WELCOME

Asian Carp Management and Control in the Ohio River and Upper Mississippi River Basins

Thank you sponsors!

Representative Mike Kelly (PA-3rd)
Representative Ron Kind (WI-3rd)

Collaborative Management of Asian Carp in the Ohio River and Upper Mississippi River Basins

Aaron Woldt

U.S. Fish and Wildlife Service

Deputy ARD Fisheries, Midwest Region

Asian Carp Collaborative Management

National Approach

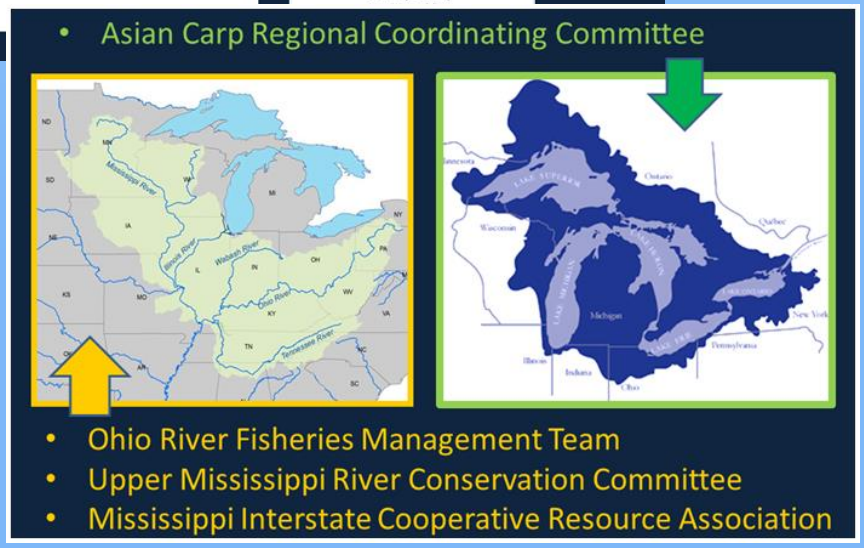
The U.S. Fish and Wildlife Service and our State and Federal partners carry out strategic detection, prevention, and control actions to address the threat of Asian carp in the United States in support of the national *"Management and Control Plan for Bighead, Black, Grass, and Silver Carps in the United States"* (National Plan)

- National Plan developed in 2007 with over 70 state, federal, industry, academic, and non-governmental partners
- Established 7 common goals and objectives and supporting Strategies and Recommendations

Asian Carp Collaborative Management

The National Plan has been the foundation of geographically focused, sub-basin Asian carp strategies including:

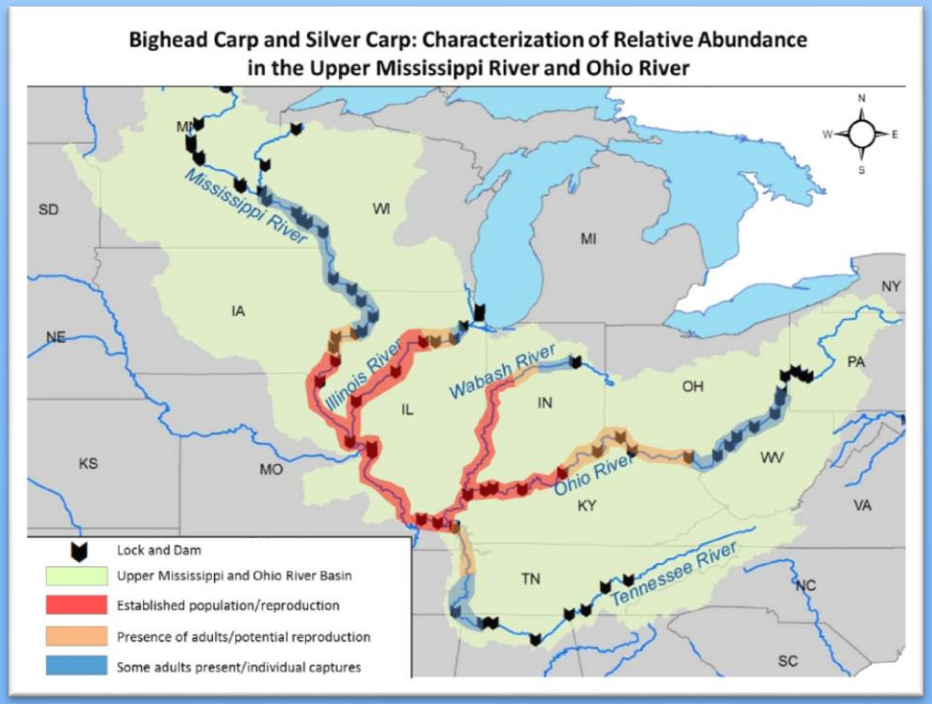
- Ohio River Basin Asian Carp Control Strategy Framework
- Upper Mississippi River Basin Asian Carp Control Strategy Framework
- ACRCC Great Lakes Asian Carp Action Plan/Monitoring and Response Plan
- In development:
  - Lower Mississippi River
  - Missouri River



Asian Carp Collaborative Management

WRRDA and Asian Carp Prevention (PL 113–121, June 2014)

- Direction from Congress to the U.S. Fish and Wildlife Service on Asian carp prevention in Upper Mississippi and Ohio River basins
  - Submit annual report to Congress on AC prevention and expenditures in UMR/OR basins
  - Lead a collaborative multiagency effort to slow the spread of Asian carp in UMR/OR basins



Asian Carp Collaborative Management

WRRDA Report to Congress:

I. Observed changes in the range of Asian carp;

II. Summary of Federal agency and non-Federal partners efforts to control the spread of Asian carp;

III. Research that could improve the ability to control the spread of Asian carp;

IV. Quantitative measures proposed for use to document progress in controlling the spread of Asian carp; and

V. Cross-cut accounting of Federal and non-Federal expenditures to control the spread of Asian carp.

Asian Carp Collaborative Management

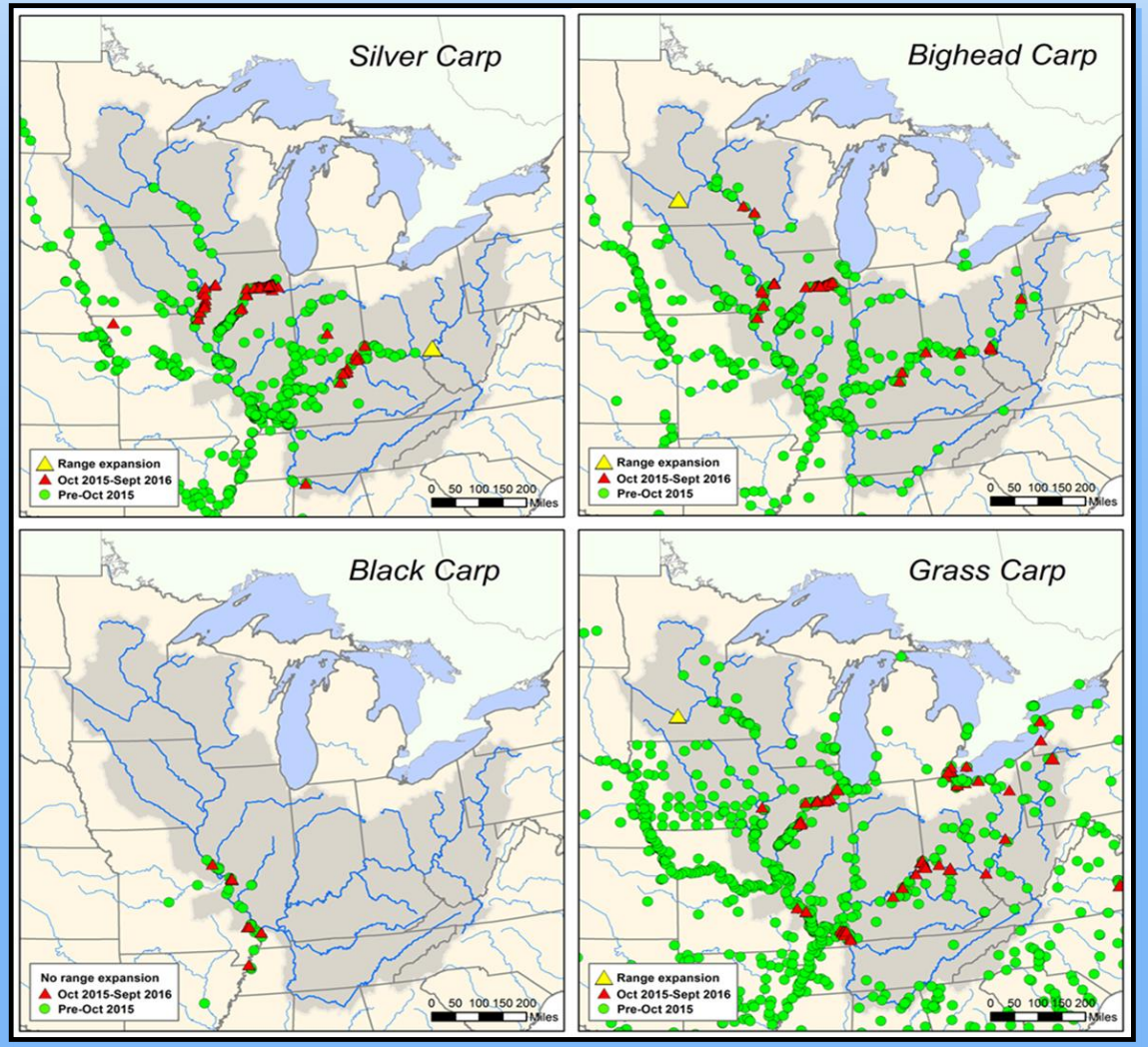
2016 Actions:

