Plants of Retention Ponds and Drainage Ditches

The Greater Daytona Beach Area

Bethune-Cookman University

Daytona Beach, FL

AUTHORS, EDITORS, and CONTRIBUTORS

Editor in Chief, Author, Photographer, Illustrator	**Hyun Jung Cho**
Authors and Editors	**Don Spence**
	Raymond Jarrett
B-CU Student Assistant	**Indira Prajapati**
	Justin Dahl

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Field Assistants: Joseph White, Ali Simpson, Jared Zurbruegg, Christopher Schlageter

Plant ID Assistant: Daniel J. Young

Maps: Ali Simpson

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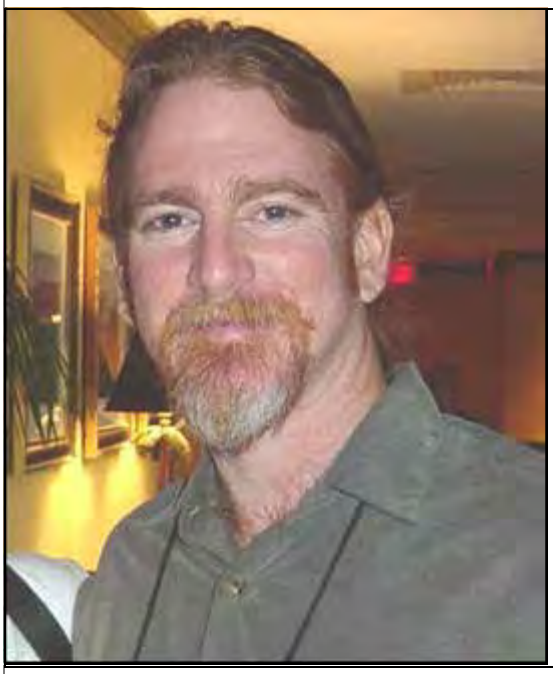
BIOSKETCHES OF AUTHORS and CONTRIBUTORS

J. Cho is Professor of Integrated Environmental Science at Bethune-Cookman University. She is easily amazed by plants growing in ditches and loves her cat. She has Ph.D. in Conservation Biology and M.S. in Biology from the University of New Orleans, NOLA and B.S. in Biology from the Sung-shin Women's University, Seoul, Korea.



Don Spence is a native of Daytona Beach and has lived in Central Florida most of his life. After high school he joined the U.S. Coast Guard where he worked with law enforcement, search and rescue, and logistical support services. During his travels he has sailed from Antarctica to the Arctic, Europe and much of the Americas. Don is a Certified Municipal Arborist and through his company, Native Florida Landscapes, LLC, has provided consulting services that range from endangered species and sea grasses surveys, invasive and native plant identification to tree health evaluations. Don earned his Bachelor's of Science in Biology from Stetson University, Master's of Science in Biology from the University of Central Florida, and his Doctorate of Philosophy in Plant Pathology from the University of Florida. Don has authored several peer reviewed journals articles and published in a wide variety of magazines

BIOSKETCHES OF AUTHORS and CONTRIBUTORS

Ray Jarrett is a graduate from the University of Central Florida in 1998 where he earned a BS degree in Biology with emphasis in botany, entomology and Florida ecosystems. Ray is a Certified Arborist by the International Society of Arboriculture (ISA) and a graduate from the Natural Areas Training Academy (NATA), managed by the University of Florida's, Department of Wildlife Ecology and Conservation in partnership with The Nature Conservancy. He is a field biologist with sixteen years of experience and currently works for the University of Central Florida as the Coordinator of Urban Forestry and Natural Lands Programs.

My name is Indira Prajapati. I completed my Bachelor's degree in Chemistry from Bethune-Cookman University. Currently, I am a graduate student in University of Kansas, Lawrence majoring in Pharmaceutical Chemistry.

Danny Young is the Director of Environmental Services at the consulting firm Zev Cohen and Associates, Inc. headquartered in Ormond Beach, FL. Danny also serves on the Board of Directors for the Florida Native Plant Society as the Chair of the Land Management Partners Committee. He is also the technical project coordinator for the Society's local Pawpaw Chapter Endangered Plant Monitoring Program. Danny earned a B.S. in Botany from the University of Central Florida. Past job experiences include high school biology teacher at Deland High School and field botanist for a wetland creation and management firm.

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AUTHOR'S NOTE TO USERS

My profession is to study aquatic plants and their habitats and to teach about them. But I believe that I was drawn into inconspicuous plants growing in water bodies since I was much younger.

Yes, most people are interested in the majestic seagrass beds in coastal waters and large mammals that are dependent on them. But the true beauty of aquatic plants, I believe, is in freshwater environment; think about the diversity!

When I moved to Florida in the fall of 2011, I was literally puzzled by the number of urban water bodies most of which were constructed to relieve the cities and towns from potential negative effects from storm water runoffs. Plus, I noticed that the floating, floating-leaved, submerged plants are ubiquitously growing in the urban, primarily man-made water ways.

On my way to work, I couldn't be happier if I get to see flowering *Sagittaria* reflecting the morning sunshine alongside of a road. I stop and take photos of the urban ponds and water ways on the way to work and coming home on regular days as well as my off time running errands. I stop by surrounding ditches and ponds before and after going grocery shopping, strolling around my neighborhood, going to banks, stopping by post offices, and eating out.

I started to have my habit of carrying my rubber boots and camera in my car trunk. Often times, I could be spotted in my Sunday dress with my black rubber boots on in a filthy drainage ditch. This was my passion. I could be labeled many things: Conservation Biologist, Coastal Scientist, Seagrass Biologist, Remote Sensing Scientist, Restoration Ecologist, Professor, and so forth. I would love to be all the labels and titles that I have, but the aquatic plants growing in freshwater bodies waters are one of my utmost inspirations and joy to explore.

First I intended to make this book to include plants from the Greater Daytona Beach area, but I decided to include only freshwater species and exclude seaside plants for this book. Also, some plant surveys were done in DeLand and Deltona areas (Fig. 1). As I look through all the plant photos that I took for the last two and a half years, I regret that I did not include some of the most amazing plants that I found in this area. However, the fieldguide book would never be completed, so I decided to include only approximately 150 species at this time. My humble hope is that the readers may gain some appreciation of the wildlife in our backyard ponds and ditches and enjoy more of little things surrounding our urban life.

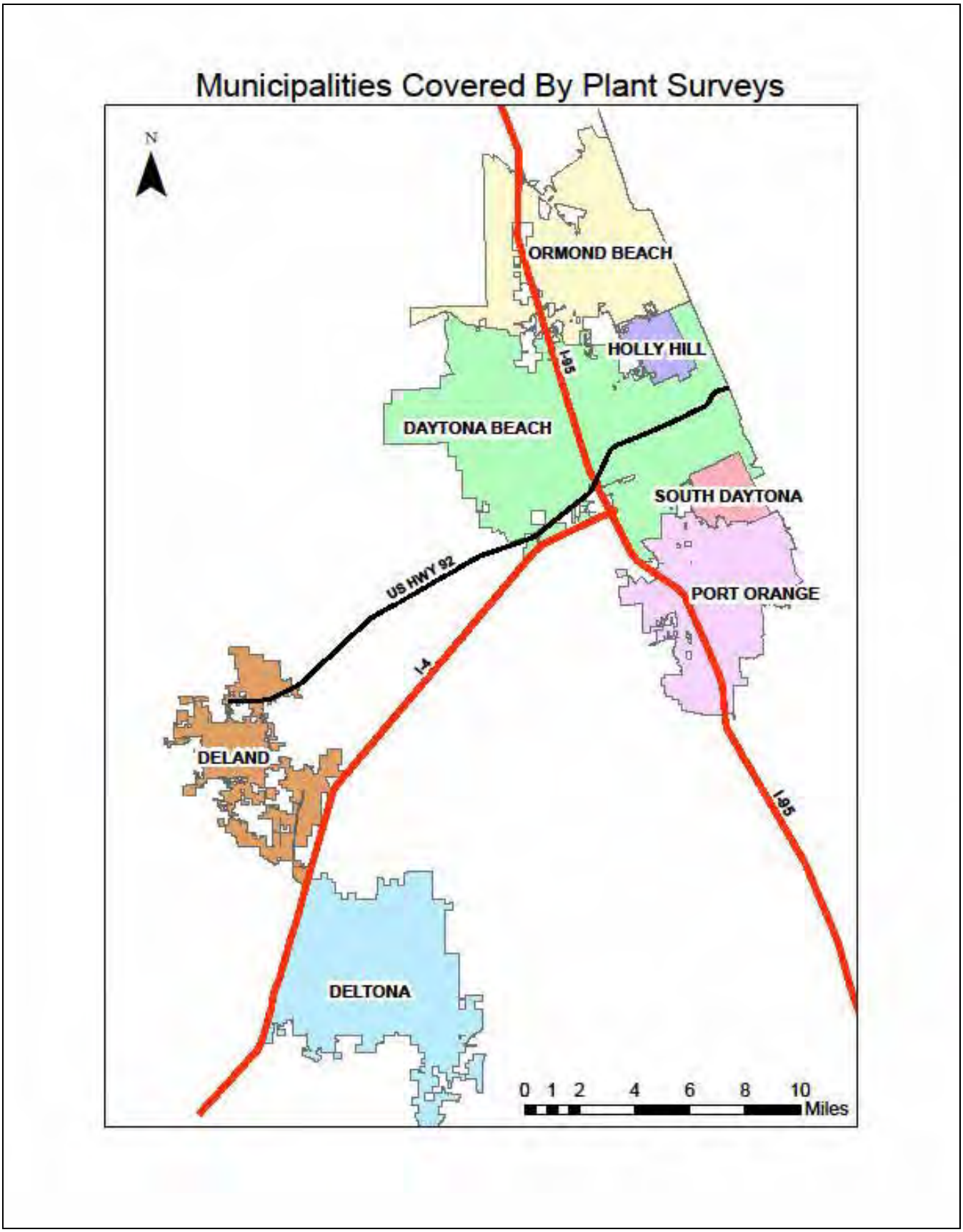


Figure 1. Municipalities in which plant surveys were conducted.

INTRODUCTION

Storm Water and Surface Runoff

Storm water is the large quantity of water that results from surface runoff after heavy precipitation. Because of the limited capacity of soil to hold water, excess water from precipitation flows over the land and into water bodies. Impervious surfaces are areas covered by material that impedes the infiltration of water into the soil. These surfaces include rooftops, paved streets, highways, and parking lots. In the absence of impervious surfaces, approximately 10% of precipitation will become storm water runoff. Impervious surfaces can increase the volume of storm water runoff by 50% to75%. Landsat 8 satellite images were used to classify the Daytona Beach ground surface at a 30 m-pixel resolution; and over 70% of the surface within the city limit was classified as impervious surfaces (Table 1 and Fig. 1) where the remaining lands were either vegetated areas, bare soils, wetlands, or open water bodies of water, such as the Halifax River estuary (Fig. 2).

Table 1. Proportion of impervious surface of the city of Daytona Beach

Surface Type	Area (square meters)	Percentage of Coverage
Impervious Surface	51,031,040	70.17%
Natural Surface	21,690,583	29.83%
Total	72,721,623	100%

Impervious surfaces have historically caused significant off-site flooding causing low areas to flood quickly after heavy rains. One of the problems associated with storm water runoff is the ability of moving nutrient-rich or polluted soils into wetlands. When polluted runoff flows directly into rivers, lakes, streams and oceans, water quality is reduced which can degrade aquatic/marine habitats and harm wildlife. Therefore, storm water is seen as a major source of pollution and is responsible for the reduced water quality of Florida's waterways and aquatic ecosystems. To combat storm water runoff, retention and detention ponds have become common components of development to help reduce pollutants such as oil, fertilizers, pesticides, soil, trash, and animal waste.

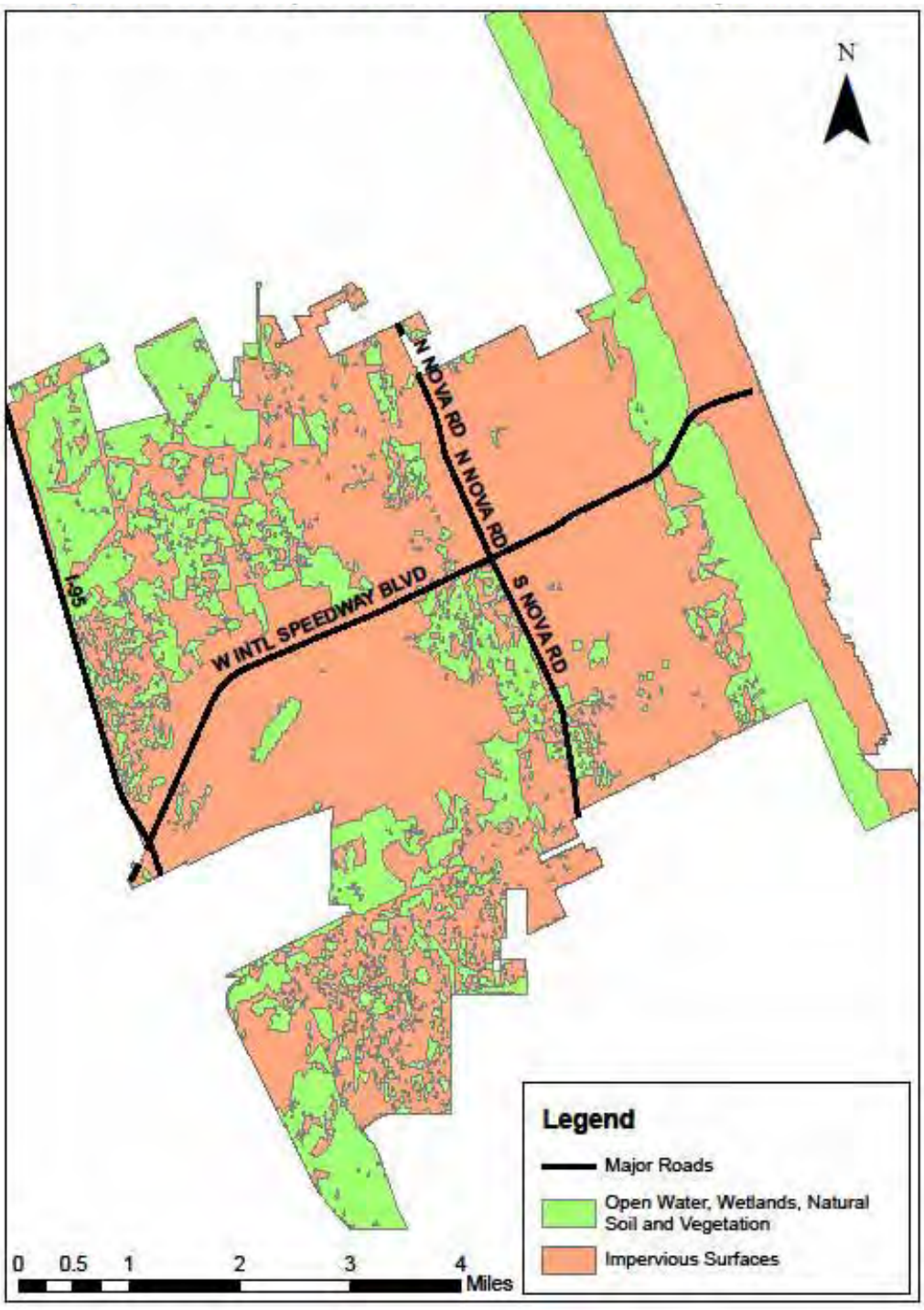


Figure 2. The proportion of impervious surfaces in Daytona Beach, FL.

