>Oxalis exilis</i>	1(1-1)	47	1(1-1)	3
<i>Poa poiformis</i> var. <i>poiformis</i>	2(1-3)	27	1(1-2)	<1
<i>Polymeria calycina</i>	1(1-1)	40	1(1-1)	1
<i>Pratia purpurascens</i>	1(1-1)	73	1(1-1)	17
<i>Selliera radicans</i>	1(1-2)	40	1(1-2)	<1
<i>Senecio hispidulus</i> var. <i>hispidulus</i>	1(1-1)	20	1(1-1)	3
<i>Solanum stelligerum</i>	1(1-1)	20	1(1-1)	1
<i>Themeda australis</i>	3(2-5)	87	1(1-3)	17
<i>Veronica plebeia</i>	1(1-1)	40	1(1-1)	10
<i>Viola betonicifolia</i>	1(1-2)	27	1(1-1)	5
<i>Westringia fruticosa</i>	1(1-1)	20	1(1-2)	<1

#### Constant:

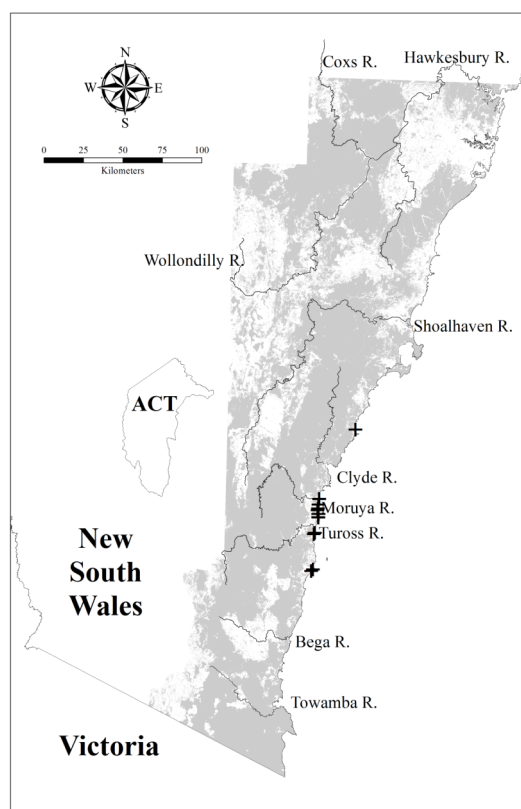
Species	C/A	Freq	C/A O	Freq O
<i>Desmodium varians</i>	1(1-1)	53	1(1-1)	21
<i>Entolasia stricta</i>	1(1-1)	33	1(1-2)	34
<i>Hypericum gramineum</i>	1(1-1)	40	1(1-1)	16
<i>Lagenifera stipitata</i>	1(1-1)	33	1(1-1)	14
<i>Lepidosperma laterale</i>	1(1-2)	33	1(1-1)	29



<i>Microlaena stipoides</i>	1(1-2)	67	1(1-2)	36
<i>Pittosporum undulatum</i>	1(1-1)	33	1(1-1)	14
<i>Poa labillardierei</i> var. <i>labillardierei</i>	1(1-5)	33	1(1-2)	12
<i>Viola hederacea</i>	1(1-1)	47	1(1-1)	22

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora floribunda</i>	2(1-2)	13	1(1-2)	9
<i>Eucalyptus agglomerata</i>	4(1-4)	13	2(1-3)	7
<i>Eucalyptus longifolia</i>	1(1-1)	7	1(1-2)	2



Locations of survey sites allocated to GL p434. Grey shading indicates extant native vegetation cover within the study area.

**DSF p463: Elderslie Banksia Scrub Forest**

Plate p463. Elderslie Banksia Scrub (Map Unit p463) at Elderslie, with scattered *Banksia integrifolia* ssp *integrifolia*.

Sample Sites: [not sampled]

Area Extant (ha): 1

Estimated % remaining: <15%

Area in conservation reserves (ha): 0

Estimated % of pre-clearing area in conservation reserves: 0 %

No. Taxa (total / unique): n/a

No. Taxa per Plot ( $\pm$ sd): n/a

Class:

Related TEC: Elderslie Banksia Scrub Forest EEC (TSC).

Elderslie Banksia Scrub Forest (DSF p463) varies in structure from scrub to woodland to forest and has an understorey dominated by shrubs with scattered herbs, sedges and ferns. It is restricted to a highly localised flat area of sandy Tertiary alluvium near Camden at about 50 m elevation. This is one of the driest areas of the Cumberland Plain, receiving less than 750mm mean annual rainfall.

No quantitative floristic samples of this unit were available to this project, however its flora has been documented previously (Benson & Howell 1990, Urban Bushland Management Consultants 1998). Its species composition is characterised by an unusual mix of coastal floodplain flora with coastal sandplain flora. Related map units include Agnes Banks Woodland (DSF p239) and Cumberland River Flat Forest (FoW p33). Elderslie Banksia Scrub Forest belongs to the Sydney Sand Flats Dry Sclerophyll Forests vegetation class (Keith 2004).

The very restricted natural distribution of Elderslie Banksia Scrub Forest has been reduced and severely fragmented by clearing and sand extraction. Consequently, it is listed as an Endangered Ecological Community under the *Threatened Species Conservation Act (1995)*.

**Vegetation structure:**

\* Structural data is unavailable for this Map Unit. This unit is characterised by an open-scrub or woodland structure, or may occur as remnant trees in degraded sites.

**Floristic Summary:**

\* The species list provided in the NSW Scientific Committee's Final Determination (NSW Scientific Committee, undated) is reproduced here.

**Trees:** *Angophora subvelutina*, *Eucalyptus baueriana*, *E. botryoides*, *Banksia integrifolia*, *Melaleuca decora*. **Shrubs:** *Acacia decurrens*, *A. implexa*, *A. ulicifolia*, *Aotus ericoides*, *Brachyloma daphnoides*, *Breynia oblongifolia*, *Clerodendrum tomentosum*, *Dillwynia glaberrima*, *Duboisia myoporoides*, *Kunzea ambigua*, *Ozothamnus diosmifolius*, *Persoonia linearis*, *Pimelea linifolia*, *Platysace lanceolata*, *Ricinocarpos pinifolius*. **Groundcover:** *Dianella caerulea*, *D. revoluta*, *Gahnia clarkei*, *Gleichenia dicarpa*, *Hibbertia diffusa*, *Lomandra filiformis*, *L. longifolia*, *Pteridium esculentum*.

**DSF p502: Castlereagh Shale-Gravel Transition Forest**

Plate p502. Castlereagh Shale-Gravel Transition Forest (Map Unit p502) in Windsor Downs Nature Reserve, with a canopy of *Eucalyptus crebra*, scattered patches of shrubs including *Bursaria spinosa* and *Persoonia nutans* and a continuous grassy groundcover dominated by *Microlaena stipoides*, *Dichelachne micrantha* and *Themeda australis*.

Sample Sites: 25

Area Extant (ha): 1700

Estimated % remaining: 25-35%

Area in conservation reserves (ha): 230

Estimated % of pre-clearing area in conservation reserves: <10%

No. taxa (total / unique): 229 / 0

No. taxa per plot ( $\pm$ sd): 44.1 (8.7)

Class: Cumberland Dry Sclerophyll Forests

Related TEC: Shale Gravel Transition Forest EEC (TSC).

Castlereagh Shale-Gravel Transition Forest (DSF p502) is equivalent to DSF 502 identified by Tindall *et al.* (2004). This unit is a eucalypt woodland with an open layer of sclerophyll shrubs and grassy groundcover. It is restricted to the Cumberland Plain, western Sydney, where average annual rainfall varies from 750 – 950 mm. Here it is found below 100m ASL on clay soils with a high concentration of iron-indurated gravel, derived mainly from Tertiary Alluvium (Tozer 2003). Castlereagh Shale-Gravel Transition Forest shares a number of species with Cumberland Shale Plains Woodland (GW p29), and the two units intergrade extensively in the vicinity of Castlereagh, Riverstone and Holsworthy where soil properties vary in a complex and unpredictable pattern. The naturally restricted distribution of Castlereagh Shale-Gravel Transition Forest has been fragmented by land clearing and the community is listed as threatened. Small examples of Shale Gravel Transition Forest are represented in conservation reserves, but rural-residential and industrial development continue to reduce its range and degrade the remaining stands by increasing fire frequency and rubbish dumping.