- Continued coordinated implementation of high-priority recommendations of ORB and UMRB Asian carp sub-basin management strategies (MICRA, State/fed agencies, others)
  - Includes Monitoring and Early Detection, Containment / Deterrents, Control and Removal, and Stakeholder Outreach
- Federal/State investment of $3.8 M on Asian carp management in the ORB and UMRB (excludes the CAWS and Great Lakes)
- Enhanced collaboration and leveraging between UMRB/ORB and Great Lakes Asian carp partnerships (e.g. new Asian carp deterrents or controls developed through the ACRCC Action Plan for potential use in other sub-basins)

Asian Carp Collaborative Management

2016 Actions:

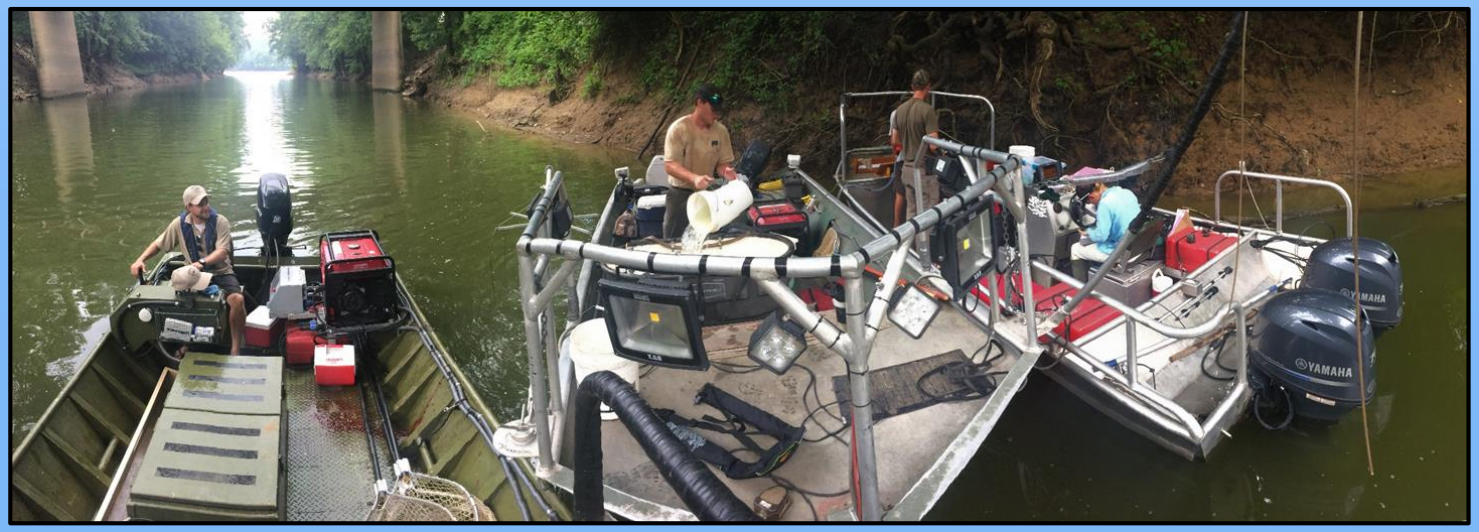
- New information on Asian carp distribution:
- Silver carp – new upstream occurrence in the Ohio River
- Bighead Carp and Grass Carp – new upstream occurrences in the Minnesota River
- Black Carp – no new range expansion



Asian Carp Collaborative Management

2016 Actions:

- In FY16, USFWS provided $1.0M for high-priority Asian carp management project ($500K UMRB; and $500K ORB)
- In FY17, USFWS will provide $1.2 M for high-priority Asian carp management project projects ($600 K UMRB; and $600 K ORB)



Upper Mississippi River Overview

Nick Frohnauer

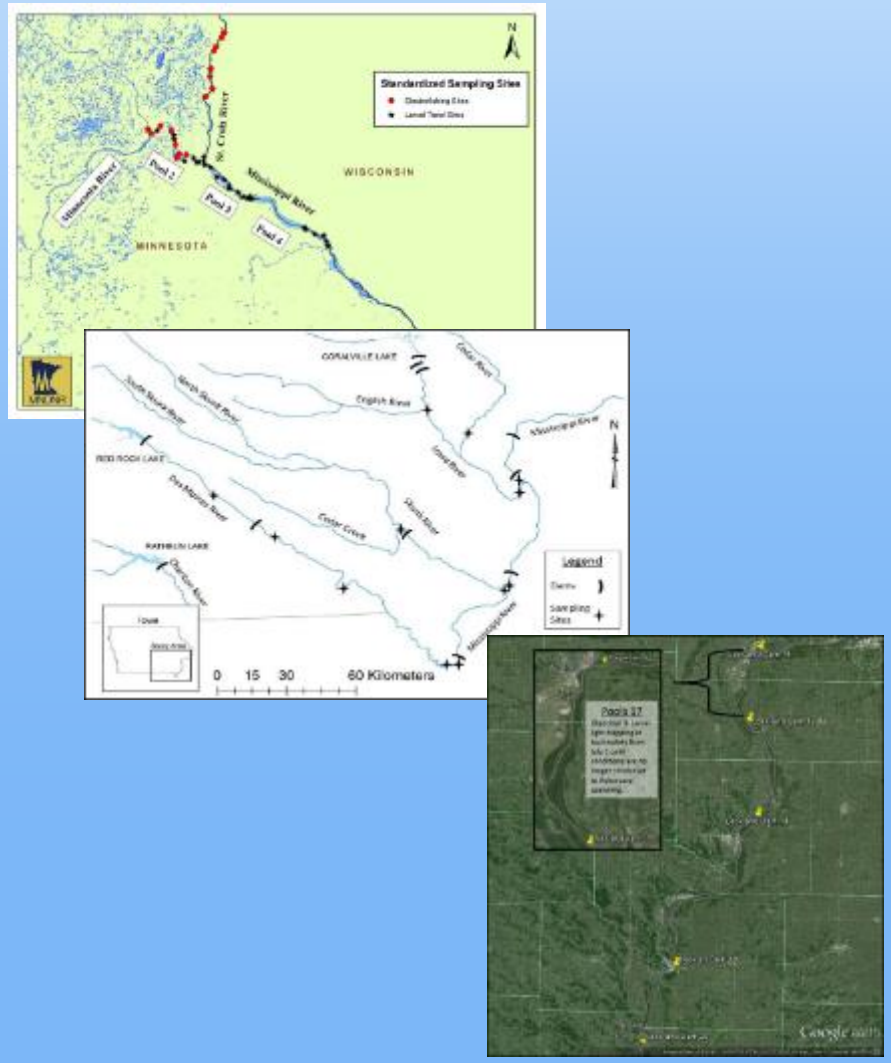
Upper Mississippi Invasive Carp Representative

Minnesota Department of Natural Resources

UMR – Fast Facts

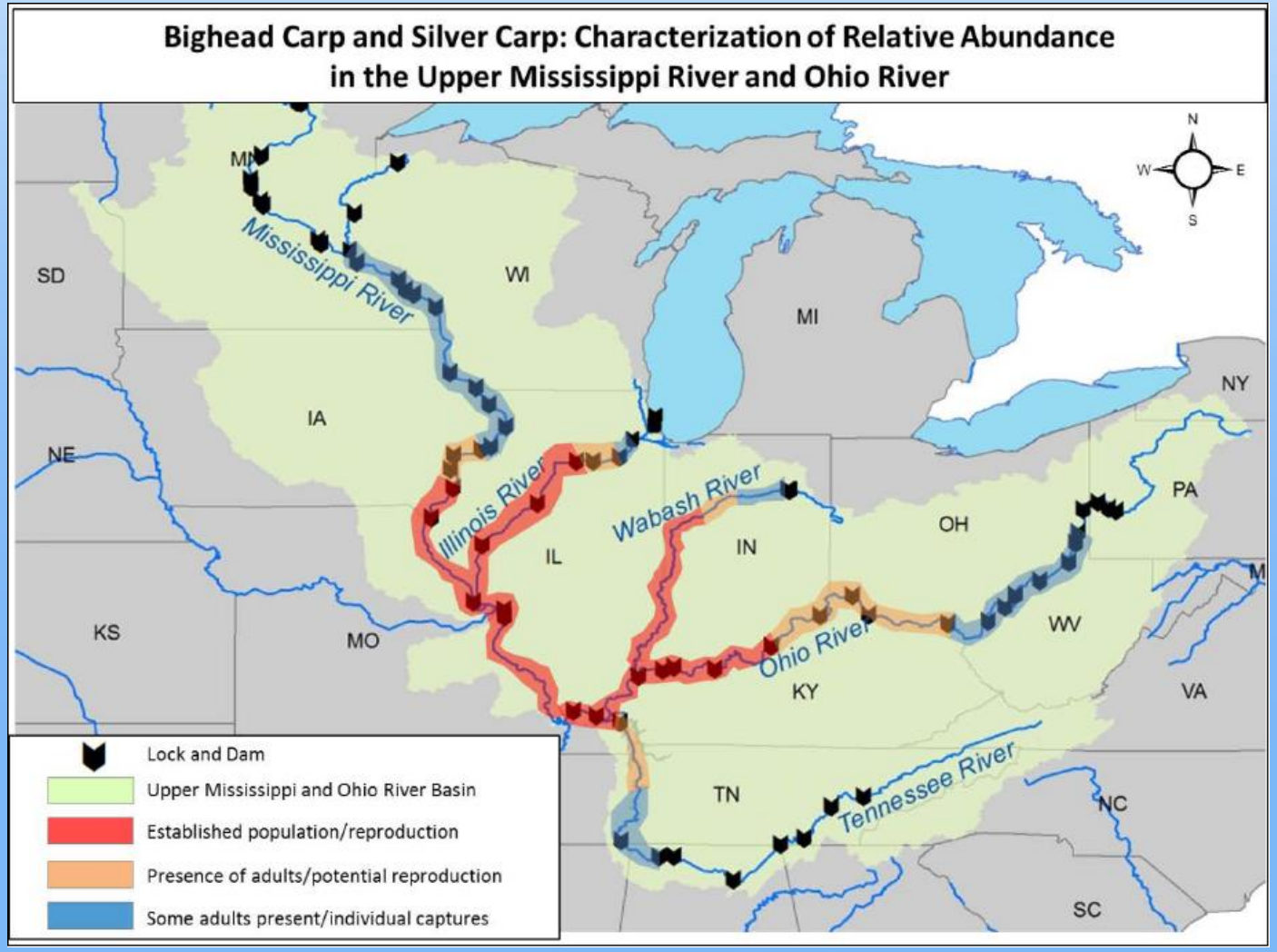
- Minnesota, Wisconsin, Iowa, Illinois, Missouri
- 29 Lock and Dams (mainstem)
- 5 National Refuges (mainstem)
- 1 National River and Recreation Area (Park Service)
- Upper Midwest Environmental Sciences Center
- Three main projects:
  - Monitoring and Assessment
  - Deterrence
  - Commercial Fishing

