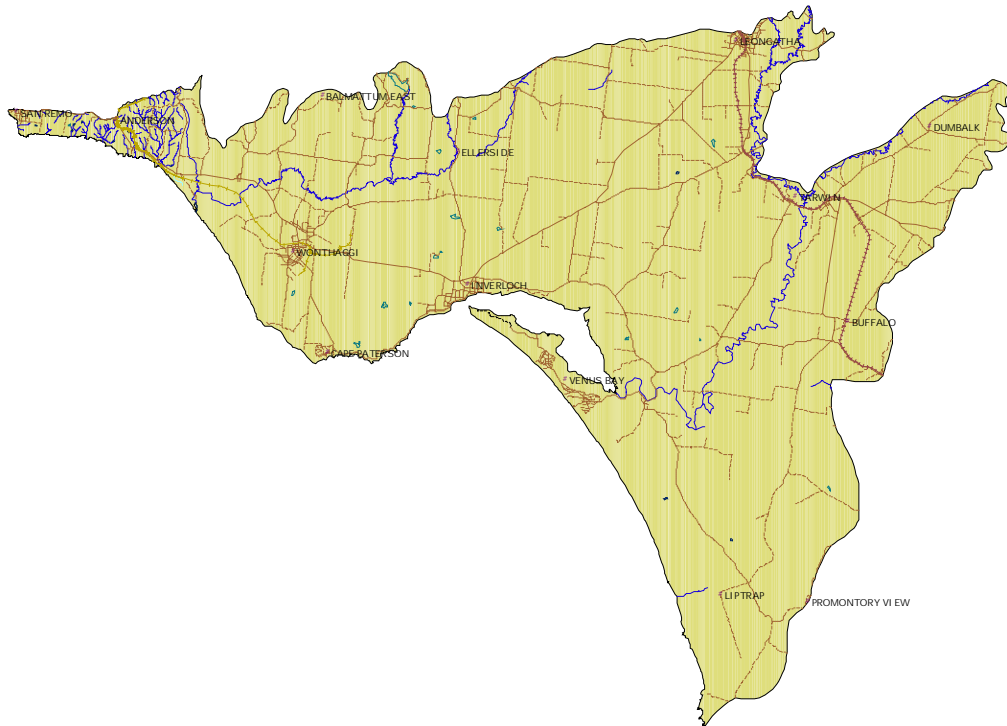


6. Tarwin-Powlett Landscape Zone



6. Tarwin-Powlett Landscape Zone

6.1 Tarwin-Powlett Landscape Zone description

The Tarwin-Powlett Landscape Zone of the Gippsland Plain bioregion is located between Phillip Island and Wilson's Promontory on the Bass Strait coast. It is encircled by the Strzelecki bioregion to the north, east and west. It comprises the lowlands from Leongatha, south to the coast, stretching from San Remo in the west, to Cape Liptrap in the east. There are two major towns in the zone—Leongatha and Wonthaggi. Inverloch is a popular coastal resort. The zone falls within the municipalities of Bass Coast and South Gippsland Shires (Map 12) and Catchment Management Authorities of Port Phillip and Westernport and West Gippsland (Map 4).

The Tarwin-Powlett Zone consists of an undulating plain of Tertiary limestone and gravel sediments inland, overlain by Quaternary gravels, silts and sands along the coast south of the Tarwin River. There are scattered Tertiary volcanic outcrops in the northern part of the zone. The Tarwin and Powlett Rivers are the two main rivers in the zone, coming down from the Strzeleckis. The Tarwin River and its tributaries drain to Anderson Inlet and Venus Bay, and the Powlett River enters the ocean directly, south of Wonthaggi.

The distribution of geology, soil types and plant communities in this zone are directly controlled by the underlying geology and climate changes of the recent past. For example Wet Heathland, Damp Sands Herb-rich Woodland and Swamp Scrub Complex dominate the inland parts of the zone on poorly drained gravel and sandy soils in down faulted land. The swamp deposits, formed behind barrier sand dunes along the coast of Anderson Inlet, support vegetation types such as Coastal Saltmarsh, Swamp Scrub, Wet Heathland, Riparian Scrub and Estuarine Wetland. Screw Creek, near Inverloch, is an important example of this diverse plant community. Inland of the coast, now almost cleared of its original vegetation, the swampy sediments would have supported Wet Heathland / Damp Heathland and Swamp Scrub with riparian communities along drainage lines. Taller trees and woodland communities more common on the older rock types near the top of the Tarwin - Powlett catchment include Lowland Forest, Wet Heathland and Damp Sands Herb-rich Woodlands.

Most of the zone has been cleared since European settlement with less than 12% of native vegetation remaining. In 1750, inland the Tarwin-Powlett Landscape Zone was dominated by Lowland Forest and Grassy Woodland, with Swampy Riparian Woodland and Swamp Scrub along the rivers. The coastal areas were dominated by Damp Sands Herb-rich Woodland between Inverloch and Cape Paterson, and elsewhere there were extensive areas of Coastal Dune Scrub Mosaic and Sand Heathland/Wet Heathland Mosaic, with Wet Heathland along the Tarwin. Apart from the Coastal Dune Scrub Mosaic, these Ecological Vegetation Classes are now heavily fragmented. Lowland Forest, Coastal Dune Scrub Mosaic and Swamp Scrub are the most abundant remnant EVCs. Thirty-one classes of native vegetation have been mapped as still occurring in the zone, but only 14 exceed 100 hectares in extent (refer to Table 16).

