

How has Mississippi used its State ANS Grant Funding FY14-24?

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Gulf and South Atlantic Regional Panel

on Aquatic Invasive Species

Biloxi, MS -- May 14, 2024

Giant Salvinia




Giant Salvinia



Bighead Carp



Amy Benson - USGS © 

Bighead Carp Juveniles



Small Silver Carp – Bee Lake



How many nonnative species are in Mississippi?

By 2018 there were:

- 68 nonnative species

- 36 plants

- 18 fishes

- 14 other species

Lionfish



Don DeMaria ©

How can we know if an nonnative species has the potential to be invasive?

Invasive species typically have one or more of the following traits:

- High rate of reproduction
- Pioneer Species
(able to colonize areas after they have been disturbed)
- Short generation times
- Long-lived
- High dispersal rates
- Single-parent reproduction
- Vegetative or clonal reproduction

Invasive species typically have one or more of the following traits:

- Broad native range / Tolerant of wide range of conditions
Habitat generalist (can live in many different types of habitats)
- Abundant in native range
- Broad diet
- Gregarious
- Human commensal (lives in close association with humans)
- High genetic variability

Black Carp

381 records

since 2003



Water Hyacinth



Hydrilla



Alligatorweed



Small Silver Carp entering Bee Lake



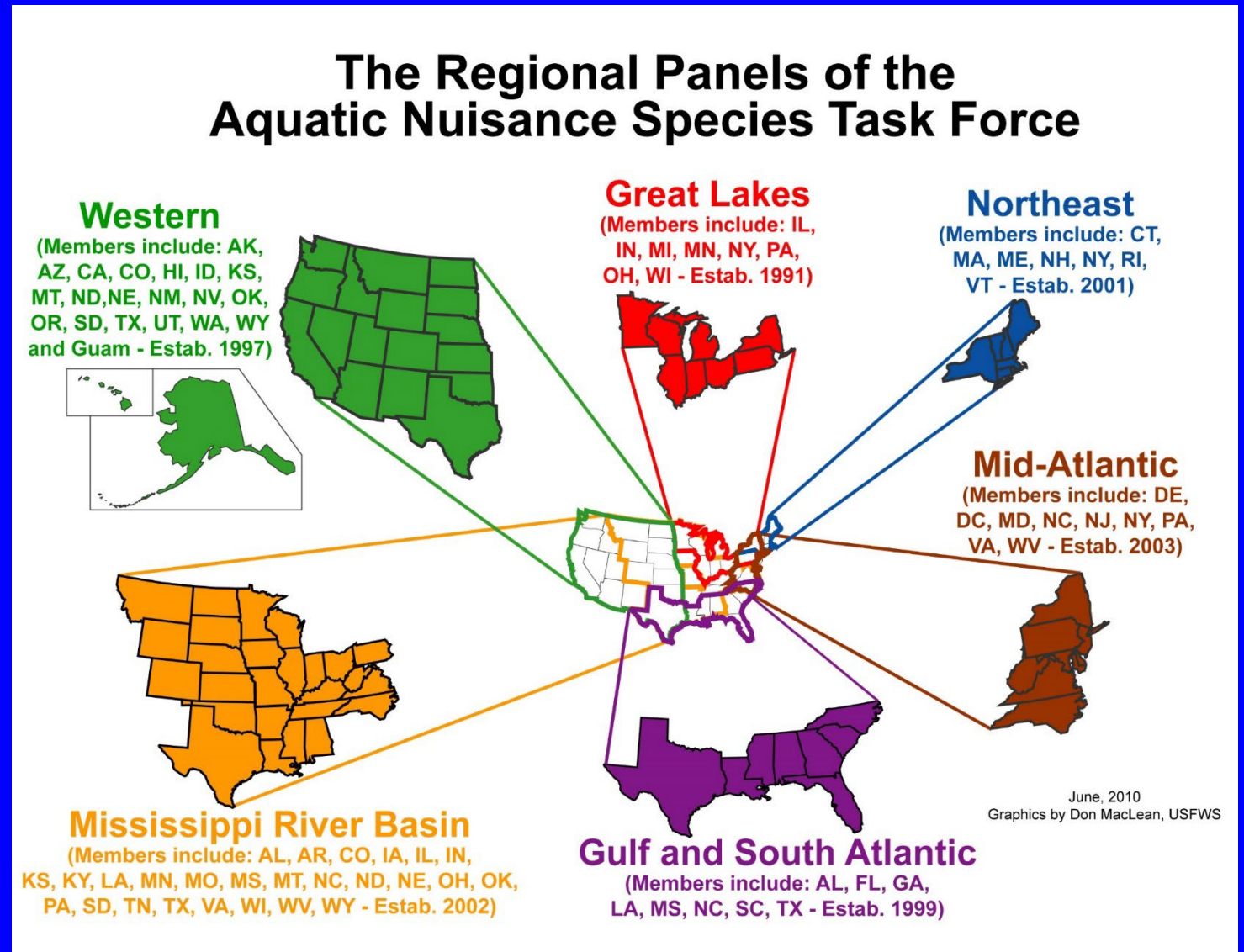
Federal Regional Role

Mississippi joined:

