

Marine Natural Values Study Summary

Discovery Bay Marine National Park



Australia's southern waters are unique. Ninety per cent of our marine plants and animals are found nowhere else on earth.

The system of Marine National Parks and Sanctuaries has been established to represent the diversity of Victoria's marine environment, its habitats and associated flora and fauna.

Victoria's marine environment has been classified into five bioregions according to a nationally agreed scheme based on physical and biological attributes.

Discovery Bay Marine National Park is one of two marine national parks and two marine sanctuaries in the Otway bioregion.

Image left:
Bull kelp *Durvillaea potatorum* on subtidal basalt reef.
Photo by NRE.

Image right:
Discovery Bay Marine National Park. Photo by NRE.



Description

The park covers 2830 hectares adjacent to Cape Bridgewater along the coast from Blacks Beach to Whites Beach and offshore to three nautical miles. Between Whites Beach and Cape Duquesne the park boundary commences 500 metres from the coastline. The park abuts the Discovery Bay Coastal Park. The wrecks of three wooden sailing barques, the Jane, the Ann and the Marie, are thought to be in the vicinity of the park.

Beach access is from Whites Beach and Blacks Beach while boat access is from Bridgewater Bay and Portland Harbour.

Parks Victoria acknowledges the Aboriginal Traditional Owners of Victoria – including its parks and reserves. Indigenous tradition indicates that the park is part of Country of Gunditjmarra.

Physical Parameters and Processes

The park is exposed to storms and south-westerly swells of the Southern Ocean, and resulting high deepwater wave energy.

The Zeehan Current is influential moving water in a south-easterly direction through the park. The warm Leeuwin Current flows east along the southern coast of Australia and may

influence water temperature, particularly during La Niña years.

The continental shelf is relatively narrow near the park, extending only 50 kilometres offshore. Wind driven coastal circulation across the shelf causes the Bonney Upwelling of cool nutrient rich water, particularly during spring and summer, which stimulates phytoplankton and zooplankton blooms, and forms the basis of a rich pelagic food chain providing feeding grounds for seabirds, fish, whales and seals.

Surface water temperatures are influenced by the cold Bonney Upwelling, with mean surface water temperature varying seasonally between 14°C and 18°C. Tidal variation is 0.8 metres for spring tides and 0.4 metres for neap tides.

Marine Habitat Distribution and Ecological Communities

The main habitats protected by the park include subtidal reef, soft sediment, and the water column. A relatively small amount of intertidal reef and soft sediment are also present in the park.

Important features include basalt and calcarenite intertidal and subtidal rocky reefs, extensive sandy subtidal soft sediment and the biota they



support. The park is part of the largest coastal basalt formation in western Victoria.

The park has rocky habitats of complex forms, including low profile calcarenite-capped basalt platforms, isolated low calcarenite reefs, and heavy sloping basalt walls.

Its deep (33 metres – 55 metres) calcarenite reefs with thick growths of sessile invertebrates (e.g. sponges, ascidians, bryozoans and gorgonians) are an important natural value, as are its shallow basaltic reefs covered by large kelps such as *Ecklonia radiata*. The park's intertidal and shallow subtidal reefs have a high diversity of invertebrates. Its extensive subtidal soft sediments of mainly fine sand, with high (80 per cent) carbonate content, are an important natural value.

Bull Kelp *Durvillaea potatorum* grows on the intertidal reef edge. Mixed brown algae, including kelp *Ecklonia radiata* and crayweed *Phyllospora comosa*, are the canopy forming algae on the sand free basalt subtidal reefs in the south-east. Also growing on these reefs are the brown algae *Scytothalia*, *Sargassum* and Giant Kelp *Macrocystis pyrifera*, and green algae *Caulerpa* spp..

Australian fur seals *Arctocephalus pusillus doriferus* on intertidal reef. Photo by Marcel Hoog Antink.