**Floristic Summary:**

**Trees:** *Eucalyptus fibrosa*, *Melaleuca decora*. **Shrubs:** *Daviesia ulicifolia*, *Lissanthe strigosa*, *Bursaria spinosa*.

**Climbers:** *Glycine clandestina*. Groundcover: *Microlaena stipoides*, *Opercularia diphylla*, *Lomandra multiflora*, *Cheilanthes sieberi*, *Aristida vagans*, *Pratia purpurascens*, *Themeda australis*, *Wahlenbergia gracilis*, *Poranthera microphylla*, *Desmodium gunnii*, *Dichelachne micrantha*, *Goodenia hederacea*, *Lomandra filiformis*, *Dichondra repens*, *Brunonia australis*, *Dianella revoluta*, *Hypericum gramineum*, *Lepidosperma laterale*, *Oxalis perennans*, *Panicum simile*.

**Vegetation structure:**

Stratum	Frequency (n=25)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	-	- (-)	- (-)
Tree canopy	100	21.5 (2.2)	20.5 (12.9)
Small tree	72	10.7 (3.3)	18.4 (14.9)
Shrub	48	1.9 (0.7)	7.8 (8.6)
Ground cover	100	0.9 (0.2)	45 (24.8)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 25 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 37 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 25 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia decurrens</i>	1(1-1)	28	1(1-1)	2
<i>Acacia falcata</i>	1(1-1)	36	1(1-1)	1
<i>Acacia parramattensis</i>	1(1-2)	40	1(1-2)	4
<i>Aristida vagans</i>	1(1-2)	88	1(1-2)	8
<i>Arthropodium milleflorum</i>	1(1-1)	32	1(1-1)	5
<i>Austrodanthonia tenuior</i>	2(1-2)	48	1(1-1)	2
<i>Brunoniella australis</i>	2(2-2)	52	2(1-2)	4
<i>Brunoniella pumilio</i>	2(1-2)	28	1(1-1)	4
<i>Bursaria spinosa</i>	2(1-3)	76	1(1-2)	14
<i>Calotis cuneifolia</i>	1(1-2)	20	1(1-2)	<1
<i>Cheilanthes sieberi</i>	2(1-3)	92	1(1-1)	14
<i>Chorizema parviflorum</i>	1(1-2)	24	1(1-1)	<1
<i>Cymbopogon refractus</i>	1(1-2)	36	1(1-1)	4
<i>Daviesia ulicifolia</i>	1(1-2)	68	1(1-1)	6
<i>Desmodium varians</i>	2(1-2)	68	1(1-1)	21
<i>Dianella longifolia</i>	1(1-1)	52	1(1-1)	4
<i>Dianella revoluta</i> var. <i>revoluta</i>	2(1-2)	48	1(1-1)	15
<i>Dichelachne micrantha</i>	1(1-2)	68	1(1-1)	9
<i>Dichondra</i> spp.	2(1-2)	68	1(1-2)	25
<i>Dillwynia sieberi</i>	2(1-2)	24	1(1-1)	1
<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	1(1-2)	52	1(1-1)	6
<i>Echinopogon ovatus</i>	1(1-1)	48	1(1-1)	14
<i>Entolasia stricta</i>	2(1-2)	72	1(1-2)	34
<i>Eragrostis brownii</i>	1(1-1)	32	1(1-1)	3
<i>Eragrostis leptostachya</i>	1(1-2)	32	1(1-1)	4
<i>Eucalyptus crebra</i>	3(2-3)	32	2(1-3)	3
<i>Eucalyptus eugenioides</i>	1(1-1)	24	2(1-3)	4
<i>Eucalyptus fibrosa</i>	3(1-3)	56	2(1-3)	3
<i>Eucalyptus moluccana</i>	3(1-3)	40	3(1-3)	2
<i>Eucalyptus tereticornis</i>	3(1-3)	40	2(1-3)	7
<i>Euchiton sphaericus</i>	1(1-1)	40	1(1-1)	3
<i>Fimbristylis dichotoma</i>	1(1-1)	28	1(1-1)	1
<i>Glycine clandestina</i>	1(1-2)	68	1(1-1)	26
<i>Glycine microphylla</i>	1(1-1)	28	1(1-2)	5
<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	1(1-2)	64	1(1-2)	14
<i>Hardenbergia violacea</i>	1(1-2)	48	1(1-1)	17
<i>Hibbertia diffusa</i>	1(1-1)	24	1(1-1)	3
<i>Hydrocotyle peduncularis</i>	1(1-2)	40	1(1-1)	9
<i>Hypericum gramineum</i>	1(1-1)	56	1(1-1)	16
<i>Juncus usitatus</i>	1(1-2)	20	1(1-1)	2

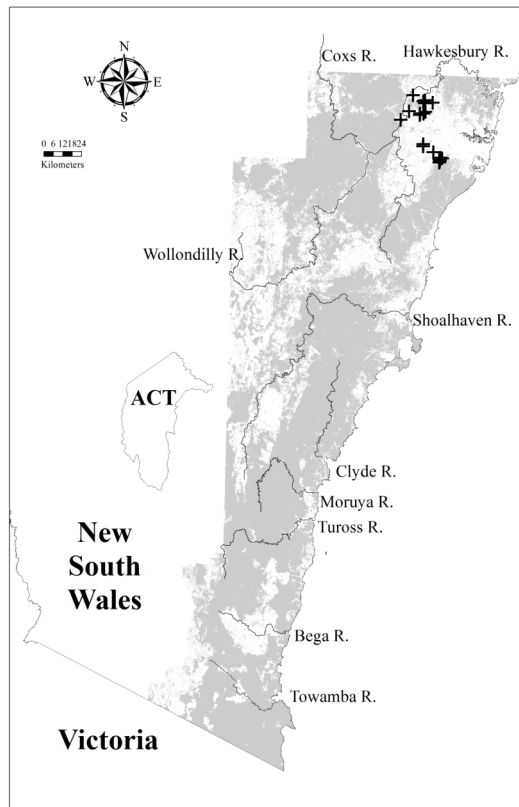
<i>Lachnagrostis filiformis</i>	1(1-1)	36	1(1-1)	3
<i>Laxmannia gracilis</i>	1(1-2)	44	1(1-1)	4
<i>Leucopogon juniperinus</i>	1(1-1)	24	1(1-1)	6
<i>Lissanthe strigosa</i>	1(1-1)	56	1(1-1)	8
<i>Lomandra filiformis</i> subsp. <i>filiformis</i>	2(1-2)	48	1(1-1)	11
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	1(1-2)	92	1(1-1)	25
<i>Melaleuca decora</i>	3(2-3)	64	2(1-3)	1
<i>Melaleuca nodosa</i>	2(1-3)	24	2(1-3)	1
<i>Microlaena stipoides</i>	2(1-3)	100	1(1-2)	36
<i>Opercularia diphyllo</i>	2(1-2)	88	1(1-1)	7
<i>Oxalis perennans</i>	1(1-2)	56	1(1-1)	13
<i>Ozothamnus diosmifolius</i>	1(1-1)	28	1(1-1)	9
<i>Panicum simile</i>	1(1-2)	56	1(1-1)	6
<i>Paspalidium distans</i>	1(1-2)	40	1(1-2)	3
<i>Polymeria calycina</i>	1(1-1)	20	1(1-1)	1
<i>Pomax umbellata</i>	2(1-2)	56	1(1-1)	14
<i>Poranthera microphylla</i>	2(1-2)	72	1(1-1)	15
<i>Pratia purpurascens</i>	1(1-2)	80	1(1-1)	17
<i>Solanum prinophyllum</i>	1(1-1)	28	1(1-1)	6
<i>Stackhousia viminea</i>	1(1-2)	36	1(1-1)	3
<i>Themeda australis</i>	3(2-4)	76	1(1-2)	17
<i>Thysanotus tuberosus</i> subsp. <i>tuberosus</i>	1(1-2)	28	1(1-1)	2
<i>Tricoryne elatior</i>	2(1-2)	48	1(1-1)	3
<i>Vernonia cinerea</i> var. <i>cinerea</i>	1(1-2)	48	1(1-1)	4
<i>Veronica plebeia</i>	1(1-2)	32	1(1-1)	10
<i>Wahlenbergia gracilis</i>	1(1-2)	80	1(1-1)	10

