

3.6 BARWON BLUFF MARINE SANCTUARY

3.6.1 Physical parameters

The Barwon Bluff Sanctuary extends southeast off a large rocky headland less than two kilometres south of the Barwon Heads township. The geology of Barwon Bluff is complex with the eastern side of the Sanctuary dominated by basalt reef and boulders formed from a Mt Duneed lava flow (Bird 1993). The western side of the Sanctuary has a large intertidal sandstone platform that slopes gradually to 10 m depth subtidally. The Barwon River is the major discharge into the Marine Sanctuary.

Table 3.6.1. Physical parameters for Barwon Bluff Marine Sanctuary.

Park Name	Barwon Bluff
Conservation status	Marine Sanctuary
Biophysical Region	Central Victoria
Size of Park (ha)	17
Length of coastline (m)	614
Exposure rating	High
Wave Energy	High
Influential currents	None
Tidal variation - springs (m)	2.1
Tidal variation - neaps (m)	0.7
Water temp - summer (°C)	17.5
Water temp - winter (°C)	13.5
0 - 10 m (ha)	17
Discharges	Barwon River mouth is 600 metres from Marine National Park boundary.
Adjacent catchment	Agricultural, Urban

3.6.2 Marine Habitat Classes

The major Marine Habitat Classes in Barwon Bluff Marine Sanctuary are subtidal soft sediment and subtidal and intertidal reef (Figure A2.6a).

Table 3.6.2. Marine Habitat Classes for Barwon Bluff Marine Sanctuary.

Marine Habitat Class	Attributes
Shoreline category	Beach
	Platform
	Beach / Platform
	Cliff
Substratum relief	Low profile reef
	High profile reef
Substratum texture	Solid reef
	Gutters
	Outcrops
	Medium sand
	Fine sand
	Shell rubble / grit
Lithology	Sandstone
	Basalt

Subtidal reef biota	Kelp - Phyllospora dominated
	Kelp - Ecklonia dominated
	Kelp - mixed Phyllospora / Ecklonia
Dominant understorey reef biota	Cystophora
	Acrocarpia
	Sessile invertebrates
	Caulerpa
Intertidal reef biota	Fleshy algae -mixed greens
	Fleshy algae -mixed browns
	Durvillaea
	Hormosira
	Turf algae
	Coralline algae
	Pyura
	Mussels
	Barnacles
Heavy reef Area (ha)	13
Total Reef Area (ha)	13
Undefined Area (ha)	4

3.6.3 Marine Ecological Communities

For a general outline of some of the animals and plants that may be found in this Marine Sanctuary, refer to Table 3.6.5.

Intertidal reef

Flora

In the mid tide level, the turf red algae (*Gelidium pusillum*) and neptune's necklace (*Hormosira banksii*) are very common often comprising almost 100% cover of the substratum in some places. Other algae include some greens such as (*Ulva* spp.) and occasional patches of coralline algae in areas not dominated by *H. banksii* (Marine Discovery Centre 2002).

Invertebrate fauna

The most common invertebrates at the high tide mark are the periwinkle (*Nodilittorina unifasciata*), the mussel (*Xenostrobus pulex*) and barnacles including (*Tetraclitella purpurascens* and *Chthamalus antennatus*). The striped coniwink (*Bembicium nanum*) and the ribbed top shell (*Austrocochlea constricta*) are also present. Closer to the mid-tide level the tube worm (*Galeolaria caespitosa*), the smooth limpet (*Cellana tramoserica*), striped limpet (*Siphonaria diemenensis*) and scaly limpet (*Patelloida latistrigata*) are also common with the occasional air breathing gastropod (*Onchidella patelloides*) also found. In rock pools which retain some water during low tide, small numbers of anemones including the waratah anemone (*Actinia tenebrosa*) and other anemones (including *Oulactis* spp., *Aulactinia veratra*) are found whilst the limpets already mentioned are still common along with the gastropods, including the chequerboard snail (*Cominella lineolata*), warrener (*Turbo undulatus*) and dog whelk (*Cominella lineolata*). Two seastars of the genus *Patiriella* are common (*P. calcar* and *P. exigua*) and shore crabs including *Cyclograpsus* spp., *Paragrapsus* spp. are often found

under rocks and in rock pools towards the low tide mark. At very low tide a rim of *Pyura stolonifera* are uncovered on the perimeter of the reef (Marine Discovery Centre 2002).

Fish

The most common fish on the Barwon Heads intertidal platform are the Tasmanian blenny (*Parablennius tasmanianus*) and the southern crested weedfish (*Cristiceps australis*) (Steve Swearer pers. comm.)

