GUIDELINES FOR PLANTING A TROPICAL COASTAL HAMMOCK IN SOUTH FLORIDA

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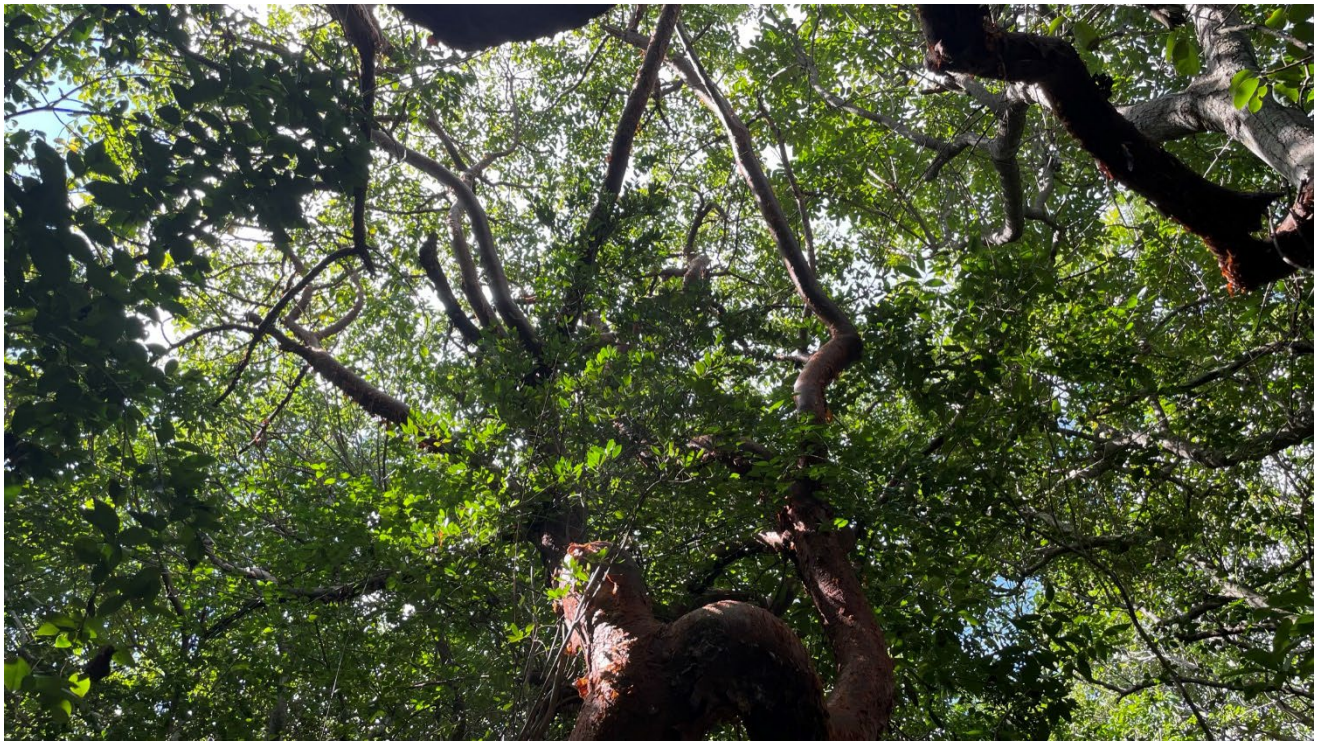
Why plant a coastal hammock? Coastal hammock is an imperiled ecosystem that has been heavily impacted by urban development along the Florida coast. In South Florida, defined here as Martin, Glades, and Charlotte counties south to the Florida Keys, coastal hammocks that are dominated by tropical species can be found throughout the Atlantic Coast and north to Sanibel Island in Lee County on the Gulf Coast. Creating a tropical coastal hammock (coastal hammock) is relatively simple and inexpensive and can be accomplished in a wide variety of situations. Coastal hammocks are aesthetically pleasing, conserve energy, reduce pollution and long-term maintenance, and contribute to climate change adaptation and mitigation. They also create wonderful habitats for native plants and wildlife, including many species of rare plants, butterflies, bees and other pollinators, and songbirds.



