

MY COMMUNITY, OUR EARTH

MIAMI

A Comparison of Mangrove Communities: Florida and Vietnam

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Problem Statement: How do the mangrove communities of South Florida compare to those found in Vietnam?

Background

Mangrove forests are trees and shrubs that grow in saline coastal habitats in the tropics and subtropics. Mangroves have had to physically adapt their leaves, their roots and their reproductive methods in order to survive in a harsh, dynamic environment of soft, low oxygen soils and varying salinity. They are found at latitudes of 25 degrees N and 25 degrees S and some even in higher latitudes. In Florida there are 400,000 – 500,000 acres of mangrove forest, while in Vietnam there are 400,000 hectares of mangrove forests.

Distribution

There are about 80 species of mangroves worldwide. Out of these, the most common species are the black, white, or red mangroves. Most of the mangroves in Florida are in the southern region where they live in small communal groups in the black cloudy water along the coast. The main species that can be found in Florida are the red, black, and white mangroves. Out of the 80 known mangrove species there are 22 in Vietnam, reason being that their land contains various ecosystems as the long country containing many lines of latitude, including the equator.



Vietnam Mangroves Two families Three species	Florida Mangroves Three families Four species
Rhizophoraceae family <i>Rhizophora apiculata</i> <i>R. Mangle</i> Avicenniaceae family <i>Avicennia alba</i>	Rhizophoraceae family <i>Rhizophora Mangle</i> Avicenniaceae family <i>Avicennia germinans</i> Cambretaceae family <i>Conmocarpus erecta</i> <i>Laguncularia racemosa</i>

Characteristics of the major mangrove species:

Out of the various species of Mangroves, the Red mangrove can be said to be the tallest of all local species. It can reach heights over 80 feet tall (25m). The plant has very broad leaves which typically grow to 5 inches (12cm) and have a blunt point on the end. The leaves can be described as dark green and waxy on top and a more pale green on the bottom. The trunk itself consists of dark red wood covered by a more subtle grey bark. The easiest way to identify the Red mangrove is through its “prop roots” which are derived from the trunk and “drop roots” which do the same from the branches. The seedling is almost 6 inches long (15 cm) and cigar-shaped.

The second tallest among the different variants, is known as the Black mangrove, which can grow over 65 feet (20m). The green leaves of this plant are 4 inches and have a generally elliptical shape as well as a small salty crust and thick hairs on the bottom. The tree gains its name from its dark and scaly bark. However a more reliable way to identify the plant is through its aerial roots, called pneumatophores which are long and shaped like lima beans.

The smallest of the mangroves is the White Mangrove which can only reach the maximum height of 50 feet. The leaf on this plant is about 3 inches and has 2 glands at the base of the broad flat and oval shaped leaves. When growing in oxygen-deprived sediment the White mangrove often develop peg roots, which are similar to pneumatophores except they are shorter and stouter in appearance. The propagates of the White Mangroves are very small, usually less than 0.2 inches (0.5 cm).

Mangroves contribute to biodiversity because they provide shelter for many species of small fish; they also provide room for algae growth which is beneficial for algae feeding organisms. Mangroves also provide small plants and animals protection from strong tides and prevent these from getting washed away into the ocean.

Benefits and Uses of Mangroves

Perhaps the most important role of mangroves is that they protect vulnerable coastlines from wave action because they hold the soil together and prevent coastal erosion. Mangroves shield inland areas during storms and minimize damage. For example, learning from the 2005 tsunami in Asia, there were no deaths in the areas, which had mangrove forests, compared to those areas without, which suffered massive casualties. In Vietnam, mangroves act as buffers against strong currents and natural disasters like hurricanes and tsunamis. These resistant trees also serve as filtering systems for their agricultural coastal lands.

Mangroves benefit Florida because we use them to protect our ocean borders and as testing grounds for experiments about soil in the ocean. Mangroves increase our biodiversity and are an excellent nursery for small fish and crustaceans hence improving our fishing industry and our tourism.

Distribution of mangroves in Florida and the Vietnam



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swissstopo and the GIS User Community

Changes in Population

Over the years mangroves have significantly been depleted in size and number. This situation has become so bad that they at one time, they were almost placed on a botanic endangered species list. Some of the problems that mangroves face involve outcomes of global warming as well as water pollution and intense increase in tide strength. Generally, mangroves need to live in warm and humid climates but with the growing global warming problem the temperatures during the winter months drops

vastly compared to the last 3 years and more and more we find the number of mangroves decreasing as a result of global warming.

Laws and Protections

In Florida the Mangrove Trimming and Preservations Act, has protected our local mangroves from people's destructive and irresponsible clearing of their land. While in our state, the local state legislature has authority to pass bills or acts to preserve mangroves in Vietnam it is the government that must come to consensus



and act as a whole before any laws can be made. However the Vietnamese government unfortunately has lax enforcement of these laws that have been drawn to protect the precious mangrove forests.

What I have learned is that to protect the mangroves of the world we (mangrove containing nations) must agree on basic fundamental rules to having and preserving mangrove ecosystems across the southern region of the world.

An example of a positive conservation effort is the Reclamation Project which helps promote the global awareness on the endangerment of mangroves not only in our state but also across the world. This type of project that start locally can expand ideas to the rest of the mangrove containing nations. Vietnam has small programs but none to the size of the Reclamation Project. Overall I felt like this experience helped me grow as a human and it exemplified how simple but useful things like mangroves can be.

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Worldwide distribution of mangroves.