UMR– Monitoring and Assessment

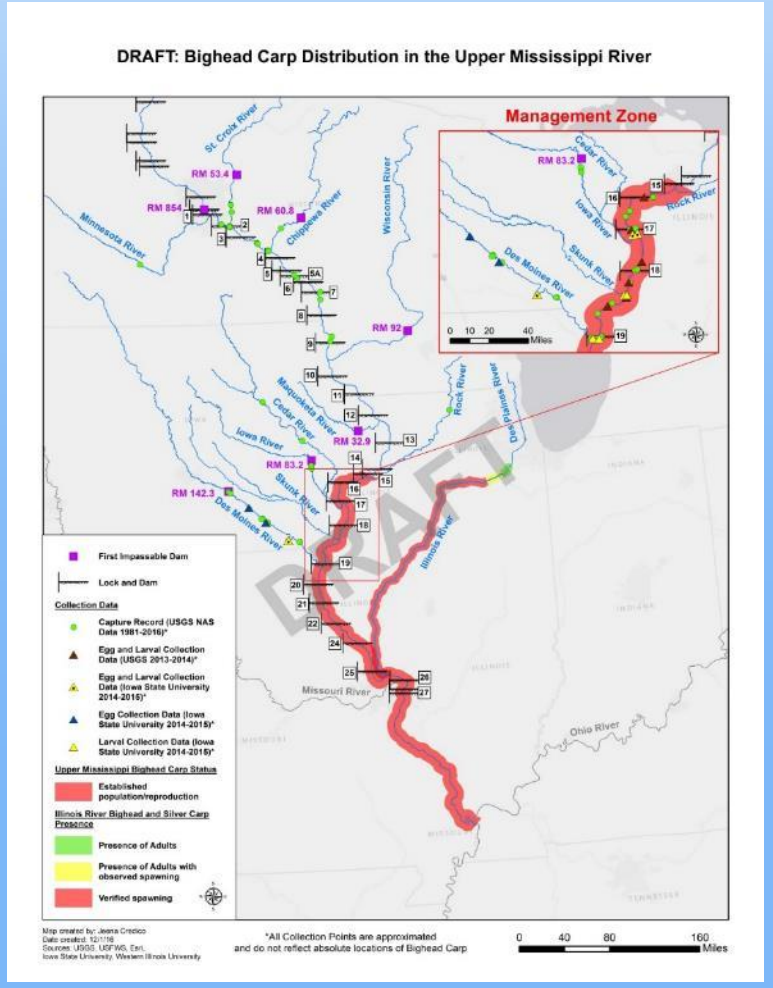


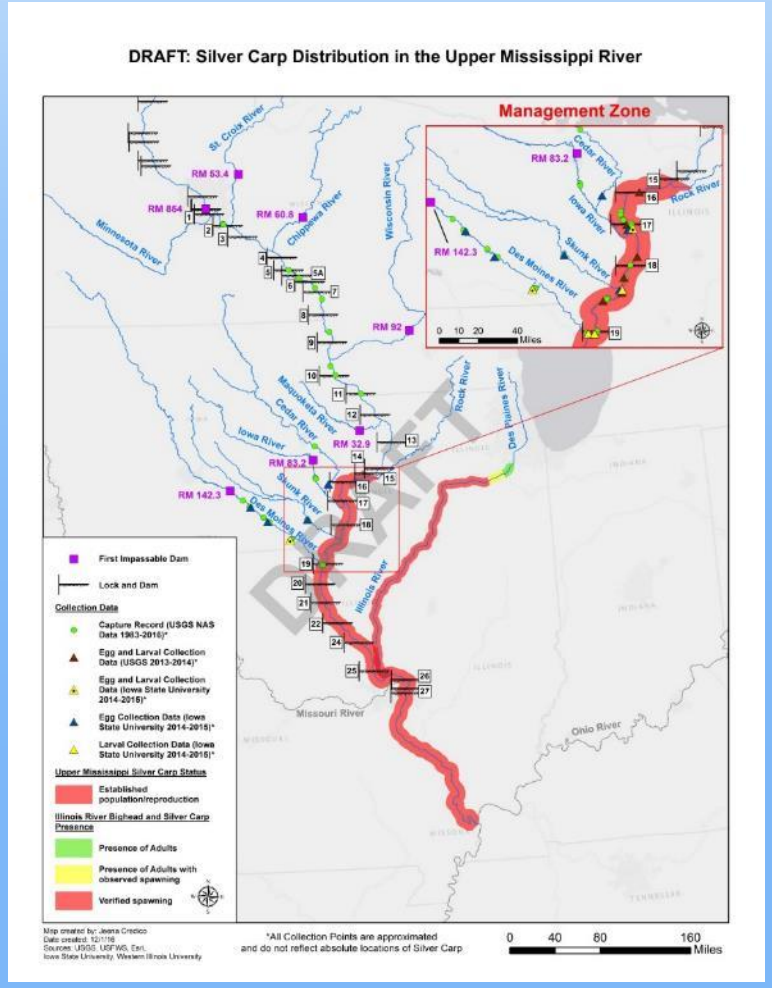
- Comprehensive monitoring
  - Minnesota, Iowa (Iowa State University), Illinois (Western Illinois University), Missouri
  - USFWS, USGS
- All life stages
- Throughout basin
  - Mississippi River Mainstem
  - Minnesota and St. Croix Rivers
  - Des Moines, Skunk, Iowa, Rock, and Wapsipinicon

