A Comparison of Mangrove Communities: Florida and Colombia

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

Background

A mangrove forest is an agglomeration of special trees that live on the edges of tropics, where the rainforest meets the ocean. Mangroves are special because they have the ability to grow in unstable, tough environments in which other plants are not lucky enough to grow. Mangroves thrive in areas where the water is not necessarily high in oxygen; salt water, fresh water, and even brackish water. You can find mangroves around saline coastal sediment habitats in the tropics and subtropics – mainly between latitudes 25°N and 25°S. These woody trees grow rather quickly, reaching twenty five meters when they are fully grown. The extent of mangrove forests in Florida reaches up to 189.7976ha versus that of Colombia which is 133.5463ha.

Over fifty species of mangroves exist worldwide; seven types are the most common; red, black, and white types being the most dominant. In Colombia, five families and ten species of mangroves can be found while only three families and four species are found in Florida.

The Black Mangroves, (*Avicennia germinans*) are usually found in higher elevations around

Columbia Mangroves Five families Ten species		Florida Mangroves Three families Four species	
Rhizophoraceae family	*Rhizophora harrisoni*	Rhizophoraceae family	*Rhizophora Mangle*
	R. Mangle	Avicenniaceae family	*Avicennia germinans*
	R. racemosa	Cambretaceae family	*Conmocarpus erecta*
	R. samoensis		*Laguncularia racemosa*
Caesalpinaceae family	*Mora oleifera*		
Avicenniaceae family	*Avicennia germinans*		
	A. tonduzzi		
Cambretaceae family	*Conmocarpus erecta*		
	Laguncularia racemosa		
Pellicieraceae family	*Pelliziera rhizophorae*		

isolated groups or woodland formations. They can be identified by the abundance of finger-like roots – pneumatophores – that protrude from the soil around this mangrove's trunk.

Red Mangroves, (*Rhizophora mangle*) are probably the most well-known; their roots have earned these mangroves the title, ''walking trees,'' as it appears to be walking on the surface of the water. Red mangroves typically grow along the water's edge, you might recognize them by their tangled, reddish roots or ''prop-roots.'' The seed-like parts – propagules – are large, pre-germinated seedlings locally known as ''monkey whistles.'' You should know red mangroves are very sensitive, especially to cutting; if fifty percent of its leaves are removed, the tree will die.

The White Mangroves, (*Laguncularia racemosa*) occupy the highest elevations, yes, even farther upland than the red or black mangroves. You may have noticed something peculiar about this type of mangrove, unlike the red and black, white mangroves have no visible aerial root systems.

You are probably wondering, ''how do I identify a white mangrove?'' Well, by its leaves. The white mangrove's leaves are elliptical, light yellow-green, and have two distinguishing glands located at the base of the leaf blade where the stem is born.

Mangrove trees thrive in salty environments; this is because they have the ability to take fresh water from salt water. How is this possible? Some mangroves completely block the intake of salt as soon as it hits their roots; others secrete the left over salt through their leaves. These characteristics make Florida one of the best environments for mangroves. The mangrove ecosystem in South Florida's coastal zone – red, black and white mangroves – traps and cycles different organic materials, chemical elements, and important nutrients. In Colombia, four species of mangroves were found; *Avicennia germinans* (Black mangrove), *Laguncularia racemosa* (White mangrove), *Rhizophora mangle* (Red Mangrove), and *Conocarpus erectus* (Buttonwood).

