

Creating Wildlife Habitat with Native Florida Freshwater Wetland Plants¹

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Introduction

The aesthetic and wildlife habitat value of ponds, water retention areas, and other created wetlands can be greatly enhanced by establishing and managing desirable native plants. Native wetland plants play important ecological roles and provide important ecological services. They provide the best overall food sources for wildlife and support many more species than non-native plants because native wildlife evolved with native plant communities.

In addition to providing habitat for wildlife above and below the water, wetland plants produce oxygen and absorb carbon dioxide, a greenhouse gas associated with global warming. Wetland plants improve water quality by removing fertilizers such as nitrogen and phosphorus and, by doing so, help control algal blooms that can cause fish kills. Wetland plants also filter stormwater runoff, help control erosion, and contribute to the aesthetic beauty of ponds and reservoirs.

Because native plants have evolved adaptations to local environments, such as seasonal changes in water level, insect pests, and plant diseases, they are typically easier to maintain than non-native species. And most native wetland plants require little or no extra water or fertilizer. These factors save homeowners time and money, reduce the amount of fertilizers and pesticides that leach into surface waters, and contribute to water conservation.

Although native plants typically fare better than introduced species, some non-native plants have thrived in Florida and spread extensively into natural areas. Non-native plants that spread into natural areas are referred to as invasive exotics, and they present major ecological problems by displacing native plants, disrupting natural processes, and degrading habitat for wildlife. Invasive exotics also cost taxpayers millions of dollars each year in control expenditures. Planting only with native species is critical for preventing the spread of invasive exotics. Fortunately, Florida has seen a recent surge of interest in landscaping with native plants from both homeowners and developers. This circular provides

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guidance on choosing the right types of native freshwater plants, plants you should avoid, planting techniques, and maintenance tips.

Types of Wetland Plants

Most wetland plants can survive a range of environmental conditions associated with wet and dry periods, but all plants possess adaptations that determine the conditions under which they grow best and the extremes that limit their survival.

A practical way of thinking about wetland plants when planning restoration activities is to consider the needs and nature of the plant and the water depth where each species typically grows best (Figure. 1).

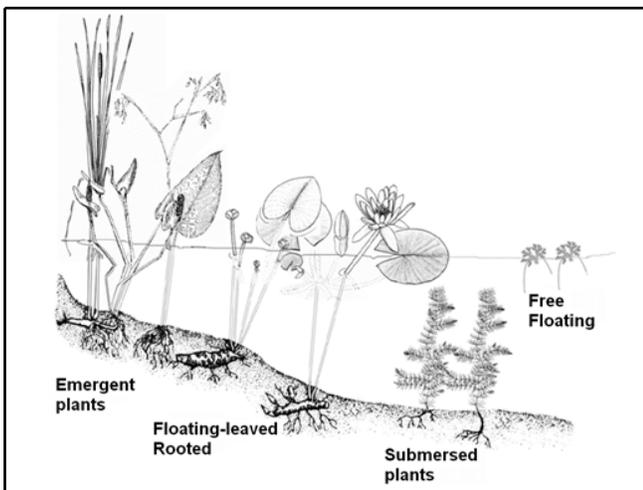


Figure 1. Major wetland plant growth categories.

Wetland plants can be organized into 3 major groups or zones based on growing patterns and water depth:

- **Submerged (submersed) wetland plants** grow entirely underwater and cannot survive out of water. Some species are rooted in the soil and some are rootless.
- **Floating wetland plants** include plants that are rooted in the ground with leaves floating on the surface and species that float free on the surface with roots dangling in the water.
- **Emergent (emersed) wetland plants** are rooted in the ground with the lower portion of the plant growing below and the upper portion growing above the water. This is the largest category of wetland plants and is often divided

into 3 subcategories that more accurately describe growing conditions required by each species (although it is worthwhile to note that most wetland plants tolerate a range of growing conditions):

- **Emerging aquatic plants** – include plants that need to be rooted in the water most of the time but have leaves and flowers projecting above the water.
- **Short-stemmed marginal plants** – include low-growing, bog-type plants that do well on wet mud or sand.
- **Marginal plants** – include ferns, grasses, flowers, shrubs, and trees that grow at the interface of wetland and upland habitats. These plants prefer changing water levels.