Background. Coastal hammocks are broad-leaved forests found on stabilized sand or shell substrate with a surface accumulation of organic material. They are multi-layered dome-shaped forests that are protected from the direct effects of coastal wind and salt spray. The canopy is closed and dominated by a diversity of tropical tree species, such as gumbo-limbo (*Bursera simaruba*). Live oak (*Quercus virginiana*), a temperate species, is also found north of the Florida Keys, and becomes more common the farther north you go. The subcanopy is primarily composed of emerging canopy trees, but also a variety of large shrubs, like Spanish stopper (*Eugenia foetida*), which are abundant along the hammock edges. Similarly, the understory of the interior is dominated by seedlings and saplings of canopy and subcanopy trees, with some typical understory shrubs like shiny-leaved wild coffee (*Psychotria nervosa*), and occasional herbaceous species like coastal bedstraw (*Galium bermudense*) and false-mint (*Dicliptera sexangularis*). More understory diversity is found along the edges and in more open areas, including native cacti and other armed plants like the endemic false-sisal (*Agave decipiens*). Vines and epiphytes can be found but are generally uncommon except along the edges. Coastal hammocks have evolved with natural disturbances such as hurricanes and tropical storms and can quickly recover following storm events if protected from invasive species and other threats. Natural fire is absent or very rare.

On barrier islands, most coastal hammocks are found on stabilized sand dunes and are classified as maritime hammock by the Florida Natural Areas Inventory. Other coastal hammocks in South Florida include shell mounds, which grow on large piles of debris deposited long ago by Indigenous Americans and are more common along the southwest coast; coastal berms, which are found on deposits of sand or shell on low energy coastlines in South Florida; and rockland hammocks, which grow on limestone on the shores of Biscayne Bay in Miami-Dade County and in the Florida Keys. (Separate guidelines for planting rockland hammocks can be found here.) Each of these habitats has its own unique flora and fauna. Outside of the Florida Keys, coastal hammocks have received significant protection in Everglades National Park and other larger conservation areas along the southwest coast but have been severely impacted by development elsewhere. Coastal hammocks are also threatened by invasive species, altered hydrology, fragmentation, sea level rise, and climate change.

These guidelines are intended principally for residential landscapes, schools, commercial landscapes, and similar situations. They can provide a foundation for ecological restoration plans for conservation areas, which should be prepared by a Certified Ecological Restoration Practitioner, or other experienced professional. They provide the basic information needed to restore coastal hammocks through planting in their original locations, as well as on nearby fill pads, spoil piles, and other locations protected from direct wind and salt spray from the ocean. The guidelines use reference models based on historical information as well as reference sites including intact, healthy coastal hammocks. They are consistent with the International Principles and Standards for the Practice of Ecological Restoration (Gann et al. 2019), and take environmental change (e.g., climate change) into consideration. They consider the structure of coastal hammocks, ecosystem functions and disturbance regimes like hurricanes, and their floristic and faunistic composition. While we encourage creativity, the recommendations provided are practical ones based on many decades of experience. That said, every site and every project is unique. It is best to approach your coastal hammock project within a framework of adaptive management, meaning that you should be prepared for surprises, learn from them, and adapt your methods accordingly. While the guidelines are not directly intended for other forms of native plant landscaping, such as mixed native/nonnative gardens, butterfly and wildlife gardens, and wildflower gardens, many of the ideas presented here may translate to other situations. For more information on native plant landscaping, please visit The Institute for Regional Conservation's (IRC) Natives For Your Neighborhood (NFYN) website, the Florida Native Plant Society, or the Florida Wildflower Foundation's Grow Wildflowers webpage.

Site selection. Hammocks can be planted almost anywhere near the coast within the urban and suburban environment (Fig. 1). Even the smallest spaces between buildings can house "micro-hammocks" of small trees and shrubs. Tropical coastal hammocks are well suited to residential yards, as well as to forest islands within commercial areas and at schools, and even along road easements. While some coastal hammock trees become very large, many species can be planted surprisingly close to buildings and other structures. Although the planting site can be small, be sure to avoid conflicts with overhead or underground power lines, water lines or other sensitive utilities. An open site with few nonnative trees and shrubs is easiest to work with. Remember that the hammock canopy will ultimately be larger than the footprint of the planting area. Some native species, especially strangler fig (*Ficus aurea*), have invasive root systems that are best kept away from septic tanks and other artificial sources of underground water.

Figure 1. Tropical coastal hammock planted at residential site in Hobe Sound. Photo courtesy Chris Lockhart.

