

**SCIENCE**  
**Stage 3 Living World**

Adaptations of living things

How have mangroves and platypus adapted to the river?



This resource supports the Georges Riverkeeper Stage 3 Education Module 6: Living things in Water

**Outcome:** examines how the environment affects the growth, survival and adaptation of living things ST3-4LW-S

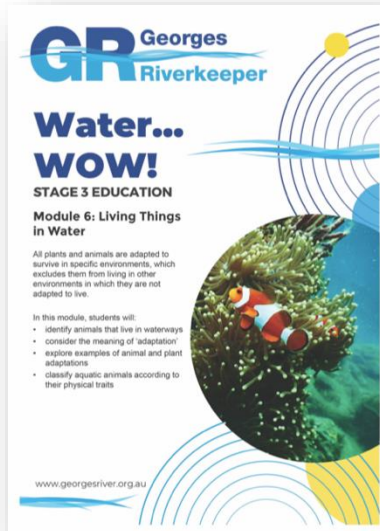
**Focus Question:** How do the structural features of living things support survival?

**Learning Intentions:** I can name some adaptations that enable mangroves and other fauna have to survive in the Georges River.

**Success Criteria:** I can name the parts of a mangrove tree. I can explain the adaptations a mangrove and platypus has that help them survive. I can explain how mangroves protect the riverbanks along the Georges River.

**Overview:**

Mangroves are a group of trees and shrubs that are capable of growing in marine, estuarine and, to a limited degree, fresh water. They occupy the fringe of intertidal shallows between the land and the sea. As a group of plants, mangroves share several highly specialised adaptations that have allowed them to colonise and thrive in intertidal areas. In particular they have developed special ways of dealing with concentrations of salt that would kill or inhibit the growth of most other plants ([source](#)). Mangrove adaptations are introduced in this 8 minute ABC video titled '[How do mangrove trees live in mud and sea water?](#)'. Conduct hands-on experiments on mangroves and discover platypus living in the Georges River with special adaptations for this environment.



**Aboriginal and Torres Strait Islander Histories and Cultures**

Aboriginal uses of mangrove trees



The Aboriginal people (or First Nations people) of the Georges River and Botany Bay depended on local and traditional materials. Mangrove wood was important for two reasons. One was the shape of the curved mangrove branches and roots: the most prized were the 'elbows' or 'knees' which could be readily carved into the boomerang shape.

The other was the characteristic qualities of this wood which was adapted to regular inundation with the tide. Joe Timbery, a senior La Perouse Aboriginal man interviewed in 1963, described the advantages of using mangrove wood because it didn't warp and, after being carefully treated, gave the best finish:



*'we always left the natural colour of the wood. If the wood didn't have a good colour or grain, we used to shape it up roughly and then bury it in wet ground for a few months. That made it blue-black and tough, and it polished up well'* ([source](#) page 130-131).

Photo 1: [Boomerang from La Perouse](#) Made in La Perouse Aboriginal Reserve, 1932-1940. Long wooden boomerang, constructed from a light coloured mangrove wood.  
Photo 2: [Mangroves on the Georges River](#)



# Adaptations of living things

How have mangroves and aquatic animals adapted to the river?

## What adaptations do mangroves have?

The most visible adaptation of mangrove plants, and the one which most distinguishes them from other terrestrial plants, is their root system. An obvious feature of the Grey Mangrove (*Avicennia marina* variety *australasica*) is its spiky vertical roots, called peg roots or 'pneumatophores', which can be seen at low tide protruding from the mud or sand. These roots act like snorkels, drawing air into the underlying root system, allowing the plant to breathe, survive and grow in soils that are too poorly aerated to allow other terrestrial plants to establish. Some mangroves are 'viviparous' (seeds germinate before becoming detached from the parent tree). This allows the seedlings to get a head-start before the seed falls into the water. They also have:

- salty sap (i.e. concentrations of salt in the sap),
- leaves with a waxy coating that limits saltwater penetration,
- salt-secreting pores on the leaves that allow the plant to get rid of excess salt,
- salt removal by concentrating it in branches and leaves before dropping them.

([source](#))

## ACTIVITY 1: How do mangroves protect our riverbanks?

Mangroves protect coastal land by absorbing the energy of tidal currents and storm-driven wind and wave action, creating a natural breakwater that helps stop erosion ([source](#)). Take a look at this [video](#) that demonstrates how this works. This can be recreated in a

shallow container with sand or soil up one end and a water at the other. When waves are made it erodes the unprotected sand/soil. This [beach erosion video](#) shows how you can make this experiment in class. You could also extend this activity by including something to protect the shoreline that represents what mangroves do.



## ACTIVITY 2: Ephemeral Art

Take a walk outside and collect 'loose parts' found in a natural area to make an ephemeral artwork of a mangrove tree. Only use parts of plants that have fallen off. Please don't use green foliage that is picked off plants. Recreate the parts of a mangrove you have learned about, snorkel roots (pneumatophores), aerial roots, seedlings, seed pods etc. You can record a video of students explaining the parts of a mangrove and adaptations they have to help them live in this environment. You could also take photos of the students artworks and print them and ask them to annotate the adaptations.



## ACTIVITY 3: What adaptations do platypus have?

Platypus have been sited in the upper freshwater sections of the Georges River ([source](#)). They are amazing animals with some equally amazing adaptations. Watch the [video on platypus adaptations](#). Create a drawing of a platypus like Aunty Lorna from the Bankstown Koori Elders Group has done on this clay artwork. Label it with the adaptations that it has that help it survive. [Platypus Fact Sheet](#).



These are free water education resources for teachers and students about water in the Georges River catchment in South Sydney, and more generally, in Australia. These education modules have been prepared for Stage 3 in primary schools.

They cover facts for kids about drinking water, water uses, the water cycle, water pollution, water conservation, rainfall, drought, floods, aquatic food webs, and how to measure water conditions using waterbugs, plus much more.

[www.georgesriver.org.au/learn-about-the-river/schools](http://www.georgesriver.org.au/learn-about-the-river/schools)

There are many different stakeholders and landowners in the Georges River Catchment who all have a responsibility to manage their land in a way that ensures there is a minimal impact on the river and its ecosystems.

### Georges Riverkeeper's Members:



### Georges Riverkeeper's Partners:

