



Mangroves are an essential part of the marine park's ecosystem, providing food and shelter for a variety of species.



## Moreton Bay Marine Park Zoning Plan review

# Habitat information: Mangroves

Mangroves are often portrayed as having little value and being little more than muddy, mosquito infested swamps that need to be cleared. In the past their removal was seen as a sign of progress. Vast tracts of mangroves across the world have been destroyed as they were perceived as useless. But nothing could be further from the truth.

In short, mangroves:

- are an essential food source for animals and other organisms;
- protect the coastline by absorbing the energy of storm driven waves and wind;
- stabilise the seabed and shore;
- improve water quality by trapping sediment;
- provide habitat for many species; and
- help to absorb carbon in the atmosphere<sup>1</sup>.

A United Nations Environment report has estimated the total economic value of mangroves at around US\$900 000 per square kilometre<sup>2</sup>. This includes the value that mangroves have for fisheries, tourism and shore protection. Other studies have estimated that 75 percent of the commercial fishery catch in Queensland is dependent on mangrove ecosystems<sup>3</sup>. This means that the majority of fish caught commercially spend some time in the mangroves or are dependent on food chains which can be traced back to these coastal forests.

Mangrove forests are great stabilisers, using their intertwined network of roots to trap and hold sediments. They also stabilise the embankments of creeks and estuaries and protect foreshores from storms.

The decomposing leaf litter from mangroves provides tonnes of nourishment for aquatic wildlife. A rich variety of fish, crustaceans and other bottom dwelling invertebrates depend on mangroves for food and shelter. The most conspicuous species are molluscs and crustaceans, but many other types also rely on mangroves.

Mangroves can live for one hundred years and therefore record the effects of changing environmental conditions in their structure and composition. By monitoring these factors, information can be obtained relating to the overall health of the marine environment. All mangroves, dead and alive, are protected under the *Fisheries Act 1994*.

### Mangroves in the foodchain

Every square metre of mangrove plants produces about one kilogram of litter (mainly leaves, twigs, bark, fruit and flowers) every year. Some of this debris is eaten by crabs but most must be broken down before the nutrients can be used by other animals. This is where bacteria and fungi come in, feasting on the litter.

Partly decomposed leaf particles, loaded with colonies of micro-organisms are then eaten by fish and prawns. They produce waste which, along with the smallest mangrove debris, is taken up by molluscs and small crustaceans. Even dissolved substances are used by plankton or, if they land on the mud surface, are eaten by animals such as crabs and mud whelks.

## What is a mangrove?

A mangrove is a woody plant or plant community which grows in the intertidal areas between the sea and the land. They thrive in areas where silt is abundant, such as in estuaries, rivers and protected island areas<sup>4</sup>. Mangroves may grow as sparse, stunted shrublands or tall, thickly-wooded forests, depending on the slope of the shore, wave action and nutrients. The term “mangrove” refers not only to the species of plant, but is also used to refer to a community of plants as a whole.

All mangroves can live in salt water. Salt is not essential for their survival, but the best growth occurs where plants live in brackish sea water. One advantage to growing in a salty environment is the lack of competition, as only a few plants have adapted to living in the intertidal conditions.

## Mangroves in Moreton Bay Marine Park

Worldwide there are about 65 species of mangroves belonging to 20 families. Around 35 mangrove species and three hybrids are known to occur in Queensland, of which eight species live in Moreton Bay Marine Park. Many areas in the marine park provide ideal habitat for mangroves, because they are sheltered by the off-shore islands. There are approximately 140 square kilometres of mangroves in the marine park, with the largest communities found in Pumicestone Passage and the Southern Bay Islands, south of Jacobs Well.

In Moreton Bay Marine Park the grey mangrove, *Avicennia marina*, dominates. River mangrove, *Aegiceras corniculatum*, is common along river banks while black mangrove, *Lumnitzera racemosa*, is at its southern limit in Moreton Bay.

## Moreton Bay Marine Park mangroves under threat

Mangroves in Moreton Bay Marine Park are impacted by both human and natural influences<sup>5</sup>. Between 1974 and 1997, approximately 313 hectares of mangrove were lost<sup>6</sup> in the marine park. Much of this loss was due to land reclamation for port, residential and industrial development – making way for south-east Queensland’s rapidly expanding population. Changes to tidal flows through dredging of channels and the construction of rock walls and groynes all take their toll on mangrove communities.

Pollution is also a significant threat to mangroves. It has been reported that blooms of the cyanobacteria *Lynbgya majuscula* may be causing mangrove die-off in Deception Bay<sup>7</sup>. Mangroves are also sensitive to other types of pollution including marine debris, oil spills and air pollution.

Mangroves have also been lost through natural causes, including erosion and severe weather. For example, a hailstorm in 1997 caused significant damage to mangroves in the southern bay. Erosion, another natural threat, is often made worse by boat wash from the increasing number of boats visiting the marine park.

## More information

For more information on the Moreton Bay Marine Park and the zoning plan review process, visit the EPA’s website at [www.epa.qld.gov.au/moretonbay](http://www.epa.qld.gov.au/moretonbay).

A number of information sheets are available on this website. You can also email us at [moreton.bay@epa.qld.gov.au](mailto:moreton.bay@epa.qld.gov.au) or freecall 1800 105 789.

<sup>1</sup> UQ (2006) Mangroves: Moreton Bay species, Centre for Marine Studies, University of Queensland, Brisbane (<http://www.cms.uq.edu.au/marbot/publications/pdf/mangrove4and1.pdf>)

<sup>2</sup> UNEP-WCMC (2006) In the front line: Shoreline protection and other ecosystem services from mangroves and coral reefs. UNEP-WCMC, Cambridge. UK. 33pp

<sup>3</sup> EPA (2006) Wetland habitats: Mangroves, Environmental Protection Agency, Brisbane

<sup>4</sup> Officers of the Fisheries Group (1998) Mangroves: File no. F98011, Department of Primary Industries and Fisheries, Brisbane

<sup>5</sup> Pedersen, D. and Duke, N. (2002) Impacts on Moreton Bay mangroves, Centre for Marine Studies, University of Queensland, Brisbane

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