References for restoration. Depending on the project location, different types of hammocks may serve as a reference for restoration. On barrier islands, a thin windward wall of seagrape (*Coccoloba uvifera*) and more extensive shrubby coastal strand vegetation protect maritime hammocks from wind and salt (Fig. 2). On the protected side, coastal hammocks of all kinds may grade into mangrove swamps or freshwater wetlands. Forest patches composed almost entirely of seagrape are not good references for restoration, as they typically represent degraded coastal strand or seagrape plantings where coastal strand or coastal hammocks have been destroyed. In urban environments on both coasts, shell mounds may serve as good references for coastal hammocks on sites with soils composed of shell rock or limestone gravel. On the southwest coast, where shelly soils are more common, rare species unique to shell mounds include Iguana hackberry (*Celtis iguanea*) and spiny hackberry (*Celtis pallida*). Where coastal hammocks are protected from direct salt spray and wind, coastal berms can provide good references. This is the situation of many residential gardens on barrier islands and along the intracoastal waterways. Coastal berm, with its sandy or shelly soils (often deposited by tropical cyclones), is the most variable of the coastal hammock habitats. Younger berms without an accumulation of organic material support shrubby vegetation more typical of coastal strand. Older deposits with a substantial accumulation of organic material support mature coastal hammock vegetation. Some coastal berms with very coarse, well-drained soils without much organic material develop as low hammocks or thickets.

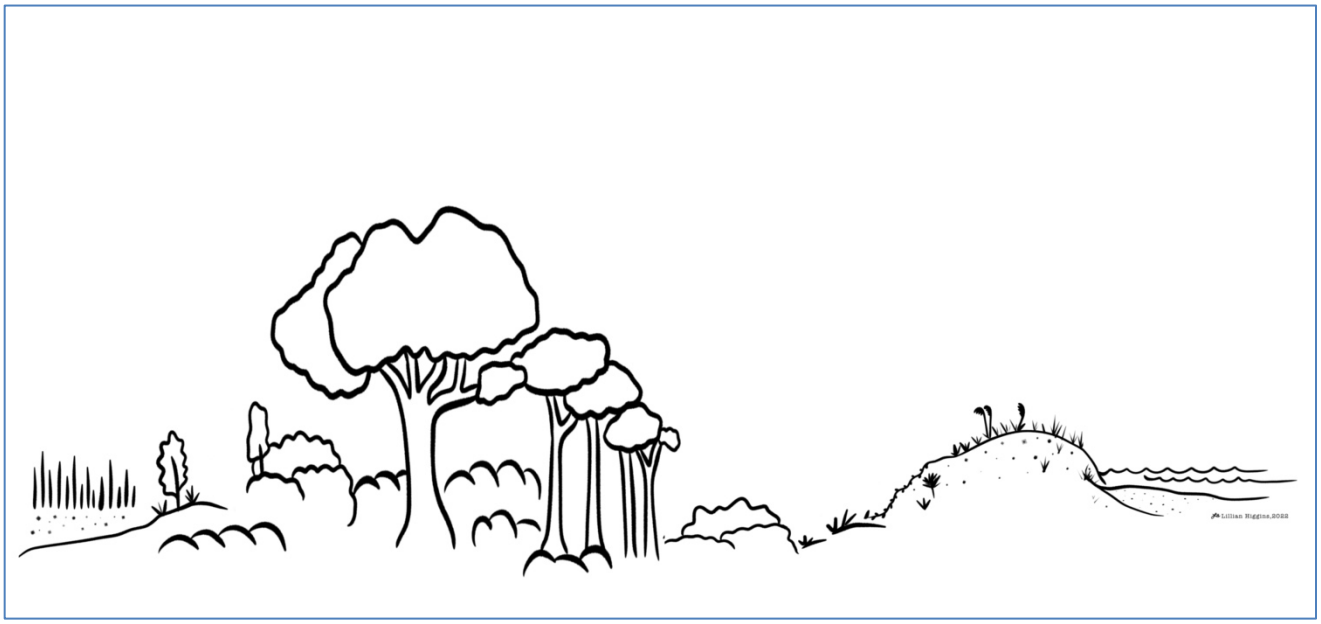


Figure 2. Conceptual representation of tropical coastal hammock on a barrier island.