Planning

Site selection and preparation are the first steps toward successful wetland plantings. Extreme changes in water levels and growing conditions, such as often occur in ponds with steep slopes, make successful establishment of wetland plants more difficult. To increase the likelihood of success, we encourage the following information be considered prior to planting.

Determine the average water level (shoreline) on a yearly basis. This is especially important in stormwater retention/detention ponds because water levels may vary dramatically. Although some wetland plants will tolerate dry and wet seasons, there are many that will die if they are kept too wet or too dry for extended periods.

Measure maximum water depth in areas to be planted. Pay special attention to the shoreline and shallow areas, where most work will take place. Without proper measurements, it is hard to determine the quantity and types of plants that will be required. As you are measuring the depth, it is a good idea to place stakes that represent different depths. Later, these measurements will assist in deciding the quantity and types of plants you need and the boundaries in which to plant them.

Consider increasing the size of planting zones.

In some cases, excavation can increase diversity by creating planting zones that originally did not exist. Soil and rocks removed to deepen one area can be used to create shallow areas elsewhere or can be incorporated into landscaping around the pond. Deepening the margins around the edge of a pond can help prevent undesirable plants, such as non-native torpedo grass, from invading into the water.

Note that detention ponds designed for stormwater management are planned and permitted according to Florida Department of Environmental Protection or local Water Management District criteria, and proper approvals must be obtained prior to modifying these types of ponds. Counties and local governments may also have guidelines or policies pertaining to planting and management of stormwater management ponds and created wetlands, as well as public safety and flood control criteria. It is advisable to contact the county public works office to ensure restoration plans are permissible.

Develop a detailed plan for planting that includes types and numbers of plants needed. The accuracy and detail of your measurements will play a key role in the planting plan. For ease in planning, divide the wetland into the three major zones: shoreline (marginal plants), shallow water (emergent and submersed plants), and deep water (floating-rooted plants) (Figure 1). A detailed plan will increase efficiency during planting and promote plant survival.

Table 1 lists freshwater wetland plants by growth zone along with some comments about their growing preferences (additional information may be available from your plant supplier). For example, water lilies do not like splashing or rapidly moving water and should be planted in water at least 2 feet deep.

Submergent plants should be planted into pots. A wide assortment of pots is available, from plastic baskets to pulp planters. Choose pots that are large enough for your plants. Baskets may have to be lined with burlap or 2 layers of newspaper to keep the soil from falling out. To keep your soil in and the plant weighted down, add a layer of gravel to the top of the pot.

For a list of Florida native plant suppliers, visit the Association of Florida Native Nurseries (AFNN) Website at <http://www.afnn.org>. Be aware that collecting wild plants in Florida is subject to various regulations and may require permits (for more information: <http://www.flmnh.ufl.edu/herbarium/collperm>).

Handle wetland plants with care during planting. Plants should be wrapped in wet newspaper to avoid injury and drying. Do not place plants in the trunk of a car or in the back of a truck where they will overheat. When planting, start with plants in the deep water zones and work up the banks. Planting should be conducted in the early morning or late afternoon to avoid the hot midday sun.

Don't overplant your wetland. A rule of thumb often used to decide how many wetland plants are needed is that for each 10 square feet, plan:

- 2 bunches of submersed plants*
- 1 floating rooted plant
- 1 short-stemmed marginal plant
- 1 medium-stemmed marginal plant

* Note that submersed plants can take over small ponds and should be used mainly for waterfowl enhancement projects.

Plant in clumps. Planting like species in clumps creates attractive concentrations of color and provides more varied habitat features. Planting in clumps also facilitates management of weeds and minimizes colonization of unwanted plants.

Choosing Native Wetland Plants

Wetland plants thrive when placed in the correct spot. Planting species in each of the growing zones creates a more complex habitat that will benefit a greater number of aquatic, semiaquatic, and terrestrial species of wetlands wildlife. Table 1 lists native Florida wetland plants in each of the growing zones, from which to select when designing, restoring, or enhancing wetland habitats.

Maintenance

The best wildlife landscapes require a minimum amount of care. Frequent watering, fertilizing, spraying, and pruning disturb wildlife and reduce habitat values. However, some level of periodic maintenance will likely be needed, especially during the first year after planting.

