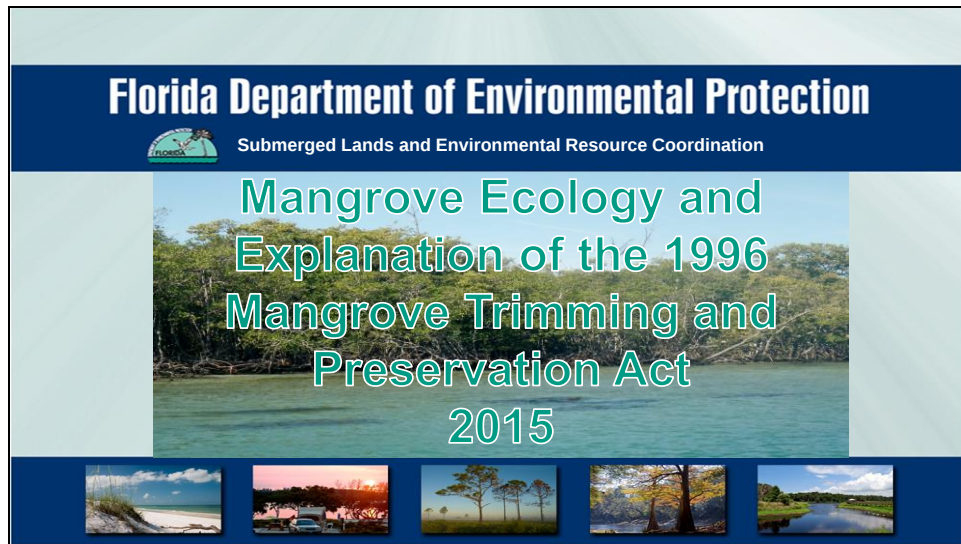


Slide 1



Thanks, and hello everyone.

My name is Daniel Sensi, and I am the Mangrove and Deadhead Logging Coordinator for the Florida Department of Environmental Protection. I am in the Tallahassee office, and work closely with all the districts throughout the state. Today this talk will cover mangrove ecology and importance, as well as a review of the Mangrove Trimming and Preservation Act of 1996.



Outline & Overview

- Mangrove Ecology
 - Mangrove distribution & species
 - Mangrove adaptations & zonation
 - Mangrove associates
 - Why mangroves are important
- Mangrove Act
 - Intent and purpose
 - Exemptions
 - General Permits
 - Individual Permits
 - Trimming styles & Enforcement



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Just as an overview, we will cover what mangroves are, and their distribution.

We will identify the three native Florida species.

Then we will get into their adaptations and importance.

I will also cover the entire mangrove act; from the intent, and delegations, to PMTs, exemptions, General Permits and alteration permits. As well as different trimming styles and violations and enforcement.

If you are a homeowner, please keep in mind that I will be going through the technical ecology section first, and the second half of the presentation will focus on the Act and trimming regulations. Thanks.



What are Mangroves?

- Mangroves are a tropical tree species, predominately in low energy saline environments.



World map mangrove distribution" by ChandraGiri - Own work. Licensed under CC BY-SA 3.0 via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:World_map_mangrove_distribution.jpg#/media/File:World_map_mangrove_distribution.jpg

- 3 of the over 100 species are native to Florida
 - Rhizophora mangle* (Red)
 - Avicennia germinans* (Black)
 - Languncularia racemosa* (White)

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Alright, to start, what are mangroves. Well, they are a tropical tree species that are often found in low-energy saline environments. Here is a picture of the worldwide distribution of mangroves. The green along the coasts is where there are mangrove forests. As you can see, they are mainly found around the equatorial regions of the globe. I have highlighted the area around Florida on the map in the red circle.



What are Mangroves?

- Mangroves are a tropical tree species, predominately in low energy saline environments.



World map mangrove distribution" by ChandraGiri - Own work. Licensed under CC BY-SA 3.0 via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:World_map_mangrove_distribution.jpg#/media/File:World_map_mangrove_distribution.jpg

- 3 of the over 100 species are native to Florida
 - Rhizophora mangle* (Red)
 - Avicennia germinans* (Black)
 - Languncularia racemosa* (White)

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As you can see, mangroves are found all along the east and west side of Florida's coastlines. As well as throughout the calm waters of the Caribbean.

There are over 100 distinct species of Mangroves worldwide, 3 of which are native to Florida. These are *Rhizophora mangle* (the red mangrove), *Avicennia germinans* (the black mangrove), and *Languncularia racemosa* (the white mangrove).



Mangrove Distribution

- In Florida, mangroves have expanded as far north as Palm Valley on the east coast (30° N) and Cedar Key on the west coast (29° N):
 - Some small, shrub-like individuals occur along the northern gulf coasts of TX, LA and FL
 - They are susceptible to freezes which limits their northern distribution and expansion
 - Rarely found in locations that experience heavy freezes or have too low of an average annual temperature (<66°F)



Black mangroves in Levy County at a condo complex on Cedar Key, Florida. The project is permitted under an Individual Alteration Permit

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In Florida, mangroves have expanded to as far north as Palm Valley (just south of Jax) on the east coast and to the northern Gulf Coast to places like Cedar Key, St. George Island, and Santa Rosa Island near Pensacola. These are the approximate limits where you can find mangrove forests in Florida.

However, there are some shrub-like individuals that can be found growing along the northern gulf coasts of LA, and TX. This includes places like the Mississippi river delta, and around Galveston.

Because mangroves are a tropical species, they are susceptible to freezes. Cold temperatures is one of the strongest limiting factors on their northern distribution.

They can not tolerate extended periods of cold weather, or harsh freeze events.

The picture on the right shows a black mangrove fringe along a shoreline on Cedar Key.



Mangrove Species

Red Mangrove (*Rhizophora mangle*)

- Can grow up to 20 meters tall (60 feet)
- In Florida, Reds may grow as high as 10-13 meters (30-40 feet)
- Dominant stands in South Florida
 - The 10,000 Islands area and Florida Bay are where the largest stands of Red Mangroves reside in the state
 - Can be found north of St. Augustine on the east coast, and St. George Island on the west (Gulf) coast
- Grows better in areas with sufficient flushing



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Alright, so getting into the different species. The first we will discuss is the Red Mangrove (*Rhizophora mangle*).

The Red mangrove can grow up to 30 or 40 feet in Florida, and even more around the world. There are extensive red mangrove forests in south Florida. The 10,000 islands region and Florida bay is where you can find the largest expanses of red mangrove forests in Florida.

Reds can be found as far north as St Augustine on the east coast, and up to Cedar Key and St. George Island on the Gulf coast.

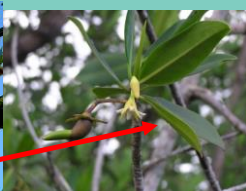
They grow best in areas with good flushing from tides and river or surface runoff.



Mangrove Species

Red Mangrove (*Rhizophora mangle*)

- Characterizations:
 - Long, pencil-shaped propagules
 - Leaves are (5-15 centimeters), dark-green, and waxy
 - Leaves are tapered at the tip, darker on top, and lighter underneath with black spots
 - Arching prop roots – gas exchange, stabilization and exclude salt



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Here are some characteristics for Red Mangroves to help you identify them.

They have long pencil-shaped propagules that hang from the branches. These propagules will fall off the parent tree, float to a new location and take root in the soil.

Reds also have the largest leaves of the three native Florida species. The leaves are dark green and waxy, they are tapered at the tip, and the underside will be slightly lighter and will sometimes have black spots.

One of the most distinguishing characteristics with reds is their arching prop roots. The prop roots provide stabilization, lift them above the water level, are important for gas exchange, and help exclude salt from the water taken up by the tree.



Mangrove Species

Red Mangrove (*Rhizophora mangle*)

- Cannot coppice:
 - This means they are unable to regrow from their trunks or roots if cut down
 - Growth is limited to the apical meristems (branch tips)
 - Trimmed stems/branches >1" in diameter will not regrow
 - This makes Red Mangroves susceptible to over-trimming
 - Especially in large mature reds where the majority of the foliage is in the upper canopy



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The red mangrove does have a limitation in that they cannot coppice. This means that they can not regrow from their trunks, roots, or large branches if they are cut or damaged by storms. All of their growth is limited to their branch tips, which are called meristems. Many branches more than 1" thick will not regrow after being cut or damaged. This makes reds, especially large mature reds so susceptible to over-trimming.



Mangrove Species

Red Mangrove (*Rhizophora mangle*)

- Windowing can be the best practice when trimming large red mangroves



Windowed Reds with hedge: Provides canopy habitat, hedge has base habitat just above the water line, also provides a view for the homeowners



Defoliated Reds: Mangroves will ultimately die. No foliage or canopy habitat. Trees were cut too severely to survive.

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Windowing is a type of trimming style that creates a view, while also protecting the life and function of the tree. In a “window trim”, the foliage is trimmed in the middle of the tree, leaving at least a 6ft hedge underneath and a foliage canopy on top to allow the mangroves to continue to grow and provide habitat.

Many large mature reds do well with window trimming because so much of the foliage is in the upper portions of the tree.

In the photo on the left, you can see an example of some windowed red mangroves along a shoreline. The window provides a view while the hedge and canopy foliage keep the mangroves healthy, provide habitat, as well as some privacy for the homeowners.

The photo on the right shows defoliation of red mangroves that were cut down too much. The cut mangroves will not survive and there is little to no habitat function in that area.



Mangrove Species

Black Mangroves (*Avicennia germinans*)

- Can grow up to 20 meters tall (60 feet)
- In Florida, Blacks can grow as high as 8-13 meters tall (25-40 feet)
- Large stands as far north as Santa Rosa Island and St. Augustine
 - Mild winters allow for expansion of scattered shrub-like growth along the northern gulf of FL, LA, and TX



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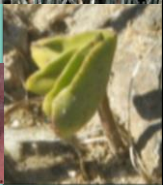
Black Mangroves, aka *Avicennia germinans* can grow up to 25 to 40 feet in Florida. They have the furthest northern range of the three species and extend through the northern gulf coast, and almost as far north as Jacksonville on the east coast. There are even scattered individuals throughout the northern gulf coast states if Texas and Louisiana.



Mangrove Species

Black Mangroves (*Avicennia germinans*)

- Characterizations:
 - Cable roots – underground root system, provides stabilization
 - Pneumatophores – “pencil roots”, grow from cable roots (up to 1 meter tall), pores for gas exchange
 - Leaves are the smallest of the three (2-5 centimeters long).
 - They are slender and green on top, the underside is greyish, often covered with salt crystals (salt extruded)
 - Propagules are small, lima-bean shaped



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Black mangroves are characterized by having an underground cable-root system, which provides the tree with stabilization. They have pneumatophores which grow up from the cable roots. The pneumatophores look like pencils sticking up out of the ground. They can be as much as a few feet tall and provide the tree with gas exchange, and act somewhat like a snorkel during high tides and water levels.

The leaves are the smallest of the three species, they are thin, green on-top and silvery underneath, sometimes with salt crystals. The leaves excrete excess salt taken up by the roots. The propagules are much smaller than reds, and look like lima beans.



Mangrove Species

Black Mangroves (*Avicennia germinans*)

- Increased wave action can impede seedling development and establishment
- Most frost tolerant (found furthest north)
- Can grow from reserve meristem tissue in trunk (coppicing)
 - Can tolerate slight freezes
 - Can sometimes have multiple trunks from natural die-off or over-trimming



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The small propagules can be adversely affected by increased wave action, and thus black mangroves are best suited to very low energy/depositional environments.

They are the most frost/freeze tolerant of the three species, which is also why they are found the furthest north.

One ability that helps them survive freeze events is that they can coppice. This means that they can regrow from their trunks and roots if they have been damaged from a storm, freeze event, or even trimming. Often times you may see black mangroves with multiple trunks like in the photo on this slide.



Mangrove Species

White Mangroves: (*Laguncularia racemosa*)

- Can grow up to 13 meters tall (35 feet)
- In Florida, whites can grow as high as 7-10 meters (20-30 feet)
- Northern limit is about the same as Reds
- They can be found as north as the Matanzas Inlet on the east coast, and Anclote Key on the west coast



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The third species is the White Mangrove, *Languncularia racemosa*. Whites are the shortest of the three, and grow to about 20-30 feet in Florida. Their northern limit is about the same as reds, or slightly less, around the Matanzas inlet on the east coast, and Anclote key of the gulf coast.



Mangrove Species

White Mangroves: (*Laguncularia racemosa*)

- Characterizations:
 - Light green, paddle-shaped leaves that are notched at the tip
 - Two small glands at the base of each leaf (petiole) are sugar glands (nectaries)
 - Leaves excrete salt (salt extruded, active)
 - Propagules are semi-viviparous, small and flat
 - Lenticels provide direct gas exchange
 - Least frost tolerant of the three species
 - White flowers when blooming

All three species of mangroves are protected under the 1996 Mangrove Trimming and Preservation Act (MTPA)



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White mangroves have very distinguished leaves. The leaves are wide and paddle shaped, with a small notch at the tip.

At the bottom of the leaf you can often see two small glands. These are nectaries and they excrete sugars.

The leaves, like the black mangrove also excrete excess salt taken up by the tree.

The propagules are small and flat, the smallest of the three species.

Although the white mangrove doesn't have a specialized root system like the reds and blacks, they do have lenticels along their bark. These lenticels are like little pores that help in gas exchange and allow the tree to "breathe" when the roots are inundated with water.

They are the least frost tolerant of the three, which is why their range is the furthest south.

All three species, Red, Black, and White Mangroves are protected under the 1996 Mangrove Trimming and Preservation Act. (part of Florida Statute)



Mangrove Adaptations

- Mangroves are salt tolerant, up to 90 parts per thousand (ppt), seawater ~35ppt), but unlike popular opinion suggests, do not require salt to survive
 - They outcompete other species in saline conditions
 - Salt excluding and salt excreting adaptations
 - Roots provide competitive advantage to tolerate large fluctuations in water level and salinities
- Their prop (Red), cable (Black), and peg (White) root systems also allow them to thrive in this unique habitat
 - Roots provide stabilization, gas exchange, and salt balance



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So, we talked about Mangrove distribution and covered the three species. Lets talk about some of their adaptations.

