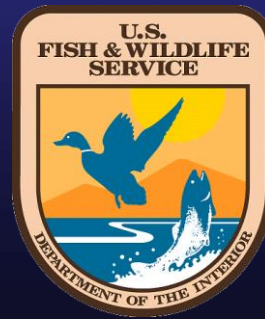




# **ACRCC and USFWS Asian Carp Control Efforts: A Partner Driven Process**

**Congressional Great Lakes Orientation Briefing  
March 29, 2019**

**Aaron Woldt  
Deputy Assistant Regional Director Fisheries, Midwest Region**





# Great Lakes AIS

- Currently ~ 185 AIS in the Great Lakes basin, which is a primary threat to a Great Lakes fishery worth in excess of \$7 billion annually in U.S. waters alone
- Key legislation:  
*National Invasive Species Act (re-authorized Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990)*
- Good news: Overall rate of AIS introductions has slowed since ballast water regulation
- A key threat exists from Asian Carp expansion





# What are “Asian Carp”?

## Four species of concern:

- Silver Carp and Bighead Carp—Planktivores
- Grass Carp—Herbivore
- Black Carp—Molluscivore



# Range Expansion in the U.S.

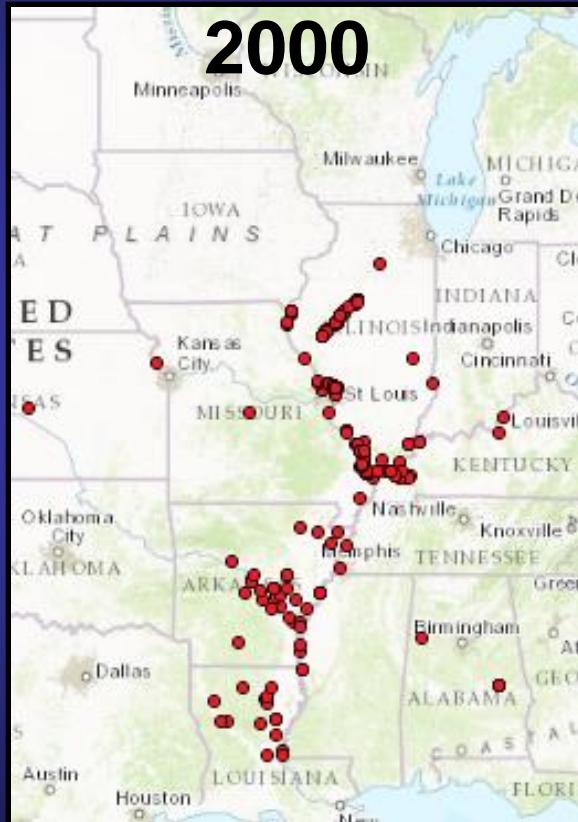
Bighead and Silver carp: Populations now widely established in Mississippi River basin

Grass and Black carp: Populations increasing (with evidence of reproduction in the wild)

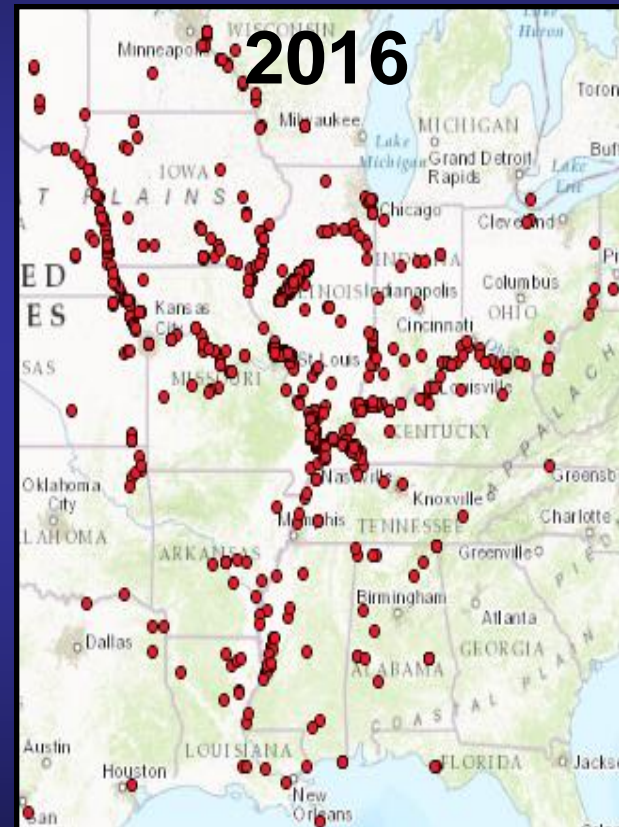
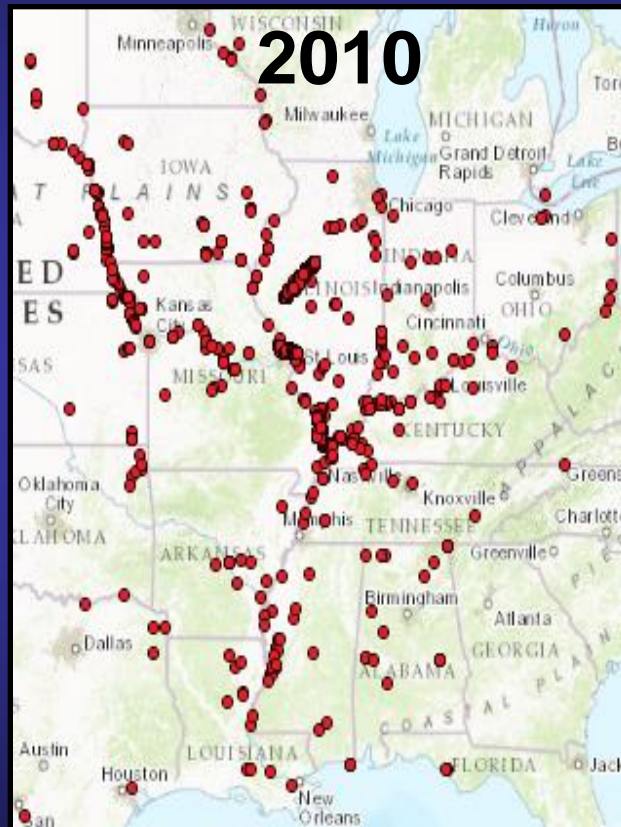