There are a number of parks and reserves in the Tarwin-Powlett Landscape Zone, predominantly in the coastal areas (Map 14). These reserves support a number of threatened flora and fauna species including Broad-lip Leek-orchid, Coast Bitter-bush, Marsh Saltbush, Bog Gum, Currant-wood, Swamp Skink, White-bellied Sea-eagle, Great Egret, Blue-billed Duck, Intermediate Egret, Hooded Plover. Twenty species of threatened flora and 58 species of threatened fauna have been recorded in the Tarwin-Powlett Landscape Zone. River condition is good to moderate (Map 11).

The main land-use is cattle, dairy farming and sheep grazing. Tourism is also important. The main threats to biodiversity values in this zone include grazing pressure by domestic stock and rabbits, predation by introduced species such as the Red Fox and feral Cat, invasion by weeds and inappropriate fire regimes.

6. Tarwin-Powlett Landscape Zone

6.1 Tarwin-Powlett Landscape Zone description (cont'd)

Table 15. Relationship between geology and vegetation

Geological Age	Map symbol	Environment of formation	Description of rock types	EVC association
Recent	Qra	Alluvial	Stream alluvium, flood plain and low level terrace deposits, sand, silt, clay, gravel	Damp Sands Herb-rich Woodland
Recent	Qrm	Lacustrine - paludal	Swamp and lagoonal deposits, mangrove swamps, salt marsh, silt, clay, peat, mud	Swamp scrub, Riparian Scrub, Wetland Formation, Estuarine Wetland, Coastal Marshland, Mangrove Scrubland
Recent	Qrc	Colluvial	Fan deposits, fault aprons, colluvium, high level alluvium, gravel, sand	Wet Heathland, Swamp scrub
Recent	Qrd	Aeolian	Dunes, beach deposits, Aeolian sand sheets, raised beaches, estuarine sand, barrier deposits and ridges, shell beds	Calcarenite Dune Woodland, Coastal Dune Scrub Mosaic, Sandy Beach, Wet Swale Herbland, Calcareous Swale Grassland, Coast Banksia Woodland
Pleistocene	Qpa	Alluvial	High level river terraces, coastal terraces, flood plain deposits, abandoned swamps and ridges	Wet Heathland / Damp Heathland Mosaic
Pleistocene - Recent	Qpb	Coastal - aeolian	Calcareous and siliceous sands, sand sheets and ridges, dune limestone consolidated and unconsolidated, clay, gravely clay, coastal barrier sand	Calcarenite Dune Woodland, Calcareous Swale Grassland, Wet Heathland / Damp Heathland Mosaic
Pliocene	Tph	Alluvial, Lacustrine, paludal	Gravel, sand, ferruginous sand and clay (Haunted Hills gravels & equivalents)	Wet Heathland / Damp Heathland Mosaic, Lowland Forest
Paleocene – Eocene	Tvo	Volcanic	Basalt lava flows, plugs and dykes	Lowland Forest
Lower Cretaceous	Kls	Lacustrine - paludal	Sandstone, mudstone, siltstone, conglomerate, black coal	Lowland Forest, Riparian Scrub
Lower Devonian	Dll	Marine	Sandstone, mudstone, shale, minor conglomerate, generally unfossiliferous (Liptrap Formation)	Lowland Forest, Shrubby Foothills Forest

6. Tarwin-Powlett Landscape Zone

6.1 Tarwin-Powlett Landscape Zone description (cont'd)

Table 16. Total area of pre-1750 and Extant EVCs in the Tarwin-Powlett Landscape Zone

EVC Group	EVC Number	EVC Bioregional Conservation Status	EVC Name	Pre-1750 Area (ha)	Extant Area (ha)
3	16	V	Lowland Forest	49549	4366
8	53	E	Swamp Scrub	23821	1678
16	3	V	Damp Sands Herb-rich Woodland	9968	920
17	8	D	Wet Heathland	7251	774
8	83	E	Swampy Riparian Woodland	6615	29
16	878	V	Damp Sands Herb-rich Woodland/Swamp Scrub Complex	4946	0
1	1	LC	Coastal Dune Scrub Mosaic	4667	3848
5	924	X	Grassy Woodland/Swamp Scrub Mosaic	4222	0
5	175	E	Grassy Woodland	2350	514
16	925	V	Damp Sands Herb-rich Woodland/Swamp Scrub Mosaic	2258	0
8	638	E	Swamp Scrub/Wet Heathland Mosaic	1128	0
1	2	V	Coast Banksia Woodland	1119	217
1	921	V	Coast Banksia Woodland/ Coastal Dune Scrub Mosaic	890	0
17	307	D	Sand Heathland/Wet Heathland Mosaic	838	209
7	29	E	Damp Forest	709	167
1	161	D	Coastal Headland Scrub	550	355
6	45	E	Shrubby Foothill Forest	452	0
8	191	V	Riparian Scrub	346	42
19	935	LC	Estuarine Wetland/ Estuarine Swamp Scrub Mosaic	302	0
20	9	LC	Coastal Saltmarsh	279	280
1	162	D	Coastal Headland Scrub/Headland Coastal Tussock Grassland Mosaic	186	22
2	48	LC	Heathy Woodland	135	59
20	140	LC	Mangrove Shrubland	26	43
9	123	V	Riparian Forest/Warm Temperate Rainforest Mosaic	23	0
1	163	LC	Coastal Tussock Grassland	14	121
6	902	E	Gully Woodland	11	12
7	30	D	Wet Forest	9	6
6	23	V	Herb-rich Foothill Forest	7	9
8	637	E	Swamp Scrub/Damp Sands Herb-rich Woodland/Wet Heathland	4	0
9	18	V	Riparian Forest	2	19
1	900	E	Coastal Saltmarsh/ Coastal Dune Grassland/ Coastal Dune Scrub/ Coastal Headland Scrub Mosaic	<1	0
1	879	E	Coastal Dune Grassland	0	3
19	74	E	Wetland Formation	0	23
8	937	E	Swampy Woodland	0	33
19	914	E	Estuarine Flats Grassland	0	39
8	126	E	Swampy Riparian Complex	0	282
19	901	E	Coastal Saltmarsh/ Estuarine Flats Grassland Mosaic	0	<1
19	10	LC	Estuarine Wetland	0	123
17	710	R	Damp Heathland	0	14
17	6	R	Sand Heathland	0	93
TOTAL				122677	1429

6. Tarwin-Powlett Landscape Zone

6.1 Tarwin-Powlett Landscape Zone description (cont'd)

Table 16. Total area of pre-1750 and Extant EVCs in the Tarwin-Powlett Landscape Zone (cont'd).

