

# Invasive Plant Education Initiative: A Recipe in the Making



Presenter: Amy Richard  
UF/IFAS Center for Aquatic and Invasive Plants

# **Center for Aquatic and Invasive Plants (CAIP)**

Established in 1978 by the Florida legislature.

**Goal:** To develop environmentally sound techniques for the management of aquatic and natural area weed species and to coordinate aquatic plant research activities within the State of Florida.

1. **Research**
2. **Teaching**
3. **Extension (outreach)**



# Who do we serve?

- ❖ aquatic and invasive plant researchers:
  - ❖ academic
  - ❖ industry
  - ❖ graduate students
  - ❖ agency managers
- ❖ natural resource / field personnel
- ❖ county Extension agents
- ❖ park biologists
- ❖ teachers
- ❖ students of all ages
- ❖ general public

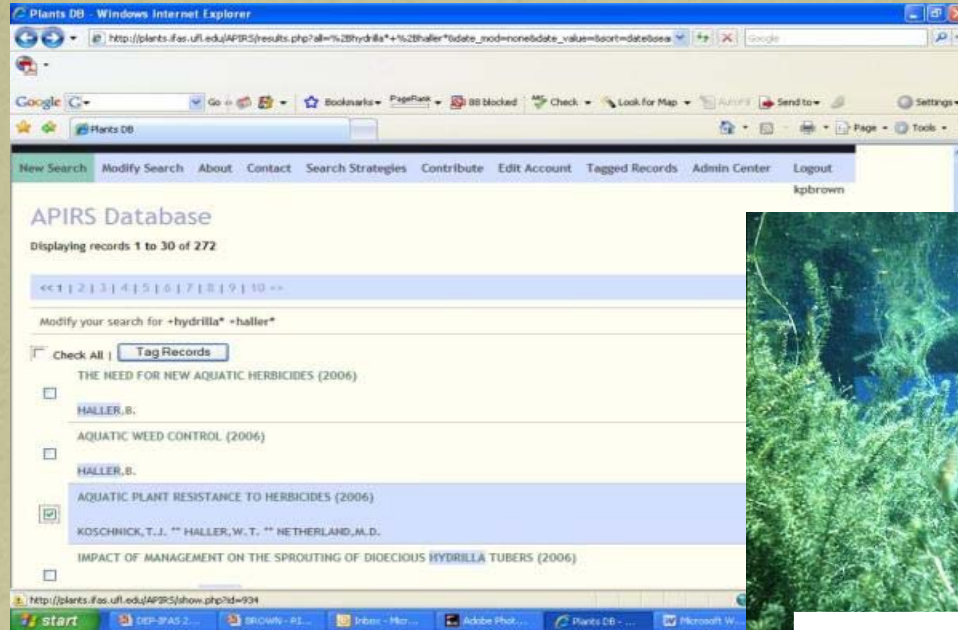


# Aquatic, Wetland and Invasive Plants Information Retrieval System

- ❖ Since 1980
- ❖ More than 71,000 annotated records of scientific literature

**<http://plants.ifas.ufl.edu/APIRS>**





- ❖ aquatic plants
- ❖ wetland plants
- ❖ salt marsh plants
- ❖ invasive upland plants





## Subjects include:

- ❖ biological control (6,360\*)
- ❖ chemical control (8,782\*)
- ❖ mechanical control (2,418\*)
- ❖ Government control (4,448\*)
- ❖ utilization
- ❖ distribution
- ❖ biology
- ❖ ecology of aquatic plants,  
and more ...



<http://plants.ifas.ufl.edu> ~ primary CAIP website (since 1995)

*New and improved!*





- ❖ Over 600 pages completely revised & updated
- ❖ New data-driven infrastructure
- ❖ 102 Plant ID Videos now online
- ❖ Enhanced navigation, delivery & appearance
- ❖ *Invasive Species Management Plans for Florida* added to 42 plant information pages
- ❖ Educational products, photographs and information on 500 plant species and much, much more



## Includes development and maintenance of primary website, plus three supplementary portals:



Plants by Scientific Name | Center for Aquatic and Invasive Plants - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://plants.ifas.ufl.edu/node/22

CAIP Education - CAIP Parks - CAIP Osceola - CAIP http://wolfteacher.co... PLANTS BETA Gmail Netflix Facebook Pandora

## CENTER FOR AQUATIC AND INVASIVE PLANTS

UNIVERSITY OF FLORIDA, IFAS

Plant Information & Images

Search

Search

Navigation

- Plant Information & Images
  - Scientific Name
  - Common Name
  - Plant Type Category
  - Plant Line Drawings
  - Image Requests
- APIRS Literature Collection and Database
- AQUAPHYTE Newsletter
- Glossary of Plant Terms
- Books, Field Guides, and Online Resources
- Educational Products and Tools
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- Meetings
- Osceola County Hydrilla & Hygrophila Demonstration Project
- IFAS Assessment
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Plants by Scientific Name

Click on a letter to expand or contract the list corresponding to that letter.

[A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

<i>Habenaria repens</i>	water-spider	Native Plant
<i>Hamelia patens</i>	firebush	Native Plant
<i>Haplopappus divaricatus</i>	scratch daisy	Native Plant
<i>Helianthus angustifolius</i> var. <i>canadense</i>	narrowleaf sunflower	Native Plant
<i>Helianthus radula</i>	rayless sunflower, sunflower	Native Plant
<i>Heteranthera limosa</i>	mud plantain	Native Plant
<i>Hibiscus aculeatus</i>	comfort root	Native Plant
<i>Hibiscus coccineus</i>	marsh hibiscus	Native Plant
<i>Hibiscus grandiflorus</i>	swamp rose	Native Plant
<i>Hippuris vulgaris</i>	mare's-tail	Native Plant
<i>Houstonia procumbens</i>	innocence	Native Plant
<i>Hydrilla verticillata</i>	hydrilla	Native Plant
<i>Hydrocharis morsus-ranae</i>	European frogbit	Native Plant
<i>Hydrocotyle species</i>	water penny	Native Plant
<i>Hydrolea corymbosa</i>	bladderpod	Native Plant
<i>Hydrolea quadrivalvis</i>	waterpod	Native Plant
<i>Hygrophila costata</i> (Syn. <i>Hygrophila lacustris</i> )	lake hygrop	Native Plant
<i>Hygrophila polysperma</i>	East Indian	Native Plant
<i>Hymenachne amplexicaulis</i>	West Indian	Native Plant
<i>Munroa ciliatula</i> (Syn. <i>M. nasuta</i> )	rounded S	Native Plant

## Navigation

### Plant Information & Images

- Scientific Name
- Common Name
- Plant Type Category
- Plant Line Drawings
- Image Requests



Hydrilla | Center for Aquatic and Invasive Plants - Mozilla Firefox

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http://plants.ifas.ufl.edu/node/183

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## CENTER FOR AQUATIC AND INVASIVE PLANTS

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### Hydrilla

#### *Hydrilla verticillata*

**Non-Native to Florida**

Video ID segment (2-3 minutes)  
You will need **Adobe Flash** installed to view this video  
This video may take several minutes to download depending on your internet connection.

HYDRILLA VERTICILLATA (L. f.) Royle  
hydrilla, water thyme  
Hydrocharitaceae/Frog's-bit Family

pronounced: hid-ni-lah ver-ti-ki-lah-ta (long/short marks)  
from: hydr (G.): water  
verticillus (L.): the whorl of a spindle  
"water plant with whorls of leaves"

Synonymy:  
none known

Britton's wild petunia | Center for Aquatic and Invasive Plants - Mozilla Firefox

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http://plants.ifas.ufl.edu/node/380

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  - Plant Manuals, Field Guides and Textbooks
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**Britton's wild petunia**

*Ruellia brittoniana* (syn. *R. tweediana*)

**Non-Native to Florida**

Video ID segment (2-3 minutes)  
You will need **Adobe Flash** installed to view this video  
This video may take several minutes to download depending on your internet connection.

**Introduction**

Mexican petunia is another example of plant that is being sold over the internet and in garden centers as a flowering plant or "handy perennial edging plant for flower beds and as colorful groundcovers". The problem is that the Mexican petunia is highly invasive and is listed as a Category 1 invasive species by the Florida Exotic Pest Plant Council. Mexican petunia received this classification because of its invasion and distribution within native plant communities.

Mexican petunia can thrive in a range of environments, including flatwoods, hardwood hammocks, prairies, rivers and pastures. The cultivars available for sale in the trade have been selected for their flower color or size (tall or dwarf), however there have been very few research projects dedicated to determining the invasive characteristics of the cultivated varieties.

