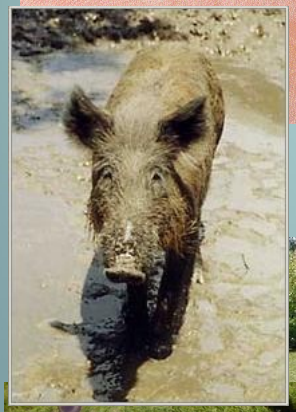
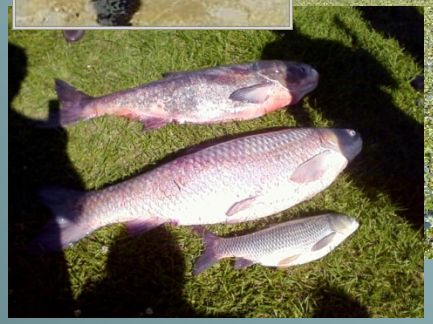
# Invasive Species











**Gerald Treadwell, Environmental Specialist, Invasive Species**

**U.S. Army Corps of Engineers, Tulsa District, 1645 S. 101 E. Ave, Tulsa OK, 74128-4629, ATTN: PE-E**

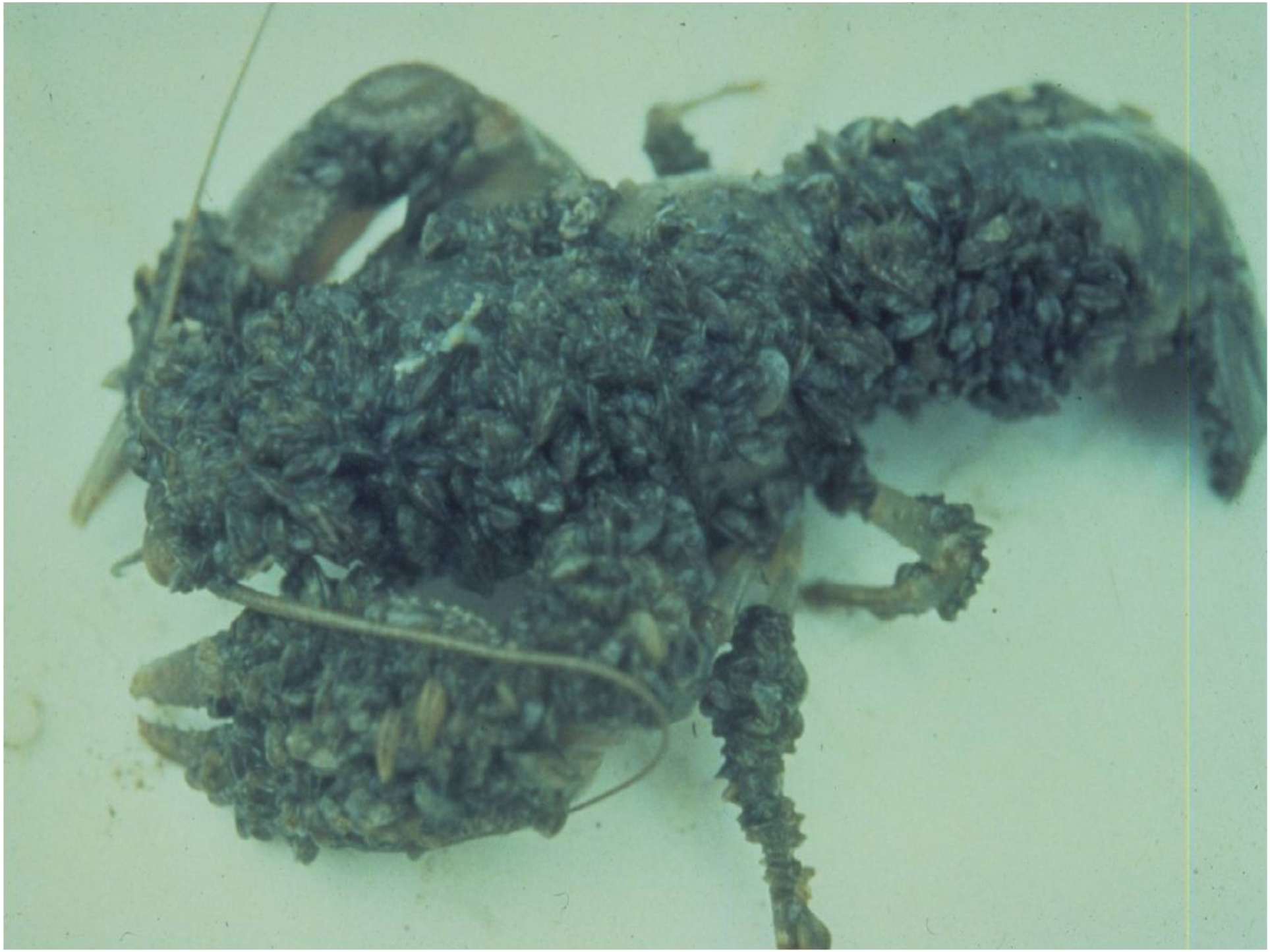
**Ph: 918-489-5541 Fax: 918-489-2063 Gerald.L.Treadwell@usace.army.mil**

