



PALM BEACH-CURRUMBIN MANGROVE STUDY 'MANGROVE ADAPTATIONS'

(This study should be conducted at low tide)

INTRODUCTION

Mangroves are angiosperms that grow where the land meets the sea. They live between the mean sea level and the highest tides on a substrate of mud and sand. The continual rise and fall of the tide means constant change. They have evolved a number of unique adaptations that enable them to overcome the problems of changing tides, changing temperature and salinity. Other problems that are faced by these trees are water-logged soil and lack of oxygen.

The animals such as fish, crabs, snakes and birds living amongst the mangroves have also adapted in special ways to cope with the unusual conditions of this ecosystem. Together they form an intricate food web that is very easily disturbed.

Mangrove forests are among the world's most productive ecosystems but the transfer of energy from producer to consumer depends on the activity of **decomposer** organisms. The organic matter in the soil originated from decomposition of plant litter produced by the mangrove trees themselves. The debris is slowly broken down under slightly acidic conditions by microscopic bacteria and fungi which release sulphuric acid (rotten egg gas). This leads to the unusual smell in the mangrove environment.

Angiosperms – flowering plants



◆ Your task today is to investigate the adaptations that the different species of mangrove trees have evolved to cope with conditions such as changing tides and high salinity

AIMS

1. To determine the specific conditions that mangroves tolerate daily
2. To observe the ways in which mangroves have adapted to the tough conditions of an estuary
3. To differentiate between the adaptations of the three different species

EQUIPMENT REQUIRED

Sunscreen and Hat
Mosquito repellent
Water Bottle
Old sandals
Clipboard folder
Notepad, pen and pencil
Magnifying Lens

PROCEDURE

- Spend time walking along the boardwalk and identify the conditions that are unique to the environment of a mangrove.
- For each of these conditions determine how the mangroves have adapted and explain these adaptations in your notes
- Draw the root systems of each of the three types of mangroves, explaining how they assist the mangrove in its environment

*All drawings must be completed in a sharp 2B pencil and should be large enough to show detail. Please label each drawing and add an approximate scale (e.g. x3) and a title.



Activity 1

After spending time walking along the boardwalk answer the questions and fill in the following table

Look carefully at each of the three species. Draw diagrams to illustrate the structure and **structural adaptations** of the tree.

	Trunk and Roots	Leaf	Seed
Genus Species			
Genus Species			
Genus Species			



Activity 2

- a) What specific conditions do mangroves tolerate which are unique to the estuarine environment?

1. _____

2. _____

3. _____

4. _____

- b) Name each of the three species of mangroves and explain how the specific root structure assists each plant in coping with its environment

1. _____

2. _____

3. _____



c) Describe two adaptations that enable the mangroves to grow in a salty environment.

d) Identify two ways in which mangroves help to make an estuary fertile.

1.

2.

e) What is the importance of mangrove communities?



f) Give reasons why mangrove communities are constantly being destroyed in Queensland.