EVC Group	EVC #	EVC Bioregional Conservation Status	EVC Name	Pre-1750 Area (ha)	Extant Area (ha)
99	987	NA	Plantation (undefined)	0	10
99	999	NA	Unknown/Unclassified	0	447
99	970	NA	Woody Vegetation - No EVC assigned	0	671
99	997	NA	Private Land No Tree Cover	0	107268

Table 17. Total area and number of current EVCs in each conservation status in the Tarwin-Powlett Landscape Zone

EVC Conservation Status	Hectares	Number of EVCs
Endangered	2780	11
Vulnerable	5572	6
Depleted	1366	5
Rare	108	2
Least Concern	4474	6

6. Tarwin-Powlett Landscape Zone

6.1 Tarwin-Powlett Landscape Zone description (cont'd)

Table 18. List of current threatened flora the Tarwin-Powlett Landscape Zone (NRE 2002c* & SAC 2002# and EA 2003*).

Latin Name	Common Name	Australian Status*	Victorian Status*	FFG Act#	Recovery Plan*	Action Statement No.*	BNA Unassessed	Species No.
<i>Eucalyptus kitsoniana</i>	Bog Gum		r				Un	1290
<i>Prasophyllum patens</i>	Broad-lip Leek-orchid		r				Un	2721
<i>Adriana quadripartita</i>	Coast Bitter-bush		v				Un	4755
<i>Thelymitra X irregularis</i>	Crested Sun-orchid		r				Un	3371
<i>Monotoca glauca</i>	Currant-wood		r				Un	3859
<i>Arachnorchis orientalis</i>	Eastern Spider-orchid	End	e	L	Y	103		3660
<i>Prasophyllum lindleyanum</i>	Green Leek-orchid		v	X				2702
<i>Burnettia cuneata</i>	Lizard Orchid		r				Un	513
<i>Atriplex paludosa ssp. paludosa</i>	Marsh Saltbush		r				Un	326
<i>Pultenaea prolifera</i>	Otway Bush-pea		r				Un	2868
<i>Sowerbaea juncea</i>	Rush Lily		r				Un	3207
<i>Prasophyllum parviflorum</i>	Slender Leek-orchid		v	X				2719
<i>Petalochilus vulgaris</i>	Slender Pink-fingers		r				Un	4449
<i>Eucalyptus globulus ssp. globulus</i>	Southern Blue-gum		r				Un	4491
<i>Arachnorchis australis</i>	Southern Spider-orchid		k					743
<i>Acacia howittii</i>	Sticky Wattle		r				Un	44
<i>Eucalyptus strzeleckii</i>	Strzelecki Gum	Vul	v					4558
<i>Arachnorchis orientalis x tessellata</i>	Variable Spider-orchid		e				Un	3655
<i>Amphibromus sinuatus</i>	Wavy Swamp Wallaby-grass		v					3625
<i>Lachnagrostis filiformis (perennial variety)</i>	Wetland Blown-grass		k				Un	4220

6. Tarwin-Powlett Landscape Zone

6.1 Tarwin-Powlett Landscape Zone description (cont'd)

Table 19. List of current threatened fauna in the Tarwin-Powlett Landscape Zone (EA 2003*, DSE 2003^, NRE 2002d* & SAC 2002#).

