UF/IFAS Center for Aquatic & Invasive Plants and FWC Sponsored Websites

by Karen Brown and Charlie Bogatescu
UF/IFAS/CAIP FWC Partnership

- UF/IFAS Center for Aquatic & Invasive Plants (CAIP)
  - Established in 1978 by FL legislature
  - ...to inform & educate all stakeholders about the impacts & management of invasive plants
- FWC Invasive Plant Management Section
  - Lead agency coordinating & funding invasive aquatic & upland plant control on public lands & waterways
CAIP & FWC

• Long history of partnering on research and education & outreach
• CAIP Information Office provides education & outreach largely through our websites
UF/IFAS CAIP Websites

• Help bridge the gap between
  – Aquatic & natural area invasive plant research AND
  – Agency personnel
  – Plant managers
  – Stakeholders
  – Teachers
  – Citizens
• Plant management in public waterbodies and natural areas is loaded with conflicts
• Many people distrust government agencies
• Important asset: many citizens feel strong loyalty and confidence in UF
• **GO GATORS!**
CAIP Information Office

• Three distinct websites

plants.ifas.ufl.edu
I. CAIP Information Office Website

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I. CAIP Information Office Website
I. CAIP Information Office Website

Center for Aquatic and Invasive Plants
University of Florida, IFAS

Search

Site Navigation
- Plant Info & Images
- APLS Database
- AQUAPHYTE Newsletter
- Plant Glossary
- Invasive Plant Laws
- Meetings
- Publications
- County Extension Offices
- Links
- Contact Faculty & Staff

Water lettuce

Pistia stratiotes

Nativity uncertain
Origin: Africa or South America
Introduction to Florida: pre-1765 (accidental)

This species appears on the following legally prohibited plant lists

<table>
<thead>
<tr>
<th>Federal Nonnoxious Weed List</th>
<th>Florida Noxious Weed List</th>
<th>Florida Prohibited Aquatic Plants List</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

FWC WEED ALERT (PDF)

CATEGORY 1 on the Florida Exotic Pest Plant Council’s (FLEPPC) 2013 List of Invasive Plant Species

More Info: Plant Management in Florida Waters

The UF/IFAS Assessment lists plants according to their invasive status in Florida.

Download a recognition card (PDF) from Invasive and Non-native Plants You Should Know

Download a page (PDF) from Identification and Biology of Nonnative Plants in Florida’s Natural Areas – Second Edition

See Table 1 in Florida’s Established Arthropod Weed Biological Control Agents and Their Targets (2013) for a list of arthropod biological control agents that occur on this species.

More Resources
I. CAIP Information Office Website

Invasive Plant Recognition Cards – SP 431

**Pistia stratiotes**

*Water lettuce*

**Appearance:** Floating herb in rosettes of gray-green leaves; rosettes occurring singly or connected to others by short stems.

**Leaves:** Often spongy near base; densely soft pubescent with obvious parallel veins, slightly broader than long, widest at apex, to 15 cm (6 in) long.

**Flowers:** Inconspicuous; clustered on small, fleshy stalk nearly hidden in leaf axils, with single female flower below and whorl of male flowers above.

**Fruit:** Arising from female flower as a many-seeded green berry.

**Ecological threat:** Capable of forming vast mats that disrupt submerged plant and animal communities and interfere with water movement and navigation. Also serves as host for at least two genera of mosquitoes. FLEPPC Category I.

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

**Field Notations:** PISTRA/PIST2

[Link to Plants Information](http://plants.ifas.ufl.edu)

ID and Biology of Non-Native Plants in Florida’s Natural Areas – SP 257

**Pistia stratiotes**

**Common Name:** Water lettuce

**Scientific Name:** Pistia stratiotes

**Height:** 15 cm (6 in) long

**Botanical Description:** Floating herb in rosettes of gray-green leaves; rosettes occurring singly or connected to others by short stems. Roots numerous, Scalloped. Leaves often spongy near base, densely soft pubescent with obvious parallel veins, slightly broader than long, widest at apex, to 15 cm (6 in) long. Flowers inconspicuous, clustered on small, fleshy stalk nearly hidden in leaf axils, with single female flower below and whorl of male flowers above. Fruit arising from female flower as a many-seeded green berry.

**Geographical Distribution:** May have been introduced to North America by natural means or by humans (Stoddart 1989). Seen as early as 1774 by William Bartram in “Notes on a quiver of a ride in the sketch” in the St. John River (Savory 1928). Has been suggested that this plant via St. Augustine, founded in 1565, may have preceded as early as 1565 for introductions into the St. Johns watershed (Jackson and Les 1994). Capable of forming vast mats that disrupt submerged plant and animal communities and interfere with water movement and navigation (Brunner 1982; Atwater 1976; Sharrar 1980; Holm et al. 1977). Also serves as host for at least 2 genera of mosquitoes (Holm et al. 1977). Considered a serious weed in Ceylon, Ghana, Benin, and Thailand and as an introduced weed in 49 other countries (Holm et al. 1979). A target of management research and control in Florida for at least 2 decades.