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Lepidosperma laterale</i>	1(1-2)	52	1(1-1)	29

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora bakeri</i>	3(3-3)	4	1(1-2)	2
<i>Angophora floribunda</i>	3(3-3)	8	1(1-2)	9
<i>Angophora subvelutina</i>	1(1-1)	4	3(1-3)	<1
<i>Corymbia maculata</i>	1(1-1)	4	2(1-3)	3
<i>Eucalyptus bosistoana</i>	3(3-3)	4	1(1-2)	3
<i>Eucalyptus globoidea</i>	2(1-3)	12	2(1-2)	12
<i>Eucalyptus punctata</i>	1(1-1)	4	2(1-3)	9
<i>Eucalyptus sclerophylla</i>	3(3-3)	8	2(1-3)	4
<i>Eucalyptus sparsifolia</i>	4(4-4)	4	2(1-3)	2



Locations of survey sites allocated to DSF p502. Grey shading indicates extant native vegetation cover within the study area.

### SL p509: Estuarine Saltmarsh



Plate p509. Estuarine Saltmarsh (Map Unit p509) at Towra Point Nature Reserve adjacent to the Kurnell peninsula. A carpet of *Sarcocornia quinqueflora* stretches toward the mangroves (*Avicennia marina* subsp. *australasica*) in the background, concealing a small complement of forbs such as *Samolus repens*.

Sample Sites: 68  
 Area Extant (ha): 2200  
 Estimated % remaining: <50%  
 Area in conservation reserves (ha): 690  
 Estimated % of pre-clearing area in conservation reserves: 10-30%  
 No. taxa (total / unique): 40 / 0  
 No. taxa per plot ( $\pm$ sd): 3.9 (2.9)



Class: Saltmarshes

Related TEC: Coastal Saltmarsh EEC (TSC); Protected Marine Vegetation under the *Fisheries Management Act 1994*.

Estuarine Saltmarsh (SL p509) represents the combining of SL 509 of Tindall *et al.* (2004) and assemblage 64 (Saltmarsh) of Keith & Bedward (1999). This unit comprises a complex, fine-scale mosaic of succulent herbfields and sedgelands. It is restricted to estuarine mudflats and saline lagoons, and is found on the upper limit of the inter-tidal zone. Estuarine Saltmarsh has a scattered coastal distribution along the entire length of the study area and is likely to continue further north and south. Larger stands are found in Botany Bay, Lake Illawarra, Jervis Bay, Merimbula Lake and the Shoalhaven, Clyde, Deua and Bermagui River estuaries.

Estuarine Saltmarsh has several halophytic taxa in common with Estuarine Mangrove Forest (SL p109), and these two units intergrade readily over short distances with small changes in elevation and soil salinity. Estuarine Saltmarsh is differentiated from Estuarine Mangrove Forest (SL p109) by hypersaline conditions and the dominance of succulent herbs and sedges rather than mangroves.

Estuarine Saltmarsh's naturally restricted distribution has been depleted substantially by coastal development, and the remnants are threatened by intense recreational pressures, continuing degradation associated with foreshore and catchment development, and invasion by mangroves.

#### Floristic Summary:

**Groundcover:** *Sarcocornia quinqueflora*, *Samolus repens*, *Juncus kraussii*, *Suaeda australis*.

#### Vegetation structure:

Stratum	Frequency (n=10)	Height (m) (±StDev)	Cover (%) (±StDev)
Emergent	-	- (-)	- (-)
Tree canopy	50	8.2 (7.7)	46 (17.8)
Small tree	20	4.5 (0.7)	45 (49.5)
Shrub	10	0.5 (-)	4 (-)
Ground cover	100	0.6 (0.3)	58.5 (21.4)

#### Diagnostic Species:

A 0.04 ha plot located in this Map Unit is expected to contain at least 1 positive diagnostic species (95% confidence interval) provided the total number of native species in the plot is 2 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 1 positive diagnostic species.

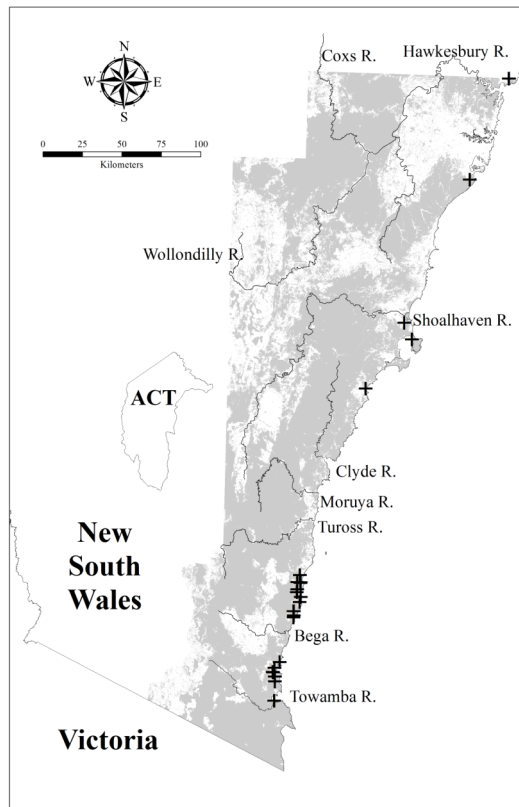
#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Atriplex australasica</i>	1(1-1)	12	1(1-2)	<1
<i>Austrostipa stipoides</i>	3(1-3)	15	1(1-1)	<1
<i>Avicennia marina</i> subsp. <i>australasica</i>	2(1-3)	37	3(2-4)	1
<i>Casuarina glauca</i>	1(1-2)	9	2(1-3)	1
<i>Disphyma crassifolium</i> subsp. <i>clavellatum</i>	2(1-2)	9	2(2-2)	<1
<i>Gahnia filum</i>	1(1-1)	9	1(1-1)	<1
<i>Juncus kraussii</i> subsp. <i>australiensis</i>	1(1-2)	34	3(1-4)	1
<i>Limonium australe</i>	2(1-3)	13	1(1-1)	<1
<i>Samolus repens</i>	2(1-3)	15	1(1-2)	1
<i>Sarcocornia quinqueflora</i> subsp. <i>quinqueflora</i>	3(2-4)	99	1(1-2)	1
<i>Sclerostegia arbuscula</i>	3(2-3)	16	3(3-4)	<1
<i>Suaeda australis</i>	1(1-2)	29	1(1-1)	<1

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus bosistoana</i>	2(2-2)	1	1(1-2)	3
<i>Eucalyptus tereticornis</i>	3(3-3)	1	2(1-3)	7





Locations of survey sites allocated to SL p509. Grey shading indicates extant native vegetation cover within the study area.

#### GW p514: Cumberland Moist Shale Woodland



Plate p514. Cumberland Moist Shale Woodland (Map Unit p514) on the steep, sheltered southern slopes of the Razorback Range. An overstorey of *Eucalyptus moluccana* and *E. tereticornis* is present with a substratum of *Allocasuarina littoralis*. *Bursaria spinosa*, *Olearia viscidula*, *Clerodendrum tomentosum* and *Notelaea longifolia* comprise a sparse shrub layer above the diverse, grass-dominated ground cover.