[back to top](#)

**Description**

Mexican petunia is a stalk forming perennial that stands up to 3 feet in height. Leaves are dark green; oppositely arranged and lance-shaped, roughly 6-12 inches long and 1/2-3/4 inches wide. Veins are prominent on the underside of the leaf. Leaf margins are can be smooth or wavy. Foliage appears a metallic blue/purple under full sun. Flowers are trumpet shaped (1 1/2 -2 inches in diameter), solitary or borne in clusters at the tips of the stems. There are numerous varieties with a

**Mexican petunia**

- Introduction
- Description
- Impacts
- Management
  - Preventative
  - Cultural
  - Mechanical
  - Biological
  - Chemical
- Notes on Herbicides
- References
- Download a Recognition Card (PDF 1 MB)
- View as PDF (77 KB)
- More Resources



## Images:



- ❖ approximately 500 plant species — photos and illustrations
- ❖ widely used by other agencies and groups world-wide

Educational Products and Tools | Center for Aquatic and Invasive Plants - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://plants.ifas.ufl.edu/node/596

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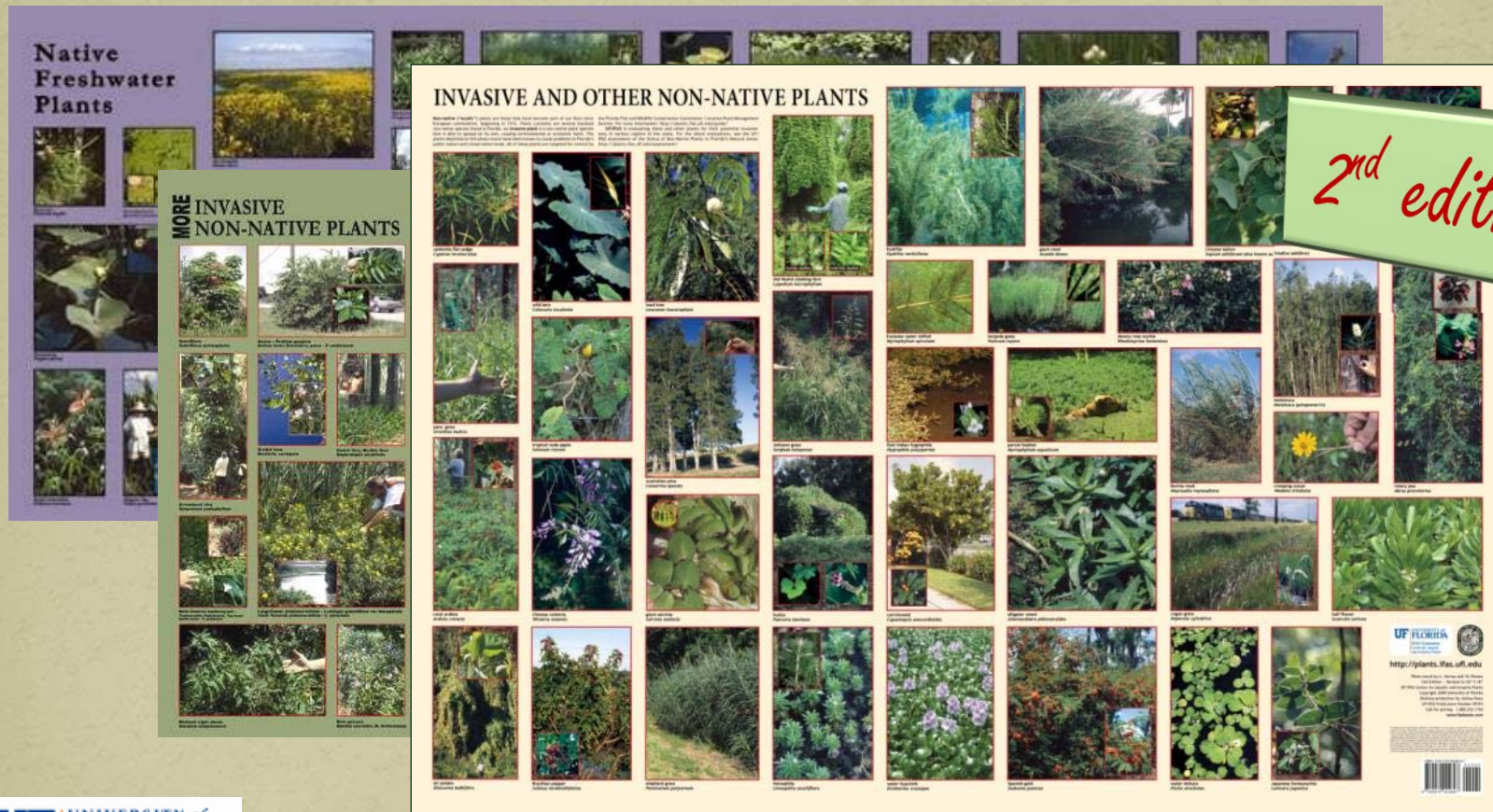
### Educational Products and Tools

- Plant Recognition / Identification Tools
  - Recognition Cards: Invasive and Non-native Plants You Should Know
  - Freshwater Plants in the Southeastern United States: A Recognition Guide for 133 Plants
  - Invasive and Other Non-Native Plants in the Southeastern United States Found in Public Waters and Conservation Lands of Florida and the Southeastern United States: A Recognition Guide for 94 Plants
  - ID Deck: Aquatic and Wetland Plants
  - ID Deck: Grasses, Sedges and Rushes
- Photo-Murals
  - Photo-Mural: Native Freshwater Plants
  - Photo-Mural: More Native Freshwater Plants
  - Photo-Mural: Invasive Non-Native Plants
  - Photo-Mural: More Invasive Non-Native Plants
  - Photo-Mural: Set of Four
- DVD Programs
  - Aquatic and Wetland Plant Identification Series Now Available as a 4 disc DVD set (IFAS Catalog No. DVD 084) - \$35.00
  - Aquatic Plant Management Series (2 DVD set) - \$25.00
  - Careers in Florida's Freshwater Environments (DVD) - \$25.00
  - Florida's Aquatic Plant Story (DVD) - \$25.00
  - What Makes a Quality Lake? (DVD) - \$25.00
- Line Drawings: Wetland and Invasive Plants
- Image Request Form
- Identification & Biology of Non-Native Plants in Florida's Natural Areas, Second Edition - by K.A. Langeland and K. Craddock Burks, Editors



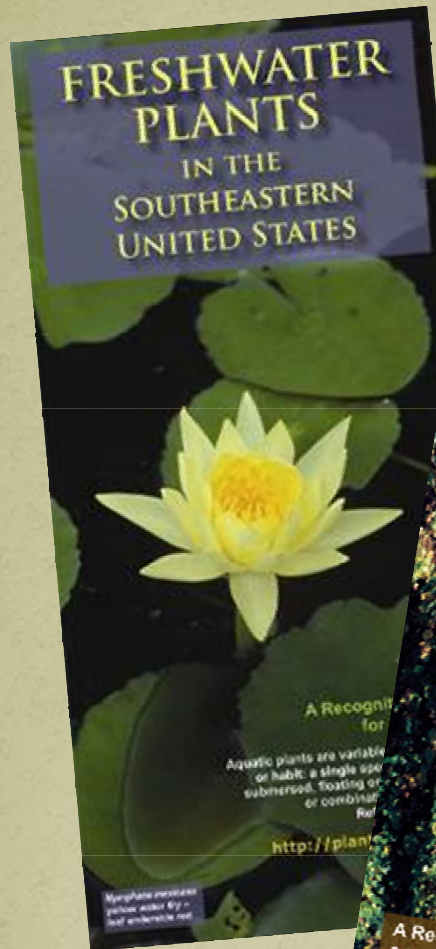
# Photomurals with 'Teaching Points'

- *Native Freshwater Plants (Part 1 and 2)*
- *Invasive Non-Native Plants (Part 1 and 2)*





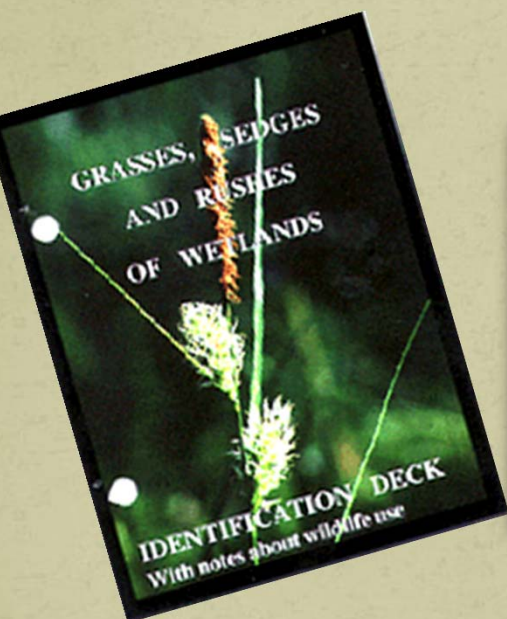
## Laminated “pocket posters”





# Plant ID (field guides)

- ❖ Recognition Cards & Flash Cards
- ❖ Aquatic Plant Identification Deck
- ❖ Grasses, Sedges and Rushes of Wetlands



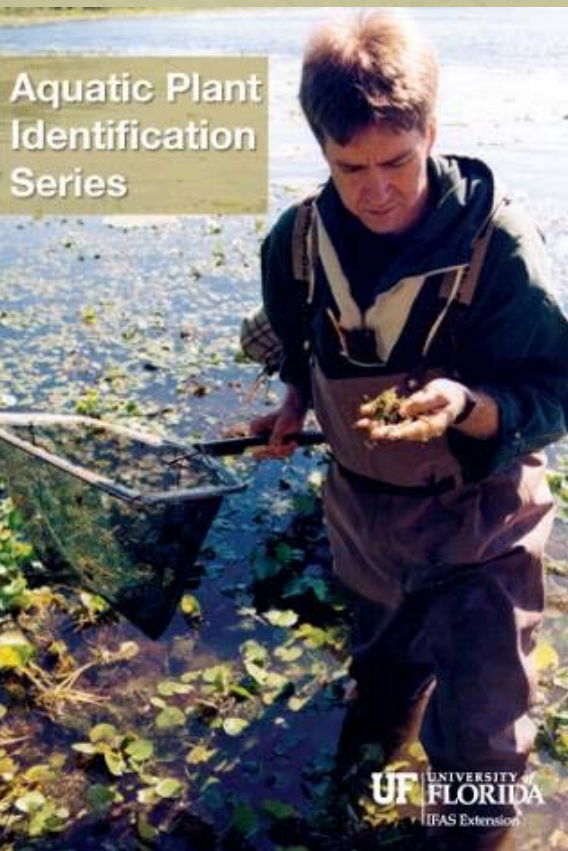


# 20 educational video programs (since 1990):



Now in DVD format; may be borrowed or purchased





## Plant ID Series ~ 4 DVDs

- ❖ Floating and floating-leaved Plants
- ❖ Emerged Plants
- ❖ Submersed Plants
- ❖ Grasses, Sedges and Rushes

# Upland Invasive Plant Identification Videos



Six produced in 2008 for CAIP website:

Chinese tallow, cogon grass, coral ardisia,  
Mexican petunia, Old World climbing fern, skunk vine





## CENTER FOR AQUATIC AND INVASIVE PLANTS UNIVERSITY OF FLORIDA, IFAS

### Welcome to the Center for Aquatic and Invasive Plants

This is a BETA version of the Center for Aquatic and Invasive Plants web site. Please report any issues or offer feedback that you may have.