- Gulf Panel - 2004
- Miss. R. Panel - 2006



Australian Spotted Jellyfish



MS ANS State Plan Development History

- Gov. Ronnie Musgrove requested state agencies to do a plan
- MS Dept. of Environmental Quality in charge
- MS Aquatic Invasive Species Task Force formed
- Met 8 times, October 2003 – July 2009
- Used LA Plan as a guide
- Major Delays for completion – disasters & funding
- Governors Barbour and Bryant supported work
- Governor Bryant approved plan in 2013
- ANSTF approved plan July 2013

Major Delays

Hurricane Katrina – August 2005



Major Delays

BP Deepwater Horizon Spill – August 2010



MS State Plan for Aquatic Invasive Species

- A snapshot of existing situation
- Pathways
- Species of Concern – established species
- State Agency Authorities
- Goals, Objectives, Management Actions
- Implementation Table
- Program Monitoring & Evaluation
- Approved, Restricted, Prohibited Species lists
- Federal Laws

- Approved Plans are Eligible for Federal Funding
- 75% Federal / 25% State \$\$\$
- 1-2 million/yr divided up between all 44 plans
- Federal \$\$\$ FY14-FY23 = \$627,136;
- State \$\$\$ FY14-FY23 = \$209,045
- Total \$\$\$ = \$836,181

Mississippi State Management Plan for Aquatic Invasive Species



Waterhyacinth (*Eichhornia crassipes*) management - Crane Lakes, Pascagoula River

Final Draft Management Plan

Mississippi Department of Environmental Quality—Henry Folmar and Mike Beiser
EPA Gulf of Mexico Program—Phil Bass
Mississippi Aquatic Invasive Species Task Force

Made possible by a grant from the Mississippi Department of Environmental Quality's Coastal Impact Assistance Program to the University of Southern Mississippi, the Mississippi Department of Environmental Quality, and the Mississippi Department of Marine Resources

Compiled and written by the Tulane / Xavier Center for Bioenvironmental Research—Alysia Kravitz Loshbaugh, Richard Campanella, Shelley Meaux, and members of the Mississippi Aquatic Invasive Species Task Force.

March 20, 2013

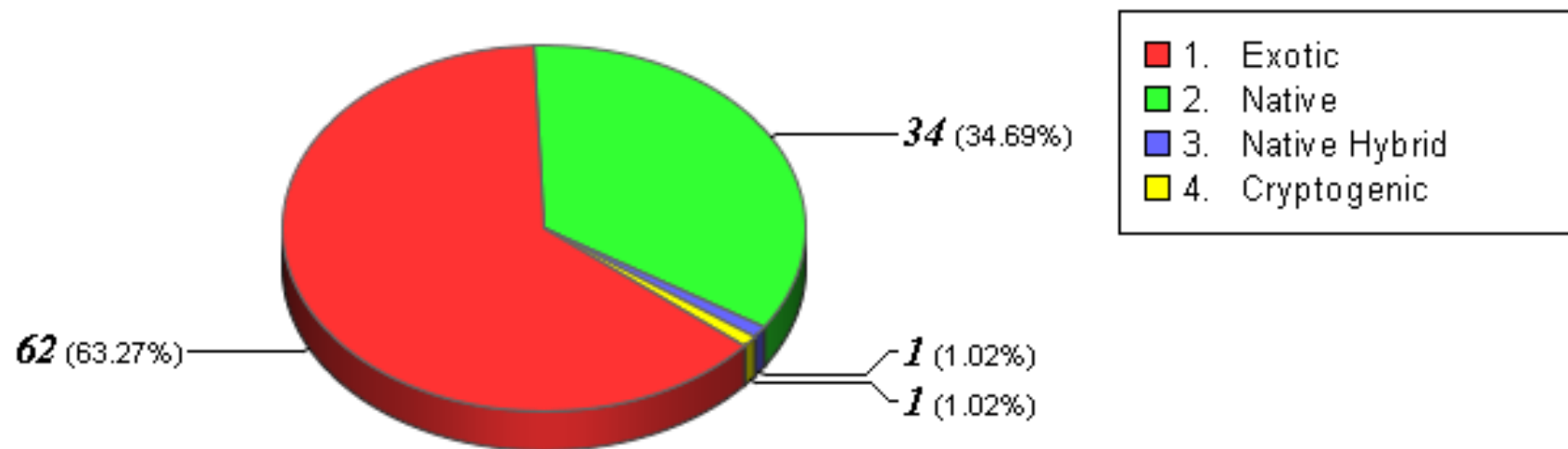
Introductions in Bordering States

	MS	LA	AR	AL	TN
Fish	44	52	61	77	72
Aquatic Plants	35	50	28	35	27
Total	101	128	104	136	110