Project timing. Coastal hammocks can generally be planted year-round. In the winter, plants will grow more slowly, but water stress is lessened. In the summer, plants will grow faster and there is typically more rainfall, but temperatures are higher and even a few days without rain can cause serious water stress and the death of recently installed plants (see **Water** below for a recommended watering schedule). At sites exposed to direct salt wind, planting may be best done from April to September, outside of the windiest months.

Site preparation. Site preparation is critical to the success of coastal hammock restoration. As a first step, clearly mark and protect any desirable native plants that are within the project area. Remove any weeds, nonnative species, and especially invasive nonnative plants from the hammock restoration site (see the Florida Invasive Species Council or the FLIP websites for information on invasive nonnative plants and their control in Florida). Certain non-invasive nonnative trees may be left if appropriate to provide temporary canopy, and may be removed later, but be mindful of the

potential damage that can be caused to the coastal hammock by later removal. Very large nonnative invasive trees that are not appropriate to leave as temporary canopy include Australian-pine (*Casuarina* spp.), nonnative fig trees such as laurel fig (*Ficus microcarpa*), and tropical almond (*Terminalia catappa*). Lawn grass may be killed in a variety of ways, including digging it up, covering with plastic, and treating with safe and appropriate herbicides. It is generally not necessary to make the ground completely level, or to worry if the site has different types of soils. Most coastal hammock species are ecological generalists and can tolerate different soil conditions if there is organic material on the surface.

Because coastal hammocks require organic material, debris created by plant removal can be utilized on site. Invasive trees and shrubs can be mulched for use after planting. In conservation areas and at larger sites, trees and shrubs can be cut up and placed into organized piles (e.g., not larger than 10' x 10', and up to 5' high) to provide temporary habitat for wildlife that may be impacted by nonnative plant removal. Smaller material can also be placed into piles to compost for later use. Some nonnative plants, however, will readily sprout and grow from plant parts and are best removed from the site. These include American evergreen (*Syngonium podophyllum*), bowstring-hemp (*Dracaena hyacinthoides*), and oysterplant (*Tradescantia spathacea*).

Figure 3. Oysterplant (l) and bowstring-hemp (r), two invasive species common in coastal landscapes.

Techniques for tree and shrub removal include excavation by heavy machinery, cutting and root grinding, and cutting at ground level. Many nonnative trees and shrubs will readily resprout following cutting and may need treatment with a safe and appropriate herbicide. Some nonnatives plants, regardless of removal technique, my require multiple treatments over relatively short periods of time. A good example is air-potato (*Dioscorea bulbifera*), which produces both aerial and underground potato-like bulbils and requires quarterly treatments for up to two years.

Plant selection and placement. Once the site has been selected, calculate the square footage of the planting area, so that you can plan for the recommended number of plants. A rule of thumb is to divide the square footage of the planting area by 50, or about 7 feet between plants on average, to get a minimum number of plants to install, or divide by 25 to get an optimal number of plants to install. For example, a 20 x 40 foot planting area should have at least 16 plants but 32 would be better (Box 1). Higher densities can be planted along the outer edges to create a true dome-shaped hammock, up to one plant per 4 square feet, or 2 feet between plants on average.

Box 1. Planting Density Chart

Dimensions (ft.)	Square feet	Total Number of plants	Canopy trees	Subcanopy or large shrubs	Understory shrubs	Edge shrubs
10 x 20	200	4-8	2	1	1-2	0-3
20 x 40	800	16-32	4-8	4-8	2-4	6-12
50 x 50	2,500	50-100	13-25	12-25	8-17	17-33
100 x 100	10,000	200-400	50-100	50-100	33-67	67-133

Coastal hammocks are diverse in all layers. To mimic this diversity, install at least ten species of trees and shrubs. Make sure that canopy and subcanopy trees make up at least 50 percent of the installed plants. Place plants in a random pattern (Fig. 4). It is generally best to put large species, such as wild mastic (*Sideroxylon foetidissimum*) and strangler fig toward the center of the site and more compact species such as pigeonplum (*Coccoloba diversifolia*) and white stopper (*Eugenia axillaris*) closer to the edges. In addition, it is helpful to take into consideration each species' light preferences, which can be found on IRC's NFYN website.

