

Mangroves is a name given to a particular group of trees that specialise living in estuarine areas, where the river meets the sea. They have some challenging conditions to live in including strong winds, salty air, constant movement of tides, and muddy soil. The adaptations that mangroves have made to their environment make them fascinating plants.

To prevent being blow over by strong coastal winds mangroves have a far reaching root system that keeps them stable. These roots also catch fallen leaves so that nutrients are returned to the soil surrounding the tree, nourishing what would otherwise be infertile soil. As an added benefit the roots catch any soil running off land during rain events. This prevents the soil from muddying up the water, thereby protecting our underwater forests of seagrass and coral from being smothered. Holding onto soil that would otherwise be washed away also gradually increases land size. The ability of mangroves to withstand these conditions means that they act as a barrier against strong winds and storms and protect any vegetation, people and infrastructure behind them.



When you mix soil with water you get mud! The challenge for plants growing in mud is that the soil lacks oxygen, which roots need to survive. To cope with these conditions mangroves have roots that stick up in the air and breathe oxygen from the atmosphere, instead of from air pockets in the soil like other plants do. We call these special types of roots “pneumatophores”. The pneumatophores have pores on them called “lenticels” – when the tide is out and the roots are exposed to air the lenticels open so that the roots can breathe, and when the tide is in and the roots are underwater they close to protect the plant from drowning.



Although mangroves are specialised in living in salty conditions, the plants can still be damaged by too much salt. A mangrove's roots play an important role by filtering out up to 90% of the salt in the water it absorbs. Any salt that makes it into the plant can still be harmful and many mangroves deal with this by excreting salt from their leaves. Those that can't do this, like the Red Mangrove, will instead send salt to leaves that are already dying so that the salt leaves their system when those leaves fall off.



The River Mangrove excretes salt from its leaves



Red mangroves send salt to dying leaves

Adult mangroves have many adaptations to their environment, however it's not easy for a young plant to establish itself in these harsh conditions. For this reason, mangrove seeds germinate while they are still on the tree. By the time the seeds drop they are able to immediately set down roots to stabilise themselves, or otherwise survive floating in water for up to one year waiting to eventually reach land again. Some mangrove seeds can even fix their own nitrogen to help them survive out in the ocean. This is why Mangroves have successfully spread all over the world and are native to all continents that have tropical or sub-tropical coasts.





A germinated mangrove seed still on the tree

There are about 120 mangrove species around the world and roughly a third of them are found in Australia. 39 of them are found in Queensland, 14 of which are found in South East Queensland.

Mangroves are one of the easiest plants to identify. You can tell them apart from each other through their roots, leaves, flowers and fruits. For example grey mangroves have thin roots that stick up in the air like pencils and small leaves that are silvery grey underneath. Red mangroves have stilt roots that look like big arches and their leaves have small black dots underneath. Orange mangroves have large glossy leaves and thick crooked roots that look like knobbly knees.



The grey underside of a Grey Mangrove leaf



The “knobbly knees” roots of an Orange Mangrove

Mangrove Forests are home to many other types of plants including vines, moss, mistletoe, and epiphytes that take advantage of the mangroves’ ability to survive in the harsh conditions. The fallen leaves trapped in their roots attract worms, crustaceans and other things that breakdown organic matter. These in turn attract birds of prey, snakes, possums, and small marsupials. Flowers attract insects, butterflies, and nectar eating birds. Mangroves are also home to the vulnerable Water Mouse, which build their nests in the mud.



