# New Resources for Southern Aquatic Plant Management

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## **Aquatic Plants in Mississippi and Beyond**

Mississippi water resources:

- 190,000 acres of ponds
- 250,000 acres of large lakes
- 14,000 miles of rivers and streams

Some are devoid of important aquatic plants

Many struggle with nuisance plants

Other southern states face similar issues



## **Need for Aquatic Plant Resources**

No single repository for aquatic plant information

Existing sources of plant control information:

- Are often outdated or come directly from the product label
- Are based on lab and mesocosm experiments
- Usually difficult to follow, particularly herbicide recommendations
- Assume all plants need to be controlled
- Sometimes incorrect or illegal

<u>Goal:</u> Produce a multimedia repository of up-to-date aquatic plant information and control recommendations.

Specifically, we developed:

1. A comprehensive hardcopy field reference book

2. A Web-based aquatic plant management resource

3. Print-on-demand taxa-specific fact sheets



### What makes these resources different?

• Does not label all aquatic plants as inherently undesirable

 Control recommendations are based on peer-reviewed literature, technical reports, and real-world applications

 Limit recommendations to the most effective options and most affordable when available

 Recommendations are easy-to-follow and base on small quantities for a landowner with little training or equipment

## **Field Guide**

• Water resistant, spiral bound

Free to professionals

## Southeastern Aquatic Plants Identification, Control, and Establishment





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# All the info you need, none that you don't

- Why plants are good
  When plants are bad
  How to establish plants
  How to get rid of plants
- Plant growth forms
- Understanding herbicides and adjuvants
- Mixing and application

# Species ID, value, and recommended control

- Don't need to be a botanist
- Value to wildlife, fisheries, and people (human uses)
- Simplified instructions serve as explanation for complicated labels

47 common species or groups

#### Water Lily | Nymphae spp.

#### Recommended Controls

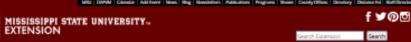
Option 1: 2,4-D (3.8-pound formulation). 2,4-D should be applied as a submersed injection (1.75 gallons per acre-foot of water). Determine pond volume prior to application. Do not exceed annual herbicide rate limits as stated on the product label.

Option 2: Endothall (4.23-pound formulation). Endothall should be applied as a submersed injection (1.3 gallons per acre-feet of water). Determine pond volume prior to application. Do not exceed annual herbicide rate limits as stated on the product label.

NOTE: Acre-feet = average depth of pond multiplied by pond acreage; average depth is calculated by taking the depth at 20 points across a water body and averaging the values. Submersed injection means that the herbicide solution is applied below the water surface directly into the water. For larger water bodies, treat one-third of the water body at a time and wait 2 weeks between applications. Then, treat the next one-third of the water body.

The best approach is to treat ponds with herbicides when water temperature is at least 60°F and the plants are actively growing. Multiple applications may be necessary to achieve eradication.

Read and follow all chemical label instructions, especially the section on the use of personal protection equipment.



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Southeastern Aquatic Plants: Identification, Control, and

#### Home + Natural Resources + Water Week

#### Water Weeds

Environment
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Mostoppi is home to extensive surface water resources. There are 81,236 miles of rivers and screams ranging in size from small, intermittent headwater screams to the Mostostpp River. There are notantil laker, reservoirs, and more than 160,000 acres of ponds, many of which are privately owned. They support numerous uses, including water withdrawal for municipal, industrial, and agricultural purposes, electric power generation, and remaindor.

Plants fulfill many natural functions and are vital in equatic and wetland environments. They help regulate water quality and produce oxygen, all while providing fload, wheter, and reproductive habitat for fish and other aquasic and semestrial species.

However, they can become overabundant and discupt ecosystem dynamics by interfeding with submining, basing, fabring, and fah management. This is particularly true when non-notive, or "exotic," species emerge, these can be expecially invasive and tack matual controls to reduce their growth.

#### Purpose and Approach

Establishment

This site takes a somewhat different approach to aquatic plants than many similar resources since it does not label all aquatic plants as inherently "undesirable."

Generally, aquetic plants are considered stimy, creeys obtacies to fahing or determent to swimming and, therefore, most publications focus on exotication. While we discuss control methods here, we also indicate plant species that can be used to provide habitat and setthetic enhancement with proper management.