Subtidal Reef

Flora

The marine algae community in deeper waters is dominated by giant kelp (*Macrocystis angustifolia*) forests whilst a fringe of bull kelp (*Durvillaea potatorum*) exists on the platform edge on the intertidal mark (Porter 1997). In shallow subtidal reef habitat common kelp (*Ecklonia radiata*) is present with other brown algae including *Cladophora* spp. and with *Cystophora* spp. forming a smaller component (Rod Watson, pers comm.). Green algae, including sea lettuce (*Ulva* sp.) in shallow water and *Caulerpa brownii* and *C. cactoides* in slightly deeper habitat (Rod Watson, pers comm.), are common. Red algae species including *Delisea pulchra*, *Corallina officinalis*, *Plocamium* sp. and encrusting corallines are also present (Rod Watson, pers comm.).

Invertebrate fauna

Common molluscan species include the black lip abalone (*Haliotis rubra*), warrener (*Turbo undulatus*), elephant snail (*Scutus antipodes*) and dogwhelk (*Thais orbita*) (Rod Watson, pers comm.). The echinoderm fauna is diverse and includes eleven-armed sea stars (*Coscinasterias calamaria*), biscuit stars (*Tosia australis*), *Uniophora granifera*, *Nectria* sp. *Patiriella brevispina* and *Echinaster varicolour* (Rod Watson, pers comm.). Also present are sea tulip (*Pyura gibbosa*) and red bait crab (Rod Watson, pers comm.). The area off Barwon Bluff is also thought to be a brooding area for female rock lobster females (Steve Frlan, in Porter, 1997).

The eastern tip of the Marine Sanctuary supports many filter-feeding invertebrates such as feather-stars which rely on fast currents to bring food. Sponges are common beneath small bommies and ledges and opisthobranchs can be found on the reef sides (Park Notes).

Fish

A scuba survey of the subtidal reef fish near the edge of the rock platform found the blue throat wrasse (*Notolabrus tetricus*) dominant with (*N. fucicola*) present, but much less common (Rod Watson, pers comm.). At least three species of leatherjackets are commonly encountered including (*Meuschenia hippocrepis*, *M. galii* and *M. freycineti*) (Rod Watson, pers comm.). Other species present include scaly fin (*Parma victoriae*), mado (*Atypichthys strigatus*) and sea sweep (*Scorpius aequipinnis*) and on one occasion a large school of juvenile zebra fish (*Girella zebra*) (Rod Watson,

pers comm.). A scuba survey on the reef off Barwon Bluff recorded twenty species of fish (Porter 1997). Eagle rays are sometimes sighted in the deeper sections of the Marine Sanctuary (Sean Blake pers comm).

3.6.4 Biological processes

Biological processes occurring within the Marine Sanctuary are unknown.

3.6.5 Species level information

No marine invertebrates, fish or algae are known to have their distributional limits near or within the Marine Sanctuary.

3.6.6 Shorebirds

The list of threatened shorebird species recorded in and around the Barwon Bluff Marine Sanctuary is shown in Table 3.6.3. A Hooded Plover nesting site is located less than 300m to the west of the Marine Sanctuary boundary (near the 29W beach emergency sign). The shoreline within the Marine Sanctuary is primarily a mix of sand and rock platform so it is probable these birds may also forage along the shoreline within the Marine Sanctuary itself.

In close proximity to the Marine Sanctuary is the internationally significant Barwon River Estuary and Lake Connewarre. This area is also a Ramsar site providing nesting, roosting and feeding habitat for large numbers of waders and waterbirds (approximately 85 species recorded).

3.6.7 Marine Mammals

Threatened marine mammals recorded in and around the Barwon Bluff Marine Sanctuary are listed in Table 3.6.4.

Table 3.6.3. Threatened shorebird records from Barwon Bluff Marine Sanctuary and surrounds (AVW).

Common Name	Scientific Name	FFG	National (EPBC)	State (TWV)	Treaties	Year TWV
Australasian Gannet	<i>Morus serrator</i>			Vul		1999
Blue Petrel	<i>Halobaena caerulea</i>		Vul			1999
Caspian Tern	<i>Sterna caspia</i>	L		Vul	CJ	1998
Common Diving-Petrel	<i>Pelecanoides urinatrix</i>			LR		2001
Crested Tern	<i>Sterna bergii</i>			LR		1998
Fairy Prion	<i>Pachyptila turtur</i>		Vul	LR		2001
Great Egret	<i>Ardea alba</i>	L		End	CJ	1988
Gull-billed Tern	<i>Sterna nilotica</i>	L		End		1997
Hooded Plover	<i>Thinornis rubricollis</i>	L		End		2000
Pacific Gull	<i>Larus pacificus</i>			LR		1999
Southern Giant-Petrel	<i>Macronectes giganteus</i>		End	End		1984
Whiskered Tern	<i>Chlidonias hybridus</i>			LR		1997
White-faced Storm-Petrel	<i>Pelagodroma marina</i>			Vul		2000

Table 3.6.4. Threatened marine mammal records from Barwon Bluff Marine Sanctuary and surrounds (AVW).