As many of you may know, mangroves are a salt tolerant species, which is what allows them to grow along saltwater shorelines. In fact, they can tolerate salinities up to 90 parts per thousand. For reference, sea water is around 35 ppt, and freshwater is 0 ppt.

However, they do not require salt to survive. They simply outcompete other species in saline conditions. This is because they are able to deal with the excess salt in ways that other species can't.

We talked about their root systems, the red mangrove's roots exclude salt when they take up water, and are often covered in salt crystals. The black and white mangroves take up the salt water in their roots, but then excrete the excess salt through their leaves, which can also have a layer of salt on them.

Their root systems also give them a complete advantage for where they grow. It allows them to tolerate large water level fluctuations, whereas other species would "drown".

The roots provide stabilization in the unstable soils, and also help with gas exchange.



Mangrove Adaptations

- Mangroves are most adapted to low energy depositional environments in tropical to sub-tropical regions
 - Low wave energy allows for dispersal and establishment of propagules which take root in fine grained soils
- Propagules from each species have different dispersal periods and time for root establishment
 - Longevity periods have been estimated at 35, 110, and 365 days for Whites, Blacks and Reds.
 - This means that a Red Mangrove propagule is viable for up to a year after it separates from the parent tree!



Black Mangrove Propagules along a shoreline

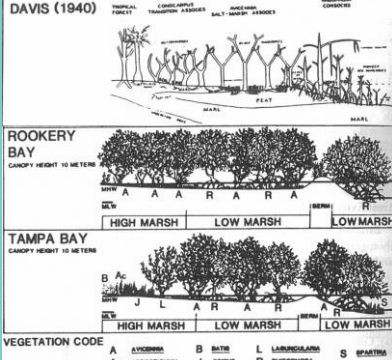
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Here is a picture of black mangrove propagules spread out across a shoreline. Mangrove forests expand by allowing waves and currents to disperse their propagules to new locations. The propagules will take root and establish in the fine-grained soils. Each species' propagules can survive for different periods of time. Which are around a month for white's, 3-4 months for blacks, and up to a year for red mangroves. That is a lot of time for a propagule to float around before it finds a good location to establish a new colony.



Mangrove Zonation

- Classic zonation models
 - Low tide high tide
 - Red, Black, White, Associates/Exotics
- These typically depict reds being the most waterward
 - Prop-roots tolerate longer and higher periods of inundation, and can extend furthest from the shore
 - Blacks are behind Reds, pneumatophores can tolerate flooding (most salt tolerant)
 - Whites are the most upland species, least adapted root system, can be intermixed with associate and/or exotic species



Figures: Davies 1940, Lewis et al. 1985

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Now, let's talk about zonation, and how mangroves are positioned along shorelines. The images on the right are excerpts from text articles depicting the classic zonation models for mangroves.

Going from low tide to high tide, it often shows Red mangroves to be the furthest waterward. Their prop-roots elevate the tree and can tolerate longer and higher periods of inundation. Black mangroves are behind the reds. Pneumatophores tolerate flooding, and they are the most salt tolerant of the three species.

And whites are behind them. White mangroves have the least adapted root system for tidal inundation and unstable soils, so they are often found closest to the upland vegetation, including exotic species, as well as what are known as mangrove associates.



Mangrove Zonation

- While the classic zonation model works as a guide, it is not always the case
- A variety of factors play a role into shaping a mangrove fringe/forest
 - Water level, salinity (water/soil), flushing, wave action, tidal forcing, nearby habitat, and topography (slope/saltens)
- Here in Cedar Key, we mainly have Black Mangroves
 - Uniform distribution



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However, the classic zonation is certainly not always the case. It works well as a guide, but is not a hard and fast rule.

A variety of factors play a role in shaping a mangrove forest. This includes, water levels, salinity, wave action, tides, surrounding habitat, and topography.

You can have forests where all three species are intermixed, and any one can be growing closest to the water. Some forest may not have all three species, and others may just have one.



Mangrove Misconceptions

- Mangroves are land builders
 - Not quite, but they **can** stabilize shorelines and trap sediments
- Red mangroves are the most valuable and are the climax of the three native species
 - All three species provide value
 - Mangrove forests are based on each species specific adaptations to that environment, not succession



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Now for some misconceptions about mangroves.

Many times people will say that mangroves are land builders. This is not quite correct and gives a false idea to what mangroves actually do.

Mangroves CAN stabilize shorelines, and prevent further erosion. They are able to trap sediments around their roots and can grow out further waterward, but don't really "build land".

Many times people say that red mangroves are the most valuable and that they are the climax of the three species.

In fact, all three species provide value, and mangrove forest look the way they do based on the conditions in that location and the different adaptations of each species, not based on succession.

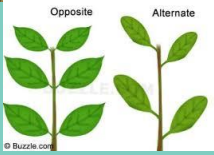


Non-Mangroves

Mangrove Associates

Buttonwood (*Conocarpus erectus*)

- Can grow in close proximity to mangroves, because of this, it is sometimes referred to as a mangrove
- Not a true mangrove, and not protected under the 1996 MTPA
- Leaves are alternate, all other mangrove leaves are opposite
- Leaves look similar to black mangrove but are usually more angled
- Have button-like seeds
- Other associate species include, Sea Grape (*Coccoloba uvifera*)



© Buzzle.com
<http://cityfutureblog.blogspot.com/2013/02/tree-identification-guide.html>

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Before I briefly mentioned mangrove associates. Mangrove associates are tree species that are often times found growing in close proximity to mangroves, and are sometimes mistaken to be mangroves, but are not true mangroves.

One such species is called buttonwood, the photo in the top right. Buttonwood can grow near mangrove forests, and will always be more upland as they do not have the same adaptations as true mangroves.

One way to distinguish buttonwood from mangroves is that their leaves are alternate. All mangrove species have opposite leaves, which means that adjacent leaves grow from the same spot on the stem, whereas alternate leaves are stacked. (see figure bottom right). Buttonwood, also produces button-like seeds.

Another mangrove associate is the Sea Grape. Distinguished by its large leaves and grape-like seeds.

Mangrove associates are not protected under the 1996 Act.



Non-Mangroves

Exotics

Brazilian Pepper

- *Schinus terebinthefolius* or “Florida Pepper” is an exotic species
- Native to South America
- Characterized by bright red berries and aromatic compound leaves
 - Toxic
- The plant outcompetes other native species
- Pepper plants should be removed with mangrove trimming permit



Australian Pine

- *Casuarina spp.* is an exotic species
- Native to Australia and Indonesia
- The plant outcompetes other native species
- Australian Pine has more than quadrupled in Florida since from 1993 to today

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Exotic or introduced species can also be found growing in and around mangrove forests. The Brazilian pepper, also called, “Florida Pepper” is an exotic species that can be found throughout Florida. It is native to South America, specifically Argentina, Paraguay and Brazil. Because it is a non-native species to Florida, it upsets the natural habitat dynamics. Pepper plants are distinguished by bright red berries along their compound leaves. The berries are toxic and when crushed can be harmful to humans and wildlife. Pepper plants should be removed when mangroves are trimmed.

Another exotic species is Australian Pine. They are native to Australia, Indonesia and Eastern Africa. Australian Pine is easily distinguishable from mangroves, it is an invasive species that has quadrupled in Florida from the 1990’s to Today.



Why are Mangroves Important?

- Mangroves provide function and value to the coastlines they inhabit
 - Shoreline stabilization
 - Storm/erosion protection
 - Ecosystem support
 - Nursery habitat (birds, fish, invertebrates)
 - Commercial fisheries
 - Mangroves support sea grass and coral reef ecosystems that fisheries rely on
 - Trap pollutants
 - Stormwater runoff: nutrients, chemicals, etc.



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To wrap up this portion of the talk I wanted to show a few more reasons why mangroves are so important.

We have already talked about shoreline stabilization, and how their root systems help to trap sediments along the shoreline.

Mangroves provide storm protection as well.

They can help to reduce wind, wave, and flood damage to human developments along the coast.

Mangroves are a key component that multiple other ecosystems rely on. They are a nursery/rookery habitat for fish, birds, and invertebrates.

Many commercial and sport fisheries rely on mangrove forests to provide shelter, structure, safety and a food web for juveniles.

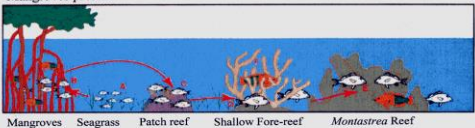
In addition to trapping sediments, mangroves can also sequester pollutants from stormwater/river runoff, such as excess nutrients and chemicals. These heavy metals are removed from the water column, getting trapped in the sediments and never making it offshore.



Why are Mangroves Important?

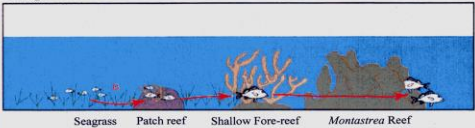
- Decrease sedimentation on coral reefs and sea grasses, when mangroves are present
 - Better habitat = better fish
 - Shelter and food for development stages of fisheries
 - Beaches and coral reefs are a multi-billion dollar industry
- Mangroves are a natural barrier versus man-made seawalls and rip-rap

Mangroves present



Mangroves Seagrass Patch reef Shallow Fore-reef Montastrea Reef

Mangroves absent



Seagrass Patch reef Shallow Fore-reef Montastrea Reef

Mumby, 2004

By removing pollutants out of the water column, and trapping them in sediments along the shoreline, mangroves help to decrease the amount that settle on seagrasses and coral reefs offshore. When corals and seagrasses are covered in sediments it inhibits their ability to photosynthesize and can limit their growth or even cause mortality. Beaches and coral reefs provide a multi-billion dollar industry to the state of Florida. But it is not only important for mangrove forest to be present along the shoreline, the size and height of the forest make a difference as well.



Why are Mangroves Important?

Florida Fishery Economics

- \$24 billion marine industry
- \$14.6 billion fishing industry
- \$53 billion tourist industry: beaches & coral reefs
- Shorter mangroves contribute less to fisheries
- In 1975 \$ values (worth 4.5x today):
 - a 5 ft. red mangrove contributed \$144/ac/yr
 - a 35 ft. red mangrove contributed \$ 6,514/ac/yr
- Recreational fishing activity creates ~54,000 Florida jobs & \$5.4 billion



Painting by Monica Gutierrez-Quarto, Mangrove Action Project

Florida Fishery Economics
<http://myfwc.com/conservation/value/saltwater-fishing/> (2010 values)

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As I have said, mangroves play a key role in the ecology and economy of multiple industries. In total, Florida's marine industry is \$24 Billion dollars/yr, \$14 billion of that is the fishing industry. The tourist industry alone, including beaches & coral reefs is \$53 billion/yr. So the entire state has an invested interest in these systems and how they impact these lucrative industries. Like I said, it makes an impactful difference whether the mangroves are left in their natural state, or if they are trimmed to short hedges.

A study found that a 5-foot tall red mangrove canopy contributes \$144/acre/year to fisheries, whereas a 35-foot tall red mangrove canopy contributes \$6514/acre/year. So a mangrove that is 7 times as tall, provides 45 times as much value to the ecosystem.



1996 Mangrove Trimming and Preservation Act

- Florida Statute 403.9321-403.9334
- Legislative Intent
 - Protect mangroves from unregulated removal and destruction
 - Protect uninhabited mangrove islands, and lands set aside for conservation and preservation
 - Provide waterfront property owners their riparian right of view
 - Encourage property owners to plant and maintain mangroves

1996 Mangrove Trimming & Preservation Act

403.9321 Short title. Sections 403.9321-403.9333, Florida Statutes, may be cited as the "Mangrove Trimming and Preservation Act."

History. s. 1, ch. 95-299.

403.9322 Legislative findings.

(1) The Legislature finds that there are over 555,000 acres of mangroves now existing in Florida. Of this total, over 80 percent are under some form of government or private ownership or control and are expressly set aside for preservation or conservation purposes.

(2) The Legislature finds that mangroves play an important ecological role as habitat for various species of marine and estuarine vertebrates, invertebrates, and other wildlife, including mammals, birds, and reptiles; as shoreline stabilization and storm protection; and for water quality protection and maintenance and as flood web support. The mangrove forest is a tropical ecosystem that provides nursery support to the sports and commercial fisheries. Through a combination of functions, mangroves contribute to the economies of many coastal counties in the state.

(3) The Legislature finds that many areas of mangroves occur as narrow riparian mangrove fringes that do not provide all the functions of mangrove forests or provide such functions to a lesser degree.

(4) The Legislature finds that scientific studies have shown that mangroves are amenable to standard horticultural treatments and that waterfront property owners can live in harmony with mangroves by incorporating such treatments into their landscaping systems.

(5) The Legislature finds that the trimming of mangroves by professional mangrove trimmers has a significant potential to maintain the beneficial attributes of mangrove resources and that professional mangrove trimmers should be authorized to conduct mangrove trimming, under certain circumstances, without prior government authorization.

History. s. 2, ch. 95-299; s. 1, ch. 96-286.

403.9323 Legislative intent.

(1) It is the intent of the Legislature to protect and preserve mangrove resources valuable to our environment and economy from unregulated removal, defoliation, and destruction.

(2) It is the intent of the Legislature that no trimming or alteration of mangroves may be permitted on uninhabited islands which are publicly owned or on lands set aside for conservation and preservation, or mitigation, except where necessary to protect the public health, safety, and welfare, or to enhance public use of, or access to, conservation areas in accordance with approved management plans.

(3) It is the intent of the Legislature to provide waterfront property owners their riparian right of view, and other rights of riparian property ownership as recognized by s. 253.141 and any other provision of law, by allowing mangrove trimming in riparian mangrove fringes without prior government approval when the trimming activities will not result in the removal, defoliation, or destruction of the mangroves.

(4) It is the intent of the Legislature that ss. 403.9321-403.9333 shall be administered so

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Alright. So now we are switching gears from mangrove ecology and we are going to start talking about the Mangrove Act.

The Mangrove Trimming and Preservation Act, is a part of Florida Statutes (403.9321-34) and was passed in 1996.

