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Mangrove Trimming Regulations[1]

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Mangroves and Their Importance

Florida is home to a wide variety of salt-tolerant plant species, including trees growing along the shore that are identified as "mangroves." Globally, there are approximately 70 species of salt-tolerant plant species that are identified as mangroves. They are distributed across tropical and subtropical regions throughout North and Central America, Africa, Asia, and Australia. While in different families and genuses, all mangrove species exhibit the same reproduction characteristic, a strategy known as vivipary, in which the seeds germinate while they are still attached to the parent plant. In Florida, there are three different species of mangrove, with each species having different biological tolerances that make it best suited to different locations along the coast and within intertidal zones.

Red mangroves, described in the Ask IFAS publication *Rhizophora mangle*: Red Mangrove, available at ask.ifas.ufl.edu, are characterized by support structures called prop roots, which are distinctive curved roots that protrude directly from the trunk of the tree and extend into the water (red mangroves usually grow right next to the water) (Figure 1). These roots help "prop" the trees up in the water and hold them vertical despite the forces of waves and currents they experience, especially at high tides (Gilman 2007).

Behind the red mangrove line and closer to shore, the black mangroves described in the Ask IFAS publication *Avicennia germinans:* Black Mangrove are prevalent. Black mangroves can be identified by their finger-like peg roots (pneumatophores) poking up from the sediment surface. Mangroves, like all trees, "breathe" through their roots, and the black mangroves' peg roots allow the species to survive in waterlogged sediments where they would otherwise drown. Black mangroves are also able to excrete salt from their tissues, allowing them to exist in a broader range of salt tolerance in comparison to other mangrove species (Andreu et al. 2013).

Farthest back from the shore, the white mangroves described in the Ask IFAS publication *Laguncularia racemosa:* White Mangrove are rarely submerged and have a narrow range of salt tolerance (Figure 2).

Mangrove ecosystems, regardless of species, have been migrating northward as freezing temperatures become less common. They can be found as far north in the eastern United States as the border of Florida and Georgia (Andreu et al. 2010). Mangroves are a vitally important species that are key to resilient human communities, healthy coasts, and marine ecosystems in Florida. Therefore, it is crucial that we maintain our mangrove ecosystems well to promote their long-term persistence. This publication is intended to assist landowners, property managers, and the general public interested in learning how to maintain Florida mangrove ecosystems to ensure that they thrive and continue to protect our coasts. It will teach readers how to trim mangroves properly and provide additional resources for anyone with further questions and concerns about mangrove management.

Figure 1. Images of the three mangrove species found in Florida.
Credit: UF/IFAS Extension Florida Sea Grant College Program

Mangrove trees provide a wide range of ecosystem services. They filter water, control erosion, buffer our coasts against storm damage, sequester carbon, and provide wildlife habitat and outdoor recreation and tourism opportunities. Coastal wetlands such as mangroves and salt marshes capture high quantities of carbon because the plants in these habitats grow quickly, pulling carbon from the atmosphere and retaining it in their tissues. Another reason these areas are key carbon reservoirs is the anaerobic (low oxygen) nature of their soils. These low oxygen conditions inhibit the decomposition of plant matter, allowing these ecosystems to retain trapped carbon for hundreds or thousands of years. The carbon sequestration potential of mangroves is

uniquely important as climate change mitigation strategies are researched on a global scale.

Ecosystem services can be difficult to value depending on the service targeted and the model used to estimate price points. In a study of the Everglades mangrove forests carbon storage, however, it was estimated that every hectare of mangrove provided from $13,859 to $23,728 in total abatement costs per hectare for carbon (Jerath et al. 2016). In another study, it was estimated that mangroves provided $5,820 of nutrient filtering services by mangrove soils, and another $608 in waste regulation per hectare per year (Blair et al. 2015).