It is very common for many animals to find

Distribution of mangroves in Florida and Colombia
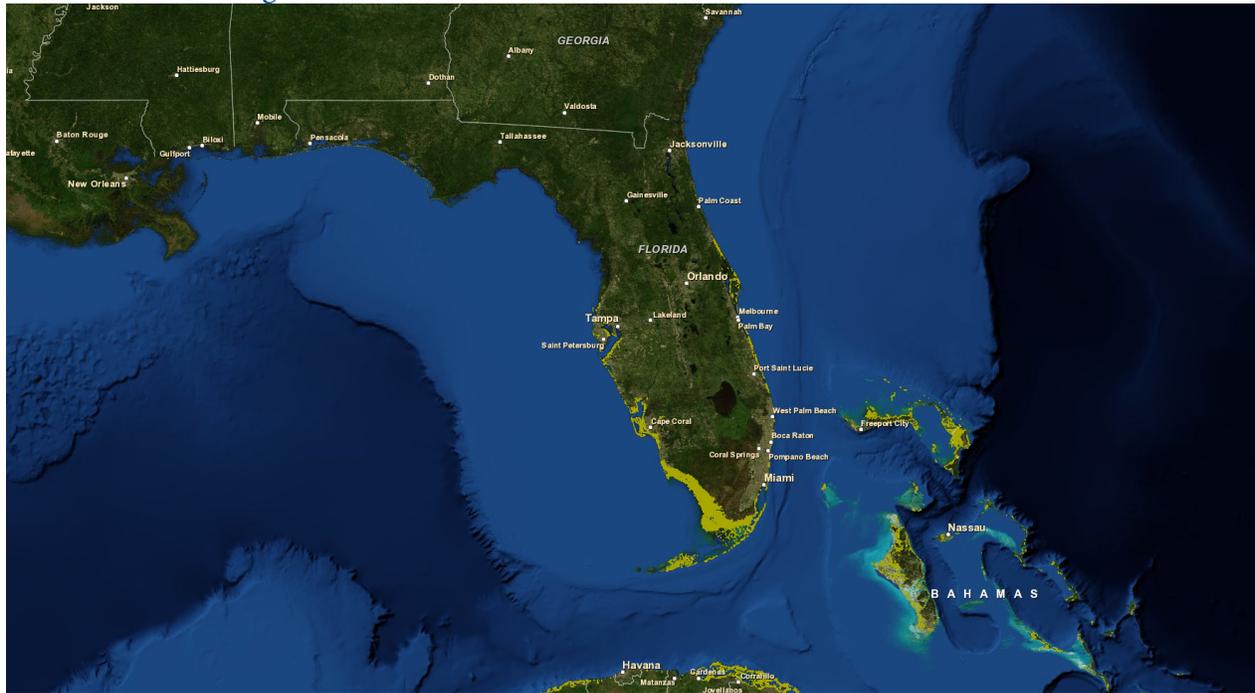
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swissstopo and the GIS User Community

shelter either in the roots or in the branches of mangrove trees. Beautiful coastal birds such as brown pelicans and roseate spoonbills consider mangrove branches nesting areas, or rookeries for their offspring. Mangroves are very much intertwined with marine life; they provide protected nursery environments for fishes, crustaceans, and shellfish. Also, they provide food for marine species such as snook, snapper, tarpon, jack, sheepshead, red drum, oyster, and shrimp. If mangroves aren't preserved and maintained in healthy shape, many of Florida's fisheries will close down.

Current Status & Results

In Colombia, mangroves provide protection against coastline erosion and they function as a natural filter which removes all sediment and nutrients. Over the years, mangrove forests have decreased. The expansion of tourism has been a contributing factor to the clearing of mangrove forests, human settlements require the cutting and burning of mangroves for uses such as: building, firewood, and charcoal. Since mangrove forests are decreasing so rapidly, these ecosystems have become one of the most endan-

gered in the world. Before suffering major human impacts, mangroves covered about seventy-five percent of the tropical coastlines and estuaries.

On July 1, 1996, the 1996 Florida Legislature amended the law regulating the trimming and alteration of mangroves (The Mangrove Trimming and Preservation Act). The Department of Environmental Protection was granted the responsibility of implementing this new law.

You are probably wondering, ''what can we do to save these mangrove forests?'', well, most importantly; learn all you can about mangroves and their importance. Other things you can you include: buying organically grown vegetables, using environmentally-friendly cleaning products to avoid polluting water. Speaking of water, try to use less. Last but not least; dispose of oils and batteries at your local collection site; this will prevent them from ending up in a mangrove swamp.

On Earth Day 2006, Miami artist Xavier Cortada launched his eco-art project. Volunteers collect seedlings from various sites in Miami-Dade County where they would have perished and spread them throughout retail and commercial businesses in South Beach, schools, and the science museum. I think Xavier Cortada's plan is exactly what we need, more and more people will be aware of what's going on and they will put more effort into the conservation of mangroves.

At the Deering Estate I learned a lot about mangroves. I saw all the trash being residing at the bottom of the coastline during low tides. I became aware of the importance of this ecosystem. Ever since that field trip I am more conscious of my actions toward the environment, I have been taking shorter showers as well as encouraging my family members to do so as well. I have taken the time to read about mangroves in order to educate myself and the ones who surround me. It is important to be involved in the preservation of mangroves because this affects not only us and our environment, but our future generations as well.

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Worldwide distribution of mangroves.

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