Retention/Detention Ponds and Drainage Ditches

In expanding urban areas, the threat of flooding is a growing danger to homeowners and businesses. Storm water retention/detention facilities and drainage ditches are constructed to relieve possible flooding and erosion by capturing storm water in contained basins.

Drainage ditches are used to drain water to relieve areas from potential flooding and are can usually be found alongside roadways or fields. Retention ponds hold a specific amount of water indefinitely, while detention ponds are built to temporarily hold large volumes of runoff until the water can drain to another area at a slower, controlled rate. Retention ponds are better suited to allow aquatic and wetland plant growth than detention ponds. Detention ponds act like a channel for water to pass since there is an outlet at the bottom, which discharges the water to another retention/detention area. In addition to slowing water movement across the landscapes, detention ponds also capture sediments and allow them to accumulate which sometimes makes it hard for vegetation to persist. Conversely, retention ponds do not have an outlet and the soil sediments at the bottom make it favorable for the aquatic plants to grow.

Based on the location of their growth, aquatic plants can be divided into five different zones (Table 2).

Table 2. Landscape design principles for storm water basin. Table was modified from the source http://www.ci.farmington-hills.mi.us/services/planningandcommdev/designguidelinesandchecklists/StormWaterDetentionBasins.asp

Planting zone		Zonation description	Plant type
Zone 1	Deep Water Pool	1 – 6 ft deep pool of water	Submergent and floating
Zone 2	Shallow Water Bench	1 ft below the normal pool	Partially submerged Emergent wetland plants
Zone 3	Lowest Zone	1 ft above the normal pool or lowest zone in a dry detention area	Shrubs Herbaceous
Zone 4	Middle Zone	1-4 ft above the normal pool, periodically inundated	Trees Shrubs Herbaceous
Zone 5	Upland Slopes and Buffer Strip	4 ft and above	Trees, Shrubs, and Herbaceous

Retention/detention areas often only have sod placed on the slopes around the pond. However, there are times when ponds are landscaped. Retention ponds (aka basins) that are designed to have natural wetland plants should be shaped so that they follow the natural topography of wetlands to the greatest extent possible. If specific aesthetic attributes are required by the landscaped pond, plants can be selected based on growth habit or height. When choosing plants, there are five wetland zones to consider when designing the basins. Zone 1 is a deep permanent pool of water up to 6 feet deep that supports the growth of submerged and free-floating plants. Zone 2 occurs on a shallow water edge and is 1 foot below the normal pool,. Plants that are partially submerged with emergent stems will grow in this zone. Zone 3 occurs from one foot above the normal pool or lowest zone area in a dry detention pond. Because zone 3 is frequently flooded, plants must be able to endure flooding and drought. Zone 4 occurs from 1 to 4 feet above the normal pool. Unlike zone 3, zone 4 is only periodically flooded, however, plants must still be able to endure occasional flooding. Zone 5 occurs from 4 feet above the normal pool. Zone 5 includes buffer strips of plants that expand past the middle zone. This zone usually does not flood, so plants here should be selected by soil type, light, and function (Note these zones pertain to basins that are designed to maintain a permanent water level).

Aquatic Plants

Wetlands are characterized by the three components: presence of water, water-logged (hydric) soil conditions, and presence of plants that can tolerate long periods of inundation. Aquatic plants, also called hydrophytes or wetland plants, are the plants adapted to live in aquatic and wetland environments. Because zones 1 through 4 are often flooded, the plants occurring there need to be adapted to survive inundation.

Aquatic and wetland plants that grow in zones 1 through 4 can occur in a range of growing forms. They can be free-floating on the water surface, completely submerged, rooted with floating leaves, or emergent with roots in standing water or permanently water-logged soil.

Free-floating: The leaves and stems are suspended in the water column or float free on the water surface with no roots anchored in the sediment.

Submergent/Submerged: The plant grows completely beneath the surface of water. Most submerged plants are rooted in the soil.

Floating-leaved: The leaves float on the surface of water while the roots are in the sediment.

Emergent: The plant is rooted in the soil beneath the surface of water with aerial stems, leaves, and reproductive organs extending above the surface of the water.

Floating, submerged, and littoral plants associated with storm water ponds play a vital role in ecosystem health. These plants help control erosion and provide habitat and food for wildlife. Most importantly, these plants help filter nutrient runoff from fertilizers and add oxygen to the water. Nitrogen and phosphorous, in part, make up most turf and landscape fertilizers. These elements can become concentrated in ponds, rivers and streams, from runoff, after heavy rains. Vegetation associated with storm water ponds, act as kidneys, filtering and metabolizing some of these elements before they make their way into a larger water body. Native plants planted along the upland margins of storm water ponds, slow down the speed of the runoff, spreading it out and allowing for better ground infiltration. Other plants, that are shallow rooted and found growing along the littoral edge of ponds help stabilize and prevent erosion. Emergent and submersed plants provide habitat and oxygenate the water column. Collectively, these plants clean the water and allow sunlight to penetrate the water column. By keeping nutrient loads lower these wetland plants help prevent harmful algal blooms that can overtake ponds.

Wetland Indicator Categories of Plants

The State of Florida, Department of Environmental Protection defined and standardized wetlands characteristics in 1995 with the development of wetland identification and classification under Section 373.4211 of the Florida Statutes (F.S.), and Chapter 62-340.F.A.C. Each native and non-native plant species were placed in categories that indicate the likelihood of their of occurrence in a wetland.

OBL: Obligate Wetland (99% probability occurrence in wetlands)

FACW: Facultative Wetland (67-99% probability occurrence in wetlands)

FAC: Facultative (34-66% probability occurrence equally in wetlands and non-wetlands)

FACU: Facultative Upland (67-99% probability occurrence in non-wetlands)

UPL: Obligate Upland (99% probability occurrence in non-wetlands)

For the purpose of plant organization in this book, plants have been classified as either OBL in zones 1 and 2; FACW in zone 3; FAC in zone 4; and FACU and UPL in zone 5.

Non-Native & Nuisance Plants

If poorly managed, retention ponds and drainage ditches can become hosts for invasive, non-native plants or native plants that become a nuisance. Invasive exotic species are ones that were introduced into an area where they did not occur naturally and have spread, displacing native plants and animals. Non-natives are species that were not likely present in Florida 500 years ago and include ornamental landscaping and agricultural plants. Nuisance plants can be any native or non-native species that has grown to the point where it requires management or removal. The term is generally used as a special case designation for native plants that have spread to the extent where they inhibit water movement or obstruct the use of a water body.

Whether non-natives species arrived as ornamental landscaping plants, agricultural products, or via an unintentional introduction, they have the potential to invade natural landscapes. Naturalized species are non-natives that occur in natural areas but have not grown to the extent where they are displacing native species.

According to the Florida Exotic Pest Plant Council (FLEPPC), there are two categories of invasive exotic species: Category I and Category II. Category I invasive exotics are affecting native plant communities by changing ecological functions. Category II invasive exotics have not yet changed Florida plant communities to the degree of Category I species. In this book, those plants are denoted EPPC (I) and EPPC (II).

Management of Retention/Detention Basins and Drainage Ditches

Maintaining retention/detention basins and drainage ditches is important and should be considered part of the 'Best Management Practices'. A management plan should be developed to address the types of pollutant discharges and activities necessary to keep the basins operating properly. The management plan should include: maintenance procedures (i.e. mowing and debris control), repairing damage to side slopes, and removing invasive vegetation. In the Greater Daytona Beach area, ponds, canals and retention basins (Table 3; Fig. 3) are largely maintained by the City, Volusia County, or the Florida Department of Transportation. The chief responsibilities of these institutions are to facilitate water flow, eliminate invasive plants, and promote growth of vegetation suitable for flood and drought conditions.

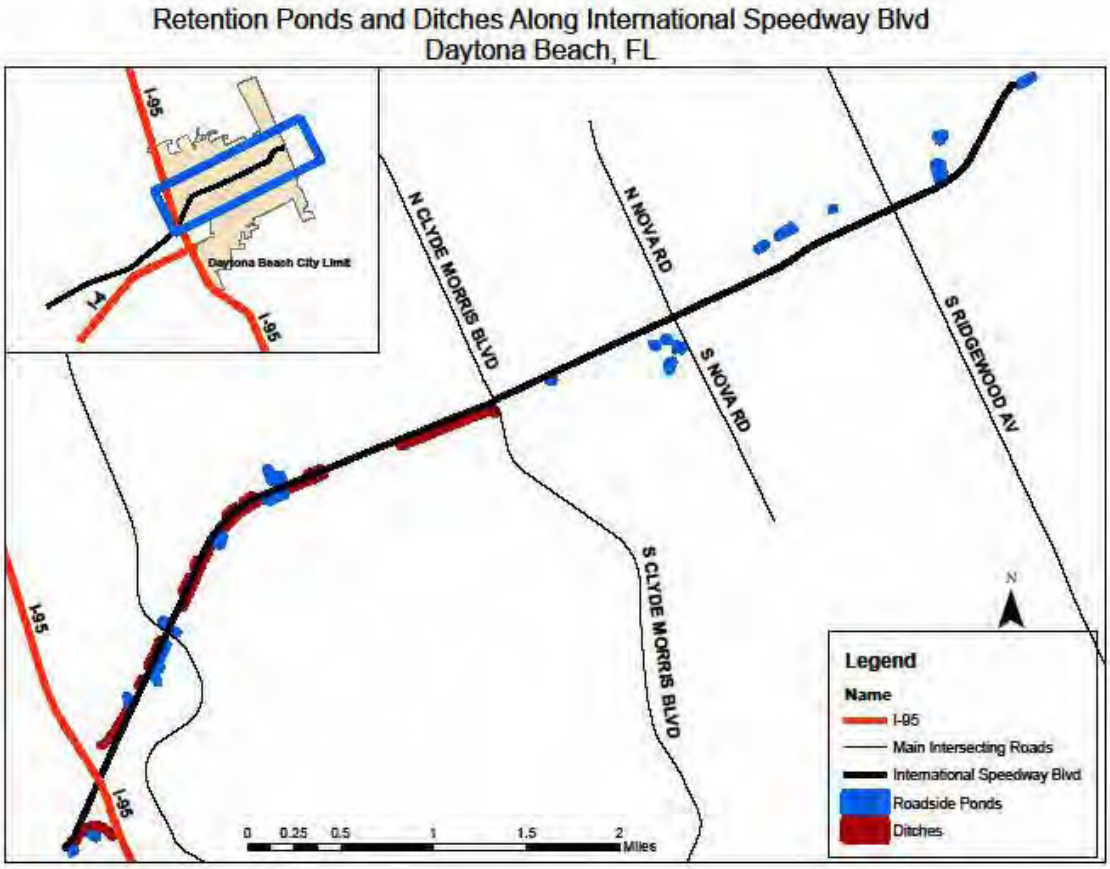


Figure 3. Map showing retention ponds and ditches along the International Speedway Blvd. Daytona Beach. The inset indicates the location of the area shown in relation to the city of Daytona Beach.

Table 3. Daytona Beach hydrology statistics

Type	Total Number (#)	# City or State Owned	# Privately Owned
Canal	40	16	24
Natural Pond	66	25	41
Man-Made Pond	150	18	132
Borrow Pit	3	0	3

The Biological Tragedy Caused by Exotic Organisms

Non-native organisms are a major threat to our urban and natural landscapes. The primary means of movement of invasive plant pests has been through the importation of ornamental plants from other countries and in untreated wood products. In Florida, we are particularly sensitive to exotic organisms since Florida has a tropical/sub-tropical climate, highly disturbed and fragmented habitats (agriculture, roads, and urban sprawl), and because Florida is a gateway for tourist travel and the ports of entry for commodities from around the world.

Billions of dollars are spent each year fighting the effects of these invasive organisms – whether they are exotic plants, animals, insects, or disease-causing microbes. The damage invasive organisms cause to ecosystems and the economic loss due to these pests is significant. It is estimated that approximately 50,000 exotic species are established in the United States, and as of today, Florida has over 1,400 exotic plants established in our urban and natural landscapes. A 2005 study estimated that losses for forest and non-forest products due to exotic species cost the American taxpayers $138 billion each year.

From the Federal Government's Animal and Plant Health Inspection Service to local initiatives such as the Cooperative Weed Management Areas, invasive species management is being dealt with much better than in the past. However, with so many invasive species present, there is a real concern that a threshold of biological stress might be reached that will either eliminate species outright or cause local extinctions. There could come a point in time where food webs break down and biological diversity declines due to habitat loss and the loss of pollinators. The overwhelming presence of so many invasive birds, fish, reptiles, plants, insects, and fungi makes it hard to find the energy and financial resources to push them back. But, we must. Not only are our natural areas deserving of our assistance, the economic impact of exotic species reinforces the need for them to be monitored, controlled, and their importation be limited.