Latin Name	Common Name	Australian Status*	Victorian Status*	FFG Act#	Recovery Plan*	Action Statement No.*	BNA Unassessed	Species No.
<i>Botaurus poiciloptilus</i>	Australasian Bittern		e	L				197
<i>Morus serrator</i>	Australasian Gannet		v				Un	104
<i>Anas rhynchotis</i>	Australasian Shoveler		v				Un	212
<i>Arctocephalus pusillus</i>	Australian Fur Seal							1542
<i>Lovettia sealii</i>	Australian Whitebait		v	L				4190
<i>Porzana pusilla</i>	Baillon's Crake		v	L				50
<i>Ninox connivens</i>	Barking Owl		e	L		116		246
<i>Falco subniger</i>	Black Falcon		e				Un	238
<i>Phalacrocorax fuscescens</i>	Black-faced Cormorant		v				Un	98
<i>Halobaena caerulea</i>	Blue Petrel	Vul					Un	81
<i>Oxyura australis</i>	Blue-billed Duck		v	L		174	Un	216
<i>Coturnix ypsilophora</i>	Brown Quail		i				Un	10
<i>Cereopsis novaehollandiae</i>	Cape Barren Goose		v					198
<i>Sterna caspia</i>	Caspian Tern		v	L				112
<i>Hylacola pyrrhopygia</i>	Chestnut-rumped Heathwren		i	L			Un	498
<i>Pelecanoides urinatrix</i>	Common Diving-Petrel		l				Un	85
<i>Sterna bergii</i>	Crested Tern		l					115
<i>Numenius madagascariensis</i>	Eastern Curlew		l					149
<i>Pachyptila turtur</i>	Fairy Prion	Vul	l				Un	83
<i>Stictonetta naevosa</i>	Freckled Duck		e	L		105	Un	214
<i>Megascolides australis</i>	Giant Gippsland Earthworm	Vul	v	L		77		5004
<i>Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo		v	L			Un	265
<i>Pseudemoia rawlinsoni</i>	Glossy Grass Skink		l					2683
<i>Plegadis falcinellus</i>	Glossy Ibis		v					178
<i>Ardea alba</i>	Great Egret		e	L		120		187
<i>Accipiter novaehollandiae</i>	Grey Goshawk		l					220
<i>Pezoporus wallicus</i>	Ground Parrot		v	L			Un	311
<i>Sterna nilotica</i>	Gull-billed Tern		e	L			Un	111
<i>Aythya australis</i>	Hardhead		v				Un	215
<i>Thinornis rubricollis</i>	Hooded Plover		e	L		9		138
<i>Melanodryas cucullata</i>	Hooded Robin			L			Un	385
<i>Ardea intermedia</i>	Intermediate Egret		c	L		120		186
<i>Larus dominicanus</i>	Kelp Gull		c					981
<i>Coturnix chinensis</i>	King Quail		c	L				12
<i>Egretta garzetta</i>	Little Egret		c	L		120		185
<i>Biziura lobata</i>	Musk Duck		v				Un	217
<i>Nycticorax caledonicus</i>	Nankeen Night Heron						Un	192
<i>Neophema chrysogaster</i>	Orange-bellied Parrot	End	c	L	Y	43		305
<i>Larus pacificus</i>	Pacific Gull		l	X			Un	126
<i>Rostratula benghalensis</i>	Painted Snipe		e	L				170
<i>Phalacrocorax varius</i>	Pied Cormorant		l					99
<i>Ninox strenua</i>	Powerful Owl		e	L		92		248
<i>Platalea regia</i>	Royal Spoonbill		v					181
<i>Diomedea cauta</i>	Shy Albatross	Vul		L			Un	91
<i>Isoodon obesulus obesulus</i>	Southern Brown Bandicoot	End		X			Un	1092
<i>Mirounga leonina</i>	Southern Elephant Seal	Vul					Un	1546
<i>Macronectes giganteus</i>	Southern Giant-Petrel	End	e	L	Y		Un	929

6. Tarwin-Powlett Landscape Zone

6.1 Tarwin-Powlett Landscape Zone description (cont'd)

Table 19. List of current threatened fauna in the Tarwin-Powlett Landscape Zone (EA 2003[♦], DSE 2003[^], NRE 2002d^{*} & SAC 2002[#]) (con'td).

Latin Name	Common Name	Australian Status [♦]	Victorian Status [*]	FFG Act [#]	Recovery Plan [*]	Action Statement No. [*]	BNA Unassessed	Species No.
<i>Dasyurus maculatus</i>	Spot-tailed Quoll	Vul	e	L		15	Un	1008
<i>Antechinus minimus</i>	Swamp Antechinus		l	L				1034
<i>Egernia coventryi</i>	Swamp Skink		v	L				2407
<i>Lathamus discolor</i>	Swift Parrot	End	e	L	Y	169		309
<i>Varanus varius</i>	Tree Goanna		i				Un	2283
<i>Litoria raniformis</i>	Warty Bell Frog	Vul	v	L			Un	3207
<i>Chlidonias hybridus</i>	Whiskered Tern		l				Un	110
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle		e	L		60		226
<i>Pelagodroma marina</i>	White-faced Storm-Petrel		v				Un	65
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail Bat		v	L			Un	1321

6. Tarwin-Powlett Landscape Zone

6.2 Tarwin-Powlett Landscape Zone priorities

6.2.1 Summary of priority biodiversity actions Tarwin-Powlett Landscape Zone:

- Future biodiversity gains across much of the zone will depend upon protection, management and restoration of freehold remnants, major creek lines and small but significant conservation reserves, and the extent to which their connection with remnant roadside vegetation networks can be bolstered and secured.
- Protect and retain hollow-bearing trees.
- Minimise impacts of firewood collection.
- Control weeds and predators.
- Exclude domestic grazing from all remnant native vegetation within public land reserves and water frontages, and (wherever possible) from freehold land.
- Revegetate using locally indigenous species, enlarging and connecting existing remnants, particularly along waterways and around wetlands.
- Buffer existing remnants and reintroduce understorey species, to reduce the impact of dieback from insect attack.
- Promote enhancement of connectivity between water frontage and remnants on adjoining tenures, giving priority to the Powlett and Tarwin Rivers.
- In consultation with licensees and local Landcare groups, target revegetation sites to abut and extend high quality roadsides and improve quality of unused roads through supplementary planting of understorey species.
- Protect known nesting sites of White-bellied Sea-eagle and provide a suitable buffer zone around nests, from human and habitat disturbance.
- Develop appropriate ecological burning programs.
- Encourage, support and expand voluntary landholder participation in community habitat conservation projects and improve community understanding of management of native biodiversity on private land.
- Encourage land managers to produce and implement management plans focused on protecting and enhancing flora and fauna values as well as mitigating threatening processes at the representative bushland and flora reserves throughout the zone.

6. Tarwin-Powlett Landscape Zone

6.3 Private Land

Land tenure details:

This tenure includes all freehold land in the zone and associated creeklines. Over 90% (approximately 114,808 ha) of the Tarwin-Powlett Landscape Zone is freehold land. The zone is within the South Gippsland Landcare Network and includes the area covered by the Tarwin and Powlett Landcare Groups. The zone is also within the area covered by the South Gippsland Conservation Society.

Land manager:

Private landholders.

Stakeholders:

Key: Lc, DSE, DPI, WGCMA, PPWCMA, South Gippsland and Bass Coast Shires,

Other: SGCS, SGWA, TSN, TFN, LFW, BG, GAV, CVA, FNC, VFF, GNP.