Native vs Nonnative Introductions

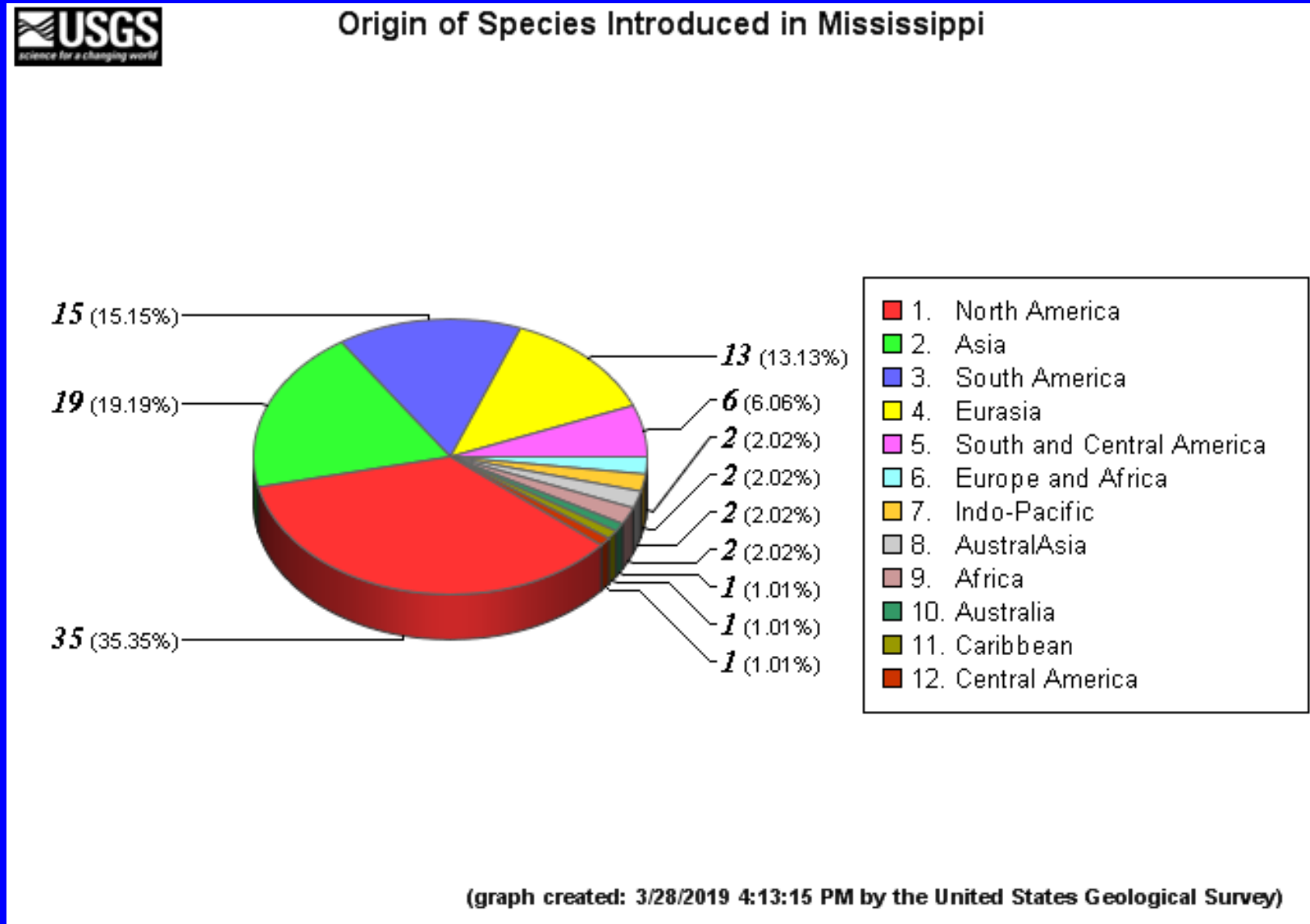


Origin of Species
Introduced into Mississippi

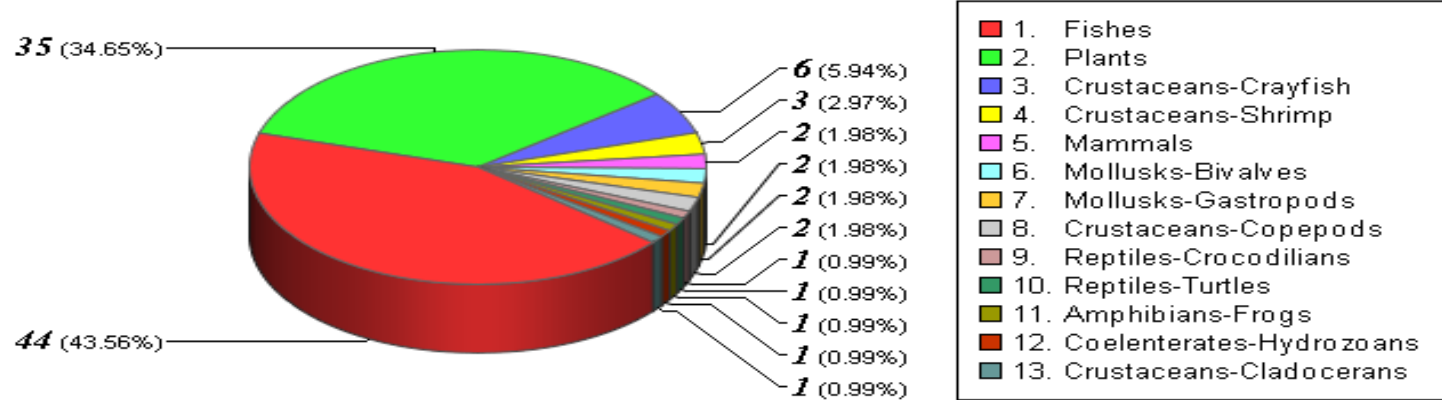