**Distribution:** Now one of the most widely distributed hydrocharitaceae in the genera (Holm et al. 1977). In North America, occur in subtropical Florida and locally known in Texas (Conolly and Wooten 1949). In Florida, distributed as invading lakes, swamps, marshes, and floodplains, watercourses, depressions, and rural communities. Florida specimens recorded from 39 counties as far west as Brevard County in the Panhandle through the peninsulas south to Collier and Miami-Dade counties (Wredeker and Harvey 2004). Populations have also been reported in Arkansas (Clough), Louisiana, and Mississippi, including the Royal Collection 1988. Glade specimens were noted in north Carolina (Cleland 1918). Occurred in 80 public water bodies in Florida in 1984 and 120 water bodies by 1989, but small abundance reduced by a half over five years as a result of a statewide management program (Schacht and Schmitz 1990).

**Life History:** Reproduces rapidly by vegetative offshoots formed on stems, brittle stems, various naturally in density of moisture, from less than 100 to over 3,000 per m² in south Florida (Trowell and Loomis 1953). Seed production, once thought to occur in Florida, now unconfirmed. Trophic habits: Exposure (Carr and Center 1960). Not cold tolerant (Holm et al. 1979). Can survive for extended periods of time on rocky, sandy, and soils (Holm et al. 1977).

K. Langeland, et al
I. CAIP Information Office Website
II. Plant Management in FL Waters

plants.ifas.ufl.edu/manage
II. Plant Management in FL Waters

Aquatic plants play an integral role in Florida's healthy aquatic ecosystems, but occasionally some of the vegetation, especially non-native plants, interferes with the use and function of these natural resources.

This website will help to explain why and how aquatic plants are managed in Florida waters. These five sections will guide you through the many factors considered by FWC biologists when developing aquatic plant management plans for Florida waters. Our priority is to manage invasive plants while also conserving and enhancing our unique aquatic habitats and wildlife communities.

plants.ifas.ufl.edu/manage
II. Plant Management in FL Waters

- Explains why and how aquatic plants are managed in Florida waters
- Demonstrates FWC compliance with NPDES
II. Plant Management in FL Waters

• Section 4 – Developing Management Plans
  – NPDES
  – Scope of APM in Florida
  – FWC Hydrilla Management Position
  – Control Considerations
    • Biological
    • Chemical
    • Mechanical
    • Physical
    • Maintenance
II. Plant Management in FL Waters

• Section 4 - Continued
  – Aquatic Plant Management Agencies
  – Integrated Plant Management
  – Monitoring and Management
  – FWC Annual Reports
  – Permitting
II. Plant Management in FL Waters

• Chemical Control Considerations
  – Registered aquatic herbicides
  – Herbicide Resistance
  – Reducing Pesticide Use
  – Considerations for 14 herbicides
    • Use Patterns
    • Water Uses & Functions
    • Herbicide, Waterbody, Plant & Climate Parameters
II. Plant Management in FL Waters

• Section 2 – Added 350+ FWC work plans for public waterbodies, indexed and searchable by county and waterbody name
III. Education Initiative & Curriculum

plants.ifas.ufl.edu/education
II. Education Initiative & Curriculum

Florida Invasive Plant Education Initiative & Curriculum

PLANT CAMP 2015
June 15-19

UPDATES
- PLANT CAMP 2015 applications deadline extended to MARCH 2, 2015
- Lakeville Quick Start Training Guida Video now available
- Higher-order reading activities added to Module 1

The Florida Invasive Plant Education Initiative was created to provide educators with the information and resources needed to teach students about the harmful impacts some non-native, invasive plants are having on our natural areas and neighborhoods. Our ultimate goal is for today's youth to draw on this knowledge as they mature into responsible environmental stewards.

FOLLOW US

Join Our Mailing List!
Keep up-to-date on news and events.

[Facebook icon] [Twitter icon] [YouTube icon]
II. Education Initiative & Curriculum

- Updated aligned educational standards on all curricula
- Created new reading activities to align with Common Core State Standards
- In development: Student Section
II. Education Initiative & Curriculum

- Update PLANT CAMP section each year with videos and photos
- Added “Teacher Kits” to publicize availability of loaner materials
- Added survey for requesting free materials online; efficient tracking and processing
Website Outreach

• List-servs utilized to announce new content and publications, websites, meetings...
  – Aquatics (~1,800)
  – Education Initiative (~2,200)
  – FLEPPC (~300)
• AQUAPHYTE newsletter
• Aquatics magazine
• Professional meetings and conferences
• Public events
Website Support

- Content management and security
- Back-ups and archives
- Usability studies
- Navigational and design improvements
- Continuous content additions & updates
- One full-time IT/Web Design person: Charlie Bogatescu
I. CAIP Information Office website
   – March 2014 – March 2015
   • 500,000 Visits
   • 1,500,000 Pageviews

Google Analytics
Use of Websites

II. Plant Management in Florida Waters
   – March 2014 – March 2015
   • 56,000 Visits
   • 120,000 Pageviews

Google Analytics
Use of Websites

III. Invasive Plant Education Initiative
– March 2014 – March 2015
• 16,000 Visits
• 41,000 Pageviews

Google Analytics
Use of Websites

• Combined usage of websites
  • 580,000 total visitors
  • 1,600,000 total pageviews

• Combined expertise of CAIP and FWC/IPMS
  • An expert guide to Florida’s aquatic & invasive plants and their management
    – Managers
    – Educators
    – Stakeholders
    – Citizens
CAIP Websites & FWC/IPMS

• Partnership spans decades
• Evolved alongside technology
• Support, participation, assistance
• Accomplishing the missions of both CAIP & FWC/IPMS
• Win/Win situation!
CAIP Websites & FWC

• Visit us at http://plants.ifas.ufl.edu
• Feedback is crucial and welcome
• Thank you!