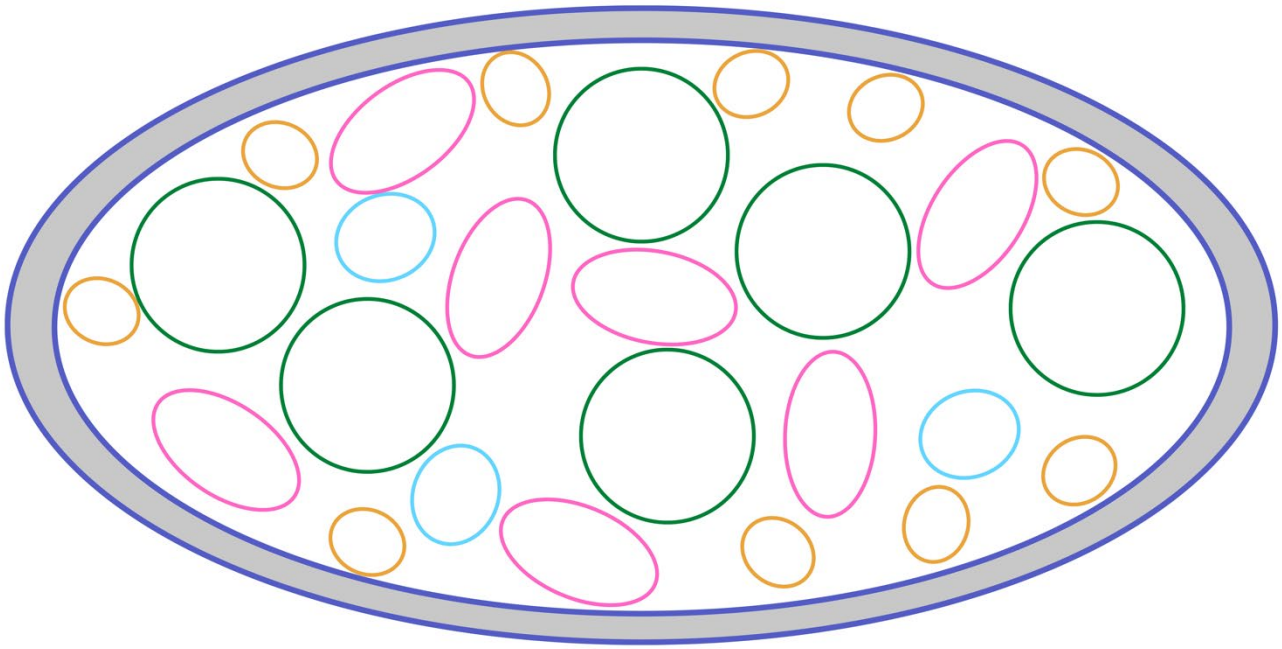


Figure 3. Conceptual layout of coastal hammock planting area (20' x 40' area). Green represents canopy trees, pink sub-canopy trees or large shrubs, blue understory shrubs, and gold edge shrubs.

Canopy trees. Canopy trees are essential to coastal hammock development and should be planted in the first phase of the project. There are six canopy trees that are found in tropical coastal hammocks throughout South Florida (Appendix A). Cabbage palm (*Sabal palmetto*), gumbo-limbo, strangler fig, and wild mastic are all very common throughout. Pigeonplum is more common on the Atlantic coast but is also present on the Gulf coast, and live oak is uncommon along much of the Atlantic coast south

of Singer Island. Both the Atlantic and Gulf coasts have additional common canopy trees. For instance, paradisetree (*Simarouba glauca*) is common along the Atlantic coast and in the interior but is not found along the Gulf coast. Jamaica-dogwood (*Piscidia piscipula*) is absent on the Atlantic coast north of Key Biscayne but is frequent along the Gulf coast. Although seagrape is commonly associated with coastal hammocks throughout South Florida, it is over planted, can overwhelm, and kill other native plants. We do not recommend it for coastal hammock restoration unless there is a specific need to block direct salt wind.

Subcanopy trees and large shrubs. There are four subcanopy trees or large shrubs found in coastal hammocks throughout South Florida: myrsine (*Myrsine cubana*), Spanish stopper, white stopper, and wild-lime (*Zanthoxylum fagara*) are all found through the region. The prickly wild-lime is the larval host for the giant swallowtail butterfly, and a great barrier plant. Additional common subcanopy trees and large shrubs on the east coast include blolly (*Guapira discolor*) and lancewood (*Nectandra coriacea*).

Understory shrubs. Shade tolerant understory shrubs are rare in coastal hammocks in South Florida. Most woody plants in the understory are seedlings or saplings of canopy and subcanopy trees or large shrubs. There are, however, three common understory shrubs found throughout South Florida: marlberry (*Ardisia escallonioides*), shiny-leaved wild coffee, and white indigoberry (*Randia aculeata*), all versatile plants for coastal hammocks and the garden.