What can you do to help?

- Do not bring home uncooked food, raw fruit, or untreated plant parts with you when you travel abroad.
- Do not move untreated wood products at all (do not bring untreated wood back with you from trips abroad and do not move firewood or dead trees anywhere, anytime).
- Clean your shoes of dirt and soil from overseas travels.
- Plant native plants instead of ornamental species.
- Participate in exotic plant removal programs such as the Cooperative Invasive Species Management Areas.
- Never release unwanted pets such as frogs, turtles, snakes, or birds into natural areas.


Dunn Ave., Daytona Beach, FL

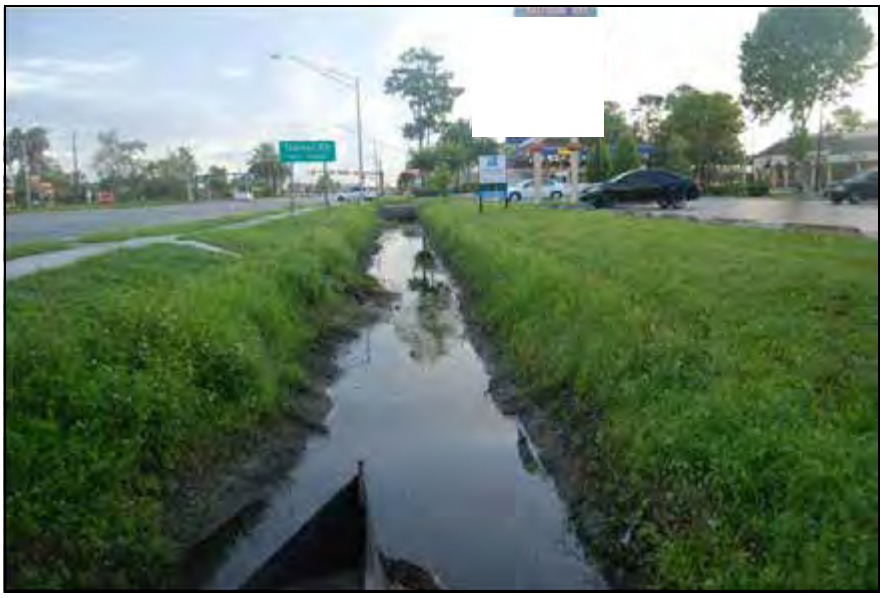

Beach St., Daytona Beach, FL

Several species of submerged plants growing in a ditch within a residential area.

Jimmy Ann Drive, Daytona Beach, FL

Sewage discharged into a ditch from an apartment complex.

Thick surface mats of duckweeds make terrestrial insects such as ants possible to walk on them.



Some of the ditch and pond areas are frequently mowed.

International Speedway Blvd., Daytona Beach, FL. The brown areas in the bottom of the ditch is likely due to herbicide use to control and kill unwanted plants.

Some areas with steep bank slopes are not well managed.

International Speedway Blvd., Daytona Beach, FL.

Some ponds are intentionally landscaped to have native plants.

Clyde Morris Blvd. and Beville Rd. Daytona Beach, FL

Although native, cattails can grow fast and take over urban wetlands and shorelines of water ways.

Coraci Park, Port Orange, FL

Some ponds and ditches may not have standing water all the time, but have OBL wetland plants even during the dry periods because of hydric soil conditions.

International Speedway Blvd., Daytona Beach, FL

Freshwater ponds can be found very close to saltwater bodies such as Halifax River.

Holly Hill, FL

Some retention ponds are fenced because of safety and liability reasons.

Daytona Beach, FL

Non-native *Salvinia minima* are growing aggressively in urban park ponds. It is easy to transport and spread non-native invasive plants unintentionally if not cautious.

Tuscawilla Park, Daytona Beach, FL

Effluent from restaurants may provide favorable conditions for this invasive growth of the non-native *Egeria densa*.

Some businesses designated natural ponds/wetlands within their properties conservation area. International Speedway Blvd. and Williamson Blvd., Daytona Beach, FL

Some ditches and ponds may have alligators and/or snakes. They are utilizing those areas as their habitats. It is highly recommended not to molest or feed them. Deltona (above) and Daytona Beach (right), FL.

Some urban water bodies and wetlands are habitats for deadly plants such as *Cicuta maculata* (picture below). Clyde Morris Blvd. and International Speedway Blvd., Daytona Beach, FL.

ZONES 1/2

Deep water pool/Shallow-floating

Free-floating, Floating Leaved, Emergent plants that are obligate wetland plants (OBL)

- Plants that grow floating on or slightly submerged below the water surface and that are not rooted in the substrate.
- Plants that are rooted in sediment with leaves floating on and above surface.
- Plants that grow submerged and become emerged as they mature; Plants that may have distinct submergent and emergent forms.
- Plants that commonly occur emergent, but also found submerged.
- Plants that are rooted in the soil beneath the water surface with aerial stems, leaves, and reproductive organs.

Azolla caroliniana

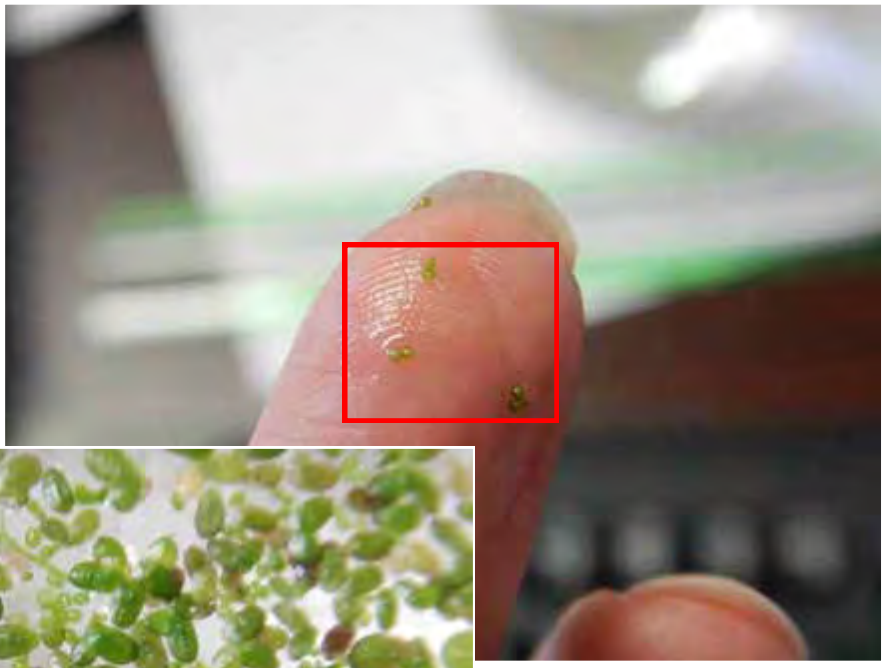
- Scientific Name: *Azolla caroliniana* Willd.
- Common Name: Carolina mosquitofern, Waterfern
- Group: Pteridophyta (Ferns)
- Family: AZOLLACEAE (Azolla family)
- Growth Form: Free-floating
- Native
- Comments: *Azolla* grows green in early growing season, then turns red. They are good nitrogen fixers and provide nitrogen to other aquatic plants as they decompose; they are fern.

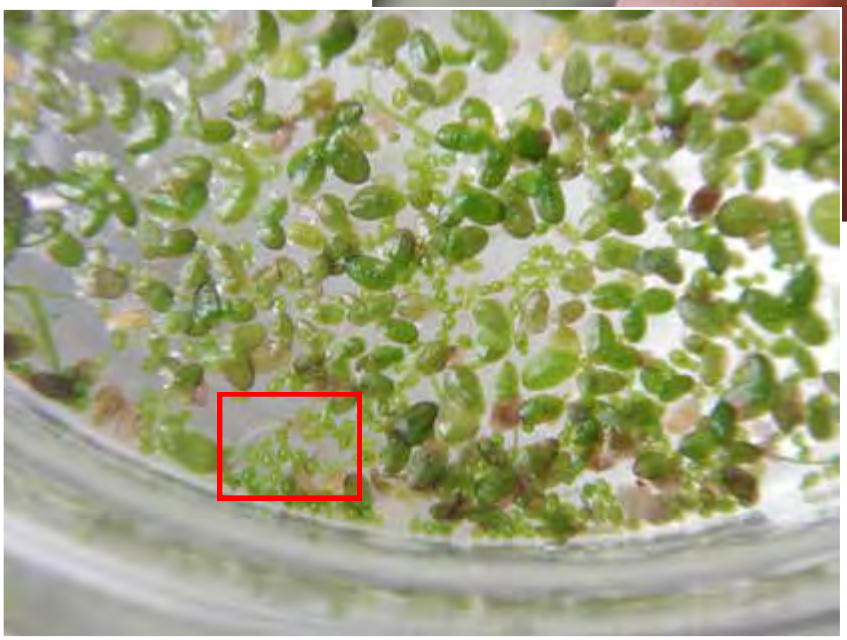
Salvinia minima (Not Native)

Upper surface of leaves have stiff hairs.

- Scientific Name: *Salvinia minima* Baker
- Common Name: Water spangles
- Group: Pteridophyta (Ferns)
- Family: SALVINIACEAE (Floating fern family)
- Growth Form: Free-floating
- Not native, EPPC(I)
- Comments: Compare with plants of duckweed family.

Wolffia columbiana

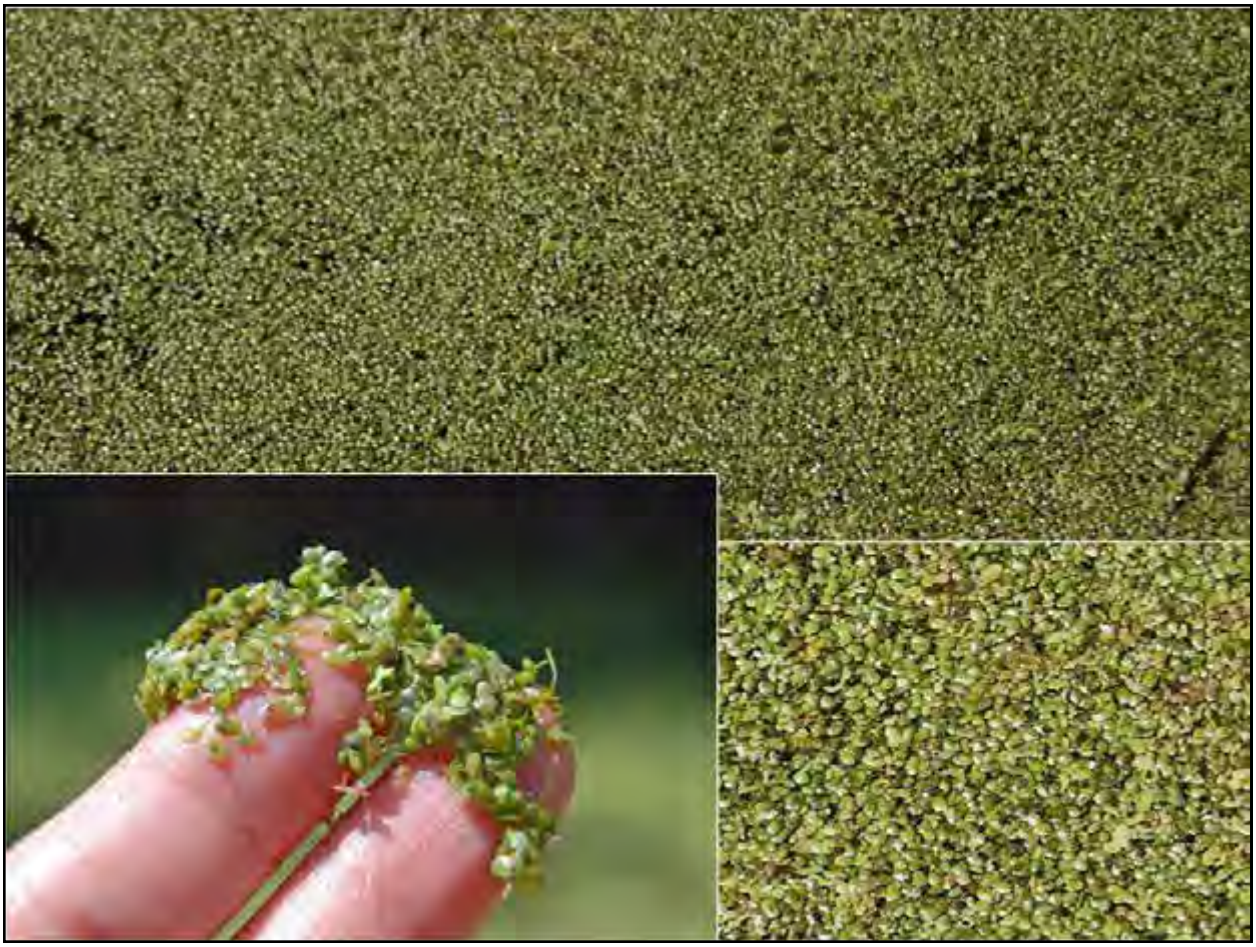




Watermeal in the pictures is indicated in red boxes to compare the size with other duckweeds.

- Scientific Name: *Wolffia columbiana* H. Karst.
- Common Name: Columbian watermeal
- Group: Monocot
- Family: LEMNACEAE (Duckweed family)
- Growth Form: Free-floating
- Native
- Comments: Compare with other plants of duckweed family. *Wolffia* has no roots.

Lemna minuta



- Scientific Name: *Lemna minuta* Kunth
- Common Name: Least duckweed
- Group: Monocot
- Family: LEMNACEAE (Duckweed family)
- Growth Form: Free-floating
- Native
- Comments: Compare with other plants of duckweed family. Each leaf of *Lemna minuta* has one faint vein; and the leaves are considerable smaller than other *Lemna* spp.

