



Asian Carp Regional Coordinating Committee

2017 Asian Carp Action Plan Briefing

January 11, 2017



Welcome and Introductions

*Matthew McKenna, Director, Northeast
Midwest Institute*

Mike Weimer, Co-Chair ACRCC, USFWS

Bill Bolen, Co-Chair ACRCC, USEPA



Asian Carp Regional Coordinating Committee 2017 Action Plan

Mike Weimer
Co-chair of the ACRCC,
U.S. Fish and Wildlife Service

2017 Action Plan

Asian Carp Regional Coordinating Committee



A binational partnership of 27 Federal, State, an Provincial partners working to protect the Great Lakes basin from the Asian Carp threat.



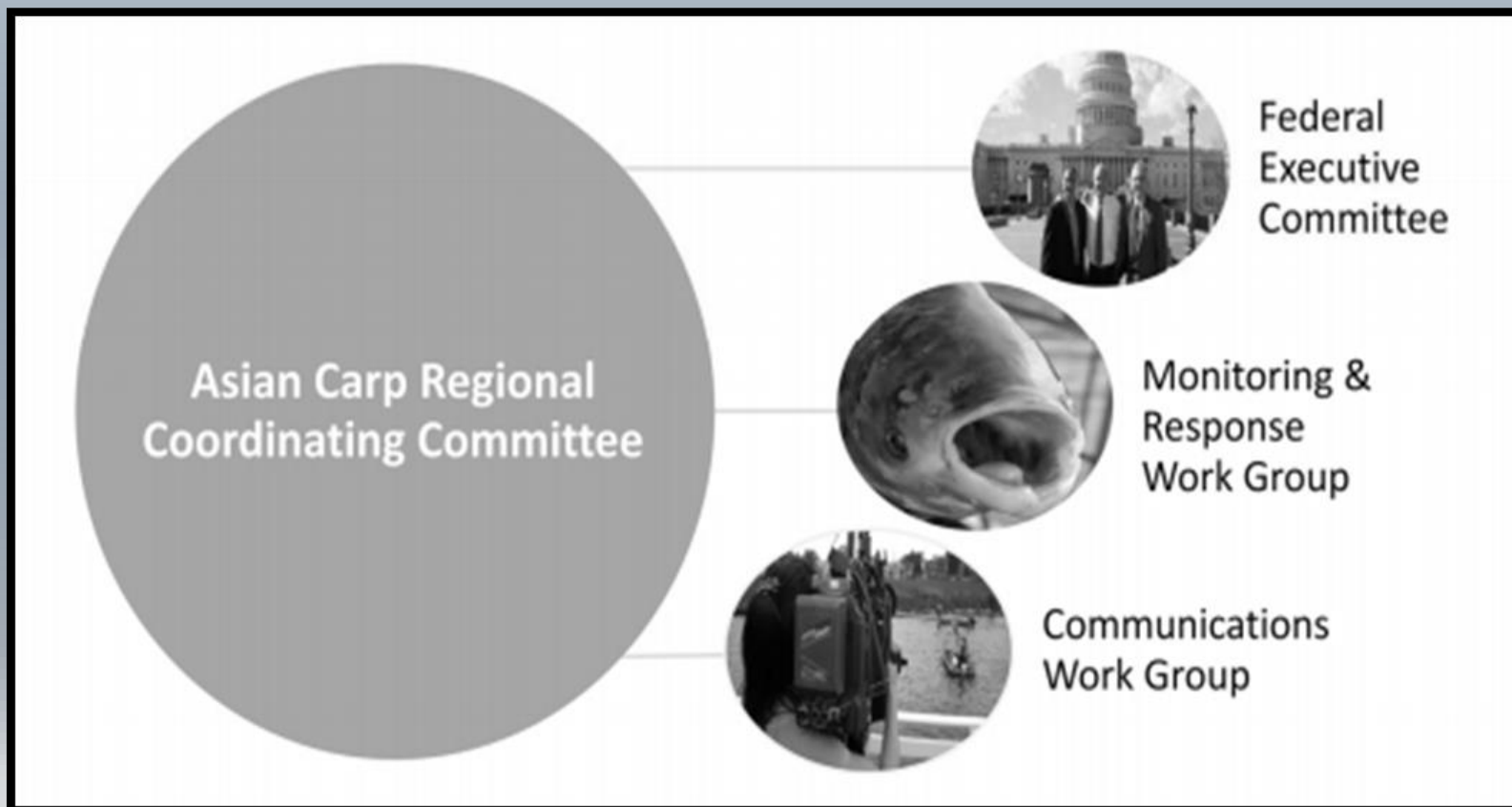
2017 Action Plan

Purpose:

“To prevent the introduction, establishment, and spread of Bighead, Black, Grass, and Silver Carp populations in the Great Lakes”



ACRCC Structure

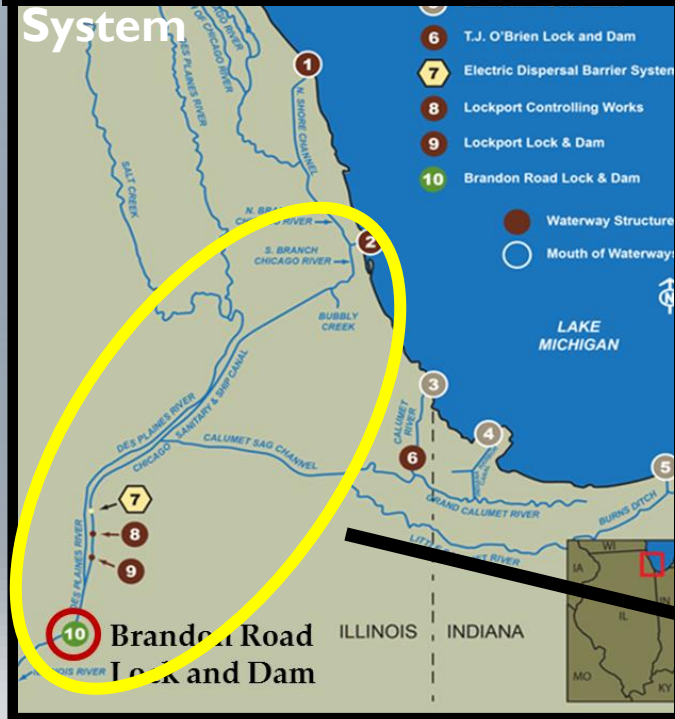


Prevention Focused at Potential Basin Entry Pathways



- Primary Pathway - Chicago Area Waterway System
- 18 Intermittent Secondary Pathways

Primary Chicago Area Waterway System



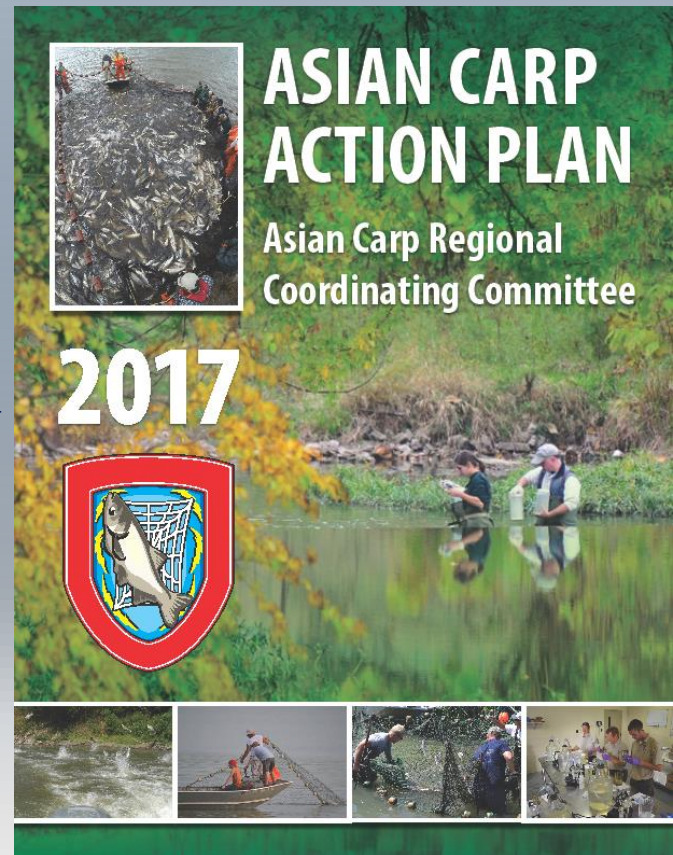
Secondary



2017 Action Plan

2017 Highlights:

- Builds on 2016 Action Plan
- Includes over 60 collaborative agency projects
- Supports the ACRCC 2017 Monitoring and Response activities
 - Early detection, rapid response and contingency planning
- Includes new out-year planning goals and objectives
 - Supports long-term agency coordination and strategic planning