Replace plants that die and remove undesirable aquatic plants or weeds, especially invasive non-native species that become established. Invasive exotic plants may quickly dominate a wetland if not controlled. Use herbicides sparingly during this time, because new plantings may be very sensitive to herbicides. After the first year, when wetland plants are better established, herbicides may be needed if undesirable wetland plants become established. Only herbicides that are registered specifically for use in wetlands by the U.S. Environmental Protection Agency and the Florida Department of Agriculture and Consumer Services can be legally used.

Table 2 lists plants that are recognized invasive exotics, and planting these species is prohibited by law. In addition to non-native species, sometimes native species such as cattails (*Typha spp.*) may become overabundant and dominate a wetland. Control of overabundant native species will create open space, increase plant diversity, and improve habitat quality for wildlife.

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Additional Information

Aquatic & Wetland Plant ID Video Series, University of Florida/IFAS, ifasbooks.ufl.edu./merchant2

Aquatic Plant Information Retrieval System, University of Florida/IFAS, <http://aquat1.ifas.ufl.edu/>.

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Table 1. Native Florida freshwater wetland plants organized by floating, submersed, and emergent growth categories. Scientific names follow common names. Comments include notes on natural resource and aesthetic values, growth characteristics, and planting tips.

FLOATING WETLAND PLANTS	
Free Floating	Comments
Mosquito Fern <i>Azolla caroliniana</i>	Small abundant fern may entirely cover the water surface and inhibit mosquito larvae from surfacing for air. Best used in remote areas.
Bladderworts <i>Utricularia spp.</i>	Small floating/submersed plant with yellow flowers and carnivorous underwater bladders. There are 14 native Florida species.
Routed Floating-leaved	Comments (mainly deep-water plants)
Water Shield <i>Brasenia schreberi</i>	A water lily-like plant with purple flowers. May form dense mats in low pH waters.
American Lotus <i>Nelumbo lutea</i>	A water lily with large yellow flowers. Spreads quickly throughout pond. Should be planted at density of 3-5 plants/25 feet.
Spatter-dock <i>Nuphar advena</i>	A water lily with yellow (early spring to summer) flowers. Can form dense colonies and should be planted at density of 3-5 plants/25 feet in 3 feet of water. Waterbirds feed on seeds.