(graph created: 3/28/2019 4:13:12 PM by the United States Geological Survey)

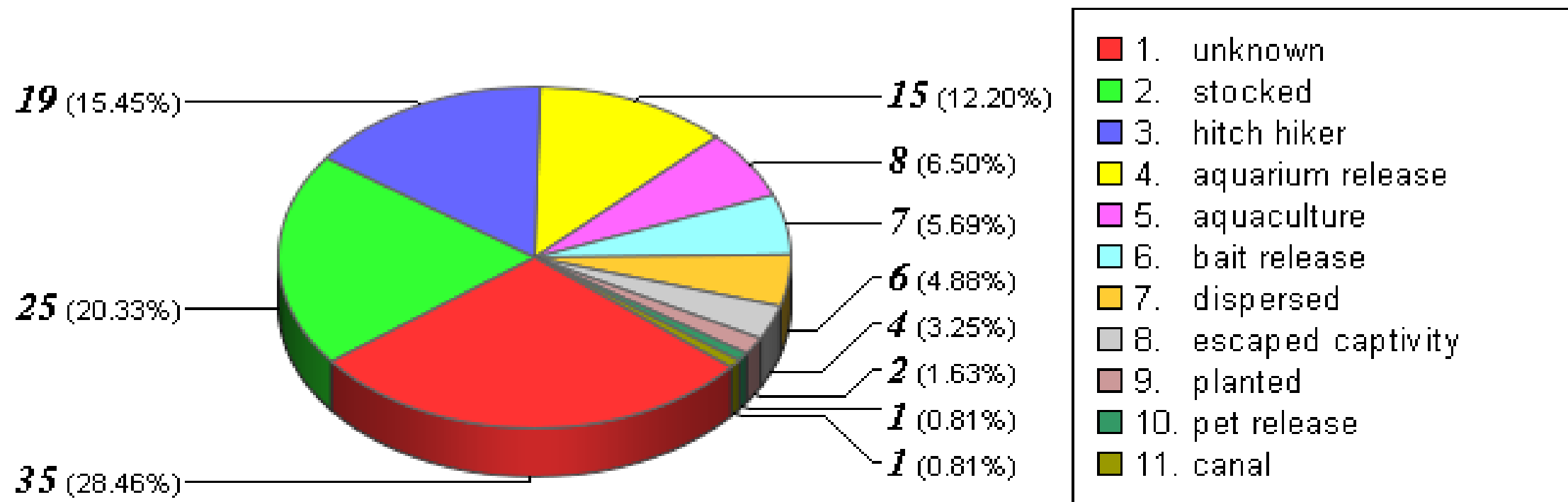
Where in the World Did You Come From?