The **UF/IFAS Center for Aquatic and Invasive Plants** is a multidisciplinary research, teaching and extension unit directed to develop environmentally sound techniques for the management of aquatic and natural area weed species and to coordinate aquatic plant research activities within the State of Florida. The Center was established in 1978 by the Florida legislature. Directed by Dr. William Haller, the Center utilizes expertise from many departments within UF/IFAS and its Agricultural Research and Education Centers throughout Florida.

The mission of the **CAIP Information Office** is to inform and educate all stakeholders about the impacts and management of invasive plants.



Plant Ed.



All you want to know about Florida's lakes, rivers, springs, marshes, swamps and canals

UF  
IF  
CAIP

Search Site

- Contents by Topics
- Contents by Keyword
- What can we do about invasive plants?
- Center for Aquatic & Invasive Plants
- Education Web Site
- Image Request Form
- Links

### Questions about Florida's freshwater environments?

Use the index or search engine to the left to navigate through our encyclopedic guide to Florida plant management.

This project is made possible by a collaboration of the Center for Aquatic and Invasive Plants, University of Florida, and the Florida Department of Environmental Protection (DEP)/Bureau of Invasive Plant Management (BIPM). The Bureau is the lead agency for aquatic plant management in Florida, responsible for inspections, work plans, permitting and funding.



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Still have questions? Write us so we can help find the answer: CAIP-WEBSITE@ufl.edu  
Center for Aquatic & Invasive Plants | 7922 NW 71st St. | Gainesville, FL 32653 | 352-392-1799  
Copyright 2007 University of Florida  
The Authors

Since 2004 ~  
a guide to plant  
management in  
Florida waters





### Contents by Keyword

[A] [B] [C] [D] [E] [F] [G] [H] [I] [J] [K] [L] [M] [N] [O] [P] [Q] [R] [S] [T] [U] [V] [W] [X] [Y] [Z]

2,4-D herbicide  
Adjuvants  
Aeration  
Agencies  
Agriculture  
Algae  
Algae bloom  
Algal biomass  
Algae control  
Algae types  
Alkalinity  
Alligators  
Alligators and plants  
Amoebas  
Animals, lakes  
Animals, marshes  
Animals, swamps  
Animals, rivers  
APM workplans  
Applicator list  
Application methods

Garlon herbicide  
Genus/Species  
Geology  
Geologic region  
Glossary, plant terms  
Glyphosate herbicide  
Grass carp  
Grasses, native  
Grasses, invasive  
Groundwater

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Harvesting plants  
Harvester manufacturers  
Herbicide control

Recreation  
Regional biologists, DEP  
Reptiles: Gators, Snakes, Turtles  
Research  
Restoration  
Restoration, wetlands  
Restoration, Kissimmee River  
Restrictions, water use  
Retention ponds  
Reward herbicide  
Rights/responsibilities  
Rivers  
Rodeo herbicide  
Rushes, native

BACK TO TOP

❖ written for the non-scientific community (*helpful to anyone*)



### Contents by Topic

[Contents by Keyword](#) | [Home](#)

#### I. About This Guide

- Introduction to the Problem
- Why Manage? - The Philosophy

#### II. Types of Florida Water Bodies

- Aquifers
- Canals
- Lakes
- Rivers
- Sinkholes
- Springs
- Wetlands
  - Marshes
  - Swamps

#### III. Florida's Special Characteristics

- Geology
- Oligo- Meso- Eu- Hypereu- Trophic
- Water Chemistry and Quality

#### IV. Freshwater User Groups and Conflicts

- User Groups Review
- Water User Statistics
- Swimming, tubing
- Boating

#### V. Aquatic and Wetland Plants

- List of Non-Native Wetland Plants
- Scientific vs Common Names
- Plants by Habitat
- Native Plants, Intro
- Non-Native Invasive Plants, Intro
- Algae
- Bacteria

#### VI. Aquatic Plant Management

- Overview, Permitting, Funding
- Permitting
- Funding

❖ accurate and trusted source of information

❖ covers more than 400 major/minor subjects



# Sample Topics:

**Herbicide Control - Plant Management in Florida Waters - Windows Internet Explorer**

http://plants.ifas.ufl.edu/guide/herbicons.html







**AQUATIC HERBICIDAL CONTROL**

MAIN INDEX | The \$\$ cost | Management agencies | Maintenance control | Herbicide history | Florida's aquatic herbicides | Choosing herbicides | Selectively applying herbicides | Herbicide adjuvants | Environmental considerations | Herbicide impacts | Water use restrictions | Herbicide testing and toxicity | Herbicide labels | DEP regulations and permits | Extension Service assistance | Prevention |

herbicide control is the application of plant-killing chemicals directly to the plant (to "kill" it). A herbicide is a pesticide.

Herbicides for the control of invasive plants in the waters and wetlands of Florida are used by the Florida Department of Agriculture and Consumer Services, the Florida Department of Environmental Protection, and the Florida Department of Transportation. For more information, contact the Florida Department of Agriculture and Consumer Services, or view general pesticide safety information and the interactive statewide pesticide application map.

**INVASIVE NON-NATIVE AQUATIC AND WETLAND PLANTS**

					
wetland nightshade <i>Solanum torreyense</i>	East Indian hyacinth <i>Eichhornia crassipes</i>	giant salvinia <i>Salvinia molesta</i>	hydrilla <i>Hydrilla verticillata</i>	pine grass <i>Urochloa mutica</i>	torpedo grass <i>Panicum repens</i>

**ADJUVANTS**

This is a supplementary part of the Herbicide Control page of this web site.

**MAIN INDEX**


For more than a century, pesticide applicators have mixed adjuvants into their herbicide spray tanks in order to facilitate or modify the action of the applied chemical, and make the herbicide application more effective.

Like the water that is mixed with most aquatic herbicides, these commercial additives carry the herbicide, causing the herbicide to spray with less drift, stick to the leaves better, spread more evenly over the plant, and so on. The earliest adjuvants were made from whale oils that were meant to enable a chemical to stick to the targeted species. In the mid-twentieth century, soaps and detergents were popular adjuvants. Research in the 1950's led to the development of more sophisticated adjuvants.


Today several manufactured herbicides contain specially formulated adjuvants already mixed into the herbicide container. Often, herbicide applicators themselves select and mix adjuvants with the chemicals they intend to use in order to tailor the herbicide application to their specific needs.

Far from the whale oils used in the early days, contemporary adjuvants are made from complex synthetic formulations that are designed for specific purposes. Unlike the chemical herbicides they are added to, most modern adjuvants are inert and have no toxic effect on the plants or the environment.

In the U.S., there are several hundred name brand adjuvants that have various effects on aquatic herbicides. Adjuvants do not require EPA or Florida Department of Agriculture and Consumer Services testing in order to be used.



large-scale application      granular spreader



# Florida wildlife



## FRESHWATER BIRDS

MAIN INDEX | Types of water birds |  
Plants and water birds | Water bird list | Bird diseases | Species richness |

Many wetlands and miles of coastline, Florida is a bird watcher's paradise. Most of these wild birds aren't hunted, so many of them have grown accustomed to being around people. Indeed, some have adapted enough to survive and even prosper in some local areas while living among 16 million Floridians. People from around the world, ecotourist birdwatchers, come to spot our birds, each year spending more than \$1 billion to do so.

Each day, most water birds search for food, usually fish, but also snails, insects, and other small aquatic animals. Many birds also look for certain plants, such as water lilies, stems and seeds. The **waders** stalk the shallows, constantly wading into the mud with their long beaks. The **divers** prowl underwater for seconds at a time. The **paddlers** move about on the surface, sticking their heads into the water to spot food. The **aquatic birds of the air** soar high above the water, sometimes fighting over fish, their huge nests encumbering many of the trees.



## FLORIDA ALLIGATORS

MAIN INDEX | Habitat | Diet | Behavior | Nesting |  
Use of aquatic plants | Juveniles | Danger | Safety tips |  
Conservation | Harvest permits | Gator look-alikes |

Commonly found lurking along grassy banks or peering from beneath Florida's freshwaters, the American alligator, *Alligator mississippiensis*, is the state's most recognizable native denizen. The massive crocodilian is the largest of all contemporary reptiles (including its local cousin, the black to grey body can weigh 500 pounds and grow more than 18 feet long).