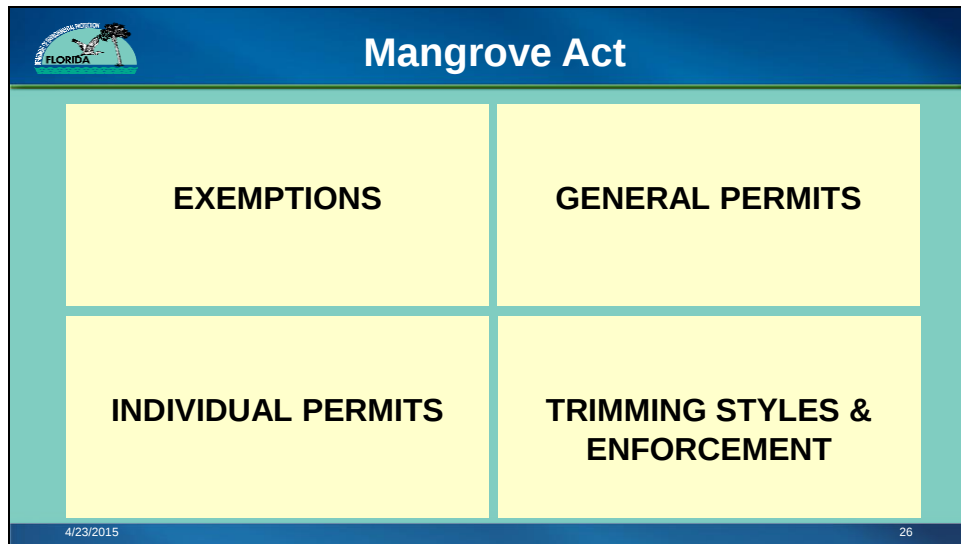
Here is a summary of the legislative intent for the establishment of the Mangrove Act.

First, to protect mangroves from unregulated destruction, either by removal or over trimming.

To protect uninhabited mangrove islands and lands set aside for conservation from trimming and/or removal. As a side note, there are multiple types of land that the Act considers as "lands set aside for conservation" and are laid out in the definition section of the Act.

It is also the legislative intent to not just protect the species, but also provide waterfront property owners their riparian rights of view.

The legislature also wanted to encourage all property owners to plant and maintain these important mangrove species.

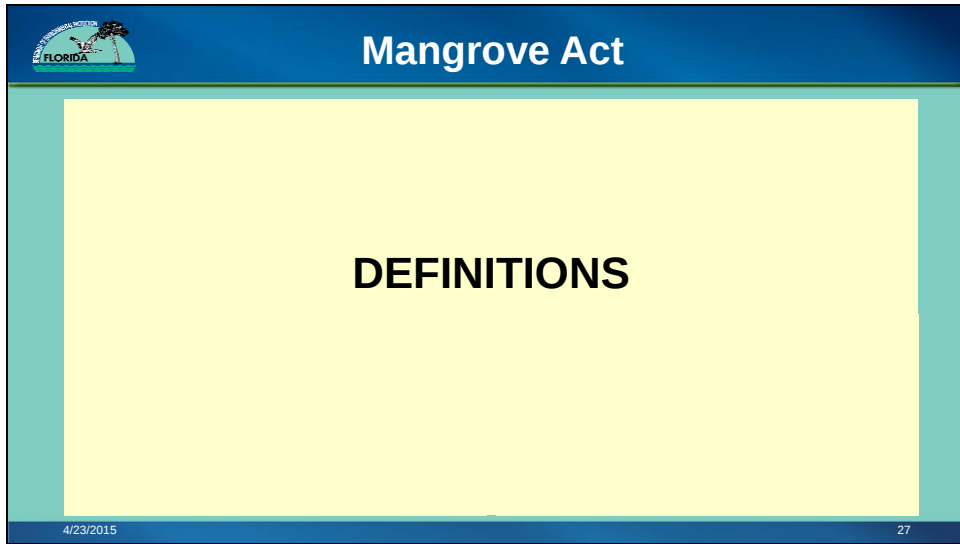


Here is a quick layout of the topics of the Act I am going to discuss.

I will go through the exempt activities that the act offers, both for trimming by homeowners and professional mangrove trimmers. I will talk about the guidelines for the general permits, as well as the individual permits.

I will wrap up by talking about different trimming styles, as well as enforcement for violations.

Slide 27



The slide features a blue header with the text "Mangrove Act" in white. In the top left corner of the header is a small logo for the "FLORIDA MANGROVE ACTION PLAN" which includes a palm tree and the word "FLORIDA". The main body of the slide is a large yellow rectangle with the word "DEFINITIONS" in bold black text. The slide is framed by a teal border. At the bottom, a blue footer contains the date "4/23/2015" on the left and the number "27" on the right.

Mangrove Act

DEFINITIONS

4/23/2015 27

But first, lets go over a few definitions that the Act, as well as I, will be referring to throughout the talk.



Mangrove

- **Mangrove** is any specimen of the species
 - *Rhizophora mangle* (red mangrove)
 - *Avicennia germinans* (black mangrove)
 - *Languncularia racemosa* (white mangrove)
- The Act protects both **living** and **dead** mangroves and does not distinguish between the two
 - Same trimming rules apply to dead mangroves as live mangroves



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The Act defines a Mangrove as any specimen of the three native species to Florida (the Red, Black, and White mangrove). In addition, the Act does not distinguish between living and dead mangroves for the purposes of trimming, removal, or requiring a permit, and as such, the regulations set forth in the Act protect both living and dead mangroves the same. Although dead mangrove lack foliage, they still provide structure and some habitat.



Shoreline

- The **shoreline** is the jurisdictional boundary where the wetlands and other surface waters meet the uplands



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The word shoreline is used throughout the Act, and is a key aspect in the permitting requirements. The shoreline is defined as the jurisdictional boundary where the wetlands and other surface waters meet the uplands. This can also be called the wetland delineation line. In the picture here we have a wide expanse of salt marsh and some mangroves that stretch from where the main water body is all the way to where the uplands are. So the shoreline is not where the main waterbody meets the wetlands, but rather where the wetlands meet the uplands. It is important to note that many times the “shoreline” is above the Mean High Water Line (MHWL).



Trimming vs Alteration

Trimming

- To cut mangrove branches, twigs, limbs and foliage
- Does not mean to remove, defoliate, or destroy the mangroves

Alteration

- Means anything other than trimming



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The acts also distinguishes between the words trim and alter. Trimming means to cut mangrove branches, twigs, limbs, and foliage, but does not mean to remove defoliate, or destroy the mangroves. Alteration is defined as anything else. Please note that the trimming definition does not include cutting mangrove roots. Cutting mangrove roots is considered alteration and is a violation unless specifically authorized.



Professional Mangrove Trimmer (PMT)

- **403.9329** – For the purposes of the Mangrove Act, persons with the following (Active) certifications are considered Professional Mangrove Trimmers **PMTs**
 - **ISA** certified Arborists (certified by the International Society of Arboriculture)
 - Professional Wetland Scientists **PWS** (certified by the Society of Wetland Scientists)
 - **CEP** Certified Environmental Professional (certified by the Academy of Board Certified Environmental Professionals)
 - Certified Ecologists **ESA** (certified by the Ecological Society of America)
 - Landscape Architects **LA** (certified by the Board of Landscape Architecture) who have met the “mangrove trimming” special qualification

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In some cases, like with certain exemptions, homeowners can trim their own mangroves. However, when a homeowner is not able to trim their mangroves as per the Act, a Professional mangrove Trimmer (or PMT) may be required. For the purposes of the Act, a person can automatically be considered a PMT if they have one of the following certifications. And that certification is a current and active membership with that organization. They can be and ISA certified arborist, a PWS professional wetland scientist, a CEP certified environmental professional, an ESA certified ecologist, or a LA landscape architect (if they have met the mangrove trimming special qualification). PMT's are required by the act to trim or supervise the trimming of mangroves under certain exemptions as well as all the General Permits. But they can be used on any and all mangrove trimming projects.



Important Terms to Know

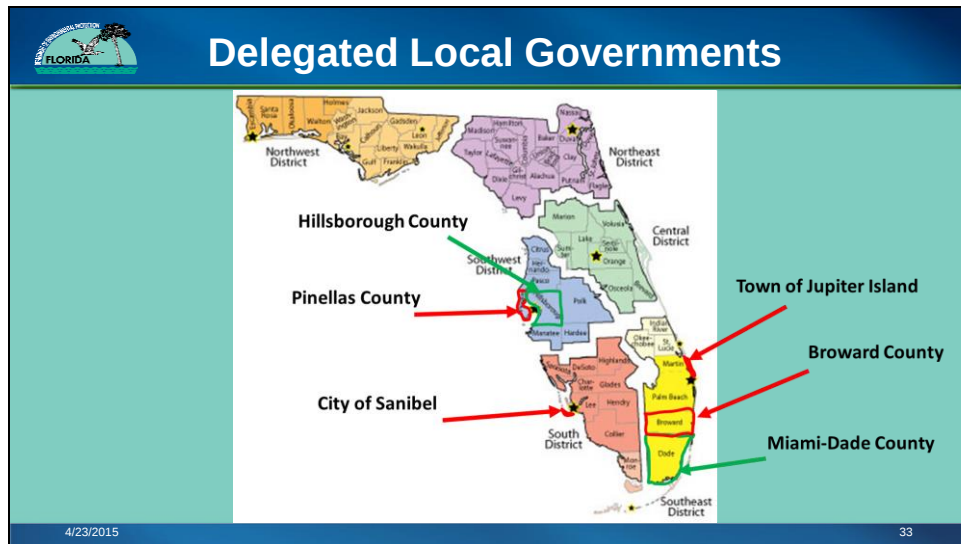
- For information about becoming a **DEP** certified PMT, please contact the Department (850) 245-8428 daniel.sensi@dep.state.fl.us
- The Department maintains a list of PMTs for all the Districts <http://www.dep.state.fl.us/water/wetlands/mangroves/pmt.htm>



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In addition to the automatic qualifications, a person can also be granted PMT status through the Department. DEP PMT status is granted to trimmers who have completed a minimum of 10 mangrove trimming projects authorized by the department. For more information about this process you can contact me at the number and email listed on the slide.

The department also maintains a list of all PMTs for each district in the state. This list is comprised of individuals who have contacted the Department and provided documentation confirming their PMT status in order to be added to the list. The lists are updated regularly.

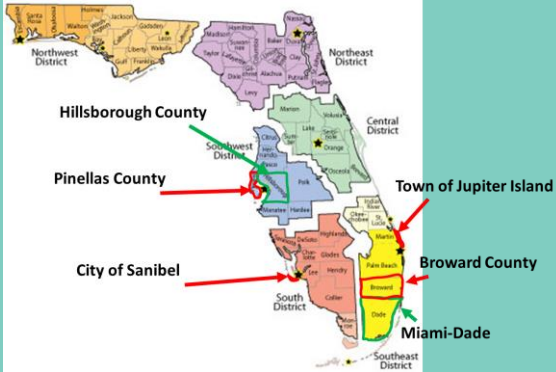


The mangrove act provides the department with the ability to delegate its authority to local governments. Here is a map of the 6 local governments that have been delegated authority to regulate and enforce the Mangrove Act. There are 4 counties, Broward, Dade, Hillsborough, and Pinellas, as well as the City of Sanibel, and the Town of Jupiter Island.



Delegated Local Governments

- Local Delegations have the authority to regulate and enforce the MTPA
- Delegations can adopt and enforce their own rules based on the Act, so long as they do not limit exemptions



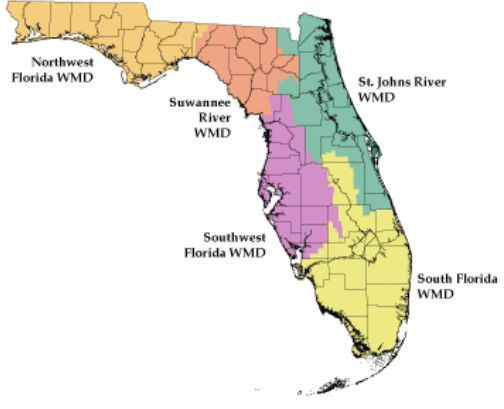
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Delegations can, if they choose, impose stricter regulation and enforcement standards than provided in the act, so long as they do not limit any of the exemptions provided in the Act. Some delegations, such as, Hillsborough, Broward, and Dade also have ERP delegation.



Water Management Districts

- The 3 of the 5 water management districts (WMD's) also have delegated authority
- When a mangrove trimming/alteration activity is proposed in conjunction with an ERP activity processed by WMD
- Do not have full delegation, cannot regulate when solely for mangrove trimming



4/23/2015

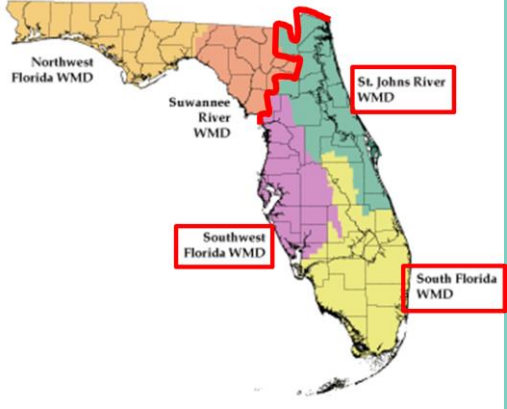
35

Of the 5 water management districts in the State, the Department has delegation agreements pertaining to mangroves with 3 of them.