UMR Carp Distribution

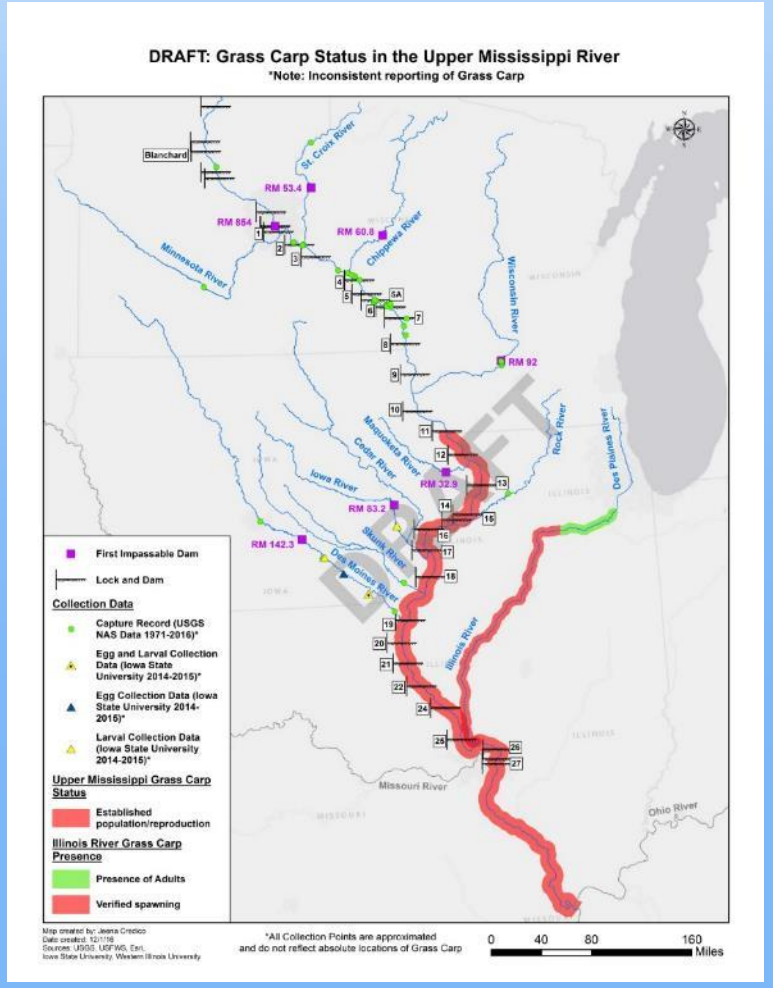


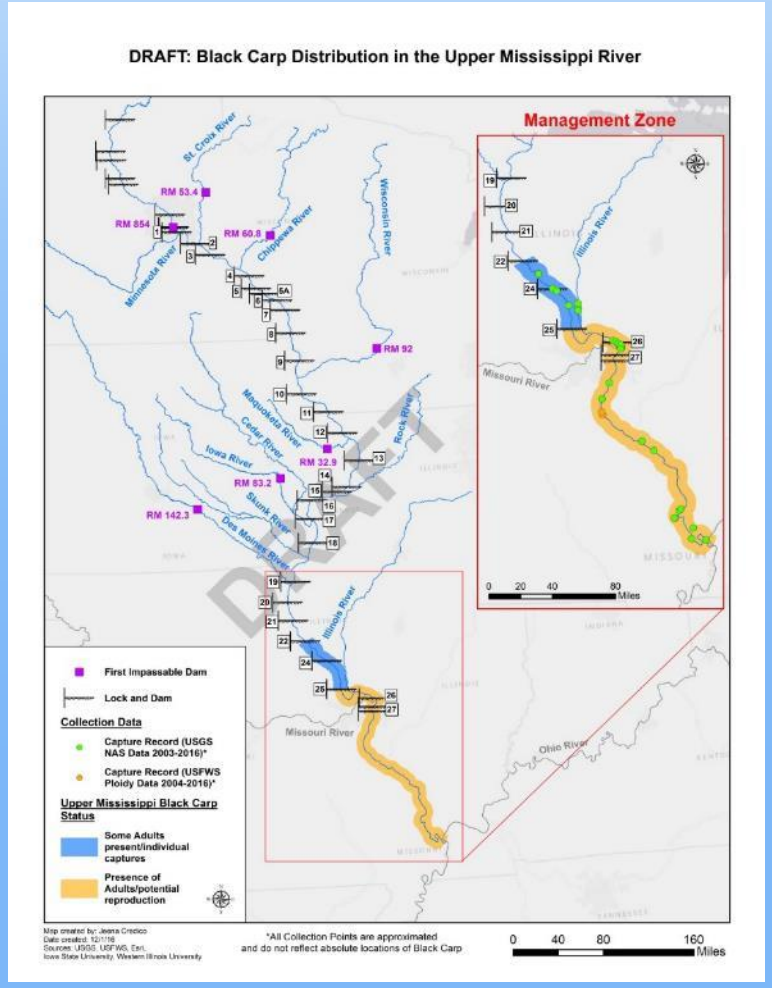
UMR – Bighead and Silver Carp Distribution





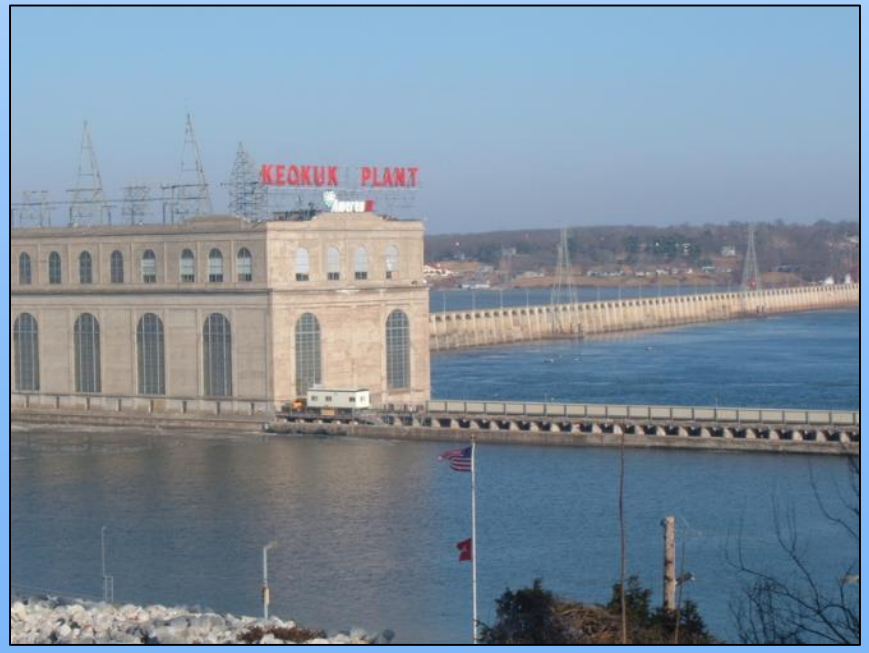
UMR – Grass and Black Carp Distribution





UMR – Containment

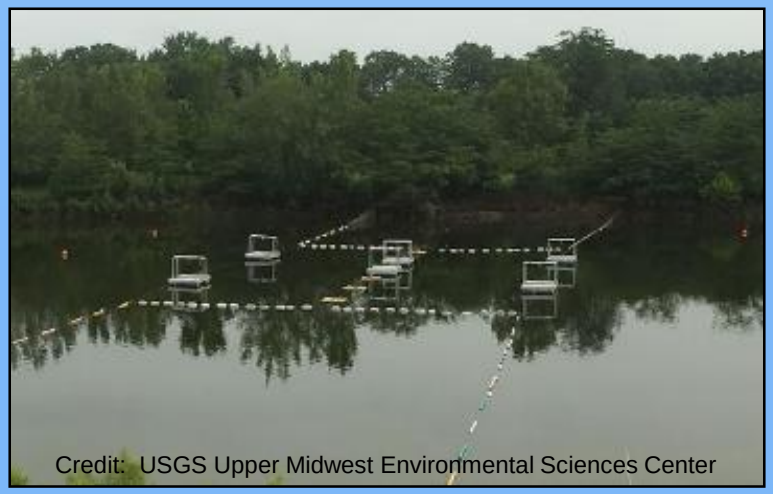
- UMR deterrent strategy
  - Where to focus
  - What technology(s) to use
  - Information needs
  - Implementation steps
  - Final report – In approval process



UMR – Containment

- Acoustic technology
  - Workshop – May 2016 (75 participants)
  - Lock and Dam 8 Evaluation: University of Minnesota – Twin Cities
  - Mesocosm & Field Trials: University of Minnesota – Duluth, USGS
  - Identified field trials as next step

Credit: University of Minnesota – Twin Cities



Credit: USGS Upper Midwest Environmental Sciences Center

UMR – Commercial Fishing

Credit: MN DNR

- Reduce population above Lock and Dam 19
  - Impact reproduction
  - Slow upstream expansion
- Aid monitoring
  - Detection in low density areas
  - Recapture Fish / Population size
  - Fish for telemetry

UMR – Commercial Fishing

- Commercial fishing - Started Fall 2015
- Start up a time and learning curve
- Mississippi River Pools 16 through19
- 68,675 lbs removed in 2017
- Will be used in combination with deterrents

Credit: Southern Illinois University

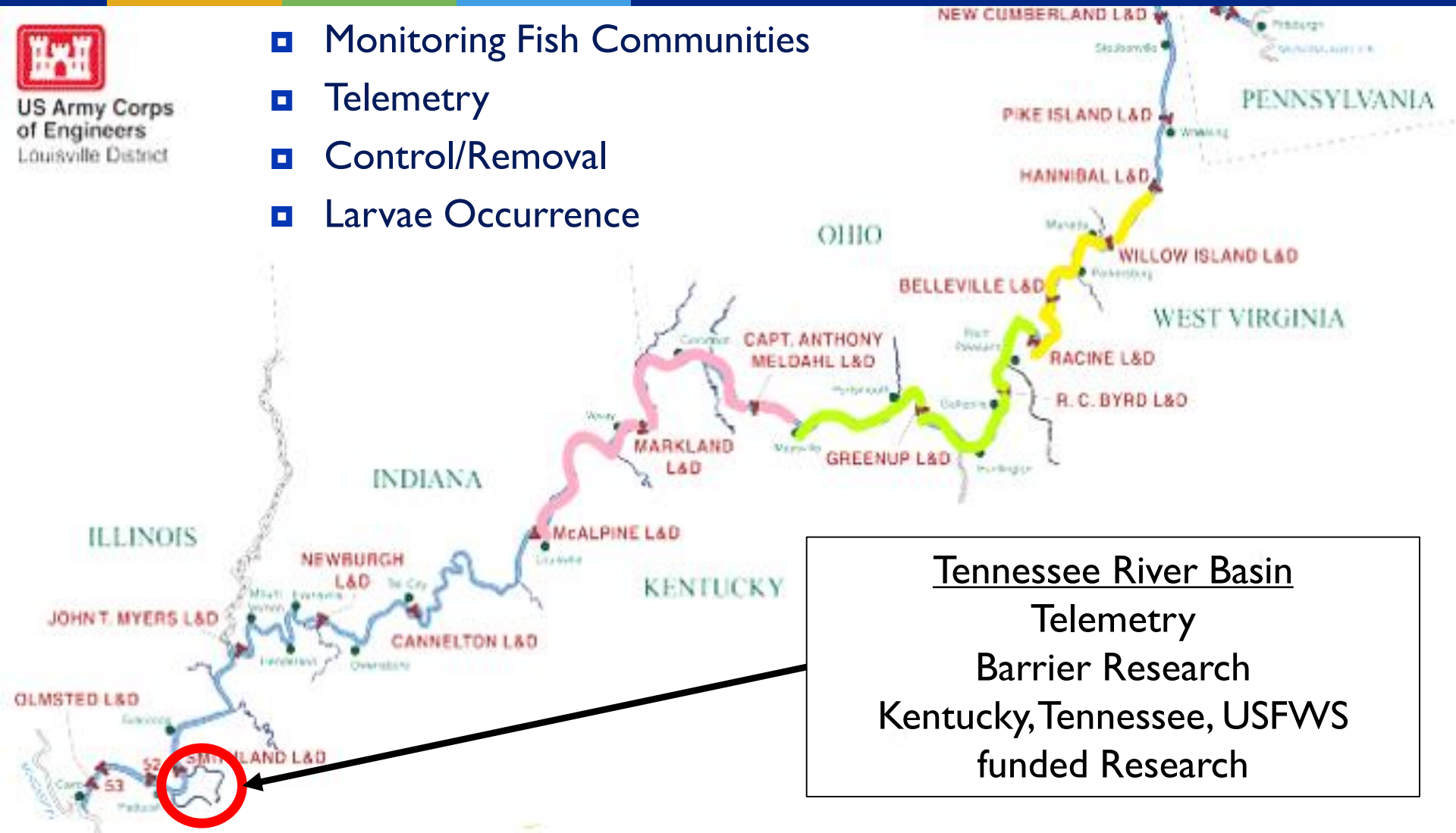
Monitoring, Control/Removal, Telemetry, and Commercial Harvest in the Ohio River