This 150 million-year-old relic from the Age of Dinosaurs acquired international acclaim in the 1950s when it was referred to the species as *el lagarto*, the lizard. Over the centuries, the alligator, namely the yellow and black skin on its belly and the meat of its tail, led the prolific reptile to near extinction. Through endangered species legislation (the alligator was listed as endangered in 1967), alligator populations in the southeastern U.S. slowly rebounded, and in 1987 was re-classified as "threatened due to similarity of appearance" to the *Asian alligator*. Today, the American alligator is a common reminder of Florida's official state reptile that year. Today, the American alligator is a common reminder of Florida's official state reptile that year.

### HABITAT

When left alone by humans, alligators thrive in Florida's natural and even its artificial fresh water wetlands. However, they also inhabit parts of Texas and Alabama. In Florida, alligators most commonly inhabit large lakes in central and south Florida, yet they also inhabit most of our lakes, rivers, and even be found in brackish environments throughout the state.



## FRESHWATER FISH

MAIN INDEX | Aquatic plants and fish | Aquatic plant management and fish |  
Commercial fishing | Recreational fishing | Fish watching |  
Fishing licenses | Game fish | Anadromous fish | Protected fish |  
Poisonous fish | Pollution and fish | Fish kills | Report wildlife violations |

The diverse and wide range of diverse aquatic ecosystems results in a wide variety of fish species in the United States. More than 250 species of fish are found in Florida's waters.



## Chinese Grass Carp

(*Ctenopharyngodon idella*)

MAIN INDEX | Grass carp and habitat management | Physical characteristics |  
Grass carp in Florida | Grass carp diet | Caveats | How many is too many? |  
How to remove grass carp | Training grass carp | Useful links |

Chinese grass carp are herbivorous (plant eating) fish that have been purposely introduced into many Florida lakes and ponds as a way of controlling aggressive aquatic weed growth. For many, grass carp and aquatic weeds seem like a match made in heaven: the fish are relatively inexpensive and they have a voracious appetite for problem plants - especially hydrilla. No lumbering harvesters needed, no expensive chemicals; just stock the lake with a few dozen hungry carp and let them do their thing. Right?



### Keep Reading

Anyone considering stocking grass carp into their lake or pond should peruse these pages and related links before taking the "plunge," while they are an effective and affordable solution for many lakes, grass carp are not a panacea for all plant infestations. Under certain circumstances, they can create their own set of problems.

### Physical Characteristics

Most folks are surprised to learn that grass carp are members of the minnow family as they certainly don't fit the typical minnow profile; these fish grow to an average of 15-20 pounds and 20-35 inches in length. In larger lakes, with plenty of plants to eat, they can grow up to 50-60 pounds and exceed 50 inches in length. In Florida, the largest reported grass carp was a 60-pounder caught in the Suwannee River.

### To Be Or Not To Be - Hybrids

Normally, grass carp require three floating rosettes to spawn and produce eggs, so it is believed they don't spawn much of a threat to lake ecosystems. However, grass carp have been known to escape from stocked lakes or ponds into neighboring waterbodies. They also harbor the potential of harboring breeding populations of grass carp in a number of states along the Atlantic coast. In Florida, three hatcheries, including one in the Suwannee River, have been established to produce sterile grass carp.

While grass carp are able to produce viable eggs, they are said to be "sterile." They have the right number of chromosomes, but Florida has been told that they are sterile.





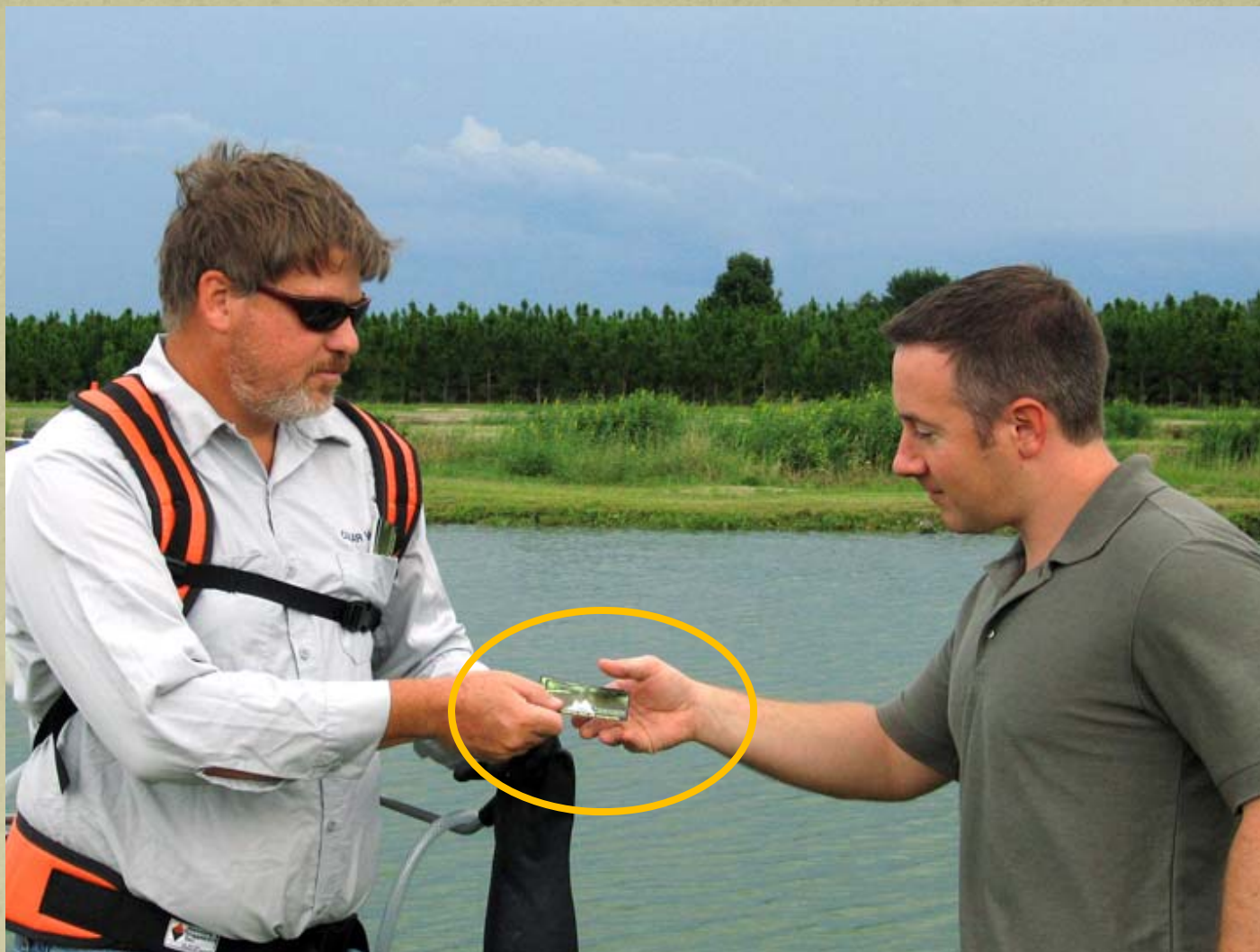
<http://plants.ifas.ufl.edu/guide>

Used by:

- ❖ homeowners
- ❖ managers and field personnel who refer concerned citizens to the 'guide' with free webcards
- ❖ **NOW...**teachers and students

*“Please, take a handful!  
Keep them in your truck,  
shirt pocket, wallet ...”*









# General Outreach ~

## Is it enough?





# Education Initiative and Curriculum

<http://plants.ifas.ufl.edu/education>



In 2005, launched an education program about native, non-native and invasive plants for use by science teachers and other educators (language arts, social studies, park rangers, etc.)



# Goals

- ❖ **Capture** the attention of educators, their students and eventually their parents;
- ❖ **Inform** them of challenges & costs associated with invasive plants in Florida *(and around the world)*;
- ❖ **Provide** useful information on how they can help.
- ❖ **Change behavior?**



## Year 1: Introduced subject to teachers





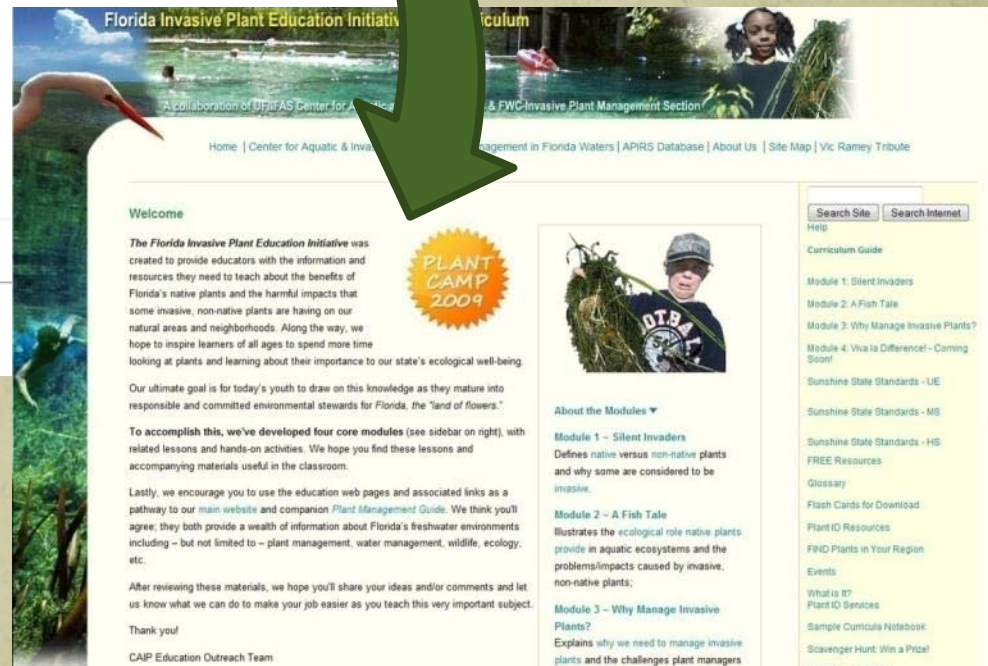
## Year 2:

Asked them what they  
needed to teach this  
subject and then began  
developing it.





