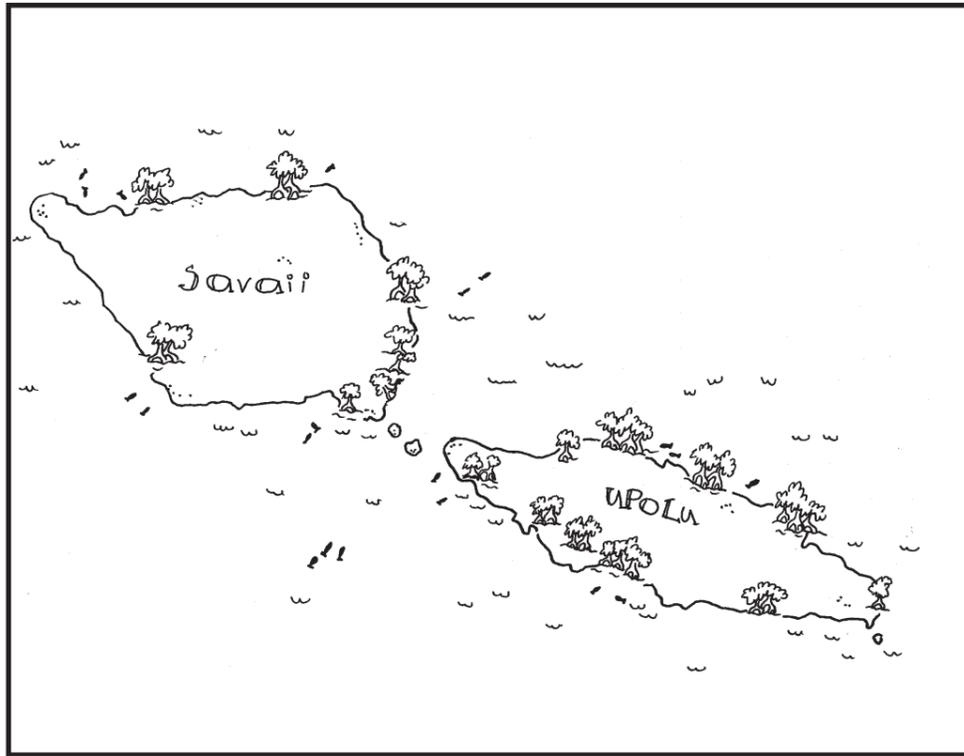


# Mangrove Areas

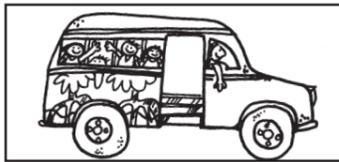
Colour in the map and add this information.



Place where you live



Names of mangrove reserves



Mangrove area your school is going to visit

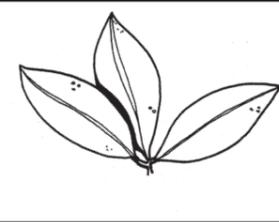


# Mangroves

Mangroves are very special and unique trees. Mangroves are among the few trees that can grow in sea water as well as in places where the salt water mixes with the fresh water from the land. Mangroves grow in places with muddy soil and a protected shoreline. They live in large groups called "mangrove forests". The mangrove forest is home to many different types of plants and trees.

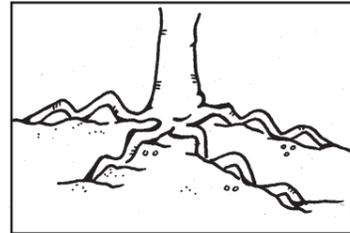
## Leaves

When dead leaves fall into the water they rot, providing nutrients for the soil and food for animals.



## Roots

Each type of mangrove tree has a special type of root that helps it breathe in sea water and mud. The roots of the mangroves hold the soil together.



## Seeds

Some mangrove seeds start to grow while they still are on the tree. When the young plant is big enough to survive it falls into the sea. These young plants float around until they find a muddy area to grow.



## Mangrove types you find in Samoa

Discuss within your group the main physical differences between the two mangrove types you find in Samoa.

