Marine Natural Values Study Summary

Point Cooke Marine Sanctuary

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.

Point Cooke Marine Sanctuary is the one of three marine sanctuaries and one marine national park in Port Phillip Bay, which is part of the Victorian Embayments bioregion.

Image left:
Purple sea urchin *Heliocidaris erythrogramma* on the subtidal reef. Photo by Andrew Christie, Marine Care Point Cooke.

Image right:
Pipefish *Stigmatopora nigra* are found in the seagrass beds of Point Cooke Marine Sanctuary. Photo by Andrew Christie, Marine Care Point Cooke.

Description

The sanctuary covers 292 hectares on the north-west side of Port Phillip Bay at Point Cook, about 30 kilometres west of Melbourne. It is the largest marine sanctuary in Victoria and protects an area of relatively intact habitat of the western shoreline environments of the bay.

It extends along 3.4 kilometres of coast from the high water mark to between 750 metres and 1.1 kilometres offshore, from just west of Point Cook Homestead to the Cheetham Wetlands. It is accessible from the shore or by boat.

The sanctuary forms part of the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar Site, along with nearby Point Cook Coastal Park and Cheetham Wetlands.

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

Physical Parameters and Processes

The shoreline geology is basalt, the remains of lava flow across the plains of northern Port Phillip Bay.

The sanctuary is shallow, less than four metres deep, with surface water temperatures averaging 20.4°C in the summer and 11.4°C in the winter.

The sanctuary has an unequal semidiurnal tidal pattern. Spring tides are 0.8 metres and neap tides 0.2 metre and the water in the sanctuary is exchanged every 28–50 tidal cycles. It is not subject to large waves, strong currents or swell, but in strong westerly conditions waves can reach heights of two metres.

Natural hydrodynamic events such as storm surges displace seaweed and kelp communities, erode beaches and deposit sand over the reefs. During periods of strong winds wrack can form a thick blanket over the intertidal area.

There are no rivers or creeks that flow directly into the sanctuary, but nearby freshwater runoff, phytoplankton blooms and disturbance of nearby fine sediments frequently create turbid conditions.

Marine Habitat Distribution and Ecological Communities

The main habitats protected by the sanctuary include narrow beaches of mud and sand, low intertidal and shallow subtidal basalt reef with algae and associated epibenthic fauna, and the water column.

Beds of the habitat forming cunjevoi *Pyura stolonifera* and beds of seagrass are found on the soft subtidal sediment.

Sand patches and associated seagrass *Zostera muelleri* beds extend across a wide band of the intertidal reef.

The macroalgal coverage on the intertidal reef is highly variable, especially the coverage of sea lettuce *Ulva* spp.. Green algae *Caulerpa remotifolia*, brown algae *Padina fraseri* and red algae *Ahnfeltiopsis fastigata* also grow on the reef.

There are small patches of aggregating intertidal reef invertebrates, tube-worms *Galeolaria caespitosa* and blue mussel *Mytilis edulis*, low on the shoreline. The anemones, red waratah *Actinia tenebrosa*, green *Aulactinia veratra*, sand *Oulactis muscosa* and white-striped *Anthothoe albocincta* are also found on the intertidal reef.

Twenty-six species of mobile invertebrates, including 20 species of molluscs have been found in low abundance on the intertidal reefs. The herbivorous gastropod *Austrocochlea porcata* is the most abundant invertebrate. Other less common molluscs are the warrener *Turbo undulatus*, conniwink *Bembicium* spp., limpet *Cellana tramoserica*, and the carnivorous gastropods *Cominella lineolata* and *Lepsiella vinosa*.

Other intertidal reef invertebrates include the shore crabs *Cyclograpsus granulosus* and *Leptograpsodes octodentatus*, seastars *Tosia australis* and *Patiriella calcar* and the invasive marine pest the green shore crab *Carcinus maenas*.

The intertidal rockpools contain fish, including the Tasmanian blenny *Parablennius tasmanianus* and the weedfish Clinidae.