# What is an Invasive Species

- Not native to a specific location.
- Competes with Native Species for available food.
- Adversely affect the habitats and Bioregions they invade.
- Typically introduced by humans

# Zebra Mussel's

- Distinguished by there dark and light stripes
- Can grow up to 2 inches long but usually about an inch long
- They use sticky threads to attach to any hard surface
- Each female can reproduce 5 times a year
- Each female can produce up to 30,000 eggs each time it reproduces or 150,000 eggs a year

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# Ecological Problems with Zebra Mussels

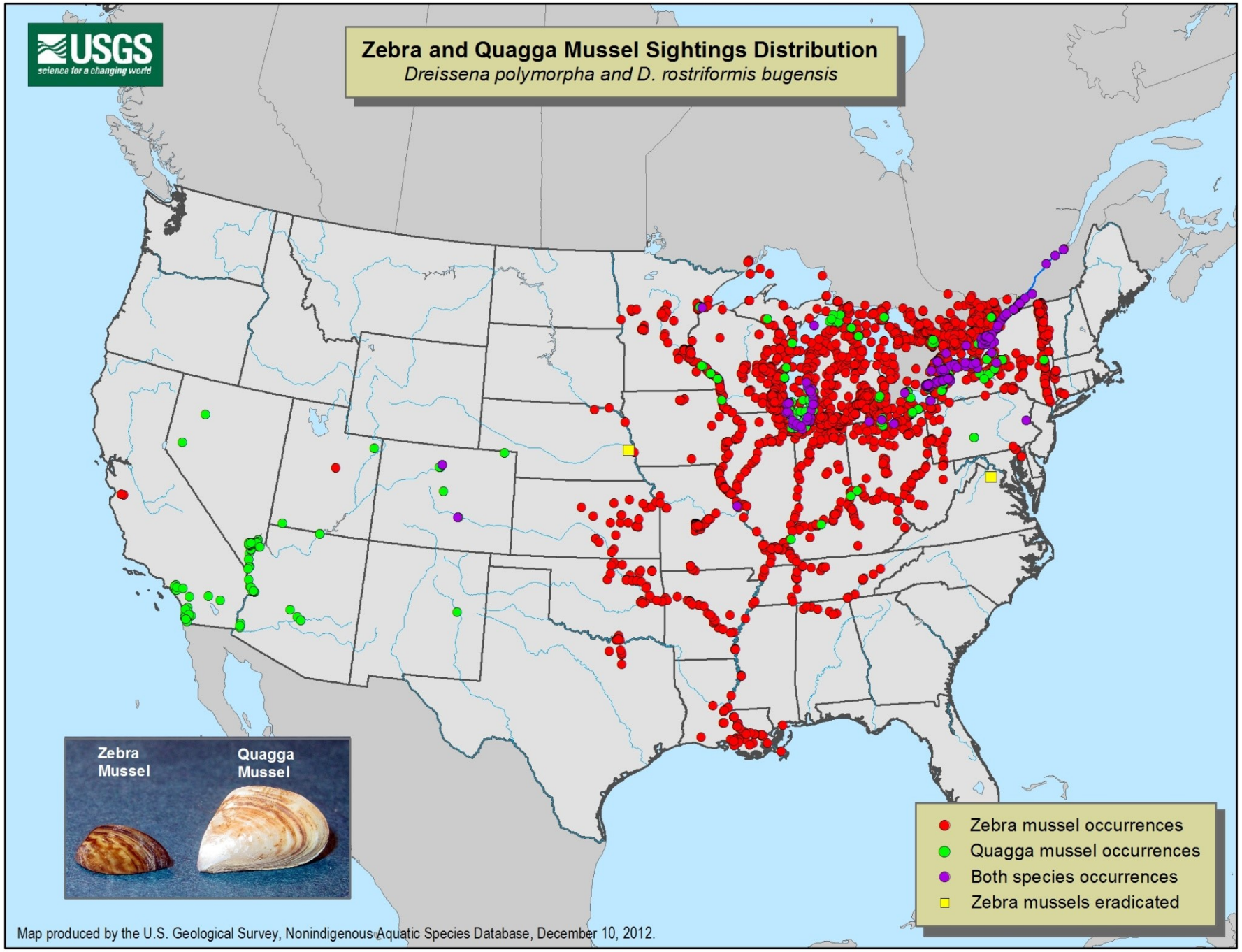
- Filter feeders
  - Feed on Plankton
  - Very good at filtering water
  - Each one filters about 2 litters of water a day
    - 2 billion zebra mussels will filter over 5 hundred million gallons of water a day
  - Out competes small fish for this plankton
  - Decrease in small fish means a decrease in larger fish
  - Can completely wipe out native mussels