Threatened Biodiversity Assets (in brackets: Cons status Vic - lower case, Aust - upper case; followed by BNA priority / risk rankings for threatened taxa = 1A, 2B, etc., or un - unassessed):

EVCs: Coastal Dune Scrub Mosaic (lc), Coastal Headland Scrub (lc), Coastal Saltmarsh (e), Damp Forest (lc), Damp Sands Herb-rich Woodland (v), Estuarine Wetland (lc), Grassy Woodland (e), Heathy Woodland (lc), Lowland Forest (v), Riparian Scrub (v), Sand Heathland/Wet Heathland Mosaic (d), Swamp Scrub (e) and Wet Heathland (d).

Threatened Flora: Bog Gum (r, un), Broad-lip Leek-orchid (r, un), Coast Bitter-bush (v, un), Eastern Spider Orchid (Ee, 3A), Rush Lily (r, un), Slender Pink-fingers (r, un), Sticky Wattle (r, un), Strzelecki Gum (Vv, 1A), Variable Spider-orchid (e, un), Wetland Blown-grass (k, un).



Adriana quadripartita
(Photo: Viridans Biological Databases)

Threatened Fauna: Australasian Bittern (e, 1A), Australasian Gannett (v, un), Australasian Shoveler (v, un), Baillon's Crake (v, 1B), Barking Owl (e, 2A), Black Falcon (e, un), Black-faced Cormorant (v, un), Blue Petrel (V, un), Blue-billed Duck (v, un), Brown Quail (I, un), Cape Barren Goose (v, 3B), Caspian Tern (v, un), Chestnut-rumped Heathwren (I, un), Common Diving Petrel (I, un), Crested Tern (I, un), Eastern Curlew (I, un), Fairy Prion (VI, un), Freckled Duck (e, un), Giant Gippsland Earthworm (Vv, 2B), Glossy Black-Cockatoo (v, un), Glossy Grass Skink (I, 1C), Glossy Ibis (v, un), Great Egret (e, 1A), Grey Goshawk (I, 2C), Ground Parrot (v, un), Gull-billed Tern (e, un), Hardhead (v, un),



King Quail
(Photo: DSE/McCann)

6. Tarwin-Powlett Landscape Zone

6.3 Private Land (cont'd)

Hooded Plover (e, un), Intermediate Egret (c, 2A), Kelp Gull (c, un), King Quail (c, un), Little Egret (c, 3A), Musk Duck (v, un), Orange-bellied Parrot (Ec, 4A), Pacific Gull (l, un), Painted Snipe (e, 2A), Pied Cormorant (l, 4C), Royal Spoonbill (v, un), Shy Albatross (V, un), Southern Brown Bandicoot (E, un), Southern Giant Petrel (Ee, un), Spot-tailed Quoll (Ve, un), Swamp Antechinus (l, 3C), Swamp Skink (v, 1A), Swift Parrot (Ee, 4A), Tree Goanna (I, un), Warty Bell Frog (Vv, un), Whiskered Tern (l, un), White-bellied Sea-Eagle (e, 2A), White-faced Storm-petrel (v, un), Yellow-bellied Sheath-tail Bat (v, un).

Recommended actions:

Protection of existing remnants:

- Retain isolated hollow-bearing trees in paddocks.
- Fence off remnants from stock.
- Fence off watercourses from stock.
- Minimise damage to biodiversity due to firewood collection.
- Restrict the opportunities for subdivision in areas of high conservation value.

Management to enhance remnants for threatened taxa (BNA response level in brackets: 4 = full commitment, 3 = substantive participation, 2 = opportunistic action, 1 = watching brief):

- Control exotic weeds.
- Control foxes and feral cats to benefit Great Egret (4), Hooded Plover, Intermediate Egret (3) and Orange-bellied Parrot (1).
- Controlled mosaic burning at appropriate intervals in all remaining habitat to benefit Ground Parrot.
- Work with landholders to encourage the retention of fallen timber within remnant vegetation.
- Liaise with land managers and DSE and DPI staff involved in 1080 baiting programs near known nesting sites to ensure that carcasses of target species are buried as soon as possible following baiting to minimise the risk of primary and secondary poisoning of White-bellied Sea-Eagles (3).



Orange-bellied Parrot
(Photo: Petina Pert)

Restoration of strategic vegetation blocks or linkages:

- Revegetate using locally indigenous species, enlarging and connecting existing remnants, particularly along waterways.
- Buffer existing remnants and reintroduce understorey species, to reduce the impact of dieback from insect attack.

6. Tarwin-Powlett Landscape Zone

6.3 Private Land (cont'd)

EXISTING POLICIES, PLANS OR PROGRAMS supporting one or more of the recommended actions:

- FFG Action Statement – Hooded Plover (9).
- FFG Action Statement – Spot-tailed Quoll (15).
- FFG Action Statement – Orange-bellied Parrot (43).
- FFG Action Statement – Predation by Red Fox (44).
- FFG Action Statement – Giant Gippsland Earthworm (77).
- FFG Action Statement – White-bellied Sea-Eagle (60).
- FFG Action Statement – Predation by Cat (80).
- FFG Action Statement – Eastern Spider-orchid (103).
- FFG Action Statement – Freckled Duck (105).
- FFG Action Statement – Barking Owl (116).
- FFG Action Statement – Great Egret (120).
- FFG Action Statement – Intermediate Egret (120).
- FFG Action Statement – Swift Parrot (169).
- FFG Action Statement – Blue-billed Duck (174).
- CAMBA – Caspian Tern, Eastern Curlew, Glossy Ibis, Great Egret, Painted Snipe, White-bellied Sea-Eagle.
- JAMBA – Eastern Curlew, Great Egret, Ground Parrot, Orange-bellied Parrot.
- Recovery Plan – Albatrosses and Giant-Petrels.
- Recovery Plan – Orange-bellied Parrot.
- Recovery Plan – Swift Parrot.
- Threat Abatement Plan – Predation by Feral Cats.
- Threat Abatement Plan – Predation by European Red Fox.
- The Action Plan for Australian Birds 2000 (Garnett and Crowley 2000).
- West Gippsland CMA Draft Native Vegetation Plan (WGCMA 2000).