Water Management Districts

- The 3 of the 5 water management districts (WMD's) also have delegated authority
- When a mangrove trimming/alteration activity is proposed in connection with an ERP activity processed by WMD
- Do not have full delegation, cannot regulate when solely for mangrove trimming



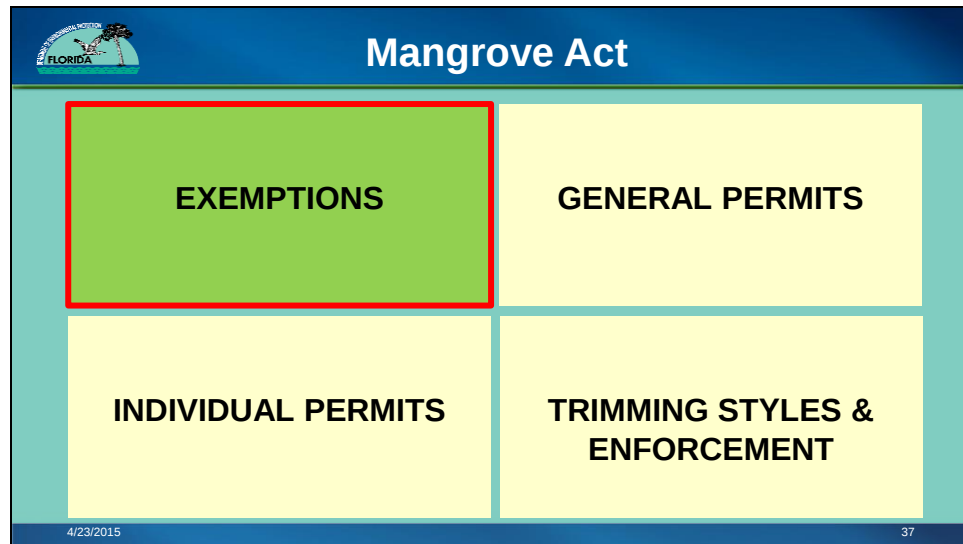
4/23/2015

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They are, The St. Johns River WMD, Southwest FL WMD, and South Florida WMD.

However, they do not have the same delegation authority as the other local governments. The WMDs delegated authority only applies when the trimming activity is proposed in connection with and ERP application, as per the operating agreement between the two agencies (the Department and the WMD).

The purpose of this “delegation” is to avoid unnecessary duplicate permits by the applicant, to streamline the regulation process, and to have only one state entity processing applications for 1 project.

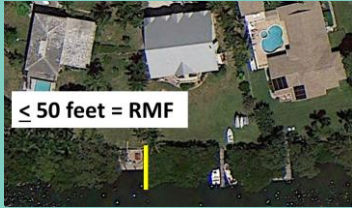


Alright. Now that I have gone through a little background on the Act and talked about some of the definitions, lets get into the exemptions.



Exemptions

- Exempt trimming may only occur within a Riparian Mangrove Fringe (RMF)
 - A **RMF** is where mangroves growing along the **shoreline** do **NOT** extend more than 50 feet waterward
 - Measured from the most landward trunk to the most waterward trunk in a line perpendicular to the shoreline.



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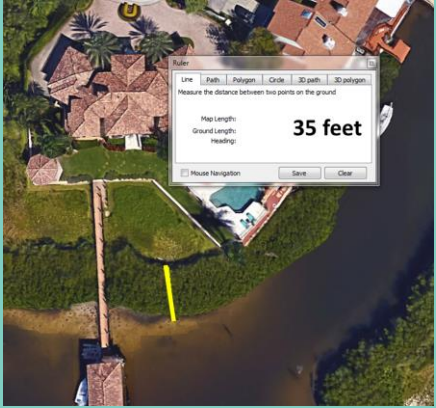
First, all exempt trimming must occur in what is known as a riparian mangrove fringe, or RMF. An RMF is where mangroves growing along a shoreline do not extend more than 50 feet waterward. This measurement is taken from the most landward mangrove trunk to the most waterward mangrove trunk in a line perpendicular to the shoreline.

The photo on top has mangroves growing along the shoreline that extend ≤ 50 feet waterward from the shoreline. Those mangroves are considered to be in an RMF, and may be exempt to trim. The photo on the bottom has mangroves that extend beyond 50 feet. That area is not an RMF and would not fall under an exemption.



Exemptions

- Exempt trimming may only occur within a Riparian Mangrove Fringe (RMF)
 - A **RMF** is where mangroves growing along the **shoreline** do NOT extend more than 50 feet waterward
 - Measured from the most landward trunk to the most waterward trunk in a line perpendicular to the shoreline.



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Here is another example. In this photo we have mangroves growing in a 35 foot band.



Exemptions

- Exempt trimming may only occur within a Riparian Mangrove Fringe (RMF)
 - A RMF is where mangroves growing along the **shoreline** do NOT extend more than 50 feet waterward
 - Measured from the most landward trunk to the most waterward trunk in a line perpendicular to the shoreline.



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The red line denotes the shoreline for the property. As you can see, there is another wetland type growing between the shoreline and the mangroves, specifically marshes, therefore, the mangroves are not growing along the shoreline, and are not considered an RMF. For mangroves to be considered growing in a riparian mangrove fringe, they have to meet all the criteria, its not as simple as “any mangrove forest less than 50 feet is a riparian mangrove fringe”.



Exemptions

403.9326(a) – Homeowner is exempt to trim mangroves on their property without a permit under the following conditions:

- Mangroves subject to trimming are a RMF, and are growing on lands owned or controlled by the homeowner, or on sovereign submerged lands (SSL) immediately waterward and perpendicular to those lands



4/23/201541

Alright, now that we have talked about what an RMF is, lets get into the first exemption in the Act.

This exemption, 403.9326(a) allows for homeowners to trim their mangroves, without a permit, and without a PMT.

To meet this exemption, the mangroves must satisfy all of the following criteria.

The mangroves subject to trimming must be in an RMF, the RMF must be on lands owned or controlled by the homeowner, or on Sovereign submerged lands (SSL) immediately waterward and perpendicular to those lands.

Here I have laid out the property lines for this parcel, lets go through and see was is exempt and what is not.



Exemptions

403.9326(a) – Homeowner is exempt to trim mangroves on their property without a permit under the following conditions:

- Mangroves subject to trimming are a RMF, and are growing on lands owned or controlled by the homeowner, or on sovereign submerged lands (SSL) immediately waterward and perpendicular to those lands



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First, the area highlighted in green could be exempt for the homeowner to trim. The mangroves are in an RMF along the homeowners shoreline.
Now, what about the other section of mangroves.



Exemptions

403.9326(a) – Homeowner is exempt to trim mangroves on their property without a permit under the following conditions:

- Mangroves subject to trimming are a RMF, and are growing on lands owned or controlled by the homeowner, or on sovereign submerged lands (SSL) immediately waterward and perpendicular to those lands



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The area circled in red would not fall under the exemption. The mangroves are not growing along the shoreline, because they are separated from the other fringe that is along the shoreline by surface waters. In addition, these mangroves are an uninhabited mangrove island. Now, let's continue with the additional criteria for the homeowner exempt trimming.



Exemptions

- The mangroves within the RMF on the homeowner's property may not exceed 10 feet in pre-trimmed height, and may not be trimmed lower than 6 feet in height



4/23/2015

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In addition to the fringe width criteria, there is also a height component for this exemption. For a homeowner to be exempt to trim their mangroves, no mangroves subject to trimming in the riparian mangrove fringe may exceed 10 feet in pre-trimmed height, and no mangroves may be trimmed lower than 6 feet in height. All height measurements are taken from the substrate, which means at ground level, to the highest point of the tree.

In the photo on the left, there is a survey pole measuring the height of the mangrove from the base of the trunk, upward. The mangroves are just under 10 feet tall, so they may be exempt to trim.



Exemptions

- The mangroves within the RMF on the homeowner's property may not exceed 10 feet in pre-trimmed height, and may not be trimmed lower than 6 feet in height





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The homeowner would be exempt to trim the mangrove from 10 feet down to 6 feet, so long as they do not defoliate the tree. A defoliation would be if any or all of the tree experienced mortality due to the trimming. It is important to keep in mind that although the act allows for trimming to 6 feet, not all mangroves can be trimmed to that height without causing mortality, but we will get into that more later



Exemptions

- The mangroves within the RMF on the homeowner's property may not exceed 10 feet in pre-trimmed height, and may not be trimmed lower than 6 feet in height





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The picture on the right has mangroves over ten feet tall. So they would not qualify under this particular exemption (not exempt for homeowner to trim).



Exemptions

- The mangroves within the RMF on the homeowner's property may not exceed 10 feet in pre-trimmed height, and may not be trimmed lower than 6 feet in height





Requires PMT to trim

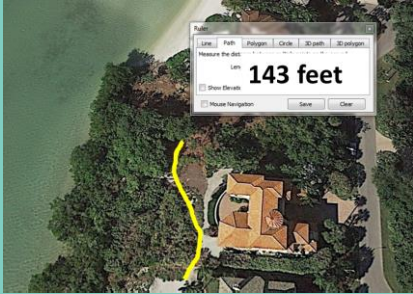
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They would require a Professional Mangrove Trimmer (PMT) to trim. Which I will also talk more about, later.

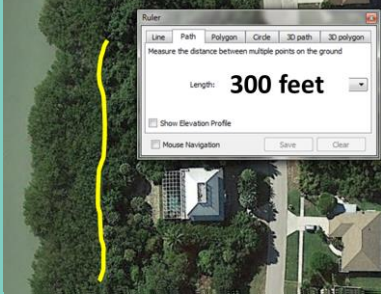


Exemptions

- 100% of the mangroves within a RMF may be trimmed when the shoreline is ≤ 150 feet
- Only 65% of the mangroves within a RMF may be trimmed when the shoreline is > 150 feet



4/23/2015



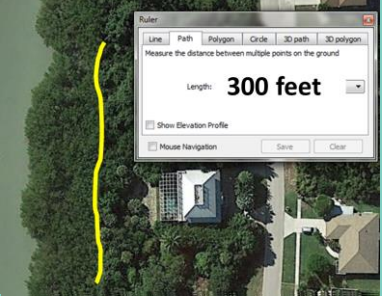
48

Alright, so far we have talked about fringe depth, and height, now lets talk about the shoreline length. In these photos, we are assuming that each has an RMF with mangroves less than 10 feet in height. The homeowner on the left has a shoreline of less than 150 feet.



Exemptions

- 100% of the mangroves within a RMF may be trimmed when the shoreline is ≤ 150 feet
- Only 65% of the mangroves within a RMF may be trimmed when the shoreline is > 150 feet



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So, as per the act, they would be exempt to trim 100% of the mangroves within that fringe. The homeowner on the right has a shoreline over 150 feet, so as per the act, they can only trim 65% of the mangroves along their shoreline.



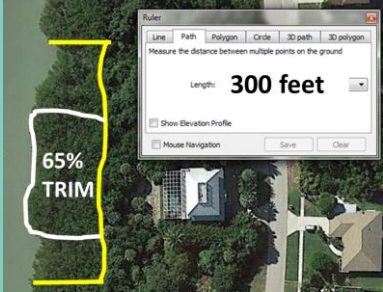
Exemptions

- 100% of the mangroves within a RMF may be trimmed when the shoreline is ≤ 150 feet
- Only 65% of the mangroves within a RMF may be trimmed when the shoreline is > 150 feet



100% TRIM

143 feet



65% TRIM

300 feet

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The white outline denotes 65% trim area, with 35% no-trim outside of that. Now, the homeowner can develop whatever configuration they want and maintain that. But they can't trim the mangroves in their designated 35% no-trim area without additional specific authorization from the Department. As this would be in violation of the exemption criteria.



Exemptions

Homeowner exempt to trim summary

- Must be in a Riparian Mangrove Fringe (≤ 50 feet)
- RMF must be on lands (or SSL) owned by the homeowner
- No herbicide or other chemicals are used when trimming
- Mangroves >10 feet in height may not be trimmed
- Overall height of any mangrove not reduced to less than 6 feet
- ≤ 150 foot shoreline = 100% of mangroves may be trimmed
- >150 foot shoreline = only 65% of mangroves may be trimmed



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Alright, I know that was a lot, so here is a summary of the criteria for homeowner's to be exempt to trim their mangroves.

First, the mangroves must be in an RMF (which we have defined what that entails).

Second, the RMF must be on lands (or SSL immediately waterward) controlled by the homeowner. In other words, the homeowner must have riparian rights to the mangroves.

No herbicides or other chemicals may be used when trimming

Only mangroves between 6 and 10 feet in pre-trimmed height may be trimmed, and the overall height of any mangrove may not be reduced to a height of less than 6 feet.

No mangroves over 10 feet may be trimmed by a homeowner.

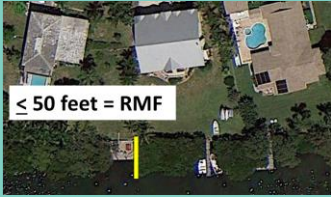
If the shoreline of the RMF is ≤ 150 feet, then 100% of the mangroves may be trimmed, if it is over 150 feet, only 65% of the mangroves may be trimmed.



Exemptions

403.9326(b) – Mangrove Trimming conducted by a authorized Professional Mangrove Trimmer **PMT** without a permit under the following conditions:

- Mangroves must be located in a Riparian Mangrove Fringe **RMF**
- Mangroves must be on lands (or SSL) own or controlled by the homeowner or the authorized contracted **PMT**



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Alright, moving on to the next exemption provided in the Act, 403.9326(b). Exempt trimming performed by a professional mangrove trimmer. The same as with the homeowner exemption, the mangroves must be located in an RMF, and the lands must be owned or controlled by the homeowner or the PMT performing the trimming.



Exemptions

Exempt trimming with **PMT** in a **RMF**:

- Mangroves may not exceed 24 feet in pre-trimmed height and may not be reduced to less than 6 feet
- Mangroves over 16 feet must be staged trimmed so that no more than 25% of the foliage is removed annually



14'

Over 10'
Under 16'

Not required to stage trim, but still cannot defoliate

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For this exemption, the mangroves in the RMF may not exceed 24 feet in height, and no mangrove may be trimmed to a height of less than 6 feet.

Additionally, if the mangroves are ≥ 16 feet tall, then the PMT is required to remove no more than 25% of the foliage from each mangrove, annually.

In the photo on the right we have a mangrove that is 14 feet tall. So the PMT is not required by the Act to remove no more than 25% of the foliage annually (animation). However, at the same time, they can not defoliate the mangrove and cause mortality. Like I said before, it is possible that some mangroves can never be trimmed to 6 feet. From the looks of this one, it seems that it may be possible to trim to 6 feet, but certainly not all at once without causing mortality to some or all of the tree.