Photo supplied by Noemi Janovics

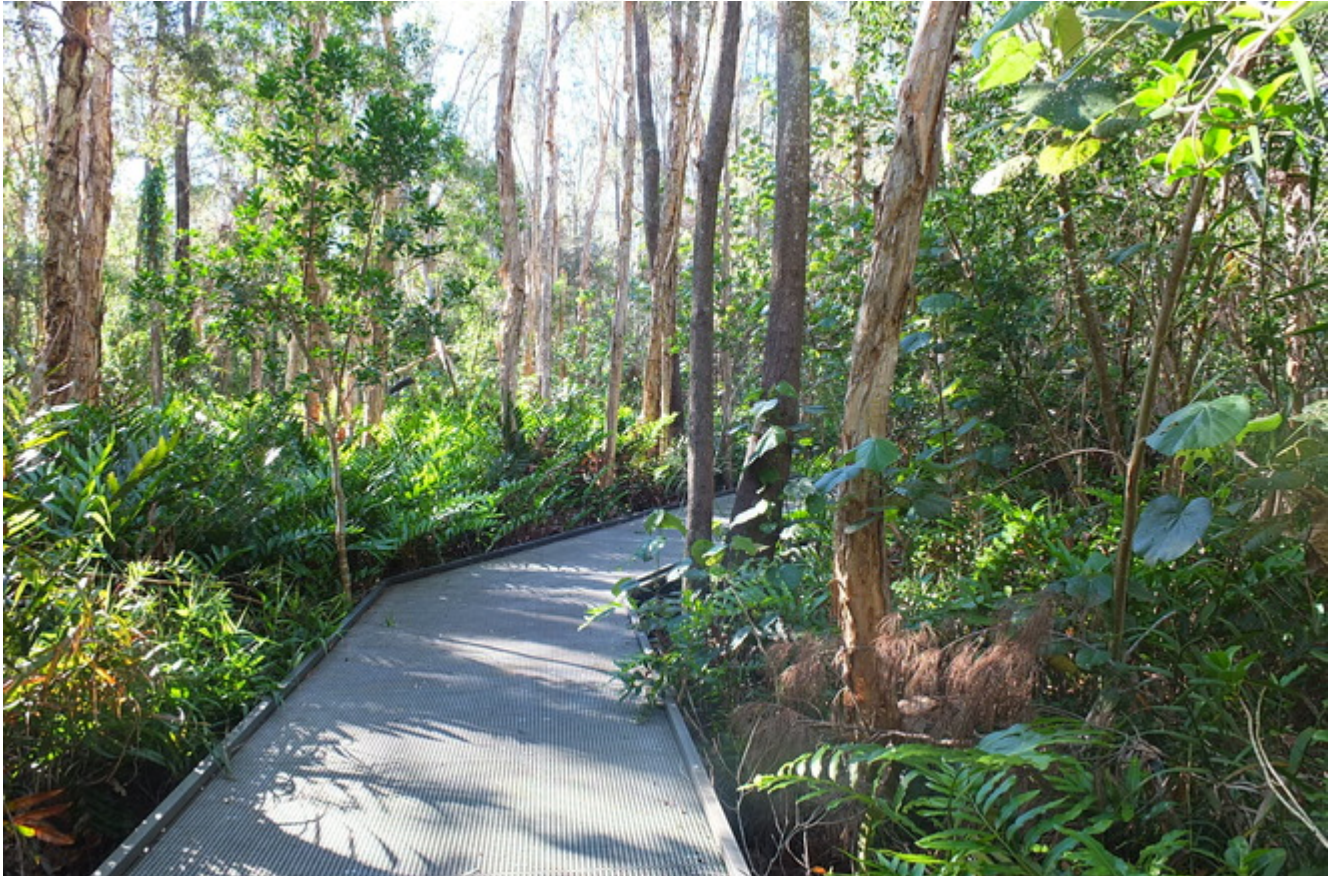
There is perhaps one fact that reminds us just how important mangroves are: it’s estimated that about 75% of the fish species that are commercially caught spend at least part of their lifecycle living in mangroves. The exposed roots are a safe haven for small fish to hide from predator species and seek shelter from strong tides. These fish species simply wouldn’t exist without them.



Mangroves are under threat from many human activities including land clearing, herbicides and other chemicals washing in from land, encroachment of weeds, and the threat of drowning from sea level rise. Mangrove Forests are a fascinating place to explore – especially once you know more about them. But their exposed roots are easily damaged when trampled by walkers or 4WD vehicles. There are many places in our region where you can enjoy a walk through the mangroves without causing them damage, including boardwalks at the following locations:

- [Weyba Creek Conservation Park](#) (Noosa)
- [Maroochy Wetlands Sanctuary](#) (Bli Bli)
- [Costigan Mangrove Boardwalk](#) (Golden Beach)
- [Wynnum Mangrove Boardwalk](#)





Maroochy Wetlands Sanctuary (Image by Elaine de Wet)

Please [contact](#) our ECO Education Service team to request a Mangrove workshop or fieldtrip.

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