What are mangroves?

Mangroves are trees that grow in intertidal salty environments because they can tolerate frequent flooding and are able to obtain fresh water from salt water. Mangroves secrete excess salt through their leaves and block absorption of salt at their roots, some more than others.

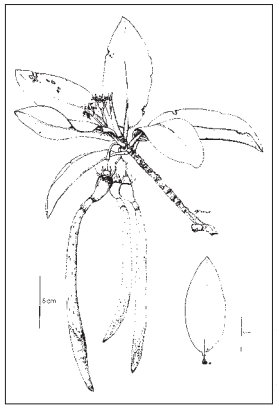
Florida's estimated 400,000–500,000 acres of mangrove forests contribute to the overall environmental health of the state's southern coasts. Mangroves trap and cycle pollutants, chemical elements, and inorganic nutrients. Mangrove roots provide attachment surfaces for marine organisms such as barnacles and oysters. Many of these attached organisms, especially cyanobacteria and algae, filter water and trap and cycle nutrients.

The importance of mangroves to their associated marine life cannot be overemphasized. Mangroves provide protected nursery areas for fish, crustaceans, and shellfish. They also contribute to the food web, aiding a multitude of marine species such as snook, snapper, tarpon, jack, sheepshead, red drum, oysters, crabs, and shrimp. Florida's important recreational and commercial fisheries would substantially change without healthy mangroves. Animals find shelter in mangrove roots and branches, and the branches serve as rookeries (nesting areas) for coastal birds such as egrets, herons, brown pelicans, and roseate spoonbills. Many migratory birds also depend on mangroves for food and shelter.

Florida's mangroves

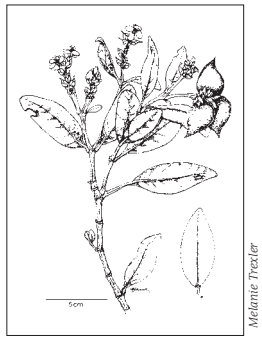
Worldwide, as many as 50 or more species of mangroves exist. Of the three species found in Florida, the **Red Mangrove**, ***Rhizophora mangle***, is found closest to the water and is probably the best known. The Red Mangrove is easily identified by its tangled, arching roots called "prop roots." The growth of these roots has earned red mangroves the title "walking trees" because they creep into new areas by branching roots.


Lyn French


Melanie Trexler

Red Mangrove, ***Rhizophora mangle***


David Crewz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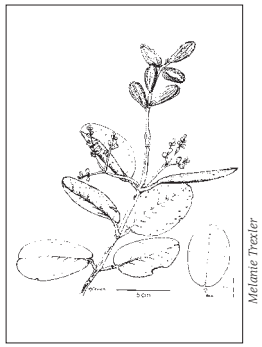
Black Mangrove, ***Avicennia germinans***

The **Black Mangrove**, ***Avicennia germinans***, often occurs in shallower water landward of the Red Mangrove zone. The Black Mangrove can be identified by numerous finger-like projections, called pneumatophores, that protrude from the soil around the tree's trunk and help with root aeration and gas exchange.


David Crewz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White Mangrove, ***Laguncularia racemosa***

The **White Mangrove**, ***Laguncularia racemosa***, usually occupies higher intertidal elevations than the Red or Black Mangroves do. Unlike the other species, the white mangrove usually has no visible aerial root systems. The easiest way to identify the white mangrove is by the leaves. They are elliptical, yellow-green, often notched at the tip, and have two opposite sugar glands (nectaries) on the leaf stalk (petiole) at the base of the leaf blade. Salt glands are located in small depressions on the leaf blade.


David Crewz


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Buttonwood or **Button Mangrove**
Conocarpus erectus

A fourth species, called **Buttonwood** or **Button Mangrove**, ***Conocarpus erectus***, is related to the White Mangrove and also has sugar glands on the leaf stalks. It may grow intertidally but is considered an uplands species by our state laws.

