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

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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

2000

2010

2016
Bighead Carp Expansion
Black Carp Expansion

2000

2010

2016
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
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
- Dresden Island Pool: Adult Population Front; Three larval Silver Carp captured in July 2015
- Starved Rock Pool: Adult abundance, Asian carp <6 inches captured in 2015 only; Asian carp eggs detected
- 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

Map Area

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Map Area
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.
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.

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
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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
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 Asian carp in the Upper Mississippi and Ohio River basins.

• Submit annual report to Congress.
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**
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

For more information, please visit: https://www.fws.gov/fisheries/ans/prevention.html
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.
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
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$_2$) 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