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Yellow Water Lily <i>Nymphaea mexicana</i>	A water lily with yellow (spring and summer) flowers. This plant is dormant in winter. Space plants every 5 feet in water from 2-3 feet deep with medium to high light. Mammals and turtles feed on the leaves.
Fragrant Water Lily <i>Nymphaea odorata</i>	A water lily with white (spring to fall) flowers. This plant spreads, so plant in sunlight with a planting density of 3-5 plants/25 feet in water 3 feet deep. Ducks and mammals feed on seeds and stems.
Banana Lily/Floating Heart <i>Nymphoides aquatica</i>	Banana-shaped tubercles are plant food reserve organs. Smaller white flowers compared to true water lilies listed above. Height 12", so plant in shallower water. Young plants spring from leaves. Seeds eaten by waterfowl. <i>N. cordata</i> also found in Northwest Florida.
Variable Leaf Arrowhead <i>Sagittaria filiformis</i>	Small white flowers and spear-shaped leaves are characteristic. This plant also grows in shallower water like the banana lily.
SUBMERSED WETLAND PLANTS	
Submersed	Comments
Water Starworts <i>Callitriche spp.</i>	These are tiny flowering annual aquatics with 3 species scattered throughout Florida. They prefer to grow in quiet shallow water. All parts of the plants are eaten by ducks.
Coontail <i>Ceratophyllum demersum</i>	Free-floating and forms large mats. Prefers to grow in sluggish waters. Three species of <i>Ceratophyllum</i> occur in Florida. Leaves and seeds occasionally eaten by waterfowl.
Muskgrass <i>Chara spp.</i>	Muskgrass, a multi-cellular alga, grows attached to the bottoms of ponds, lakes, rivers, and ditches, sometimes forming underwater meadows. Eaten by the American coots.
Southern Naiad <i>Najas guadalupensis</i>	Long-stemmed with many branches bearing short, dark, green to purple-green leaves. Spreads quickly; can become weedy. Major food plant for Florida waterfowl.
Illinois Pondweed <i>Potamogeton illinoensis</i>	Submersed plant with elliptic floating leaves and green flower spikes. Prefers alkaline water of shallow to fairly deep lakes, ponds, rivers. Rhizome growth can be extensive.
Awlleaf <i>Sagittaria subulata</i>	An easy-to-grow rosette plant that thrives in low light and prefers shallow water. Grows to a height of 8-16 inches, produces tiny white flowers and spreads by runners.
Tape/Eel Grass <i>Vallisneria americana</i>	Aquatic grass grows horizontally to several feet long; will form mats. Planting density should be 2 feet in water 12-36" deep. Waterfowl eat leaves and flowers.
EMERGENT WETLAND PLANTS	
Emerging Aquatic Plants	Comments
Yellow Canna <i>Canna flaccida</i>	Yellow flowers year-round, grows to 4 feet. Preferred conditions are sun to partial shade, intermittent flooding, at a planting density of 18 inches. Plants spread quickly, add color, and attract butterflies.
Caric Sedges <i>Carex spp.</i>	Numerous (16 wetland species) clump-forming emergent or marginal sedges. Nutlets are eaten by birds and mammals.
String Lily <i>Crinum americanum</i>	Fragrant flowering perennial that grows to 3 feet. Plant 2 feet apart in sun to partial shade, from water's edge to water 3 feet deep. Ducks and mammals feed on seeds.
Jointed Flat Sedge <i>Cyperus articulatus</i>	Grows to 5 feet. Plant 3 feet apart in sunlight, in water (even brackish) up to 30 inches deep. Songbirds eat seeds.
Spikerush <i>Eleocharis celloso</i> <i>E. interstincta</i>	Attractive green stems; spreads quickly. Plant 3 feet apart. Recommended for monoculture plantings. Dense growth can retard weeds. Other species of <i>Eleocharis</i> are not recommended.
Iris <i>Iris spp.</i>	Attractive flowers grow in clumps and attract butterflies. Plant 2 feet apart in full sun to partial shade in areas of intermittent flooding. Dormant in winter. Five native Florida wetland species.
Soft Rush <i>Juncus effuses</i>	Emergent or marginal rush to 4 feet. Planting density should be 3 feet in moist soils. This plant stabilizes shorelines and will survive extended flooding. Ducks and mammals eat seeds. There are >20 Florida native <i>Juncus</i> species.

