

**Mangroves are amazing trees** which live half-way between the land and the sea. Unlike other plants, mangroves grow with their roots in an alternating environment of sea water and freshwater runoff from the land.

Mangroves usually grow in flat muddy ground through which it is hard to walk. Very few people regard these insect-ridden areas worthy of saving. As a result, mangrove areas are often used as rubbish dumps or the trees are cut down and the land filled in for housing or other development.

# MANGROVES

## IN THE SOUTH PACIFIC

But...mangroves play an important role in many coastal environments. As well as providing food and shelter for a large number of birds and marine animals, mangroves protect and build up coastlines.

### 1 Mangroves provide an important source of food for fish and other marine creatures.

Mangroves take up nutrients (dissolved food material) through their root systems. Many of these nutrients are dissolved in water running off the land. Like other plants, mangroves convert the nutrients to plant material by using sunlight in a process called *photosynthesis*. Parts of the mangrove, such as fallen leaves, rot to form decomposed material called *detritus*.

About 10 tonnes of mangrove leaves are produced each year by 1 hectare of mangrove trees. (about 4 tons per acre)



The decaying leaves and detritus form a constant supply of food for crabs, prawns and some fish. Many large fish live in, or visit, the mangroves to feed on these smaller creatures. Much valuable organic material is 'exported' to other areas such as nearby seagrass beds and coral reefs.

### 4 Mangroves protect and build up shorelines.

Mangroves form an underground network of roots which hold the earth together and prevent it being washed away. Above the ground, the roots act like a comb and trap particles and sediment; in this way mangroves build up and extend shorelines.

Mangrove seedlings grow in the newly-formed ground and the mangrove front advances towards the sea.

### 5 Mangroves provide shelter for many plants, animals and birds

such as the mudskipper, a small fish which can climb trees! Its fins act as legs and, when frightened, it can climb up the roots of mangroves.



The mudskipper is just one of many unusual creatures living in mangrove areas.

**What are mangroves?** The word 'mangrove' is used to refer to over 90 different types of trees, many of which are unrelated to each other. These trees vary in size and appearance but are alike in that they have become specialized to live at the sea's edge. Three mangroves which occur in the Pacific region are shown below.



**white mangrove (*Avicennia*)**  
This mangrove has underground cable roots growing from the trunk. Slender pencil-like roots called pneumatophores grow up from the ground.



**red mangrove (*Rhizophora*)**  
This mangrove has stilt roots which grow like arches from high up in the tree. The stilt roots enable it to survive changes in the level of the mud and sand.



**(*Bruguiera*)**  
This mangrove has buttress roots - thick vertical slabs - growing around the trunk. Knee-like pneumatophores grow up above the surface of the ground.

In some places only one species of mangrove grows while on other coasts, several different species form a coastal forest. A healthy mangrove forest is shown in the photograph below.



Many mangrove areas in the South Pacific, like the one shown in the photograph below, have been badly affected or destroyed by the activities of people.



### WAYS OF PROTECTING MANGROVES.

Mangrove areas have been used as rubbish dumps or places to fill in and use for housing development. This destruction is usually called *reclamation* - the claiming back of useless wasteland. But, as we have seen, mangroves are certainly not wasteland!

Mangroves are also destroyed by less direct activities of people - activities which alter the environment in which mangroves live. The mangroves shown in the diagram below have been killed by the construction of a coastal road. The road has cut off the flow of freshwater runoff from the land. As a result the water to the left of the road is too salty and the water to the right of the road contains too much fresh water.



The mangroves could have been saved by building the road inland behind the mangroves - or perhaps by burying pipes under the road to allow the flow of tidal seawater and freshwater runoff.

Mangroves are particularly affected by...

- changes in the tidal flow or salinity (salt content) of the water in which mangroves live,
- constructions which cause sediments to build up, or to be washed away from mangrove root systems, and
- pollution such as chemicals, oil or sewage in the water.

We should regard mangroves as a vital part of the coastal environment. Mangroves areas can be managed by cutting down no more than the **sustainable yield** (see box 2), and by making at least some areas **reserves**, where the mangroves are fully protected.

### 2 Mangroves are a valuable and renewable resource for coastal people.

Mangroves are used to provide dyes, or colouring material, and wood for cooking and building. They can continue to be used this way forever, as long as the quantity of mangroves cut down is no more than that which can be replaced by natural growth. This quantity is called the *sustainable yield*.

### 3 Mangroves provide a home for many marine species which are used by people as food.

Many important food species use the mangroves for at least part of their life-cycle. Mangroves provide...

- Permanent homes* for some species such as oysters (which grow on mangrove roots) and mud crabs.
- Nursery areas* (areas where the young grow up before moving out to deeper water) for animals such as prawns. Some fish such as the mangrove mullet stay in mangrove nursery areas for 3 to 4 years before moving out to sea to spawn.
- Feeding areas* for larger fish such as the black-spot sea-perch, which visit mangroves areas to feed on smaller fish and other creatures.

OYSTERS

MULLET

MUD CRAB

PRAWN

BLACK-SPOT SEA-PERCH



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