Mangrove ecosystems are threatened globally by commercial shrimp aquaculture, urban development, increasing hurricane intensity, and pollution (Goldberg et al. 2020; Krauss and Osland 2019). Coastal development in Florida, beginning in the 1940s and continuing through the present day, has put increased pressure on mangroves. The mangroves that exist along developed coastlines are often trimmed and treated as a landscape feature. The trimming of mangroves reduces canopy coverage, vegetative debris, and horizontal root growth (on red mangroves). Trimming conducted improperly leads to long-term decline in the health of the tree (Medina Irizarry and Andreu 2022). To maintain the ecosystem and prevent the death or decline of mangroves, it is necessary to be knowledgeable about current best practices for trimming and preserving mangrove trees.

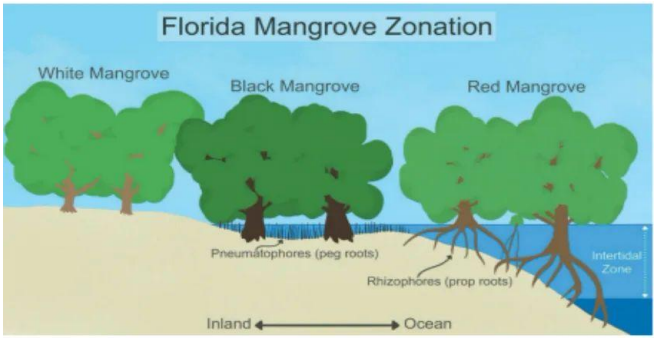

Figure 2. General zonation trends of Florida mangroves depicted by distance away from the shoreline. It should be noted that there is often a significant overlap of species and that elevation does not dictate where species are found.
Credit: Natalia Medina-Irizarry, used with permission

The Mangrove Trimming and Preservation Act

The Florida1996 Mangrove Trimming and Preservation Act (MPTA) allows trimming or removal of mangroves only under specific stipulations and with agency authorization. This law was passed with the goal of protecting mangroves from trimming, removal, or defoliation without authorization. The law has mechanisms in place for the enforcement of specific trimming requirements. Throughout most of Florida, the Florida Department of Environmental Protection (DEP) is responsible for the management of the law and any permitting associated. There are seven entities that have received local delegation of the state rule, making them the local authority on trimming. Those seven agencies are: Miami-Dade County, Broward County, Hillsborough County, Pinellas County, Sarasota County, the town of Juniper Island, and the city of Sanibel.

Current trimming practices allowed by the 1996 Mangrove Trimming and Preservation Act include hedging of mangrove with a minimum overall height of six feet from the substrate. However, trimming authorization only applies in cases where the mangroves exist within a riparian mangrove fringe (RMF). The RMF can be designated as the mangroves growing along the shoreline on private property, property owned by a governmental entity, or sovereign submerged land. An RMF is a mangrove habitat along a property owner's shoreline where the mangroves do not extend more than 50 feet waterward, measured perpendicularly from the most landward mangrove trunk to the most waterward mangrove trunk (Figure 3). When within an RMF zone, if the shoreline is less than 150 feet, then 100% of the RMF may be trimmed; however, if the shoreline is greater than 150 feet, then only 65% of the RMF may be trimmed. This zonation can be difficult to determine on properties with coastal wetlands or along shorelines with peninsular formations. The act allows for exemptions from trimming permits only when shorelines meet the RMF criteria and certain other stipulations that are discussed below.

Figure 3. Designations of the RMF. Image A on the top left is not an RMF because the mangroves are not contiguous with the shoreline. Image B on the top right displays both an RMF region along a continuous shoreline and a non-RMF region on an island. Image C on the bottom left shows a continuous shoreline with the mangroves extending less than 50 feet landward. Image D on the bottom right displays that if that distance is greater than 50 feet it is not considered an RMF.
Credit: UF/IFAS Extension Florida Sea Grant College Program

It is important to note that the overall height of a mangrove tree will not always be visible above the water line, and it is necessary to measure from the substrate (soil, sand) where the tree is rooted to the top-most point of the canopy. It is crucial that the height of each mangrove is taken before it is trimmed to ensure trimming only occurs in the proper zones. If the mangroves that need to be trimmed exceed 10 feet, then a professional mangrove trimmer (PMT) must supervise and/or conduct the trimming. These professionals are knowledgeable in the care of mangroves and know how to perform the trimmings in a way that will prevent the most damage to the tree. Under MTPA, the following organizations or individuals may be considered PMTs:

- Arborists certified by the International Society of Arboriculture (ISA).
- Professional wetland scientists, certified by the Society of Wetland Scientists.
- Environmental professionals, certified by the Academy of Board-Certified Environmental Professionals (Florida Association of Environmental Professionals membership is insufficient).
- Ecologists certified by the Ecological Society of America.
- Landscape architects who are currently licensed under part II of Chapter 481 and who have agreed to certain mangrove trimmer standards.
- People who have received PMT status from the Florida Department of Environmental Protection (in locations that are not delegated to local governments) or who have been recognized by a local government that has been delegated the state mangrove regulatory program by the DEP.

These organizations and individuals are required to qualify for specific revisions under the MTPA to qualify as an PMT. It is highly encouraged to talk to locals and neighbors to determine the best PMT near you. For assistance in locating professional trimmers, contact your local DEP officer or your local delegated government body, listed on Florida DEP's submerged lands and environmental resources coordination mangroves page at FloridaDEP.gov.

Exceptions, Permits, and Contacts

- Basic Private Property Exemption: Shorelines of less than or equal to 150 feet in length, where the mangroves do not exceed ten feet in overall height, can be trimmed to no less than six feet in overall height by the private property owner (Figure 4).
- General vs. Individual Permits: Depending on the scope of the trimming project, either a general or an individual permit may be required. Each permit has designated restrictions on the trimming of mangroves, such as the percentage of shoreline that can be trimmed, the phases and timing of trimming, and mitigation rules the trimmer must follow.
- Alteration Permit: As opposed to a trimming permit, which allows for the selective cutting of branches, twigs, limbs, and foliage, an alteration permit is required for any other activity that affects mangroves. An alteration permit is needed to remove or defoliate mangroves. If alteration is necessary, contact Florida DEP or your regulation body to acquire an alteration permit.
- *If you believe your property is exempt from permitting requirements but do not have recent confirmation in writing of that exemption, you are required to contact the Florida DEP or your locally delegated government to determine if a permit is necessary.* This is vitally important because your property may be under additional encumbrances related to prior violations of the state MTPA or other local conservation measures. For answers to additional authorization questions, see the Florida DEP's Mangrove FAQs at FloridaDEP.gov (search for "mangrove questions.")
- In the instance that a PMT is required, either for assistance or to conduct the trimming, the Florida DEP maintains a list of state-authorized PMTs at FloridaDEP.gov.

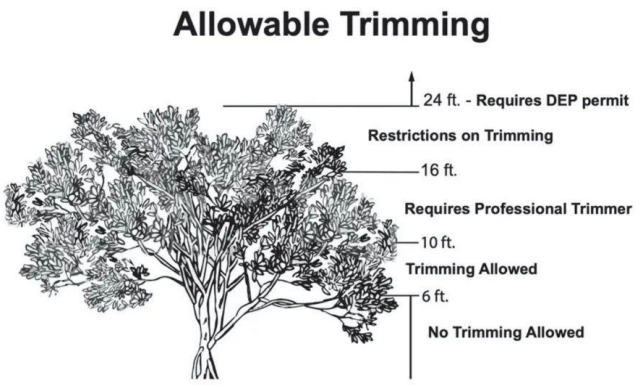

Figure 4. This picture shows the standard conditions allowable for mangrove trimming. Above 24 feet, you must acquire a permit from FDEP to trim your mangrove tree. Between 16 feet and 24 feet, abide by the restrictions described in this publication. Between 16 feet and 10 feet, you must hire a PMT to trim the mangrove tree. If the tree is between 10 feet and six feet, you may trim it as long as you don't reduce the height of the tree to under six feet. At six feet or lower, you must not trim the tree.
Credit: Florida DEP

Making a Mangrove Trimming Plan

Once authorization has been received from the appropriate authority, whether that comes in the form of a letter of exemption or a permit, it is important to ensure that the mangrove trees are trimmed with as much care as possible. Best practices for mangrove trimming are similar to those for other trees and include using correct, clean and sharp tools, trimming with a specific goal in mind, making appropriate pruning cuts, and avoiding damage to the tree. Mangroves have additional considerations for best practices related to their structure and flowering habits. No more than 25% of the foliage can be removed in a single year. Red mangroves flower and fruit year-round, while white and black mangroves fruit predominantly in the spring and early summer. Ideally, you should avoid trimming mangroves while they are flowering and fruiting to encourage maximum reproductive potential. Some entities have specific requirements regarding what time of year pruning of mangroves is authorized. As with any new trimming work conducted on mangroves, you must check with the DEP or delegated local governments before you start.