On the subtidal soft sediment the seagrasses *Heterozostera nigricaulis* and *Halophila australis*, and cunjevoi *Pyura stolonifera*, form patches of habitat. Large beds of green algae *Caulerpa remotifolia*, *C. longifolia*, *C. brownii* and *C. flexilis* also grow on the soft sediment.

Over nineteen species of macroalgae have been recorded in low density from the subtidal reef of the sanctuary. Dominant species include kelp *Ecklonia radiata*, green algae *Caulerpa remotifolia* and encrusting coralline algae. With low cover of sea lettuce *Ulva* sp., brown algae *Dilophus marginatus* and *Dictyota dichotoma*, and thallose red algae such as *Gigartina* sp.

Over twenty one species of mobile marine invertebrates, dominated by echinoderms including the purple sea urchin *Heliocidaris erythrogramma* and seastars *Tosia australis*, *Meridiastra gunnii*, *Coscinasterias muricata*, are found on the subtidal reef. Also abundant are black lip abalone *Haliotis rubra* and the granular seastar *Uniophora granifera*.

Over sixteen species of fish, dominated by the southern hulafish *Trachinops caudimaculatus* occur on subtidal reefs in the sanctuary. Other typical species are the little rock whiting *Neoodax balteatus* and southern goatfish *Upeinichthys vlaminghii*. There are occasional sightings of banjo ray *Trygonorrhina fasciata*, zebrafish *Girella zebra*, moonlighter *Tilodon sexfasciatus*, dusky morwong *Dactylophora nigricans* and globefish *Diodon nichthemerus*.

The introduced Japanese kelp *Undaria pinnatifida*, red algae *Grateloupia turuturu* and European fanworm *Sabella spallanzani* grow on the reef.

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, fish, and phytoplankton and zooplankton. A number of seabirds also use the water column in the sanctuary.

Species and Communities of Conservation Significance

Saltmarsh, dunes and wetlands back onto the sanctuary. Its sandy beaches, intertidal reefs and mudflats, offshore banks and waters provide roosting and foraging habitat for migratory seabirds and shorebirds.

Forty-four threatened bird species have been recorded in or in the immediate surrounds of the sanctuary. These include the critically endangered orange-bellied parrot *Neophema chrysogaster*, Australian painted snipe *Rostratula australis* and the intermediate egret *Ardea intermedia*.

The sanctuary protects feeding areas for thirty internationally important migrant bird species. Six species of marine flora and fauna, including the ghost shrimp *Axiopsis werribee*, are believed to be at their distributional limits within the sanctuary.

Major Threats

Measures to address or minimise threats identified for Point Cooke Marine Sanctuary form part of the park management plan. Parks Victoria also uses an adaptive management approach which includes periodic reviews of priority natural values and

Basalt boulders rimmed by the encrusting tubeworm *Galeolaria caespitosa* with intertidal *Zostera muelleri* seagrass beds.
Photo by Trish Rice, Marine Care Point Cooke.

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 invasive marine pests, illegal fishing, disturbance and predation of birds, nutrients from runoff, increased sedimentation, industrial spills, trampling and contaminated groundwater.

Several introduced species have been found including the Japanese kelp *Undaria pinnatifida*, red algae *Grateloupia turuturu*, green shore crab *Carcinus maenas* and Eurpoean Fan Worm *Sabella spallanzanii*.

There have also been reports of the purple urchin *Heliocidaris erythrogramma* increasing in abundance and forming barrens habitat (usually devoid of macroalgae) in the northern part of the bay, including in Point Cooke Marine Sanctuary. It is unclear whether the recent increases in abundance are part of a natural cycle or a persistent increase in this native species.

Climate change also 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.