Bruguiera



Roots

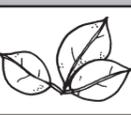
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Trunk

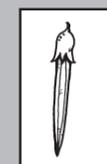
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Rhizophora



Leaves

--



Seeds

--

Draw each one of them



Group No

--

Names

Secretary \_\_\_\_\_

Speaker \_\_\_\_\_

# Before

you visit the mangroves

Follow Pa'a's prints...

Date: \_\_\_\_\_

Time of visit: \_\_\_\_\_

Mangrove area

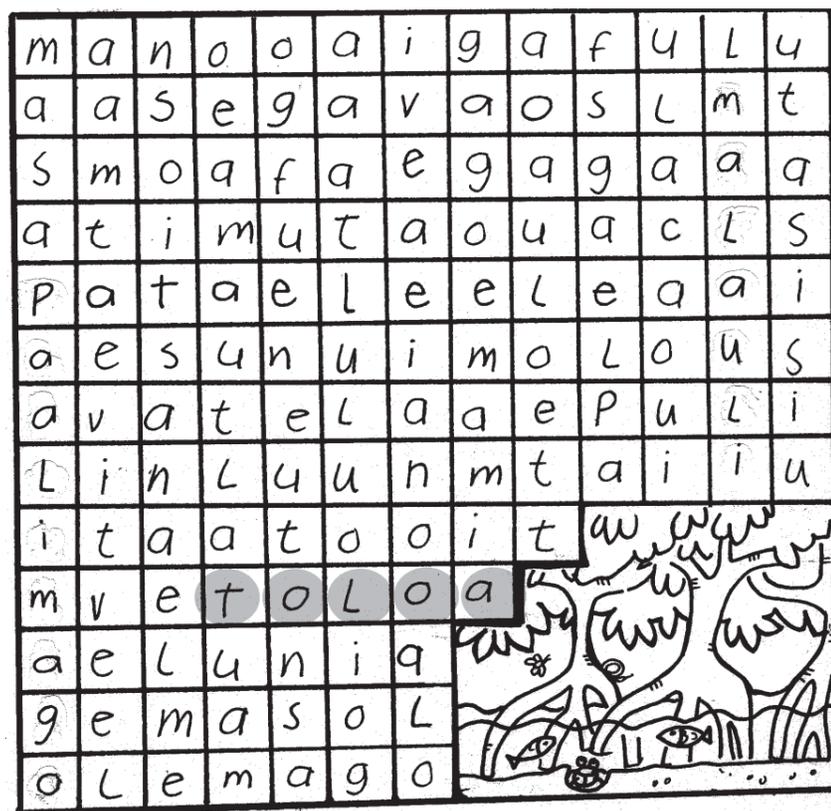
## Things to take with you



- water bottle
- hat
- pen or pencil
- rain coat
- change of clothing
- lunch
- proper shoes
- plastic bag...

(...to protect your guide chart. Make sure you bring it back!)

# Mangrove animal word finder



Sega vao, Lupe, Lulu, Toloa, Vea, Tio, Maso, Manoo, Sisi, Paalimago, Anae, Ula, Mataelele.



Find the Samoan names for these mangrove animals and circle them

- Snail
- Mud skipper
- Green crab
- Blue-crowned lory
- Pigeon
- Owl
- Wild duck
- Banded rail
- Oyster
- Mussel
- Caterpillar
- Butterfly
- Mullet
- Shrimp
- Snapper
- Trevally

# Importance of mangroves



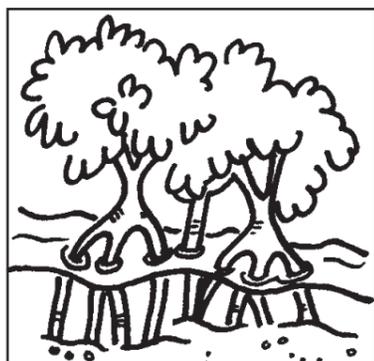
The mangroves can be a place to grow, a permanent home or a feeding area for many animals. Young fish find the mangrove roots a very safe place to grow until they are big enough to move into deeper water. Some big fish like mullet and snapper visit the mangroves to feed on smaller fish, molluscs and insects. Fruit bats, which live in the mangrove canopy (top of the tree), can sometimes be seen flying around dusk, as can some seabirds.