#### **Fish University**



Part of the <u>Hammin Resources</u> Lithworkly <u>podcess network</u> and hossed by Dr. Wes Neal, Fish Linkworkly is a sciencebased podcess couvring the largest measurch in fish management from the small pond to the vast ocean.

many participants

#### Caption

PUBLICATIONS

FUELCATION NUMBER FITTING?

Macroslope | Chars and Nitella spg.

Aurcas | Aurcas spp.

Nation Number Parts in Water Persysteri (Hydrocolys.app.)

Mater Principe | Ladwigia spg.

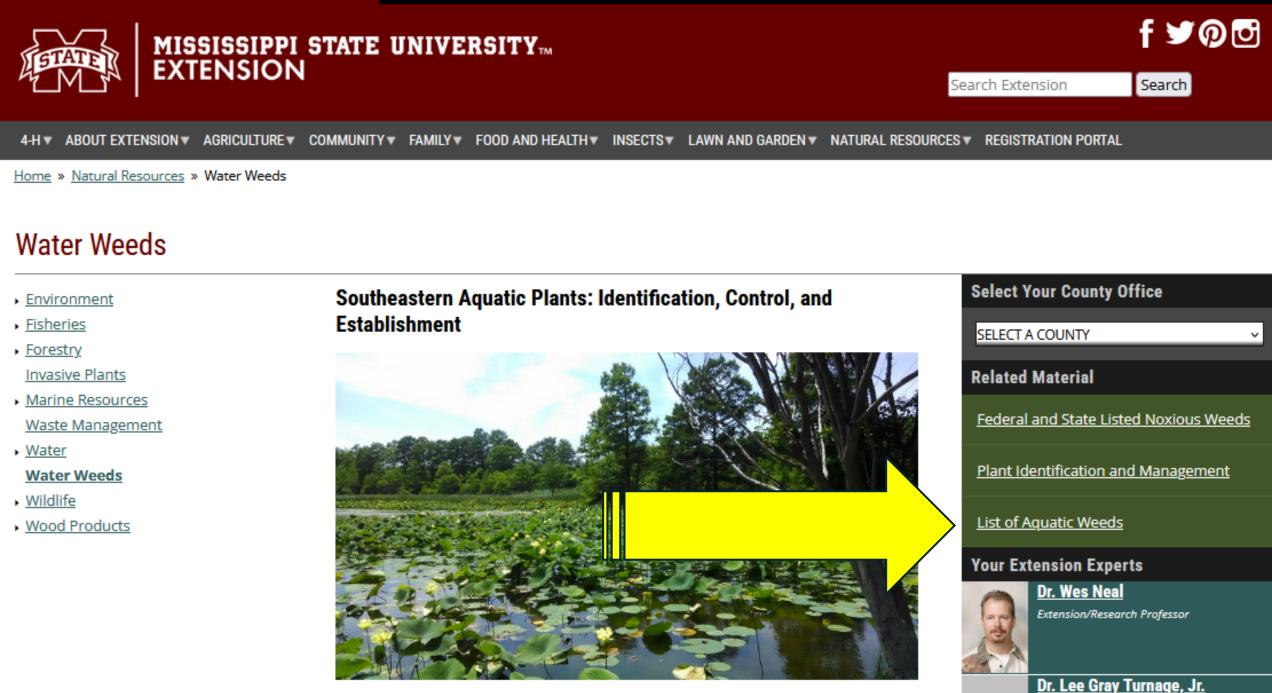
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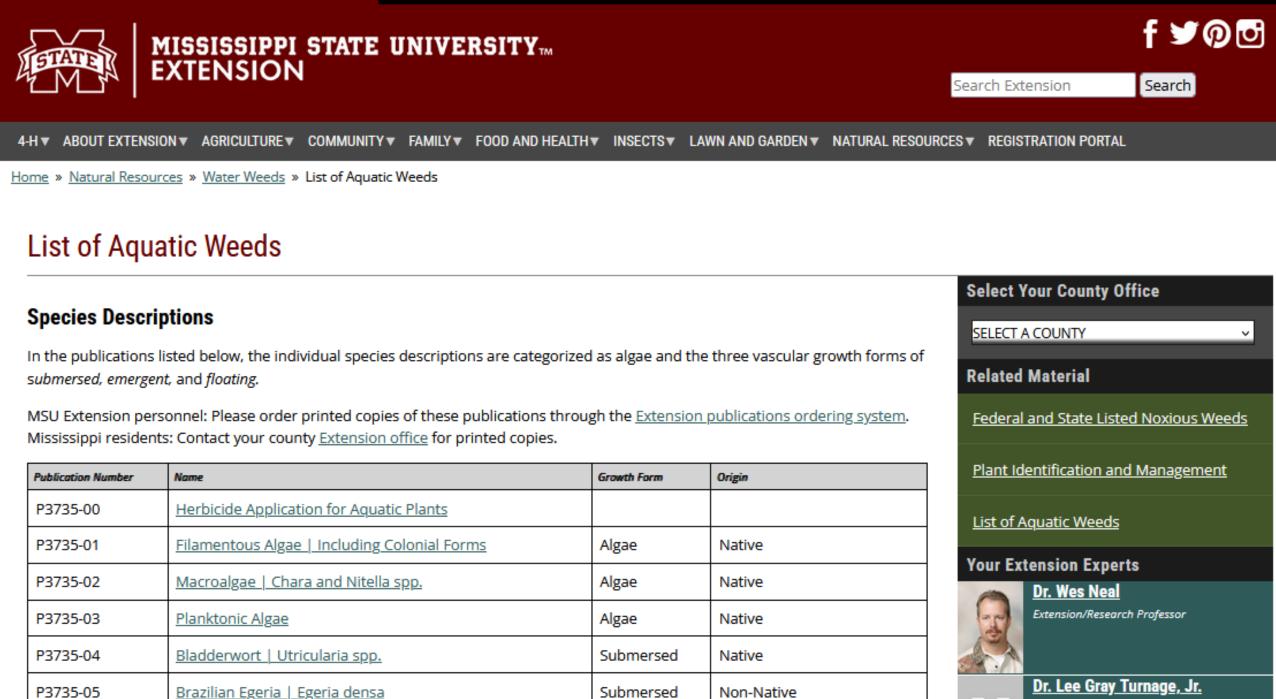
Water Shield | Brasenia achreberi

