

Invasion pathways for aquatic weeds: Case studies from Florida

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Florida's environment



Plant introductions



Duckweed

Description	Item Number	Price	Quantity
Duckweed	99969	\$2.49 6 or more: \$1.89	<input type="text"/>

ADD TO CART

Add to Wish List



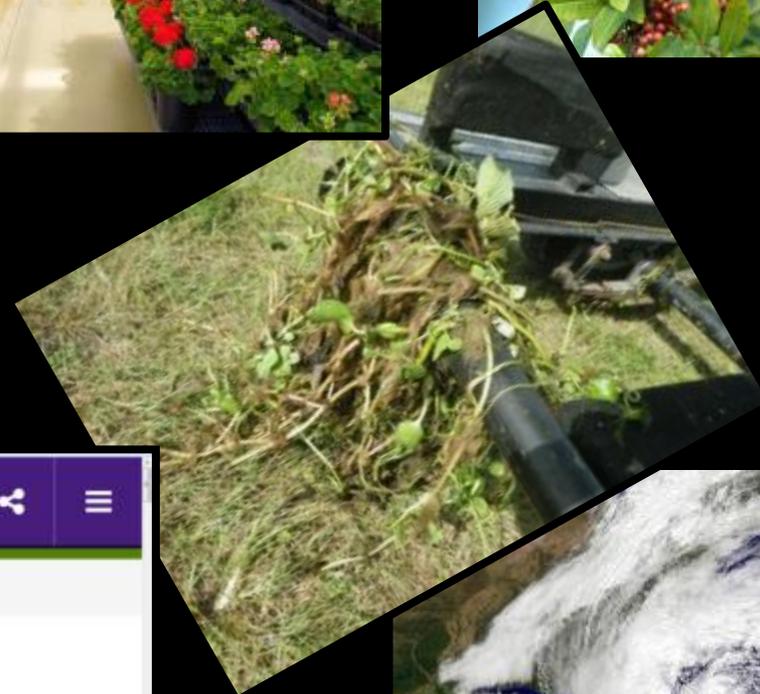
Expansion and spread



CL > south florida > miami / dade > all for sale / wanted > farm & garden - by owner

Reply: 4988-3752101687@vsnl.com craigslist.org flag: uncategorized prohibited spam best of Post: 2013-04-07

Nice small plastic pond with water plants, fish & fountain - \$125 (Doral)



LSU AgCenter
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Publications > Louisiana Agriculture Magazine > Past Issues > 2008 > Summer
> Chinese Tallow Trees a Potential Bioenergy Crop for Louisiana

Chinese Tallow Trees a Potential Bioenergy Crop for Louisiana

Linda Benedict | 10/21/2015 10:29:21 AM

General

1/7

A row of green trees, likely Chinese Tallow Trees, growing in a field.

Some of Florida's aquatic weeds...

Floating



Shoreline/all-terrain



Submersed



Floating-leaved



Waterhyacinth

1880s: Waterhyacinth



Waterhyacinth

Eichhornia crassipes (Pontederiaceae)

Brazil, S. America

Florida Prohibited Aquatic Plant

Plant height to 3'