Mobile invertebrates on these subtidal reefs include seastars, Southern Rock Lobster *Jasus edwardsii* and Blacklip Abalone *Haliotis rubra*.

Sessile invertebrates, predominately compact sponges, occur in isolated areas within the sand band from 35 metres to 55 metres depth suggesting that the sediment is a thin veneer over hard substrate. Sessile invertebrates dominate the deeper, and largely sand-inundated, reefs in the west of the park where they are free of sand. These include abundant ascidians, hydroids, and bryozoans along with gorgonian soft corals, hard corals, *Tethya* sponges, zoanthids and the Sea Whip *Primnoella australasiae*.

The water column is home to a variety of planktonic and pelagic organisms. Those that make their permanent home in the water column include sea jellies, salps, many fish, and phytoplankton and zooplankton. A number of marine mammals and seabirds are also found in or use the water column.

Species and Communities of Conservation Significance

The park has one endemic crustacean, the Southern Hooded Shrimp *Athanopsis australis*.

Seven species of algae and one invertebrate are known or presumed

to be at the limit of their distribution in the park.

Western Blue Groper *Achoerodus gouldii* have been observed in the high profile reef systems in 50m of water west of Cape Duquesne. The open waters of the park are a probable habitat for the threatened migratory southern bluefin tuna *Thunnus maccoyii*, grey nurse shark *Charcharias taurus*, and White Shark *Carcharodon carcharias*.

The intertidal reef provides an occasional haul-out area for state vulnerable New Zealand *Arctophoca forsteri* and nationally listed Australian *Arctocephalus pusillus doriferus* Fur Seals. Southern right whales *Eubalaena australis*, blue whales *Balaenoptera musculus* and southern elephant seals *Mirounga leonina* have been recorded in or near the park.

The park provides important feeding and roosting habitat for fifteen threatened bird species. Two of these species are regarded as endangered; the Wandering Albatross *Diomedea exulans* and Southern Giant Petrel *Macronectes giganteus*. The park also protects feeding areas for ten internationally important migratory bird species.

Major Threats

Measures to address or minimise threats identified for Discovery Bay



Marine National Parks form part of the park management plan. Parks Victoria also uses an adaptive management approach which includes periodic reviews of priority natural values and threats through processes such as the State of the Parks evaluation and setting of desired conservation outcomes. Through these processes Parks Victoria has identified emerging threats and developed appropriate management responses.

Serious threats include poaching of abalone, marine pests and diseases. Evidence of abalone viral ganglioneuritis which can kill a large proportion of abalone populations in affected areas has also been observed in much of the Otway bioregion.

The introduced algal species *Grateloupia turuturu*, *Caulerpa racemosa* var. *cylindracea* and *Codium fragile* subspecies *fragile* were also recorded in Portland Harbour in 2010 and there is some concern about their possible spread.

Climate change poses a serious medium to long term threat to natural values. Parks Victoria will use an adaptive management approach to develop responses and actions that focus on priority climate change issues such as extreme weather events and existing risks that are likely to be exacerbated by climate change.

Research and Monitoring

Parks Victoria has established extensive marine research and

monitoring programs that address important management challenges for the marine national parks and sanctuaries. These focus on improving baseline knowledge, as well as applied management questions.

Since the establishment of the parks in 2002 our knowledge and understanding of natural values and threats for the system have improved significantly through this marine science program. Much of the research has been undertaken as part of the Research Partners Program involving collaboration with various research institutions.

There are four ongoing research projects and one habitat mapping project that are relevant to Discovery Bay Marine National Park, while six research projects and two habitat mapping projects have already been completed.

While recognising there are still knowledge gaps, Parks Victoria will continue to focus on addressing the information needs that will assist management.

For more information, including marine habitat mapping products, please see the full versions of the Marine Natural Values reports on www.parks.vic.gov.au.

Subtidal basalt reef in Discovery Bay Marine National Park.
Photo by NRE.

