

Managing Invasive Plants

R E S I D E N T S ' G U I D E

Barataria-Terrebonne National Estuary Program



BTNEP
BARATARIA-TERREBONNE
NATIONAL ESTUARY PROGRAM



What is BTNEP?

The Barataria-Terrebonne National Estuary Program

(BTNEP) works to protect and preserve the culture and land located between the Mississippi



and Atchafalaya Rivers in Southeast Louisiana.

BTNEP was established in 1991 in recognition of the national significance of this estuary system. An estuary is classified as an area where freshwater from rivers, streams, or bayous meets the saltwater of the sea. The range of habitat types found in estuaries makes them some of the most ecologically productive systems in the world.

The *Residents' Guide* series was developed to promote awareness and good stewardship of the great natural resources of our estuary.

What is an invasive species?



A species is considered invasive when it is not naturally found in an ecosystem and when the introduction of that species either causes or is likely to cause negative impacts on the environment, the economy, or human health.

This guide identifies potentially damaging, invasive plants and offers chemical, mechanical, and biological control solutions.

Table of Contents

- 4 Chinese tallow
- 5 Chinese | Japanese privet
- 6 Chinaberry
- 7 Camphor tree
- 8 Johnsongrass, Cogongrass, Torpedo grass
- 9 Air potato, Wild taro
- 10 Kudzu, Catclaw vine
- 11 Japanese honeysuckle, Japanese climbing fern
- 12 Hydrilla
- 13 Water hyacinth
- 14 Salvinia



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Chinese tallow is sometimes called "popcorn tree" due to the resemblance of the ripe fruit.

Why should invasive species be removed?

When invasive species invade an area they can affect and alter the habitat type, the native species composition, and the quality of the environment. Often, invasive species grow uncontrolled because they do not have any natural predators present in the environment that they have invaded. Invasive species often outcompete the native species and over-use the resources in that environment. This can negatively impact our native species and cause their numbers to decline, which can cause a rippling effect on all of the other species that depend on that native species.

What is biological control?

Biological control is the management and reduction of an invasive species by introducing a natural enemy into the environment. The introduced enemy can either be a predator or a parasite of the invasive species. This method includes collecting, importing, rearing, and releasing the enemy. It can be a long-lasting and inexpensive method once the enemy species has been established. However, this method only keeps the invasive species numbers low and manageable, but does not completely eradicate it.

Before introduction of the biological control species, it is crucial to study how and if the species will impact other organisms naturally found in the ecosystem. The USDA's Animal and Plant Health Inspection Service studies potential biocontrol agents under quarantine conditions for years to make certain that they will be effective only against the target species, and will not harm natives.



Salvinia weevil

The salvinia weevil *Cyrtobagous salviniae* is a perfect example of an effective, host-specific biocontrol agent. Every stage of its life cycle is spent utilizing the target plant.

Salvinia test plots show obvious signs of weevil damage.



safety

Please use caution and follow manufacturers' safety recommendations when handling any toxic materials.

3

Need help?
1 (800) 222-1222
American
Association of Poison
Control Centers



Chinese tallow tree

Seedlings

Thoroughly wet all leaves with one of the following herbicides in water with a surfactant from July to October

- Arsenal AC – as a 1% solution (4 ounces per 3 gallon mix)
- Krenite S – as a 30% solution (3 quarts per 3 gallon mix)
- Garlon 4 – as a 2% solution (8 ounces per 3 gallon mix)

Saplings

Apply to young bark as a basal spray

- Garlon 4 – as a 20% solution in commercially available basal oil, diesel fuel, or kerosene (2.5 quarts per 3 gallon mix) with a penetrant (check with herbicide distributor)

Large Trees

Make stem injections, and apply in dilutions and cut spacing specified on the herbicide label

- Arsenal AC
- Garlon 3A
- Pathfinder II

Felled Trees

Apply herbicide to stem and stump tops immediately after cutting

- Garlon 3A – 10% solution
- Ortho Brush-B-Gone (triclopyr)
- Enforcer Brush Killer (triclopyr)

For treatment of extensive infestations in forest situations

Apply to the soil surface within 3 feet of the stem (one squirt of spot gun per 1-inch stem diameter) or in a grid pattern at spacing specified on the herbicide label

- Velpar L

Chinese tallow trees are remarkably free of pests, insects, and pathogens. But one potential biocontrol agent, a flea beetle from China called *Bikasha collaris*, is currently undergoing laboratory study and could be available for release very soon.