Leaves 5", round

Leathery/rubbery

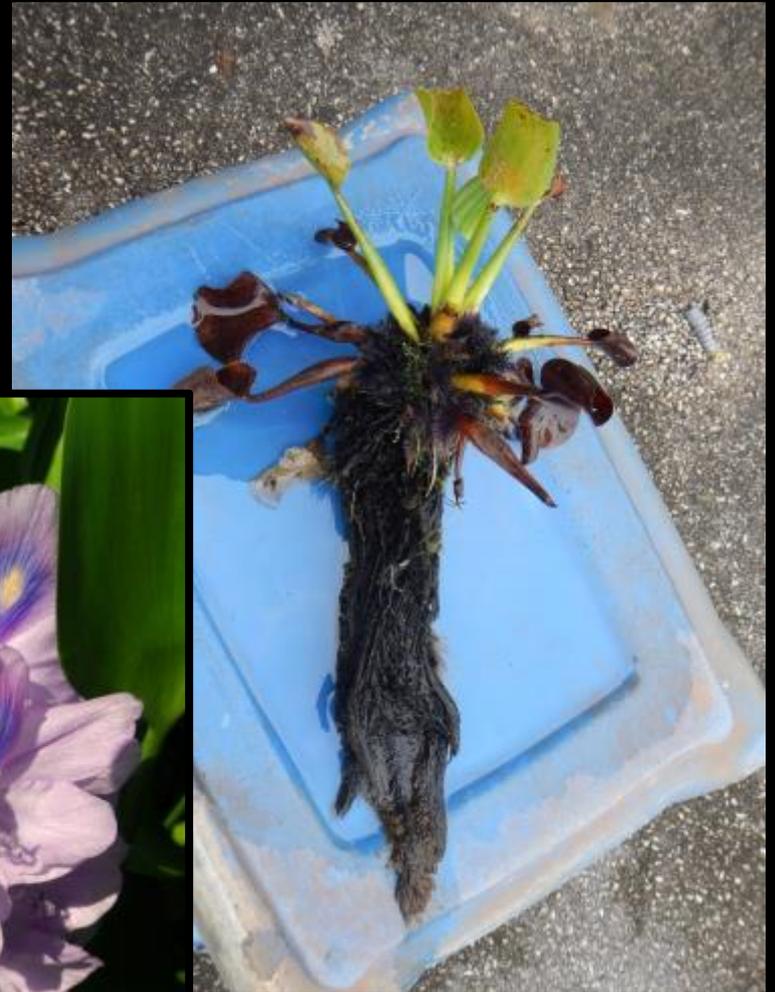
Spongy petioles; basal

Roots dark, feathery

Showy purple flowers



Waterhyacinth



Waterhyacinth



2,4-D, triclopyr
Diquat, glyphosate
Penoxsulam

Waterlettuce

Pistia stratiotes (Araceae)

S. America, Africa, SE US???

Florida Class 2 Prohibited Aquatic Plant

Plant width to 2'

Leaves to 1', scalloped

Thick, dull green, sessile

Roots light, feathery

Inconspicuous flowers



Waterlettuce



2,4-D, diquat, endothall
Flumioxazin

Giant salvinia

1990s/2000s: Giant salvinia/kariba weed



Giant salvinia

Salvinia molesta (Salviniaceae) – true fern

Brazil

Federal Noxious Weed

Fronds to 4 cm

Upper fronds round/oval

Joined in pairs

“Egg-beater” hairs

Lower fronds = “roots”



Giant salvinia



Diquat
Glyphosate

Feathered mosquitofern

2007: Feathered mosquitofern



Feathered mosquitofern

Azolla pinnata (Azollaceae) – true fern

Africa, Asia

Federal Noxious Weed

Fronds to 25 mm, deltoid

Green to red

Velvety

Roots up to 2" long

N fixation



Redroot floater

2010: Redroot floater



Redroot floater

Phyllanthus fluitans (Euphorbiaceae)

South America

Not listed (IFAS Assessment : “caution”)

Brittle stems to 2” long

Leaves to $\frac{3}{4}$ ” long, concave , green to pink to red

Water-repellant

Alternate

Roots to 1” long, tan to red



Redroot floater



Diquat

Crested floatingheart

1990s/2000s: Crested floatingheart



Crested floatingheart

Nymphoides cristata (Menyanthaceae)

Asia

Florida Noxious Weed

Leaves 6", cordate

Dark red markings

Smooth

Ridged white flowers

~5 petals

Spikey ramet



Crested floatingheart



Endothall (H191) + diquat

Yellow floatingheart

1990s/2000s: Yellow floatingheart



Yellow floatingheart

Nymphoides peltata (Menyanthaceae)

Asia

Florida Noxious Weed

Leaves 4", round to cordate

~ purple lower

~ scalloped margin

Flat papery yellow flowers

5 petals

Small/no ramets

Copious seed production



Yellow floatingheart



Glyphosate???
Unknown...

Hydrilla

1950s: Hydrilla



Hydrilla

Hydrilla verticillata (Hydrocharitaceae)

Multiple origins – Korea, India* (FL: dioecious ♀)

Federal Noxious Weed

Plant height to 25'

Leaves strap-shaped, 0.5"

Coarse serrations

Verticillate (4 to 8)

Rooted; tubers, turions

White flower to 0.25"

Long peduncle



Hydrilla



Fluridone
Endothall, ALS
Topramezone
Flumioxazin

Fanwort

2000s: Fanwort



Fanwort

Cabomba caroliniana (Cabombaceae)

Native***

Plant height to 30'

Submersed leaves finely cut, fan-like, 3"