Edge shrubs. There is a lot of diversity along the edges of coastal hammock, because most shrubs native to South Florida like a lot of sunlight. Five common edge shrubs found throughout South Florida are: blackbead (*Pithecellobium keyense*), firebush (*Hamelia patens*), Florida privet (*Forestiera segregata*), Jamaica caper-tree (*Quadrella cynophallophora*), and wild-sage (*Lantana involucrata*). Additional common edge shrubs on the Gulf coast include sevenyear-apple (*Casasia clusiifolia*).

Appendix A contains the list of maritime hammock trees, shrubs, groundcovers, vines, and epiphytes with wide native ranges and broad ecological tolerances. For more detail on these species, to get a list of additional species recommended for your specific project area, and to obtain information on availability, please refer to IRC's NFYN website. Appendix B displays color photographs of a wide variety of coastal hammock plants.

Obtaining plants and plant sizes. Very few of the species recommended here are available at 'big box stores.' Look for nurseries specializing in native plants. To obtain some of the rare and unusual species, consider joining your local Florida Native Plant Society, where monthly meetings often include a native plant drawing. Also, keep in mind that it is generally good practice to obtain plants grown from regionally adapted seeds or other propagules, bearing in mind that the climate is changing.

Plants in two- to three-gallon containers (plants 2-4 feet in height) and seven- to fifteen-gallon containers (plants 4-10 feet in height) are recommended for coastal hammock restoration. Plant at least fifty percent of the plants from the smaller containers because they will become established and grow more quickly. This is especially important in drier areas, where plants are more likely to be water-stressed following installation. Balled and burlapped (field grown) material can be used if larger specimens are desired. However, field grown trees and shrubs are more expensive, require larger holes and more water, and take longer to establish than container grown plants.

Installation. Dig the hole so that the plant will be level with the surrounding ground surface when installed. Dig each hole so that the top of the root ball will be level with or just under the surrounding ground when installed and so that the planting hole is just wider than the container. Do not add special soils, but fertilizer can be mixed into the soil at the bottom of the hole. Use the material you excavated from the hole as back fill. Once the plant is placed in the planting hole, water thoroughly to eliminate air pockets under and around the plant. During this process, use a shovel or trowel to lightly (not firmly) pack in the back fill around the plant. Finally, level out the planting surface so that it

grades smoothly into the surrounding terrain. If there is a slope on the surface, consider creating a slight depression, or collar, around the plant so that added water flows toward its roots rather than away from the plant.

Mulch. After all plants are installed, apply a 3-6 inch top dressing of mulch or wood chips to the planting area. Mulch can be obtained commercially in bags from stores or from a local tree-trimming company in bulk; the latter is almost always less expensive and is usually of good quality. If store bought mulch is used, then melaleuca or eucalyptus mulch is recommended. Do not use cypress mulch or pine chips. Cypress mulch is harvested from native cypress forests and pine chips do not provide the soil nutrients preferred by native hardwood trees and shrubs. When applying mulch, make sure not to cover the trunks or root crowns of the installed plants. Piling mulch against the plant can cause rot, or heat stress if fresh wood chips are used.

Watering. Careful watering is essential to the successful establishment of coastal hammock plants. Each watering should be equivalent to one inch or more of rainfall. If you use small container plants (3-gallon sized or smaller), water once per day for the first week. During the next three weeks, water every other day, and during the next four weeks, water once per week. Supplemental water may be needed during very hot dry periods. If your site receives one inch or more of rain within 24 hours of when a watering is scheduled, you can skip a watering. Herbaceous groundcovers generally require far less water than woody plants, but if you would like to be liberal, you can follow the schedule above. Larger container material will need additional and longer periods of watering. Excess water, however, invites more weeds. Hand watering individual plants is preferred. Broadcast irrigation can be inefficient and also contribute to weed problems.