Created  
website for  
easy access  
to materials



## Highlights!

### Free Education Resources for Teachers

For Teachers who are interested in invasive aquatic plants in Florida. These resources are products of the University of Florida unless otherwise stated.

[General Resources](#) | [PDF Files](#) | [Items to Order](#) | [Affordable Resources](#)

#### General Resources (links)

[A Glossary of Flower Parts](#) - (254 KB jpeg image)

[A Glossary of Leaf Shapes](#) - (1.6 MB jpeg image)

[Aquatic Plant Problem? Contact your DEP Regional Biologist](#)

[Assorted Photos](#) of native and invasive plants in Florida and the U.S.

[Biological Invasions: A Growing Threat](#) - An article from *Issues in Science and Technology*

[176 Botanical drawings](#) of native and invasive plants in Florida

[Center for Precollegiate Education and Training](#) offers educational programs for teachers and students

[Crossword puzzles](#) about aquatic plant management [Upper Elem.](#) | [Middle](#) | [High](#)

[Extension publications](#) about invasive plants and their management

[Flash Cards: Invasive and Non-native Plants You Should Know](#)

Florida Invasive Species:

- [Water Hyacinth](#) DEP Flash movie (requires downloadable Macromedia Flash player)
- [Lygodium](#) DEP Flash movie (requires downloadable Macromedia Flash player)
- [Hydrilla](#) DEP Flash movie (requires downloadable Macromedia Flash player)





# Highlights!

## PDF Files

A bunch of **Weed Alerts** from the **Department of Environmental Protection** -  
**See weed alert lessons designed for the classroom**

**A four page flyer of "Teaching Points"** about native and non-native plants, questions and answers made by and for teachers - (PDF 357 MB)

**A Glossary of Flower Parts** - (PDF 1.6 MB)

**A Glossary of Leaf Shapes** - (PDF 2.14 MB)

**Activity book: Understanding Invasive Aquatic Weeds**, for students of all ages. Information and activities; in a 16-page booklet covering 5 aquatic plants that are invasive regionally and throughout the country. - (PDF 3.5 MB). Also available in quantity for free: <http://www.apms.org/activity.htm>

- This booklet is also available in quantity from the **Aquatic Plant Management Society**

**Activity book: The Underwater Forests of Lakes and Rivers** - Information about native and invasive aquatic plants with activities suitable for upper elementary. (PDF 7.3 MB)

**Botany Handbook for Florida** - Learn and understand scientific names of plants with clear illustrations and concise definitions. (PDF 4.44 MB)

**Careers in Florida's Freshwater Environments** booklet - (PDF 3 MB)

- **Careers in Florida's Freshwater Environments** DVD program about environmental occupations in Florida, for elementary and middle school students

**Effects of Grass Carp on Aquatic Vegetation in Lake Conway, Florida** - (PDF 58.95 KB)

UF/IFAS Information Bulletins :

- **Help Protect Florida's Natural Areas from Non-native Invasive Plants (Circular 1204)** (PDF 1,624 KB)
- **Brazilian Pepper-tree Control (Circular SS-AGR-17)** (PDF 344 KB)
- **Natural Area Weeds: Air Potato (*Dioscorea bulbifera*) (Circular SS AGR 164)** (PDF 411 KB)
- **Natural Area Weeds: Chinese Tallow (*Sapium sebiferum*) (Circular SS-AGR-45)** (PDF 372)
- **Natural Area Weeds: Distinguishing Native & Non-native "Boston Ferns" & "Sword Ferns" (*Nephrolepis* spp.) (Circular SS-AGR-22)** (PDF 1,621 KB)
- **Natural Area Weeds: Skunkvine (*Paederia foetida*) (Circular SS-AGR-80)** (PDF 3,659 KB)

*Highlights!*

## Florida Invasive Plant Education Initiative and Curriculum

A collaboration of UF/IFAS Center for Aquatic Plants & DEP Bureau of Invasive Plant Management

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### Glossary of Plant Terminology

[A](#) | [B](#) | [C](#) | [D](#) | [E](#) | [F](#) | [G](#) | [H](#) | [I](#) | [J](#) | [K](#) | [L](#) | [M](#) | [N](#) | [O](#) | [P](#) | [Q](#) | [R](#) | [S](#) | [T](#) | [U](#) | [V](#) | [W](#) | [X](#) | [Y](#) | [Z](#) |

**achene** - n. any small, dry fruit with one seed whose outer covering ( [pericarp](#) ) does not burst when ripe. Example: sunflower seed.

**algae** - n. a wide variety of tiny, often microscopic, plants (or plant-like organisms) that live both in water and on land.

**alga** - singular. [More information.](#)

**alternate** (leaf arrangement) - adj. leaves occurring one at a [node](#); one after another, not opposing. [See illustration.](#)

**anatomy** - n. the internal structure of an organism and/or its parts.

**angiospermae** - n. a major division of the plant kingdom, commonly known as flowering plants; their reproductive organs develop seeds in the flowers. Example: [duck potato](#). **angiosperms** - plural

**anther** - n. the top of the [stamen](#), which produces the [pollen](#). [See illustration.](#)

**aquatic macrophytes** - aquatic plants that are large enough to be apparent to the naked eye. They can be grouped into four basic categories. Some are rooted in the bottom sediments but protrude above the water's surface ( [emersed](#) ) while others float on the water's surface ( [floating](#) and [floating-leaved](#) ). Still others grow completely below the water's surface ( [submersed](#) ).

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*Highlights!*

Florida Invasive Plant Education Initiative & Curriculum - Windows Internet Explorer

http://plants.ifas.ufl.edu/education/regional\_map.html

Find Plants in Your Region

Click on your region in Florida to view native and non-native plants in your area. Or see the table below for county listings.

**Northwest Region**

Bay  
Calhoun  
Escambia

**Northeast Region**

Alachua  
Baker  
Bradford

**Central Region**

Brevard  
Clay  
Flanler

**Southwest Region**

Charlotte  
Collier  
Desoto

**Southeast Region**

Broward  
Glades  
Hendry

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Affordable Resources  
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Recent & Upcoming Events  
Plant Management Agencies in Florida  
What is it?  
Plant ID Services  
Discover our web site with a crossword puzzle

# Highlights!

## Flash Cards: Invasive and Non-native Plants You Should Know

### COMPLETE SET

Download individual flash cards (PDF - average file size, 500 KB) or [purchase the set](#).



= Prohibited. Some of the plants featured in this card deck are officially prohibited by federal or state law.

**Cover / Introduction / Reference Section** (PDF - 1 MB) includes the following:

- Plants by Scientific Name
- Plants by Common Name
- Flower Parts
- Stems
- Roots
- Leaf Shapes
- Leaf Bases & Attachments
- Leaf Arrangements
- Habit
- Glossary of Plant & Flower Parts
- Bibliography

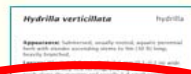
### by Common name

Flash Cards: (PDF - average file size, 500 KB)

- air-potato
- alligator weed
- asparagus fern
- Australian pine
- bishopwood
- bowstring hemp
- Brazilian jasmine
- Brazilian pepper

### by Scientific name

- *Abrus precatorius*
- *Acacia auriculiformis*
- *Albizia julibrissin*
- *Albizia lebbbeck*
- *Aleurites fordii*
- *Alternanthera philoxeroides*
- *Ardisia crenata*
- *Ardisia elliptica*



### *Hydrilla verticillata* hydrilla

**Appearance:** Submersed, usually rooted, aquatic perennial herb with slender ascending stems to 9m (30 ft) long; heavily branched.

**Leaves:** Whorled, 3-8 per whorl, 2-4 mm (0.1-0.2 in) wide and 6-20 mm (0.2-0.8 in) long, bearing coarse (visible) teeth along the margins and usually 1-4 small conical bumps along underside of midrib, which is often red.

**Flowers:** Male flowers detached and free floating at maturity, with 3 sepals and 3 petals, white to reddish brown, about 2 mm (0.7 in) long, releasing floating pollen from stamens when flower pops open at water surface.