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Golden Club <i>Orontium aquaticum</i>	Characteristic club-like yellow flowers and attractive blue-green leaves. Can grow to 15 inches. Plant in full sun, 3 feet apart.
Water Paspalum <i>Paspalum repens</i>	Colonial aquatic grass that sprawls, covering small areas of ponds or slow-moving shallow water.
Arrow Arum <i>Peltandra virginica</i> <i>P. sagittifolia</i> (not in South Florida)	Yellow flower stalks backed by hood and surrounded by large arrow shaped leaves. Grows to 3 feet in light or shade. Seeds eaten by waterfowl.
Smartweeds <i>Polygonum densiflorum</i> , <i>P. hydropiperoides</i> , <i>P. punctatum</i>	Flowering colonial herbs. Grow 1-5 feet in sun to shade. Seeds eaten by waterfowl.
Pickerelweed <i>Pontederia cordata</i>	Purple flowering colonial reaching a height of 4 feet. Plant 2-3 feet apart in medium to high light, in 6-18 inches of water. Ducks and mammals feed on seeds; Apple snails lay eggs on stems; and butterflies are attracted to this plant.
Tracy's Beakrush <i>Rhynchospora tracyi</i>	Clump-forming to 4-feet-high, spherical heads with spiked nutlets. 29 <i>Rhynchospora</i> species grow in Florida's wetlands. They are a preferred food of whistling ducks.
Duck Potatoes <i>Sagittaria graminea</i> , <i>S. lancifolia</i> , <i>S. latifolia</i>	Flowering perennials, 1-5 feet high. Plant 2 feet apart in sun, along water's edge to water 6 inches deep. Waterbirds and mammals feed on seeds and tubers; flowers attract butterflies.
Lizard's Tail <i>Saururus cernuus</i>	Flowering aromatic colonial herb, reaching 3 feet high. Prefers shade and shallow water. Seeds eaten by waterfowl.
Giant Bulrush <i>Scirpus californicus</i> Soft-stem Bulrush <i>S. tabernaemontani</i>	Grows to 10 feet and spreads, forming dense clumps. Plant 6 feet apart in full sun, at depths to 3 feet (including brackish water). Apple Snails lay eggs on stems; birds and mammals eat seeds. 13 native <i>Scirpus</i> wetland species occur in Florida.
Alligator Flag <i>Thalia geniculata</i>	Grows to 9 feet. Large green leaves and small purple flowers; dormant in winter. Plant in soils with intermittent flooding. Butterflies attracted to flowers.
Short-stemmed marginal plants	Comments
Hatpins <i>Eriocaulon spp.</i>	Characterized by basal leaves, and round white flower heads. Reach 2 feet in height. Six species in Florida prefer intermittent water levels of 2 inches or less.
Water Hyssop <i>Bacopa caroliniana</i> , <i>B. monnieri</i>	Sprawling flowering emergent, reaching 6 inches in height. Grows in sun to partial shade, in areas that are almost always wet. <i>B. monnieri</i> attracts butterflies.
Pink Sundew <i>Drosera capillaries</i>	Carnivorous herb with basal leaves and pink flowers. Reaches 8 inches in height. Prefers to grow in wet flatwoods and bogs.
Bog Buttons <i>Lachnocaulon anceps</i>	Stems arranged in tufts reach 1.5 feet; flower heads are white; leaves basal rosettes.
Milkworts <i>Polygala spp.</i>	Height (6 inches to 3 feet) and flower color vary by species (23 native wetland species in Florida).
Shoe Buttons/Hatpins <i>Syngonanthus flavidulus</i>	Solitary or clump-forming perennial with white flower heads and basal leaves. Reaches one foot in height. Prefers moist soils.
Marginal plants: ferns and fern-like	Comments

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Leather Fern <i>Acrostichum danaeifolium</i>	Large clump-forming fern, grows to 8 feet. Showy cinnamon-colored spores. Plant in partial shade in brackish or freshwater marshes, hammocks, or swamps in central to south Florida.
