Mangrove forests

Mangrove forests form some of Australia’s most important and widespread coastal ecosystems. They grow between the low and high tide zone of tropical, subtropical, and protected temperate coastal rivers, estuaries and bays.

Mangrove forests cover 750 000 hectares around the Australian coastline (Table 1 and Figure 1).

Mangrove forests generally range from 2–10 metres in height, but their structure and height vary with the environment. In high rainfall areas of far north Queensland, they may be 30 metres tall. In some temperate and highly salty areas on the inland side of tropical mangrove stands, trees may only reach one metre, and therefore be too short to be classified as forest.

Mangroves can form dense, almost impenetrable stands, often dominated by only one or two species.

Australian mangrove forests consist of 40 species from 19 families of plants, which vary with tidal inundation and latitude. White mangrove (Avicennia marina) is the most widespread and common. Several other salt-tolerant species may grow in mangrove forests. For example, the mangrove palm (Nypa fruticans) occurs in tropical mangrove forests, while the mangrove fern (Acrostichum speciosum) inhabits the mangrove forest floor. Ferns and orchids grow on the trunks and branches of mangroves in tropical areas.

Mangrove species are adapted to tidal inundation and high salinity in coastal estuaries, inlets and bays. They deal with salinity in two ways: by keeping out the dissolved salt as their roots absorb water, or by absorbing the salt and then extruding it through special glands in their leaves.

Mangroves have adapted to low oxygen levels in the deep, muddy soil by evolving aerial or breathing roots (see following box) that grow up through the water into the air.
Where are Australia’s mangrove forests?

Mangrove forests are widespread in tropical, subtropical and some temperate regions of the world. In Australia, most mangrove forests are located in the tropical northwest, north and northeast, but there are isolated stands in Victoria, South Australia and in temperate Western Australia (Figure 1). The southern-most occurrence of mangroves in Australia is at Wilson’s Promontory, Victoria.

Tropical mangrove forests are the most diverse and widespread, with the greatest concentration of species along the northeast coast of Queensland. The number of species decreases further south due to lower winter temperatures, and from east to west across the tropics as rainfall decreases. Some scientists consider mangroves to be a special form of tropical rainforest, because they have many families of plants in common. In Australia, however, mangroves have traditionally been considered a separate vegetation type.

Table 1: Area of mangrove forest by crown cover compared with total native forest (hectares)

<table>
<thead>
<tr>
<th></th>
<th>Woodland</th>
<th>Open</th>
<th>Closed</th>
<th>Unknown crown cover</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mangrove</td>
<td>25 000</td>
<td>266 000</td>
<td>325 000</td>
<td>132 000</td>
<td>749 000</td>
</tr>
<tr>
<td>Total native forest</td>
<td>102 526 000</td>
<td>45 603 000</td>
<td>4 644 000</td>
<td>9 907 000</td>
<td>162 680 000</td>
</tr>
</tbody>
</table>

Table 2: Tenure of mangrove forest, by State and Territory (hectares)

<table>
<thead>
<tr>
<th>Tenure</th>
<th>ACT</th>
<th>NSW</th>
<th>NT</th>
<th>Qld</th>
<th>SA</th>
<th>Tas</th>
<th>Vic</th>
<th>WA</th>
<th>Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leasehold land</td>
<td>0</td>
<td>0</td>
<td>44 000</td>
<td>18 000</td>
<td>2 000</td>
<td>0</td>
<td>0</td>
<td>20 000</td>
<td>85 000</td>
</tr>
<tr>
<td>Multiple-use forests</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1 000</td>
<td>1 000</td>
</tr>
<tr>
<td>Nature conservation reserves</td>
<td>0</td>
<td>1 000</td>
<td>4 000</td>
<td>22 000</td>
<td>3 000</td>
<td>0</td>
<td>1 000</td>
<td>37 000</td>
<td>69 000</td>
</tr>
<tr>
<td>Other crown land</td>
<td>0</td>
<td>0</td>
<td>11 000</td>
<td>46 000</td>
<td>3 000</td>
<td>0</td>
<td>0</td>
<td>106 000</td>
<td>166 000</td>
</tr>
<tr>
<td>Private land</td>
<td>0</td>
<td>1 000</td>
<td>261 000</td>
<td>61 000</td>
<td>1 000</td>
<td>0</td>
<td>1 000</td>
<td>4 000</td>
<td>329 000</td>
</tr>
<tr>
<td>Unresolved tenure</td>
<td>0</td>
<td>0</td>
<td>36 000</td>
<td>48 000</td>
<td>11 000</td>
<td>0</td>
<td>0</td>
<td>5 000</td>
<td>99 000</td>
</tr>
<tr>
<td>Total mangrove forest</td>
<td>0</td>
<td>3 000</td>
<td>355 000</td>
<td>196 000</td>
<td>19 000</td>
<td>0</td>
<td>2 000</td>
<td>173 000</td>
<td>749 000</td>
</tr>
</tbody>
</table>


Ownership and management

Reflecting their predominantly tropical distribution, the greatest area of mangrove forest is in the Northern Territory, while Queensland and Western Australia have most of the remainder. More than 40% are on privately managed land, which includes Indigenous land (Table 2).

Values and uses

Wood

Historically, many mangrove species provided useful products, such as tannin, wood for poles, firewood, charcoal and occasionally milled timber. Australian mangrove forests, however, are no longer harvested commercially for timber.

Environmental

Mangroves play important roles in the ecology of wetlands and estuaries. By reducing the speed of currents and trapping sediments, mangroves help to reduce silt accumulation in adjacent marine habitats. In addition, riverborne nutrients and chemicals are trapped and recycled within mangroves. They provide habitat and breeding sites for birds, fish and other wildlife. They are also highly valued for their unique biodiversity.

Indigenous uses

Mangroves are also an important resource for Indigenous people in the Northern Territory. The plants are a source of honey and fruit, as well as medicines. Mangrove worms, found within decaying mangrove wood, are used as food. The timber can be used for implements, firewood and construction. Many edible fish, crabs and other shellfish are harvested from mangrove swamps.

Other uses

One of the key beneficiaries of mangroves is the fishing industry. A high proportion of the commercial and recreational fish catch around Australia are species that require estuarine habitat for at least part of their lifecycle. These include barramundi (Lates calcarifer) and banana prawn (Penaeus merguiensis). Many mangrove forests provide nursery areas for these valuable fish. It has been estimated that 75% of fish and prawns caught commercially in Queensland spend at least part of their lifecycle in mangroves.

Some mangroves have leaves that are palatable for livestock when other food is unavailable.
Acknowledgements

Australia’s forest types profiles have been compiled by the National Forest Inventory, a cooperative project between the Australian Government and State and Territory governments, and managed by the Bureau of Rural Sciences. Information in this profile is taken from Australia’s State of the Forests Report 2003, available by calling 1800 020 157 or online from http://www.brs.gov.au/stateoftheforests.

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The transition from mangrove forest to rainforest, Daintree Rainforest, Queensland