

Risk of Bighead and Silver Carp to the Great Lakes: the Case for Prevention



Dr. John Dettmers

Fishery Management Program Director

Great Lakes Fishery Commission

and

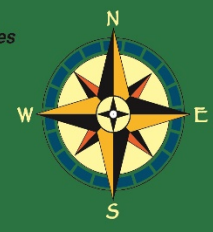
Co-chair, Monitoring and Response Workgroup,

Asian Carp Regional Coordinating Committee

Great Lakes – St. Lawrence Legislative Caucus

2019 Annual Meeting

September 14, 2019



1854
Treaty
Authority
(headquarters)

GLIFWC
(headquarters)



The Invasive Carps



BIGHEAD



SILVER



GRASS



BLACK

Why Should We Care About Aquatic Invasive Species?

BECAUSE WE'LL BE STUCK WITH THE PROBLEM IF WE DON'T!

- 180+ non-native species in Great Lakes
- Only 2 can be controlled (!)



ALEWIFE

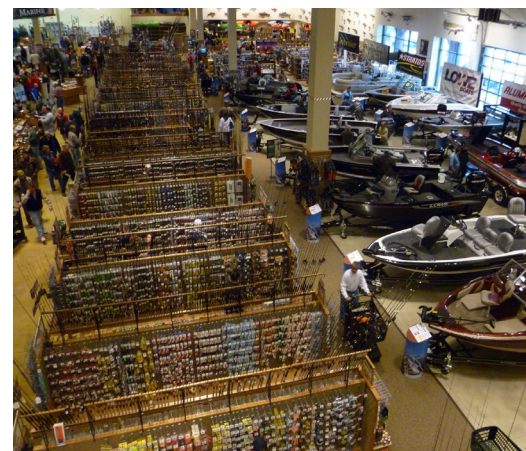


SEA LAMPREY

INVASIVE SPECIES IMPACT

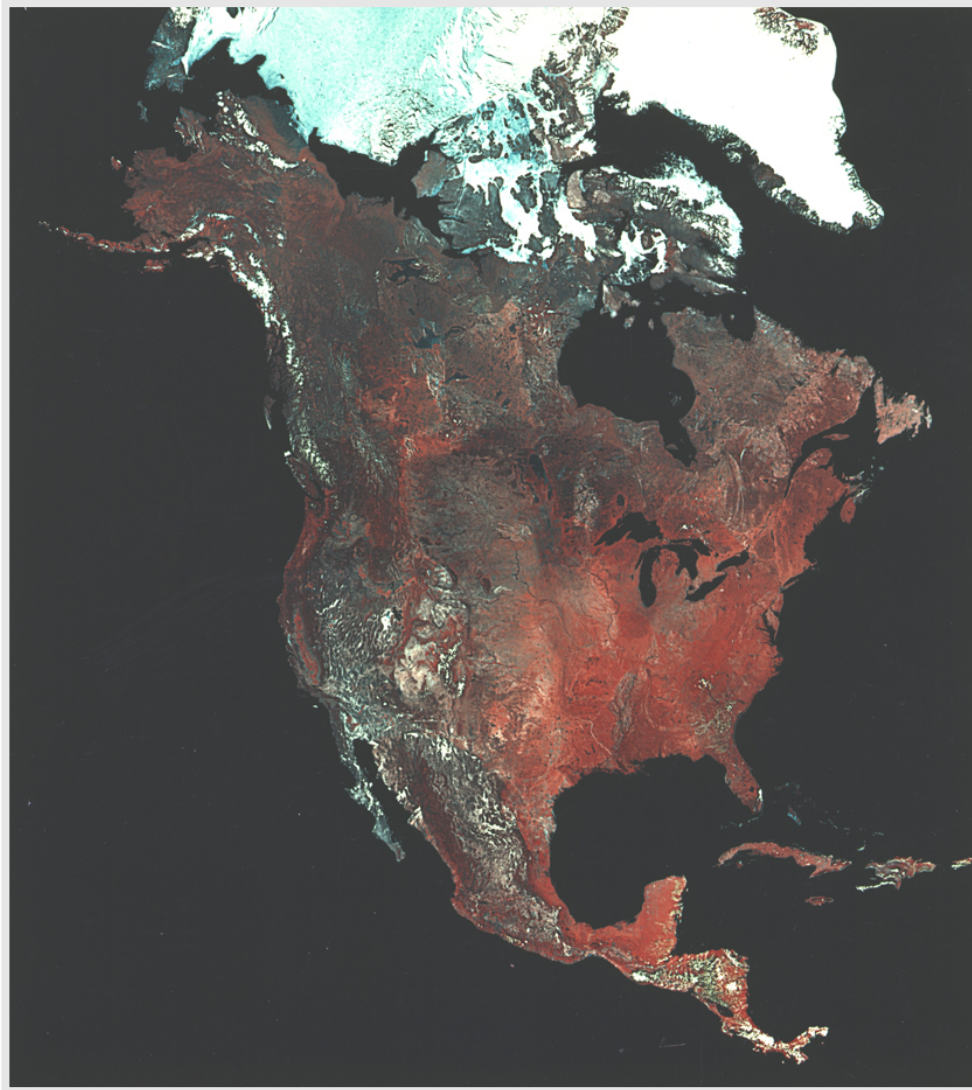
ANNUAL ECONOMIC LOSS

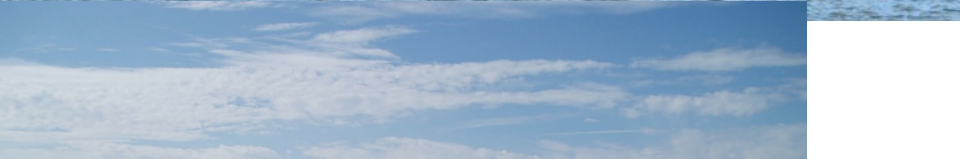
- **\$120 Billion in losses nationally**
- **\$5.7 billion in the Great Lakes**
 - Zebra and quagga mussels--billions
 - Sea lampreys--\$25 million / year to control
 - Spiny water flea--\$163 million in lost ecosystem services
- **Grass carp in the Great Lakes: \$16 billion over 40 years**



Source: Pimental, Zuniga, and Morrison (2005); Walsh et al 2016; Fisheries and Oceans Canada

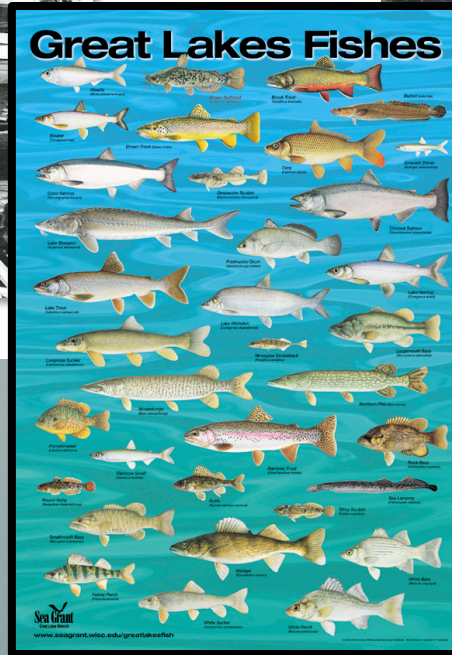
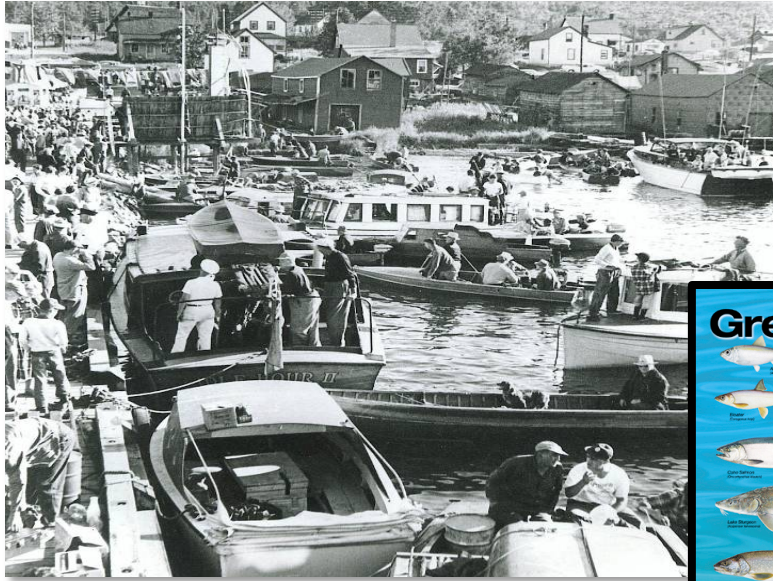
Photos: D. Arcuri; T. Lawrence