Groups Introduced into Mississippi



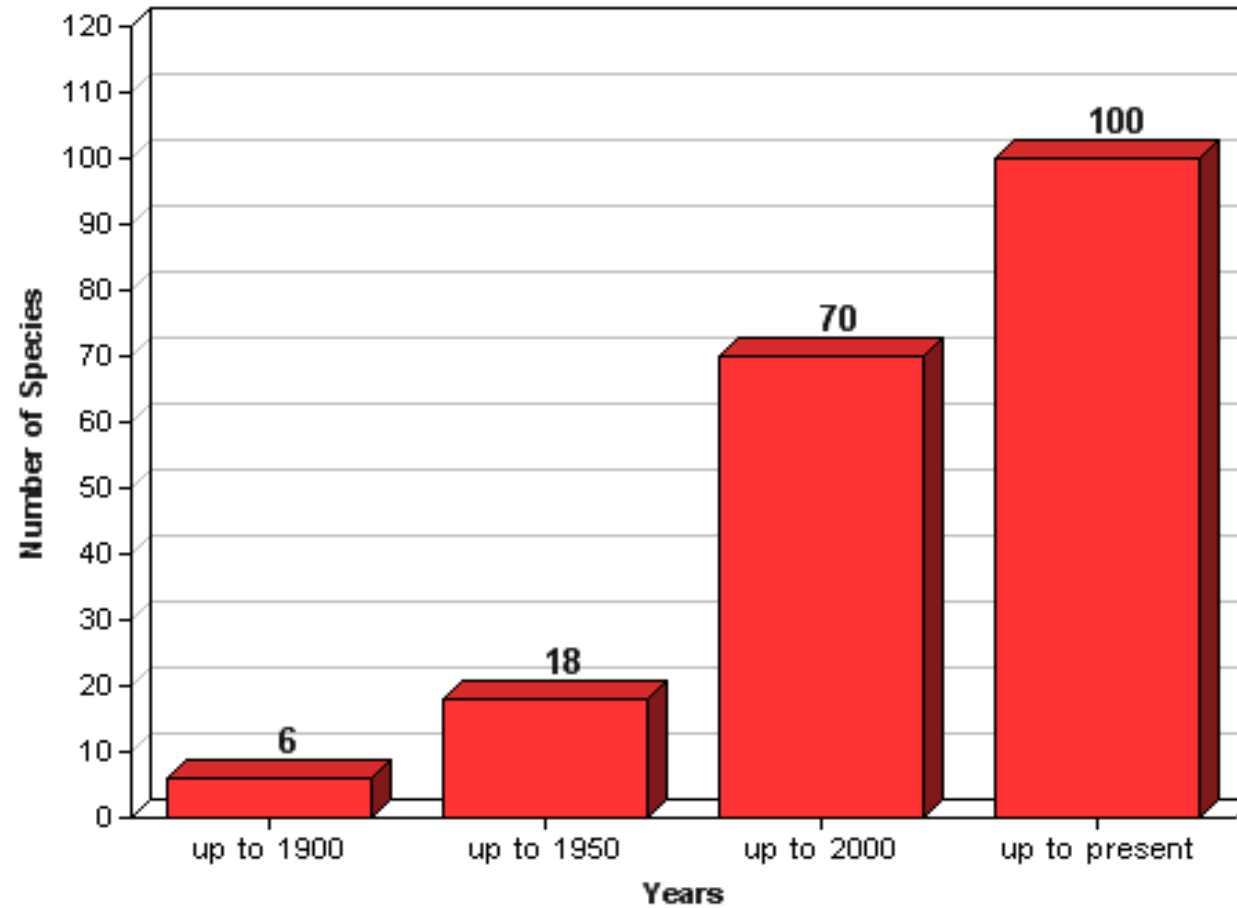
Introduction Pathways for Mississippi



Introductions by Time Period



Introduced Species in Mississippi



(graph created: 3/28/2019 4:13:12 PM by the United States Geological Survey)

Control Methods

Harvesting – Commercial Fishing - Moon River Foods



Control Methods

Chemicals – Aquatic Herbicides



What is the MDWFP doing?

- **Encouraging harvest – special seasons**
- **Prohibiting stocking nonnatives in ponds**
- **Changing bait capture and use rules**
- **Treating invasive plants at public lakes**
- **Educating the public**
- **Monitoring distribution**
- **Tracking Asian Carp in Tenn -Tom Waterway**
- **Assessing effect of Silver Carp on native fish**



Skipjack



Gizzard Shad



Threadfin Shad



Silver Carp

Credit: Nathan Aycock/MDWFP



MAISC Projects

- Teachers to TVA AIS plant workshop (2016-17)
- ANS Meeting Display (2017)
- MAISC logo (2017)
- Tracking of Silver Carp in Tenn -Tom Waters (2017)
- Aquatic Plant Survey – 42 waters (2017)
- Northern Snakehead boat ramp signs - 100 (2017-18)
- Northern Snakehead flyers - 1,000 (2017)
- MAISC brochure (2018)



MAISC Projects

- Lionfish and Tiger Shrimp Reporting Decals (2018)
- Teachers to TVA AIS plant workshop (2018)
- Northern Snakehead reporting rulers (2018)
- Aquatic Plant ID, Treatment, Control Sheets (2018-19)
- Aquatic Plant Survey – 3 surveys so far (2018-22)
- Herbicide applications on Hyacinth, Hydrilla, Salvinia (2018-24)
- Herbicide purchases to treat plants (2018-24)
- Revised ANS brochure (2018-19)
- Northern Snakehead flyers – print 1,000 more (2018)