# Silver Carp Expansion

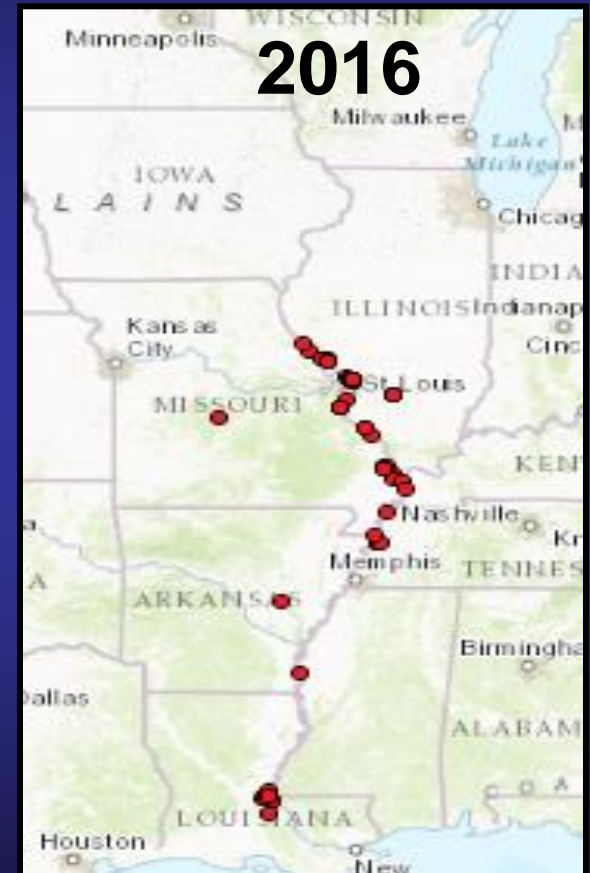
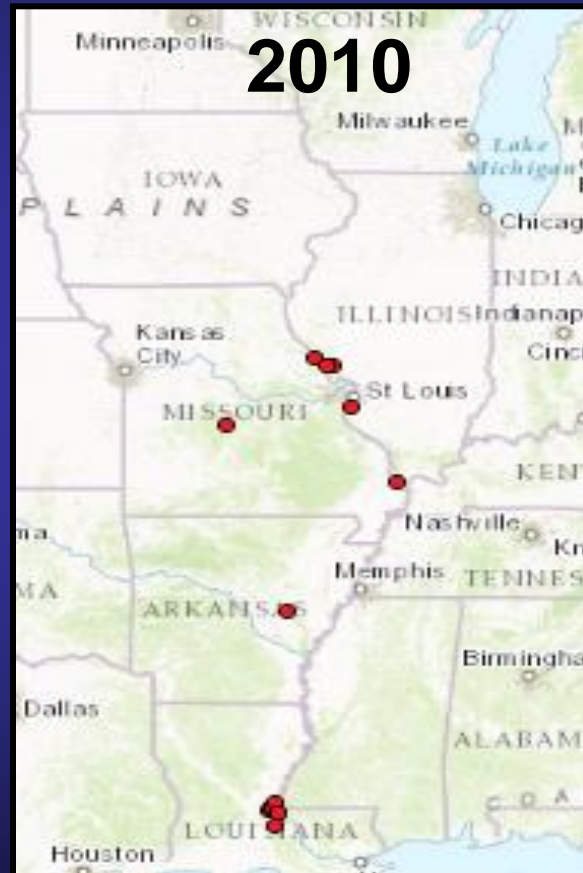