Swamp Fern <i>Blechnum serrulatum</i>	A spreading fern reaching 5 feet; grows in partial shade. Prefers soils that are wet the majority of the time.
Cinnamon Fern <i>Osmunda cinnamomea</i>	Deciduous, clump-forming fern grows to 4 feet and prefers shade. The planting density should be two feet in wet soils, but it cannot tolerate frequent flooding.
Royal Fern <i>Osmunda regalis</i>	Shrub-like fern growing to 5 feet in shade to full sun. Planting density should be 2 feet in very wet acid soils.
Netted Chain Fern <i>Woodwardia aerolata</i>	Forms colonies of plants 3 feet in height. Plant in partial sun to shade, in acidic soils that are nearly always wet.
Virginia Chain Fern <i>Woodwardia virginica</i>	Forms colonies of plants to 3 feet in height. Plant in partial sun to shade in acid soils. Requires usually wet soils.
Rough Horsetail <i>Equisetum hyemale</i>	Ancient fern-like evergreen, reaching a height of 3 feet and forming colonies. Prefers full sun in wet areas. Eaten by waterfowl and mammals.
Marginal plants: grasses and grass-like	Comments
Giant Switch Cane <i>Arundinaria gigantea</i>	Perennial grass forming dense stands, with plants reaching 25 feet. Grows in moist to wet woods and along wetland banks, but not in south Florida. Sometimes browsed by deer. Preferred habitat of American woodcock. Attracts skipper butterflies.
Muhly/Hair Grass <i>Muhlenbergia capillaris</i>	Attractive perennial bunch grass with striking purple inflorescence. Grows to 3-5 feet in full sun and tolerates a wide range of soil moisture. Excellent landscaping plant. Seeds eaten by birds and wildlife.
Maidencane <i>Panicum hemitomon</i>	Forms dense stands of grass reaching 6 feet. Plant 2 feet apart in sun in water up to 18 inches, as this grass will grow as an emergent. Birds eat the seeds.
Common Reed <i>Phragmites australis</i>	Colonial emergent or marginal, reaching a height of 16 feet. Requires very wet soils. Eaten by American coot.
Sand Cordgrass <i>Spartina bakeri</i>	Bunchgrass growing to 5 feet in medium to high light on wet to dry sandy soils. Planting density is 3 feet. Birds feed on seeds.
Wildrice <i>Zizania aquatica</i>	Emergent or marginal grass, reaching a height of 9 feet. Plant in soils that are almost always wet, or in shallow water (1.5-3 feet), but it does not grow in south Florida. Ducks feed on seeds.
Giant Cutgrass <i>Zizaniopsis miliacea</i>	Colonial grass, reaching a height of 10 feet. Requires wet soils. It provides nesting material, cover, and seeds to wildlife. Host plant for Skipper (<i>Ancyloxypha numitor</i>) butterfly caterpillar.
Marginal plants: flowers	Comments
Fen-flower Milkweed <i>Asclepias lanceolata</i>	Flowering perennial, growing 1-3 feet. Prefers (as does <i>A. perennis</i> and <i>A. rubra</i>) soils that are almost always wet. Larval food plant for Monarch and Queen butterflies.
Leavenworth's Tickseed <i>Coreopsis leavenworthii</i>	A spreading flowering herb which grows to 3 feet in full sun. Planting density should be one foot in usually wet soils.
Swamp Sunflower <i>Helianthus angustifolius</i>	Spreading, flowering perennial herb growing 2-6 feet in full sun to partial shade. Prefers usually wet soils as do 5 other <i>Helianthus</i> species found in Florida. Seed heads eaten by birds.
Perfumed Spider Lily <i>Hymenocallis latifolia</i>	Flowering, clump-forming perennial herb, 2-3 feet high. Plant in sun to partial shade in usually wet soils. Member of the Amaryllis family, which includes 12 wetland species that grow in specific areas in Florida.

