



Jervis Bay Marine Park

Summary of natural values

Introduction

NSW marine parks aim to conserve marine biodiversity, maintain ecosystem processes and support sustainable uses of the marine environment. Jervis Bay Marine Park, south-east of Nowra, covers an area of 21,450 hectares and spans over 100 kilometres of coastline and adjacent ocean, extending from Kinghorn Point in the north to Sussex Inlet in the south.

Jervis Bay Marine Park contains important natural values that contribute to a healthy environment. It also supports a wide variety of uses, including:

- diving and snorkelling, boating, marine mammal watching, beach activities and nature appreciation, which rely on the park's aesthetic and biodiversity values
- recreational and commercial fishing, which rely on the provision of habitat for harvested fish and the maintenance of ecological processes
- the ongoing traditional use and connection to the marine and coastal environment in its natural state by local Aboriginal communities.

This document provides a summary of the natural values of the Jervis Bay Marine Park.

Marine and coastal ecosystems

Subtidal rocky reef habitats

There are extensive subtidal rocky reefs throughout the marine park.

The rocky reef habitats can be divided into two broad categories: shallow reefs (occur in waters 0–20 metres deep) which are dominated by kelp or other macroalgae; and intermediate reefs (occur in waters 20–60 metres deep) which contain primarily sponges and other bottom-dwelling invertebrates.

Shallow reefs are extensive and diverse in the marine park. Types of shallow reef ecosystems include:

- fringe habitat – occurs just below low tide level (approximately 3 metres deep) and is dominated by brown algae and turfing algae
- barrens habitat – occurs mainly at depths greater than 2 metres and is dominated by encrusting coralline algae, bottom-dwelling invertebrates, limpets, snails and urchins which graze on the algae
- kelp forest habitat – occurs mainly at depths greater than 2 metres and is characterised by a dense canopy of large algae with an understory of smaller algae and encrusting animals
- sponge habitat – sponge-dominated assemblages often replace macroalgae as the dominant sessile assemblage in the deeper sections of shallow reefs. This is particularly evident in areas where walls, overhangs and caves provide suitable habitat.

High resolution sea floor mapping has revealed considerable areas of **intermediate reef** in the offshore region of the marine park. These are mainly situated between Longnose Point and Bowen Island, and extend offshore from shallow reefs that are usually connected to the shore.

Consistent with reefs found at these depths in other temperate regions, intermediate reefs contain a diverse range of bottom-dwelling species, generally dominated by sponges and invertebrates such as sea squirts, black corals, gorgonians, anemones and bryozoans. Very little is known about the diversity of sponges, although at least 100 species are likely to occur along the central coast of NSW.

The habitats within **rocky reefs** in the marine park also support a wide diversity of mobile marine animals.

- A total of 216 fish, shark and ray species have been recorded from shallow reefs in Jervis Bay Marine Park. These are dominated by temperate species, with a seasonal influx of subtropical species.
- The marine park has a high regional diversity of fish species compared to other areas in the region. This is likely to result from oceanographic influences and habitat diversity.
- Rocky reefs of the marine park are important habitats for commercially and recreationally valuable fish such as snapper, yellowtail kingfish and bream.
- The reefs also provide food for economically important pelagic (open water) carnivores including tuna, mackerel, trevally and sharks.
- Rocky reefs provide habitat for a range of invertebrates including molluscs (e.g. shellfish, nudibranchs and cuttlefish); crustaceans (e.g. crabs, rock lobsters and shrimps); echinoderms (e.g. urchins, brittlestars and seastars); worms; and a whole range of other animals.

Subtidal unconsolidated habitats

Seagrass habitats

Jervis Bay Marine Park has some of the most extensive seagrass beds on the NSW coast. At least four seagrass species are found in the marine park. Seagrass beds occur in the estuaries around Carama Inlet, along the shore between Green Island and Bindijine, at Callala Bay, and inside Plantation Point. Seagrasses are of particular ecological importance for a range of reasons, including:

- the provision of habitat for a diverse assemblage of flora and fauna
- the production of algae which is the base of the food chain for many marine species
- generally supporting a much higher diversity and abundance of fish than unvegetated areas, and are an important habitat for juvenile commercial and recreational species such as snapper, yellow-fin bream, tarwhine and luderick
- maintenance of water quality by using nutrients and stabilising sediments in shallow water.

Unconsolidated habitats

Unconsolidated habitat includes areas of sandy substrate varying in particle size and shell content and may contain small amounts of boulders, cobbles or pebbles, particularly adjacent to areas of rocky reef. The habitat occurs in over 70% of the bay and the major part of the marine park outside Jervis Bay. Unvegetated habitats in the marine park support a wide range of organisms including:

- over 500 species of macrobenthic infauna (species that can be seen with the naked eye and live in the sediment of the seabed) consisting mainly of polychaetes, molluscs and crustaceans which provide food and habitat for fish species
- a range of plants and animals living above the sediment which form distinct habitats including bivalve clumps, drift algae, polychaete hummocks, bioturbated sands and rippled sand
- over 100 species of fish live in unconsolidated habitats in Jervis Bay, including several species of mullet, whiting and flathead.