# Bighead Carp Expansion





# Black Carp Expansion





# Why Are Asian Carp a Problem?





# Asian Carp Regional Coordinating Committee

## Partners



# **Mission:** Prevent the introduction, spread, and establishment of Asian carp in the Great Lakes

**Asian Carp Regional  
Coordinating Committee**



Federal  
Executive  
Committee



Monitoring &  
Response  
Work Group

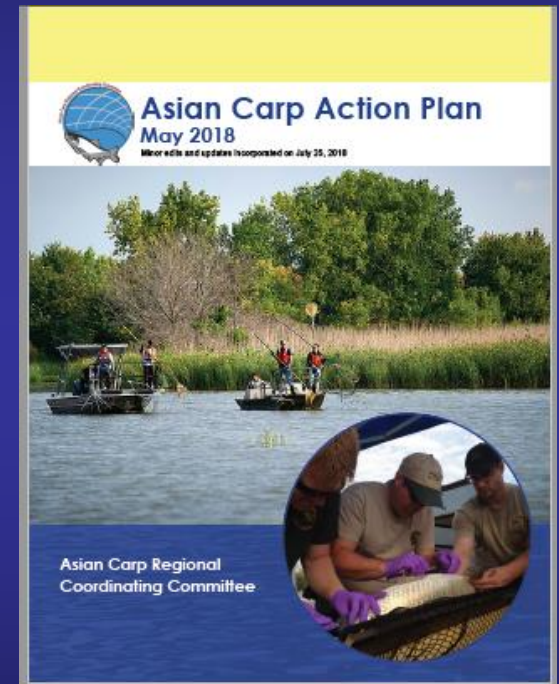


Communications  
Work Group



# ACRCC's Comprehensive Strategy for Great Lakes Defense

- ACRCC develops annual Asian Carp Action Plan (since 2010)
- Strategic projects focused on:
  - Prevention
  - Control
  - Monitoring
  - Early Detection
  - Pathway Closures
  - R and D (New Tools)
  - Stakeholder Communications
- Supported through GLRI and agency base funds
- Supports broader goals of the National Asian Carp Plan





## Legend

- River
- - - - - Asian carp eggs detected
- Lock and Dam/Water Control Structure
- 2017: Single Silver Carp captured below TJ O'Brien Lock at RM 324.2
- 2015: 3 larval fish detections, none before or after 2015.
- 2010: Single Bighead Carp captured in Lake Calumet
- 2009: Single Bighead Carp captured during rotenone action

### Distances from Lake Michigan

37 miles ★ Electric Barrier System

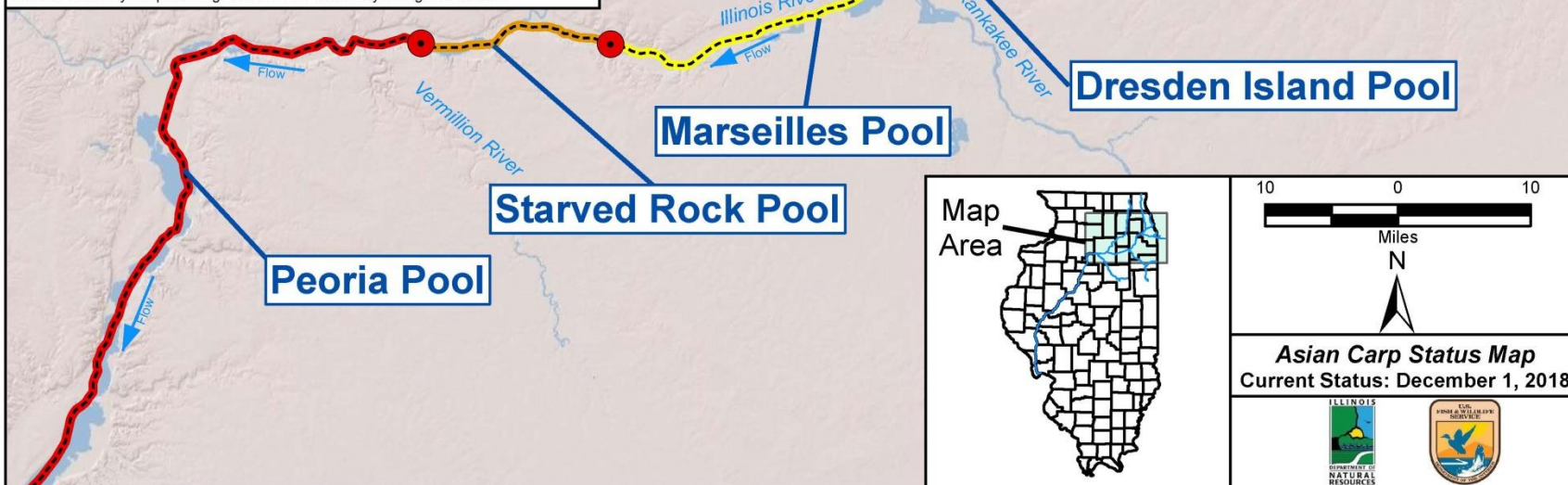
47 miles Dresden Island Pool: Adult Population Front;  
Three larval Silver Carp captured in July 2015