Intermediate Egret
(Photo: Mike Carter)

6. Tarwin-Powlett Landscape Zone

6.4 Public Land and Water Frontages

Land tenure details:

Public Land Water Frontage in this zone includes Foster Creek (G1), Powlett River (G1) and Tarwin River (K1).

Land manager:

Land Victoria

Stakeholders:

Key CMA, DSE, DPI, Private

Other LGA, Lc, WAG, RAG, LFW, GAV, GNP, VFF, VAA

Threatened Biodiversity Assets (in brackets: Cons status Aust - upper case, Vic - lower case; followed by BNA priority / risk rankings for threatened taxa = 1A, 2B, etc., or un - unassessed):

EVCs: Coastal Saltmarsh (lc), Estuarine Wetland (lc), Swamp Scrub (e) and Swampy Riparian Woodland (e).

Threatened Flora: Bog Gum (r, un), Strzelecki Gum (Vv, 4A).

Threatened Fauna: Gull-billed Tern (e, un), Southern Brown Bandicoot (E, un).



Southern Brown Bandicoot
(Photo: Tony Robinson)

Recommended actions:

Protection of existing remnants:

- Assess habitat condition and biodiversity value of all sites in this tenure, giving priority to those having the greatest potential to constitute extensive habitat networks when managed in collaboration with adjacent tenures (roadsides, freehold).
- Improve awareness of landholders and key stakeholders of the potential linkage value of these frontages, once restored.
- Within Public Land Water Frontage, ensure protection and regeneration of understorey, maintenance of connectivity and retention of large hollow-bearing trees.
- Fence out public land water frontage and exclude stock grazing.
- Prevent the collection of firewood from the tenure, to conserve habitat for fauna.
- Exclude flow improvement works and desnagging in streams.

Management to enhance remnants for threatened taxa (BNA response level in brackets: 4 = full commitment, 3 = substantive participation, 2 = opportunistic action, 1 = watching brief):

- Control Red Fox and feral cats and exotic weeds.

6. Tarwin-Powlett Landscape Zone

6.4 Public Land and Water Frontages (cont'd)

Restoration of strategic vegetation blocks or linkages:

- Promote enhancement of connectivity between water frontage and remnants on adjoining tenures, giving priority to the Powlett and Tarwin Rivers.

EXISTING POLICIES, PLANS OR PROGRAMS supporting one or more of the recommended actions:

- FFG Action Statement – Predation by Red Fox (44).
- FFG Action Statement – Predation by Cat (80).
- Threat Abatement Plan – Predation by European Red Fox.
- Threat Abatement Plan – Predation by Feral Cats.
- Victorian Firewood strategy discussion paper (McKinna 2002).

6. Tarwin-Powlett Landscape Zone

6.5 Other Public Land

Land tenure details:

This tenure includes streamside reserves and bushland reserves (H1-H10).

Land manager:

Land Victoria.

Stakeholders:

Key DSE, DPI, WGCMA, PPWCMA

Other South Gippsland and Bass Coast Shires, SGCS, SGWA, BG, TSN, FNC, LGA, GNP, Private

Threatened Biodiversity Assets (in brackets: Cons status Vic - lower case, Aust - upper case; followed by BNA priority / risk rankings for threatened taxa = 1A, 2B, etc., or un - unassessed):

EVCs: Coastal Saltmarsh (lc), Estuarine Wetland (lc), Lowland Forest (v), Swamp Scrub (e) and Wetland Formation (e).

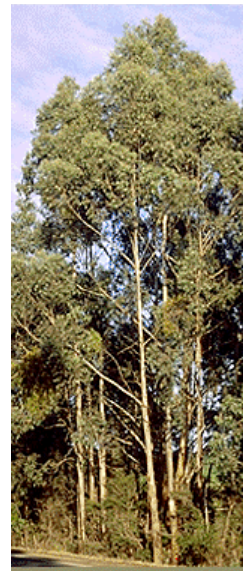
Threatened Flora: Bog Gum (r, un), Southern Blue Gum (r, un), Strzelecki Gum (Vv, 4A).

Threatened Fauna: None Recorded.

Recommended actions:

Protection of existing remnants:

- Plan to reduce damage to biodiversity due to firewood collection.
- Retain and protect hollow-bearing trees.
- Plan timber harvesting to minimize damage to biodiversity.
- Ensure works do not compromise Strzelecki Gums.
- Ensure maintenance activities do not impact on water quality.
- In consultation with licensees, review status of unused roads and, where areas of high conservation values exist, provide assistance with fencing, stock exclusion, regeneration and information on biodiversity benefits.
- Review licensing of unused roads to incorporate vegetation quality assessments and conditions of management.
- Identify and encourage active management of high quality roadsides to protect them from weed invasion and disturbance from roadworks or grazing.



Eucalyptus strzeleckii (Photo: unknown)

6. Tarwin-Powlett Landscape Zone

6.5 Other Public Land (cont'd)

Management to enhance remnants for threatened taxa (BNA response level in brackets: 4 = full commitment, 3 = substantive participation, 2 = opportunistic action, 1 = watching brief):

- Undertake ecological burns.
- Fence out sites supporting Strzelecki Gum (2) to encourage regeneration.
- Supplementary plant with understorey species where necessary.
- Control exotic weeds, pests and predators.