Gelatinous

Opposite or verticillate/whorled

Emergent leaves ◇

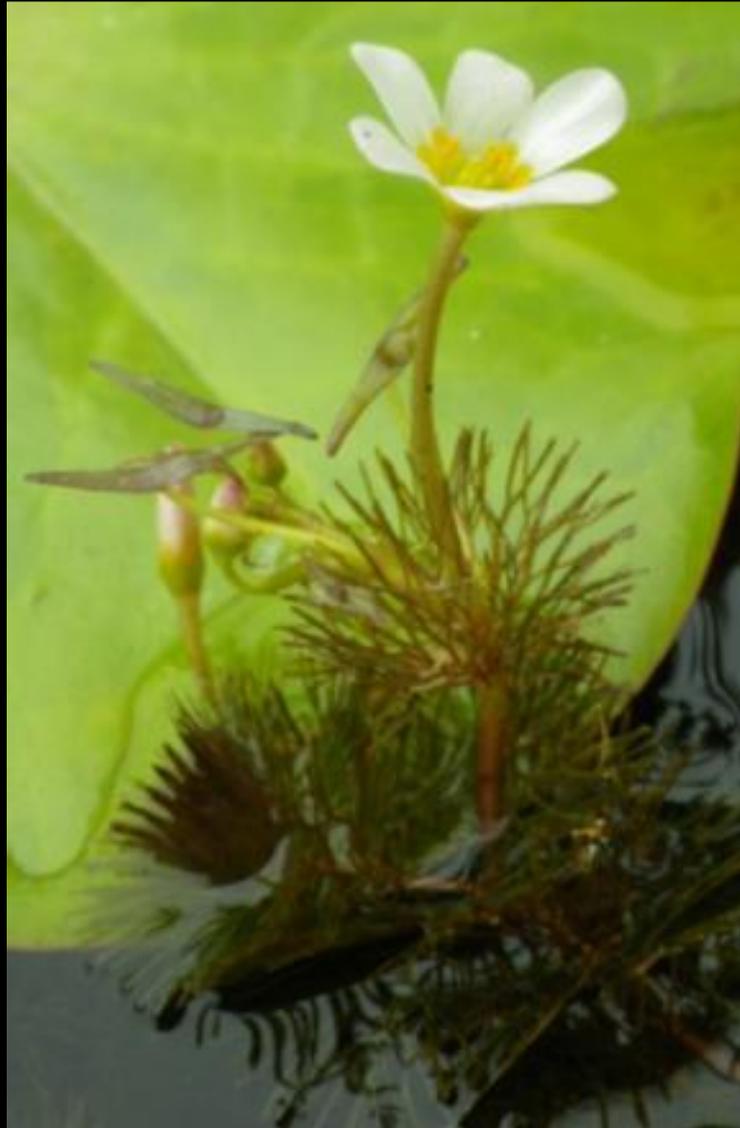
Usually rooted

Free-floating or anchored

Flowers emergent, 0.5"



Fanwort



Triclopyr
Carfentrazone

Torpedograss

Pre-1870s/multiple: Torpedograss



Torpedograss
Panicum repens
Photo by Ann Murray

Torpedograss

Panicum repens (Poaceae)

Africa, Asia

FLEPPC Category 1

Plant height to 3'

Leaves to 1/4" x 10"

Blue-green

Clasping hairy ligule

Open panicle to 9"

Small yellow flowers

Sharp pointed rhizome



Torpedograss



Glyphosate
Fluridone, imazapyr

East Indian hygrophila

1950s: East Indian hygrophila



East Indian hygrophila

Hygrophila polysperma (Acanthaceae)

India, Malaysia

Federal Noxious Weed

Leaves simple, to 4"

Elliptic, smooth margins

Opposite

Square stems

Flowers in leaf axils



Alligatorweed

1890s: Alligatorweed



Alligatorweed

Alternanthera philoxeroides (Amaranthaceae)

South America

Florida Prohibited Aquatic Plant

Plant height to 1'

Leaves simple, to 4"

Elliptic to lanceolate

Smooth margins

Opposite

Hollow stems

White flower on peduncle



Alligatorweed

Imazapyr, imazamox
Glyphosate, triclopyr

Rotala

1990s: Rotala, roundleaf toothcup



Rotala

Rotala rotundifolia (Lythraceae)

Asia

FLEPPC Category 2

Plant height to 8"

Leaves simple, smooth margins, opposite or whorled

Emergent round, to 0.5"

Submersed elliptic, to 1"

Bright red to green stems

Spike of bright pink flowers



Rotala



Rotala



2,4-D and triclopyr
F: Bispyribac, imazamox
S: Fluridone

Importance as vectors



- Waterhyacinth
- Waterlettuce
- Giant salvinia
- Feathered mosquitofern
- Redroot floater
- Hydrilla
- Fanwort
- Crested floatingheart
- Yellow floatingheart
- Hygrophila
- Torpedograss
- Rotala