Chinese | Japanese privet

Smaller Plants

Thoroughly wet all leaves with one of the following herbicides in water with a surfactant from August to December

- Glyphosate herbicide – 3% solution (12 ounces per 3 gallon mix)
- Arsenal AC – 1% solution (4 ounces per 3 gallon mix)

Larger Plants

For stems too tall for foliar sprays, apply solution in commercially available basal oil, diesel fuel, or kerosene with a penetrant (check with herbicide distributor) to young bark as a basal spray

- Garlon 4 – 20% solution (2.5 quarts per 3-gallon mix)

Or cut large stems and immediately treat the stumps in water with surfactant

- Arsenal AC – 10% solution (2.5 quarts per 3-gallon mix)
- Velpar L – 10% solution (2.5 quarts per 3-gallon mix)

When the safety of surrounding vegetation is desired, immediately treat stumps and cut stems

- Garlon 3A – 20% solution (2.5 quarts per 3 gallon mix)
- Glyphosate herbicide – 20% solution (2.5 quarts per 3 gallon mix)



Chinaberry

Seedlings

Thoroughly wet all leaves with one of the following herbicides in water with a surfactant from July to October

- Garlon 3A – 2% solution 8 ounces per 3-gallon mix)
- Garlon 4 – 2% solution (8 ounces per 3-gallon mix)
- Arsenal AC – 1% solution (4 ounces per 3-gallon mix)

Saplings

Apply to young bark as a basal spray

- Garlon 4 – as a 20% solution in commercially available basal oil, diesel fuel, or kerosene (2.5 quarts per 3 gallon mix) with a penetrant (check with herbicide distributor)

Large Trees

Make stem injections, and apply in dilutions and cut spacing specified on the herbicide label.

- Arsenal AC
- Pathway
- Pathfinder II
- Garlon 3A

Felled Trees

Apply herbicide to stem and stump tops immediately after cutting.

- Arsenal AC
- Pathway
- Pathfinder II
- Garlon 3A



6



Camphor tree

Saplings

Apply treatment to foliage:

- Garlon – 2-3% solution (in water with 0.25% surfactant)
- Garlon 4 – .5-2% solution (in water with 0.25% surfactant)

Large Trees

Apply a basal bark treatment around the tree

(up to 12 inches from the base)

- Garlon 4 – 30% in an oil solution

Apply a frill treatment

by cutting into the bark and peeling it back to form a cup and apply the solutions

Cut the tree down

and within 2 minutes apply a layer of herbicide to the entire cut layer of the stump

- Garlon 4 – 50% solution

Mowing will kill seedlings and repeated mowing will kill resprouting stumps



Johnsongrass



Apply herbicide to the leaves

- Roundup – 2.5 gallon containers
- Roundup Dry Pak – one gallon makes a 2% spray solution
- Tillage in the fall
- Repeated mowing reduces plants and seed production

Cogongrass



Thoroughly wet all leaves with one of the following herbicides in water with surfactant from September or October with multiple applications to regrowth

- Arsenal AC – 1% solution (4 ounces per 3-gallon mix)
- Glyphosate herbicide – 2% solution (8 ounces per 3-gallon mix)

Repeat before flowering in spring to suppress seed production and again in successive years for eradication

Torpedograss



Apply herbicide to the foliage of the grass

- Glyphosate (Roundup, Killzall, Grass and Weed Killer, and other brands)

Where you cannot spray surrounding foliage, use a selective weed killer that will not kill most other ornamentals

- Fluazifop (Ferti-lome Over the Top, Ortho Grass B Gon, Fusilade, Ornamec, and other brands)
- Sethoxydim (Vantage, Hi-Yield Grass Killer, Poast)

Air potato

Thoroughly wet all leaves with one of the following herbicides in water with surfactant from July to October

- Garlon 3A – 2% solution
(8 ounces per 3-gallon mix)
- Garlon 4 – 2% solution
(8 ounces per 3-gallon mix)

Sometimes the plant does not take up the herbicide and it must be collected and destroyed (not composted)

Cut climbing plants just above the soil surface and immediately treat the freshly cut stem

- undiluted Garlon 3A



Air Potato Beetle

The leaf beetle *Lilioceris cheni* is an approved biocontrol agent for air potato. It has been released in multiple locations in southern Louisiana, helping greatly to control the spread of the air potato vine.