Lemna valdiviana

- Scientific Name: *Lemna valdiviana* Phil.
- Common Name: Valdivia duckweed
- Group: Monocot
- Family: LEMNACEAE (Duckweed family)
- Growth Form: Free-floating
- Native
- Comments: Compare with other plants of duckweed family. Leaves of *Lemna valdiviana* are elongated.

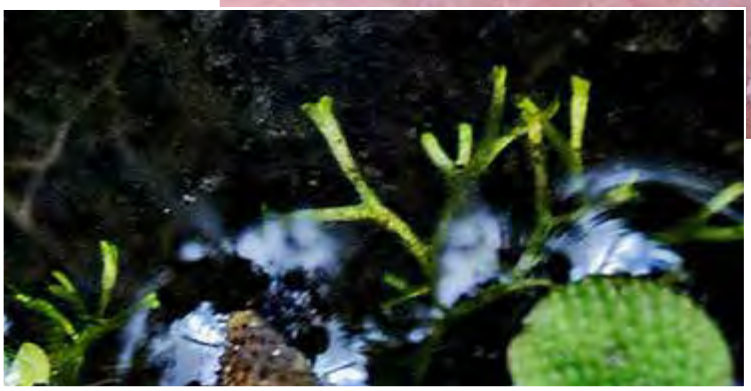
Lemna obscura

- Scientific Name: *Lemna obscura* (Austin)Daubs (= *Lemna minor var. obscura*)
- Common Name: Little duckweed
- Group: Monocot
- Family: LEMNACEAE (Duckweed family)
- Growth Form: Free-floating
- Native
- Comments: Compare with other plants of duckweed family. Lower leaf surface of *Lemna obscura* has blotches of red colors and root caps.

Spirodela polyrhiza

- Scientific Name: *Spirodela polyrhiza* (L.)Schleiden
- Common Name: Common duckweed, Common duckmeat
- Group: Monocot
- Family: LEMNACEAE (Duckweed family)
- Growth Form: Free-floating
- Native
- Comments: Compare with other plants of duckweed family. Each frond has 5 or more pronounced veins; and each frond has more than one root that has root cap.

Riccia fluitans

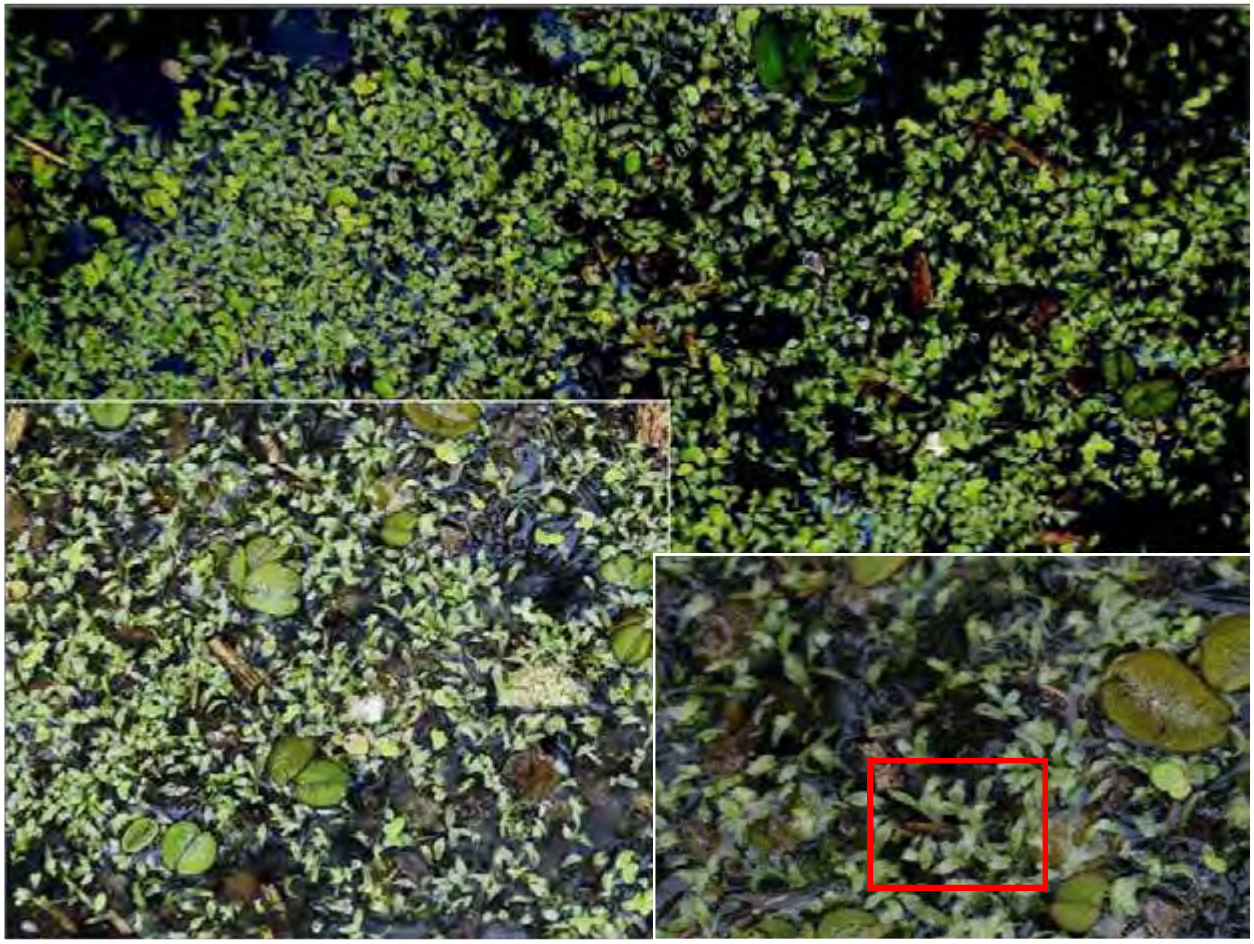


- Scientific Name: *Riccia fluitans* L.
- Common Name: Crystalwort, Staghorn riccia
- Group: Liverwort
- Family: RICCIACEAE
- Growth Form: Free-floating
- Native
- Comments: Compare with duckweed family; non-vascular.

Wolffiella gladiata

- Scientific Name: *Wolffiella gladiata* (Hegelm.)Hegelm.
- Common Name: Florida mudmidget
- Group: Monocot
- Family: LEMNACEAE (Duckweed family)
- Habitat: Still water: ponds and lakes
- Native
- Comments: Compare with *Wolffiella oblonga.*

Wolffiella oblonga



The red box denotes *Wolffiella oblonga*.

- Scientific Name: *Wolffiella oblonga* (Phil.)Hegelm.
- Common Name: Saber mudmidget, Saber bogmat
- Group: Monocot
- Family: LEMNACEAE (Duckweed family)
- Native
- Comments: Compare with *Wolffiella gladiata.* The leaves are shorter and wider than those of *Wolffiella gladiata.*

Utricularia sp.

- Scientific Name: *Utricularia* sp.
- Common Name: Bladderwort
- Group: Dicot
- Family: LENTIBULARIACEAE (Bladderwort family)
- Growth Form: Floating
- Native
- Comments: Carnivorous plants.

Limnobium spongia

- Scientific Name: *Limnobium spongia* (Bosc) Rich. ex Steud
- Common Name: Frog's bit, American spongeplant
- Group: Monocot
- Family: HYDROCHARITACEAE (Tape-grass family)
- Growth Form: Floating-leaved—Rooted
- Native
- Comments: Compare with *Eichhornia crassipes*.

Eichhornia crassipes (Not Native)

- Scientific Name: *Eichhornia crassipes* (Mart.) Solms
- Common Name: Common water hyacinth
- Group: Monocot
- Family: PONTEDERIACEAE (Water-hyacinth family)
- Growth Form: Floating-leaved—Rooted
- Not native, EPPC (I)
- Comments: Compare with *Limnobium spongia*; Leaves of *Eichhornia crassipes* are thicker and have inflated petioles. The inflated petioles help the leaves float. Compare the flowers with those of *Pontederia cordata*.

Nuphar lutea

- Scientific Name: *Nuphar lutea* (L.) Sm. ssp. *advena* (Aiton) Kartesz & Gandhi
  Nuphar advena (formerly *Nuphar lutea* (L.) Sibth. & Sm.)
- Common Name: Spatterdock, Yellow pond-lily
- Group: Dicot
- Family: NYMPHEACEAE (Water-lily family)
- Growth Form: Floating-leaved—Rooted
- Native
- Comments: Leaves are heart-shaped.

Nymphaea odorata

- Scientific Name: *Nymphaea odorata* Aiton
- Common Name: American white waterlily, Fragrant waterlily
- Group: Dicot
- Family: NYMPHAEACEAE (Water-lily family)
- Growth Form: Floating-leaved—Rooted
- Native
- Comments: Leaves are notched with pointy lobes.

Pistia stratiotes (Not Native)

- Scientific Name: *Pistia stratiotes* L.
- Common Name: Water lettuce
- Group: Monocot
- Family: ARACEAE (Arum family)
- Growth Form: Floating-leaved—Rooted
- Comments: Nativity disputed; Not native, EPPC(I) (Atlas of Florida Vascular Plants); Native (US Department of Agriculture).

Elodea sp.

- Scientific Name: *Elodea* sp.
- Common Name: Waterweed
- Group: Monocot
- Family: HYDROCHARITACEAE (Tape-grass family)
- Growth Form: Submergent—Rooted
- Native
- Comments: Compare with *Egeria densa*. *Elodea canadensis* leaves usually occur as 3-whorled and shorter than those of *Egeria densa*.

Egeria densa (Not Native)

- Scientific Name: *Egeria densa* Planch.
- Common Name: Brazilian waterweed
- Group: Monocot
- Family: HYDROCHARITACEAE (Tape-grass family)
- Growth Form: Submergent—Rooted
- Not Native
- Comments: Compare with *Elodea canadensis*. *Egeria densa* appears to be leafier than *Elodea canadensis*.

Vallisneria americana

- Scientific Name: *Vallisneria americana* Michx.
- Common Name: Tapegrass, American eelgrass
- Group: Monocot
- Family: HYDROCHARITACEAE (Tape-grass family)
- Growth Form: Submergent—Rooted
- Native
- Comments: Compare with submerged *Sagittaria subulata.*

Najas guadalupensis

- Scientific Name: *Najas guadalupensis* (Spreng.)Magnus
- Common Name: Southern waternymph
- Group: Monocot
- Family: NAJADACEAE (Water-nymph family)
- Growth Form: Submergent—Rooted
- Native
- Comments: Compare with *Potamogeton pusillus*. *Najas guadalupensis* appears leafier than *P. pusillus* and has shorter leaves.

Potamogeton pusillus

- Scientific Name: *Potamogeton pusillus* L.
- Common Name: Small pondweed
- Group: Monocot
- Family: POTAMOGETONACEAE (Pondweed family)
- Growth Form: Submergent—Rooted
- Native
- Comments: Compare with *Najas guadalupensis*. Longer leaves with prominent midrib.

Chara sp.

- Scientific Name: *Chara* sp.
- Common Name: Muskgrass, Stonewort
- Group: Charophyta (Green algae)
- Family: CHARACEAE
- Growth form: Submergent—Not rooted
- Comments: *Chara* is an algae that resembles vascular submerged plants. Compare with *Ceratophyllum demersum*

Ceratophyllum demersum

- Scientific Name: *Ceratophyllum demersum* L.
- Common Name: Coontail, Coon's tail
- Group: Dicot
- Family: CERATOPHYLLACEAE (Hornwort family)
- Growth Form: Submergent—Not rooted
- Native
- Comments: Compare with *Chara*; *Ceratophyllum demersum is* a vascular plants that usually grows submerged but not rooted. Leaves have small teeth, in whorl arrangements.

Myriophyllum aquaticum (Not Native)

- Scientific Name: *Myriophyllum aquaticum* (Vell.)Verdc.
- Common Name: Parrot feather watermilfoil
- Group: Dicot
- Family: HALORAGACEAE (Water milfoil family)
- Growth Form: Submergent/Emergent —Rooted
- Not native

Myriophyllum heterophyllum

- Scientific Name: *Myriophyllum heterophyllum* Michx.
- Common Name: Twoleaf watermilfoil
- Group: Dicot
- Family: HALORAGACEAE (Water milfoil family)
- Growth Form: Submergent/Emergent —Rooted
- Native
- Comments: Emerged portion of leaves (not shown in these pictures) are stout and strongly toothed.

Eleocharis baldwinii

- Scientific Name: *Eleocharis baldwinii* (Torr.) Chapm.
- Common Name: Road-grass, Baldwin's spikerush
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Growth Form: Submergent/Emergent —Rooted
- Native
- Comments: Compare with *Eleocharis parvula*; *Eleocharis baldwinii* stems are much more slender and longer than those of *E. parvula*; Occurs in both submergent and emergent forms.

Eleocharis parvula

- Scientific Name: *Eleocharis parvula* (Roem. & Schult.) Link ex Bluff et al.
- Common Name: Dwarf spikerush
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Growth Form: Submergent/Emergent —Rooted
- Native
- Comments: Compare with *Eleocharis baldwinii. Eleocharis parvula* can also occur submerged and they commonly occur in brackish waters.

Eleocharis obtusa

- Scientific Name: *Eleocharis obtusa* (Willd.) Schult.
- Common Name: Blunt spikerush
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Native
- Comments: Compare with other *Eleocharis* species.

