Florida's Walking Trees

MANGROVES

What are mangroves?

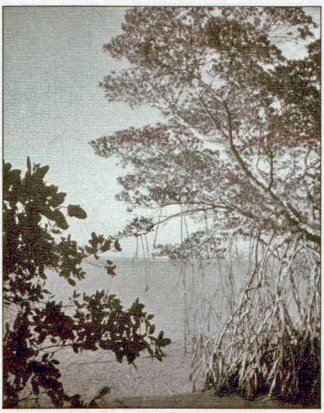
Mangroves are trees that grow in intertidal salty environments because they can tolerate frequent flooding and are able to obtain fresh water from salt water. Some species secrete excess salt through their leaves, whereas others block absorption of salt at their roots.

Florida's estimated 400,000–500,000 acres of mangrove forests contribute to the overall health of the state's southern coasts. Mangroves trap and cycle pollutants, chemical elements, and inorganic nutrients. Mangrove roots not only act as physical traps but also provide attachment surfaces for marine organisms such as barnacles and oysters. Many of these attached organisms, especially blue-green algae, filter water and trap and cycle nutrients.

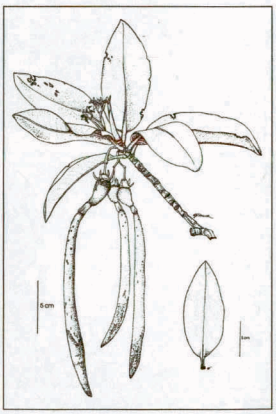
The importance of mangroves to their associated marine life cannot be overemphasized. Mangroves provide protected nursery areas for fish, crustaceans, and shellfish. They also function as the basis of the food chain for a multitude of marine species such as snook, snapper, tarpon, jack, sheepshead, red drum, oysters, crabs, and shrimp. Florida's important recreational and commercial fisheries will drastically decline 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 large 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,



Lbyn French



Melanie Trexler

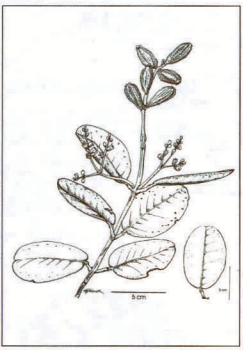
Red mangrove, *Rhizophora mangle*

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.

Melanie Trexler

Black mangrove, ***Avicennia germinans***

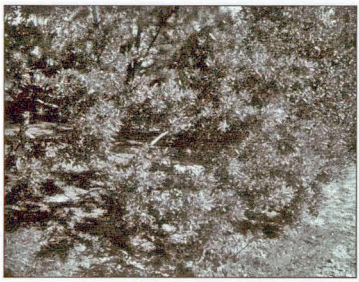
The **black mangrove**, ***Avicennia germinans***, often occurs in shallow water and landward of the red mangrove. The black mangrove can be identified by numerous finger-like projections, called pneumatophores, that protrude from the soil around the tree's trunk and help with aeration.



Melanie Trexler

White mangrove, ***Laguncularia racemosa***

The **white mangrove**, ***Laguncularia racemosa***, usually occupies higher elevations than the red or black mangroves do. Unlike its red or black counterparts, 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, light yellow-green, often notched at the tip, and have two distinguishing sugar glands on the leaf stalk at the base of the leaf blade.



Melanie Tercier

Buttonwood or **button mangrove**
Conocarpus erectus

A fourth species, called **buttonwood** or **button mangrove**, ***Conocarpus erectus***, also has glands on the leaf stalks. It may grow intertidally but is usually considered an uplands species.

Each of these species has a remarkable method of propagation during which seedlings, or propagules, are formed. On red mangrove trees, seedlings are germinated while still attached to the tree and are contained within a fruit cover. Over time, the fruit cover withers away, and the seedling is forced from the tree by strong winds or high tides. The seedlings then float for a while and eventually settle on a shallow shoreline. Seedlings of both black and white mangroves also form on the tree within a fruit cover but drop with the cover intact. The propagule may lose 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 can occur farther north in Florida than the other two species. 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. A very narrow fringe of mangroves offers less protection, but a wide expanse of forest can absorb wave energy and thus considerably reduce water 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 extensive. Scientists at the Florida Fish and Wildlife Conservation Commission's Florida Marine Research Institute use a Geographic Information System to study changes in Florida's coastal habitats. By comparing digitized aerial photographs from different years, and by researching the history of the study sites, the scientists are able to evaluate changes in the extent of mangrove forest. 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 Harbor, probably as a result of sediments being disturbed during development. As tidal flats recovered more sediment, they were colonized by mangroves; tidal-flat acreage decreased, and mangrove acreage increased. 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 an estuarine lagoon. Exotic vegetation and urbanization have replaced 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 only 1,900 acres are available as fisheries habitat because the remainder are mosquito impoundments. Consequently, 76% of the existing

mangrove areas are not productive to fisheries. Since the 1940s, 86% of the mangrove habitat areas have been 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—*Common snook (*Centropomus undecimalis*) are among the myriad organisms that depend on mangrove habitat for food and shelter throughout their lives.*

Background photo: Llyn French

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