62 miles Marseilles Pool: Adult presence and potential spawning,  
Asian carp eggs detected

88 miles Starved Rock Pool: Adult abundance, Asian carp <6  
inches captured in 2015 only. Asian carp eggs detected

102 miles Peoria Pool to Mississippi River: Established  
population with ALL life stages detected

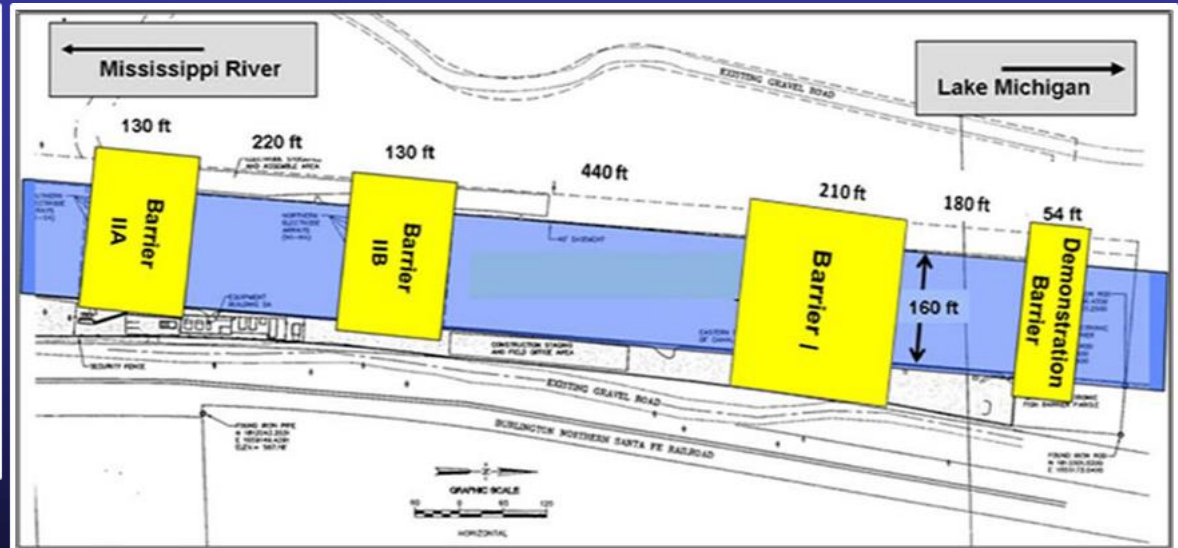
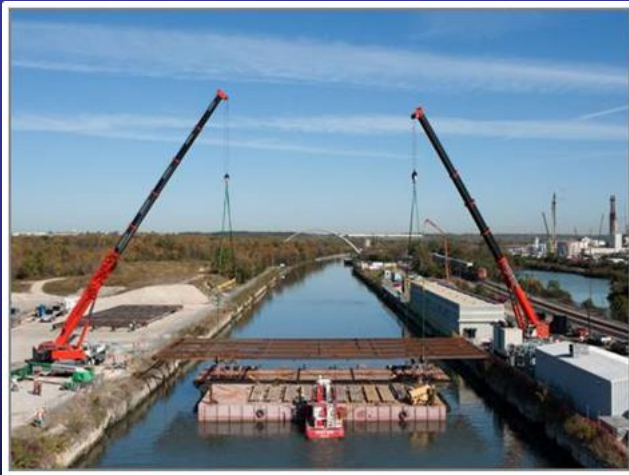
Note: All distances measured in river miles from Lake Michigan (Chicago Harbor).  
Source: US Army Corps of Engineers Illinois Waterway Navigation Charts