Sample Sites: 9

Area Extant (ha): 600

Estimated % remaining: 25-35%

Area in conservation reserves (ha): <10

Estimated % of pre-clearing area in conservation reserves: <1%

No. Taxa (total / unique): 118 / 1

No. Taxa per Plot ( $\pm$ sd): 36.3 (8.1)

Class: Coastal Valley Grassy Woodlands

Related TEC: Moist Shale Woodland EEC (TSC)

Cumberland Moist Shale Woodland (GW p514) is equivalent to GW 514 described by Tindall *et al.* (2004), and to Moist Shale Woodland (14) identified by Tozer (2003). This unit is a eucalypt woodland with a sparse semi-mesic shrub layer and grassy groundcover. It is restricted to rugged areas at higher elevations in the southern half of the Cumberland Plain, where it occurs exclusively on soils derived from Wianamatta Shale. It has been recorded at sites with elevations from 50m to 300m ASL and mean annual rainfall of 800-900mm. This community appears to represent the endpoint of a transition from Cumberland Shale Plains Woodland through Cumberland Hills Woodland with increasing elevation, rainfall and ruggedness from the central Cumberland Plain to the Razorback Range at Picton (Tozer 2003). Cumberland Moist Shale Woodland is also related floristically to Grey Myrtle Dry Rainforest (RF p38). Like other communities on the Cumberland Plain, GW p514 is fragmented by land clearing, and threatened by continuing rural-residential development, weed invasion, high frequency fire and grazing.

#### Floristic Summary:

**Trees:** *Eucalyptus tereticornis*, *E. moluccana*. **Shrubs:** *Breynia oblongifolia*, *Clerodendrum tomentosum*, *Sigesbeckia orientalis*, *Olearia viscidula*, *Bursaria spinosa*. **Climbers:** *Cayratia clematidea*, *Glycine clandestina*. **Groundcover:** *Desmodium gunnii*, *Cyperus gracilis*, *Galium propinquum*, *Brunoniella australis*, *Desmodium brachypodium*, *Solanum prinophyllum*, *Microlaena stipoides*, *Arthropodium milleflorum*, *Echinopogon ovatus*, *Einadia hastata*, *Nyssanthus diffusa*, *Oxalis perennans*, *Plectranthus parviflorus*, *Rumex brownii*, *Wahlenbergia gracilis*.

#### Vegetation structure:

Stratum	Frequency (n=9)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Tree canopy	100	24.7 (4.6)	18.9 (7.8)
Small tree	89	10.8 (4.7)	27.6 (22.6)
Shrub	33	2.3 (0.6)	10 (8.7)
Ground cover	100	1 (-)	30.3 (25)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 19 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 30 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 19 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Adiantum aethiopicum</i>	3(1-4)	44	1(1-1)	9
<i>Aristida ramosa</i>	1(1-2)	33	1(1-2)	5
<i>Arthropodium milleflorum</i>	1(1-2)	56	1(1-1)	5
<i>Brachychiton populneus</i> subsp. <i>populneus</i>	1(1-4)	44	1(1-1)	3
<i>Breynia oblongifolia</i>	1(1-1)	78	1(1-1)	12
<i>Brunoniella australis</i>	2(1-2)	67	2(1-2)	4
<i>Bursaria spinosa</i>	1(1-2)	67	1(1-2)	14
<i>Carex inversa</i>	1(1-1)	44	1(1-1)	3
<i>Cayratia clematidea</i>	1(1-2)	78	1(1-1)	2
<i>Celastrus australis</i>	1(1-2)	33	1(1-1)	2
<i>Cheilanthes distans</i>	1(1-2)	44	1(1-1)	2
<i>Chloris truncata</i>	1(1-1)	33	1(1-1)	<1
<i>Chloris ventricosa</i>	1(1-1)	22	1(1-2)	1
<i>Clematis glycinoides</i> var. <i>glycinoides</i>	1(1-1)	44	1(1-1)	10
<i>Clerodendrum tomentosum</i>	1(1-1)	67	1(1-1)	5
<i>Commelina cyanea</i>	1(1-1)	44	1(1-1)	4
<i>Crassula sieberiana</i>	1(1-1)	33	1(1-1)	3
<i>Cyperus gracilis</i>	1(1-2)	78	1(1-1)	2

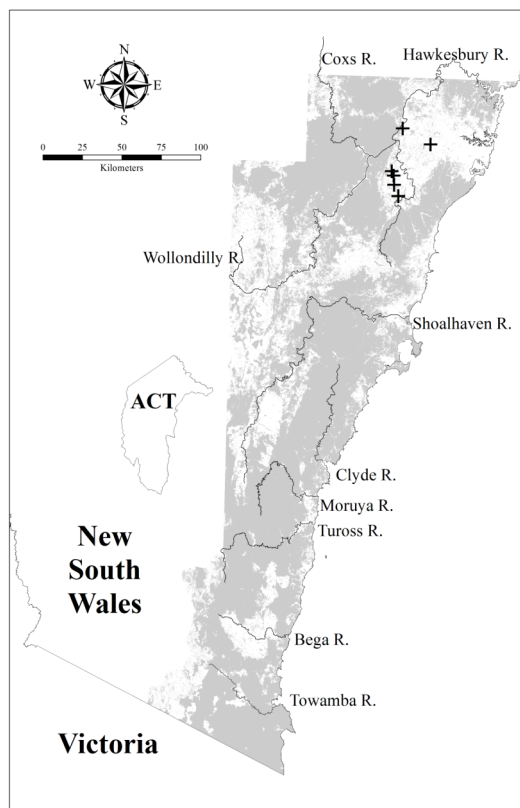
<i>Desmodium brachypodium</i>	1(1-2)	67	1(1-1)	3
<i>Desmodium rhytidophyllum</i>	1(1-1)	22	1(1-1)	1
<i>Desmodium varians</i>	1(1-1)	100	1(1-1)	21
<i>Dichondra</i> spp.	2(1-3)	100	1(1-2)	25
<i>Echinopogon ovatus</i>	1(1-1)	56	1(1-1)	14
<i>Einadia hastata</i>	1(1-1)	56	1(1-1)	3
<i>Einadia polygonoides</i>	1(1-1)	33	1(1-2)	<1
<i>Eucalyptus crebra</i>	4(3-4)	33	2(1-3)	3
<i>Eucalyptus moluccana</i>	1(1-3)	56	3(1-3)	2
<i>Eucalyptus tereticornis</i>	3(1-3)	67	2(1-3)	7
<i>Galium propinquum</i>	1(1-3)	78	1(1-1)	7
<i>Geranium homeanum</i>	1(1-1)	33	1(1-1)	3
<i>Glycine clandestina</i>	2(1-2)	78	1(1-1)	26
<i>Lagenifera gracilis</i>	1(1-1)	33	1(1-1)	3
<i>Myoporum montanum</i>	1(1-2)	56	1(1-1)	<1
<i>Nyssanthes diffusa</i>	1(1-2)	56	1(1-1)	<1
<i>Olearia viscidula</i>	1(1-2)	56	1(1-2)	5
<i>Oplismenus aemulus</i>	2(1-3)	44	1(1-2)	5
<i>Oxalis perennans</i>	1(1-2)	56	1(1-1)	13
<i>Paspalidium criniforme</i>	1(1-1)	22	1(1-2)	<1
<i>Plantago debilis</i>	1(1-1)	67	1(1-1)	7
<i>Plectranthus parviflorus</i>	1(1-2)	56	1(1-1)	8
<i>Rumex brownii</i>	1(1-1)	56	1(1-1)	5
<i>Scaevola albida</i> var. <i>albida</i>	2(1-2)	22	1(1-2)	<1
<i>Scleria mackaviensis</i>	2(1-2)	22	1(1-2)	1
<i>Senecio hispidulus</i> var. <i>hispidulus</i>	1(1-2)	33	1(1-1)	3
<i>Senecio quadridentatus</i>	2(1-2)	44	1(1-1)	1
<i>Sigesbeckia orientalis</i> subsp. <i>orientalis</i>	2(1-2)	67	1(1-1)	7
<i>Solanum pungetium</i>	1(1-1)	33	1(1-1)	6
<i>Sporobolus creber</i>	1(1-1)	22	1(1-1)	1
<i>Trema tomentosa</i> var. <i>viridis</i>	1(1-1)	22	1(1-1)	1
<i>Wahlenbergia gracilis</i>	1(1-2)	56	1(1-1)	11

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia implexa</i>	2(1-2)	33	1(1-1)	7
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	1(1-2)	33	1(1-2)	6
<i>Indigofera australis</i>	3(1-3)	33	1(1-1)	9
<i>Microlaena stipoides</i>	1(1-1)	67	1(1-2)	36
<i>Pandorea pandorana</i>	1(1-1)	33	1(1-1)	18
<i>Pellaea falcata</i>	1(1-1)	33	1(1-1)	10
<i>Poa sieberiana</i> var. <i>sieberiana</i>	3(1-4)	44	1(1-2)	11
<i>Pratia purpurascens</i>	1(1-2)	33	1(1-1)	17
<i>Solanum prinophyllum</i>	3(1-3)	33	1(1-1)	6

Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Corymbia maculata</i>	3(2-3)	22	2(1-3)	3



Locations of survey sites allocated to GW p514. Grey shading indicates extant native vegetation cover within the study area.