# Economical problems with Zebra mussels

- Foul hulls, intakes, props, dock lines, and anything else submerged in water
- Reduce water flow or stop up cooling water pipes for industrial facilities
- Billions of Dollars are spent every year because of zebra mussels
- No known method to eliminate them

# Where did they come from

- Native to the Caspian Sea region of Asia
- Believed to have been transported to United States in the ballast water of cargo ships
- First introduced to the Great Lakes
- Spreading throughout United states
- Becoming wide spread throughout Oklahoma
- Not currently found in Tenkiller Lake


USGS
science for a changing world
Zebra and Quagga Mussel Sightings Distribution
Dreissena polymorpha and D. rostriformis bugensis
Zebra Mussel
Quagga Mussel
Zebra mussel occurrences
Quagga mussel occurrences
Both species occurrences
Zebra mussels eradicated
Map produced by the U.S. Geological Survey, Nonindigenous Aquatic Species Database, December 10, 2012.

# Salvinia Molesta

- Better known as Giant Salvinia
- Also known as Salvinia
- Also known as Koi Kandy
- Also known as water velvet
- Also known as Water fern
- Also known as Aquarium Watermoss
- Often called the worlds worst aquatic weed


UGA1929038

# Lake Moondarra Australia when first infested by Giant Salvinia

# Lake Moondarra Australia after being infested for a few months

# Giant Salvinia

- Can grow from a small plant fragment
  - It can double in size every 5 to 7 days
  - In the right conditions a small plant fragment can grow to cover forty square miles of water in three months
  - Can grow mats on the water up to three feet thick

# Problems with Giant Salvinia

- Ecological problems
  - Blocks sunlight
    - Stops all photosynthesis from accruing below the surface of the water.
  - Lowers oxygen level in the water
  - Cause water loss in summer
  - Reduces Biodiversity of native plants
  - Provides no food for animals and little aquatic habitat