# Electric Dispersal Barriers

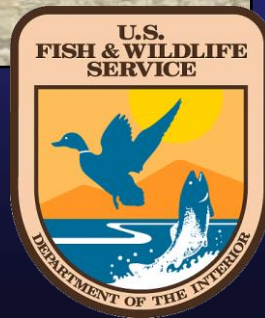
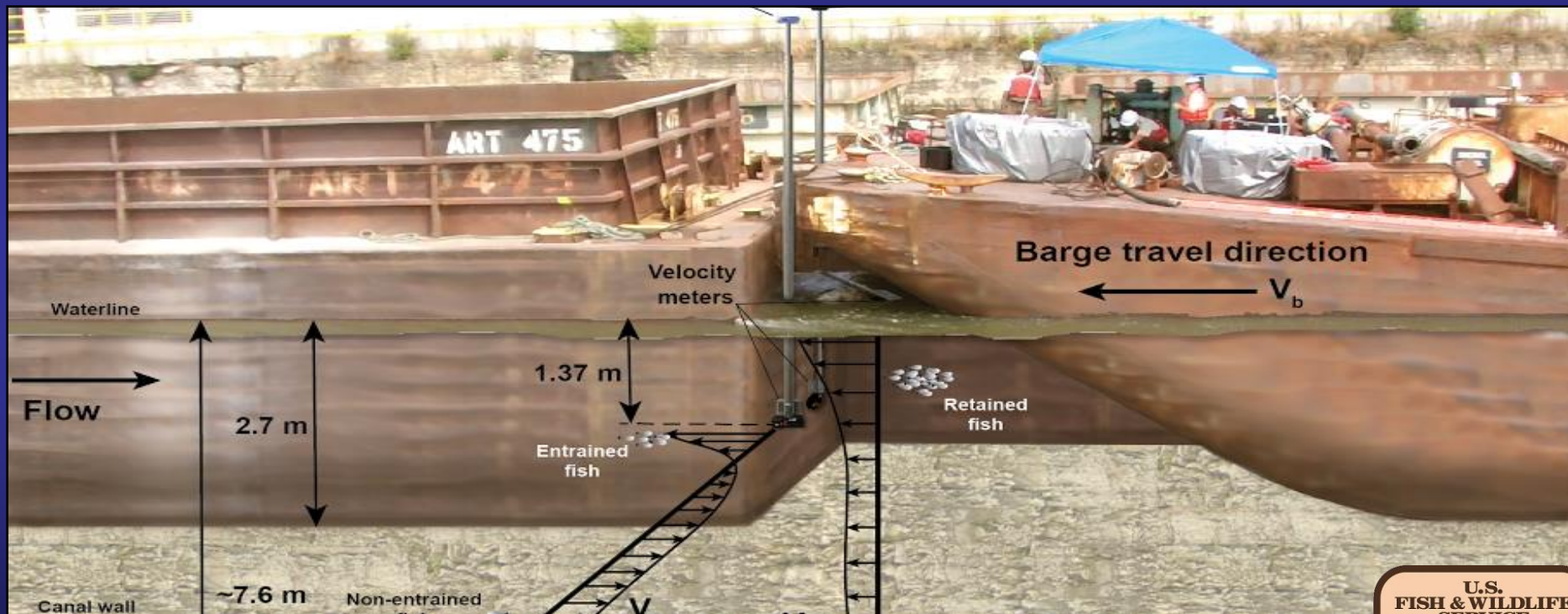
- Electrical Barriers in the Chicago Sanitary and Ship Canal.
- Important “line in the sand” in the CAWS to protect Great Lakes.
- Current arrays include Demonstration Barrier (2002), Barrier 2A and Barrier 2B (2009 and 2011).
- New third permanent barrier (Barrier 1) under construction.







# Alternative Pathways: Barge Entrainment







Seasonal Intensive  
Sampling Efforts in  
the Chicago Area  
Waterway/Illinois  
Waterway.





# Commercial Harvest

- States work with contracted commercial fishers to intensively target key locations.
- Goal is to reduce stock sizes in defense of high priority choke points, like the electric barriers.
- To date, contract fishers in Illinois have removed ~8 MILLION pounds of Asian carp.





## Bighead Carp and Silver Carp: Characterization of Relative Abundance in the Upper Mississippi River and Ohio River







U.S. Fish & Wildlife Service

# National Plan for United States

- Completed in 2007.
- Over 70 partners contributed.
- 7 Goals which include actions for prevention and risk assessment, early detection, rapid assessment, containment, rapid response, control, and eradication.



Bighead carp



Silver carp

## Management and Control Plan for Bighead, Black, Grass, and Silver Carp in the United States

*Submitted to the Aquatic Nuisance Species Task Force  
Prepared by the Asian Carp Working Group*

October 2007



Black carp



Grass carp

# National to Basinwide Strategies



Bighead carp

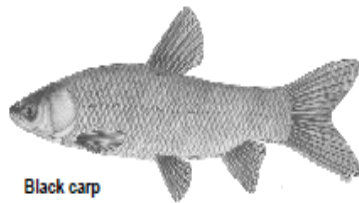


Silver carp

## Management and Control Plan for Bighead, Black, Grass, and Silver Carps in the United States

*Submitted to the Aquatic Nuisance Species Task Force  
Prepared by the Asian Carp Working Group*

October 2007



Black carp



Grass carp



## Ohio River Basin Asian Carp Control Strategy Framework

Ohio River Fisheries Management Team  
October 24, 2014



## Minnesota Invasive Carp Action Plan

A plan to assess the threat posed by bighead, black, grass and silver carp, and actions to minimize their impact in Minnesota

Invasive Carp Work Group  
Original Plan – 11/2/2011  
Update - 12/15/2014



U.S. Fish & Wildlife Service

# Water Resources Reform and Development Act (2014)

- Direction from U.S. Congress to the USFWS to lead a multi agency effort to slow the spread of on Asian carp in the Upper Mississippi and Ohio River basins.
- Submit annual report to Congress.