### RF p516: Yarrowarra Temperate Rainforest



Plate p516. Yarrowarra Temperate Rainforest (Map Unit p516) next to Robertson cemetery in the Southern Highlands. The overstorey is dominated by *Doryphora sassafras* and *Acacia melanoxylon* with *Hymenanthera dentata* and *Pittosporum multiflorum* forming an open shrub stratum. Lianes such as *Parsonsia straminea*, *Marsdenia rostrata* and *Aphanopetalum resinosum* form a prominent tangle in the understorey and mats of *Pyrrosia rupestris* adorn the larger tree trunks.

Sample Sites: 19  
 Area Extant (ha): 870  
 Estimated % remaining: 15-30%  
 Area in conservation reserves (ha): 30  
 Estimated % of pre-clearing area in conservation reserves: <2%  
 No. taxa (total / unique): 101 / 0  
 No. taxa per plot ( $\pm$ sd): 28.3 (5.1)  
 Class: Southern Warm Temperate Rainforests  
 Related TEC: Robertson Rainforest EEC (TSC).

Yarrawa Temperate Rainforest (RF p516) is equivalent to RF 516 described by Tindall *et al.* (2004). This map unit is a closed forest characterised by a low, dense tree canopy, a mesic shrub stratum, lianas and a fern-dominated groundcover. This rainforest is restricted to basalt derived soils of the Robertson plateau from 650 to 800m ASL where annual rainfall exceeds 1300mm. Yarrawa Temperate Rainforest is closely related to Intermediate Temperate Rainforest (RF p116) which occupies fertile clay soils derived from shale on the Southern Highlands plateau or narrow bands of shales/volcanics/coal seams on the upper Illawarra Escarpment. Yarrawa Temperate Rainforest occurs in conjunction with Southern Highlands Basalt Forest (WSF p266) and their distributions may reflect historic fire frequencies.

Much of Yarrawa Temperate Rainforest's original distribution has been fragmented by clearing for agriculture.

#### Floristic Summary:

**Trees:** *Acmena smithii*, *Acacia melanoxylon*, *Doryphora sassafras*. **Shrubs:** *Dicksonia antarctica*, *Coprosma quadrifida*, *Hedycarya angustifolia*, *Rapanea howittiana*. **Climbers:** *Pandorea pandorana*, *Pyrrosia rupestris*, *Smilax australis*, *Marsdenia rostrata*, *Eustrephus latifolius*, *Microsorium scandens*, *Morinda jasminoides*. **Groundcover:** *Asplenium flabellifolium*, *Urtica incisa*, *Lastreopsis acuminata*, *Pellaea falcata*.

#### Vegetation structure:

Stratum	Frequency (n=19)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	5	50 (-)	35 (-)
Tree canopy	100	27.4 (15.3)	64.7 (21.8)
Small tree	53	14.7 (5.4)	40.3 (23.6)
Shrub	79	2.1 (0.5)	15 (18)
Ground cover	100	0.5 (0.6)	10.5 (12.4)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 17 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 25 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 17 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia melanoxylon</i>	3(1-4)	89	1(1-1)	6
<i>Acmena smithii</i>	3(1-4)	63	2(1-3)	9
<i>Alectryon subcinereus</i>	1(1-1)	32	1(1-1)	2
<i>Aphanopetalum resinosum</i>	2(1-3)	42	2(1-3)	4
<i>Arthropteris tenella</i>	3(2-3)	32	1(1-2)	2
<i>Asplenium australasicum forma australasicum</i>	1(1-2)	21	1(1-2)	2
<i>Asplenium flabellifolium</i>	1(1-1)	53	1(1-1)	11
<i>Celastrus australis</i>	1(1-2)	74	1(1-1)	2
<i>Ceratopetalum apetalum</i>	4(3-5)	26	3(1-3)	3
<i>Coprosma quadrifida</i>	1(1-1)	68	1(1-1)	9
<i>Dicksonia antarctica</i>	1(1-2)	47	1(1-3)	4
<i>Doryphora sassafras</i>	4(3-5)	89	3(1-3)	3
<i>Eucalyptus fastigata</i>	4(3-4)	32	2(1-3)	6
<i>Eustrephus latifolius</i>	2(1-2)	100	1(1-1)	19
<i>Geitonoplesium cymosum</i>	1(1-2)	74	1(1-1)	16



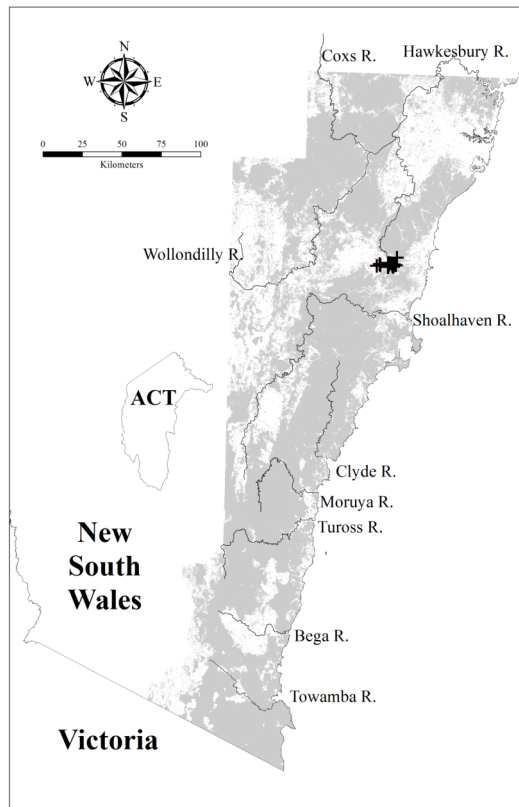
<i>Gymnostachys anceps</i>	1(1-2)	47	1(1-2)	3
<i>Hedycarya angustifolia</i>	1(1-2)	26	1(1-3)	4
<i>Hibbertia scandens</i>	1(1-1)	32	1(1-1)	5
<i>Hydrocotyle peduncularis</i>	1(1-2)	58	1(1-1)	9
<i>Hymenanchera dentata</i>	1(1-3)	89	1(1-1)	6
<i>Lastreopsis microsora</i> subsp. <i>microsora</i>	3(1-4)	42	2(1-3)	4
<i>Marsdenia rostrata</i>	2(2-3)	89	1(1-2)	12
<i>Microsorium scandens</i>	1(1-2)	32	2(1-3)	4
<i>Notelaea venosa</i>	1(1-1)	42	1(1-1)	12
<i>Pandorea pandorana</i>	2(1-2)	79	1(1-1)	18
<i>Parsonsia brownii</i>	2(1-3)	68	1(1-1)	1
<i>Parsonsia straminea</i>	2(1-3)	42	1(1-1)	7
<i>Pellaea falcata</i>	1(1-2)	47	1(1-1)	10
<i>Pennantia cunninghamii</i>	1(1-3)	32	1(1-3)	1
<i>Pittosporum multiflorum</i>	2(1-3)	68	1(1-2)	4
<i>Pittosporum undulatum</i>	1(1-3)	58	1(1-1)	14
<i>Polyosma cunninghamii</i>	2(1-4)	26	1(1-2)	1
<i>Pyrrosia rupestris</i>	2(1-3)	84	1(1-2)	6
<i>Rapanea howittiana</i>	1(1-1)	68	1(1-1)	5
<i>Rubus nebulosus</i>	1(1-3)	26	1(1-1)	1
<i>Sambucus australasica</i>	1(1-1)	37	1(1-1)	1
<i>Sarcopetalum harveyanum</i>	1(1-1)	42	1(1-1)	4
<i>Smilax australis</i>	2(1-2)	84	1(1-1)	16
<i>Solanum pungetium</i>	1(1-2)	32	1(1-1)	6
<i>Tylophora barbata</i>	1(1-2)	47	1(1-1)	17
<i>Urtica incisa</i>	1(1-1)	53	1(1-1)	5
<i>Viola hederacea</i>	1(1-1)	53	1(1-1)	22

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Clematis aristata</i>	1(1-1)	47	1(1-1)	20
<i>Morinda jasminoides</i>	1(1-2)	32	1(1-2)	9

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus agglomerata</i>	1(1-1)	5	2(1-3)	7
<i>Eucalyptus piperita</i>	3(3-3)	5	2(1-3)	9
<i>Eucalyptus smithii</i>	3(3-3)	11	1(1-2)	2
<i>Eucalyptus viminalis</i>	3(3-3)	5	2(1-3)	5



Locations of survey sites allocated to RF p516. Grey shading indicates extant native vegetation cover within the study area.