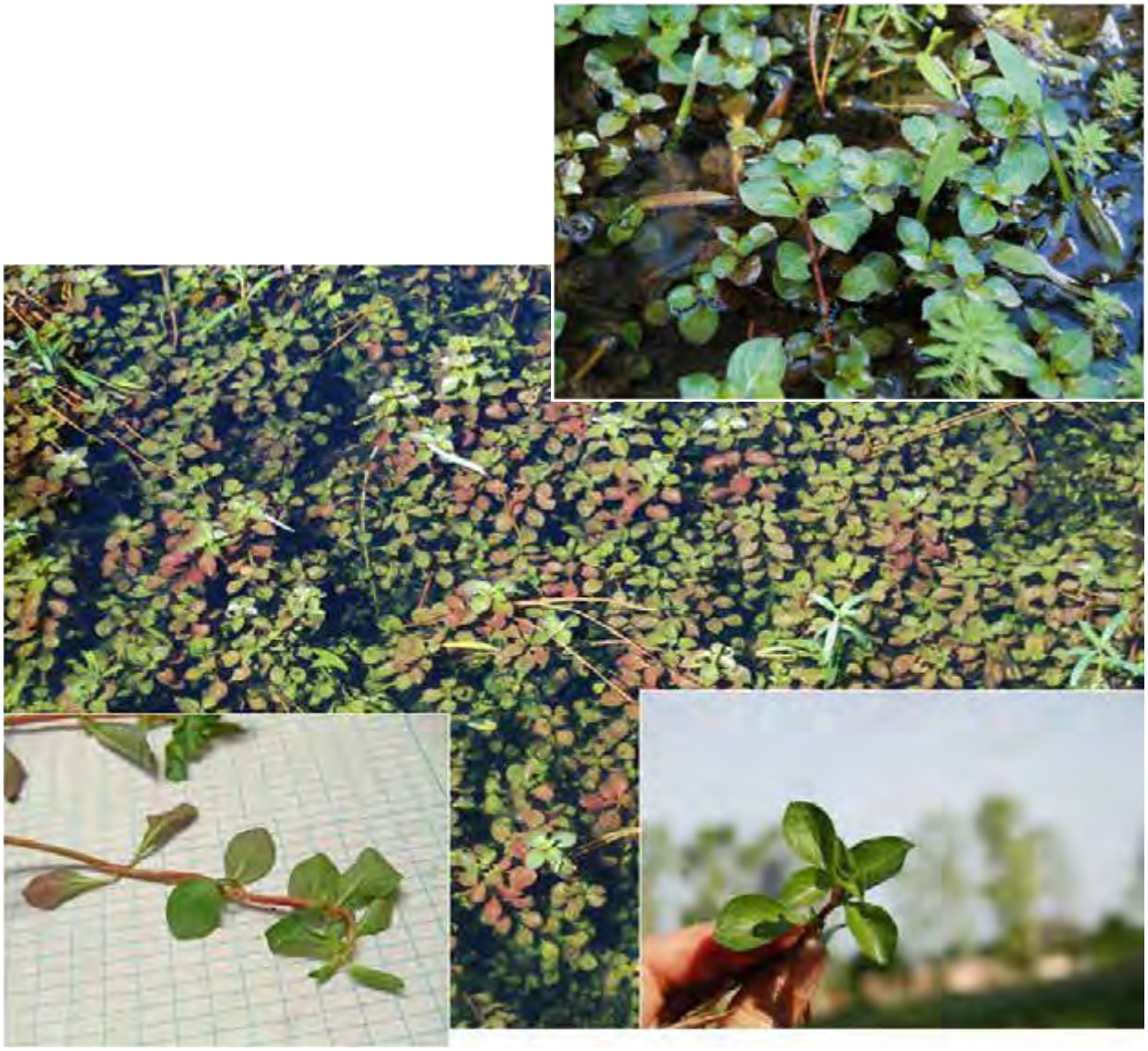
Luziola fluitans

- Scientific Name: *Luziola fluitans* (Michx.)Terrell & H.Rob.
- Common Name: Southern watergrass
- Group: Monocot
- Family: POACEAE (Grass family)
- Growth Form: Submerged/Floating leaved—Rooted
- Native
- Comments: *Luziola fluitans* is the new name for *Hydrochloa caroliniensis*.

Hygrophila polysperma (Not Native)

- Scientific Name: *Hygrophila polysperma* (Roxb.) T. Anderson
- Common Name: Indian swampweed
- Group: Dicot
- Family: ACANTHACEAE (Acanthus family)
- Growth Form: Submergent/Emergent
- Not native, EPPC (I)

Ludwigia repens



- Scientific Name: *Ludwigia repens* J.R. Forst.
- Common Name: Creeping primrose-willow
- Group: Dicot
- Family: ONAGRACEAE (Evening-primrose family)
- Growth Form: Floating leaved/submerged—Rooted
- Native

Sagittaria subulata

- Scientific Name: *Sagittaria subulata* (L.) Buchenau
- Common Name: Awl-leaf arrowhead
- Group: Monocot
- Family: ALISMATACEAE (Water-plantain family)
- Growth Form: Submergent/Emergent
- Native
- Comments: Compare with *Vallisneria americana* when submerged.

Sagittaria filiformis

- Scientific Name: *Sagittaria filiformis* J.G. Sm.
- Common Name: Threadleaf arrowhead
- Group: Monocot
- Family: ALISMATACEAE (Water-plantain family)
- Growth Form: Submergent/Emergent
- Native
- Comments: Compare with *Sagittaria subulata.*

Marsilea ancylopoda

- Scientific Name: *Marsilea ancylopoda* A.Braun
- Common Name: Tropical waterclover
- Group: Fern
- Family: MARSILEACEAE (Water-clover family)
- Growth Form: Floating-leaved/Emergent
- Native
- Comments: Compare with *Hydrocotyle ranunculoides*.Populations of *Marsilea* can be as temporary as the open, shallow waterbodies in which they grow

Hydrocotyle ranunculoides

- Scientific Name: *Hydrocotyle ranunculoides* L.f.
- Common Name: Floating marshpennywort
- Group: Dicot
- Family: APIACEAE (Carrot family)
- Growth Form: Floating-leaved/Emergent
- Native
- Comments: Compare with other species of *Hydrocotyle.*

Micranthemum umbrosum

- Scientific Name: *Micranthemum umbrosum* (J.F. Gmel.) S.F. Blake
- Common Name: Shade mudflower
- Group: Dicot
- Family: SCROPHULARIACEAE (Figwort family)
- Growth Form: Submergent/Emergent
- Native
- Comments: Compare with *Lindernia grandiflora*.

Lindernia grandiflora

- Scientific Name: *Lindernia grandiflora* Nutt.
- Common Name: Savannah false pimpernel
- Group: Dicot
- Family: SCROPHULARIACEAE (Figwort family)
- Growth Form: Emergent/Submergent
- Native
- Comments: Compare with *Micranthmum umbrosum* and *Bacopa monnieri*

Bacopa monnieri

- Scientific Name: *Bacopa monnieri* (L.) Pennell
- Common Name: Herb of grace
- Group: Dicot
- Family: SCROPHULARIACEAE (Figwort family)
- Growth Form: Emergent/Submergent
- Native
- Comments: Compare with *Lindernia grandiflora* and *Bacopa caroliniana*

Bacopa caroliniana

- Scientific Name: *Bacopa caroliniana* (Walter) B.L. Rob.
- Common Name: Blue waterhyssop, Lemon bacopa
- Group: Dicot
- Family: SCROPHULARIACEAE (Figwort family)
- Growth Form: Emergent/Submergent
- Native
- Comments: Compare with *Bacopa monnieri*; when crushed, the leaves smell lemony.

Hydrocotyle umbellata

- Scientific Name: *Hydrocotyle umbellata* L.
- Common Name: Manyflower marshpennywort
- Group: Dicot
- Family: APIACEAE (Carrot family)
- Native
- Comments: Compare with other species of *Hydrocotyle*; Leaves of *H. umbellata* are smaller than those of *H. bonariensis*. Leaf diameters rarely exceed 1.5 inches.

Eleocharis cellulosa

- Scientific Name: *Eleocharis cellulosa* Torr.
- Common Name: Gulf coast spikesedge
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Growth Forms: Emergent
- Native
- Comments: Round stems are not segmented (not seprate); Compare with *Eleocharis interstincta.*

Eleocharis interstincta

- Scientific Name: *Eleocharis interstincta* (Vahl) Roem. & Schult.
- Common Name: Knotted spikerush
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Growth Forms: Emergent
- Native
- Comments: Stems are seprate with the segments becoming narrower toward the tip; Compare with *Eleocharis cellulosa.*

Fuirena scirpoidea

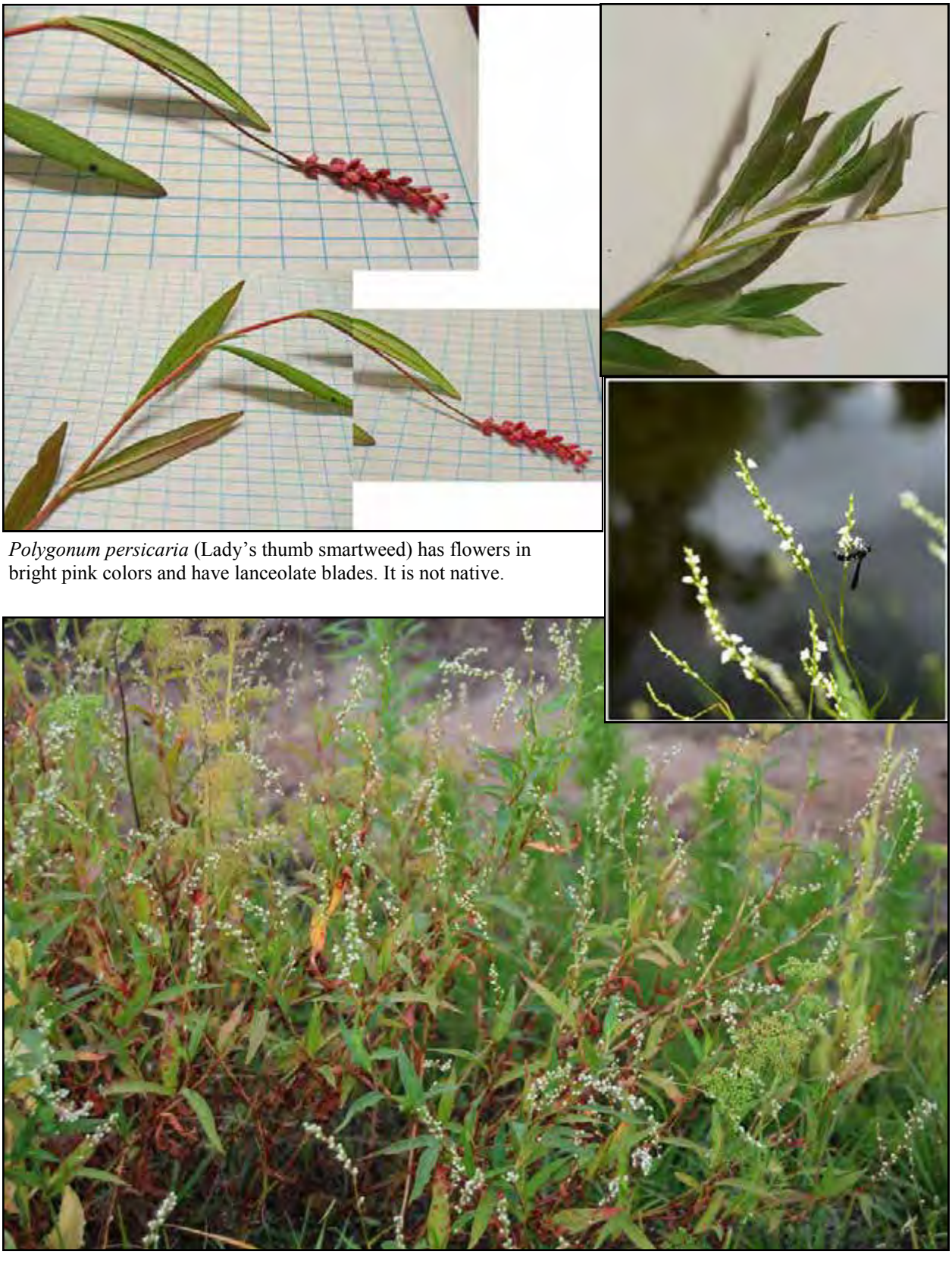
- Scientific Name: *Fuirena scirpoidea* Michx.
- Common Name: Southern umbrella-sedge
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Growth Form: Emergent
- Native
- Comments: Compare with similar-looking *Eleocharis* spp.

Polygonum spp.

Polygonum hydropiperoides (Swamp smartweed) has white flowers and lanceolate leaves that are narrow to broad.

- Scientific Name: *Polygonum* L.
- Common Name: Knotweed
- Group: Dicot
- Family: POLYGONACEAE (Buckwheat family)
- Growth Form: Emergent
- Most *Polygonum* species are native, but some can be nuisance.

Polygonum spp.



Polygonum persicaria (Lady's thumb smartweed) has flowers in bright pink colors and have lanceolate blades. It is not native.

Alternanthera philoxeroides (Not Native)

- Scientific Name: *Alternanthera philoxeroides* (Mart.) Griseb.
- Common Name: Alligatorweed
- Group: Dicot
- Family: AMARANTHACEAE (Amaranth family)
- Growth Form: Emergent
- Not native, EPPC(II)
- Comments: Each white inflorescence is composed of several flowers and has a paper-like texture; Inflorescences are borne terminal or from the leaf axis; Leaves are opposite.

Colocasia esculenta (Not Native)

- Scientific Name: *Colocasia esculenta* (L.) Schott
- Common Name: Wild taro, Dasheen, Coco yam
- Group: Monocot
- Family: ARACEAE (Arum family)
- Growth Form: Emergent
- Not native, EPPC(I)
- Comments: Compare with *Peltandra virginica.*

Peltandra virginica

- Scientific Name: *Peltandra virginica* (L.) Schott
- Common Name: Green arrow arum
- Group: Monocot
- Family: ARACEAE (Arum family)
- Growth Form: Emergent
- Native
- Comments: Compare with *Colocasia esculenta.*

Pontederia cordata

- Scientific Name: *Pontederia cordata* L.
- Common Name: Pickerelweed
- Group: Monocot
- Family: PONTEDERIACEAE (Water-hyacinth family)
- Growth Form: Emergent
- Native
- Comments: Compare with *Sagittaria lanciflora* and *Canna flaccida* when not flowering.