9

Wild taro

In late summer, cut the plant close to the base and paint on

- Glyphosate (50% solution) and Metsulfuron (0.05 g/L) mix

Four weeks later, apply a spray to any emerging healthy leaves

- Glyphosate (2% solution), Metsulfuron (0.05 g/L), and Pulse (2 ml/L) mix



- Follow up spraying or removal may be necessary*

- Plants can be dug out, tuberous roots must be completely removed**
- Use caution as taro sap is an irritant to skin and eyes**



Kudzu



Thoroughly wet all leaves with one of the following herbicides in water with surfactant from July to October when regrowth appears

- Tordon 101 – 3% solution (12 ounces per 3- gallon mix)
- Tordon K – 2% solution (8 ounces per 3- gallon mix)

From July to September for successive years

- Escort – 3 to 4 ounces per acre in water (0.8 to 1.2 dry ounces per 3- gallon mix)
- Transline – 0.5% solution in water (2 ounces per 3- gallon mix) when safety to surrounding vegetation is desired

Spray climbing vines as high as possible or cut vines that are not controlled after treatment.

Catclaw vine



Cut the vines and apply herbicide to the cut ends

- Glyphosate – 100% solution Basal bark treatment
- Triclopyr – 100% solution Foliar spray
- Triclopyr – 1-2% spray with surfactant

Mowing is mostly ineffective because catclaw vine can become a groundcover. But continued cutting around tree trunks will keep the vine from covering the tree canopy.

Catclaw vine

Japanese honeysuckle

Apply with a surfactant to foliage either by broadcast spraying or by spot spraying from June to August

- Escort – broadcast spraying (0.6 dry ounces per 3-gallon mix)
- Escort – spot spraying (0.6 to 1.2 dry ounces per 3-gallon mix)



Treat foliage with one of the following herbicides in water with a surfactant during July to October or during warm days in the beginning of winter

- Glyphosate herbicide – 2% solution (8 ounces per 3-gallon sprayer)
- Garlon 3A – 3-5% solution (12-20 ounces per 3-gallon mix)
- Garlon 4 – 3-5% solution (12-20 ounces per 3-gallon mix)

Cut vines just above the soil and treat cut stems from July to October

- Garlon 3A – 20% solution (2.5 quarts per 3-gallon mix)

**Prescribed burning in the spring will reduce ground mats.
Sever climbing vines for more effective herbicide treatment.**

Japanese climbing fern

Thoroughly wet all leaves with one of the following herbicides in water with surfactant from July to October

- Arsenal AC – 1% solution (4 ounces per 3-gallon mix)
- Garlon 3A, Garlon 4, or glyphosate herbicide – 2% solution (8 ounces per 3-gallon mix)
- Escort – 1 to 2 ounces per acre in water (0.3 to 0.6 dry ounces per 3-gallon mix)



Hydrilla



Aquatic herbicides for use on hydrilla include:

Copper complexes
Diquat
Copper with diquat
Endothall
Fluridone
Imazamox
Penoxsulam
Bispyribac
Flumioxazin

Many aquatic herbicides have water use restrictions. One danger with chemical control methods is the chance of oxygen depletion from decaying vegetation, which can result in fish and wildlife kills. Always follow label instructions to the letter.

Mechanical removal by raking or seining can be effective in the short term, but hydrilla will quickly grow again from stem fragments or buried tubers. Physical light barriers or competition from native aquatic vegetation can help suppress the growth rate of hydrilla.



Hydrilla harvester on Bayou Lafourche

Grass carp will readily consume hydrilla, but check with your local Fisheries agent before attempting to stock these fish, as they have become an invasive nuisance species in some areas.

The hydrilla fly *Hydrellia pakistanae* is an approved biocontrol agent that has seen some success controlling hydrilla in Louisiana waterways.

•In the U.S., it is illegal to possess hydrilla, and it should not be transported or spread.

Water hyacinth

Active ingredients proven to treat water hyacinth include:

2,4-D
Diquat
Imazamox
Imazapyr
Penoxsulam
Triclopyr
Bispyribac
Glyphosate



Many aquatic herbicides have water use restrictions. One danger with chemical control methods is the chance of oxygen depletion from decaying vegetation, which can result in fish and wildlife kills. Always follow label instructions to the letter.

Physical or mechanical removal of water hyacinth can be effective in a small area or closed waterbody, but it is a labor-intensive and logistically challenging operation.

Water hyacinth has many insect pests. Two species of weevil from South America, *Neochetina bruchi* and *Neochetina eichhorniae*, have been released since the 1970s in an attempt to reduce the amount of water hyacinth in waterways. These weevils have proven to be one of the most important control methods.

•In the U.S., it is illegal to possess hyacinth, and it should not be transported or spread.



Salvinia



Active ingredients proven to treat salvinia include:

Fluridone
Penoxsulam
Diquat
Glyphosate
Flumioxazin

Many aquatic herbicides have water use restrictions. One danger with chemical control methods is the chance of oxygen depletion from decaying vegetation, which can result in fish and wildlife kills. Always follow label instructions to the letter.