2017 Action Plan

2017 Key Initiatives:

- Construction of a new electric barrier
- Intermittent Pathways:
 - Closure actions at Ohio-Erie Canal and Little Killbuck Creek Pathways
- Continuation of Brandon Road efforts
- Development of new *detection and removal* techniques and gears



2017 Action Plan

2017 Key Initiatives

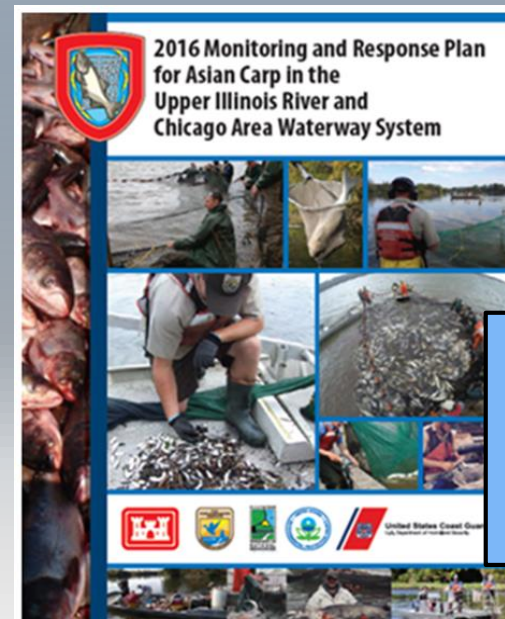
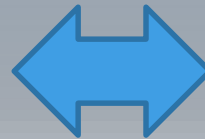
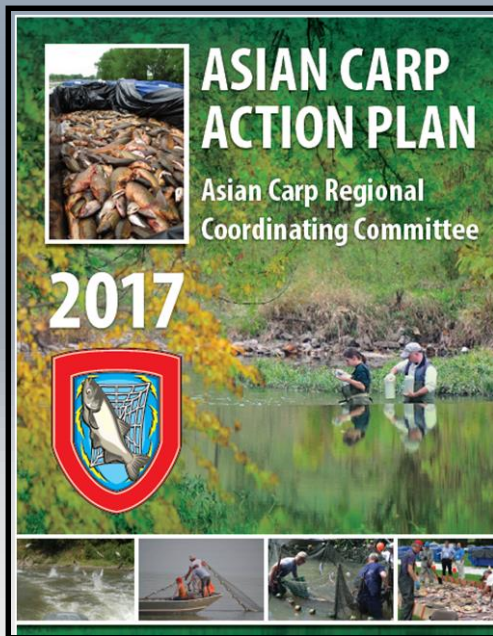
- Targeted removal of small Asian carp in key locations in the Upper Illinois Waterway
- Refinement of Contingency Response Plan (per new data and available tools)
- Development/field-testing of potential new control technologies (e.g. CO₂, complex sound)
- Intensive monitoring for Asian carp (all life stages) upstream and downstream of Electrical Dispersal Barrier
- Action to address emerging threats from Black and Grass Carp



Monitoring and Response Plan

Monitoring and Response Plan >> “Tactical” battle plan, puts the Action Plan into effect (*What, When and Where*)

- Includes **Contingency Response Plans** (added in 2016)
 - ACRCC response if Asian carp are detected in upstream locations closer to Great Lakes; focus on 5 navigation pools below the EDB



**Includes
Contingency
Response
Plans**



2017

Funding Summary

Bill Bolen

Co-chair of the ACRCC and USEPA Senior Advisor



GLRI Asian Carp 2010 - 2017

Agency	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
USGS	\$4,643,000	\$4,673,934	\$2,055,100	\$1,625,000	\$3,523,232	\$3,935,500	\$5,240,000	\$4,392,000
USACE	\$14,040,000	\$7,481,680	\$5,868,000	\$3,600,000	\$1,830,740	\$3,916,500	\$2,594,000	\$3,862,500
USEPA	\$400,000	\$400,529	\$373,583	\$340,000	\$0	\$0	\$1,713,000	\$465,910
USCG	\$500,000	\$380,000	\$360,000	\$0	\$0	\$0	\$209,000	\$400,000
USFWS	\$1,410,000	\$5,080,444	\$3,610,000	\$3,580,000	\$4,918,028	\$4,024,000	\$3,260,000	\$2,745,000
NOAA	\$0	\$1,166,169	\$785,617	\$292,800	\$0	\$0	\$0	\$159,590
States	\$4,000,000	\$5,718,000	\$6,337,417	\$5,373,000	\$5,728,000	\$4,124,000	\$4,522,000	\$4,900,000
NPS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$75,000
USDA-NRCS	\$0	\$0	\$0	\$1,200,000	\$0	\$0	\$0	\$0
Total cost	\$24,993,000	\$24,900,756	\$19,389,717	\$16,010,800	\$16,000,000	\$16,000,000	\$17,538,000	\$17,000,000