Each of these species has a remarkable method of reproduction in which seedlings, or propagules, are formed. On Red Mangrove trees, seedlings germinate while still attached to the tree. Over time, the seedling drops from the tree, floats for a while, and eventually settles on a shallow shoreline. Seedlings of Black and White Mangroves also form on the tree within a fruit but drop from the tree with the fruit cover intact. The propagule loses the fruit cover while floating in the water or when it reaches a shoreline.

Florida's mangroves are tropical species and are sensitive to temperature fluctuations as well as to freezing temperatures. Mangroves are common as far north as Cedar Key on the Gulf coast and Cape Canaveral on the Atlantic coast. Black Mangroves occur farther north in Florida than the other two species do. Frequently, all three species grow intermixed without any perceptible zonation.

People living along south Florida coasts benefit in many ways from mangroves. In addition to providing fish habitats, mangrove forests protect uplands from storm winds, waves, and floods. The amount of protection afforded by mangroves depends upon the width of the forest and the tree size. A very narrow fringe of small mangroves offers less protection, but a wide expanse of tall forest can absorb more wave energy and thus considerably reduce storm-surge damage to property. Mangroves help prevent erosion by stabilizing

shorelines with their specialized root systems. They also remove pollutants and, by slowing wave action, maintain water quality and clarity.

Mangrove losses in Florida

Although mangroves can be damaged by natural events, human destruction of mangroves has been more common. Scientists at the Florida Fish and Wildlife Conservation Commission's Fish and Wildlife Research Institute use Geographic Information Systems to study changes in Florida's coastal habitats. By comparing digitized aerial photographs from different years, scientists are able to evaluate changes in the extents of mangrove forests. These studies show that mangrove acreage has been lost, often because of human activities.

Tampa Bay, located on the southwest Florida coast, has experienced considerable change. The Port of Tampa is one of the 15 largest ports in the nation. Over the past 100 years, Tampa Bay has lost over 40% of its coastal wetlands, including both mangroves and salt marshes.

The next large bay system south of Tampa Bay is Charlotte Harbor. Unlike Tampa Bay, Charlotte Harbor is a less urbanized estuary, but some mangrove destruction has occurred here as well. Punta Gorda waterfront development accounts for 59% of the total loss in Charlotte Harbor. Mangrove acreage has increased in parts of the bay, probably as a result of sediments being disturbed during uplands development. As tidal flats accumulate more sediment, they are colonized by mangroves. Spoil islands, created as by-products of channel dredging, also provide suitable habitat for mangroves.

Scientists have also been observing changes in the Lake Worth system on the southeast Florida coast. Lake Worth, near West Palm Beach, evolved naturally from a saltwater lagoon to a freshwater lake; but because of human alterations, the lake has again become estuarine. Exotic vegetation and urbanization have displaced the mangroves, whose acreage has decreased 87% over the past 40 years. The 276 acres of mangroves that remain are found in small scattered areas and are now protected by strict regulations.

Another study site included the Indian River Lagoon from St. Lucie Inlet north to Satellite Beach. The Indian River is the longest saltwater lagoon in Florida. The study site contains almost 8,000 acres of mangroves, but much of this is not available as fisheries habitat because many acres are in mosquito impoundments. Some impoundments have been reconnected to the lagoon through pipes and water-control structures. Since the 1940s, as much as 86% of the mangroves have been impounded or lost.

Mangroves are Florida's true natives and are part of our state heritage. It is up to us to ensure a place for them in Florida's future as one of our most valuable coastal resources.

State and local regulations have been enacted to protect Florida's mangrove forests, and local laws vary. Prior to taking any action, be sure to check with officials in your area to determine whether a permit is required. Trimming of mangroves is permitted only in accordance with the Mangrove Trimming and Protection Act of 1996.

ON THE COVER

Background—*Tangled prop roots of a Red Mangrove,* Rhizophora mangle, *arch in the foreground. Behind them, the finger-like pneumatophores of a Black Mangrove,* Avicennia germinans, *protrude from the soil.*

Inset—*The flowers of a Black Mangrove,* Avicennia germinans.

Background photo: Llyn French

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