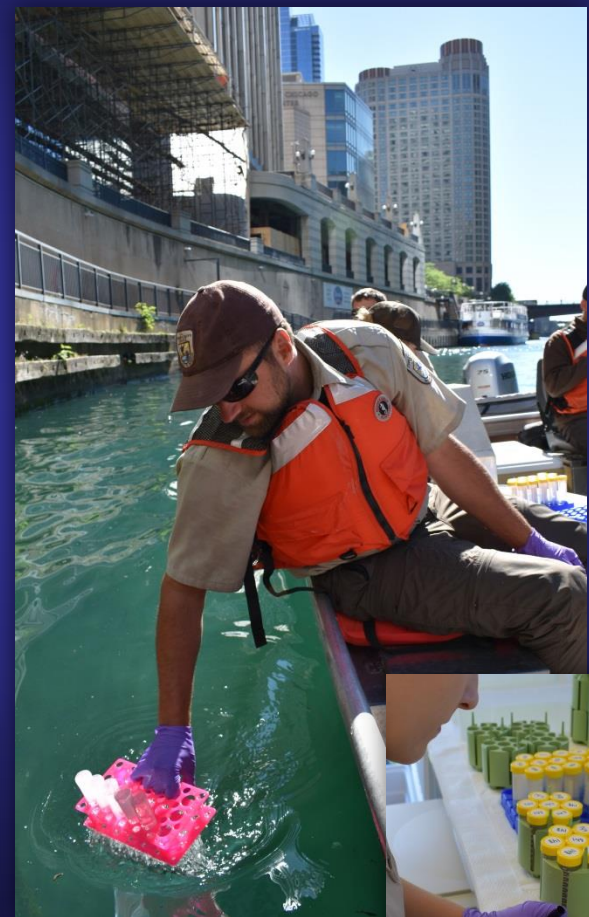




U.S. Fish & Wildlife Service

# Great Lakes Basinwide Early Detection

- **Traditional sampling**
  - Electrofishing, trawling, several types of nets, and ichthyoplankton sampling.
  - Targeting juvenile and adult fish, and invertebrates.
- **Genetic surveillance**





# 2018 AIS Traditional Sampling Sites





## U.S. Fish & Wildlife Service

# Risk Assessment

- **Rapid Risk Screening Program (2010-present)**
  - 1,000 species reports finalized
  - 800 additional in progress
- **Applications**
  - Prioritize targets for early detection
  - Prioritize species to consider in injurious wildlife listing process
  - Inform response to new detections
  - Provide States with information to make their own prioritization and regulatory choices

U.S. Fish & Wildlife Service

### Killer Shrimp (*Dikerogammarus villosus*)

#### Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, September 2014

Revised, June 2015 and September 2016

Web Version, 09/14/2017



Photo: S. Giesen, NOAA Great Lakes Environmental Research Laboratory

### 1 Native Range, and Status in the United States

#### Native Range

From CABI (2015):

"The amphipod is native to the lower reaches of the rivers discharging into the Black Sea and Caspian Sea (Dedju, 1967; Neseemann et al., 1995; Vaate et al., 2002)."

#### Status in the United States

From Dettlöff et al. (2015):

"Not established in North America"

#### Means of Introductions in the United States

From Dettlöff et al. (2015):

"Due to its high tolerance to varying levels of salinity, oxygen and temperature, *D. villosus* is considered a highly likely candidate for introduction to the Great Lakes through ballast water

For more information, please visit:  
<https://www.fws.gov/fisheries/ans/prevention.html>