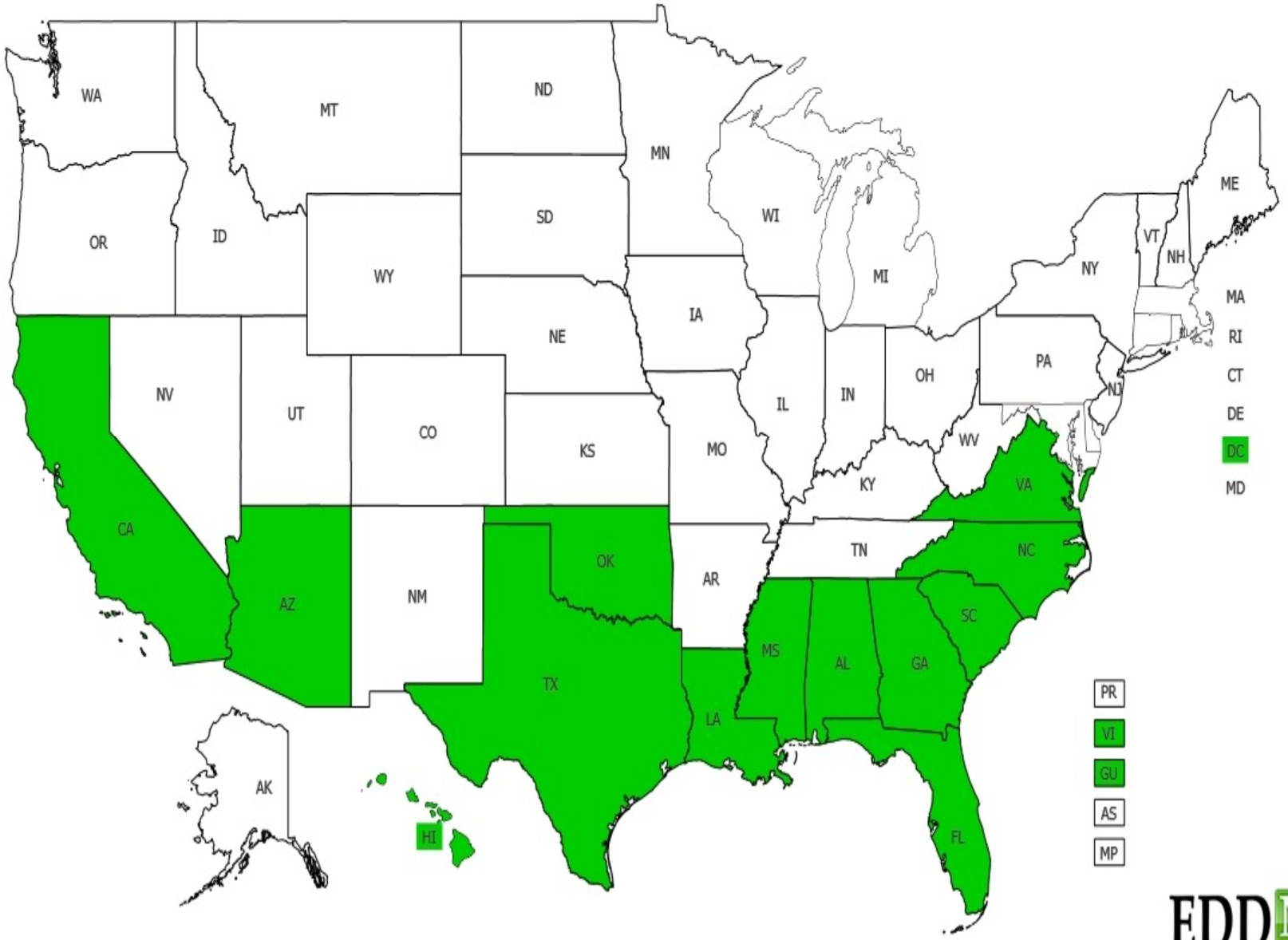
# Problems with Giant Salvinia

- Other problems
  - Safety risk for people and animals from becoming entangled in the root-like structures
  - Impede the flow of water to irrigation pipes and water intakes
  - Boats unable to maneuver in it
  - Swimming and fishing becomes impossible
  - Prime mosquito habitat

# Where did it come from

- Native only to Brazil
- Introduced to United States through the aquarium or aqua-garden trade
- Is a threat to all southern states
- Was found in Texas in 1998
- Is now found in Alabama, Arizona, South Carolina, North Carolina, Texas, Louisiana, Mississippi, Georgia, Florida, Hawaii, California, Oklahoma, and Virginia