Sagittaria lancifolia

- Scientific Name: *Sagittaria lancifolia* L.
- Common Name: Bulltongue arrowhead
- Group: Monocot
- Family: ALISMATACEAE (Water-plantain family)
- Growth Form: Emergent
- Native
- Comments: Compare with *Echinodorus cordifolius*.

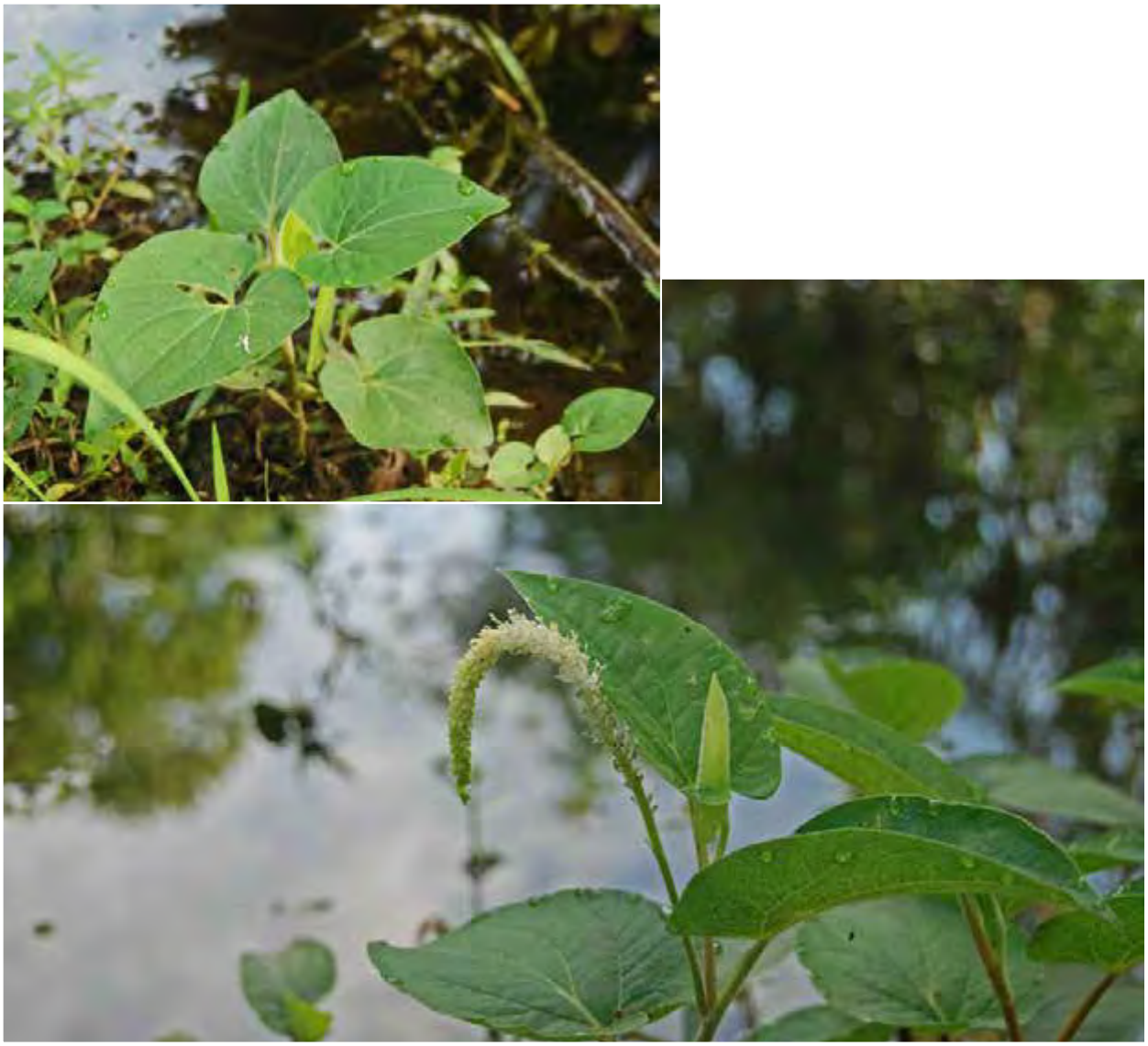
Echinodorus cordifolius

- Scientific Name: *Echinodorus cordifolius* (L.) Griseb.
- Common Name: Creeping burrhead
- Group: Monocot
- Family: ALISMATACEAE (Water-plantain family)
- Growth Form: Emergent
- Native
- Comments: Compare with *Sagittaria lancifolia.*

Canna flaccida

- Scientific Name: *Canna flaccida* Salisb.
- Common Name: Bandanna of the Everglades
- Group: Monocot
- Family: CANNACEAE (Canna family)
- Growth Form: Emergent
- Native
- Comments: Compare with *Sagittaria lancifolia* and *Pontederia cordata* when not flowering.

Saururus cernuus



- Scientific Name: *Saururus cernuus* L.
- Common Name: Lizard's tail
- Group: Dicot
- Family: SAURURACEAE (Lizard's-tail family)
- Growth Form: Emergent
- Native
- Comments: Leaves are alternate and heart-shaped.

Typha domingensis

Staminate and pistillate portions of the spikes are separated.

- Scientific Name: *Typha domingensis* Pers.
- Common Name: Southern cattail
- Group: Monocot
- Family: TYPHACEAE (Cat-tail family)
- Growth Form: Emergent large plant, the tallest of the cattails
- Native, can be nuisance
- Comments: Male flowers occur on upper portion of the spike; Compare with *Typha latifolia.*

Typha latifolia

- Scientific Name: *Typha latifolia* L.
- Common Name: Broadleaf cattail
- Group: Monocot
- Family: TYPHACEAE (Cat-tail family)
- Growth Form: Emergent
- Native, can be nuisance
- Comments: There is no gap between mail and female flowers; Compare with *Typha domingensis*.

Phragmites australis

- Scientific Name: *Phragmites australis* (Cav.) Trin. *ex* Steud
- Common Name: Common reed
- Group: Monocot
- Family: POACEAE (Grass family)
- Growth Form: Emergent
- Native

Schoenoplectus tabernaemontani

- Scientific Name: *Schoenoplectus tabernaemontani* (C.C.Gmel.)Palla
- Common Name: Softstem bulrush
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Growth Form: Emergent
- Native
- Comments: Can be confused with *Juncus effuses*; Its old name is *Scirpus validus* Vahl.

Rhynchospora latifolia

- Scientific Name: *Rhynchospora latifolia* (Baldwin) W.W. Thomas
- Common Name: Giant whitetop, Sandswamp white top
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Growth Form: Emergent
- Native

Rhynchospora corniculata

- Scientific Name: *Rhynchospora corniculata* (Lam.) A. Gray
- Common Name: Shortbristle horned beaksedge
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Growth Form: Emergent
- Native

Juncus effusus

- Scientific Name: *Juncus effusus* L. subsp. *solutus* (Fernald & Wiegand)Hämet-Ahti
- Common Name: Soft rush
- Group: Monocot
- Family: JUNCACEAE (Rush family)
- Growth Form: Emergent
- Native
- Comments: Compare with *Schoenoplectus tabernaemontani* which is much bigger and have inflorescences closer to the tip of stems.

Juncus megacephalus

- Scientific Name: *Juncus megacephalus* M.A. Curtis
- Common Name: Bighead rush
- Group: Monocot
- Family: JUNCACEAE (Rush family)
- Growth Form: Emergent
- Native

Juncus polycephalos

- Scientific Name: *Juncus polycephalos* Michx.
- Common Name: Manyhead rush
- Group: Monocot
- Family: JUNCACEAE (Rush family)
- Growth Form: Emergent
- Native
- Comments: Compare with *J. megacephalus*; Laterally compressed hollow blades are septate; base of stems is red colored.

Sabatia calycina

- Scientific Name: *Sabatia calycina* (Lam.) A. Heller
- Common Name: Coastal rose gentian
- Group: Dicot
- Family: GENTIANACEAE (Gentian family)
- Growth Form: Emergent
- Native
- Comments: Compare with *Sabatia stellaris*.

Cicuta maculata

- Scientific Name: *Cicuta maculata* L.
- Common Name: Spotted water hemlock
- Group: Dicot
- Family: APIACEAE (Carrot family)
- Growth Form: Emergent
- Native
- Comments: *Cicuta maculata* is one of the most poisonous plants; Compare with *Oxypolis filiformis* and *Sambucus nigra.*

Oxypolis filiformis

- Scientific Name: *Oxypolis filiformis* (Walter) Britton;
  (=*Tiedemannia filiformis* (Walter)Feist & S.R.Downie)
- Common Name: Water cowbane
- Group: Dicot
- Family: APIACEAE (Carrot family)
- Growth Form: Emergent
- Native
- Comments: Compare with *Cicuta maculata* and *Sambucus nigra.*

Ludwigia octovalvis

- Scientific Name: *Ludwigia octovalvis* (Jacq.) P.H. Raven
- Common Name: Mexican primrose-willow
- Group: Dicot
- Family: ONAGRACEAE (Evening primrose family)
- Growth Form: Emergent
- Native
- Comments: Compare with *Ludwigia peruviana.*

Cephalanthus occidentalis

- Scientific Name: *Cephalanthus occidentalis* L.
- Common Name: Common buttonbush
- Group: Dicot
- Family: RUBIACEAE (Madder family)
- Native
- Growth Form: Emergent

Taxodium ascendens

- Scientific Name: *Taxodium ascendens* Brongn.
- Common Name: Pond cypress
- Group: Gymnosperm
- Family: CUPRESSACEAE (Cypress family)
- Native
- Growth Form: Emergent
- Comments: Leaf needles are facing upward; Compare with *Taxodium distichum.*

Taxodium distichum

- Scientific Name: *Taxodium distichum* (L.) Rich.
- Common Name: Bald cypress
- Group: Gymnosperm
- Family: CUPRESSACEAE (Cypress family)
- Native
- Growth Form: Emergent
- Comments: Compare with *Taxodium ascendens*.

ZONE 3

1 ft above the normal pool or lowest zone in a dry detention area

<u>Emergent forbes, grasses, sedges, and that are facultative wetland plants (FACW)</u>

- Plants that has FACW status and mostly occur in zone 3.

Hydrocotyle sibthorpioides (Not Native)

- Scientific Name: *Hydrocotyle sibthorpioides* Lam.
- Common Name: Lawn marshpennywort
- Group: Dicot
- Family: APIACEAE (Carrot family)
- Not native
- Comments: Compare with other *Hydrocotyle* species.

Hydrocotyle bonariensis

- Scientific Name: *Hydrocotyle bonariensis* Lam.
- Common Name: Largeleaf marshpennywort, Largeleaf pennywort
- Group: Dicot
- Family: APIACEAE (Carrot family)
- Native
- Comments: Compare with other *Hydrocotyle* species.

Centella asiatica

- Scientific Name: *Centella asiatica* (L.) Urb.
- Common Name: Spadeleaf
- Group: Dicot
- Family: APIACEAE (Carrot family)
- Native
- Comments: *Centella asiatica* is the new name for *Centella erecta* (L.f.) Fernald; Compare with *Hydrocotyle* species.

Rumex verticillatus

- Scientific Name: *Rumex verticillatus* L.
- Common Name: Swamp dock
- Group: Dicot
- Family: POLYGONACEAE (Buckwheat family)
- Growth Form: Emergent
- Native

Panicum repens (Not Native)

- Scientific Name: *Panicum repens* L.
- Common Name: Torpedograss
- Group: Monocot
- Family: POACEAE (Grass family)
- Not native, EPPC(I)

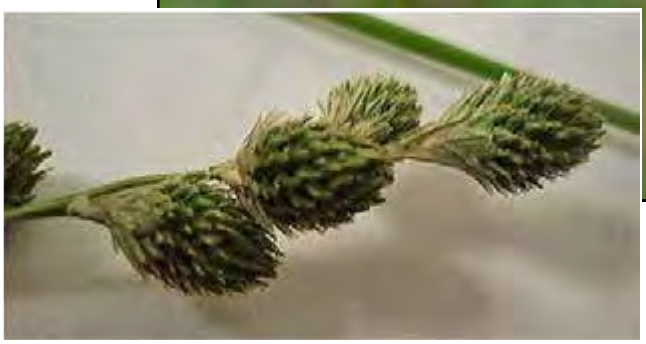
Echinochloa walteri

- Scientific Name: *Echinochloa walteri* (Pursh)A.Heller
- Common Name: Coast cockspur, Coast cockspur grass
- Group: Monocot
- Family: POACEAE (Grass family)
- Growth Form: Emergent
- Native

Carex intumescens

- Scientific Name: *Carex intumescens* Rudge
- Common Name: Greater bladder sedge
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Growth Form: Emergent
- Native
- Comments: Previously not recorded in Volusia County

Carex longii



- Scientific Name: *Carex longii* Mack.
- Common Name: Long's sedge
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Growth Form: Emergent
- Native

Cyperus odoratus

- Scientific Name: *Cyperus odoratus* L.
- Common Name: Fragrant flatsedge
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Growth Form: Emergent
- Native

Cyperus surinamensis

- Scientific Name: *Cyperus surinamensis* Rottb.
- Common Name: Tropical flatsedge
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Growth Form: Emergent
- Native

Spiranthes vernalis

- Scientific Name: *Spiranthes vernalis* Engelm. & A. Gray
- Common Name: Spring ladiestresses, Spring lady's tresses
- Group: Monocot
- Family: ORCHIDACEAE (Orchid family)
- Native

Diodia virginiana

- Scientific Name: *Diodia virginiana* L.
- Common Name: Virginia buttonweed
- Group: Monocot
- Family: RUBIACEAE (Madder family)
- Native

Pluchea odorata

- Scientific Name: *Pluchea odorata* (L.)Cass.
- Common Name: Sweetscent
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Native

Vernonia gigantea

- Scientific Name: *Vernonia gigantea* (Walter)Trel. ex Branner & Coville
- Common Name: Giant ironweed
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Native

Eustoma exaltatum

- Scientific Name: *Eustoma exaltatum* (L.)Salisb. ex G.Don
- Common Name: Marsh gentian; Catchfly prairie-gentian
- Group: Dicot
- Family: GENTIANACEAE (Gentian family)
- Native