Ron Brooks
Kentucky Department of Fish and Wildlife Resources
Director, Fisheries Division
MICRA Chairman

Ohio River Basin Asian Carp Effort (600 River Miles)

US Army Corps of Engineers
Louisville District

- Monitoring Fish Communities
- Telemetry
- Control/Removal
- Larvae Occurrence



Tennessee River Basin
Telemetry
Barrier Research
Kentucky, Tennessee, USFWS funded Research

Monitoring, Control (Removal)

2013-2017 Most Effort in "Leading Edge" Pools

Monitoring (McAlpine – RC Byrd) : 60 fish species documented

Electrofishing:

- 223 transects
- 34 silver carp; 8 grass carp

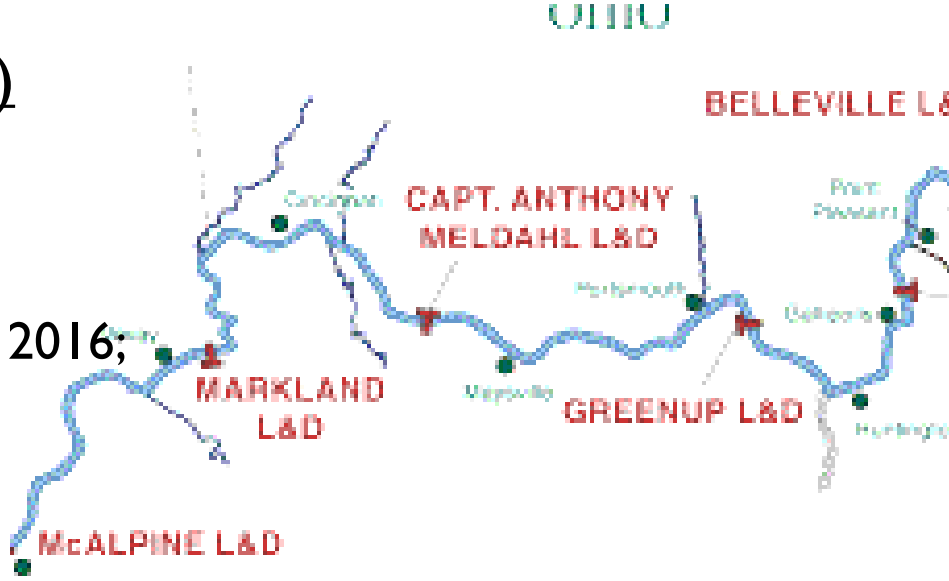
Gillnetting:

- 42,000 ft of gill netting effort
- 32 silver carp; 2 bighead carp; 5 grass carp

Control (Removal): All 6 Pools)

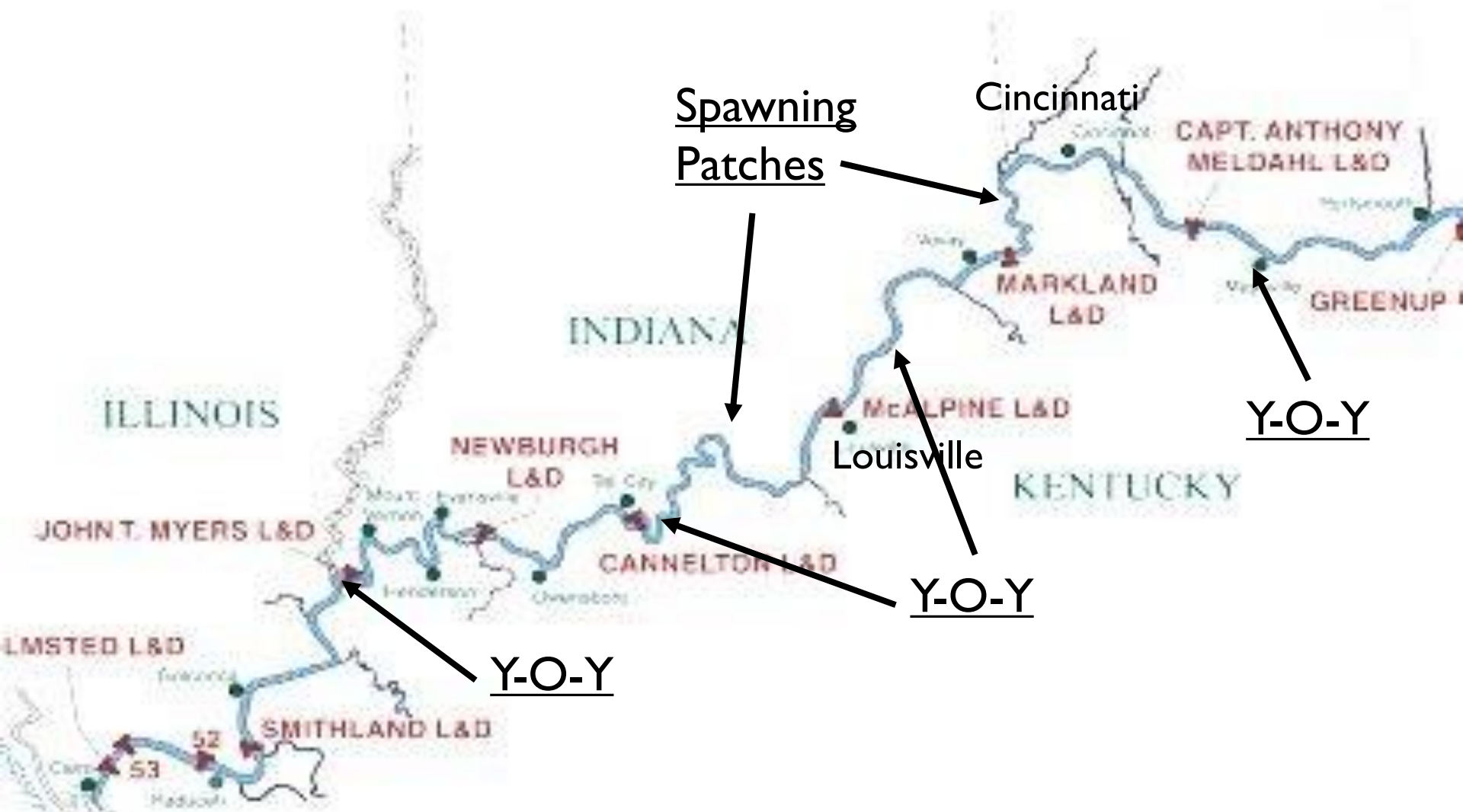
2017 effort included highest-density, lower pools (Cannelton & JT Meyers)

20,000+ pounds of Asian carp removed in 2016;
More than 2,500 fish removed since 2013