Select Your County Office	MAN,
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Related Material	
Federal and State Listed Nonious Weeds	PR.
Plant Identification and Management	
Lint of Aquatic Weeds	
Your Extension Experts	
R. Hea Head	
Dr. Les Gray Turnage, Jr.	

## Website

## extension.msstate.edu/waterweeds Google "MSU water weeds"







Common salvinia.



Giant salvinia.



impact aquatic biota and human uses of aquatic resources.

#### Management Value

This plant is non-native and highly invasive. Eradicate on sight.

#### **Recommended Controls**

**Option 1:** Flumioxazin (4.0-pound formulation). For each gallon of water, mix 0.05 ounce flumioxazin and 1.3 ounces non-ionic surfactant. Use a buffering agent when mixing with water with pH greater than 7.0. Spray to wet all exposed plants. Do not exceed annual herbicide rate limits as stated on the product label.

**Option 2:** Glyphosate (5.4-pound formulation). For each gallon of water, mix 1.0 ounce glyphosate and 1.3 ounces non-ionic surfactant. Spray to wet all exposed plants. Do not exceed annual herbicide rate limits as stated on the product label..

In cold temperatures (less than 50 degrees), apply flumioxazin. In warm temperatures, use glyphosate or a glyphosate plus flumioxazin tank mix.

Read and follow all chemical label instructions, especially the section on the use of personal protection equipment.

Asst Extension/Research Prof

#### **Related Publications**

PUBLICATION NUMBER: P3735-02 Macroalgae | Chara and Nitella spp.

PUBLICATION NUMBER: P3735-26 Juncus | Juncus spp.

PUBLICATION NUMBER: P3735-36 Water Pennywort | Hydrocotye spp.

PUBLICATION NUMBER: P3735-37 Water Primrose | Ludwigia spp.

PUBLICATION NUMBER: P3735-38 Water Shield | Brasenia schreberi



Common salvinia.