AQUARIUM PETS

A NON-NATIVE SPECIES RELEASED INTO THE WILD HAS THE POTENTIAL TO DISPLACE A NATIVE SPECIES AND DISRUPT THE NATIVE ECOSYSTEM. INVASIVE PLANTS CAN CLOG WATERWAYS AND AFFECT RECREATIONAL ACTIVITIES SUCH AS BOATING, SWIMMING AND FISHING. INVASIVE ANIMALS OFTEN HAVE NO NATURAL PREDATORS AND POPULATIONS CAN REACH HIGH DENSITIES, ALTERING THE AQUATIC ECOSYSTEMS BY REDUCING BIOLOGICAL DIVERSITY.

PREVENTATIVE MEASURES

1. UNWANTED PETS SHOULD NEVER BE RELEASED INTO THE WILD.
2. DO NOT DUMP AN UNWANTED AQUARIUM INTO A WATERBODY.



Egeria

Egeria is a fast-growing, non-native aquatic plant that can form dense, impenetrable mats. It is highly invasive and can displace native plants, clog waterways, and reduce oxygen levels in the water. It is also a common pest in aquariums.



Lionfish

Lionfish are highly venomous, non-native fish that can cause serious injury to humans. They are also highly invasive and can displace native fish species. They are often found in aquariums and are a common pest in waterways.



Python

Pythons are large, non-native snakes that can grow to over 20 feet long. They are highly invasive and can displace native snake species. They are often found in aquariums and are a common pest in waterways.



Variegated Satina Catfish

Variegated satina catfish are non-native fish that can grow to over 10 inches long. They are highly invasive and can displace native fish species. They are often found in aquariums and are a common pest in waterways.



BOATERS & FISHERMEN

BOATERS AND FISHERMEN MOVE AMONG WATERBODIES AND CAN TRANSPORT AQUATIC PLANTS FROM ONE WATERBODY TO ANOTHER. EMPTYING BAIT BUCKETS INTO THE WATER HAS THE POTENTIAL TO INTRODUCE INVASIVE SPECIES.

PREVENTATIVE MEASURES

1. THOROUGHLY CLEAN YOUR BOAT AND TRAILER, AND ALLOW THEM TO COMPLETELY DRY, BEFORE MOVING FROM ONE WATERBODY TO ANOTHER -- REMEMBER CLEAN, DRAIN, DRY.
2. DO NOT EMPTY LIVEWELLS INTO THE WATER.
3. DO NOT RELEASE FISH OR BAIT (EVEN NATIVE FISH) FROM ONE WATERBODY INTO ANOTHER.



Asian Carp

Asian Carp are a group of three species of fish that are highly invasive and can cause significant damage to the environment. They are known for their ability to eat a wide variety of plants and animals, and they can grow very large. Asian Carp are also known for their ability to reproduce quickly, and they can spread to new areas very easily. They are a major threat to the native fish and wildlife of the United States, and they are a major concern for the Department of Natural Resources.



Zebra Mussels

Zebra Mussels are a highly invasive species that can cause significant damage to the environment. They are known for their ability to filter water and remove plankton, which can lead to a decline in the food supply for other organisms. They can also clog pipes and other infrastructure, and they can spread to new areas very easily. They are a major threat to the native fish and wildlife of the United States, and they are a major concern for the Department of Natural Resources.



Eurasian Watermilfoil

Eurasian Watermilfoil is a highly invasive species that can cause significant damage to the environment. It is known for its ability to form dense, impenetrable mats that can block sunlight and oxygen from reaching other plants and animals. It can also clog pipes and other infrastructure, and it can spread to new areas very easily. It is a major threat to the native fish and wildlife of the United States, and it is a major concern for the Department of Natural Resources.

INVASIVE AQUATIC PLANTS

INVASIVE AQUATIC PLANT SPECIES ARE CAPABLE OF AGGRESSIVE VEGETATIVE GROWTH AND HAVE FEW NATURAL PREDATORS IN THE AREA WHERE THEY ARE INTRODUCED. THEY OUT-COMPETE NATIVE PLANTS, DISRUPT THE NATIVE ECOSYSTEM AND IMPEDE SWIMMING, BOATING, FISHING AND SKIING.

PREVENTATIVE MEASURES

1. THOROUGHLY CLEAN YOUR BOAT AND TRAILER, AND ALLOW THEM TO COMPLETELY DRY, BEFORE MOVING FROM ONE WATERBODY TO ANOTHER - - REMEMBER CLEAN, DRAIN, DRY.
2. USE ONLY NATIVE PLANTS IN WATER GARDENS
3. DO NOT RELEASE ANY WATER GARDEN PLANTS INTO THE WILD.
4. DO NOT EMPTY YOUR AQUARIUM INTO THE WATER, EVEN IF ALL PLANTS HAVE BEEN REMOVED.



