

Subject  
Science

## Ecological Succession: the magic of mangroves

### Summary

Students learn about unique plants called Mangroves. They're land builders and do this through a process called *Ecological Succession*.

### Overall Expectations.

Students will read a journal article on the website to learn about mangroves. They will then compare two habitats that illustrate Ecological Succession after doing a web search.

### Specific Expectations

Students develop an understanding of the term Ecological Succession.

Students will compare plants in a marine environment habitat to plants in a Boreal forest habitat.

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### BACKGROUND

We first spotted Mangrove swamps in the Exuma Cays Land & Sea Park, central Bahamas. We dinghied through a Mangrove Swamp in Shroud Cay (inside the Park). We later saw the same species of mangroves in SE Bahamas- Mayaguana and the Dominican Republic. Read our journal titled, The Land Builders, posted Wednesday, January 25, 2006. It is incredible to see the results of how plants can transform the ocean floor into dry land. Ah... the magic of Mangroves.

**Challenge:** Compare the adaptations of plants in a Marine Environment that are land builders and are part of *Ecological Succession* with plants that grow in a Boreal Forest.

### ACTIVITIES

1. Go to the journal section of our website and re-read The Land Builders, posted January 25, 2006. The information in the journal will help you answer the questions below. From the journal you will learn about the 4 species of Mangroves that commonly occur together in a swamp. Name these four Mangrove species.
2. The roots of the **Red Mangrove** reach downward from the trunk of the tree to anchor it in the mud. As an adaptation for living in saltwater, this mangrove species has very dense or heavy wood that sinks in water. The wood also has special chemicals giving it a red colour. The leaves have a waxy surface that helps the tree retain moisture. Throughout the year, the tree gradually sheds all its leaves. They then accumulate on the bottom of the water and eventually become permanent enough to support the mud-dwelling mangrove species that grow next. What is this next species of mangrove that grows **after** the Red Mangrove?
3. This next species of Mangrove has highly specialized tubes called pneumatophores (pronounced, *new -MAT-o-forz*). These roots penetrate the surface of the mud. Over time, the mud is slowly transformed or changed to hard ground.
  - a) What is the name of this Mangrove Species?
  - b) What characteristic of mud makes it essential that this Mangrove has tubes? Consider what these tubes do to help the mangrove. (Hint: think about the consistency of mud – is it like a sponge or is it more like clay?).

- The White Mangroves have their own specialization to living in the marine habitat. They have succulent green leaves that have two conspicuous salt-secreting glands on the leaf stem. This enables the species to take over areas in the upper reaches of the tides and prepare the ground for the next species of mangrove to grow. What is the next species of mangrove to take over the marine environment?

***Did you know...***

Mangrove swamps offer sailboats protection from hurricanes and storms like no other coastal area. The dense network of roots and branches breaks up the force of pounding waves. The roots are also strongly anchored into the ground, so sailboats can tie up to them and use them like anchors.

- A common forest habitat in Canada and parts of the US is the Boreal forest. In this terrestrial (land) habitat, there are a variety of small plants that are land builders or stabilizers. They enable large coniferous trees such as Spruce and Fir (Christmas trees) to become established and grow. Search the web to learn about lichens and mosses which are considered to be land builders in a terrestrial habitat. From the information in the journal - The Land Builders, and your research on the web, record what you have learned in a chart. Make a comparison of the two habitats. An example is shown below.

Marine Habitat		Terrestrial Habitat	
Plant	Adaptation	Plant	Adaptation
Red Mangrove	Leaves retain moisture	Lichen	First plants to grow on rocks and decomposing trees.
	Leaves accumulate and turn into mud		
Black Mangrove		Mosses	