Asian Carp Agency Funding 2010 - 2017

Agency	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017
USGS	\$692,000	\$552,000	\$3,052,000	\$5,617,000	\$3,264,942	\$5,260,229	\$5,228,000	\$5,228,000
USACE	\$25,095,000	\$13,372,000	\$27,065,000	\$27,500,000	\$39,000,000	\$50,200,000	\$29,000,000	\$14,600,000
USEPA	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
USCG Guard	\$0	\$0	\$98,000	\$0	\$0	\$5,600	\$7,600	\$77,000
USFWS	\$320,000	\$320,000	\$2,000,000	\$2,900,000	\$2,790,094	\$2,797,088	\$5,300,000	\$5,300,000
NOAA	\$497,846	\$497,122	\$60,000	\$684,680	\$0	\$0	\$152,128	\$179,905
States	\$0	\$0	---	\$0	\$0	\$0	\$150,000	\$0
NPS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
USDA- NRCS	\$0	\$0	---	\$0	\$0	\$0	\$0	\$0
Total cost	\$26,604,846	\$14,741,122	\$32,275,000	\$36,701,680	\$45,055,036	\$58,262,917	\$39,837,728	\$25,384,905



Monitoring Update and 2017 USFWS Actions

Charles Wooley

*Deputy Regional Director for the Midwest
Region, USFWS*

Bighead and Silver Carp Status in the IWW

Distances from Lake Michigan

37 miles ★ Dispersal barriers

47 miles Adult Population Front: **Dresden Island Pool**

62 miles Adult Presence/Potential Spawning: **Marseilles Pool**

88 miles Adult and Juvenile Presence: **Starved Rock Pool**

102 miles Established population with ALL life stages detected/assumed: **Peoria Pool** to confluence with UMR

● Captures of larval Silver Carp

● Captures of Asian carp less than 6 inches

--- Asian carp eggs detected

Electric Barrier System (37 mi)

Lockport Pool

Brandon Road Pool

Dresden Island Pool

Starved Rock Pool

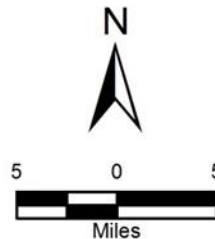
Marseilles Pool

Peoria Pool

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

Legend

- ★ Electric Barrier System
- Lock and Dam
- Brandon Road Pool
- Dresden Island Pool
- Lockport Pool
- Marseilles Pool
- Starved Rock Pool
- Peoria Pool
- CAWS
- River



Source: ESRI Shaded Relief Map, 2013

2016 Asian Carp Interim Summary Report
Contingency Planning for the Upper Illinois Waterway

Figure 1
Upper Illinois Waterway Map

Prepared By: Illinois Department of
Natural Resources





USFWS 2017 Monitoring Activities

Environmental DNA (eDNA)

- Genetic surveillance above the barrier in CAWS and below barrier in Lockport and Brandon Road pools;
- Black Carp Genetic Analysis;
- Genomic Mapping of Bighead and Grass Carp to Aid in Genetic Surveillance and Potential Genetic Control Efforts

Adult Asian Carp Monitoring

- Great Lakes Asian Carp Monitoring Program;
- Monitoring and Response Team Support;
- Hydro-Acoustic Assessment of Lock Mediated Fish Passage in the Upper Illinois River;
- Analysis of Grass Carp in the CAWS;
- Black Carp Assessment: CAWS and UMRB;
- Barrier Defense Using Novel Gear

Juvenile Asian Carp Monitoring

- Mass Removal and Monitoring of Juvenile Asian Carp;
- Barrier Defense Using Novel Gear

Barge-influenced movement of fish

- Barge Entrainment and Interaction Studies;
- Predictive Model for Identifying Probability/Risk of Barges Entraining Asian carp