Restoration of strategic vegetation blocks or linkages:

- Collect Strzelecki Gum seed for propagation and revegetation.
- Expand remnants supporting Strzelecki Gum.
- In consultation with licensees and local Landcare groups, target revegetation sites to abut and extend high quality roadsides and improve quality of unused roads through supplementary planting of understorey species.

EXISTING POLICIES, PLANS OR PROGRAMS supporting one or more of the recommended actions:

- FFG Action Statement – Increase in sediment input into Victorian rivers and streams due to human activities (122).
- FFG Action Statement – Prevention of passage of aquatic biota as a result of the presence of instream structures (129).
- Victorian Firewood strategy discussion paper (McKinna 2002).

6. Tarwin-Powlett Landscape Zone

6.6 Local Government Land

Land tenure details:

This tenure includes township land and shire-managed roadsides and recreation reserves.

Land manager:

South Gippsland and Bass Coast Shires.

Stakeholders:

Key DSE, DPI, WGCMA, PPWCMA, PV, CFA.

Other VicRoads, SGCS, SGWA, TSN, Private, LFW, FNC, GAV.

Threatened Biodiversity Assets (in brackets: Cons status Vic - lower case, Aust - upper case; followed by BNA priority / risk rankings for threatened taxa = 1A, 2B, etc., or un - unassessed):

EVCs: Lowland Forest (v), Sand Heathland (r), Swamp Scrub (e) and Wet Heathland (d).

Threatened Flora: Bog Gum (r, un), Broad-lip Leek-orchid (r, un), Green Leek-orchid (v, un), Lizard Orchid (r, un), Slender Leek-orchid (v, un), Southern Spider-orchid (k, un).



Prasophyllum patens
(Photo: John Eichler)

Threatened Fauna: Black-faced Cormorant (v, un), Blue Petrel (V, un), Blue-billed Duck (v, un), Warty Bell Frog (Vv, un), Whiskered Tern (l, un), White-bellied Sea-eagle (e, un), White-faced Storm Petrel (v, un), Yellow-bellied Sheath-tail Bat (v, un).



Warty Bell Frog
(Photo: DSE/Clemann)

Recommended actions:

Protection of existing remnants:

- Plan to reduce damage to biodiversity due to firewood collection from roadsides.
- Ensure activities such as road maintenance do not impact on water quality.
- Retain and protect hollow-bearing trees.
- Prohibit firewood collection from roadsides.
- Identify roadsides that support populations of Strzelecki Gum for protection and management.
- Assess roadside reserves to identify remnants of high quality as management priorities.
- Protect known nesting sites of White-bellied Sea-eagle and provide a suitable buffer zone around nests, from human and habitat disturbance.
- Incorporate the protection of suitable White-bellied Sea-eagle habitat in local council planning controls.
- Protect known nesting sites, and a suitable buffer zone around nests, from human and habitat disturbance on public land through appropriate land management practices.

6. Tarwin-Powlett Landscape Zone

6.6 Local Government Land (cont'd)

- Approach all land managers who have important nesting and foraging habitat on their land regarding sympathetic management of these areas.
- Undertake a public awareness program on the importance of protecting the White-bellied Sea-Eagle.

Management to enhance remnants for threatened taxa (BNA response level in brackets: 4 = full commitment, 3 = substantive participation, 2 = opportunistic action, 1 = watching brief):

- Assess roadside reserves for important native vegetation remnants and ensure they are managed appropriately.
- Undertake ecological burns.
- Control exotic weeds and pests.
- Encourage the protection of sites on private land through extension programs (such as Land for Wildlife) or conservation covenants, and provide financial assistance through the Land Protection Incentive Scheme.
- Liaise with DSE staff and other land managers involved in 1080 baiting programs near known nesting sites to ensure that carcasses of target species are buried as soon as possible following baiting to minimise the risk of primary and secondary poisoning of White-bellied Sea-Eagles.
- Undertake a public awareness program on the importance of protecting the White-bellied Sea-Eagle.
- Retain and protect hollow-bearing trees.

Restoration of strategic vegetation blocks or linkages:

- Collect Strzelecki Gum seed for propagation and revegetation.
- In consultation with adjacent land managers and local Landcare groups, target revegetation sites to abut and extend high quality roadsides.

EXISTING POLICIES, PLANS OR PROGRAMS supporting one or more of the recommended actions:

- FFG Action Statement – White-bellied Sea-eagle (60).
- FFG Action Statement – Blue-billed Duck (174).
- CAMBA – White-bellied Sea-eagle.
- South Gippsland Shire Council – Roadside Management Plan (Ellis 1997a).
- South Gippsland Shire Council – Roadside Management Manual (Ellis 1997b).
- The Action Plan for Australian Birds 2000 (Garnett and Crowley 2000).
- Victorian Firewood strategy discussion paper (McKinna 2002).



Blue-billed Duck
(Photo: DSE/McCann)

6. Tarwin-Powlett Landscape Zone

6.7 Parks and Reserves

Land tenure details:

The zone includes parts of a number of designated parks and reserves managed by Parks Victoria including Bald Hills Wildlife Reserve (C1), Bunyurong Marine Park (H1,J5), Cape Liptrap Coastal Park (A3), Kings Flat Flora Reserve (G3), San Remo—Point Smythe Coastal Reserve (H1,J1) and Wonthaggi Heathlands (C47). Cape Liptrap is a site of National geological and geomorphological significance (Parks Victoria 2003).

Land manager:

Parks Victoria.

Stakeholders:

Key WGCMA, PPWCMA.

Other DSE, VEAC, VNPA, BG, FNC, GNP, AAV, AWSG, EPA, FOTP, GCB, LGA, MBV, SGCS, SGWA, GCB, TSN, VWSG, Private.