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Redroot <i>Lachnanthes caroliana</i>	Emergent to marginal flowering herb reaching 1-3 feet high. Prefers full sun and moist to wet, moderately well-drained soils. White flowers attract butterflies.
Blazing Star <i>Liatris gracilis</i> , <i>L. spicata</i>	Flowering herb, reaching 2-7 feet high. Prefers full sun and moist, well-drained sandy or limestone soils. Nectar plant for butterflies.
Lobelia <i>Lobelia spp.</i>	These beautiful flowering herbs grow 2-4 feet and should be planted one foot apart. There are 12 native species which grow in specific areas of Florida. <i>L. cardinalis</i> red flowers attract hummingbirds, and it, along with <i>L. floridana</i> , prefers very wet soils. The other <i>Lobelia</i> species occur in moderately wet soils.
West Indian Meadowbeauty <i>Rhexia cubensis</i>	A flowering herb that grows to 2 feet in usually wet soils. Planting density 1 foot. There are 8 native Florida <i>Rhexia</i> species that prefer moderately wet soils and 2 that prefer very wet soils.
Goldenrod <i>Solidago fistulosa</i> , <i>S. leavenworthii</i> , <i>S. stricta</i> , <i>S. patula</i> , <i>S. latissimifolia</i>	Flowering herbs reach 2-6 feet high. First 3 species listed prefer usually wet soils; the last 2 species prefer almost always wet soils. Seeds eaten by songbirds and small mammals; plants eaten by rabbits and deer. Flowers attract butterflies.
Rain Lily <i>Zephyranthes atamasco</i>	Flowering herb reaching a height of 15 inches. Prefers shade and moist soils of wetland meadows, swamps, and wet pine flatwoods.
Marginal plants: shrubs and shrub-like	Comments
Buttonbush <i>Cephalanthus occidentalis</i>	This fragrant flowering deciduous shrub grows to 12 feet. It prefers full sun to partial shade and soils that are almost always wet; and it will tolerate permanent water. Fruits are eaten by wildlife, and flowers attract butterflies and hummingbirds.
Swamp Dogwood <i>Cornus foemina</i>	A flowering, deciduous shrub which grows 10-25 feet in sun to shade on usually wet soils. The planting density should be 8 feet. This plant is absent in SE Florida. Fruits are prized by birds.
Swamp Loosestrife <i>Decodon verticillatus</i>	Flowering shrub/herb with branches sprawling 9 feet in length. Usually emergent requiring wet soils. Absent in south Florida. Seeds eaten by ducks and mammals.
Marsh Hibiscus <i>Hibiscus coccineus</i>	A showy flowering perennial growing 4-6 feet in sun to partial shade. Plant 2 feet apart. Butterflies and humming birds are attracted to this plant. This and three other <i>Hibiscus</i> species (<i>H. grandiflorus</i> , <i>H. laevis</i> , and <i>H. moscheutos</i>) require wet soils.
Marsh St. John's Wort <i>Hypericum fasciculatum</i>	A flowering evergreen reaching 6 feet. Plant in full sun to partial shade, 2 feet apart. This <i>Hypericum</i> species along with 4 others (<i>H. chapmanii</i> , <i>H. edisonianum</i> , <i>H. lissophloeus</i> , <i>H. mitidum</i>) prefers soils that are almost always wet.
Virginia Willow <i>Itea virginica</i>	A flowering deciduous shrub which grows to 8 feet in very wet soils. Planting density should be 5 feet.
Shiny Lyonia <i>Lyonia lucida</i>	A flowering evergreen shrub which grows to 13 feet; should be planted 5 feet apart.
Wax Myrtle <i>Myrica cerifera</i>	Flowering evergreen reaching 20 feet. Plant in full sun to partial shade, 5 feet apart. This shrub is tolerant of wet and dry soils. Berries eaten by many birds.
Wild Coffee <i>Psychotria nervosa</i>	Flowering shrub growing 5-10 feet in height. Prefers shade in moist to somewhat dry soils. Absent in Florida panhandle. Red fruits eaten by birds; flowers attract butterflies.
Needle Palm <i>Rhapidophyllum hystix</i>	Shrubby palm reaching a height of 3 feet. Grows in north to central Florida. Prefers shade and soils that are usually wet.
Carolina Willow <i>Salix caroliniana</i>	Flowering colonial with fast-spreading willow heads. Reaches a height of 20 feet. Planting should be done 5 feet apart in soils that are almost always wet. Flowers attract butterflies.
Snowbell <i>Styrax americanus</i>	Flowering shrub growing 6-10 feet. Prefers acid, wet, fertile soils in shade to partial sun.