*Salvinia molesta*




Last observation: June 30, 2014 - Map generated: August 29, 2014

EDDMapS
Early Detection & Distribution Mapping System

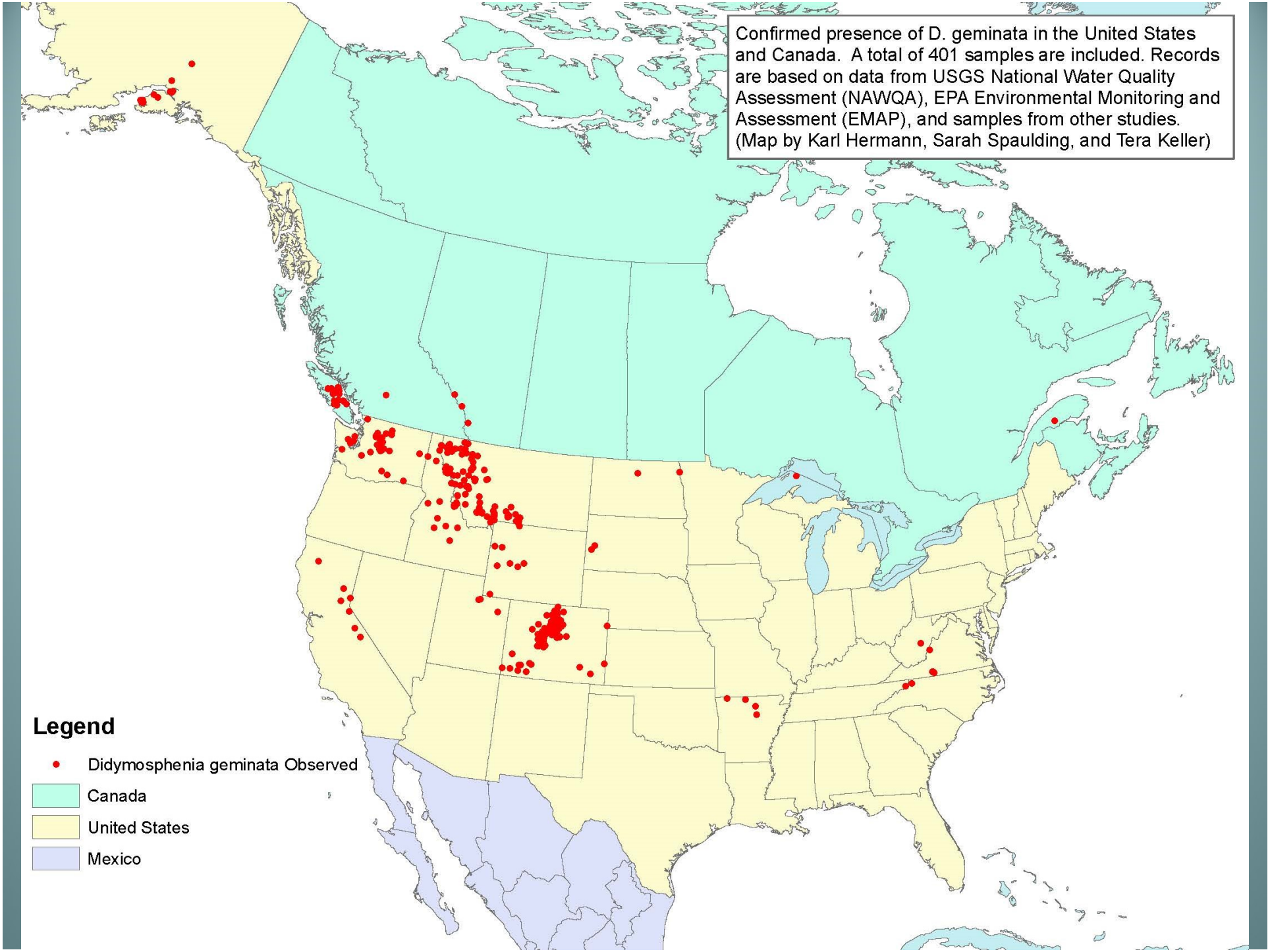
# Didymo

- Datomaceous Algae
- Better known as Rock Snot
- No known method of eradication


Sarah Spaulding

# Problems From Rock Snot

- Completely covers the bottom of the stream bed
  - Blocks sunlight and disrupting the ecosystem
- It can survive two days when dry and a month when damp
- No proven affects to fish populations yet.
- There is a lot to learn about it yet
- It is only found in Oklahoma in the Barren Fork River below Broken Bow Lake


Confirmed presence of D. geminata in the United States and Canada. A total of 401 samples are included. Records are based on data from USGS National Water Quality Assessment (NAWQA), EPA Environmental Monitoring and Assessment (EMAP), and samples from other studies. (Map by Karl Hermann, Sarah Spaulding, and Tera Keller)
Legend
Didymosphenia geminata Observed
Canada
United States
Mexico

# Asian Carp

- Two types of Asian Carp found in America.
  - Big Head Carp
  - And Silver Carp
- Found two places in Oklahoma
  - Red River and tributaries
  - Neosho River

Asian Carp Regional Coordinating Committee 2010

# What to Do If You Think You Have Found an Asian Carp

**Step 1: Asian Carp Identification**

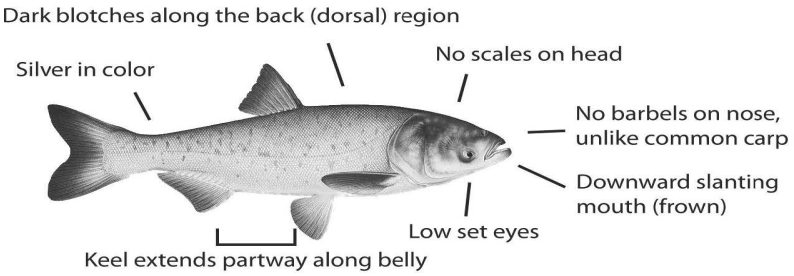
There are seven species of carps native to Asia that have been introduced to the United States, but only four types that are considered a threat to the Great Lakes: bighead, silver, black and grass.