Long-term management. The key to the long-term success of a maritime hammock is ongoing management, or maintenance. This involves weeding, trimming, and occasional re-mulching. If the site has been properly prepared, mulch has been applied, and appropriate watering is done, then few weeds are likely to invade the planting area. Plan on doing a light weeding every two or three months. Weeding will be needed more frequently just after planting and in the wet season (summer and fall), so make sure to plan for that. Once the canopy has formed, weeding will be necessary every six months or so. More frequent weeding may be needed where the hammock connects with any lawn areas, as lawn grasses and weeds will continuously invade the edges of the hammock. To combat this problem, some people install wood, rock, concrete, or plastic borders between the lawn area and the hammock to prevent the lawn from spreading. You may also consider creating a gravel path around the edge of the hammock. Whenever weeding, make sure to protect seedlings of native trees and shrubs that might have recruited since the hammock was installed. On the other hand, vigorously weed out any invasive nonnative plants that might become established. Because coastal hammocks need abundant organic material to thrive, consider piling or composting your weeds so that they can be absorbed back into the hammock soil.

Within a year of installation, trees and shrubs will show significant growth. Select trimming may be necessary every six months or so to keep the understory open, to promote canopy development, or for aesthetic reasons. If lateral branches of trees and large shrubs are trimmed, do so a few at a time, making sure that no more than one third of the total leaf area is removed in any one trimming. Some large or medium shrubs (especially shiny-leaved wild-coffee) may also be trimmed in this manner. Some small and medium shrubs can be trimmed within a few inches of the ground if they become too overgrown (e.g., American beautyberry [*Callicarpa americana*]).

In most cases, a second mulching will not be required as leaves and small branches from the coastal hammock will refresh the mulch layer. However, in some cases the mulch may be too thin or may decompose relatively quickly and a complete or partial re-mulching may be required. You can usually tell if the mulch is too thin if an abundance of weeds begins to appear within the planting area. If there is sufficient organic material, fertilizing is unnecessary as falling leaf litter and small twigs provide the

nutrients needed for native hammock species to thrive.

Finally, some exotic pests of native plants such as scale insects have become established in South Florida and may affect your coastal hammock. These usually cause temporary problems resolved by summer rains, native insects, and birds. The more diverse your planting is, the more resistant it will be to pests and disease. The green iguana can also be problematic and is more difficult to control.

Related habitats. Coastal hammocks have edges that connect with other native plant habitats, such as coastal strand and beach dune along the sandy shoreline, and mangrove swamps or freshwater wetlands in low lying areas. These hammock edges make excellent landscape features, attract butterflies and birds, and provide an abundance of color. While coastal hammocks are shady, protected habitats, plants of coastal strand can also make excellent landscape features, attract butterflies and birds, and provide additional color in sunny areas. Historically, many coastal hammocks in South Florida graded into coastal interdunal swales, low lying freshwater wetlands containing ferns, wildflowers, and trees and shrubs usually found in marshes and swamps in the interior. Freshwater ponds, rain gardens, retention areas, and other low-lying areas provide space for these native wetland grasses and wildflowers, and are key habitats for native birds, dragonflies, fish, and other wildlife. With water being a necessary component for all life, water features do much to increase biodiversity in your yard. For more information on coastal strand, freshwater wetlands, mangrove swamps, and other habitats that may be appropriate for planting at your project site, please refer to IRC's NFYN website.

Just the beginning. These guidelines provide the basics for planting a tropical coastal hammock in South Florida. Once mastered, other more challenging aspects of hammock restoration can be explored. These include the introduction of groundcovers, vines, epiphytes, rare species, plants that are difficult to grow, and plants especially known for attracting wildlife. Start a wildlife list and document the birds, butterflies, and other creatures that stop by to use the habitat you are creating. Once begun, the restoration of a coastal hammock can turn into a life-long experience that is not only aesthetically rewarding, but also contributes to the restoration of South Florida's native plant heritage.

About The Institute for Regional Conservation. Founded in 1984, IRC seeks to protect - and restore - viable populations of all native plant and animal species within key regions by designing conservation strategies powered by rich, geographically distributed data. Our approach adds critical value to traditional conservation strategies focused on charismatic animals or species with small global ranges by mapping the health and viability of multiple species within those ranges. Our work is especially important in South Florida where ecosystem degradation – urbanization, agriculture, introduction of nonnative invasives – has been intense and is expected to continue. IRC's Restoring the Gold Coast (RGC) program is a collaborative initiative launched in 2019 to restore the incredible beauty and diversity of plants and animals native to coastal ecosystems in southeastern Florida. Biologically diverse coastal ecosystems are healthy ecosystems and our first line of defense against sea level rise, climate change, and catastrophic storms. Habitats along the intracoastal and adjacent waterways are also critical both for native species and as locations for adaptive, nature-based responses to sea level rise and climate change.