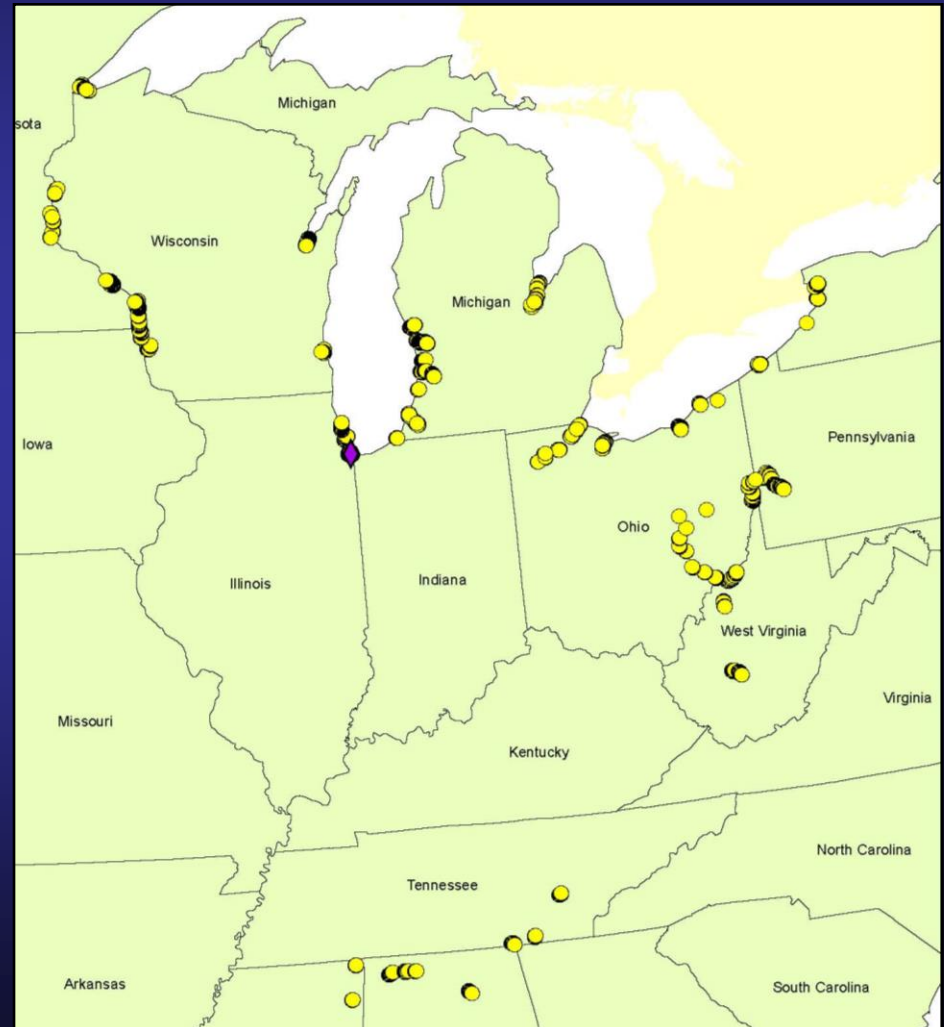




U.S. Fish & Wildlife Service

# Genetic Surveillance: eDNA

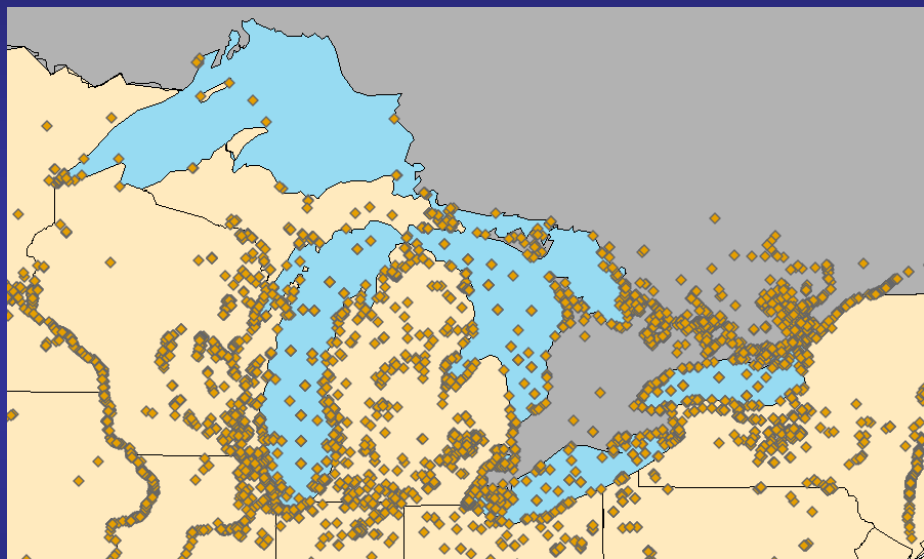
- Very sensitive tool.
- Collect water samples at/near edge of range to look for sloughed genetic material.
- Only currently have markers for bighead and silver carp.