Think you may have found an Asian carp that needs to be reported? Follow these helpful identification tips before calling state personnel.

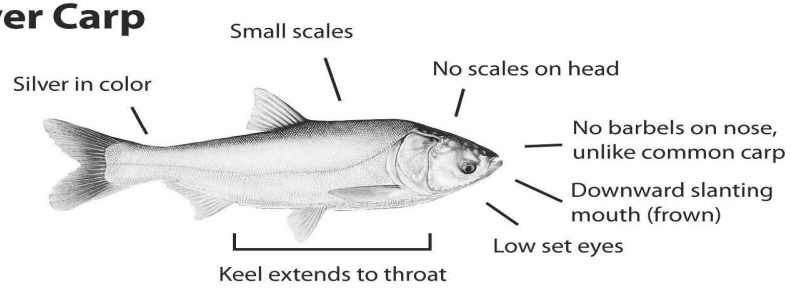
**Identification Tips:**

- Make sure you have the right carp! There is also common carp which is not currently threatening the Great Lakes. The common carp is not an Asian carp. They have a small mouth relative to body size and are brown in color with large scales. If in doubt, call your state personnel!
- Grass carp closely resembles black carp in form (see picture). The major difference is grass carp are nearly white in color.
- Look for hybrids, fish that might exhibit characteristics of both the silver and bighead species, and report them.