Support for USGS Technology Refinement

- Registration of Microparticle Technologies;
- Registration of Carbon Dioxide Technologies

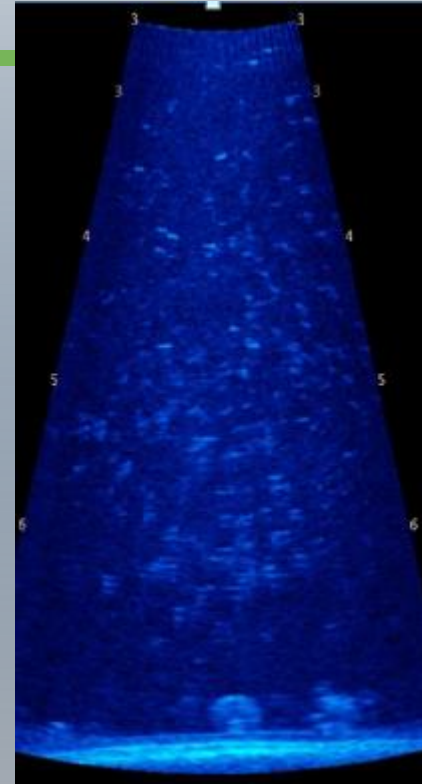
Outreach

- Asian Carp Strategic Communications Plan and Website Operation and Maintenance



2016 USFWS Barge Studies

- Downstream transiting barges resulted in reverse flow coupled with electrical sagging, allowing upstream passage of small, non-Asian carp species over the Electric Dispersal Barrier
- Recognition of potential vulnerability does not represent an increase in probability/risk of Asian carp passage
 - Small Asian carp (< 6") remain ~ 40 miles/3 lock and dam structures downstream from barrier
 - Enhanced Contingency Planning (added in 2016) = increased early detection/rapid response capacity (Monitoring and Response Work Group)



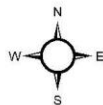
Underwater sonic view of fish moving upstream over barrier with a downstream passing tow

Bighead and Silver Carp eDNA Early Detection Results:
All 2016 eDNA Results
Number of Samples Collected: 6737
Number of eDNA Positives: Silver Carp 1; Bighead Carp 1



eDNA Sample Points

- Negative
- ◆ Positive Bighead AND Silver Carp



0 50 100 200 Miles



eDNA in 2016:

- 7,500 eDNA samples collected and processed for Bighead and Silver Carp in the Midwest
 - 4,891 in Great Lakes region
- ONLY ONE sample was positive for BOTH Bighead and Silver Carp eDNA (in CAWS)
- eDNA surveillance work will continue in 2017
- USFWS validating Black Carp marker for field detection
- USFWS developing Grass Carp marker
- eDNA handheld units will also be used in 2017



Asian Carp Population Reduction Efforts/Contingency Planning:

Leaving Nothing to Chance

***Kevin Irons, Illinois Department
of Natural Resources***



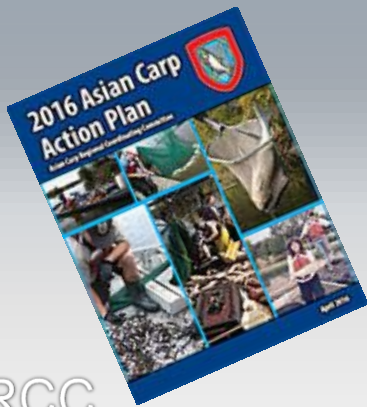
**Monitor
and assess
Asian carp
movement**