### GW p520: Tableland Swamp Flats Forest



Plate p520. Tableland Swamp Flats Forest (Map Unit p520) on the alluvial terrace of Little Bombay Creek, Mulloon, west of Braidwood. A stately stand of *Eucalyptus viminalis* towers above a grassy understorey dominated by *Microlaena stipoides*, *Poa labillardierei* and *Echinopogon ovatus*. The grasses conceal a variety of forbs such as *Dichondra repens*, *Acaena novae-zelandiae* and *Stellaria pungens* and scattered individuals of *Acacia dealbata* lurk in the background.



Sample Sites: 36  
 Area Extant (ha): 11000  
 Estimated % remaining: 20-35%  
 Area in conservation reserves (ha): 2500  
 Estimated % of pre-clearing area in conservation reserves: <10%  
 No. taxa (total / unique): 261 / 1  
 No. taxa per plot ( $\pm$ sd): 29 (9.2)  
 Class: Temperate Swamp Forests  
 Related TEC: n/a

Tableland Swamp Flats Forest (GW p520) is equivalent to GW 520 identified by Tindall *et al.* (2004), with a distribution confirmed to extend south of that study. GW p520 is an open eucalypt forest with sparse shrubs and dense grassy groundcover. It occurs on coarse sandy alluvial soils along drainage channels and flats on the tablelands at elevations between 500 and 900m ASL where average annual rainfall ranges from 650 to 1000mm.. Tableland Swamp Flats Forest was sampled at localities from Jenolan to Bombala, and probably extends further in areas of similar habitat. Two related communities (Southern Tableland Flats Forest (GW p220) and Tableland Granite Grassy Woodland (GW p420)) partially overlap with the distribution of GW 520, but they occur on drier, flat to gently undulating terrain. Tableland Swamp Flats Forest has been extensively cleared and few examples are represented in conservation reserves. The remnants are exposed to small-scale clearing, weed invasion and grazing.

#### Floristic Summary:

**Trees:** *Eucalyptus viminalis*, *E. pauciflora*. **Shrubs:** *Rubus parviflorus*. **Groundcover:** *Microlaena stipoides*, *Dichondra* spp., *Acaena novae-zelandiae*, *Hydrocotyle laxiflora*, *Stellaria pungens*, *Poa labillardierei*, *Echinopogon ovatus*, *Geranium solanderi*, *Desmodium varians*.

#### Vegetation structure:

Stratum	Frequency (n=34)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
Emergent	3	- (-)	40 (-)
Tree canopy	85	24.5 (9.2)	25.2 (13.8)
Small tree	56	10.6 (4.7)	19.8 (16.2)
Shrub	35	2 (0.5)	20.2 (21)
Ground cover	97	0.7 (0.4)	65.5 (24.9)

#### Diagnostic Species:

A 0.04ha plot located in this Map Unit is expected to contain at least 7 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 22 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 7 positive diagnostic species.

#### Positive Diagnostic Species:

Species	C/A	Freq	C/A O	Freq O
<i>Acacia dealbata</i>	1(1-1)	25	1(1-2)	5
<i>Acacia mearnsii</i>	2(1-3)	22	1(1-2)	7
<i>Acaena novae-zelandiae</i>	1(1-2)	75	1(1-1)	7
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	1(1-2)	31	1(1-2)	6
<i>Austrostipa rudis</i>	1(1-2)	31	1(1-2)	6
<i>Carex appressa</i>	1(1-2)	28	1(1-1)	4
<i>Dichondra</i> spp.	1(1-2)	83	1(1-2)	25
<i>Echinopogon ovatus</i>	1(1-2)	56	1(1-1)	14
<i>Elymus scaber</i> var. <i>scaber</i>	1(1-1)	36	1(1-1)	5
<i>Eucalyptus pauciflora</i>	2(1-3)	31	1(1-2)	3
<i>Eucalyptus viminalis</i>	3(2-4)	67	2(1-3)	4
<i>Euchiton gymnocephalus</i>	1(1-1)	28	1(1-1)	7
<i>Geranium solanderi</i> var. <i>solanderi</i>	1(1-2)	47	1(1-1)	8
<i>Glycine tabacina</i>	1(1-1)	28	1(1-1)	7
<i>Helichrysum scorpioides</i>	2(1-2)	25	1(1-1)	7
<i>Hydrocotyle laxiflora</i>	1(1-2)	72	1(1-1)	15

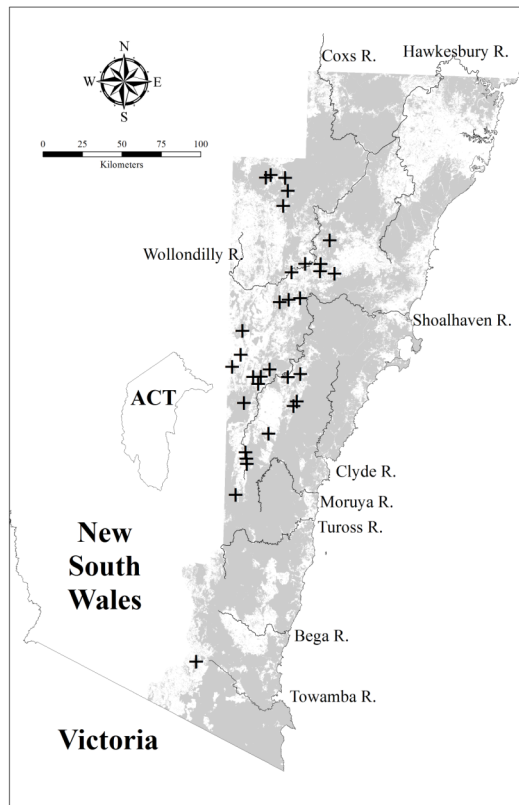
<i>Hypericum gramineum</i>	1(1-1)	39	1(1-1)	16
<i>Microlaena stipoides</i>	3(2-4)	94	1(1-2)	36
<i>Oreomyrrhis eriopoda</i>	2(1-2)	22	1(1-1)	1
<i>Oxalis perennans</i>	1(1-2)	39	1(1-1)	13
<i>Poa sieberiana</i> var. <i>sieberiana</i>	1(1-1)	31	1(1-2)	10
<i>Poa labillardierei</i> var. <i>labillardierei</i>	2(1-3)	50	1(1-2)	12
<i>Poranthera microphylla</i>	1(1-1)	39	1(1-1)	15
<i>Rubus parvifolius</i>	1(1-1)	31	1(1-1)	9
<i>Rumex brownii</i>	1(1-1)	42	1(1-1)	5
<i>Senecio prenanthoides</i>	1(1-1)	25	1(1-1)	8
<i>Stellaria pungens</i>	1(1-2)	61	1(1-1)	6
<i>Veronica plebeia</i>	1(1-1)	33	1(1-1)	10
<i>Viola betonicifolia</i>	1(1-1)	33	1(1-1)	5

## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Desmodium varians</i>	1(1-2)	42	1(1-1)	21
<i>Glycine clandestina</i>	1(1-1)	33	1(1-1)	26
<i>Lomandra longifolia</i>	1(1-3)	61	1(1-1)	44
<i>Pteridium esculentum</i>	1(1-2)	47	1(1-2)	37

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Eucalyptus amplifolia</i> subsp. <i>amplifolia</i>	2(1-3)	8	2(1-3)	1
<i>Eucalyptus bridgesiana</i>	1(1-2)	17	1(1-3)	1
<i>Eucalyptus dalrympleana</i> subsp. <i>dalrympleana</i>	2(1-3)	14	1(1-2)	3
<i>Eucalyptus dives</i>	3(3-3)	3	2(1-3)	4
<i>Eucalyptus elata</i>	4(4-4)	3	2(1-3)	5
<i>Eucalyptus fastigata</i>	2(2-2)	6	2(1-3)	6
<i>Eucalyptus macarthurii</i>	3(2-4)	8	0(0-0)	0
<i>Eucalyptus macrorhyncha</i>	1(1-1)	3	2(1-3)	3
<i>Eucalyptus mannifera</i>	1(1-1)	6	2(1-3)	4
<i>Eucalyptus ovata</i>	2(1-2)	6	2(1-3)	1
<i>Eucalyptus radiata</i> subsp. <i>radiata</i>	1(1-1)	19	2(1-3)	6
<i>Eucalyptus rubida</i> subsp. <i>rubida</i>	1(1-4)	11	1(1-2)	2
<i>Eucalyptus stellulata</i>	2(1-3)	19	1(1-2)	<1



Locations of survey sites allocated to GW p520. Grey shading indicates extant native vegetation cover within the study area.

### HL p563: Eastern Suburbs Banksia Scrub



Plate p563. Eastern Suburbs Banksia Scrub (Map Unit p563) in the eastern suburbs of Sydney. Flowering specimens of *Xanthorrhoea resinosa* can be seen prominently in the foreground with a shrub canopy rising behind dominated by *Banksia ericifolia*, *B. aemula* and *Melaleuca nodosa*.

Sample Sites: n/a  
 Area Extant (ha): 250  
 Estimated % remaining: <10%  
 Area in conservation reserves (ha): 90  
 Estimated % of pre-clearing area in conservation reserves: <2%  
 No. Taxa (total / unique): n/a  
 No. Taxa per Plot ( $\pm$ sd): n/a

Class: Wallum Sand Heaths

Related TECs: Eastern Suburbs Banksia Scrub EEC (TSC and EPBC).

Eastern Suburbs Banksia Scrub (HL p563) is characterised by a dense to open tall shrub canopy and open groundcover of forbs and sedges, and may include small areas of woodland or low forest. This unit is found between North Head and Botany Bay and is restricted to podsolised sand dunes, sometimes perched on coastal sandstone plateaux at elevations up to 150m ASL.

Its original distribution has been reduced to small fragments, which continue to be exposed to intense recreational pressures and continuing attrition and degradation. The mapped extent of this unit is based on detailed aerial photograph interpretation and ground truthing work undertaken on behalf of the NSW DEC as part of the recovery planning process for this EEC (NSW DEC 2004b). This description is based on the Final Determination for this EEC (NSW Scientific Committee, undated).

#### Floristic Summary:

**Shrubs:** *Acacia longifolia*, *Brachyloma daphnoides*, *Lambertia formosa*, *Leptospermum laevigatum*, *Dillwynia retorta*, *Xanthorrhoea resinifera*, *Acacia suaveolens*, *Pimelea linifolia*, *Leucopogon ericoides*, *Banksia aemula*, *B. serrata*, *Leptospermum trinervium*. **Groundcover:** *Hypolaena fastigiata*, *Pteridium esculentum*, *Lomandra longifolia*, *L. glauca*, *Eragrostis brownii*, *Schoenus ericetorum*.

#### Vegetation structure:

\* Structural information is unavailable for this Map Unit. This unit is characterised by a dense to open shrub canopy with an open groundcover of forbs and sedges.

#### Species List:

\* The species list provided in the NSW Scientific Committee's Final Determination is reproduced here.

#### Species

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*Acacia longifolia*  
*Acacia suaveolens*  
*Acacia terminalis*  
*Acacia ulicifolia*  
*Actinotus helianthi*  
*Actinotus minor*  
*Allocasuarina distyla*  
*Astroloma pinifolium*  
*Baeckea imbricata*  
*Banksia aemula*  
*Banksia ericifolia*  
*Banksia integrifolia*  
*Banksia serrata*  
*Bauera rubioides*  
*Billardiera scandens*  
*Boronia parviflora*  
*Bossiaea heterophylla*  
*Bossiaea scolopendria*  
*Brachyloma daphnoides*  
*Caustis pentandra*  
*Conospermum taxifolium*  
*Cyathochaeta diandra*  
*Darwinia fascicularis*  
*Darwinia leptantha*  
*Dianella revoluta*  
*Dichelachne crinita*  
*Dillwynia retorta*  
*Epacris longiflora*  
*Epacris microphylla*  
*Epacris obtusifolia*  
*Eragrostis brownii*  
*Eriostemon australasius*  
*Eucalyptus gummifera*  
*Gonocarpus teucrioides*

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*Haemodorum planifolium*  
*Hakea teretifolia*  
*Hardenbergia violacea*  
*Hibbertia fasciculata*  
*Hypolaena fastigata*  
*Kunzea ambigua*  
*Lambertia formosa*  
*Lepidosperma laterale*  
*Leptocarpus tenax*  
*Leptospermum laevigatum*  
*Lepyrodia scariosa*  
*Leucopogon ericoides*  
*Lomandra longifolia*  
*Melaleuca nodosa*  
*Melaleuca squamea*  
*Monotoca elliptica*  
*Monotoca scoparia*  
*Persoonia lanceolata*  
*Philotheca salsolifolia*  
*Pimelea linifolia*  
*Pomax umbellata*  
*Pteridium esculentum*  
*Restio fastigata*  
*Ricinocarpos pinifolius*  
*Styphelia viridis*  
*Woollsia pungens*  
*Xanthorrhoea resinifera*  
*Xanthosia pilosa*

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### WSF p599: Central Coast Wet Forest

Sample Sites: 9  
 Area Extant (ha): 90  
 Estimated % remaining: 20-35%  
 Area in conservation reserves (ha): 40  
 Estimated % of pre-clearing area in conservation reserves: 10-25%  
 No. taxa (total / unique): 140 / 1  
 No. taxa per plot ( $\pm$ sd): 38.7 (15.6)  
 Class: North Coast Wet Sclerophyll Forests  
 Related TEC: n/a

Central Coast Wet Forest (WSF p599) is equivalent to WSF 99 identified by Tindall *et al.* (2004), and is a tall eucalypt forest with a mesic small tree/shrub stratum and a moist open understorey. Within the study area, this tall forest is distributed from Patonga to Bouddi north of Broken Bay, and it continues further north to the Watagan Ranges in areas where mean annual rainfall is greater than 1200mm. Between Patonga and Bouddi, Central Coast Wet Forest occurs below 200m ASL on sheltered slopes and gullies, with loamy soils derived from interbedded shale and sandstone strata of the Narrabeen Group. Central Coast Wet Forest shares a number of species with Blue Gum High Forest (WSF p153) and Illawarra Gully Wet Forest (WSF p99), but also contains several taxa restricted to the central and north coasts. About four-fifths of the original range of Central Coast Wet Forest within the study area has been cleared for urban and rural development, although it is likely that this unit occupies similar environments to the north of the study area.

#### Floristic Summary:

**Trees:** *Eucalyptus pilularis*, *E. acmenioides*, *Livistona australis*. **Shrubs:** *Breynia oblongifolia*, *Notelaea longifolia*, *Synoum glandulosum*. **Climbers:** *Eustrephus latifolius*, *Tylophora barbata*, *Hibbertia scandens*, *Smilax australis*, *Geitonoplesium cymosum*. **Groundcover:** *Lomandra longifolia*, *Pteridium esculentum*, *Imperata cylindrica*, *Pseuderanthemum variabile*, *Dianella caerulea*, *Xanthorrhoea macronema*, *Oplismenus imbecillis*.