An additional consideration is needed for red mangroves, which have adventitious roots (also called "prop roots") that dangle (or drop) down from overhead branches (Figure 5). These roots will not sprout vegetative growth if they are cut. Because these adventitious roots can easily be mistaken for branches and because they are necessary to preserve the health of the tree, red mangrove branches greater than one inch in diameter should not be trimmed unless necessary (Gilman 2007). What is considered necessary? If branches are broken, if they are blocking major pathways, or if they are otherwise hazardous, trimming is likely necessary and warranted. In other cases, consider options that leave red mangroves intact.

Figure 5. The prop roots (rhizophores) of the red mangrove. These roots are not to be trimmed but can be confused for limbs. Thus, no red mangrove branch less than one inch in diameter should be trimmed.
Credit: Natalia Medina-Irizarry, UF/IFAS, used with permission

There are many reasons homeowners may want to trim mangroves on their property, and the best trimming plan should align with the individual homeowner's specific goals. Some goals to consider would be to reduce the height of the mangrove to provide a clearer view of the water and shore, or to improve access to a human-built structure like a dock that dead or diseased branches might be blocking. The first step to establishing a mangrove trimming plan involves asking the right questions. At the end of this publication, there is a guide for asking relevant questions that will direct the trimmer in the right direction during different stages of the trimming process. Once the preparation questions have been answered, a trimming plan can be developed that meets the requirements of state and local law and promotes healthy tree growth.

Trimming Styles for Mangroves

When considering how to configure your mangrove shoreline, several options are available beyond the typical six-foot hedge (Figure 6). You may need a combination of several trimming styles to meet your goals while preserving the environmental services that mangroves provide. In all cases, the maximum amount of canopy coverage and foliage should be maintained to encourage a robust and resilient mangrove shoreline. The upper canopy of mangroves is important bird habitat and can also provide significant windbreak for your property during storms.

Trim Types:

1. Window or Vista Trimming: Window trimming mangroves maintains an upper and lower canopy of foliage while allowing a view to the water. This trimming style selectively removes lateral branches from an area between six and twelve feet from the substrate. You may also opt to window trim in areas near your dock or in line with a particular desired view while leaving the remaining shoreline intact. The bottom height of a "window" through a mangrove or mangroves must not be lower than six feet from the substrate, and it is recommended that the window openings be no more than ⅓ of the whole canopy for smaller trees and no more than ⅕ of the canopy for larger trees. Mangroves must be trimmed evenly with no limbs unevenly trimmed.
2. Hedging: Hedging mangroves maintains the lower six feet of mangrove branches while trimming off only the tops. However, not all trees can be trimmed down to six feet. Red mangrove trimming is limited to areas where leaf mass is abundant, and there should be no trimming or hedging for mature black mangrove. As with window trimming, there should be even trimming in the mangrove limbs with no limbs unevenly trimmed and hanging out of the hedge.
3. Undercutting: Undercutting mangroves is deliberate trimming of the lower portion of the mangrove below six feet. This type of trimming is only allowed so long as defoliation of all or part of the tree does not occur. It is highly recommended that undercutting is considered as a last-resort trimming style because drastic trimming and loss of foliage can damage mangrove propagules. Young mangroves may not be trimmed without an alteration permit and assistance from a PMT.

Because mangroves are a uniquely valuable and scarce resource, we must make every possible effort to ensure their health. This includes making good trimming decisions. To avoid inviting disease, pests, or decay into the tree, make clean pruning cuts, and be especially conservative, careful, and judicious when removing large branches or overhead branches.

