

The mysteries of MANGROVES

A mangrove is a land plant that is able to live in salt water. These plants come in all shapes and sizes of trees and shrubs. They have developed a number of specialised adaptations that enable them to live in intertidal regions – the area between high tide and low tide. Mangrove areas are highly fertile habitats, supporting a rich diversity of animal species.



The hardy grey mangrove

The grey mangrove (*Avicennia marina*) is the most widespread species in Australia. It is a hardy plant that has adapted to a range of soil types. The grey mangrove can tolerate low temperatures and a variety of intertidal conditions. In fact, it has adapted so successfully that it is able to survive in all of Western Australia's widely distributed mangrove areas.

Named after its grey bark, it grows up to 10 m tall and has distinctive pencil-like roots, known as "pneumatophores". These above-ground roots grow to about 30 cm tall, and can absorb oxygen when not submerged underwater.



Mangroves and man

For hundreds of years Australian Aboriginal communities have had close links with mangroves, which provide them with many useful resources.

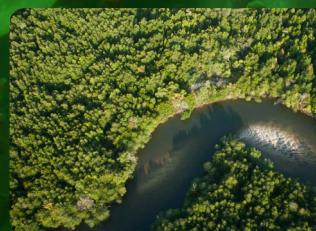
Mangrove plants are used for food, including the fruit of some species and nectar from the flowers. Mangrove areas are also a source of edible animals such as crabs, prawns and fish.

Various medicines produced from mangroves can help with toothache, infections, stings, headaches, rheumatism, snakebites, boils, ulcers and can even be used as an insect repellent.

Timber from mangroves has been used to make tools and weapons such as axe handles, boomerangs, spears, boats and fishing floats.

Threats to mangroves

Many human activities are threats to mangroves. Land clearing for coastal development, mining, aquaculture, timber, salt production and agricultural crops such as rice, coconut and palm oil can destroy mangrove ecosystems. Other threats include trampling, pollution and changes in tidal flows.



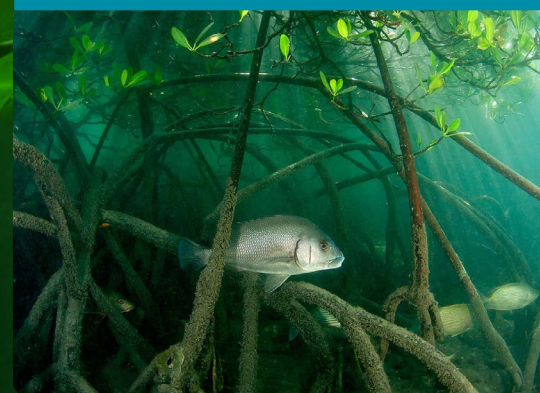
Habitat

Mangrove communities have the effect of slowing down currents and encouraging an accumulation of mud and sediment that harbours an abundance of invertebrate life.

Mangroves protect the coastline by creating a buffer from storms and reducing erosion, filtering pollutants from land run-off, and trapping silt and sediments.

Mangroves are important nursery areas for many marine animals, providing shelter and protection for the juveniles that depend upon this habitat.

They are also important as a food source, forming the base of rich food webs based on the breakdown of detritus – mostly leaf litter from the mangroves themselves. Many species of fish spend at least a part of their life in mangrove communities.



Range

There are 15.5 million hectares of mangroves worldwide. The total mangrove area in Australia is 11,600 km², or over a million hectares. Mangroves grow in sheltered shores and are more plentiful in the warm tropical regions.

In Western Australia, mangroves are most common in the Kimberley and Pilbara regions, Exmouth, Shark Bay and the Abrolhos Islands. There is also a distinct mangrove community found in the Leschenault Inlet near Bunbury in the State's south-west.



Toughing it out in a harsh saltwater habitat

Mangroves live in a harsh environment: the mud is regularly flooded, is low in oxygen and high in salt. Waves and tides batter the plants and make it hard for mangrove seedlings to survive.

Shaking the salt

Many mangrove species use a number of methods to cope with the problem of excess salt. These include:

- filtering it out through their roots;
- excreting the salt through special salt glands in the leaves; and
- depositing the salt in the older leaves and bark, which then drop from the tree.



Coming up for air

Mangroves have extensive underground root systems, which support and anchor the plants. As oxygen levels are poor below the surface, they can't rely on these underground roots to absorb oxygen like other terrestrial plants. Many mangroves therefore have adapted "aerial" roots above the mud.

Seed survival strategies

Some mangroves give their seeds a better chance of surviving in this harsh habitat. Large numbers of seeds are produced and many of these "germinate" (sprout leaves and roots) on the tree itself instead of dropping off. Other mangroves provide a large food store for their seeds before dropping them.

Many mangrove seeds and seedlings are dispersed by water – they float and grow rapidly after falling off from the tree, allowing them to quickly attach themselves in the mud if conditions are right.



Do you smell rotten eggs? EEWWW!

Mangrove mud contains large amounts of dead plant and animal matter (detritus), which is broken down by billions of bacteria. Because the mud is so thick and wet the oxygen can't get any deeper than the first couple of centimetres. Therefore the bacteria which live here need to be able to survive without oxygen – these are known as "anaerobic" bacteria. These bacteria produce sulphur dioxide, which is more commonly known as rotten egg gas.

CREATURE FEATURE



Juvenile barramundi feed, shelter and grow in mangrove areas during their first year.



Mangroves provide a great food source for the saltwater (or estuarine) crocodile – the world's largest reptile, reaching up to 7 m in length.



Mud crabs can generally be found hiding amongst mangroves roots. They burrow backwards into the mud using their large front claws for protection.



Mudskippers are well adapted to life in intertidal areas as they can store water in their special gill chambers. These chambers keep their gills wet and allow them to breathe for short periods of time out of the water.