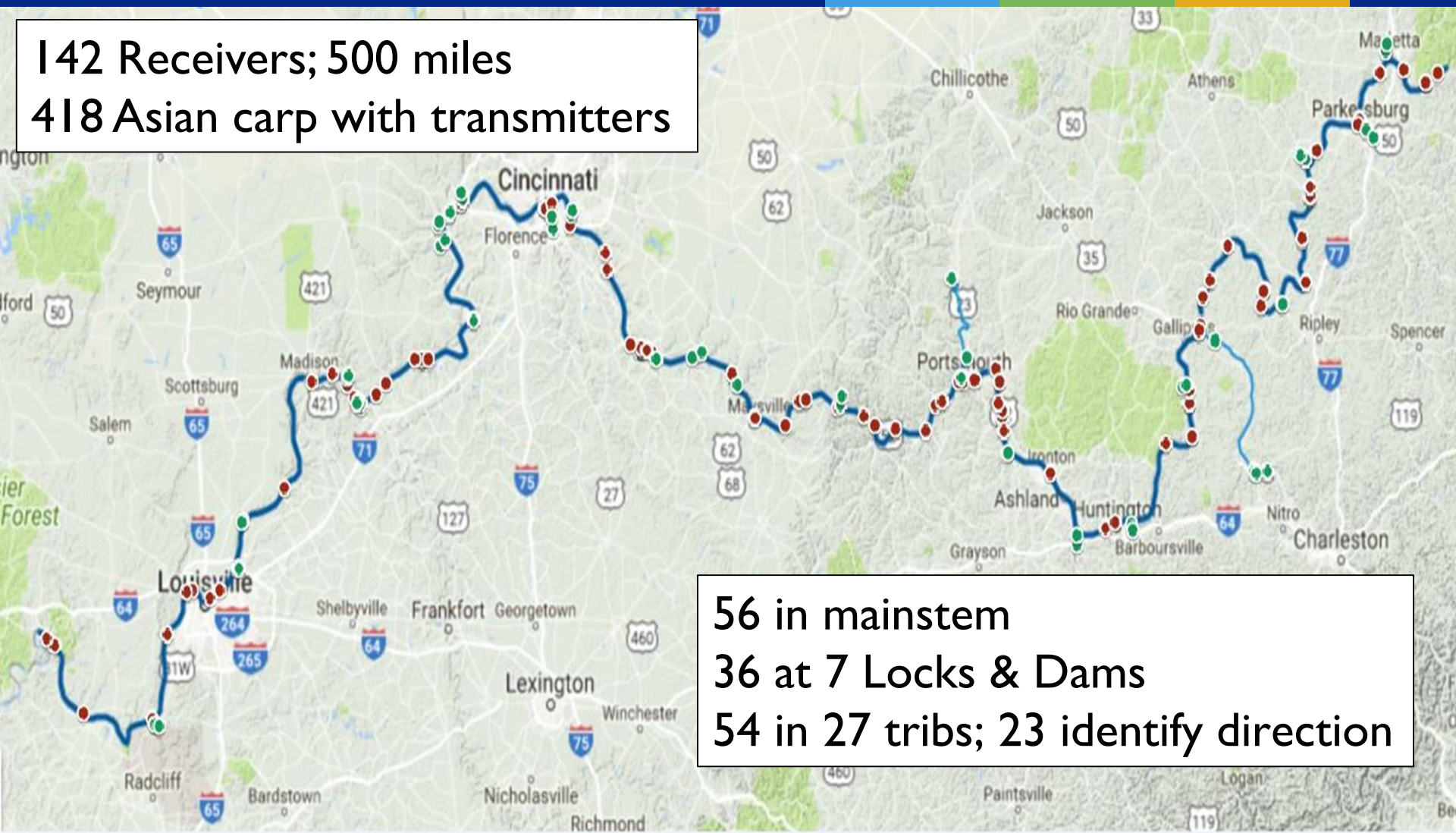
Monitoring, Juvenile/Early Life

2016 – 2017 All Pools (JT Myers - Meldahl)



Telemetry

142 Receivers; 500 miles
418 Asian carp with transmitters



56 in mainstem
36 at 7 Locks & Dams
54 in 27 tribs; 23 identify direction

Barrier Research

Kentucky, Barkley, McAlpine Dams

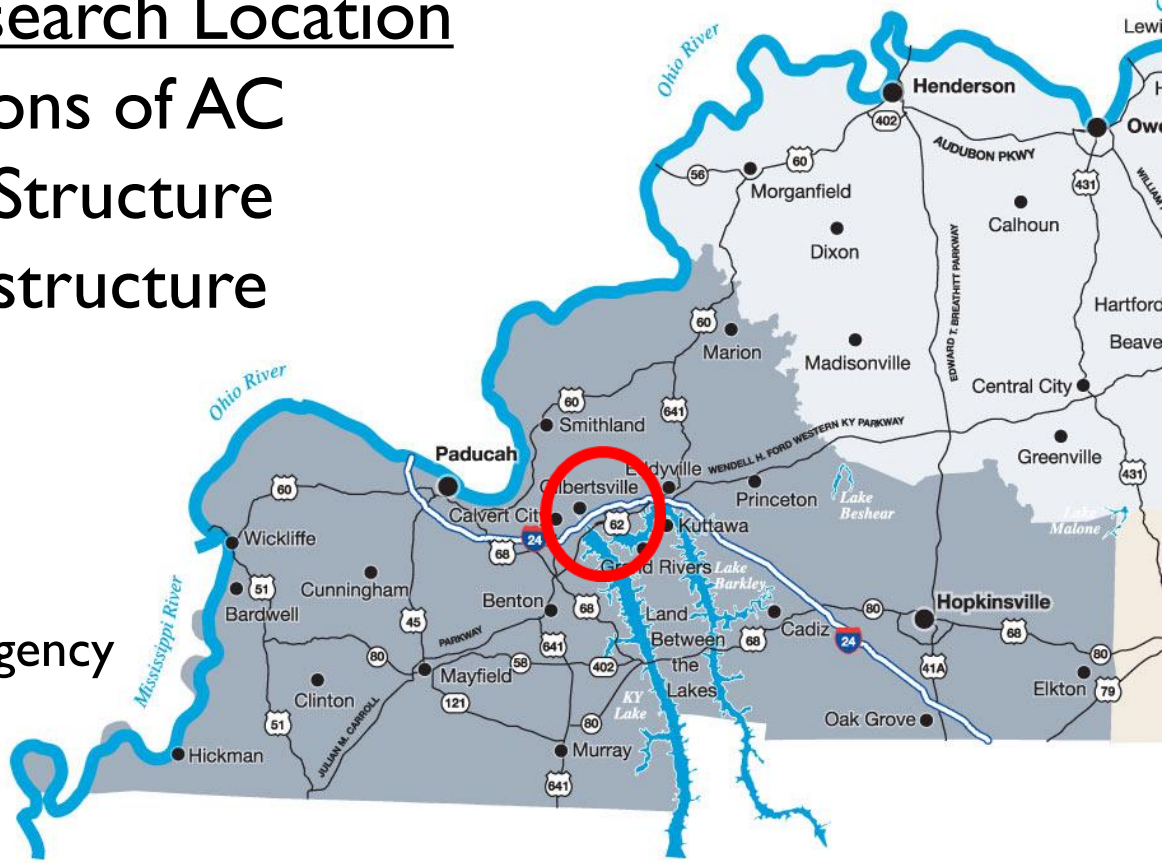
<u>Criteria for Research Location</u>

Dense populations of AC

Lock and Dam Structure

Telemetry Infrastructure

Research Staff



<u>Cooperating Agencies</u>

Tennessee Wildlife Resources Agency

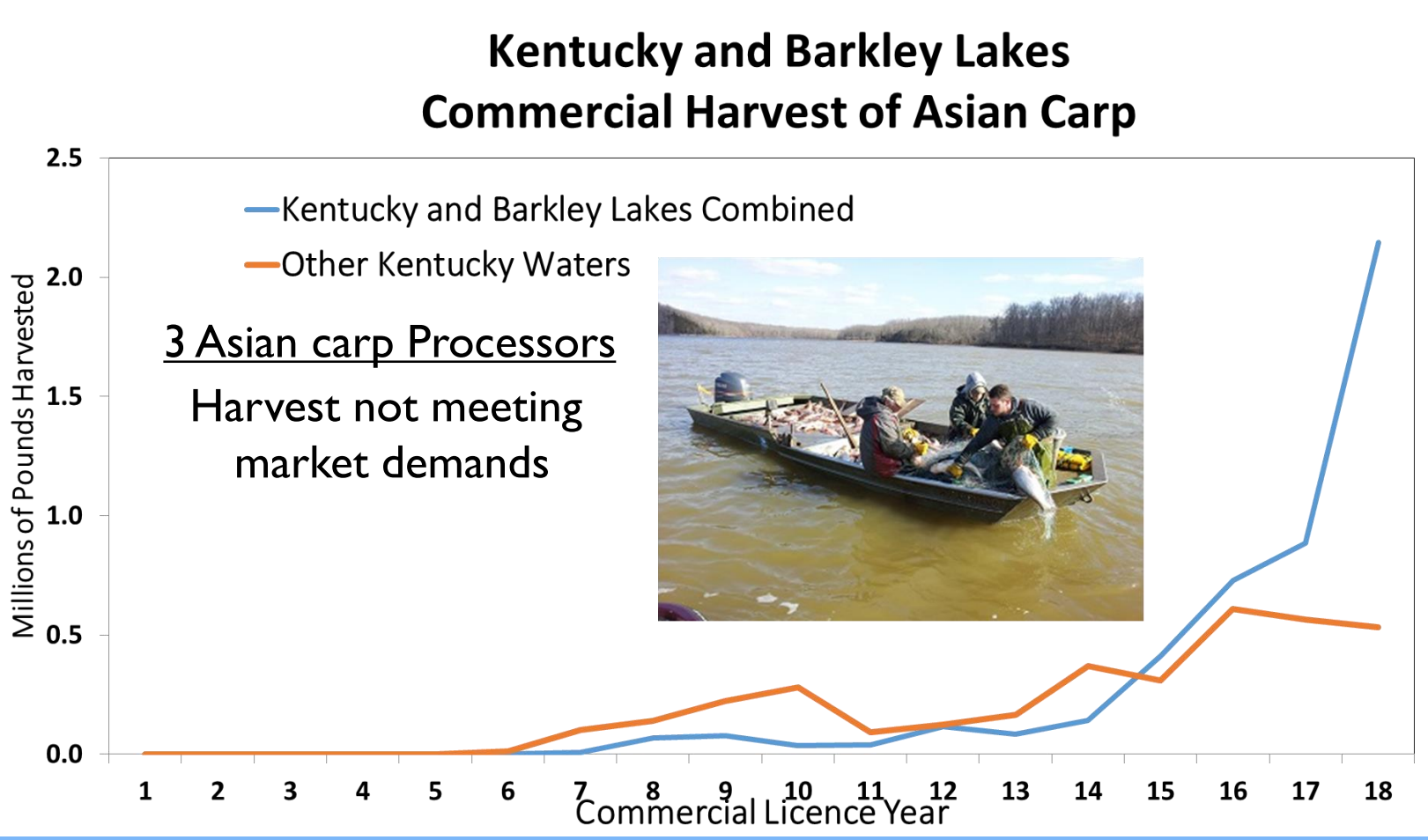
U.S. Army Corps of Engineers

U. S. Fish and Wildlife Service

U.S. Geological Survey

Kentucky Department of Fish and Wildlife Resources

Kentucky and Barkley Lakes Commercial Harvest of Asian Carp



Asian Carp Harvest Public-Private Partnerships

Andre Raghu

Moon River Foods and Blue Shores Fishery

President and CEO

How Government Can Support the Asian Carp Industry

- Consistent supply of raw materials is the key business challenge facing U.S. Asian carp manufacturers
- Public-Private Partnerships (P3's) will create faster road to business solvency for all facing U.S. Asian carp manufacturers
- P3's will address many of the nonfinancing pain points in infrastructure development and delivery