Exemptions

Exempt trimming with **PMT** in a **RMF**:

- Mangroves may not exceed 24 feet in pre-trimmed height and may not be reduced to less than 6 feet
- Mangroves over 16 feet must be staged trimmed so that no more than 25% of the foliage is removed annually



19'

Over 16'
Under 24'

TRIM 1

TRIM 2

TRIM 3

TRIM 4

TRIM 5

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In this picture we have mangroves that around 19 feet tall. So, they are under 24 feet, which means they are still exempt, but since they are over 16 feet, the PMT is required to remove no more than 25% of the foliage annually. Which means that the PMT must trim the mangroves in stages in order to reduce it to its final configuration. As a note, the Act specifically states foliage, rather than tree height, for the 25% removal. This means that the 25% calculation can be simplified to reflect the foliage height in feet. So for example, a 20 foot mangrove that has leaves that start at 4 feet off the ground would have 16 feet of foliage and 25% removal would be 4 feet, not 5 feet.

Now this graphic shows 5 trim events to get down to 6 feet. However, it may not be possible to take these mangroves down to 6 feet, or may take additional trim events depending on the tree. It is also possible that the homeowner may not want to even trim them that low either.



Exemptions

Exempt trimming with **PMT** in a **RMF**:

- Mangroves may not exceed 24 feet in pre-trimmed height and may not be reduced to less than 6 feet
- Mangroves over 16 feet must be staged trimmed so that no more than 25% of the foliage is removed annually



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Here we have a survey pole of a mangrove that is 27 feet tall. This mangrove would not be exempt to trim, even by a PMT, and would require either a permit or other Departmental authorization to trim.

This is a case where a mangrove could not be trimmed to 6 feet. The mangrove is already so tall that it lacks understory vegetation. If this mangrove was trimmed/cut to 6 feet it would experience mortality.

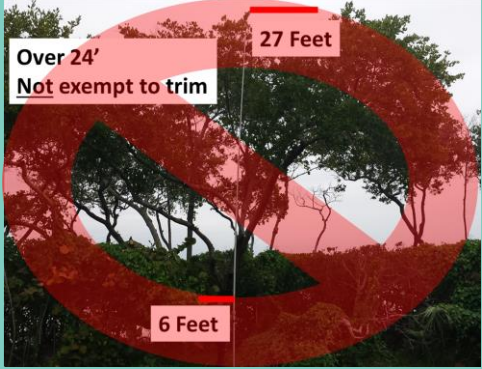
Now, it does look like this fringe has already been trimmed. There is a clear hedge around 9 feet high, and the taller mangroves have been window trimmed from 9 feet to around 18 feet or so. We will talk more about window trimming later.



Exemptions

Exempt trimming with **PMT** in a **RMF**:

- Mangroves may not exceed 24 feet in pre-trimmed height and may not be reduced to less than 6 feet
- Mangroves over 16 feet must be staged trimmed so that no more than 25% of the foliage is removed annually



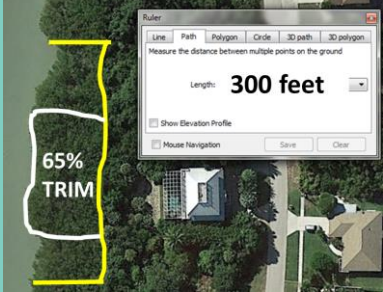
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Again, not exempt to trim, even with a PMT.



Exemptions

- 100% of the mangroves within a RMF may be trimmed when the shoreline is ≤ 150 feet
- Only 65% of the mangroves within a RMF may be trimmed when the shoreline is > 150 feet



4/23/2015 57

Alright, so now for the shoreline. The same limits for percent trim apply to this exemption as the homeowner exempt trim. In this case all the mangroves are in between 10 and 24 feet in height and require a PMT to trim, and stage trim if necessary. A shoreline of 150 feet or less can be trimmed 100%, shorelines >150 feet can only trim 65% of the mangroves along the shoreline.



Exemptions

PMT exempt to trim summary

- Must be in a Riparian Mangrove Fringe (≤ 50 feet depth)
- RMF must be on lands (or SSL) owned by the homeowner or PMT
- No herbicide or other chemicals are used when trimming
- Mangroves >24 feet in height may not be trimmed
- Mangroves ≥ 16 feet in height must be staged trimmed $\leq 25\%/yr.$
- Overall height of any mangrove not reduced to less than 6 feet
- ≤ 150 foot shoreline = 100% of mangroves may be trimmed
- >150 foot shoreline = only 65% of mangroves may be trimmed
- PMT trimming Reds for first time must contact 10 days prior



4/23/2015 58

Alright, now to summarize the PMT exempt trim.

First, must be in an RMF (which is a fringe depth of ≤ 50 feet growing along the shoreline).

The lands (or SSL) owned by the homeowner or PMT performing the trimming.

No herbicides or other chemicals may be used when trimming.

Any mangroves greater than 24 feet in pre-trimmed height may not be trimmed.

Mangroves that are 16 feet or taller **MUST BE** trimmed in stages and not remove more than 25% of the foliage of any mangrove per year.

The overall height of any mangrove may not be reduced to less than 6 feet.

100% of the mangroves may be trimmed for a shoreline that is ≤ 150 feet. Only 65% for shorelines >150 feet.

Also, a PMT that is trimming red mangroves for the first time under this particular exemption must contact the Department 10 days prior to the trimming. This is due to the sensitivity large red mangroves have to trimming, and over-trimming.



Alteration Exemption

403.9328(5)

- Exempt to trim or alter (if necessary) mangroves: if part of an activity that is exempt under **403.813** or is permitted under **373.403-468**
- Example – Mangrove in the “foot print” of an exempt dock
- No PMT required
- Recommend contacting DEP to verify



4/23/2015 59

Another exemption, which is not listed in the exemption section of the Act, but rather the alteration section (fittingly) is the alteration exemption 403.9328(5). In this exemption, the homeowner is exempt to trim or even alter (if necessary) mangroves if the trimming or alteration is part of an activity that is exempt under 403.813 or permitted under 373.403-468.



Alteration Exemption

403.9328(5)

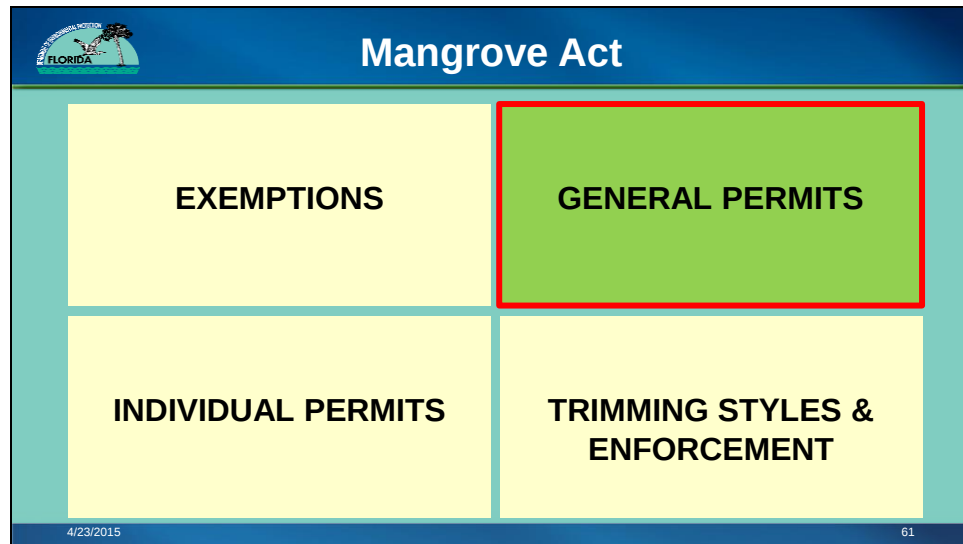
- Exempt to trim or alter (if necessary) mangroves: if part of an activity that is exempt under **403.813** or is permitted under **373.403-468**
- Example – Mangrove in the “foot print” of an exempt dock
- No PMT required
- Recommend contacting DEP to verify



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What does this mean. Well, for example, it is exempt to trim the mangrove in this picture in order to maintain dock access. The dock is a qualifying activity for this exemption, so no permit is required to trim the branches to the right of the red line, so long as the trimmings are removed from the wetlands. No PMT is required, however, it is always wise to contact the Department regarding the situation before conducting any trimming.

The Act also provides additional exemptions for utilities and municipalities to conduct certain types of trimming associated with their work activities.



Alright exemptions done! 1 topic down, 3 to go. Everybody doing ok?....Ok Great!
Let's move on to General Permits.



General Permits

- **403.9327** General Permits are established for the trimming of mangroves that do not qualify for an exemption
- Notice to use either GP must be provided to the Department
 - <http://www.dep.state.fl.us/water/wetlands/erp/forms.htm>
- Two types of General Permits

GP for a view



GP for navigation



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General permits, or GP's are permitted activities authorized by the Department for trimming that does not meet the criteria laid out in the exemption section.

There are two types of GPs. There is a GP for a view, which is your standard height reduction trimming, and there is a Navigation GP, which is for the trimming of waterways for navigational access. Notice to use either GP must be provided to the Department in the form of an application.

The application fee for the GP is \$250 and each has its own criteria.



General Permits

- **403.9327** General Permits are established for the trimming of mangroves that do not qualify for an exemption
- Notice to use either GP must be provide to the Department
 - <http://www.dep.state.fl.us/water/wetlands/erp/forms.htm>
- Two types of General Permits

GP for a view

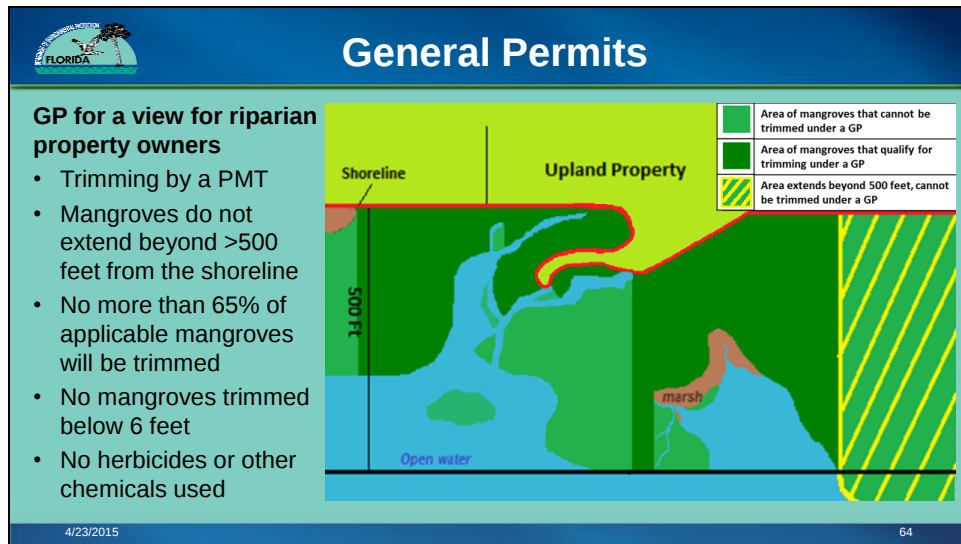


GP for navigation



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First, lets go through the GP for a view.



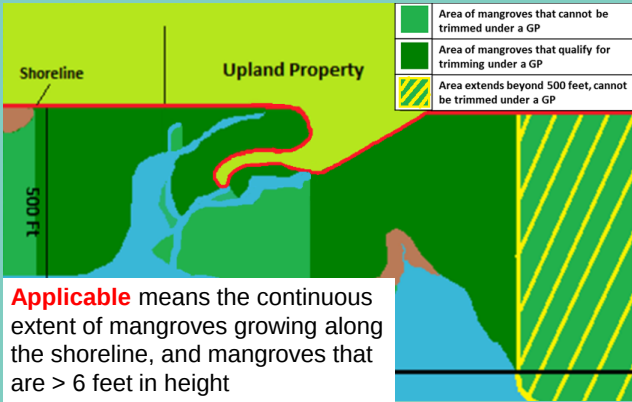
Here is an outline and diagram for the criteria for the first general permit in the act, the GP for a View. This GP is allotted for riparian property owners who want to trim mangroves on their property, or on SSL immediately waterward and perpendicular to their property. First, the trimming must be conducted by a PMT. Mangroves to be trimmed under this GP may not extend more than 500 feet from the shoreline. Like with the exemptions, this is measured from the most landward trunk to the most waterward trunk in a line perpendicular to the shoreline.