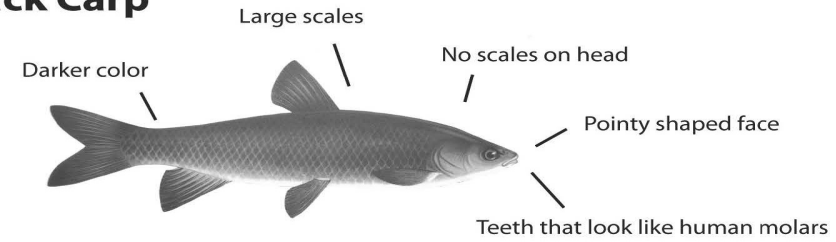
## Bighead Carp




## Silver Carp




## Black Carp




**Want more information? Go to http://www.AsianCarp.org**


05/04/2008


United States Geological Survey

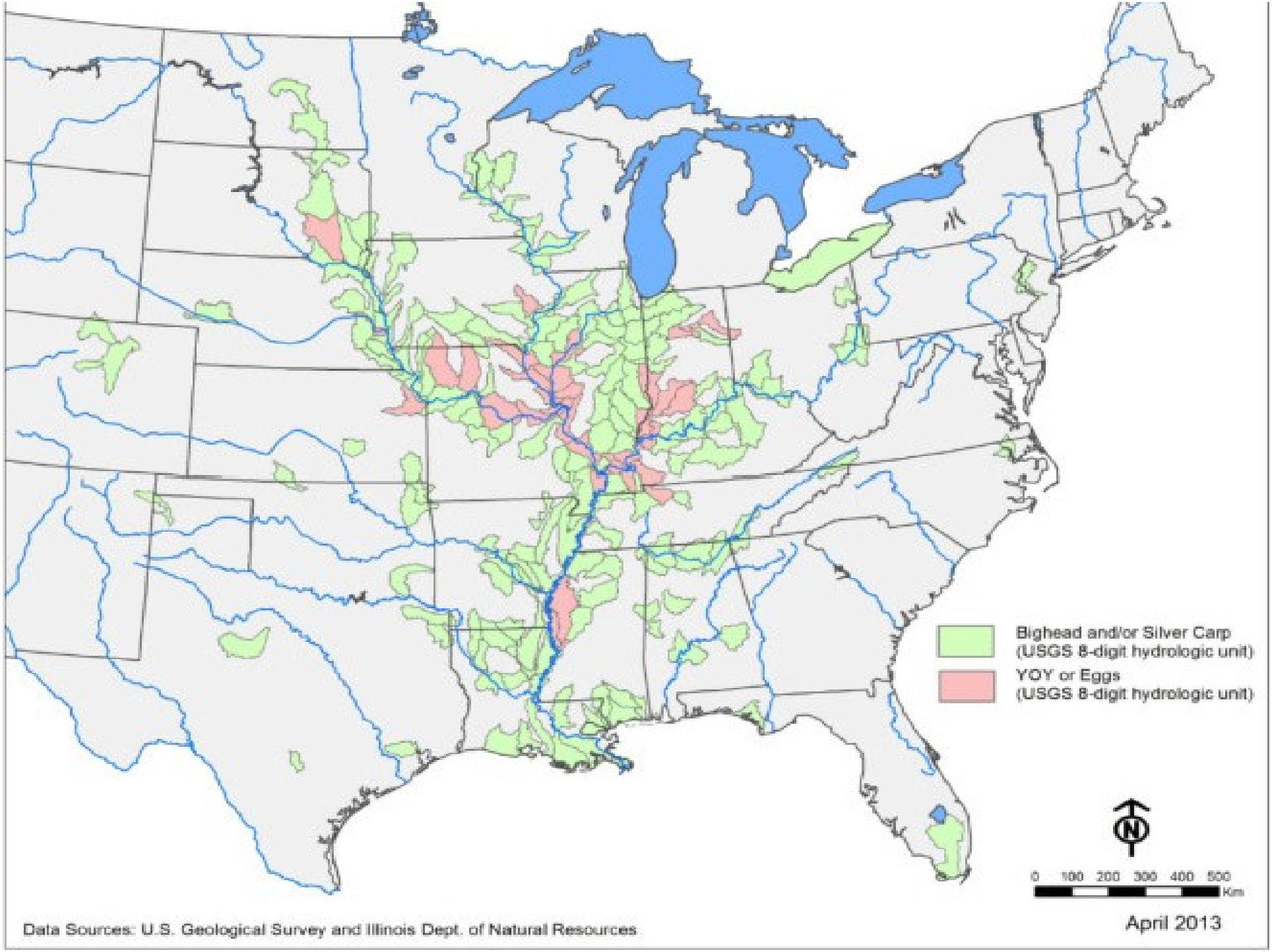

JOHNNY'S HIDEAWAY
© Bill Konway

# Problem with Asian Carp

- Eat Zooplankton
  - Eat 40% of its body weight each day
  - Out compete native fish for food
- Prolific Reproduction
  - One female can produce 2 million eggs per year
  - In a few years they can out number native fish species 10 to 1

# Where did they come from

- They came from Japan and Asia
- Imported by catfish farmers in 1970s to Louisiana and Arkansas
  - They used them to clean holding pens in fish farms
- Escaped because of flooding from Hurricanes
  - They ended up in the Mississippi and Illinois Rivers and have been migrating north


Bighead and/or Silver Carp
(USGS 8-digit hydrologic unit)
YOY or Eggs
(USGS 8-digit hydrologic unit)
N
0 100 200 300 400 500
Km
Data Sources: U.S. Geological Survey and Illinois Dept. of Natural Resources
April 2013

# Wild Pig

- Feral Hog, Wild Boar, Razer Back, and Eurasion Wild Boar.
  - Eat Almost Anything
  - Can Live Almost Anywhere
  - Can Reproduce Rapidly
  - Low Rates of Natural Mortality
- Found in 45 States and Rapidly Expanding

# Where Did They Come From

- First pigs to be introduced came from Cuba
- They were introduced into Florida
- By an explorer named Fernando De Soto in 1539
- He introduced 13 pigs in 1539 and by 1542 the population was over 700 head.
- Today they estimate that there are over 8 million wild pigs in the U.S.