Draw some of the animals that you saw in the mangrove area (in and out of the water).



# Mangroves protect our coast



The large root systems of mangroves slow down waves and water flowing through them. This reduces erosion and causes the particles of soil to settle down. As a result mangrove shores continue to grow towards the sea. Ole a tele se aafiaga o eleele tu matafaga, e pei o le tafiaese atu o eleele i taimi o afa ma timuga pe a faaleagaina pe aveesea foi to gatogo.



When strong winds including cyclones hit the shores where mangroves grow, mangroves act as natural wave breakers. The mangrove trees protect the shore and houses from the wind and waves.

## What will happen...

if many mangroves are cut from the shoreline?



After your visit to the mangroves

Rhizophora and Bruguiera are the two types of mangroves that we can find in Samoa. This chart gives you the basic physical differences between these two trees.

Features	Rhizophora	Bruguiera
Tree size and height	Not as big as Bruguiera	Tall and big
Shape of the whole plant	Oval	Not oval
Leaves	Tips of the leaves are blunt	Tips of the leaves are pointed
Flowers	Whitish yellow	Pink
Seeds	Usually longer and thinner	Short and fat
Stems	Thin and short	Tall, thick and strong
Roots	Mostly above the ground	Mostly underground
Where is found	Towards the water/sea	In the mud or towards the land

# Start here!!



Select a mangrove tree in the area and observe closely the following features:

Tree height, shape of the whole tree; leaves, seeds, stem and root system. Let this be your Mangrove Tree 1.

Look carefully around the area. Can you find a mangrove tree with features different from those of Mangrove Tree 1? This will be Mangrove Tree 2.

Features	Observations	Mangrove Tree 1		Mangrove Tree 2	
<b>Tree size and height</b>	● Is it big and tall?	No	Yes	No	Yes
	● Is it short and small?	No	Yes	No	Yes
<b>Shape</b>	● Is it oval in shape?	No	Yes	No	Yes
<b>Leaves</b>	● Are the tips of the leaves sharply pointed?	No	Yes	No	Yes
	● Are the tips of the leaves blunt?	No	Yes	No	Yes
<b>Flowers</b>	● Are they small and yellow?	No	Yes	No	Yes
	● Are they pink and big?	No	Yes	No	Yes
<b>Seeds</b>	● Are they thin and long?	No	Yes	No	Yes
	● Are they thick and fat?	No	Yes	No	Yes
<b>Roots</b>	● Are they mostly growing from the stem above the ground?	No	Yes	No	Yes
	● Are they mostly underground with parts growing out of the mud?	No	Yes	No	Yes
<b>Where are they found?</b>	● Are they mostly found towards the sea?	No	Yes	No	Yes
	● Are they mostly found closer to the land?	No	Yes	No	Yes

# Stop here!!

Spend some time looking carefully (observing) the roots and leaves of the mangroves in this place.

# Roots and leaves

## Roots

Type of roots

Knee roots

Stilt roots

How wide are the roots? \_\_\_\_\_

Colour

Texture

Choose one particular mangrove tree

Rhizophora

Bruguiera

How many different types of mangrove trees can you see?

## Leaves

Size

Texture

Skin color

leaf shape

roots shape

# Seeds and seedlings

The mangrove seeds are attached to the plant hanging vertically. The mangrove seeds start to grow while they are still on the tree.

When the young plant is big enough to survive it falls into the sea. They drop vertically and stick to the soft muddy ground or are able to float around until they find a muddy area to grow.

Look for mangrove seeds or seedlings (possibly of the two mangrove types). Observe how they are attached to the plant.

Hold a seed vertically and drop it into shallow water or mud.

Pick one seed from the tree and note

shape

size

length

toughness and color

What happens?

Create a few waves towards the seed you just dropped. What happens to the seed?