General Permits

GP for a view for riparian property owners

- Trimming by a PMT
- Mangroves do not extend beyond >500 feet from the shoreline
- No more than 65% of **applicable** mangroves will be trimmed
- No mangroves trimmed below 6 feet in height
- No herbicides or other chemicals used

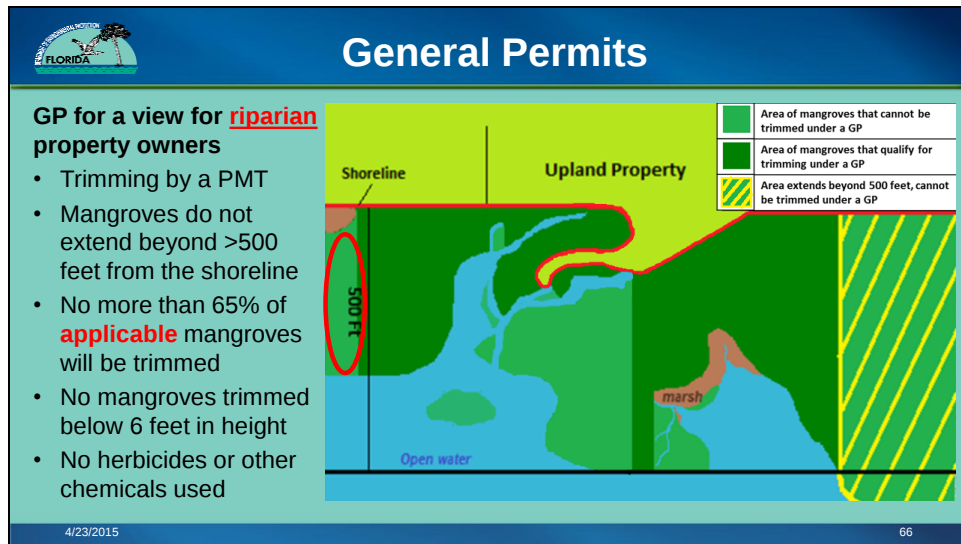


	Area of mangroves that cannot be trimmed under a GP
	Area of mangroves that qualify for trimming under a GP
	Area extends beyond 500 feet, cannot be trimmed under a GP

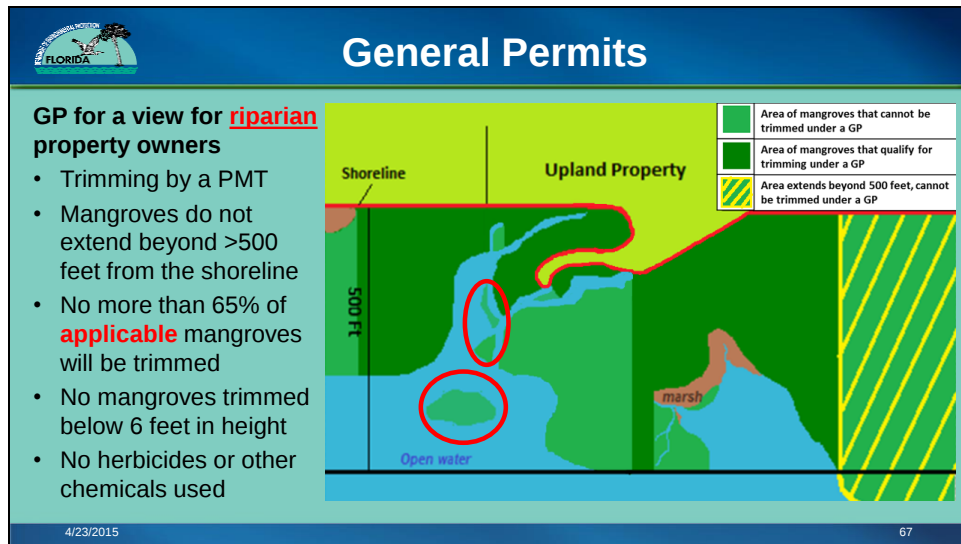
Applicable means the continuous extent of mangroves growing along the shoreline, and mangroves that are > 6 feet in height

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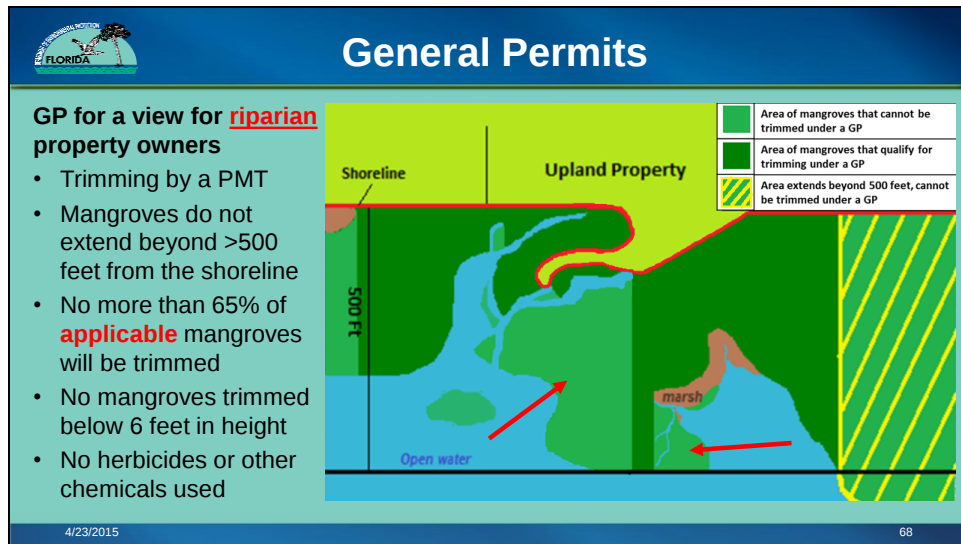
No more than 65% of the applicable mangroves may be trimmed. Note, applicable mangroves means mangroves that could legally be trimmed under the GP. This means only 65% of the mangroves that are growing along the shoreline, which exceed 6 feet in height, and do not extend more than 500 feet waterward. The diagram on the right shows mangroves that qualify for trimming under the GP (dark green). It also shows mangroves that do not qualify because they are not growing along the shoreline (light green) or extend beyond 500 feet (hatched). So in this example, if this was someone's property, the owner could only trim 65% of the dark green area under the GP.



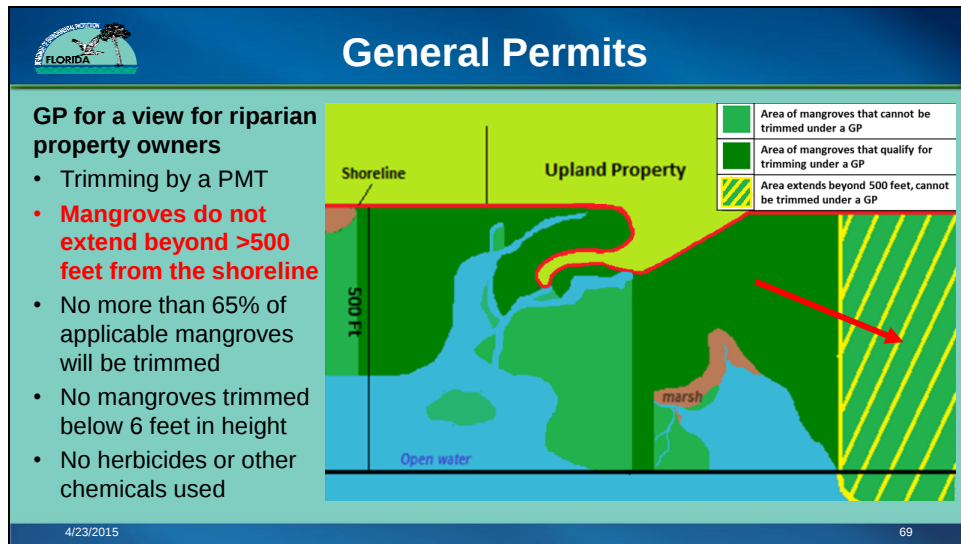
Ok, so I'm going to go through this diagram step by step to explain why it is colored the way it is, and what doesn't qualify and why. First, the area in the red circle is marked as "does not qualify for the GP". This is because these mangroves are not growing along the shoreline. There is a patch of marsh growing in between the mangroves and the shoreline. So these mangroves may not be trimmed under the GP, and they also can not count towards the 35% no-trim area because they are not applicable mangroves under the GP.



Here, I have highlighted a few mangrove islands. Even though they are within 500 feet of the shoreline, they are not growing along the shoreline, and it is also the intent of the legislature that no trimming will occur on uninhabited mangrove islands. These will also not count towards the 35% no-trim area for the GP.



These two sections are adjacent to an area where mangroves can be trimmed under a GP, so why can't these. Well, the left arrow is pointing to an area that is cut off from the property shoreline by a body of water, and therefore these mangroves are not growing along the shoreline. The area that the right arrow is pointing to is separated from the rest of the mangrove fringe by a marsh system, and therefore are also not growing along the shoreline. Since these two area do not qualify to be trimmed under the GP, they also cannot be used in the 35% no-trim area.



This last arrow points to the cross-hatched section where the mangroves extend beyond 500 feet from the shoreline, and therefore the entire swath of mangroves does not qualify to be trimmed under the GP. Note, that if you have mangroves that extend beyond 500 feet, you **MAY NOT** trim the fringe up to the 500 foot mark and then stop, leaving what extends beyond 500 feet untrimmed. If any part of the continuous fringe extends beyond 500 feet then all of those mangroves (in a line perpendicular to the shoreline) starting from the shoreline do not qualify and are kicked out of the GP.

An individual alteration permit would be required to trim the mangroves in this diagram that do not qualify to be trimmed under the GP.

The slide features a blue header with the text "General Permits" and a small logo on the left. The main content area is divided into three horizontal sections. The top section, labeled "Requires GP", shows a mangrove tree with a height of ">24 feet". The middle section, labeled "Under 24ft may be exempt", shows a mangrove tree with a height of "Under 24ft". The bottom section contains a text box stating: "If the mangroves are too tall to qualify for an exemption (e.g. over 24 feet) a GP CANNOT be layered with an exemption so that 100% of the shoreline is now 'trimmable'". The slide is dated "4/23/2015" and has the number "70" in the bottom right corner.

General Permits

Requires GP

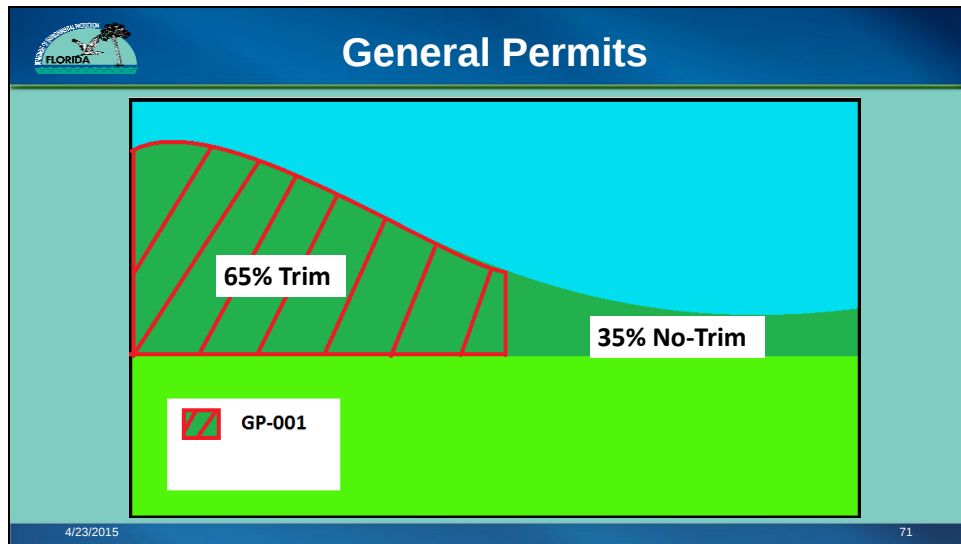
>24 feet

Under 24ft may be exempt

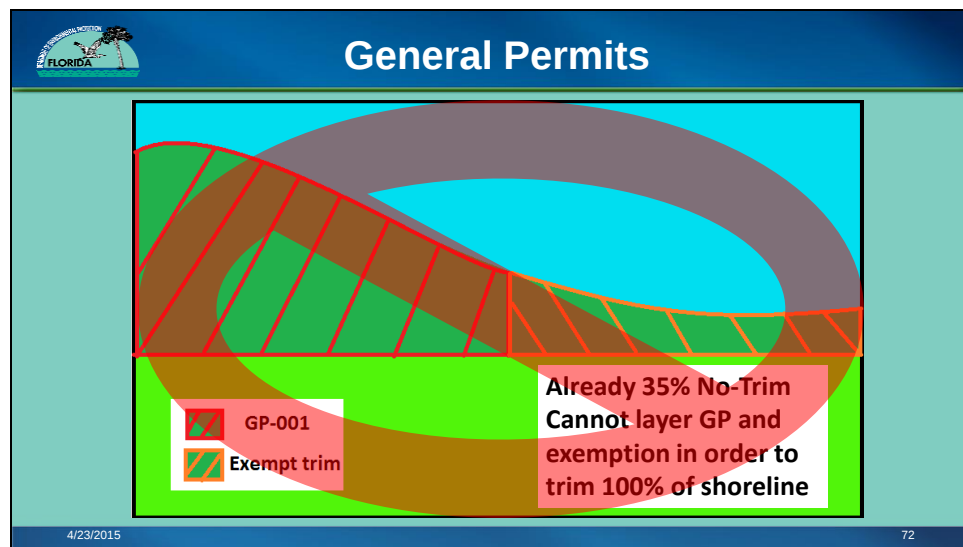
If the mangroves are too tall to qualify for an exemption (e.g. over 24 feet) a GP CANNOT be layered with an exemption so that 100% of the shoreline is now "trimmable"

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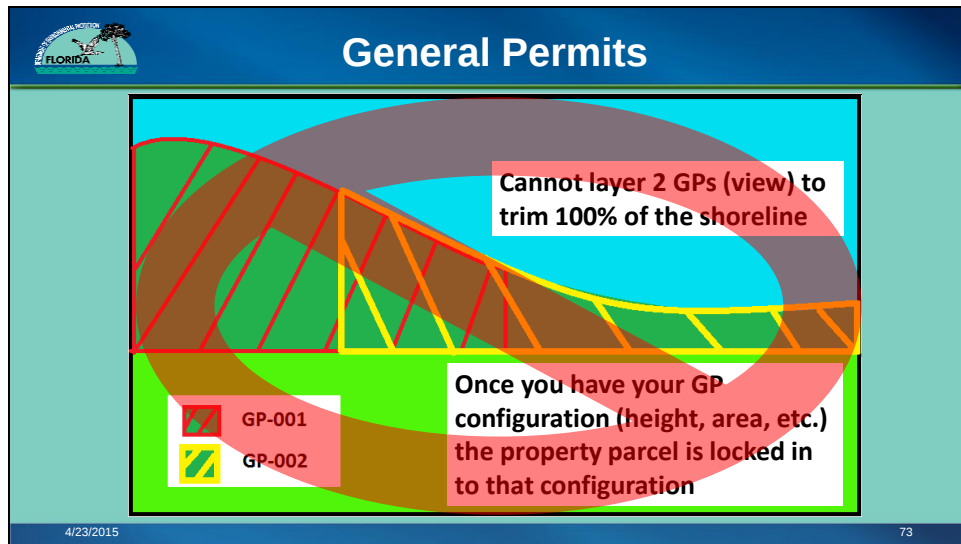
So we just covered the criteria needed to use a GP, now I have a few slides of how a GP cannot be used. This example is to demonstrate that a GP cannot be layered with an exemption in order to make 100% of the shoreline trimmable. Here, there are some mangroves over 24 feet tall, which can't be trimmed under the exemption. The homeowner wants to place a GP on the parcel so they can trim the mangroves over 24 feet in height. Then, once all the mangroves are under 24 feet tall, the homeowner wants to claim that they can trim 100% of the fringe under the exemption.