**Manage and
control Asian
carp to reduce
their impact**

**Use
aggressive
measures for all
contingency
actions**

Asian Carp Monitoring, Management, and Contingency Actions

Coordinated Communication Strategy on results, findings and strategy





Actions to Date have Made a Difference

▣ Vigilance

▣ GOALS

Monitor
and assess
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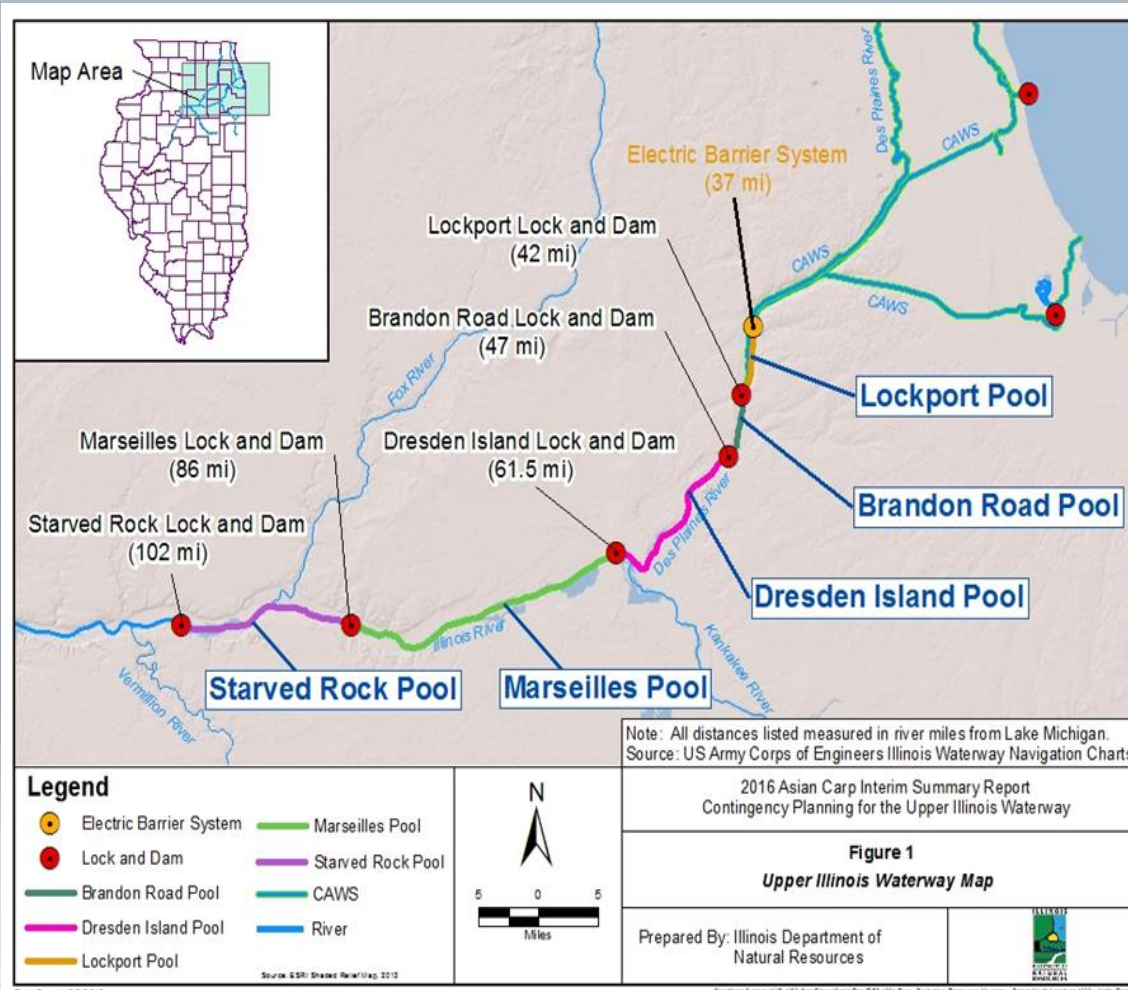
Followed by Action

- ▣ Over 5 million pounds of adult Asian carp removed
- ▣ Understanding and use of deterrence continues to be improved
- ▣ Harvest and monitoring informing on strategies for harvest and best management practices (entrainment)
- ▣ Contingency Plan developed for unforeseen changes in Asian carp locations and dynamics (Pool specific, immediate and escalating coordinated responses)

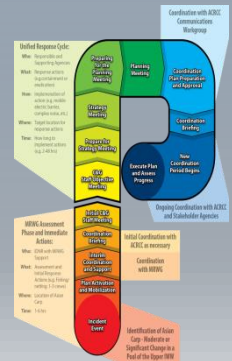
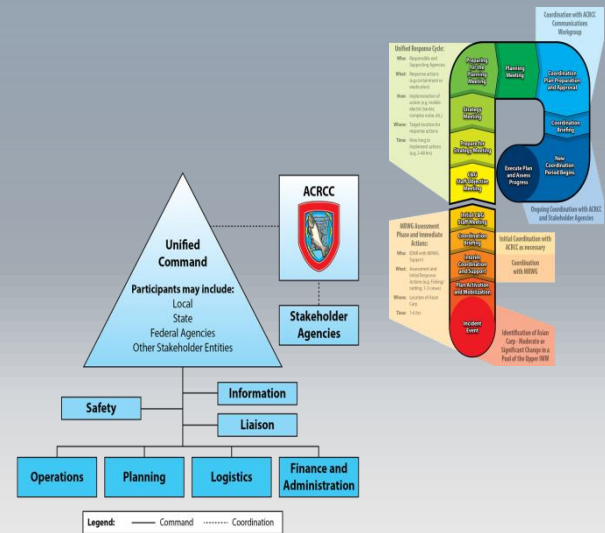