Beach habitats

Jervis Bay Marine Park contains a number of sandy beaches which support a diverse range of invertebrates, including crustaceans, beach worms and molluscs.

Surveys of the sandy beaches in Jervis Bay have found:

- 97 species of fish were found along sandy beaches in the marine park the most abundant being baitfish such as sprats, anchovy and silversides
- 23 species of fish caught from beaches in the marine park are of commercial or recreational importance such as mullet and sand whiting
- sandy beach shallows are important nursery and feeding areas for various fish species. The surveys show that around 15% of the fish caught were only caught as juveniles
- surf areas of exposed sandy beaches were found to be important nursery grounds for some species of fish that were previously considered to be estuary-dependent.

Sandy beaches are also key feeding and roosting sites for shorebirds, seabirds and migratory wading birds, including threatened species such as the little tern and pied oystercatcher. Beaches are also important for migratory wader species listed under international agreements.

Rocky intertidal habitats

Intertidal rocky shores are found between marine and terrestrial environments, and include the intertidal zone and the adjacent wave surge zone. Because of the intertidal habitats in Jervis Bay Marine Park, the variation in rock composition (i.e. platform, cobble or boulder), exposure (i.e. protected or exposed), and slope (steep, inclined or flat) is very diverse in nature.

Rocky shores provide habitat for a wide range of species, including barnacles, gastropods (such as whelks and limpets), chitons, worms and algae. They also provide roosting and feeding habitat for some seabirds.

Estuarine ecosystems

There are six estuaries in the marine park including Currumbene Creek, Moona Moona Creek, Carama Inlet, Wowly Gully, Callala Creek and Currarong Creek. Vegetated estuarine habitats are categorised into mangroves, seagrass beds and saltmarshes.

Mangrove habitats

Mangrove habitats provide a range of important functions:

- They often contain terrestrial, estuarine and marine animal species, so are high in biodiversity, including many fish, birds and invertebrates.

- The habitat often contributes significantly to the productivity of estuaries, by cycling nutrients and trapping sediments and leaf litter.
- Mangroves are nursery areas for many species of fish, crabs and prawns that are of economic importance, providing shelter among their submerged roots and trunks. They are also important as habitat for adult fish such as some species of whiting.

Saltmarsh habitats

Saltmarsh is a distinct habitat found in the upper intertidal area of shorelines in estuaries and bays dominated by soft sediment. Saltmarshes generally contain a diverse range of grasses, saltbushes, rushes and sedges. Saltmarshes provide a range of important functions, including:

- assisting in the control of floods and erosion
- helping reduce pollution
- providing organic material for the detritus in estuaries
- benefiting the environment through transpiration, water-shading and sediment trapping.

Unvegetated habitat

Estuaries are often dominated by unvegetated habitats, reflecting the input of sediments from marine and freshwater sources. They occur as intertidal sand, mudflats and deep muddy basins. They provide a range of ecological benefits such as:

- habitats for many fish, shark and ray species
- form an important part of estuarine ecosystems, transforming food and nutrients that run off the catchment into new food for marine ecosystems and fish
- form part of a network of important nursery habitats for many species
- are important habitat for a number of bird species.

Other marine species

Eight species of shark and 24 species of marine mammal have been recorded in the marine park. The marine park supports a resident population of the Indo-Pacific bottlenose dolphin.

A range of other species of marine mammals have been recorded in the region including the leopard seal and Australian fur seal which are at the extreme limit of their range. Australian and New Zealand fur seals occur almost year-round at a mixed site on Steamers Head, south of Jervis Bay.

There are over 120 species of coastal and marine birds occurring in the region, including a colony of approximately 5000 nesting pairs of little penguins on Bowen Island in the adjacent Booderee National Park.

Threatened and protected, rare and endemic marine species

While the marine park aims to conserve all marine species occurring naturally in the region, particular emphasis is given to conserving species that are threatened, protected or endemic to the area. Twenty-nine endangered, vulnerable and protected marine species in NSW have been recorded in the marine park, including the grey nurse shark.

Threatened seabird species occurring in the marine park include pied and sooty oystercatchers, and ospreys.

Migratory bird species undertaking seasonal movements to breeding and feeding grounds pass through the marine park and are present for short periods each year.

The full report, *Natural Values of the Jervis Bay Marine Park*, is available from www.mpa.nsw.gov.au.

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