Mission: Prevent the introduction, spread and establishment of Asian carp in the Great Lakes
Partnership Planning

2018 Action Plan

• Comprehensive approach to Great Lakes defense
  • Detection
  • Management (Prevention and Control)
  • Response

• Supports annual Monitoring and Response Plan (tactical)

• Supports goals of the National Asian Carp Plan
2018 Action Plan Key Initiatives

Prevention Actions

• New Electric Dispersal Barrier
• Potential Future AIS Control Actions at Brandon Road L&D
• Addressing Secondary Interbasin Pathways

Control Measures

• Increased Use of Targeted Contract Commercial Harvest
• Use of an Asian Carp Population Model for Management Decision Support
2018 Action Plan Key Initiatives

**New Control Technology Development**
- Pilot Trials for Underwater Sound Deterrents
- Development of CO2 as an Asian Carp Barrier

**Early Detection, Monitoring, and Assessment**
- Monitoring Upstream/Downstream of Electric Dispersal Barrier
- Comprehensive eDNA Monitoring
Key USFWS Partnership Actions

Monitoring IWW and CAWS

• Monitoring with Remote Sensing at the Barrier
• Fixed, Random Site and Seasonal Intensive Monitoring
• Distribution and Movement of Small Asian Carp
• Des Plaines River Monitoring

USFWS Hydroacoustic transducers ready for deployment

USFWS Paupier Sampling Boat
2018 Action Plan Key Initiatives

**Rapid Response Actions**
- Interagency Contingency Response Planning

**Emerging Threats - Black and Grass Carp**
- Development of New Prevention and Control Strategies

**Interbasin Collaboration**
- Coordination and Leveraging Across Basinwide Partnerships
## 2018 Action Plan Funding

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## MRWG Working Groups

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<td>Behavioral Deterrent Technologies</td>
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DETECTION PROJECTS (12)

• Seasonal intensive Monitoring of the CAWS
• Strategy for eDNA Sampling in the CAWS
• Larval Fish Monitoring in the Illinois Waterway
• Distribution and Movement of Small Asian Carp in the Illinois Waterway
• Distribution and Movement of Small Asian Carp in the Illinois Waterway Using Telemetry
• Fixed Site Monitoring Downstream of the Dispersal Barrier
• Telemetry Monitoring Plan

• Monitoring Fish Abundance, Behavior, and Species Composition Near the Chicago Sanitary and Ship Canal Electric Dispersal Barrier
• Alternative Pathway Surveillance – Urban Pond Monitoring
• Young-of-year and Juvenile Asian Carp Monitoring
• Des Plaines River and Overflow Monitoring
• USGS Support for Implementation of MRP
MANAGE AND CONTROL PROJECTS (13)

• Barrier Maintenance Fish Suppression
• Barrier Defense Asian Carp Removal Project
• **Enhanced Contract Removal**
• Barrier Defense Using Novel Gear
• Optimization of Mass Removal Techniques
• Using Long-term Asian Carp Abundance and Movement Data to Reduce Uncertainty of Management Decisions
• Evaluation of Gear Efficiency and Asian Carp Detectability

• Unconventional Gear Development
• Barge Entrainment and Asian Carp Interaction Study and Monitoring Barge Entrainment Dynamics and Assessment of Mitigation Protocols
• **Asian Carp Population Modeling to Support an Adaptive Management Framework**
• Telemetry Support for the Spatially Explicit Asian Carp Population Model (SEACarP)
• Asian Carp Demographics
• Alternative Pathway Surveillance in Illinois – Law Enforcement
Upper Illinois Waterway Contingency Response Plan

- Provides guidance for rapid multi-agency response to emergency or unexpected needs
- Also appropriate to assist and guide multi-agency responses and actions that are not emergencies

Manages actions and communication of information
Enhanced Contracted Removal

Goal: Efficiently eliminate upstream progression of Asian carp

Objectives:
1) Determine most effective locations to target adult mortality (leading edge vs population source)
2) Determine required mortality rates and quotas
3) Determine most effective locations for deterrents technology
4) Determine minimum effectiveness rates for deterrent technology
5) Prioritize research efforts to reduce uncertainty of risk
USGS 2018 Actions

- Hydraulic and WQ data supporting partner efforts
- CO$_2$ as a deterrent
- Acoustic Deterrents
- Algae used to attract Asian carp and enhance microparticle delivery
- Acoustic telemetry database
- Toxic microparticles
- Microparticle and CO$_2$ registration
- Hot water/ozone/chlorine lock treatment testing
- Early detection molecular technologies
- Early detection eDNA: Hand held rapid detection tool
- Grass Carp detection/control
- FluEgg Simulation Model
- Black Carp – life history, toxic bait development
- Mass Removal / Unified Method Support
USGS 2018 Actions: Mass Removal

- **Unified Method**
  - Multi-agency - USGS, USFWS, MDC, STLCO, ILDNR
  - Drive fish to collecting point
  - Low bycatch
  - 240,000 lbs removed
- **Novel capture gears**
  - New trap nets
  - Fish driving methods
- **Potential rapid response method**
USGS 2018 Actions: Acoustic Deterrents

- Deployment of an Acoustic Deterrent System (ADS) in the CAWS
- Develop, refine, and test new acoustic stimuli in ponds and field
- Develop study plan for large scale ADS (Barkley Lock & LD 19)
- Compare effectiveness of several different sound stimuli and multiple techniques to herd or capture fish in tributaries
Modeling and Decision Science: AC Control

Control options:
1) Deter immigration
2) Reduce spawner abundance

Control options:
1) Increase mortality
2) Encourage / do not inhibit emigration

Asian carp abundance

- Births
- Additions
- Immigration

- Deaths
- Losses
- Emigration

✓ Improve USFWS & USGS collaborative SEACarP model
✓ Improve removal techniques
✓ Improve deterrent applications
✓ Improve decision support tools
Thank you!
Asian Carp Range from Lake Michigan

UPDATE: June 22, 2017
RM 324.2, Location of Silver Carp Captured below TJ O’Brien Lock

Legend
- River
- Asian carp eggs detected
- Lock and Dam/Water Control Structure
- 3 larval fish detections in 2015, none before or after 2015.

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


Map showing the range of Asian Carp from Lake Michigan to the Mississippi River, with specific pools marked and the electric barrier system.