Immediate Export Opportunities

- Export of U.S. Asian Carp to China is the immediate low hanging fruit for all domestic manufacturers
- China Import tariffs and VAT on U.S. Asian Carp creates unbalanced competition against China's longstanding domestic farm raised Asian Carp industry
- US Asian Carp recently excluded from China's January 2017, "MFN Provisional Tariff Schedule for Imported Commodities" 3-7% lower import tariffs for popular seafood products

Future Domestic Opportunities

- Great market interest from U.S. agricultural growers to purchase Organic single species fertilizers
- Early small batch tests of Asian Carp organic fertilizers with crop growers exhibited:
  - faster vegetative growth
  - darker more robust leaf structure and
  - increased yields
- Our Universities can play a key research role in the further development of Asian Carp Organic fertilizers

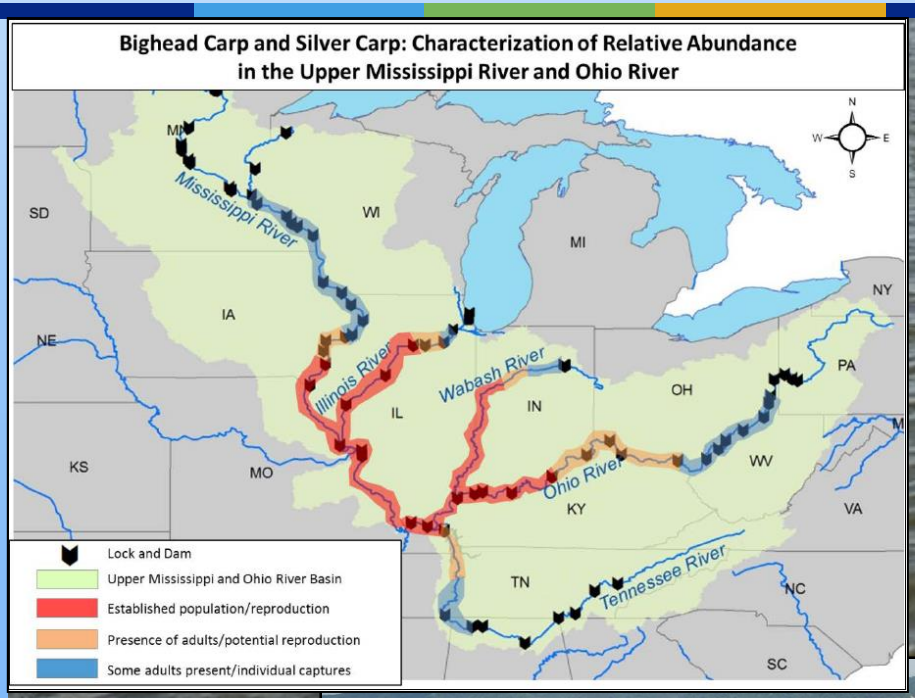
Asian Carp Management and Control in the Mississippi River Basin

Greg Conover

MICRA Coordinator

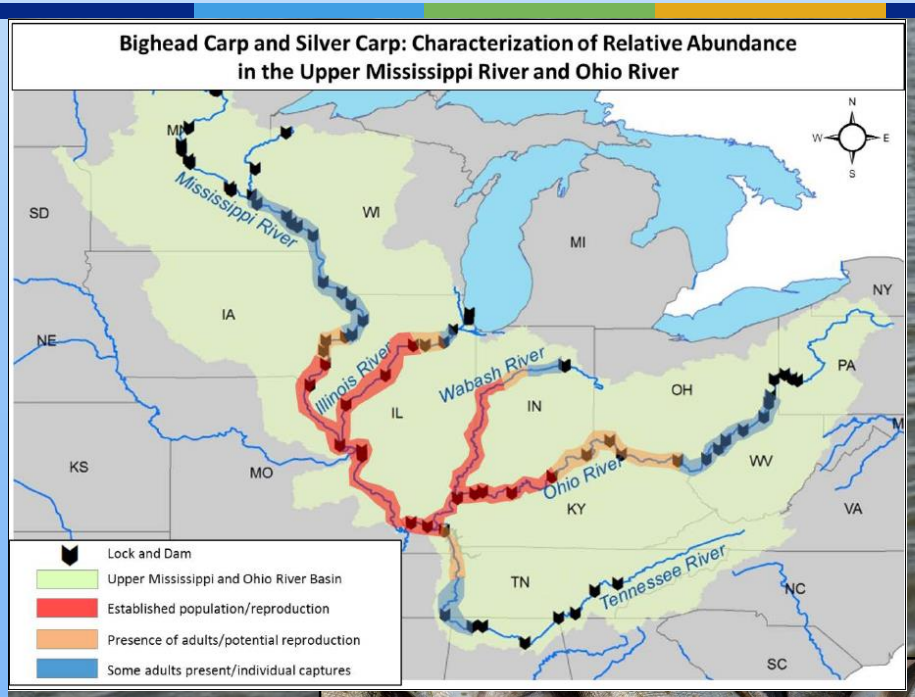
Limiting Upstream Movement

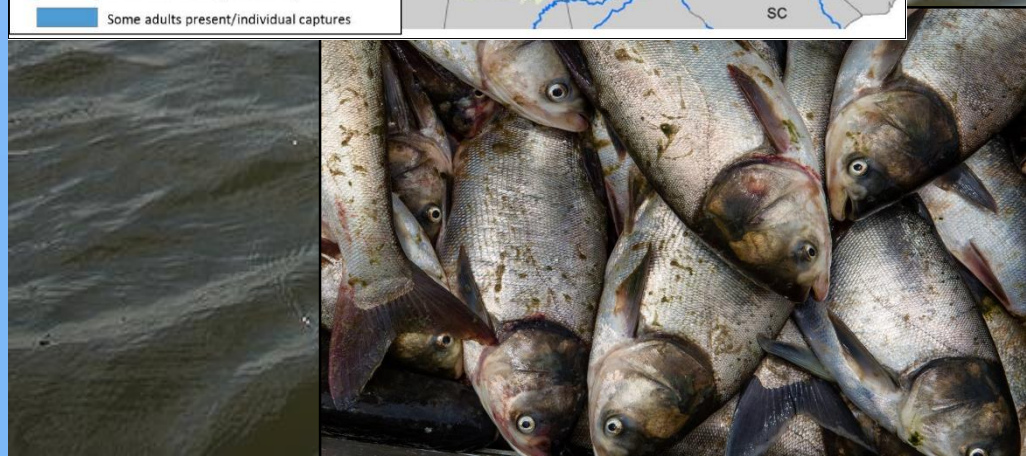
- Deterrents
  - Minimize movement from locations with high abundance (red)
  - Additional locations upriver to contain reproducing population
- Locks and dams
  - Opportunities to evaluate sound deterrents
  - Modifications to dam gate operations



Control / Reduction

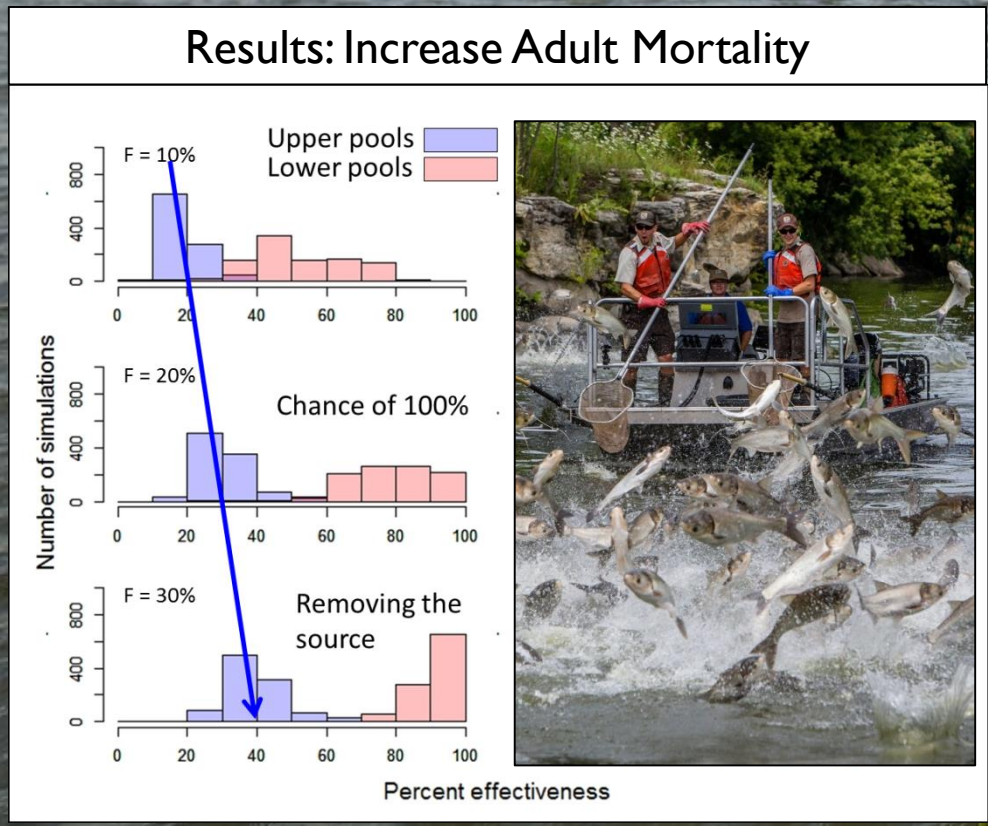
- Increased Harvest
- Immediate need: prevent dispersal
  - Focus on transition zones where not established (yellow)
  - Minimize opportunity for reproduction
  - Minimize upstream dispersal from areas of high concentration
- Long-term: reduce population size and minimize impacts
  - Not a sustainable fishery