Commelina diffusa

- Scientific Name: *Commelina diffusa* Burm.f.
- Common Name: Climbing dayflower, Common dayflower
- Group: Monocot
- Family: COMMELINACEAE (Spiderwort family)
- Not native

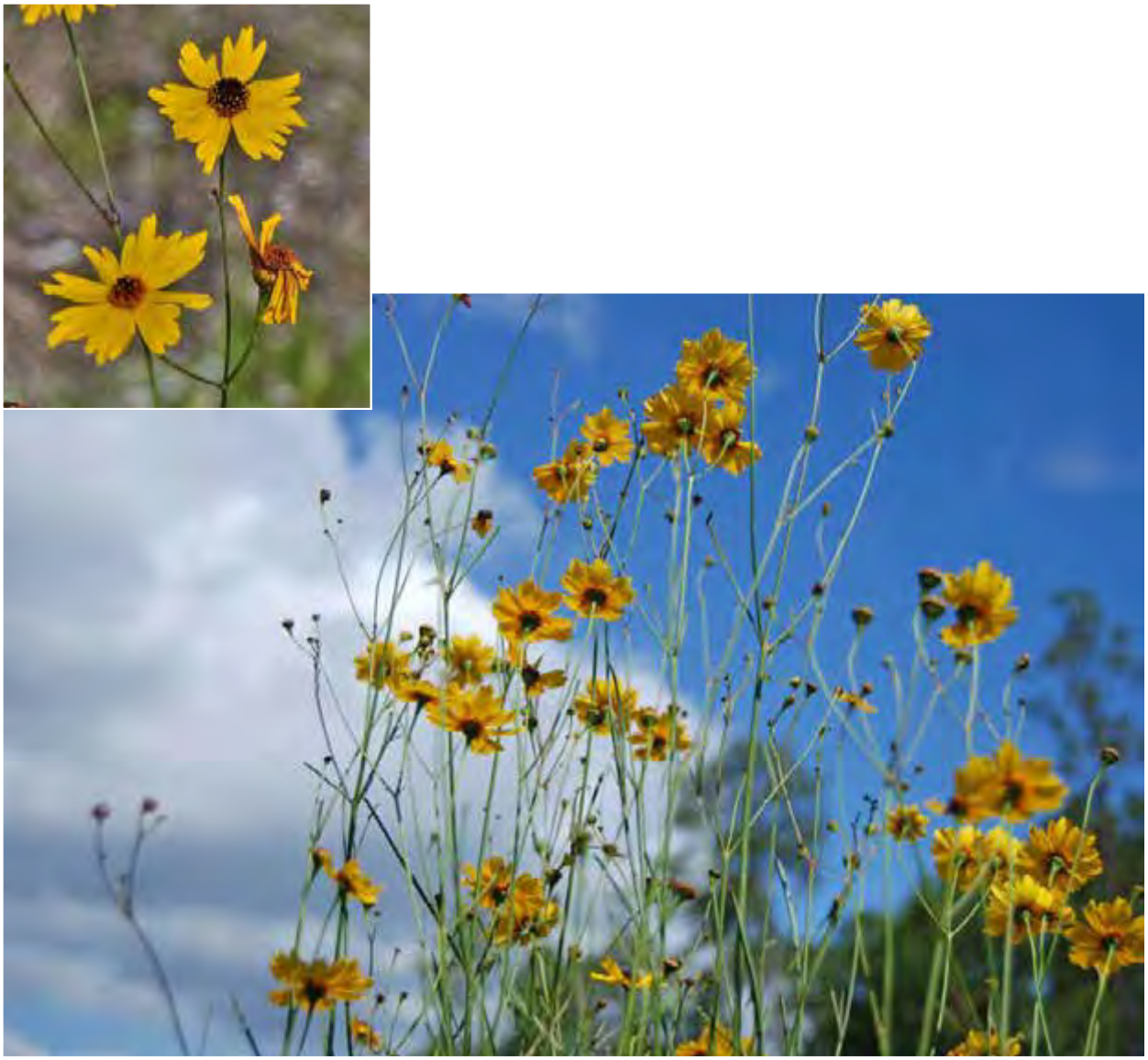
Cirsium nuttallii

- Scientific Name: *Cirsium nuttallii* DC.
- Common Name: Nuttall's thistle
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Native

Sabatia stellaris

- Scientific Name: *Sabatia stellaris* Pursh
- Common Name: Rose of Plymouth
- Group: Dicot
- Family: GENTIANACEAE (Gentian family)
- Native
- Comments: Compare with *Sabatia calycina*.

Coreopsis leavenworthii



- Scientific Name: *Coreopsis leavenworthii* Torr. & A. Gray
- Common Name: Leavenworth's tickseed
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Native

Flaveria linearis

- Scientific Name: *Flaveria linearis* Lag.
- Common Name: Narrowleaf yellowtops
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Native

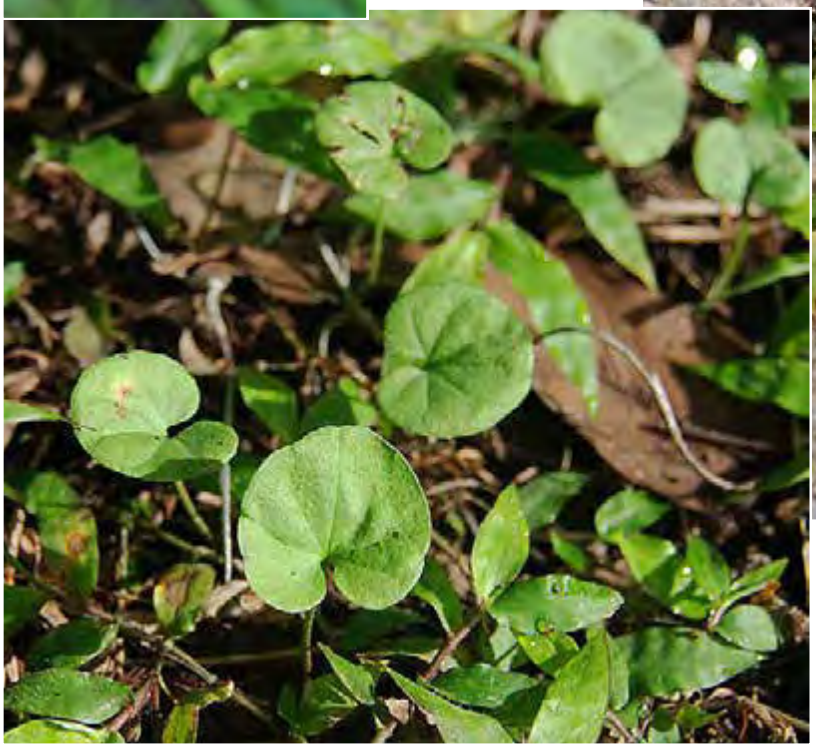
ZONES 4

Middle zone: 1-4 ft above the normal pool, periodically inundated

<u>Emergent plants that are facultative plants (FAC)</u>

- Plants that have 34-66% probability occurrence equally in wetlands and non-wetlands.

Dichondra carolinensis



- Scientific Name: *Dichondra carolinensis* Michx.
- Common Name: Carolina ponysfoot
- Group: Dicot
- Family: CONVOLVULACEAE (Morning-glory family)
- Native
- Comments: Compare with *Centella.*

Phyla nodiflora

- Scientific Name: *Phyla nodiflora* (L.) Greene
- Common Name: Turkey tangle fogfruit, Capeweed
- Group: Dicot
- Family: VERBENACEAE (Verbena family)
- Growth Form: Emergent
- Native

Arundo donax (Not Native)

- Scientific Name: *Arundo donax* L.
- Common Name: Giant reed
- Group: Monocot
- Family: POACEAE (Grass family)
- Growth Form: Emergent
- Not native

Polypogon monspeliensis (Not Native)

- Scientific Name: *Polypogon monspeliensis* (L.) Desf.
- Common Name: Rabbitfootgrass
- Group: Monocot
- Family: POACEAE (Grass family)
- Growth Form: Emergent
- Not native

Cyperus rotundus (Not Native)

- Scientific Name: *Cyperus rotundus* L.
- Common Name: Nutgrass
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Growth Form: Emergent
- Not native

Juncus marginatus

- Scientific Name: *Juncus marginatus* Rostk.
- Common Name: Shorerush, Grassleaf rush
- Group: Monocot
- Family: JUNCACEAE (Rush family)
- Growth Form: Emergent
- Native

Bidens alba

- Scientific Name: *Bidens alba* (L.) DC.
- Common Name: Beggarticks, Romerillo
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Native

Sambucus nigra

- Scientific Name: *Sambucus nigra* L. subspecies. *canadensis* (L.) R. Bolli
- Common Name: American elder, Elderberry, American black elderberry
- Group: Dicot
- Family: CAPRIFOLIACEAE (Honeysuckle family)
- Native
- Comments: Compare with *Cicuta maculata* and *Oxypolis filiformis*.

Stachys floridana

- Scientific Name: *Stachys floridana* Shuttlew. ex Benth.
- Common Name: Florida hedgenette, Florida betony
- Group: Dicot
- Family: LAMINACEAE (Mint family)
- Native

Erigeron strigosus

- Scientific Name: *Erigeron strigosus* Muhl. ex Willd.
- Common Name: Prairie fleabane
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Native

Sisyrinchium rosulatum (Not Native)

- Scientific Name: *Sisyrinchium rosulatum* E.P. Bicknell
- Common Name: Annual blue-eyed grass
- Group: Monocot
- Family: IRIDACEAE (Iris family)
- Not native

Ruellia caroliniensis

- Scientific Name: *Ruellia caroliniensis* (J.F.Gmel.)Steud.
- Common Name: Carolina wild petunia
- Group: Dicot
- Family: ACANTHACEAE (Acanthus family)
- Native
- Comments: Compare with *Ruellia simplex.*

Ruellia simplex (Not Native)

- Scientific Name: *Ruellia simplex* C.Wright
- Common Name: Britton's wild petunia, Mexican bluebell
- Group: Dicot
- Family: ACANTHACEAE (Acanthus family)
- Not native, EPPC(I)
- Comments: Compare with *Ruellia caroliniensis.*

Cirsium horridulum

- Scientific Name: *Cirsium horridulum* Michx.
- Common Name: Purple thistle, Yellow thistle
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Native
- Comments: Compare with *Cirsium nuttallii.*

Tradescantia ohiensis

- Scientific Name: *Tradescantia ohiensis* Raf.
- Common Name: Bluejacket, Ohio spiderwort
- Group: Monocot
- Family: COMMELINACEAE (Spiderwort family)
- Native

Sphagneticola trilobata (Not Native)



- Scientific Name: *Sphagneticola trilobata* (L.)Pruski (=*Wedelia trilobata)*
- Common Name: Creeping oxeye
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Not native, EPPC(II)

Calyptocarpus vialis (Not Native)

- Scientific Name: *Calyptocarpus vialis* Less.
- Common Name: Straggler daisy
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Not native

Toxicodendron radicans

- Scientific Name: *Toxicodendron radicans* (L.) Kuntze
- Common Name: Eastern poison ivy
- Group: Dicot
- Family: ANACARDIACEAE (Sumac family)
- Native
- Comments: Poisonous

Sapium sebiferum (Not Native)

- Scientific Name: *Sapium sebiferum* (L.)Dum.Cours.
- Common Name: Popcorntree, Chinese tallowtree, Chinese tallow
- Group: Dicot
- Family: EUPHORBIACEAE (Spurge family)
- Not native, EPPC(I)

Schinus terebinthifolius (Not Native)

- Scientific Name: *Schinus terebinthifolius* Raddi
- Common Name: Brazilian pepper, Brazilian peppertree
- Group: Dicot
- Family: ANACARDIACEAE (Sumac family)
- Not native, EPPC(I)

ZONE 5

4 ft and above normal pool

Facultative Upland (FACU) and Obligate Upland (UPL) plants

- Plants that have > 67% probability occurrence in non-wetlands

Plantago lanceolata (Not Native)

- Scientific Name: *Plantago lanceolata* L.
- Common Name: English plantain, Narrowleaf plantain
- Group: Dicot
- Family: PLANTAGINACEAE (Plantain family)
- Not native
- Comments: can be confused with some *Eleocharis* species. *Eleocharis* does not have any leaves

Boehmeria cylindrica

- Scientific Name: *Boehmeria cylindrica* (L.) Sw.
- Common Name: False nettle; Bog hemp
- Group: Dicot
- Family: URTICACEAE (Nettle family)
- Growth Form: Emergent
- Native

Setaria sp.

- Scientific Name: *Setaria* sp.
- Common Name: Foxtail
- Group: Monocot
- Family: POACEAE (Grass family)
- Growth Form: Emergent
- Native
- Comments: Compare with *Polypogon monspeliensis*

Imperata cylindrica (Not Native)

- Scientific Name: *Imperata cylindrica* (L.)P. Beauv.
- Common Name: Cogongrass
- Group: Monocot
- Family: POACEAE (Grass family)
- Not native, EPPC(I)
- Comments: Midvein on leaf is off centered. *Imperata cylindrical* is considered one of the worst weeds in the world.

Cynodon dactylon (Not Native)

- Scientific Name: *Cynodon dactylon* (L.)Pers.
- Common Name: Bermudagrass
- Group: Monocot
- Family: POACEAE (Grass family)
- Not native

Dactyloctenium aegyptium (Not Native)

- Scientific Name: *Dactyloctenium aegyptium* (L.)Willd. ex Asch. & Schweinf.
- Common Name: Durban crowfootgrass, Egyptian grass
- Group: Monocot
- Family: POACEAE (Grass family)
- Not native, EPPC(II)

Cenchrus sp.