Giant Salvinia

This fast-growing, rootless plant can reproduce very quickly, covering the surfaces of waterways, impeding boating, fishing, swimming, skiing, degrading water quality, and reducing biodiversity. It is spread by wind transport, and boaters and fishermen who do not clean their gear when moving from one water body to another, it was probably introduced into the United States as an aquatic plant.



Hydrilla

Hydrilla is a small aquatic plant that can form thick mats which impede boating, fishing, swimming, and skiing. It is believed that Hydrilla was first introduced into the United States from Australia during the 1930s. The primary pathway for Hydrilla's spread among water bodies is likely due to fragments of the plant being transported by boats or trailers that are not cleaned when they are returned from a water body.



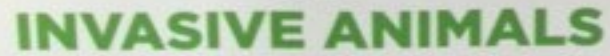
Water Hyacinth

Water hyacinth forms very dense, floating mats which impede boat traffic and slowing water currents. The thick mats formed by this plant block sunlight to native submerged vegetation, which degrades water quality and impedes biodiversity. Water hyacinth is the #1 aquatic weed in the world with infestations capable of doubling in size in less than a week.



Alligator Weed

This plant forms dense mats that impede boat traffic and slow water currents. It is believed that Alligator Weed was first introduced into the United States from Australia during the 1930s. The primary pathway for Alligator Weed's spread among water bodies is likely due to fragments of the plant being transported by boats or trailers that are not cleaned when they are returned from a water body.



PREVENTATIVE MEASURES

- 



Giant Apple Snail

Asian Corp

Asian Tiger Shrimp

Asian Tiger Shrimp - Tiger shrimp can be easily identified by the distinctive dark and light "tiger" coloring pattern on the shell and thin legs and showing on growth a possible weight of 1.5 ounces. Long shrimp are appreciated for their use in many dishes and even those who dislike seafoods bring home several dozen to share with family in the following industry.

INVASIVE LIONFISH

**Please Report
All New Sightings
With Location**

(228) 374-5000

REPORT.INVASIVE@DMR.MS.GOV



Black and White
Banding on
Tail →



Large Size -
Can Grow to Over
10" in Length

INVASIVE ASIAN TIGER SHRIMP

**Please Report
All Sightings
With Location
(228) 374-5000**

REPORT.INVASIVE@DMR.MS.GOV





WARNING



Northern Snakehead

Northern Snakeheads may be present in these waters. It shall be unlawful for any person or persons to have in their possession live Northern Snakeheads.

Any person or persons having these species in their possession shall immediately notify the Mississippi Department of Wildlife, Fisheries, and Parks of such possession by calling 601-432-2200.

If you catch this fish, DO NOT THROW IT BACK, DO NOT THROW IT ON LAND.

The Northern Snakehead can be confused with the native Bowfin.



Note long anal fin

Northern Snakehead

Invasive Species



Note short anal fin

Bowfin

Native Species

ATTENTION

Northern Snakehead



Northern Snakehead

Invasive Species



Bowfin

Native Species

The Northern Snakehead is an invasive species that is native to China, Russia and Korea where it lives in shallow, slow moving and often low oxygenated waters. It can grow up to 47 inches and 15 pounds.

It shall be unlawful for any person or persons to have in their possession live Northern Snakeheads.