**Fruit:** N/A

#### Ecological threat:

Competitively displaces native submersed plant communities. In dense stands, alters fisheries populations, causes shifts in zooplankton communities, and affects water chemistry. FLEPPC Category I

**Distribution:** NW, NE, C, SW, SE



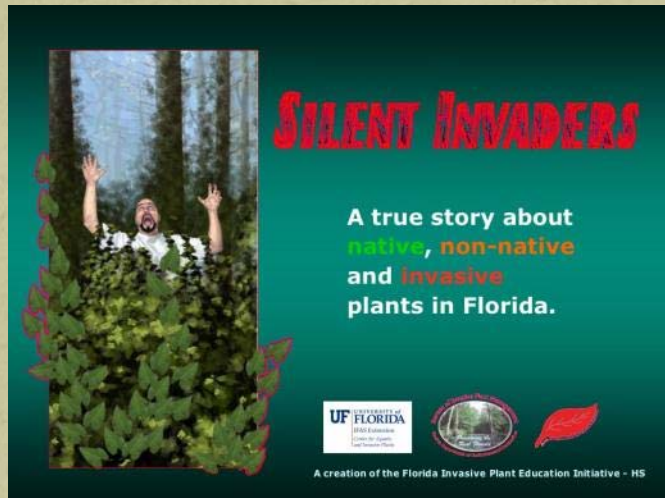
#### Field Notations

HYDRVERT/HYVE3

<http://plants.ifas.ufl.edu>



## Top request: PowerPoint™ Presentations



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### Module 1 ~ Silent Invaders

About the Video



Table of Contents

- Opening and Title Slide (slides 1-2)
- Part 1 Introduction to Native Plants in Florida (slides 4-14)
  - Keywords
  - FCAT Questions: Coming Soon
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- Part 2 Introduction to Non-native Plants (slides 16-33)
  - Keywords
  - FCAT Questions: Coming Soon
  - Suggested Resources
- Part 3 Introduction to Invasive Plants (slides 34-48)
  - Keywords
  - FCAT Questions: Coming Soon
  - Suggested Resources
- Part 4 You Can Help: Positive Actions We Can

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### Module 3 ~ Why Manage Invasive Plants?

About the Video




Table of Contents

- Opening and Title Slide (slides 1-2)
- Part 1 Introduction to Native, Non-native and Invasive Plants in Florida (slides 4-13)
  - Keywords
  - FCAT Questions: Coming Soon
  - Suggested Resources
- Part 2 Managing Plants in Florida (slides 14-22)
  - Keywords
  - FCAT Questions: Coming Soon
  - Suggested Resources
- Part 3 Maintenance Control (slides 23-37)
  - Keywords
  - FCAT Questions: Coming Soon
  - Suggested Resources
- Part 4 Integrated Plant Management (slides 38-53)

Watch Now: [Silent Invaders!](#) ~ [A Fish Tale](#) ~ [Why Manage?](#) ~ [Viva la Difference!](#)

[Order DVD](#)

[Silent Invaders Teacher Guide](#)

[Module 1 Lessons and Activities](#)

UNIVERSITY OF FLORIDA

IFAS Extension Center for Aquatic and Invasive Plants

### Module 2 ~ A Fish Tale

About the Video



Table of Contents

- Opening and Title Slide (slides 1-2)
- Part 1 ~ Oxygen in water; factors that influence it (slides 4-10)
  - Keywords
  - FCAT Questions (Think About It): Coming Soon
  - Suggested Resources
- Part 2 ~ Photosynthesis, Respiration, Decomposition (slides 11-21)
  - Keywords
  - FCAT Questions (Think About It): Coming Soon
  - Suggested Resources
- Part 3 ~ Wind and wave action; invasive plants (slides 22-31)
  - Keywords
  - FCAT Questions (Think About It): Coming Soon
  - Suggested Resources
- Part 4 Be Involved! (slides 32-35)
  - Keywords
  - FCAT Questions (Think About It): Coming Soon
  - Suggested Resources

Watch Now: [Silent Invaders!](#) ~ [A Fish Tale](#) ~ [Why Manage?](#) ~ [Viva la Difference!](#)

[Order DVD](#)

[A Fish Tale Teacher Guide](#) [UE MS HS](#)

[Module 2 Lessons and Activities](#)



# All lessons correlate to Sunshine State Standards

Middle School Sunshine State Standards - Florida Invasive Plant Education Initiative & Curriculum - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://plants.ifas.ufl.edu/education/sunshine\_state\_standards\_ms.html

CAIP Education - CAIP Parks - CAIP Osceola - CAIP http://wolfteacher.co... PLANTS BETA Gmail Netflix Facebook Pandora

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Invasive Plant Education Initiative Curricula: Correlation to Sunshine State Standards

We are currently in the midst of updating our lessons with the new Sunshine State Standards. Thank you for your patience.

Printer friendly version of Sunshine State Standards (Microsoft Word Document 465 KB)

Middle School Activities							
<a href="#">A Fish Tale PowerPoint w/Questions</a>	SC.G.1.3	SC.G.2.3	SC.H.1.3	SC.H.2.3	SC.H.3.3	LA.A.1.3	LA.B.2.3
<a href="#">Alligator Flea Beetle Aquarium Lab</a>	SC.G.1.3	SC.G.2.3	SC.H.1.3	SC.H.2.3	SC.H.3.3	LA.A.1.3	LA.B.2.3
<a href="#">Alligator Flea Beetle Petri Lab</a>	SC.G.1.3	SC.G.2.3	SC.H.1.3	SC.H.2.3	SC.H.3.3	LA.A.1.3	LA.B.2.3
<a href="#">"Careers in Florida's Freshwater Environments" DVD Questions</a>	SC.G.1.3	SC.G.2.3	SC.H.1.3	SC.H.2.3	SC.H.3.3	LA.A.1.3	LA.B.2.3
<a href="#">"Careers in Florida's Freshwater Environments" DVD Vocabulary</a>	SC.G.1.3	SC.G.2.3	SC.H.1.3	SC.H.2.3	SC.H.3.3	LA.A.1.3	LA.B.2.3

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Plant ID Resources

FIND Plants in Your Region

Events

Grant Opportunities

What is it?

Plant ID Services

Sample Curricula Notebook

Scavenger Hunt: Win a Prize!

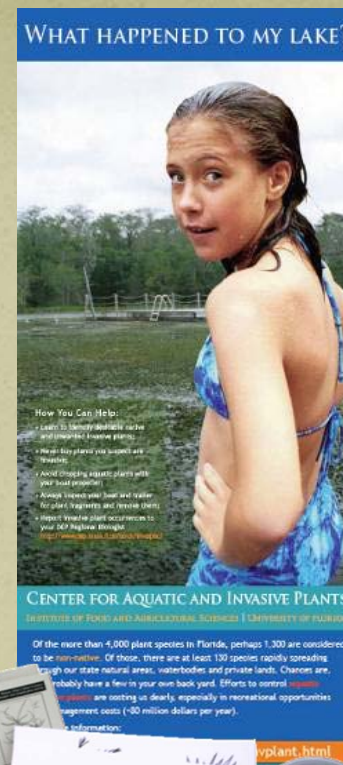
Develop a Lesson: Earn a Stipend (PDF)

Required!

# Gathered or created materials...



# It's not just about producing materials.





## **A Recipe in the Making:**

- ☐ **humor versus fear**
- ☐ **give educators a chance to contribute**
- ☐ **regular communication**
- ☐ **make materials that can be adapted**
- ☐ **be as generous as possible**
- ☐ **cooperate with others**
- ☐ **annual workshops**

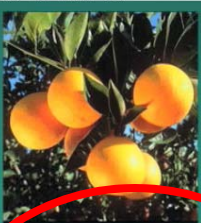
## □ humor versus fear



### SILENT INVADERS

A true story about  
**native**, **non-native**  
and **invasive**  
plants in Florida.

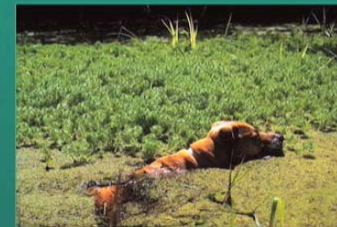
File Edit View Window Help



Most have  
proven to be  
extremely  
beneficial.



Of course, nature  
has its own way  
of moving seeds  
(and plants) to  
new areas.







Feral Hog



Feral Cat



Gambian Rat



Coyote



Cuban tree frog



cane toad

**LOTS of material here...**



□ give teachers a chance to contribute





# regular communication

Reply Reply to All Forward Move Delete Junk Close

Re: Bingo

Wendy Norton [nortonw@osceola.k12.fl.us]

You forwarded this message on 11/9/2007 1:00 PM.

Sent: Friday, November 09, 2007 12:14 PM

From: RICHARD,AMY N

I have to tell you my low level 7th graders had a ball with the bingo today they were screaming and yelling it was an amazing teaching moment.

Best Regards,

Wendy Norton-  
MAR Discovery Educator  
Science Lab Teacher  
Malaga Academy

Reply to All Forward Move Delete Junk Close

al plants

ton [nortonw@osceola.k12.fl.us]

Sent: November 06, 2007 6:32 PM

AMY N

Aquatic Plant story today the worksheet had the kids engaged the whole time. thanks,

-ry Educator  
eacher  
demy  
Hill Road  
34746

Re: A Fish Tale quick question

Nancy Palmer [nancy\_palmer@scps.k12.fl.us]

Extra line breaks in this message were removed.

Sent: Wed 11/12/2008 10:10 AM

To: RICHARD,AMY N

Hey Amy,

Yes, I think it would helpful to have definitions for key words. It would take any guesswork out of the definitions if they were already there.

Thank you!!!