- Scientific Name: *Cenchrus* sp.
- Common Name: Sandbur
- Group: Monocot
- Family: POACEAE (Grass family)
- Growth Form: Emergent
- Native
- Comments: *C. echinatus* if ring of bristle-like spines at base of bur (spur); *C. spinifex* if the rings is absent

Cyperus retrorsus

- Scientific Name: *Cyperus retrorsus* Chapm.
- Common Name: Shallow sedge
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Growth Form: Emergent
- Native

Kyllinga odorata (Not Native)

- Scientific Name: *Kyllinga odorata* Vahl.
- Common Name: Fragrant spilesedge
- Group: Monocot
- Family: CYPERACEAE (Sedge family)
- Growth Form: Emergent:
- Not native
-

Cnidoscolus stimulosus

- Scientific Name: *Cnidoscolus stimulosus* (Michx.)Engelm. & A.Gray
- Common Name: Tread-softly, Finger-rot
- Group: Dicot
- Family: EUPHORBIACEAE (Spurge family)
- Native
- Comments: Hairs on the plants can cause rashes if touched.

Crinum asiaticum (Not Native)

- Scientific Name: *Crinum asiaticum* L.
- Common Name: Poisonbulb
- Group: Monocot
- Family: LINIACEAE (Lily family)
- Not native
- Comments: Sap can cause irritating skin on contact.

Richardia scabra (Not Native)

- Scientific Name: *Richardia scabra* L.
- Common Name: Rough Mexican clover
- Group: Dicot
- Family: RUBIACEAE (Madder family)
- Not native
- Comments: Compare with *Richardia grandiflora*.

Richardia grandiflora (Not Native)

- Scientific Name: *Richardia grandiflora* (Cham. & Schltdl.)Steud.
- Common Name: Largeflower Mexican clover
- Group: Dicot
- Family: RUBIACEAE (Madder family)
- Not native (EPPC II)
- Comments: Compare with *Richardia scabra*.

Centrosema virginianum

- Scientific Name: *Centrosema virginianum* (L.) Benth.
- Common Name: Spurred butterfly pea
- Group: Dicot
- Family: FABACEAE (Pea family)
- Native

Mimosa quadrivalvis

- Scientific Name: *Mimosa quadrivalvis* L. var. *hystricina* (Small ex Britton & Rose) Barneby (=*Mimosa hystricina* (Small ex Britton & Rose) B.L. Turner)
- Common Name: Fourvalve mimosa
- Group: Dicot
- Family: FABACEAE (Pea family)
- Native

Portulaca pilosa

- Scientific Name: *Portulaca pilosa* L.
- Common Name: Pink purslane, Kiss-me-quick
- Group: Dicot
- Family: PORTULACACEAE (Purslane family)
- Native
- Comments: Compare with *Portulaca amilis* and *Portulaca oleracea*

Portulaca amilis (Not Native)

- Scientific Name: *Portulaca amilis* Speg.
- Common Name: Paraguayan purslane
- Group: Dicot
- Family: PORTULACACEAE (Purslane family)
- Not native
- Comments: Compare with *Portulaca pilosa* and *Portulaca oleracea*

Oxalis drummondii

- Scientific Name: *Oxalis drummondii* A. Gray
- Common Name: Drummond's woodsorrel
- Group: Dicot
- Family: OXALIDACEAE (Wood-Sorrel family)
- Native
- Comments: Compare with *Oxalis rubra* and *Oxalis corniculata*

Oxalis articulata (Not Native)

- Scientific Name: *Oxalis articulata* Savigny (=*Oxalis rubra* A. St.-Hil.)
- Common Name: Windowbox woodsorrel
- Group: Dicot
- Family: OXALIDACEAE (Wood-Sorrel family)
- Not native
- Comments: Compare with *Oxalis drummondii* and *Oxalis corniculata*

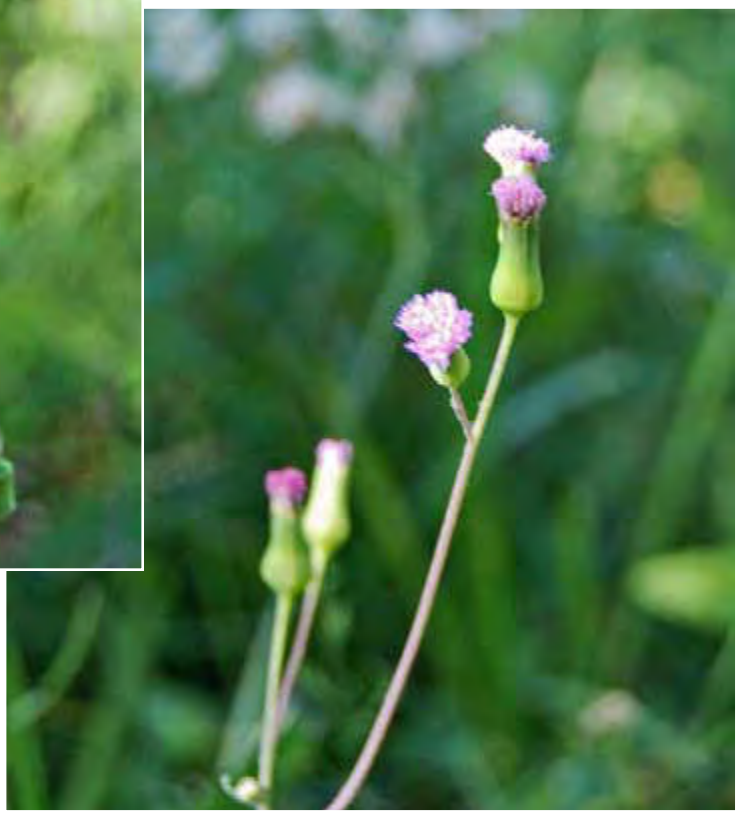
Monarda punctata

- Scientific Name: *Monarda punctata* L.
- Common Name: Spotted beebalm
- Group: Dicot
- Family: LAMIACEAE (Mint family)
- Native

Ipomoea purpurea (Not Native)

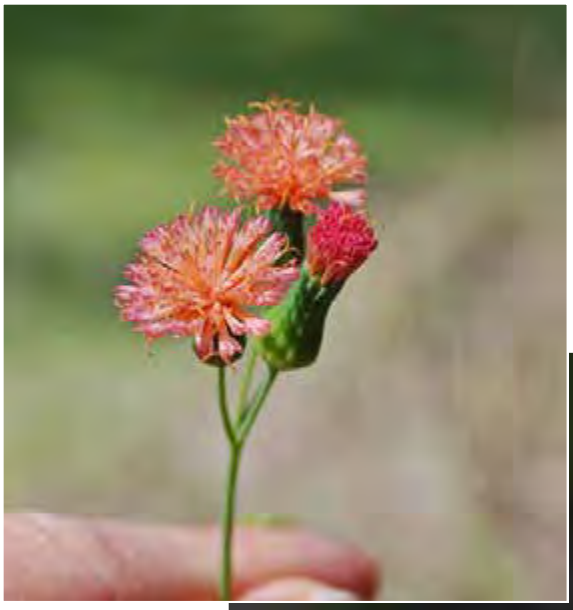
- Scientific Name: *Ipomoea purpurea* (L.) Roth
- Common Name: Tall morning-glory
- Group: Dicot
- Family: CONVOLVULACEAE (Morning-glory family)
- Not native

Emilia sonchifolia (Not Native)



- Scientific Name: *Emilia sonchifolia* (L.)DC.
- Common Name: Lilac tasselflower
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Not native
- Comments: Compare with *Emilia fosbergii*

Emilia fosbergii (Not Native)



- Scientific Name: *Emilia fosbergii* Nicolson
- Common Name: Florida tasselflower
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Not native
- Comments: Compare with *Emilia sonchifolia*

Gaillardia pulchella

- Scientific Name: *Gaillardia pulchella* Foug.
- Common Name: Indian blanket, Firewheel
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Native

Erythrina herbacea

- Scientific Name: *Erythrina herbacea* L.
- Common Name: Coralbean, Cherokee bean, Redcardinal
- Group: Dicot
- Family: FABACEAE (Pea family)
- Native
- Comments: Seeds are very poisonous.

Russelia equisetiformis (Not Native)

- Scientific Name: *Russelia equisetiformis* Schltdl. & Cham.
- Common Name: Fountainbush, Firecracker plant
- Group: Dicot
- Family: PLANTAGINACEAE (Figwort family)
- Not native

Oxalis corniculata

- Scientific Name: *Oxalis corniculata* L. (= *Oxalis stricta* L.)
- Common Name: Common yellow oxalis, Creeping woodsorrel
- Group: Dicot
- Family: OXALIDACEAE (Wood-Sorrel family)
- Native
- Comments: Compare with *Oxalis drummondii* and *Oxalis rubra*. Also compare with *Portulaca oleraceae*.

Portulaca oleracea (Not Native)

- Scientific Name: *Portulaca oleracea* L.
- Common Name: Little hogweed
- Group: Dicot
- Family: PORTULACACEAE (Purslane family)
- Not native
- Comments: Compare with *Portulaca pilosa* and *Portulaca amilis*. Also compare with *Oxalis stricta*.

Sonchus oleraceus (Not Native)

- Scientific Name: *Sonchus oleraceus* L.
- Common Name: Common sowthistle
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Not native

Heterotheca subaxillaris

- Scientific Name: *Heterotheca subaxillaris* (Lam.)Britton & Rusby
- Common Name: Camphorweed
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Native

Ludwigia peruviana (Not Native)

- Scientific Name: *Ludwigia peruviana* (L.) H. Hara
- Common Name: Peruvian primrose-willow
- Group: Dicot
- Family: ONAGRACEAE (Evening primrose family)
- Not native, EPPC(I)
- Comments: Compare with *Ludwigia octovalvis*

Parthenocissus quinquefolia

- Scientific Name: *Parthenocissus quinquefolia* (L.) Planch.
- Common Name: Virginia creeper, Woodbine
- Group: Dicot
- Family: VITACEAE (Grape family)
- Native

Euphorbia cyathophora

- Scientific Name: *Euphorbia cyathophora* Murray
- Common Name: Fire on the mountain
- Group: Dicot
- Family: EUPHORBIACEAE (Spurge family)
- Native

Euphorbia heterophylla

- Scientific Name: *Poinsettia heterophylla* (L.)Klotzsch & Garcke
- Common Name: Fiddler's Spurge
- Group: Monocot
- Family: EUPHORBIACEAE (Spurge family)
- Native

Dioscorea bulbifera (Not Native)

- Scientific Name*: Dioscorea bulbifera* L.
- Common Name: Air potato, Air yam
- Group: Monocot
- Family: DIOSCOREACEAE (Yam family)
- Not native, EPPC(I)

Lantana camara (Not Native)

- Scientific Name: *Lantana camara* L.
- Common Name: Lantana, Shrubverbena
- Group: Dicot
- Family: VERBENACEAE (Verbena family)
- Not native, EPPC(I)

Lepidium virginicum

- Scientific Name: *Lepidium virginicum* L.
- Common Name: Virginia pepperweed
- Group: Dicot
- Family: BRASSICACEAE (Mustard family)
- Native

Lactuca graminifolia

- Scientific Name: *Lactuca graminifolia* Michx.
- Common Name: Grassleaf lettuce
- Group: Dicot
- Family: ASTERACEAE (Aster family)
- Native

List of Non-Native Species and Similar Looking Species (Red denotes Non-Native)

	Not Native		Compare with		
Zone	Scientific Name	Page	Scientific Name	Page	Scientific Name
1/2	*Salvinia minima*	3	*Spirodela polyrhiza*	8	
1/2	*Eichhornia crassipes*	14	*Limnobium spongia*	13	
1/2	*Pistia stratiotes*	17			
1/2	*Egeria densa*	19	*Elodea canandensis*	18	
1/2	*Myriophyllum aquaticum*	25	*Myriophyllum heterophyllum*	26	
1/2	*Hygrophila polysperma*	31	*Ludwigia repens*	32	
1/2	*Polygonum persicaria*	46	*Other Polygonum spp.*	45	
1/2	*Alternanthera philoxeroides*	47			
1/2	*Colocasia esculenta*	48	*Peltandra virginia*	49	
3	*Hydrocotyle sibthorpioides*	72	*Hydrocotyle umbellata*	41	
3	*Panicum repens*	76			
3	*Commelina diffusa*	87	*Tradescantia ohiensis*	108	
4	*Arundo donax*	96			
4	*Polypogon monspeliensis*	97	*Setaria sp.*	119	
4	*Cyperus roduntus*	98	*Carex retrosus*	124	
4	*Sisyrinchium rosulatum*	104			
4	*Ruellia simplex*	106	*Ruellia caroliniensis*	105	
4	*Sphagneticola trilobata*	109	*Heterantheca subaxillaris*	145	
4	*Calyptocarpus vialis*	110			
4	*Sapium sebiferum*	112			
4	*Schinus terebinthifolius*	113			
5	*Plantago lanceolata*	117			
5	*Imperata cylindrica*	120			
5	*Cynodon dactylon*	121	*Dactylotenium aegyptium*	122	
5	*Dactylotenium aegyptium*	122	*Cynodon dactylon*	121	
5	*Kyllinga brevifolia*	125			
5	*Crinum asiaticum*	127			
5	*Richardia scabra*	128	*Richardia grandiflora*	129	
5	*Richardia grandiflora*	129	*Richardia scabra*	128	
5	*Portulaca amilis*	133	*Portulaca pilosa*	132	*Portulaca oleracea*
5	*Oxalis articulata*	135	*Oxalis drummondii*	134	*Oxalis corniculata*
5	*Ipomoea purpurea*	137			
5	*Emilia sonchifolia*	138	*Emilia fosbergii*	139	
5	*Emilia fosbergii*	139	Emilia sonchifolia	138	
5	*Russelia equisetiformis*	142			
5	*Oxalis corniculata*	143	*Oxalis articulata*	135	*Oxalis drummondii*
5	*Portulaca oleracea*	144	*Portulaca amilis*	133	*Portulaca pilosa*
5	*Sonchus oleraceus*	145			
5	*Ludwigia peruviana*	147	*Ludwigia octovalvis*	67	
5	*Dioscorea bulbifera*	151			
5	*Lantana camara*	182			

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Plants of Retention Ponds and Drainage Ditches

The Greater Daytona Beach Area

Bethune-Cookman University
Daytona Beach, FL