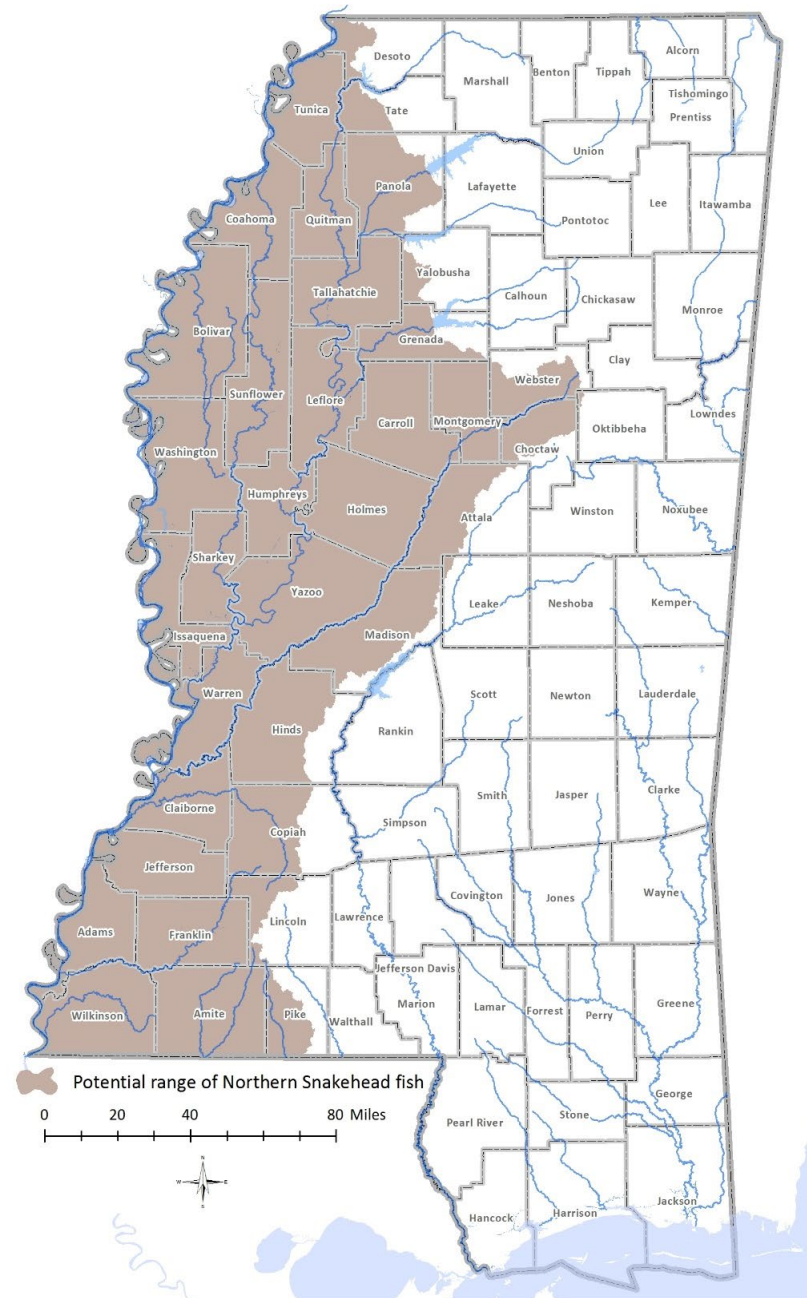
WHAT CAN YOU DO?

Learn to identify the Northern Snakehead. Do not confuse it with the bowfin, a species native to Mississippi (pictured above).

Any person or persons having Northern Snakeheads in their possession shall immediately notify the Mississippi Department of Wildlife, Fisheries and Parks of such possession by calling 601-432-2200.

If you catch this fish, DO NOT THROW IT BACK, DO NOT THROW IT ON LAND.

DO NOT release your aquarium pets or live food into the environment. **NEVER** dump live fish (such as bait buckets) from one body of water into another - this may introduce non-native species. **ALWAYS** drain water from your boat, live well, and bilge before leaving any water access.






**STOP AQUATIC
HITCHHIKERS!**

Prevent the transport of nuisance species.
Clean all recreational equipment.
www.hitchhikerfree.com

When you leave a body of water:

- Remove any visible mud, plants, fish or animals before transporting equipment.
- Rinse/mix water from equipment before transporting.
- Clean and dry anything that comes into contact with water (boats, trailers, equipment, clothing, etc.) etc.
- Never reuse plants, fish or animals into a body of water unless they are out of that body of water.






INVASIVE CARPS


Be on the lookout:

- Look-out for large upturned mouth without barbers
- Silver in color
- Bighead Carp have dark blotches on the back and sides
- Scaleless head, body scales are very small
- Adults typically weigh 3-10 lbs. and measure 1-3 ft.
- Silver Carp may jump out of the water when disturbed by boat motors


DO NOT RELEASE LIVE BAIT/FISH



Grass Carp



Bighead Carp







Silver Carp

Bighead Carp and Silver Carp have been documented in the Mississippi River and Tennessee River. They pose a risk to native fishes and boaters.

Report any sightings, with exact locations, to:

Mississippi – HCRP
 601-312-2240

Alabama – HCRP
 334-955-2634
www.alabamaparks.com/mississippi

IF YOU CATCH A NORTHERN SNAKEHEAD

- DO NOT PUT IT BACK IN THE WATER
- DO NOT RELEASE IT ON LAND
- DO NOT TRANSPORT IT ALIVE
- REPORT ALL SIGHTINGS

MISSISSIPPI DEPARTMENT OF WILDLIFE, FISHERY, AND FORESTRY

INVASIVE SPECIES NORTHERN SNAKEHEAD
Native to China, Russia and Korea

LOOKS SIMILAR TO NATIVE BOWFIN
Note Difference in Fin Lengths

LONG FIN
PROTECT NATIVE FISH STOCKS; HELP STOP THE SPREAD OF NORTHERN SNAKEHEAD

SHORT FIN

601.432.2200 REPORT.INVASIVE@DMR.MS.GOV