This is **NOT** the case. Once a GP is placed on a parcel, it is locked in to that configuration, and since a GP has a 35% no-trim area, the homeowner would not be able to trim 100% of their shoreline, unless they received an alteration permit.



can't use exemption in an area already deemed a no-trim area under a GP.



In the same fashion, you cannot layer two of the same types of GPs (e.g. GP view) to trim 100% of your shoreline. Here the homeowner receives a GP-001 to trim 65% in the hatched area, and leave a 35% no trim area. Once they have reached the final configuration of the GP they then want to apply for another GP on the parcel, and this time have the 65% trim area cover the previous 35% no trim area (animation). This is not permissible. For purposes of General Permits, once a parcel has a GP configuration (height, area, etc.) and trimming is performed under that GP, the parcel is locked into that configuration.



General Permits

- **403.9327** General Permits are established for the trimming of mangroves that do not qualify for an exemption
- Notice to use either GP must be provided to the Department
 - <http://www.dep.state.fl.us/water/wetlands/erp/forms.htm>
- Two types of General Permits

GP for a view



GP for navigation



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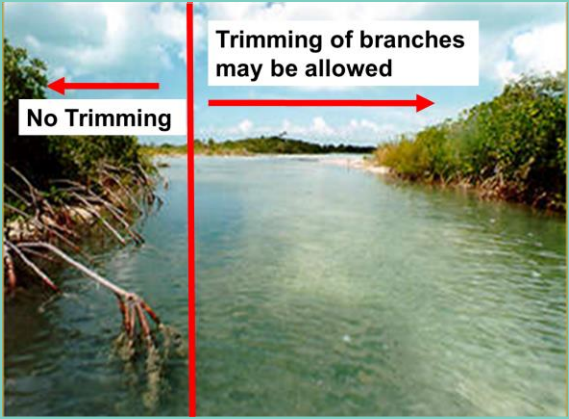
Alright, now lets move on to the Navigation GP.



General Permits

Navigation GP for riparian property owners

- Limited to trimming within existing navigation channels
- Restricted to branches or trunks of mangroves that extend into the navigation channel beyond a vertical plane of the most waterward prop root or root system



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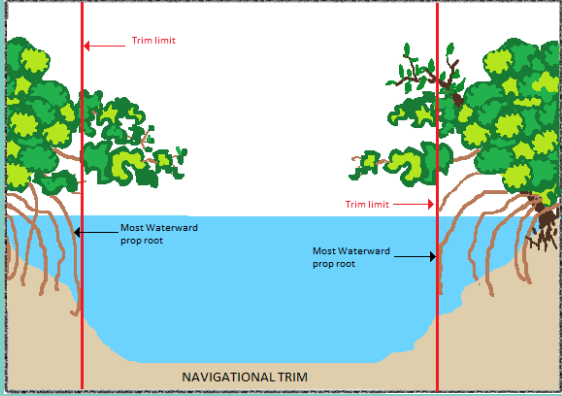
The navigation GP allows for riparian property owners to trim mangroves that overhang into navigable waters in order to maintain access through those waters. The trimming is restricted to only mangrove branches or trunks that extend into the channel beyond the most waterward root or root system. This picture shows an extreme example where a red mangrove prop root has extended far into the waterway. Under this GP, trimming may only occur to the right of the vertical red line (inside the channel). Any trimming to the left of the red line, or trimming of any roots would not be permissible and may result in a violation.



General Permits

Navigation GP for riparian property owners

- Limited to trimming within existing navigation channels
- Restricted to branches or trunks of mangroves that extend into the navigation channel beyond a vertical plane of the most waterward prop root or root system



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Here is a diagram version of the real life example, this time with overhanging branches. Again, you draw a vertical plane at the most waterward root, any branch or trunk overhang beyond that plane may be trimmed.

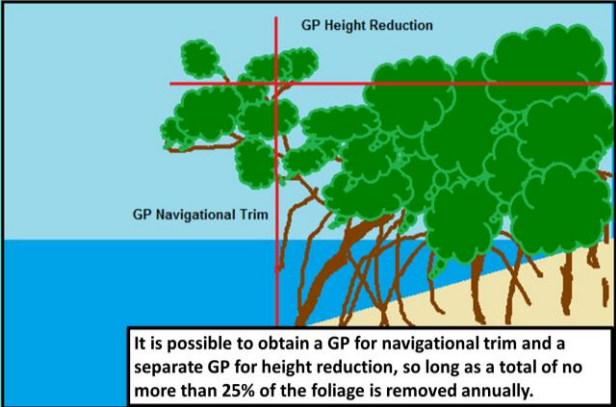
Just like with all other exempt and permitted trimming projects, no mangrove roots shall be cut/trimmed under Navigation GPs.



General Permits

GP for a view combined with a GP for navigation

- Cannot layer two GPs of the same type on the same parcel
- Can have 1 GP of each type on the same parcel



It is possible to obtain a GP for navigational trim and a separate GP for height reduction, so long as a total of no more than 25% of the foliage is removed annually.

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Now, I have stated earlier that you cannot layer multiple view GPs, or a GP and an exemption in order to trim more of your shoreline. However, the Act does allow for up to 1 of each type of GP on the same parcel. So for example, a riparian property owner with navigation access can have a GP for a view, and a Nav GP on the same parcel, and the two can even overlap. Now the same criteria still apply to the GPs, which means that no more than 25% of the foliage of any mangrove can be removed annually from the two permits combined. This may mean that you trim more from one GP than the other, or you may have to alternate trimming years. The homeowner has to decide which of the two is more important for their parcel.



Multi-Family Residences

- Applies to GP for a view
 - 403.9327(1)(a)
- 65% shoreline trim must be equitably distributed so that each owner's riparian rights are similarly affected
- If needed, possible to obtain higher trim percentage to ensure equitable distribution of the view



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As part of the legislative intent, trimming conducted on properties with multifamily residences, e.g. condo complexes etc. must have an equitable distribution of view. This means that for the view GP, the 65% trim area must be equally distributed across the property so all residents have a similar view.

In this diagram, the 'trim' areas are generally directly between the buildings and the water in order to provide the best view of the water for the residents. The 'no trim' areas are between the buildings. This helps to satisfy the percent trim requirement, the equitable distribution requirement, and provide a view. Note that, the trim configuration must not allow for more than 65% of the **qualifying mangroves** to be trimmed. This is just one type of configuration for the parcel. Any configuration proposed may be used, so long as it meets the necessary criteria.



General Permit Summary

GP View for Riparian Property Owners

- Trimming is supervised or conducted exclusively by a PMT
- The mangroves subject to trimming do not extend >500 feet waterward
- No more than 65% of the **applicable** mangroves may be trimmed
- No mangroves may be trimmed below 6 feet in height
- No herbicide or other chemicals will be used for trimming
- A GP may be used only once to achieve a height of no less than 6 feet
- Trimming **must** be conducted in stages $\leq 25\%$ foliage removal annually
- Final configuration is exempt to be maintained under 403.9326(1)(d)

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Alright, now for a summary of the GP for a view.

First, the trimming must be conducted exclusively by a PMT.

The mangroves subject to trimming do not extend more than 500 feet waterward from the shoreline.

No more than 65% of the **applicable** mangroves may be trimmed, we went through how to determine if the mangroves are applicable or not.

No mangroves may be trimmed below 6 feet in height

No herbicide or other chemicals will be used for trimming.

A GP may be used only once to achieve a height of no less than 6 feet

Trimming **MUST** be conducted in stages so that no more than 25% of the foliage is removed annually.

And lastly, the final configuration of the view GP is exempt to be maintained under 403.9326(1)(d) so long as no defoliation occurs. Which means that homeowners are exempt to maintain their final configuration so long as they do not trim more than what was allotted by the GP, and they do not defoliate the mangroves. A PMT or others can also maintain the configuration if the homeowner prefers.



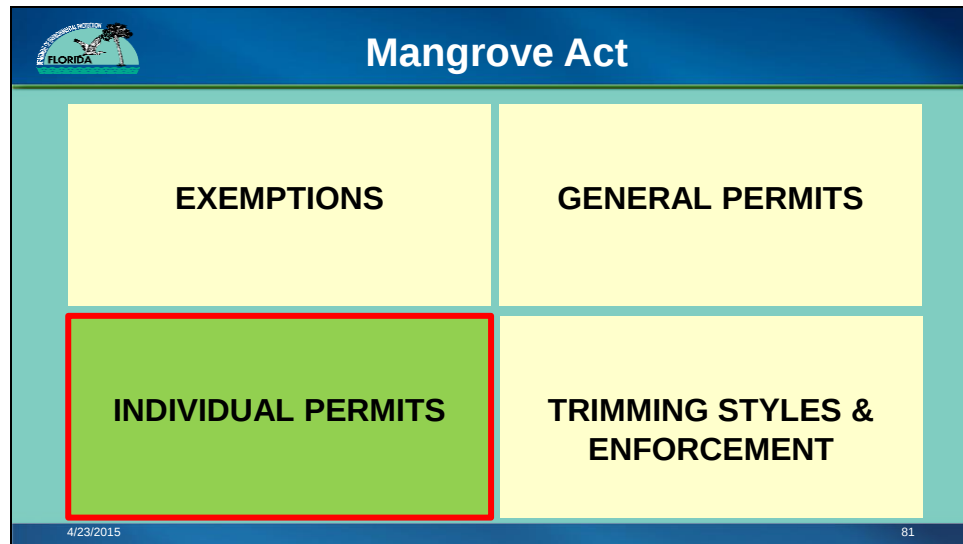
General Permit Summary

GP Navigation for Riparian Property Owners

- Trimming is supervised or conducted exclusively by a PMT
- No herbicide or other chemical will be used for trimming
- A GP may be used only once to achieve a height of no less than 6 feet
- Trimming **must** be conducted in stages $\leq 25\%$ foliage removal annually
- Final configuration is exempt to be maintained under 403.9326(1)(d)
- Trimming is limited to the branches that extend into the navigation channel beyond a vertical plane of the most waterward prop root

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And a summary for the Nav GP. The bullets in red are overlap from the GP for a view, so the only additional stipulation is that under the NAV GP, the trimming is limited to mangrove branches and trunks that extend into the navigational channel beyond a vertical plane of the most waterward prop root or root system.

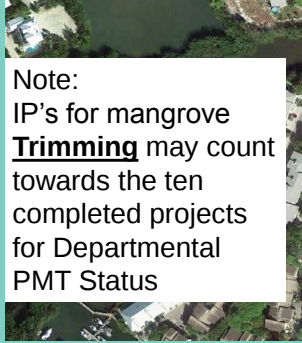


Alright, exemptions and GPs done, lets move on to Individual permits.



Individual Permits

- Individual (Alteration) Permits are those that do not meet either the Exemption or the General Permit criteria
- Individual permits can be exclusively for trimming, or alteration, or both
- IP's are subject to evaluation of public interest criteria in 373.414(1) and cumulative impacts in (8)
 - If the application is found to impact public interest, then modification/mitigation may be required



Note:
IP's for mangrove **Trimming** may count towards the ten completed projects for Departmental PMT Status

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Individual Permits act as the catch all. They cover whatever does not meet the criteria laid out in the exemption and GP sections. Individual Permits may be issued solely for trimming, or solely for alteration (removal), or they can be a combination of the two.

In addition, Individual permits are subject to Departmental evaluation of public interest and consideration of cumulative impacts of the project, as per 373.414(1) and (8).

(animation)

As a side note, individual permits that are for mangrove trimming may count towards the ten completed projects needed for DEP PMT status.



Individual Permits

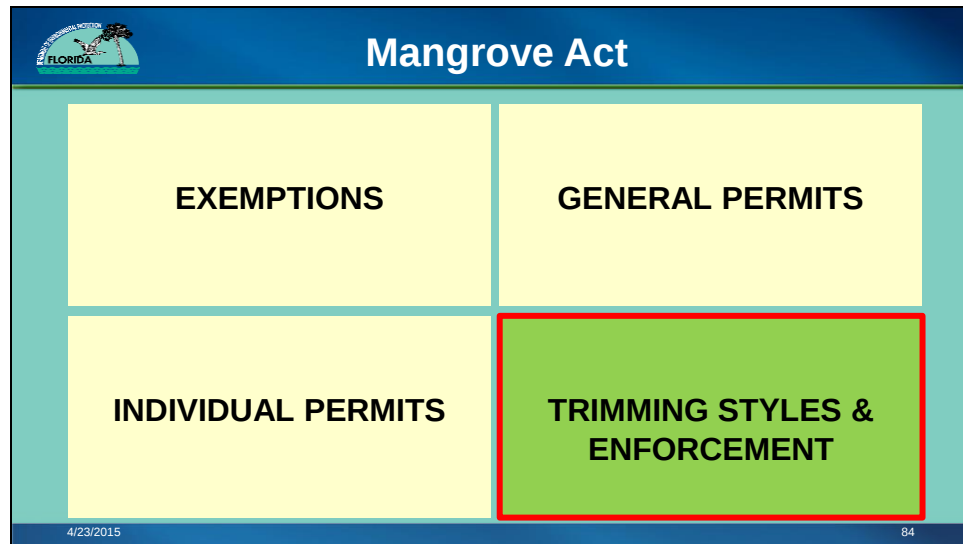
If the project does not meet the previous criteria:

- The department and the applicant shall first try to reduce or eliminate the unpermittable activities
- If this fails, then the applicant may propose to the department measures to mitigate for the unpermittable impacts
- Types of mitigation
 - **Creation:** On-site planting
 - Restoration: replanting
 - **Preservation:** Conservation Easements CE's
 - **Enhancement:** Anything that increases the functionality of the system
 - (e.g. exotic removal, hydrologic conditions etc.)