#### Vegetation structure:

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Stratum	Frequency (n=8)	Height (m) ( $\pm$ StDev)	Cover (%) ( $\pm$ StDev)
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Emergent	-	- (-)	- (-)
Tree canopy	100	25.6 (5)	60.6 (16.6)
Small tree	50	15.5 (6.7)	30 (23.5)
Shrub	75	2.2 (0.4)	75 (50.9)
Ground cover	100	0.7 (0.3)	19 (18.6)

**Diagnostic Species:**

A 0.04ha plot located in this Map Unit is expected to contain at least 15 positive diagnostic species (95% confidence interval) provided that the total number of native species in the plot is 26 or greater. A 95% confidence interval means that five percent of plots sampled (1 in 20 plots) in this Map Unit may contain fewer than 15 positive diagnostic species.

**Positive Diagnostic Species:**

Species	C/A	Freq	C/A O	Freq O
<i>Acacia floribunda</i>	1(1-2)	33	1(1-2)	3
<i>Allocasuarina torulosa</i>	2(1-2)	44	1(1-3)	5
<i>Astrotricha floccosa</i>	2(1-4)	33	1(1-2)	1
<i>Blechnum cartilagineum</i>	1(1-2)	56	1(1-2)	11
<i>Breynia oblongifolia</i>	1(1-1)	67	1(1-1)	12
<i>Calochlaena dubia</i>	2(1-3)	44	1(1-3)	9
<i>Cissus antarctica</i>	1(1-1)	33	1(1-2)	3
<i>Correa reflexa</i>	1(1-1)	33	1(1-1)	5
<i>Dioscorea transversa</i>	1(1-1)	44	1(1-1)	<1
<i>Dodonaea triquetra</i>	2(1-5)	56	1(1-2)	6
<i>Doodia aspera</i>	1(1-1)	56	1(1-2)	12
<i>Eucalyptus acmenoides</i>	1(1-2)	56	2(1-3)	<1
<i>Eucalyptus paniculata</i> subsp. <i>paniculata</i>	1(1-1)	67	1(1-2)	3
<i>Eucalyptus pilularis</i>	2(1-3)	44	2(1-3)	5
<i>Eucalyptus punctata</i>	1(1-1)	56	2(1-3)	9
<i>Eucalyptus saligna</i> X <i>botryoides</i>	2(1-2)	22	2(1-3)	2
<i>Eustrephus latifolius</i>	1(1-1)	89	1(1-1)	19
<i>Geitonoplesium cymosum</i>	1(1-1)	56	1(1-1)	16
<i>Glochidion ferdinandi</i> var. <i>ferdinandi</i>	1(1-2)	44	1(1-1)	2
<i>Glycine clandestina</i>	1(1-1)	89	1(1-1)	26
<i>Gymnostachys anceps</i>	1(1-1)	33	1(1-2)	3
<i>Hibbertia dentata</i>	1(1-1)	44	1(1-1)	6
<i>Imperata cylindrica</i> var. <i>major</i>	1(1-2)	67	1(1-2)	10
<i>Livistona australis</i>	1(1-1)	56	1(1-1)	6
<i>Lomandra longifolia</i>	1(1-1)	89	1(1-1)	44
<i>Macrozamia communis</i>	1(1-2)	56	1(1-2)	4
<i>Maytenus silvestris</i>	1(1-1)	56	1(1-1)	1
<i>Notelaea longifolia</i> forma <i>longifolia</i>	1(1-2)	56	1(1-1)	8
<i>Pandorea pandorana</i>	1(1-1)	89	1(1-1)	18
<i>Pellaea paradoxa</i>	1(1-1)	22	1(1-1)	<1
<i>Poa affinis</i>	1(1-1)	33	1(1-2)	2
<i>Podolobium ilicifolium</i>	1(1-4)	56	1(1-1)	9
<i>Pomaderris ferruginea</i>	1(1-1)	22	1(1-1)	1
<i>Pseuderanthemum variabile</i>	1(1-1)	67	1(1-2)	9
<i>Rapanea variabilis</i>	1(1-1)	33	1(1-1)	4

<i>Rhodamnia rubescens</i>	1(1-1)	44	1(1-1)	1
<i>Rubus moluccanus</i> var. <i>trilobus</i>	1(1-1)	22	1(1-1)	2
<i>Smilax australis</i>	1(1-1)	56	1(1-1)	16
<i>Stephania japonica</i> var. <i>discolor</i>	1(1-1)	56	1(1-1)	7
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>	1(1-1)	67	2(1-3)	7
<i>Trochocarpa laurina</i>	1(1-1)	22	1(1-1)	1

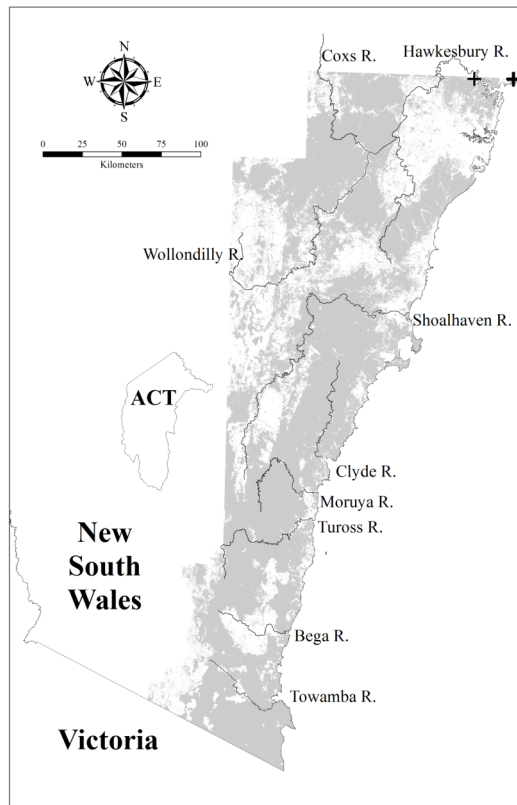
## Constant:

Species	C/A	Freq	C/A O	Freq O
<i>Adiantum aethiopicum</i>	1(1-1)	33	1(1-1)	9
<i>Billardiera scandens</i>	1(1-1)	67	1(1-1)	28
<i>Cissus hypoglauca</i>	1(1-1)	33	1(1-2)	10
<i>Dianella caerulea</i>	1(1-1)	67	1(1-1)	28
<i>Entolasia marginata</i>	2(1-2)	33	1(1-1)	11
<i>Entolasia stricta</i>	1(1-1)	78	1(1-2)	34
<i>Microlaena stipoides</i>	1(1-1)	33	1(1-2)	36
<i>Morinda jasminoides</i>	1(1-1)	33	1(1-2)	9
<i>Oplismenus imbecillis</i>	1(1-2)	33	1(1-2)	14
<i>Persoonia linearis</i>	1(1-1)	67	1(1-1)	29
<i>Pratia purpurascens</i>	1(1-1)	33	1(1-1)	17
<i>Pteridium esculentum</i>	1(1-2)	56	1(1-2)	37
<i>Smilax glyciphylla</i>	1(1-4)	33	1(1-1)	8

## Other tree species occurring less frequently in this community:

Species	C/A	Freq	C/A O	Freq O
<i>Angophora costata</i>	2(1-2)	22	1(1-3)	7
<i>Angophora floribunda</i>	2(2-2)	22	1(1-2)	9
<i>Corymbia gummifera</i>	2(1-2)	22	2(1-2)	16





Locations of survey sites allocated to WSF p599. Grey shading indicates extant native vegetation cover within the study area.

### **NV: Modified or Disturbed Land**

NV includes a range of modified or disturbed environments including urbanised or bare areas largely without native vegetation; forests, shrublands, grasslands and herbfields comprised primarily of exotic plant species, including exotic plantations and pastures. Such areas may include a variable component of native species depending on seasonal conditions and regrowth rates. In the case of some unimproved pastures included within this Map Unit, derived by clearing grassy woodlands, the majority of plant cover and biomass may be native.