Pick another seed, hold it horizontally and drop it into the water, does it (tick one)

float

sink

# Start here!

Time you started

12

12

Time you finished

Describe or draw the weather conditions when you started the visit.

Did the weather remain the same during all the visit?

Yes

No

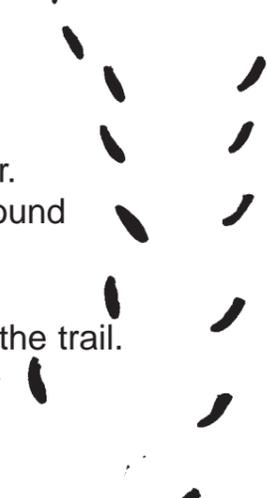
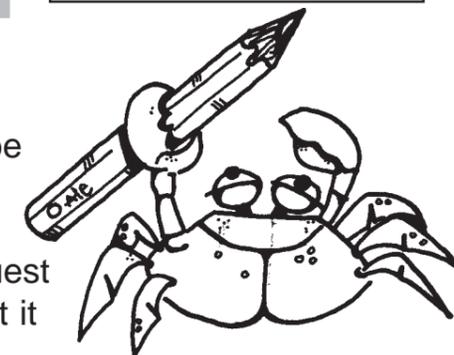
To complete the field guide chart follow my prints!!!

# Talofa Lava!!

My name is Pa'a, I will be taking you into the mangrove forest. Remember you are a guest in this environment, treat it with respect!

## What to do...

1. Work in groups as instructed by your teacher.
2. Walk along the trail or around slowly and carefully.
3. Observe the animals and plants as you walk along the trail.



Start here!

# Plants



# Mangrove Census



# Animals



Mangrove forests are amazing! Many plants live in them. Choose a place to do your "Mangrove Census". Mark your study area. Three metres by three metres or bigger if it is a large group. Name all the plants you see and each member of the team will choose one and count it.

The mangrove is inhabited by different types of animals such as fish, birds, molluscs, bats, and insects. Mangrove areas provide permanent homes for some shellfish which grow on mangrove roots and in mud. They are also good breeding grounds for prawns, mullet, and other fish. Count the animals living in your study area, spend at least 15 minutes!

Name of plant	Found in water/land/on tree	Number	Name of Animal	Found in water/land/on tree	Number

## Threats to the mangroves

### Cutting trees in the mountains

Numerous rivers and streams drain into the mangrove forest. The dirt and sediment is carried downstream to the mangrove forest where it can cover the roots and kill the trees.

### Cutting of the mangrove forest

Mangroves are not a fast growing tree, if many trees of one kind are cut in one area, they will probably not grow back.

### Construction

Any type of building or construction done on or close to the mangroves endangers the trees. When the flow of water (fresh or marine) is reduced, the mangroves suffer or even die.

### Pollution and rubbish

Pollution from land affects the health and growth of the trees. Do not throw rubbish in the mangroves! Oil and gasoline from faulty outboard motors create a thin film that gets stuck on the mangrove's roots and makes it difficult for the tree to exchange gases.

## Mangroves are important

Mangrove timber, its bark and roots are used for many purposes, from building houses to making fish traps, for traditional medicine, extracting dyes and handicrafts. The bark of mangrove roots is used for making garlands (ula).

Mangrove trees produce large amounts of organic matter which form a constant supply of food for crabs, shrimps and other herbivores. The herbivores become food for meat eating animals or carnivores. Other animals come to the mangrove areas to feed on the animals that are sheltered there.

The large root systems of mangroves slow down waves and water flowing through them. This reduces erosion and causes the particles of soil to settle down. As a result mangrove shores continue to grow towards the sea. Mangroves make coastal areas more resistant to erosion during storms and cyclones.

## Medicinal uses of the mangroves

Plant parts cut or removed	Number of trees	Possible use of the plant part
Bark		
Roots		
Stem		

Rubbish and pollution in the mangroves

Make a list of all the rubbish you see in the mangrove area.



Many people use parts of the mangrove tree to make medicines. Can you see any evidence of it?