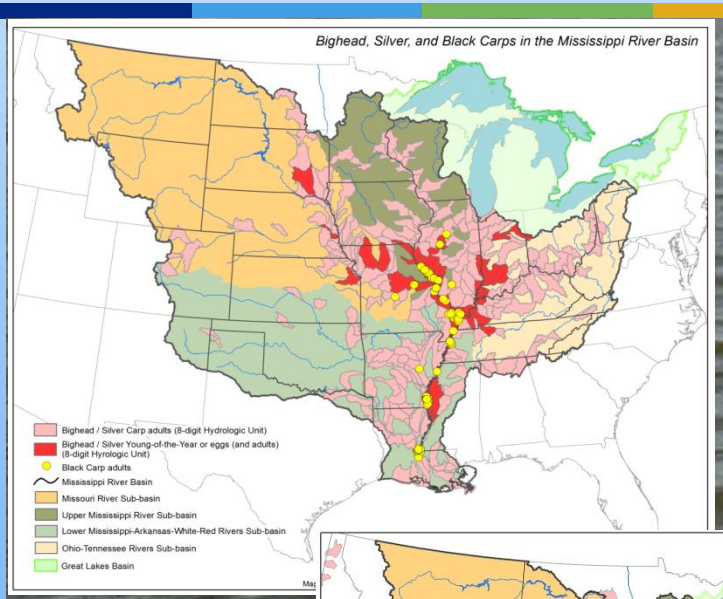
Evaluating Success

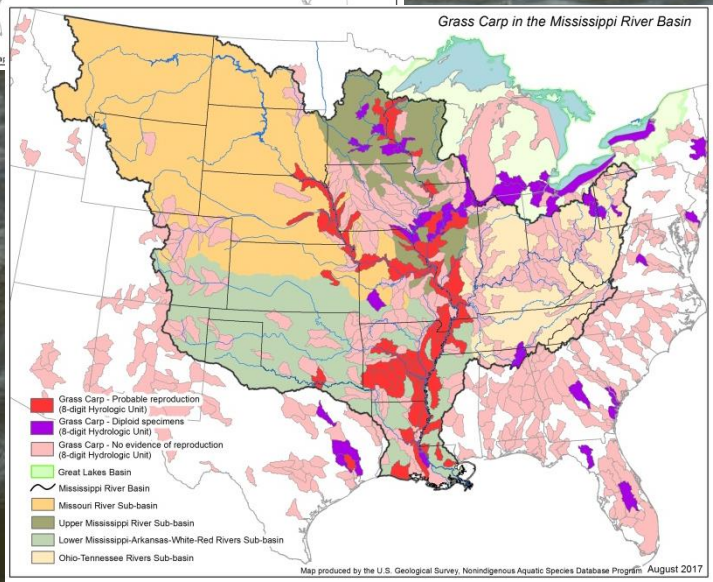
- Monitoring
  - Population assessment
  - Model development
  - Adaptive management
  - Maximize efficiency



MICRA Priorities

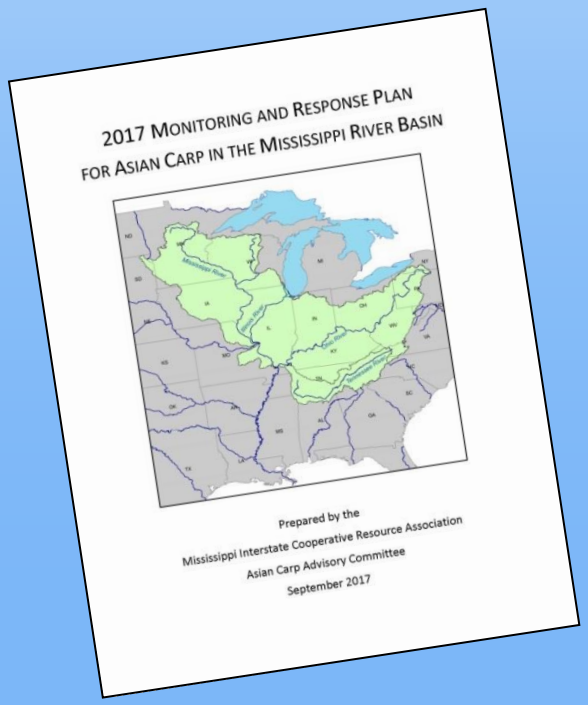
- Basinwide (national) management and control
  - Upper Mississippi River
  - Ohio River
  - Missouri River
  - Lower Mississippi River
- Comprehensive, integrated, and adaptive management strategies
- Multi-year planning
- Communication, coordination, and collaboration among regional partnerships

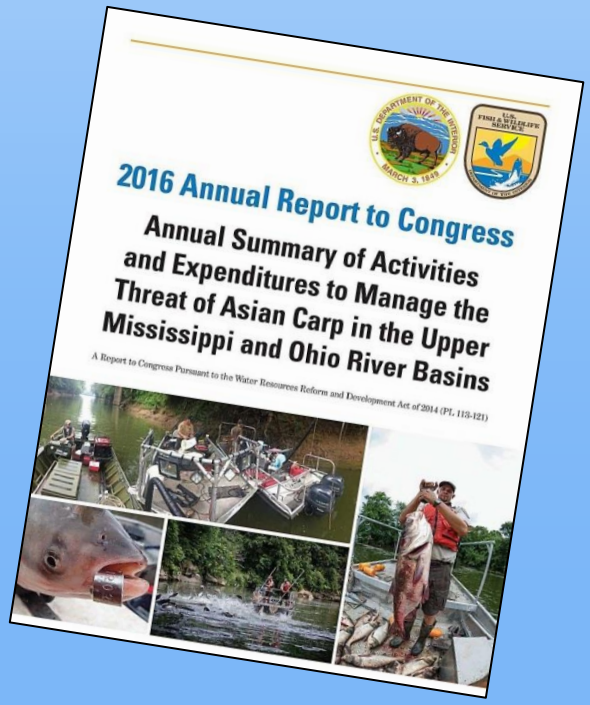




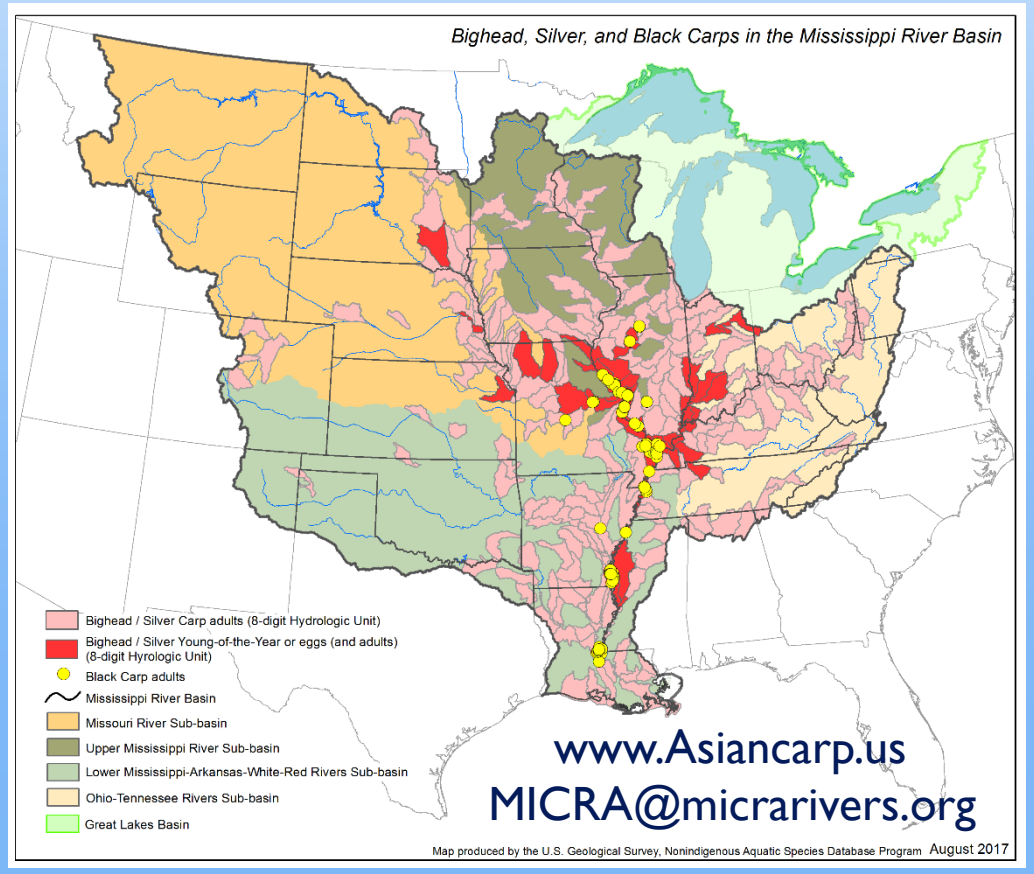
More Information…

- www.Asiancarp.us
- micra@micrarivers.org





Questions?


Bighead, Silver, and Black Carps in the Mississippi River Basin
Bighead / Silver Carp adults (8-digit Hydrologic Unit)
Bighead / Silver Young-of-the-Year or eggs (and adults) (8-digit Hyrologic Unit)
Black Carp adults
Mississippi River Basin
Missouri River Sub-basin
Upper Mississippi River Sub-basin
Lower Mississippi-Arkansas-White-Red Rivers Sub-basin
Ohio-Tennessee Rivers Sub-basin
Great Lakes Basin
www.Asiancarp.us
MICRA@micrarivers.org
Map produced by the U.S. Geological Survey, Nonindigenous Aquatic Species Database Program August 2017