Nancy

Original Message

From: Solomon, Coni - Ft. King Middle School [Coni.Solomon@marion.k12.fl.us]  
To: RICHARD,AMY N  
Cc:  
Subject: RE: FCAT and "guiding" questions for SILENT INVADERS

Sent: Tue 10/14/2008 8:44 PM

Amy,

I took a quick look at the demo site and it looks great! Y'all are doing a super job of listening to our feedback (unusual in the educational field:-)

Here are a few responses to your questions:

1. Five sections look good and are easy for navigation. One question: There isn't a section for tiles 4-19. Is it considered vocabulary development? Or Introduction to Non-Native Species?
2. I checked out the middle school link and like the guiding questions. Esp good for either using as a Powerpoint, general review or, for ESE Special area kids, it can be duplicated for them to follow along with their own "hard copy." For some students, it is required by law through their IEP to give them their own materials (as an accommodation).
3. The words aren't hard-and-fast FCAT words, but they are subject specific and appear to meet the needs of the lesson. Sometimes too many words at a time is just too much for the kids to absorb. For the elementary level, it is a good introduction to the Vocab., for middle it is a good reinforcement (some new words/some already introduced words). Check with high school teachers for their input as to the appropriateness for them. I'm clueless on that one.
4. There probably will need to be varying levels of FCAT questions as upper elementary questions would and should be vastly different from high school questions. You could use the same types of questions - just "amp up" the question to meet the need of the higher academic levels.

Hope this is helpful. Have a great day!

Coni Solomon  
Ft. King Middle School  
[Coni.Solomon@marion.k12.fl.us](mailto:Coni.Solomon@marion.k12.fl.us)

Teamwork is simply individual efforts melded together to achieve excellence.

❑ materials easily adapt to other regions



Florida Invasive Plant Education Initiative and Curriculum

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### Module 1 - Silent Invaders

About the Video

About 3,000 of Florida's terrestrial and aquatic plant species are native plants.

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Table of Contents

Opening and Title Slide (slide 1-3)

Part 1 Introduction to Native Plants (slides 4-14)

- Keywords
- FCAT Questions: Common
- Suggested Resources

Part 2 Introduction to Non-Native Plants (slides 15-33)

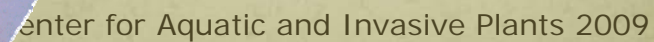
- Keywords
- FCAT Questions: Common
- Suggested Resources

Part 3 Introduction to Invasive Plants (slides 34-44)

- Keywords
- FCAT Questions: Common
- Suggested Resources

Part 4 You Can Help: Positive Impact







□ cooperate with others

*Project WILD!*





[Overview](#) [Current Program](#) [Past Programs](#) [Sponsors](#)

## Current Programs



### INVASIVE SPECIES MONITORING, Fall 2008

#### Overview

Maine 7th and 8th grade students will apply their knowledge and skills to the scientific study of invasive aquatic species. Using *Vital Signs* innovative computing tools and research equipment, teams of students will report species observations and habitat data to a ready and responsive community of scientists. Scientists will use these student-collected data to inform their own statewide research efforts.

The hands-on study of invasive species reinforces a number of state and national science and technology learning standards. It challenges students to work collaboratively with their peers, connect with their local communities, and steward natural resources.

#### Content Focus: Invasive Species

Invasive species pose a serious threat to biodiversity worldwide, causing extinction or displacement of native species, degrading wildlife habitat, impairing recreational use of waterways, and reducing shell/finfish resources. Early detection and rapid removal are critical to the management and protection of our aquatic environments, but Maine has perhaps only a dozen scientists dedicated to monitoring the state's 6,000 lakes, 32,000 miles of rivers and streams, and 5,000 miles of coastline. Vital Signs will enable 32,000 7<sup>th</sup> and 8<sup>th</sup> grade students to collect rigorous scientific data to significantly enhance existing monitoring efforts.

#### Universal Access: 7<sup>th</sup> and 8<sup>th</sup> Grade Students in Maine

*Vital Signs* will be universally accessible to all Maine students in grades 7 and 8. The Maine Learning Technology Initiative (MLTI) has equipped each student in this grade cohort with a personal laptop computer and high speed Internet access. A partnership with MLTI offers *Vital Signs* an extraordinary opportunity to connect 32,000 students, 400 teachers, and a number of invasive species researchers in statewide scientific study.

#### Program Development

See what we're up to:

- [VS 2008 Development Blog](#)

#### Student Research Experience

Students use the scientific process to investigate local habitats for invasive species:

- Observations are made in the field
- Research questions are selected
- Hypotheses drive field investigations
- Software and authentic tools guide data collection
- Database, interactive maps & graphs assist analysis
- Products are shared with online community of students, teachers, scientists

#### Program Impacts

*"The magnitude of this involvement promises to build a heightened level of school-age awareness and a meaningful body of scientific knowledge that is essential for biologists and resource managers committed to addressing invasive species issues"* Commissioner David Littell, Maine Department of Environmental Protection

#### Professional Development

Vital Signs Teacher Institute, August 2008

- [VS Institute 2008 blog](#)
- [VS Institute 2008 wiki](#)

Aquatic Invaders in Maine Summer Institute, June 2007

- [AIM blog](#)
- [AIM wiki](#)

## □ annual workshops



**2009 Summer PLANT CAMP Application**  
<http://plants.ifas.ufl.edu/education/plantcamp>

Workshop made possible by the U.S. Fish and Wildlife Conservation Commission's Invasive Plant Management Section and UF IFAS Center for Aquatic and Invasive Plants.

Thank you for your interest in this 5<sup>th</sup> annual five-day in-service training workshop for teachers (which about Florida's native and invasive plants in a perfect world. Every one of you should be able to attend our workshop. However, due to obvious limited seating, we must limit participation to 24 teachers. If you are not selected, please stay tuned for opportunities to attend similar events next year. And thank you for being leaders in education.

**When:** June 14-18, 2009 **Where:** University of Florida / Center for Aquatic and Invasive Plants / Gainesville

**IMPORTANT:** Applications will be accepted from **UPPER ELEMENTARY, MIDDLE and HIGH** school teachers. Participants chosen by a committee of teachers and CAP staff. **All entry packets MUST** contain the following, completed by the applicant:

**#1 Application:** Note: An incomplete application may result in being disqualified.

**#2 Letter of recommendation:** from your principal or school superintendent, stating why you should be selected to attend this workshop. This letter should include a brief description of your teaching accomplishments, enthusiasm and evidence of your commitment to continuing Florida's natural areas.

**#3 Mission statement:** From you, on how and when the new knowledge and materials will be shared with your students. To include the number of students and teachers who will benefit.

**Participants will be notified by February 26, 2009.**  
 Please send recommendations and mission statements to: [CAP-extension@ufl.edu](mailto:CAP-extension@ufl.edu). (Note: We will provide contact information, if selected, so you can arrange accommodations.)  
**Download PLANT CAMP Flyer:** <http://plants.ifas.ufl.edu/education/plantcamp/index.html>

**DUE DATE:** February 13, 2009  
 Send completed application to:  
 UF/IFAS Center for Aquatic and Invasive Plants  
 7952  
 Gainesville, FL 32626  
 Phone: 352.392.5843 • Fax: 352.392.5844  
 Email: [CAP-extension@ufl.edu](mailto:CAP-extension@ufl.edu)  
 LEARN MORE: <http://plants.ifas.ufl.edu/education/plantcamp>

Grade level(s) teaching: \_\_\_\_\_ Subject you will teach (2009-2010): \_\_\_\_\_

Name: \_\_\_\_\_

Home Mailing Address (Note: Please be sure to provide your preferred physical mailing address so we can send materials, if needed.)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

School Name/Address: \_\_\_\_\_

School Phone #: \_\_\_\_\_ E-mail: \_\_\_\_\_

Home Phone: \_\_\_\_\_ Cell Phone #: \_\_\_\_\_



❖ **Create infrastructure** to support annual in-service workshops and continuing education for teachers.





# PLANT CAMP Goals

❖ **Create excitement and interest** among teachers who will pass it along to students and also assist with curriculum development.



# Welcome Session





## Day 1 — Upland Plants





## Day 2 — Why Manage Invasive Plants?





## Day 3 — Aquatic Plants and Water Quality





## Day 4 — Curricula Development & Graduation





## Teacher Comments

Now I understand how important it is to stay ahead of invasive plants.”