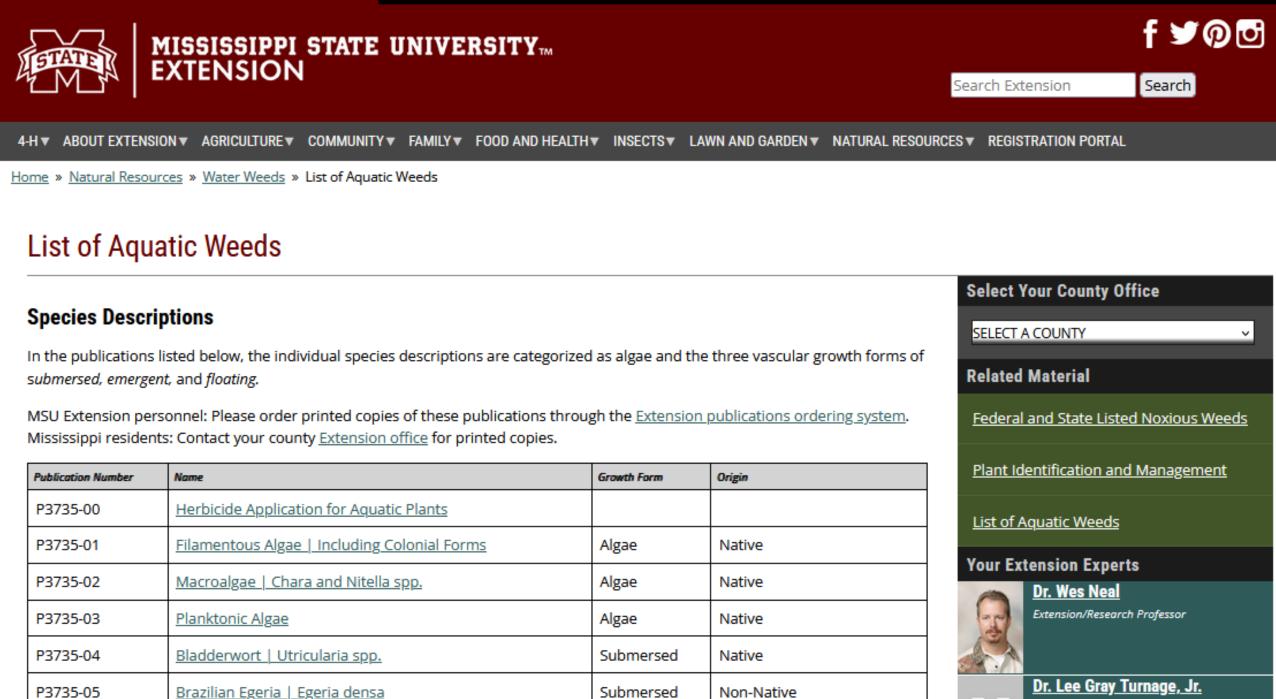
This plant is non-native and highly invasive. Fradicate on sight.

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Home » Publications » Publications » Salvinia   Salvinia spp.		
Salvinia   Salvinia spp.		
PUBLICATIONS Publication Number: P3735-44	Filed Under: Water Weeds	Select Your County Office
View as PDF: <u>P3735-44.pdf</u>		SELECT A COUNTY ~
Floating   Non-Native		Dr. Wes Neal
	Common salvinia ( <i>Salvinia minima</i> ) and giant salvinia ( <i>Salvinia molesta</i> ) are non-native invasive plant species that are problematic in Mississippi. Salvinia are <b>aquatic ferns that float</b> on the water's surface in calm areas.	Extension/Research Professor Fisheries Extension           Dr. Lee Gray Turnage, Jr.           Asst Extension/Research Prof
	The leaves of common salvinia are relatively small, ranging from one-fourth of an inch to no more than 1 inch. Giant salvinia is	EXTENSION
	roughly twice as large. <b>Leaves are hairy</b> and may be flat, slightly bent, or heavily folded. The "roots" are modified leaves.	Your Extension Experts
	Both species are invasive and should be eliminated. Giant salvinia is one of the worst invasive plants worldwide. Under ideal	Dr. Wes Neal Extension/Research Professor
	conditions, it can form mats up to 3 feet thick that negatively impact aquatic biota and human uses of aquatic resources.	Dr. Lee Gray Turnage, Jr.
part -	Management Value	Asst Extension/Research Prof

Common salvinia.

This plant is non-native and highly invasive. Fradicate on sight.



## A work in progress...

• Website is online but developing...

• Recommendations are always changing...

New species to be added...

We hope to update frequently.

## 

WORK IN PROGRESS

## You can help!

 Use the website and let me (wes.neal@msstate.edu) or the webmaster know if you find errors.

 Make suggestions on how to make these resources more user friendly or suggest additional information for inclusion.



## Acknowledgements

Funding provided by the Aquatic Nuisance Species Program of the U.S. Fish and Wildlife Service, Grant Award F18AP00260 and the Mississippi Department of Environmental Quality. Additional funding and support provided by the MSU Extension Service.