U.S. Fish & Wildlife Service

# Invasive Mussels



Zebra Mussel distribution, 2019  
(first detected 1988 in Lake St. Clair)



Quagga Mussel distribution, 2019  
(first detected 1989 in Lake Erie)

For more information, please visit:  
<https://invasivemusselcollaborative.net/>

# Grass Carp Response

*In FY18 USFWS Budget--“\$10,400,000 is for controlling Asian carp in the Mississippi and Ohio River Basins and preventing them from entering and establishing in the Great Lakes, including \$2,000,000 to expand and perfect the combined use of contract fishing and deterrents to extirpate Asian carp, including grass carp, where already established;”*

- *Support for State/Federal grass carp management in Lake Erie*
- *Deployment of acoustic deterrents at strategic choke points*
- *Expansion of contract fishing in the ORB and UMRB*





# Grass Carp Response

## U.S. and Canadian, State/Provincial and Federal resource agencies, and universities

- Primary focus = Lake Erie (western basin)
- Science and strategy used to guide control actions
  - USGS: Key research on status, spawning locations/times, and habitat use
  - OH and MI: Leadership on State-led interagency response operations/strategic planning
  - USFWS: Expertise on eDNA, ploidy, and on-the-water field support
  - OMNRF and DFO-Canada: Key Canadian partners

Photo: OH DNR

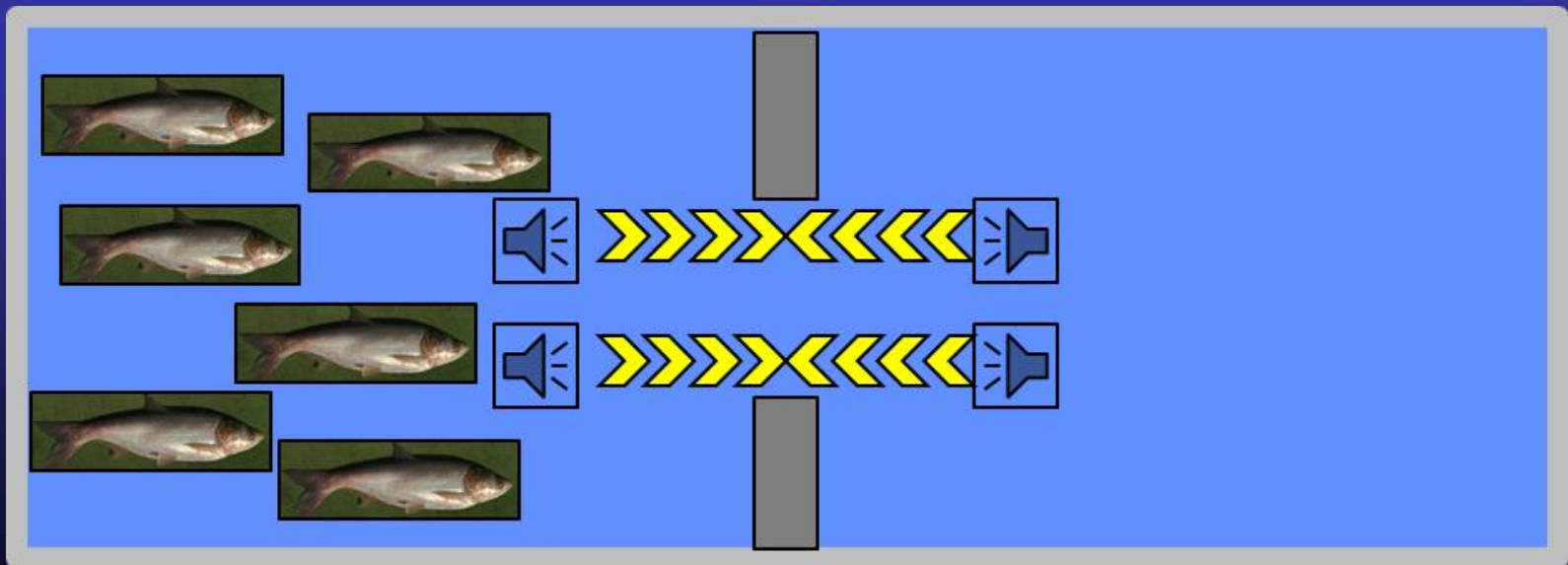




U.S. Fish & Wildlife Service

## Deterrent Technologies/BAFF

- Use of underwater sound to deter fish movement.
- Intense and focused sound waves.
- Non-selective for fish species (stops both target and non-target fish species).
- Can be deployed near lock structures for key confluences.





# Other Potential Technologies

- Carbon Dioxide (CO<sub>2</sub>) as a deterrent.
- Water jets at/near electric barriers.
- “Microparticles” for delivery of selective piscicides.
- Lock Treatment Options (e.g. Hot Water/Ozone/Chlorine).
- Novel Sampling Gears.
- Cavitation barrier/  
bubble wall.







# **Are Our Efforts Working?**

- No new detections of Bighead or Silver carp in the Great Lakes.
- Numbers of fish have been reduced in key locations, and the leading edge of the population in the Illinois waterway has not moved in recent years.
- Secondary pathways are being closed.
- New contingency/emergency response plans in place for faster and stronger responses.



# Questions?



For more info, please visit: <http://www.asiancarp.us>