Contingency Plan

In addition to robust monitoring and response plan



- Pool specific
- Definitions
- Tools
- Process
- Preparedness
- Authorities





Monitoring and Response Work Group Status

- NO Bighead or Silver Carp observed or captured above Brandon Road Lock and Dam (14 miles below barrier)
- Two seasonal intensive events in Chicago canals
- No larval Asian carp captured in upper river (above Starved Rock)
- No small Asian carp (under 6 inches) captured in any pool except Peoria (downstream of Starved Rock Lock and Dam)
- Reduced population at upstream reach of Asian carp population
- Extensive effort and gears used to monitor for small Asian carp
- eDNA genetic surveillance continues above barriers



Additional Activities

- Barrier maintenance suppression:
 - Concentrated efforts around barrier during planned maintenance or unplanned outages
- Unified Method:
 - Successful collaboration with Chinese scientists and fishers in March 2016, will repeat in 2017
- Continued dialogue with industry to use market pressure to assist in fight



Asian carp harvested go to use for local vendors in products such as dog treats



Asian Carp Technologies Update

Mark Gaikowski

Director,

*USGS Upper Midwest Environmental Sciences
Center*





Control Tool Status

IPM



Carbon Dioxide (CO₂) as a Deterrent/Barrier

- CO₂ is an effective deterrent in lab/pond studies-Bighead and Silver Carp avoid CO₂
- Identify effective concentrations and affects of temperature, compared injection system
- Multi-agency Advisory Group formed; transitioning tool to implementation

Underwater Sound as Asian Carp Deterrent

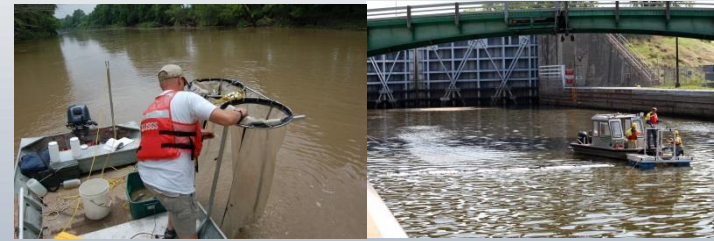
- Bighead and silver carp avoid broadband sounds; native fish little response
- Preliminary results indicate effective for “herding” and may increase capture of fish
- Assessing potential habituation to repeated exposure, optimal frequencies

Microparticles Targeting Bighead Carp and Silver Carp

- Developed lethal & non-lethal formulations, developing production capacity
- Completed pond tests to demonstrate bigheaded carps ingest toxic microparticles
- Completed non-lethal targeted microparticle field application, results pending



2017 Actions



- Hydraulic and WQ data supporting partner efforts
- **CO₂ as a deterrent**
- **Underwater sound**
- Algae used to attract Asian carp and enhance microparticle delivery
- **Acoustic telemetry database**
- Toxic microparticles
- Microparticle and CO₂ 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
- Integrated Pest Management
- Brandon Road Lock and Dam hydrologic support



2017 Actions



Carbon Dioxide – *Conduct field studies for management applications*

- Block Asian carp access to backwaters; enhance removal efforts
- With USACE, identify and characterize large-scale field sites to evaluate feasibility of CO₂ injection

Underwater Sound – *Field Implementation*

- With USACE, plan and implement a deployment (7 days) at Brandon Road Lock
- Conduct trials to deter Asian carp from drainage canals (Emiquon NWR)

Microparticles – *Field Trials*

- Assess impacts on non-target species with surrogate non-lethal microparticles
- Assess environmental fate of lethal microparticles





2017 Actions



Grass Carp

- Refine likely spawning and hatching locations on Sandusky River (Ohio)
- Map aquatic vegetation in Lake Erie to inform management actions

Fish Telemetry Network/Database – Multi-agency/universities

- Release initial visualization tools on Asian carp movement for general use by partner agencies to aid with management actions.
- Implement automatic early warning system to notify key partners via text and email of notable movements by Asian carp