Table 1. Native Florida freshwater wetland plants organized by floating, submersed, and emergent growth categories. Scientific names follow common names. Comments include notes on natural resource and aesthetic values, growth characteristics, and planting tips.

Climbing Aster <i>Symphotrichum carolinianum</i>	Flowering shrub reaching a height of 10 feet. Prefers almost always wet organic soils with sun or partial shade. Attracts butterflies.
Viburnum <i>Viburnum obovatum</i> <i>V. nudum</i> , <i>V. dentatum</i>	Flowering shrubs ranging in height from 6-30 feet. Prefer sandy, acidic, usually wet soils. Occur in north to central Florida. Berries eaten by birds.
Marginal plants: trees	Comments
Red Maple <i>Acer rubrum</i>	This tree ranges from 30-70 feet. Its deciduous leaves turn red in fall. The tree prefers partial shade and usually wet soils at a planting density of 10 feet.
Pond Apple <i>Annona glabra</i>	Small flowering evergreen growing 15-35 feet. Plant in full sun to shade in soils that are almost always wet. Florida growing region is from Brevard County south.
Water Hickory <i>Carya aquatica</i>	Deciduous tree reaching a height of 100 feet. Prefers soils almost always wet. Absent in 4 southernmost Florida counties. Squirrels, turkey, nuthatches, and wood ducks will eat the nuts.
Sugar/Hackberry <i>Celtis laevigata</i>	This flowering deciduous tree grows to 80 feet and prefers full sun to partial shade in usually wet soils. Plant 15 feet apart. Fruits are eaten by songbirds.
Pop Ash <i>Fraxinus caroliniana</i>	Deciduous tree which grows to 50 feet and prefers shade to partial sun and constantly wet soils. Plant density 10 feet. Seeds eaten by some birds and mammals.
Loblolly Bay <i>Gordonia lasianthus</i>	Flowering evergreen grows 30-60 feet in full sun to partial shade in usually wet soils. Plant 10 feet apart.
Sweet Gum <i>Liquidambar styraciflua</i>	Deciduous tree reaching 120 feet. Foliage may turn red in fall. Plants should be placed in sun to partial shade in usually wet soils, ten feet apart. This tree does not grow in south Florida.
Dahoon Holly <i>Ilex cassine</i>	Flowering evergreen, reaching 20-40 feet high. Plant in full sun to partial shade in soils almost always wet. Berries eaten by birds.
Sweet Bay <i>Magnolia virginiana</i>	Flowering evergreen, reaching 25-60 feet high. Plant 10 feet apart in sun to partial shade. Requires soils that are almost always wet. Seeds eaten by birds.
Red Mulberry <i>Morus rubra</i>	Flowering deciduous tree 40-70 feet high. Plant in sun to partial shade. Prefers moist soils but will tolerate wet to dry. Fruit eaten by birds.
Swamp Tupelo <i>Nyssa sylvatica</i> var. <i>biflora</i>	A deciduous flowering tree, reaching 130 feet. This tree should be planted 20 feet apart, but only in north Florida. Blue fruit is eaten by birds and mammals. Excellent honey bee tree.
Swamp Red Bay <i>Persea palustris</i>	A flowering evergreen that reaches 50 feet. Should be planted in full sun to partial shade, 10 feet apart in soils that are almost always wet. The fruit is eaten by birds and squirrels.
Water Oak <i>Quercus nigra</i>	Deciduous tree growing 50-80 feet. Plant in full sun to partial shade, in usually wet soils. Acorns eaten by squirrels, ground feeding birds, and deer.
Cabbage Palm <i>Sabal palmetto</i>	Florida State tree, but really a monocot. Reaches a height of 20-60 feet. Prefers sun and usually wet soils. Squirrels, raccoons, and many other mammals and birds dine on the fruit and seed.
Bald Cypress <i>Taxodium distichum</i>	This deciduous tree grows 50-80 feet in organic acid soils, mainly in swamps, but it will tolerate dry periods. Cypress should be planted 10 feet apart. The trees provide growing structure for bromeliads, and the seeds are eaten by birds and squirrels.
American Elm <i>Ulmus americana</i>	Deciduous tree that grows to 60 feet in soils that usually are wet. Foliage turns yellow in fall. Does not grow in south Florida. Planting density should be 10 feet.

Table 2. Invasive, non-native wetland plants that are illegal to possess, collect, transport, cultivate, or import without a permit according to the Florida Department of Environmental Protection. For more information on non-native plants in Florida, refer to the Florida Exotic Pest Plant Council (FLEPPC) Website: www.fleppc.org.

SCIENTIFIC NAMES	COMMON NAMES
<i>Alternanthera philoxeroides</i>	Alligator weed, green lead plant
<i>Casuarina spp.</i>	Australian pine
<i>Crassula helmsii</i>	Swamp stonecrop
<i>Eichhornia spp.</i>	Water hyacinth
<i>Hydrilla verticillata</i>	Hydrilla, Florida elodea, star grass, oxygen grass
<i>Ipomoea aquatica</i>	Water spinach
<i>Ipomoea fistulosa</i>	
<i>Lagarosiphon spp.</i>	African elodea
<i>Limnocharis flava</i>	Sawah flowing rush
<i>Lithrum salicaria</i>	Purple loosestrife
<i>Melaleuca quinquenervia</i>	Melaleuca
<i>Mimosa pigra</i>	Giant sensitive plant, cat's-claw
<i>Monochoria hastate</i>	
<i>Monochoria vaginalis</i>	
<i>Myriophyllum spicatum</i>	Eurasian water milfoil
<i>Nechamandra alternifolia</i>	
<i>Oryza rufipogon</i>	Wild red rice
<i>Pistia stratiotes</i>	Water lettuce (some consider plant native)
<i>Pontederia rotundifolia</i>	Tropical pickerelweed
<i>Salvinia spp.</i> (excluding <i>S. minima</i>)	Water spangles, Giant Salvinia
<i>Schinus terebinthifolius</i>	Brazillian Pepper
<i>Sparganium erectum</i>	Exotic bur reed
<i>Stratiotes aloides</i>	Water aloe, soldier plant
<i>Trapa spp.</i>	Water chestnut
<i>Vossia cuspidata</i>	Hippo grass