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If the applicant does not meet the criteria laid out in 373.414(1) and (8), then the Department and the Applicant will first discuss measures to reduce or eliminate the unpermittable impacts. If these impacts still remain, then the applicant may propose measures to mitigate for said impacts.

The types of mitigation are **Creation**, in the form of on-site planting, with restoration being replanting. There is **Preservation**, in the form of CE's. Then there is **Enhancement**. Enhancement is anything that increases the functionality of the system. This can be anything from exotic removal to improving hydrology.

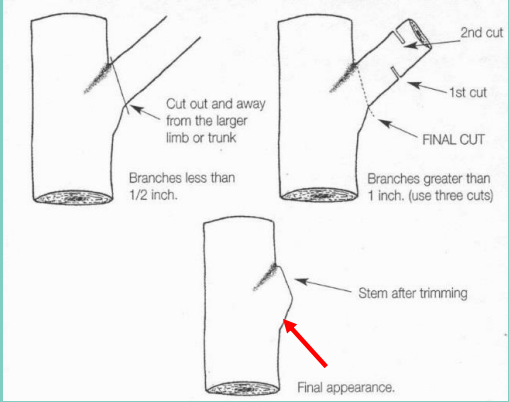


Alright, now let's get into some of the different trimming styles, as well as what types of trimming are and are not permissible. We will also cover enforcement in this section.



Trimming Styles

- Diagram of proper trimming technique for small (left) and large (right) branches
- Important to avoid cutting through the branch collar (cut out and away)
- Do not split the bark
 - larger branches require multiple cuts



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Here is a diagram on how to properly trim tree branches. The tree in the top left shows a small branch, $<1/2$ " in diameter. Only one cut is required. Make sure to avoid cutting through the branch collar by cutting out and away from the larger trunk. (animation) The red arrow in the bottom image is pointing to the branch collar. This will avoid doing unnecessary damage to the tree and allow for the smallest amount of open tissue for the tree to heal. The picture in the top right shows a larger branch, >1 ". Here, three cuts are used to prevent the branch from breaking at the node of the larger trunk and peeling down the side. Larger branches require multiple cuts to avoid the weight of the limb from splitting on the cut and pulling down bark from the side of the tree.



Root vs Stem

- Trimming does not allow for cutting of mangrove roots
 - (unless specifically authorized)
- Stems (red mangrove) have obvious circular scars, roots are smooth



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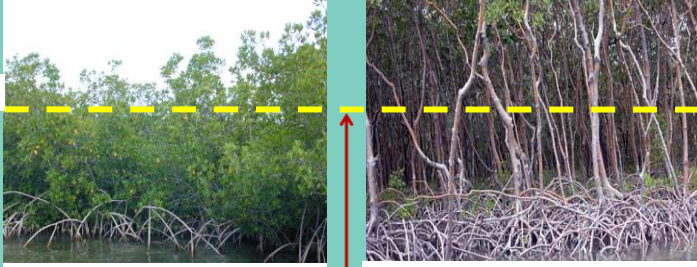
Trimming does not allow for cutting of mangrove roots. One way to differentiate the two is that stems have circular scars, or what are called leaf scars, whereas roots tend to be smooth. Another indicator is that stems are attached to the trunk or branch and have leaves at the end. Roots attach to the trunk or branch and either hang with nothing at the end, if they are an aerial root or are grounded in the substrate.



Hedge Trimming

Not all mangroves can legally be trimmed down to 6 ft. – there must be sufficient leaf mass left on tree to survive – (especially red mangroves)

6 Feet



- Reds above are able to be legally trimmed to 6 feet without defoliation

- Reds above are not able to be trimmed to 6 feet without defoliation occurring

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Earlier I mentioned that the Act allows for trimming mangroves to a height as low as 6 feet. I also mentioned that some mangroves may not be able to be trimmed to 6 feet. Here is an example of that. In the photo on the left we have a mangrove fringe where the red mangroves have a lot of foliage below the 6 foot mark. These could most likely be trimmed to 6 feet without being defoliated. The photo on the right shows some taller red mangroves that have the majority of their foliage in the upper portion of the canopy, and almost no leaf mass below 6 feet. If these mangrove were trimmed to 6 feet (yellow line) then they would certainly be defoliated and all would experience mortality, as there would be nothing but trunk left.



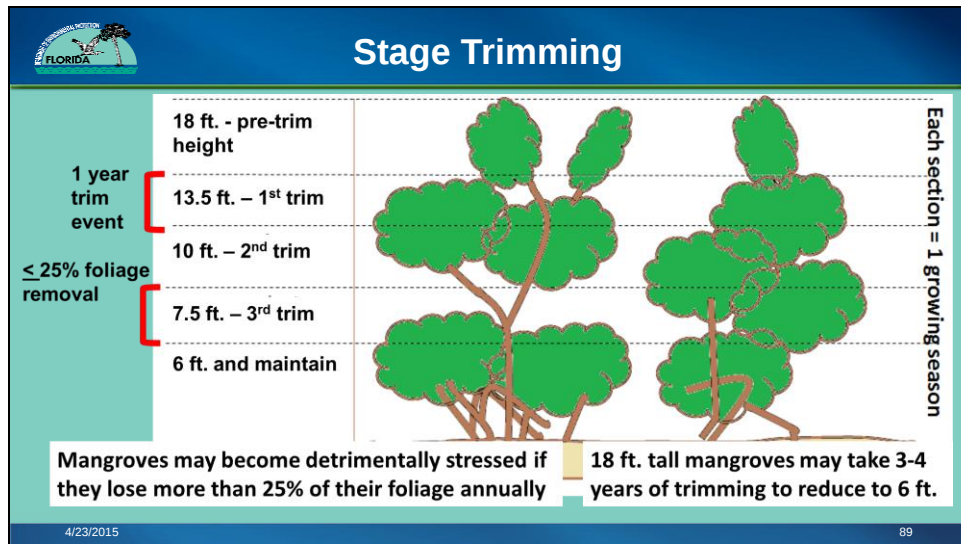
Window Trimming

- Removal of internal secondary branches
- Creates a view through the canopy
- Preserves the mangrove functions (canopy and understory habitat)
- Preserves privacy



4/23/201588

One way to avoid unnecessary defoliation, while still being able to trim for a view is to window trim. Window trimming is the removal of internal secondary branches in the middle part of the mangrove. Window trimming creates a view through the canopy, while still preserving the life and function of the mangrove. Here, the lower portion of the fringe is hedge trimmed, and the middle section is trimmed and thinned to create a view. The upper portion of the canopy (which is where the majority of the foliage is for red mangroves) is left intact and allows the tree to continue to grow. Window trimming provides the fringe with greater habitat function than just a hedge trim alone.



I talked about stage trimming before in regards to some of the exemptions and the GPs. Now let's put a quantitative perspective on it. Here we have an 18 ft. tall mangrove (just above the 16 ft. stage trim requirement for the exemption). If we want to trim these to 6 feet as quickly as the act allows, then it will take us a few years to do so. The first trim, we go from 18 ft to 13.5 ft, and take 4.5 ft. off the tree. We come back the next year and trim to 10 ft. taking off 3.5 feet. The third year we trim to 7.5 ft, and finally on the fourth year we take the fringe down to 6 feet. So that's 4 trim events, over 4 years. You have to remember that this is simplified to not take into account the amount of regrowth from year to year, so in reality, it could take even longer. It is important to remember that stage trimming is a process, and can take some additional time depending on the tree's level of recovery after each trim event. But it helps to preserve the life and function of the tree while it is being trimmed to its desired height and configuration.



Improper Trimming

Lion's tailing





Undercutting (lollipop) and trimming below 6 ft.

4/23/2015

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Here are some examples of improper trimming. The photo on the left is called lion's tailing. This was most likely supposed to be a window trim, but too much foliage was trimmed off at the top and now the mangroves have been defoliated and have little if any habitat function. The photo on the right shows undercutting, or lollipop trim. Here, the mangroves are not only trimmed to an overall height of less than 6 feet, but they were also trimmed and thinned from the ground up, removing branches and foliage. Each of these would be considered violations.



Unauthorized Activities

Unauthorized trimming - is considered trimming beyond the authorized height or configuration so long as the mangrove still has sufficient leaf mass to support the life of the tree



4/23/2015

Unauthorized alteration – is any activity that causes a mangrove to lose most of its leaf mass, causing all or part of the tree to die



2015-09-08

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Here are some more unauthorized activities. There are two types, unauthorized trimming, and unauthorized alteration.

Unauthorized trimming is where trimming was performed outside of the authorized height or configuration, but not to a degree at which the mangrove has been defoliated or experiences mortality. The photo on the left shows these mangroves have been trimmed below 6 feet.

Unauthorized alteration is any activity that causes a mangrove to lose the majority of its leaf mass, resulting in death of all or part of the tree. The photo on the right shows a much larger mangrove that has had all of its foliage removed and will experience mortality.



Unauthorized Activities



Trimming debris

- Must be removed
- Disposed of in a confined upland location
- If left in wetlands or surface waters is considered fill and may be an ERP violation

Note for Conservation Easements:

- Trimming is allowed in a CE only if the CE specifically allows it
- Read the CE carefully, and feel free to contact the agency that issued the CE with questions

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For all trimming events, the trimmed debris (anything $>1/4''$ in diameter) must be removed out of the wetlands (mangrove fringe) and disposed in an upland location. Any trimming debris left in the wetlands is considered “fill” and may be subject to an ERP violation.

As a note for trimming in Conservation Easements. Trimming is **ONLY** allowed in CE’s when it is specifically stated in the CE that trimming is allowed. Be sure to read CE’s carefully and feel free to contact the issuing agency with any questions.



Enforcement

In regards to violations

- “In all cases, the applicant, permittee, landowner, and person performing the trimming are jointly and severally liable...”
 - S. 403.9332(1)(b) of the MTPA 1996
- Be sure to take photos before and after in order to document any and all trimming activities
 - The more photo documentation the better



Defoliation, as shown in this photo is a violation

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Now for enforcement. For enforcement against violations, 403.9332(1)(b) of the Mangrove Act states: “In all cases, the applicant, permittee, landowner, and person performing the trimming are jointly and severally liable...”

This is another reason why photo documentation is so important. If you plan to have trimming done, or if you are going to trim, be sure to take photos before and after the trimming to document what was done. The more documentation the better.



Enforcement

Restoration or mitigation must occur when:

- 5% or more of trimmed mangroves were trimmed below 6 feet (without authorization), or where 5% or more have been destroyed, defoliated, or removed under either an exemption or general permit
- Restoration will first require onsite replanting
 - 80% survival after 1 year
 - Achieve equivalent canopy area to violation within 5 years
- If offsite restoration is needed
 - Must be conducted in a suitable area
 - Same conditions apply to offsite as onsite
- If all or part of restoration fails
 - Monetary donation to a restoration project
 - Purchase mitigation bank credits



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For enforcement, restoration must occur when 5% or more of the trimmed mangroves were deemed to be in violation. This could be that they were trimmed below 6 feet (w/o authorization), or where 5% or more have been destroyed, defoliated, or removed under an exemption or general permit.

Restoration will follow these criteria.

Restoration will first require onsite planting/replanting. The planting must have an 80% survival rate after the first year. If 80% survival is not reached, additional planting must occur until the survival rate of all the plantings reaches 80% 1 year after the most recent planting. Additionally, the planting must achieve an equivalent canopy area to offset the violation within 5 years.

If onsite planting is not feasible, offsite restoration will be required. It must be conducted in a suitable area for mangrove growth. The same conditions for onsite restoration apply to offsite.

If all or part of either restoration fails, there must either be a monetary donation to a restoration project, or the person may purchase mitigation bank credits to offset the violation.



Developing a Trimming Plan

- Plan a trim that conserves the mangroves, while giving the property the desired view
 - Elevated homes may not need to trim to 6 feet
- For the 'view GP' decide where you want the view & whether a top trim is needed or if a window trim would be more desirable
 - Can only have 1 GP and are locked in to that configuration
- Once the trees are trimmed, to change the trimming plan will require an Individual Permit, so plan carefully



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Here are some recommendations when developing a trimming plan.

Plan a trim that conserves the mangroves, while giving the property the desired view. For example, an elevated home may not need to hedge trim their mangroves down to 6 feet to achieve a desired view.

When using the General Permit, think about where you would like the view the most, and decide whether it is best (for your parcel) to top trim the mangroves, or if a window trim would be more desirable. Remember that you can only have 1 GP for a view on a parcel, and once trimming has occurred, you will be locked into that configuration. In order to change a trimming plan, an individual permit would be required, which may require mitigation, so plan carefully.



Application Information

What to include in your application

<http://www.dep.state.fl.us/water/wetlands/erp/forms.htm>

- Name & address of riparian owner
- Name & signature of PMT (the department must be notified if you decide to change trimmers)
- Exact property boundaries (clearly marked)
- Location of any easements, including CE's & deed restrictions
- Location of all mangroves associated with the property
- Location of the shoreline(s) (e.g. 'wetland delineation line(s)')
- Proposed trim areas with depth as measured from the shoreline(s)
- Stage trimming plan showing locations of red mangroves and providing elevations of their lowest leaves
- Photos of existing conditions



NOTICE OF INTENT TO USE S. 403.9327, F.S., GENERAL PERMIT FOR MANGROVE TRIMMING
OR
APPLICATION FOR S. 403.9328, F.S., INDIVIDUAL PERMIT TO TRIM OR ALTER MANGROVES

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The mangrove trimming application can be found on the Department's website (link provided). The trimming application will require the name and address of the riparian property owner. Name and signature of the PMT. Clearly marked property boundaries. As well as any easements or deed restrictions for the property. Locations of all mangroves on the property, and the location of the shoreline. You will also need a description and diagram of the proposed trim areas with depths (measured from the shoreline). As well as photos of the existing conditions prior to any trimming activities.



Questions?

Thanks so much everyone, I will take any questions at this time

Mangrove webpage:
<http://www.dep.state.fl.us/water/wetlands/mangroves/index.htm>

District Contacts:
<http://www.dep.state.fl.us/secretary/dist/default.htm>

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Thanks everyone. Please feel free to visit the Department's Mangrove webpage, and contact me if you have any mangrove related questions.

I'll take any questions at this time.