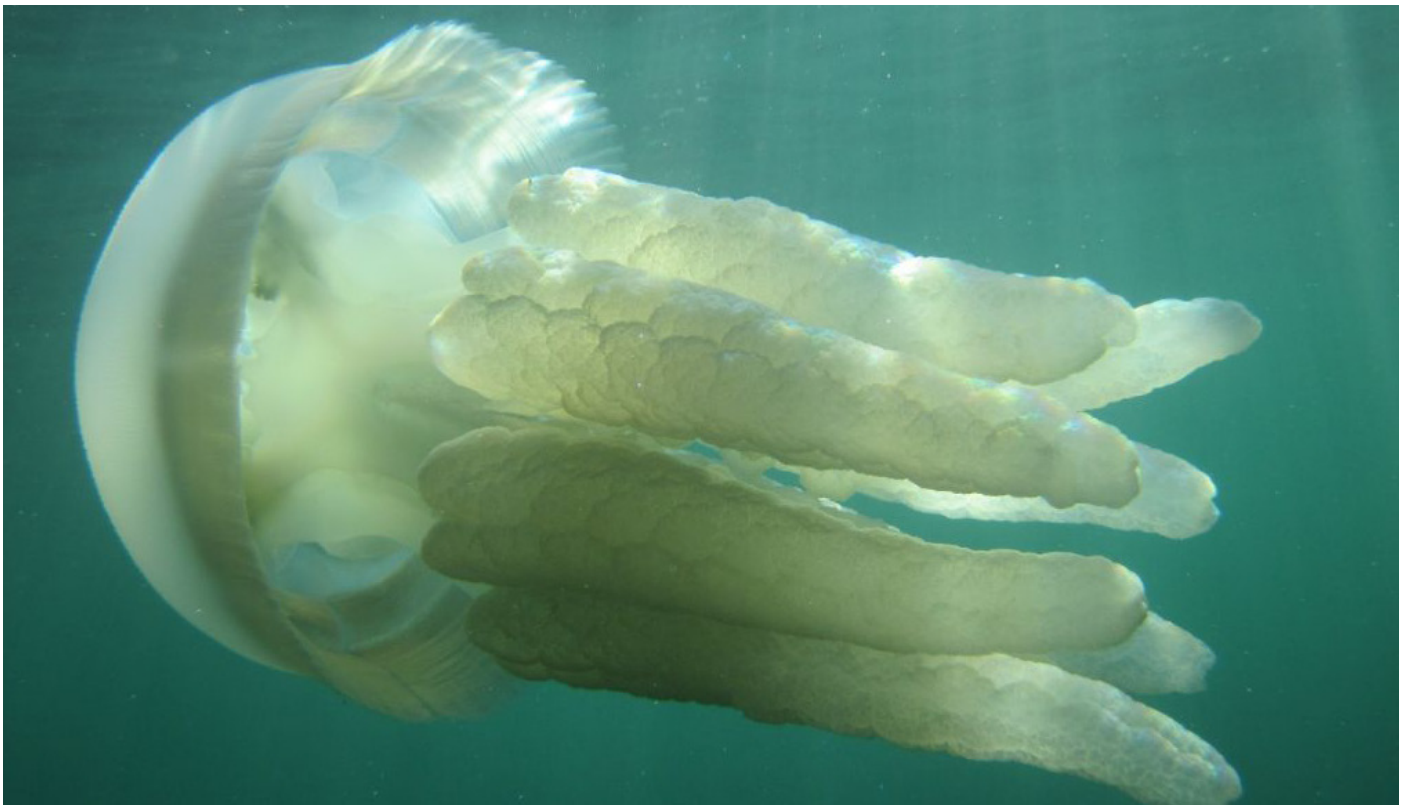
Since the establishment of the parks in 2002 our knowledge and understanding of natural values and threats for the system have improved significantly through the marine science program. Much of the research has been undertaken as part of the Research Partners Program involving collaboration with various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

There are five ongoing research projects and one habitat mapping project that are relevant to Point Cooke Marine Sanctuary, while six research projects and one habitat mapping project have already been completed. The sanctuary has ongoing intertidal and shallow subtidal reef monitoring programs.

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.

The blubber jellyfish *Catostylus mosaicus*.
Photo by Andrew Christie, Marine Care Point Cooke.



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