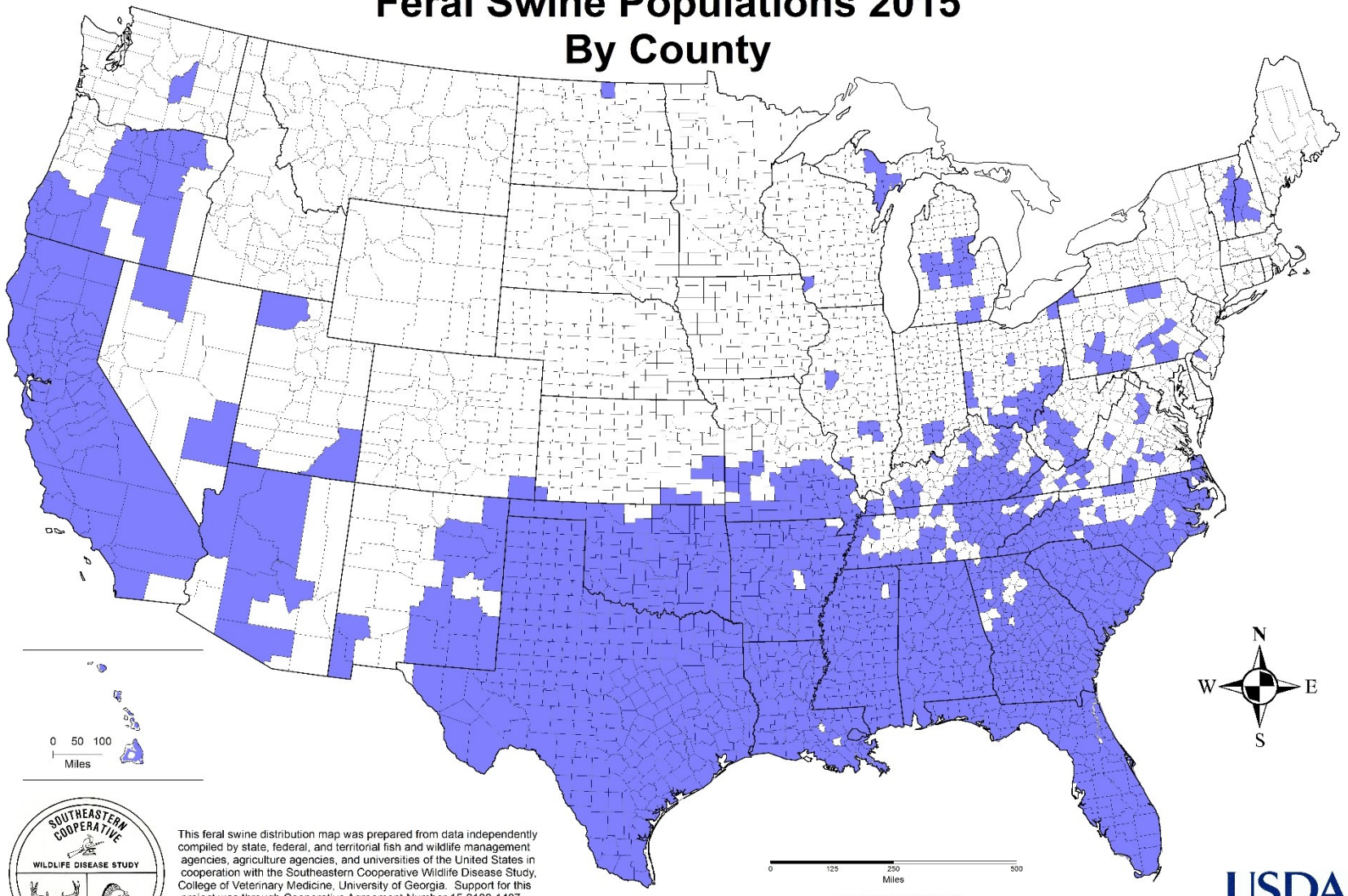
# Facts About Wild Pigs

- Can start breeding at 6 months of age
- Can have 2 litters of pigs per year
- Have an average of 5 to 6 pigs per littler
- Can live 4 to 8 years of age
- 66% of the population must me removed each year to maintain population size
- Can smell some odors 5-7 miles away and 25 feet underground
- They eat 3 to 5 percent of their body weight each day
- Can run up to 30 mph and jump up to 5 feet high

# Damage From Wild Pigs

- Destroy farm land
- Eat crops and seeds
- Spread diseases to domestic animals and humans (Pseudo Rabies, Swine Brucellosis, etc…)
- Cause $1.5 Billion in the U.S. annually
- Damage to urban areas
- Very smart animal

# Feral Swine Populations 2015
# By County




SOUTHEASTERN COOPERATIVE WILDLIFE DISEASE STUDY

This feral swine distribution map was prepared from data independently compiled by state, federal, and territorial fish and wildlife management agencies, agriculture agencies, and universities of the United States in cooperation with the Southeastern Cooperative Wildlife Disease Study, College of Veterinary Medicine, University of Georgia. Support for this project was through Cooperative Agreement Number 15-9100-1407, Veterinary Services, Animal and Plant Health Inspection Service, U.S. Department of Agriculture.

Last Updated 02/13/2016
UGA-CGR

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Questions