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APPENDIX A

Common trees, shrubs, groundcover, vines, and epiphytes recommended for planting a tropical coastal hammock in South Florida (see Natives For Your Neighborhood for additional species for your ZIP code. Select your ZIP code, chose habitats, and Coastal Berm or Maritime Hammock)

Canopy Trees

Cabbage palm	*Sabal palmetto*
Gumbo-limbo	*Bursera simaruba*
Pigeonplum	*Coccoloba diversifolia*
Strangler fig	*Ficus aurea*
Live oak	*Quercus virginiana*
Wild mastic	*Sideroxylon foetidissimum*

Subcanopy Trees or Large Shrubs

Myrsine	*Myrsine cubana*
Spanish stopper	*Eugenia foetida*
White stopper	*Eugenia axillaris*
Wild-lime	*Zanthoxylum fagara*

Understory Shrubs (interior or edge)

Marlberry	*Ardisia escallonioides*
Shiny-leaved wild coffee	*Psychotria nervosa*
White indigoberry	*Randia aculeata*

Edge Shrubs

Blackbead	*Pithecellobium keyense*
Firebush*	*Hamelia patens*
Florida privet	*Forestiera segregata*
Jamaica caper-tree	*Quadrella cynophallophora*
Yellow Necklacepod	*Sophora tomentosa* var. *truncata*
Wild-sage	*Lantana involucrata*

Groundcovers

Rougeplant*	*Rivina humilis*
Scorpionstail*	*Heliotropium angiospermum*

Vines

Corkystem passionflower	*Passiflora suberosa*

Epiphytes

Stiff-leaved wild-pine*	*Tillandsia fasciculata*
Spanish-moss*	*Tillandsia usneoides*

*indicates a species not readily available in the trade.

APPENDIX B **– Images of native plants commonly found in tropical coastal hammocks of South Florida.**

Canopy Trees

Cabbage Palm
(*Sabal palmetto*) **JH**

Gumbo-limbo
(*Bursera simaruba*) **SD**

Pigeonplum
(*Coccoloba diversifolia*) **DZ**

Strangler fig
(*Ficus aurea*) **GG**

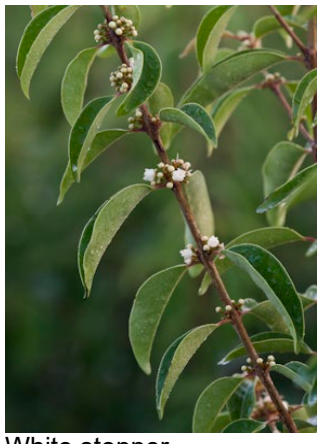
Live oak
(*Quercus virginiana*) **GG**

Wild mastic
(*Sideroxylon foetidissimum*) **JH**

Subcanopy Trees or Large Shrubs

Myrsine
(*Myrsine cubana*) **GG**

Spanish stopper
(*Eugenia foetida*) **JH**



White stopper
(*Eugenia axillaris*) **KB**

Wild-lime
(*Zanthoxylum fagara*) **KB**

Photo credits: Keith Bradley, Shirley Denton, George Gann, Jay Horn, Dennis de Zeeuw

Understory Shrubs

Marlberry
(*Ardisia escallonioides*) **RH**

Shiny-leaved wild-coffee
(*Psychotria nervosa*) **JH**

White indigoberry
(*Randia aculeata*) **RH**

Edge Shrubs

Blackbead
(*Pithecellobium keyense*) **GG**

Firebush
(*Hamelia patens*) **RH**

Florida privet
(*Forestiera segregata*) **JH**

Jamaica caper-tree
(*Quadrella cynophallophora*) **RH**

Wild-sage
(*Lantana involucrata*) **GG**

Photo credits: George Gann, Jay Horn, Roger L. Hammer

Groundcovers

Rougeplant
(*Rivina humilis*) **GG**

Scorpionstail
(*Heliotropium angiospermum*)
RH

Vines

Corkystem passionvine
(*Passiflora suberosa*) **ST**

Epiphytes

Stiff-leaved wild-pine
(*Tillandsia fasciculata*) **RH**

Spanish-moss
(*Tillandsia usneoides*) **RH**

Photo credit: George Gann, Roger L. Hammer, Susan Trammell