Using dull or dirty pruning equipment can harm a mangrove tree, so as with any pruning, always make sure that your tools are clean and sharp. You can clean your tools with several available disinfectants including isopropyl alcohol, pine oil, or a bleach solution. Sharpening your tools will prevent them from tearing or crushing branches and ensure that your cuts heal quickly.

Also avoid "flush cutting," or cutting large branches immediately next to the trunk of the tree. This practice can produce very dangerous large open wounds on trees. When cutting larger branches or branches overhead, before removing a branch, first make several cuts to gradually reduce the length of the branch. This practice helps to avoid tearing the bark. Find more information and pruning tips at the School of Forest, Fisheries, and Geomatics Sciences' Pruning Shade Trees in Landscapes page at hos.ifas.ufl.edu (search for "woody pruning").

Figure 6. Photos of the different styles of mangrove trimming. Style A on the top left is hedging mangroves, which allows for clear and even pathways. Style B in the bottom left is window or vista trimming, allowing for a clear view between two groups of mangroves. Style C on the right is undercutting and should be undertaken only under a permit or, with special considerations by a PMT. Credit: Florida DEP

Figure 7. The best mangrove trimming plan might incorporate multiple trimming styles. Shown above is an example of hedging on the left, with a window or vista trim between two tree systems. Credit: Florida DEP

Conclusion

Mangrove systems are vital to Florida's coasts, not only for their ecosystem services but also for their rare and distinctive beauty, found in few other places in the United States. It is crucial for the health of these ecosystems that we ask the proper questions before embarking on a trimming project and remain careful and judicious during the trimming process. To best follow proper trimming techniques, ask the questions in the "Step-by-step Step Guide to Trimming" section below. For answers, reach out

to professional trimmers, and contact your local Extension agencies, the Florida DEP, and delegated local governments.

Step-by-Step Guide to Trimming

Before

1. Are the mangroves in an RMF?
2. Do I need a permit?
3. Whom should I contact about a permit: Florida DEP or the County?
4. How large are the mangroves?
5. Do I need to bring in a PMT?
6. Whom do I contact for help?
7. Am I allowed to trim during this time of the year?
8. What is my purpose for pruning?
9. Is a water view the main priority for pruning?
10. Is there a boat dock or other shoreline feature that needs to be cleared for access?
11. Which species of mangroves are present?

During

1. Are my tools sharp and clean?
2. How large are the branches I want to cut?
3. What shape and style do I want to trim to achieve?
4. How much foliage am I removing? (Should be less than 25% per year.)
5. *For red mangroves:* Is this limb a branch or a root?

After

1. Was any soil uprooted or displaced?
2. Did I properly dispose of the discarded limbs?
3. Are there any canopy gaps where invasives could colonize?

Glossary

Alteration: Any action that results in defoliation or damage to a mangrove that is not authorized, often associated with over pruning or "hat-racking."

Defoliation: The removal of the majority of leaf material on a mangrove.

Maximum Overall Height: A measurement taken from the substrate to the top of the canopy. (Bear in mind that mangroves may originate below the water line.)

Professional Mangrove Trimmer (PMT): An individual who holds one of the following certifications along with any locally specific registration or certification program; ISA-certified arborist, certified environmental professional, certified ecologist, professional wetland scientist, Florida-certified professional landscape architect.

Riparian Mangrove Fringe (RMF): Mangroves growing along the shoreline on private property, property owned by a governmental entity, or sovereign submerged land, the depth of which does not exceed 50 feet as measured waterward from the trunk of the most landward mangrove tree in a direction perpendicular to the shoreline to the trunk of the most waterward mangrove tree. RMF does not include mangroves on uninhabited islands; public lands that have been set aside for conservation or preservation; or mangroves on lands that have been set aside as mitigation, if the permit, enforcement instrument, or conservation easement establishing the mitigation area did not include provisions for the trimming of mangroves.

Substrate: The soil or sand from which a mangrove's trunk and roots emerge.

Vivipary Reproduction: A reproductive strategy in which seeds germinate and grow into seedlings while still attached to the parent tree. The seedlings will grow up to varying lengths and then detach and fall into the water.

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