Threatened Biodiversity Assets (in brackets: Cons status Vic - lower case, Aust - upper case; followed by BNA priority / risk rankings for threatened taxa = 1A, 2B, etc., or un - unassessed):

EVCs: Coast Banksia Woodland (v), Coastal Dune Scrub Mosaic (lc), Coastal Headland Scrub (d), Coastal Saltmarsh (lc), Coastal Tussock Grassland (lc), Estuarine Wetland (lc), Heathy Woodland (lc), Lowland Forest (v), Sand Heathland/Wet Heathland Mosaic (d) and Swamp Scrub (e).

Threatened Flora: Bog Gum (r, un), Broad-lip Leek-orchid (r, un), Coast Bitter Bush (v, un), Currant-wood (r, un), Lizard Orchid (r, un), Green Leek-orchid (v, 2B), Marsh Saltbush (r, un), Wetland Blown-grass, (k, un).



Monotoca glauca
(Photo: John Eichler)

Threatened Fauna: Australasian Bittern (e, 3A), Australasian Gannett (v, un), Australasian Shoveler (v, un), Australian Whitebait (v, 1A), Baillon's Crake (v, 1B), Barking Owl (e, 4A), Black Falcon (e, un), Black-faced Cormorant (v, un), Blue-billed Duck (v, un), Caspian Tern (v, 2B), Crested Tern (l, 3C), Eastern Curlew (l, 1C), Fairy Prion (v, un), Glossy Grass Skink (l, 1C), Great Egret (e, 1A), Ground Parrot (v, un), Hardhead (v, un), Hooded Plover (e, 1B), Intermediate Egret (c, 1A), Kelp Gull (c, un), Little Egret (c, 2A), Musk Duck (v, un), Orange-bellied Parrot (Ec, 3A), Pacific Gull (l, un), Pied Cormorant (l, 2C), Powerful Owl (e, 4A), Royal Spoonbill (e, 2B), Southern Brown Bandicoot (E, un), Spot-tailed Quoll (Ve, un), Swamp Antechinus (l, 2C), Swamp Skink (v, 1A), Swift Parrot (Ee, 4A), Tree Goanna (i, un), Warty Bell Frog (Vv, un), White-bellied Se-Eagle (e, 1A).



Swift Parrot (Photo: Mike Carter)

6. Tarwin-Powlett Landscape Zone

6.7 Parks and Reserves (cont'd)

Recommended actions:

Protection of existing remnants:

- Identify, protect and manage principal Australasian Bittern breeding wetlands.
- Ensure that poorly fenced sections of Cape Liptrap are protected from grazing by domestic stock (Parks Victoria 2003).
- Maintain the ecological condition of the existing diverse and intact forest, heathland and headland communities and improve it by restoring age-class diversity (Parks Victoria 2003).
- Prohibit public access to offshore rock stacks and cliff areas that are used by breeding seabirds and bats (Parks Victoria 2003).
- Introduce the concepts and actions of the 'Creeping Backyard' program to adjoining landowners in settlements near parks and reserves (Parks Victoria 2003).

Management to enhance remnants for threatened taxa (BNA response level in brackets: 4 = full commitment, 3 = substantive participation, 2 = opportunistic action, 1 = watching brief):

- Implement Recovery Outline for Australasian Bittern (3), including identification of any breeding wetlands and their protection and management, and rehabilitation of any former breeding wetlands.
- Manage ecological burning to ensure conservation of Swamp Skink (4) and Tree Goanna.
- Carry out Red fox and feral cat control programs.
- Control exotic weeds.

Restoration of strategic vegetation blocks or linkages:

- Encourage land managers on adjacent land to actively manage introduced plant and animal species.
- Encourage land managers in the catchment to revegetate gullies and creeks to protect water quality (DCE 1992).
- Investigate the possibility of developing wildlife corridors from Cape Liptrap Coastal Park to link with adjoining reserves and other areas of native vegetation (Parks Victoria 2003).
- Investigate options for buffer establishment on adjacent land and encourage adjoining landholders to participate in Weed Action Groups and Rabbit Action Groups activities to decrease infiltration of introduced species into isolated reserves.
- Rehabilitate selected former breeding wetlands.
- Progressively restore species diversity, structure and age-class diversity of the coastal dune communities (Parks Victoria 2003).

6. Tarwin-Powlett Landscape Zone

6.7 Parks and Reserves (cont'd)

EXISTING POLICIES, PLANS OR PROGRAMS supporting one or more of the recommended actions:

- FFG Action Statement – Hooded Plover (9).
- FFG Action Statement – Spot-tailed Quoll (15).
- FFG Action Statement – Predation by Red Fox (44).
- FFG Action Statement – White-bellied Sea-Eagle (60).
- FFG Action Statement – Predation by Cat (80).
- FFG Action Statement – Barking Owl (111).
- FFG Action Statement – Great Egret (120).
- FFG Action Statement – Intermediate Egret (120).
- FFG Action Statement – Little Egret (120).
- FFG Action Statement – Swift Parrot (169).
- FFG Action Statement – Blue-billed Duck (174).
- JAMBA – Eastern Curlew, Great Egret, Ground Parrot, Little Tern, Orange-bellied Parrot.
- CAMBA – Caspian Tern, Eastern Curlew, Great Egret, Little Tern, White-bellied Sea-Eagle.
- The Action Plan for Australian Birds 2000 (Garnett and Crowley 2000).
- Threat Abatement Plan – Predation by European Red Fox.
- Threat Abatement Plan – Predation by Feral Cats.
- Recovery Plan – Albatrosses and Giant-Petrels.
- Recovery Plan – Orange-bellied Parrot.
- Recovery Plan – Swift Parrot.
- Bunyurong Marine and Coastal Park Proposed Management Plan (DCE 1992).
- Cape Liptrap Coastal Park Management Plan (Parks Victoria 2003).



Spot-tailed Quoll (Photo:
Ian McCann)