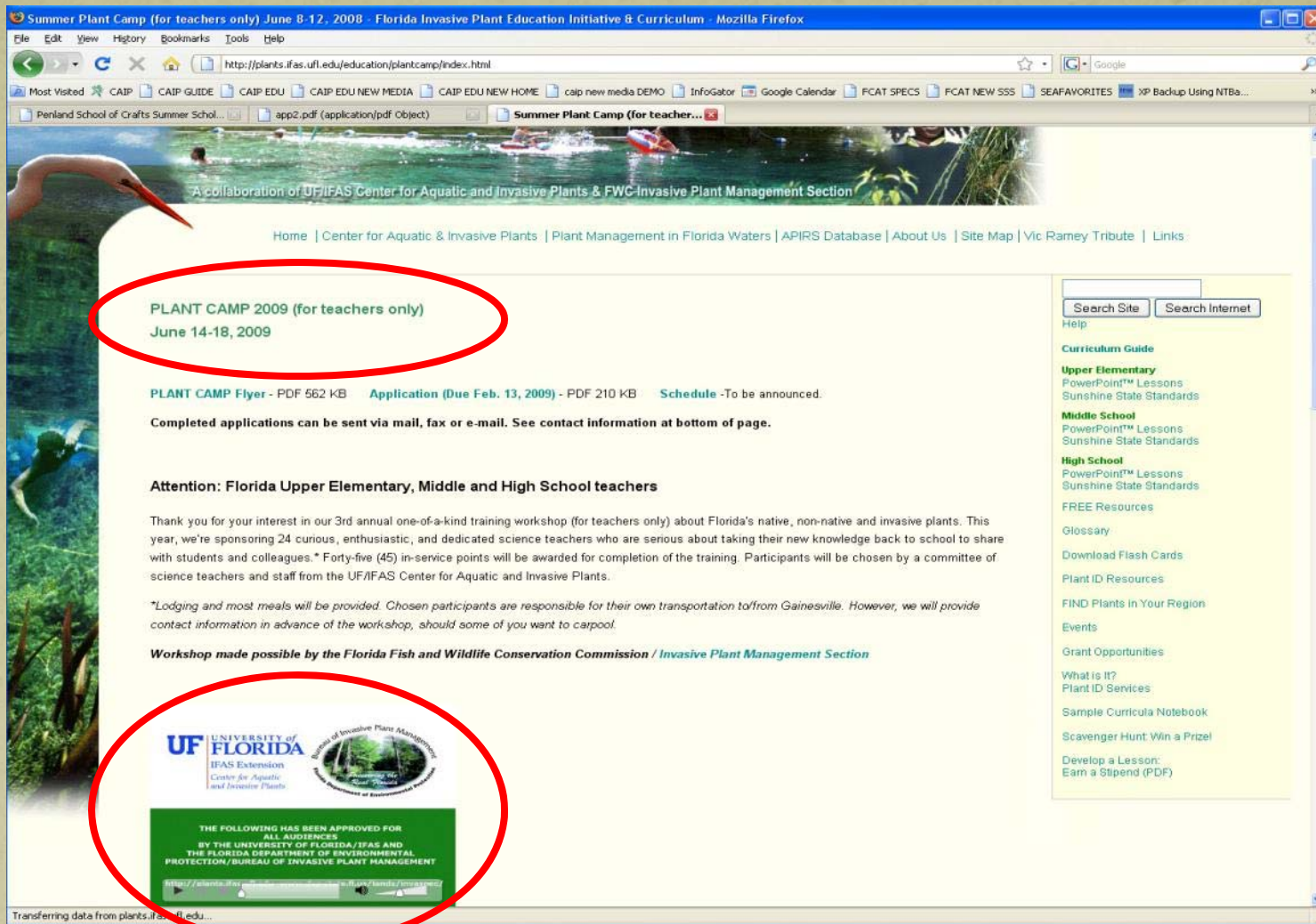
Thanks for getting us out in the real thing.”

Hands-on activities on boats were a real eye opening experience.”

This has given me a deeper insight into the seriousness of the issue.”

Helpful to see the actual invasions of specific species.”

The number of invasive plants was amazing! “





# Looking forward ~

## Sneak Preview: Invasive Species Film Festival





## Wetlands, Oceans, and Watersheds

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Search: ☐ All EPA ☒ This Area

You are here: [EPA Home](#) » [Water](#) » [Wetlands, Oceans & Watersheds](#) » EPA Water Quality Video Contest

### EPA Water Quality Video Contest- Win \$2,500!

Help the U.S. EPA spread the word about water quality and environmental stewardship

We're looking for educational videos that inspire people to help protect our streams, lakes, wetlands, and coasts

The two winners will each receive \$2,500 and their videos will be featured on EPA's Web site.

- [Contest Information](#)
- [Getting Started - Basic Information](#)
- [Contest Rules](#)
- [Privacy Policy](#)
- [Frequently Asked Questions](#)

You can also [join our Facebook group to connect with other participants](#) [EXIT Disclaimer](#)

#### Contest Information

We need your help to improve the nation's water quality by getting the word out about water pollution. To educate people on behaviors that will result in improved water quality, the U.S. Environmental Protection Agency (EPA) is looking for video submissions in the following two categories:

- a 30 or 60 second video that is usable as a TV public service announcement
- a 1-3 minute instructional video

The goal of the video contest is to educate the public on different water pollution issues and illustrate ways that target audiences such as homeowners, gardeners, farmers, pet owners, communities and others can improve water quality by changing simple behaviors.



[Click here to download plugin.](#)

Some features of this site require the latest version of Macromedia Flash Player.

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PLAYER



## In the Parks...



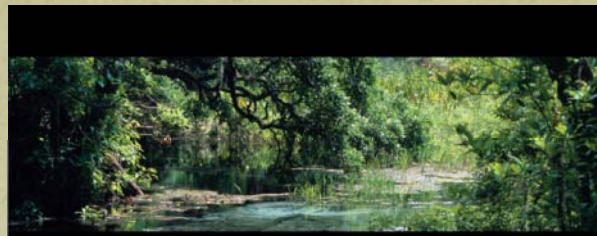
Also working with biologists, environmental specialists and volunteers in select Florida state parks.



- ❖ Bill Baggs/Cape Florida
- ❖ Crystal River Preserve
- ❖ Estero Bay
- ❖ Jonathan Dickinson
- ❖ Oscar Scherer
- ❖ Paynes Prairie Preserve
- ❖ Rainbow River

UNIVERSITY of  
**FLORIDA**  
IFAS Extension  
*Center for Aquatic  
and Invasive Plants*





## Invasive Plants in Rainbow Springs State Park

Do you recognize any of these plants? We'd like to bring your attention to some non-native, invasive plant species that have become a serious ecological threat in this area. The six plants below are currently being controlled by park staff and volunteers.

<p>A small, creeping plant that forms a dense mat. It spreads rapidly and can be difficult to remove. It is often found in wet areas.</p> <p><b>Spotted Spurge</b> Clerodendron bungei</p>	<p>A vine that grows in wet areas. It has large, heart-shaped leaves and can form a dense mat. It is often found in wet areas.</p> <p><b>Water Hyacinth</b> Eichhornia crassipes</p>	<p>A small, creeping plant that forms a dense mat. It spreads rapidly and can be difficult to remove. It is often found in wet areas.</p> <p><b>Spotted Spurge</b> Clerodendron bungei</p>
<p>One of the most common invasive plants in the state. It has large, heart-shaped leaves and can form a dense mat. It is often found in wet areas.</p> <p><b>Water Hyacinth</b> Eichhornia crassipes</p>	<p>This vine grows in wet areas. It has large, heart-shaped leaves and can form a dense mat. It is often found in wet areas.</p> <p><b>Water Hyacinth</b> Eichhornia crassipes</p>	<p>A fast-growing plant that can form a dense mat. It has large, heart-shaped leaves and can form a dense mat. It is often found in wet areas.</p> <p><b>Water Hyacinth</b> Eichhornia crassipes</p>

To identify plants in your neighborhood, visit  
<http://plants.ifas.ufl.edu>



Photos by: Scott MacKenzie



## Why Should We Care?

Invasive plants are costing Floridians a lot of money; tens of millions of taxpayer dollars are spent annually to control them. If not kept in check, they can produce ideal breeding grounds for mosquitoes; create serious navigation blockages; and cause major flooding problems during storms. Boating, swimming, hiking and other activities can also be made difficult, even dangerous, by invasive plant infestations.



<http://plants.ifas.ufl.edu/guide>

Below: Florida's Invasive Plant Species







## Keeping Things Under Control

After much research, we know that some invasive plant species will never be eradicated in Florida; they simply reproduce too fast. So now, the strategy is to keep infestations at the lowest feasible levels.

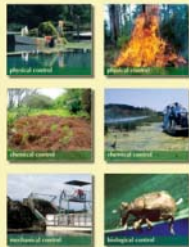
Regular "maintenance control" lessens overall environmental damage; it maintains habitat for native wildlife and it keeps plants from damaging bridges and flood control structures. It also reduces the total amount of herbicides needed over the long term.

Control of invasive plants allows us to enjoy our natural areas and preserves Florida's unique diversity.



<http://plants.ifas.ufl.edu/guide>

Photo by: iStockphoto.com



## You Can Help

Preventing the introduction and spread of non-native, invasive plants in Florida is the most effective and least expensive way to protect Florida's natural habitats. Here are a few things we can all do:

- Learn to identify which plants are invasive, especially in your area.
- Always remove plant matter from boats and trailers after use.
- Volunteer to help remove invasive plants in your neighborhood.
- Ask your nursery or garden center for native and/or non-invasive plants.
- Inspect your yard for invasive non-native plants; dispose of them in household trash (don't compost them).
- Practice good stewardship: never transport Florida's aquatic, wetland or upland plants to other areas, and never empty your aquarium into a body of water (not even a ditch).



<http://plants.ifas.ufl.edu/guide>





An opportunity ?

## **Invasive Species Education Summit –**

for those involved in the education side of things. (Currently, most meetings seem focused on the control and/or policy aspect.)

## **More ideas:**

- ❖ **Invasive Species Video Festival (online)**
- ❖ **Take time to create a listing of all agencies/groups working on invasive species education and open a dialogue...**



# The Team

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- ❖ **Joshua Huey** ~ Graphics Assistant

With great appreciation for a 25 year  
collaboration and continued support of...

the FWC / Invasive Plant  
Management Section  
(formerly the DEP/Bureau of  
Invasive Plant Management)





*If we can be of service...*

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