Salvinia can be removed from small, isolated water bodies by raking or seining from the surface, but it will return from any remaining fragments left behind.

The salvinia weevil *Cyrtobagous salviniae* is a very effective and host-specific biocontrol agent. It will not eradicate salvinia, but has been shown to provide effective control of its growth and spread. It has been released throughout Louisiana. Contact the Louisiana Department of Wildlife & Fisheries or the LSU AgCenter for more information about the salvinia weevil program.



Salvinia Weevil

•In the U.S., it is illegal to possess salvinia, and it should not be transported or spread.



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15

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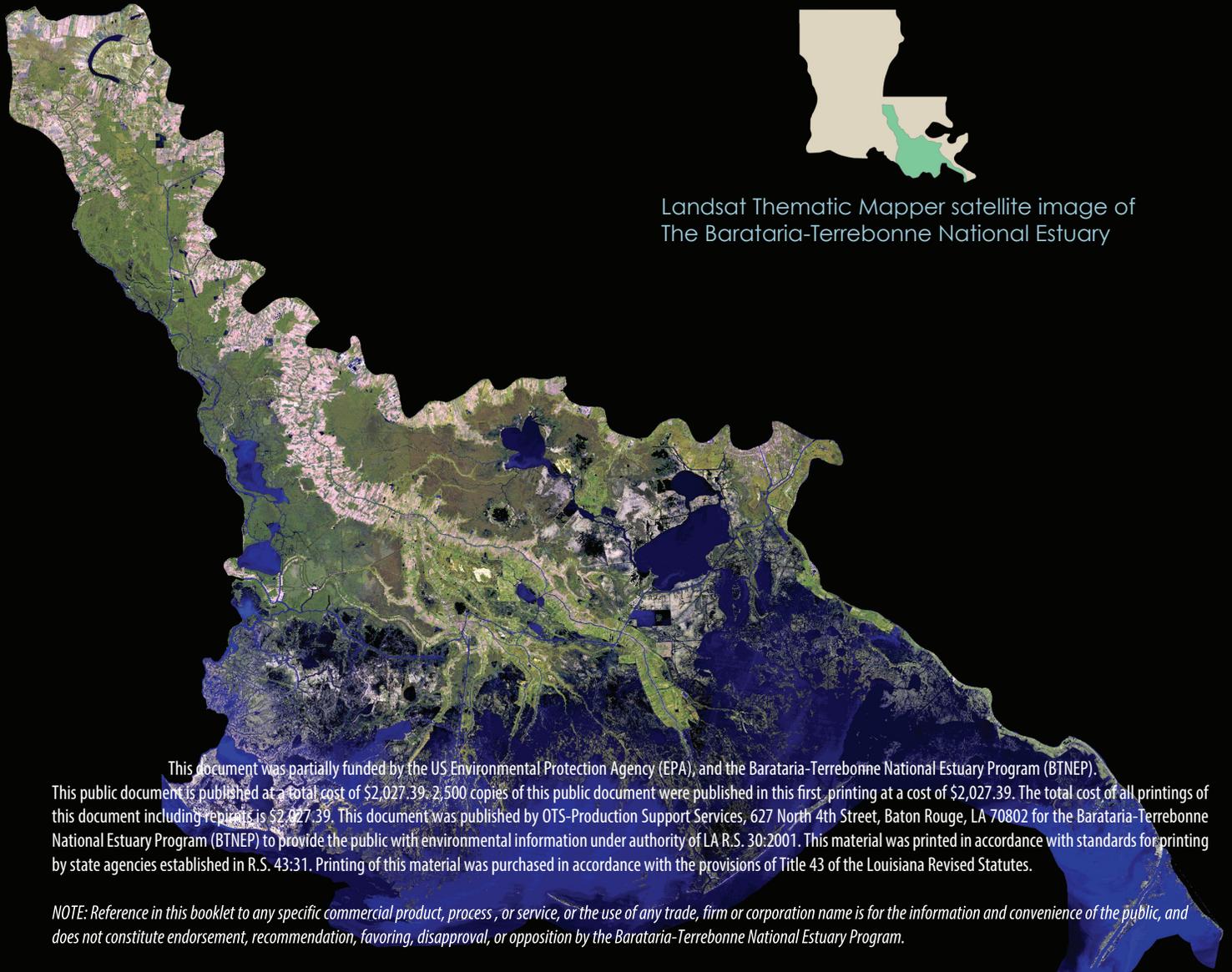
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