Common Name	Scientific Name	FFG	National (EPBC)	State (TWV)	Treaties	Year TWV
Australian Fur Seal	<i>Arctocephalus pusillus</i>			Vul		1988
Southern Right Whale	<i>Eubalaena australis</i>	L	End	CEn		1989

Table 3.6.5. Selection of some animals and plants that may be found in the Barwon Bluff Marine Sanctuary.

The table below is not an exhaustive species list, nor does it identify only common organisms, but is provided as an outline of some of the biota that may be seen in this park.

	Common name	Latin name
Flora	brown algae	<i>Macrocystis angustifolia</i> , <i>Durvillaea potatorum</i> , <i>Ecklonia radiata</i> , <i>Cladophora</i> spp., <i>Cystophora</i> spp., <i>Hormosira banksii</i>
	green algae	<i>Ulva</i> spp., <i>Caulerpa brownii</i> , <i>C. cactoides</i>
	turf red algae	<i>Gelidium pusillum</i>
	red algae	<i>Delisea pulchra</i> , <i>Corallina officinalis</i> , <i>Plocamium</i> sp. and encrusting corallines
Invertebrates	mussel	<i>Xenostrobus pulex</i>
	barnacles	<i>Tetraclitella purpurascens</i> and <i>Chthamalus antennatus</i> .
	gastropods	<i>Bembicium nanum</i> , <i>Austrocochlea constricta</i> , <i>Onchidella patelloides</i> , <i>Cominella lineolata</i> , <i>Turbo undulatus</i> , <i>Cominella lineolata</i> , <i>Nodilittorina unifasciata</i>
	tube worm	<i>Galeolaria caespitosa</i> ,
	limpet gastropods	<i>Cellana tramoserica</i> , <i>Siphonaria</i>

		<i>diemenensis</i> , <i>Patelloida latistrigata</i>
	anemones	<i>Actinia tenebrosa</i> , <i>Oulactis</i> spp., <i>Aulactinia veratra</i>
	seastars	<i>Patiriella calcar</i> and <i>P. exigua</i>
	crabs	<i>Cyclograpsus</i> spp., <i>Paragrapsus</i> spp.
	ascidians	<i>Pyura stolonifera</i>
	black lip abalone	<i>Haliotis rubra</i> ,
	elephant snail	<i>Scutus antipodes</i>
	seastars	<i>Coscinasterias calamaria</i> , <i>Tosia australis</i> , <i>Uniophora granifera</i> , <i>Nectria</i> sp. <i>Patiriella brevispina</i> and <i>Echinaster varicolour</i>
Fish	wrasse	<i>Notolabrus tetricus</i> , <i>N. fucicola</i>
	leatherjackets	<i>Meuschenia hippocrepis</i> , <i>M. galii</i> and <i>M. freycineti</i>
	scaly fin	<i>Parma victoriae</i> ,

3.6.8 Sites of Geological and Geomorphological Significance

Sites of geological and/or geomorphological significance within or adjacent to Barwon Bluff Marine Sanctuary are listed below (MPV database and Buckley 1993):

Barwon Heads (Regional/Local Significance): Calcarenite coastal bluff rising south of Barwon Heads township. Bluff shows sections in Pleistocene dune calcarenite with interbedded palaeosols resting upon basalt which outcrops on the shore and forms reefs off the mouth of the Barwon River

3.6.9 Knowledge gaps

Very little quantitative data are available for any areas within the Barwon Bluff Marine Sanctuary. Student surveys of the intertidal reef and a single survey involving five diver transects on the subtidal reefs in the Sanctuary are the only information available. No species are known to be restricted or have their distributional limits at the Barwon Bluff Marine Sanctuary.

3.6.10 Research

Author	Project	Notes
(Marshall 2002)	In-situ measures of spawning synchrony and fertilisation success in an intertidal free spawning invertebrate	
Marine Discovery Centre Queenscliff	Long history of leading students and members of the public on rockpool rambles in the area	