Hand Held eDNA Asian Carp Detector

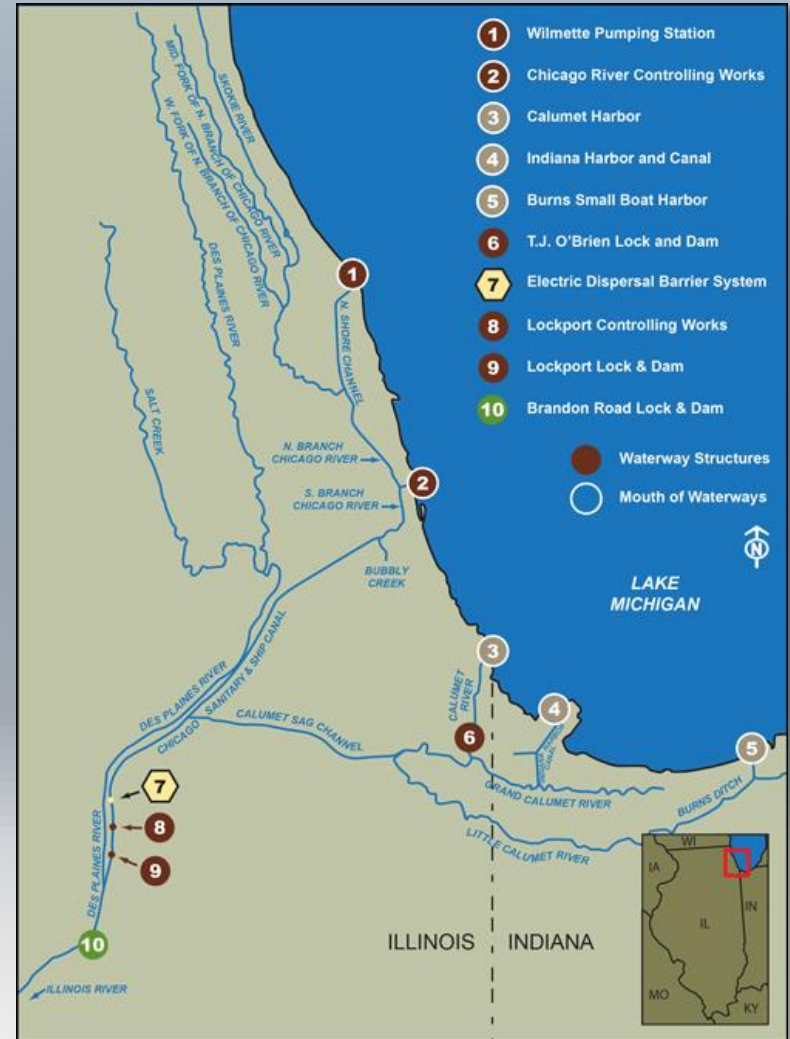
- Testing use to detect Asian carp in bait shops with Ohio DNR, Michigan DNR, and Illinois DNR.
- Responding to state agency requests to extend to open water application

USACE 2017 Actions



COL Christopher T. Drew
Commander, Chicago District

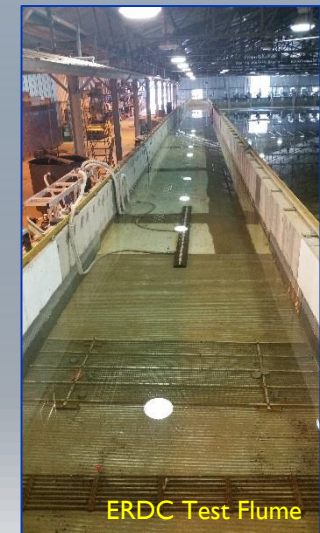
11 January 2017





Key 2017 USACE Projects

- **Pathway Closures and Control Measures**
 - Construction and Operation of Electric Barriers in the CSSC
 - Execution of the Great Lakes and Mississippi River Interbasin Study (GLMRIS)
 - Brandon Road Study
 - Technical Support to Ohio for the closure of the Ohio-Erie Canal pathway
 - Development and Testing of Measures to Address Barge Entrainment
 - Field Demonstration of Sound Deterrent with USGS



- **Detection, Monitoring and Control**
 - Support to the Monitoring and Response Workgroup



THANK YOU

For more information

Please visit www.asiancarp.us