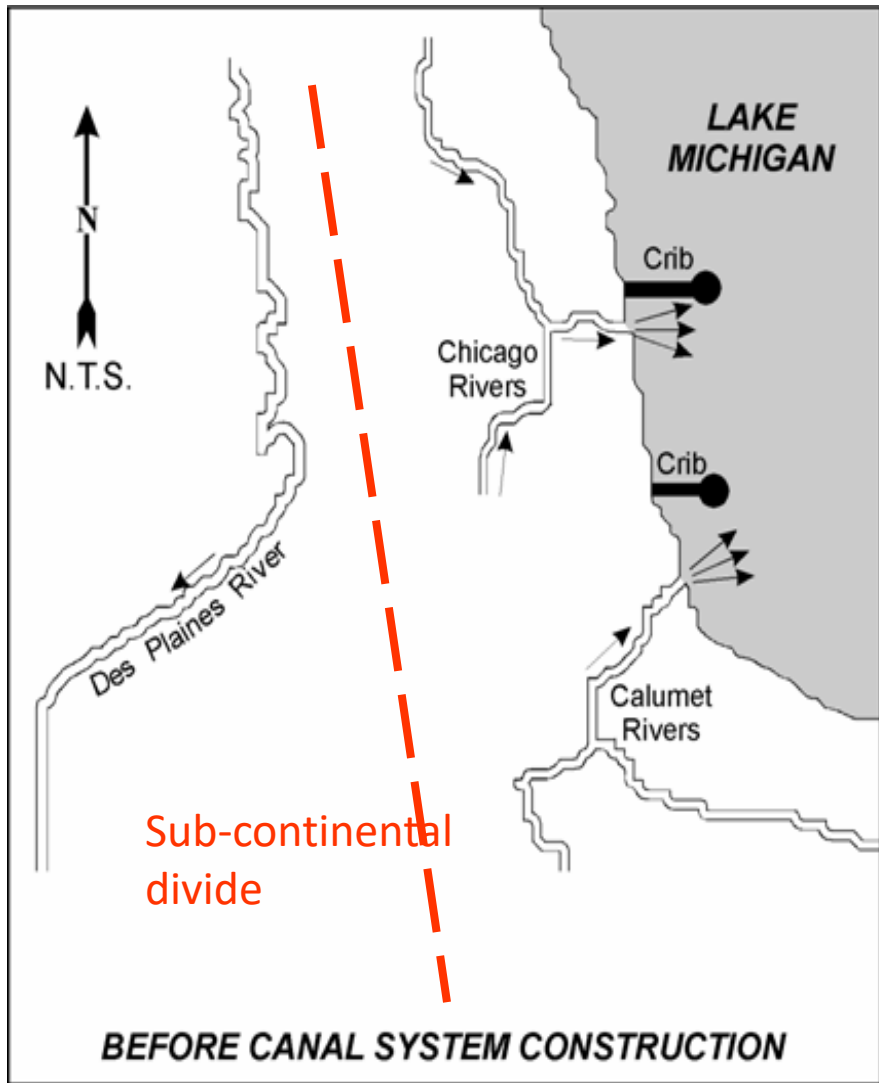
A \$7 Billion Fishery!

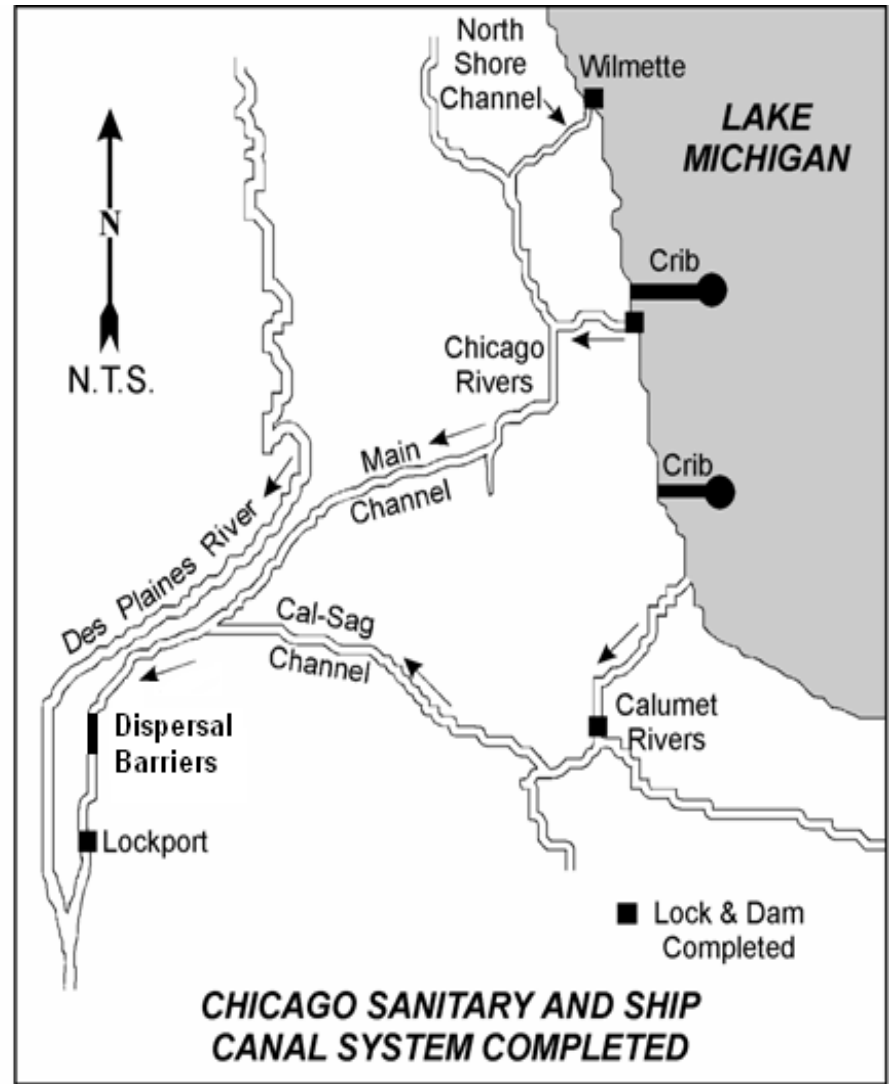
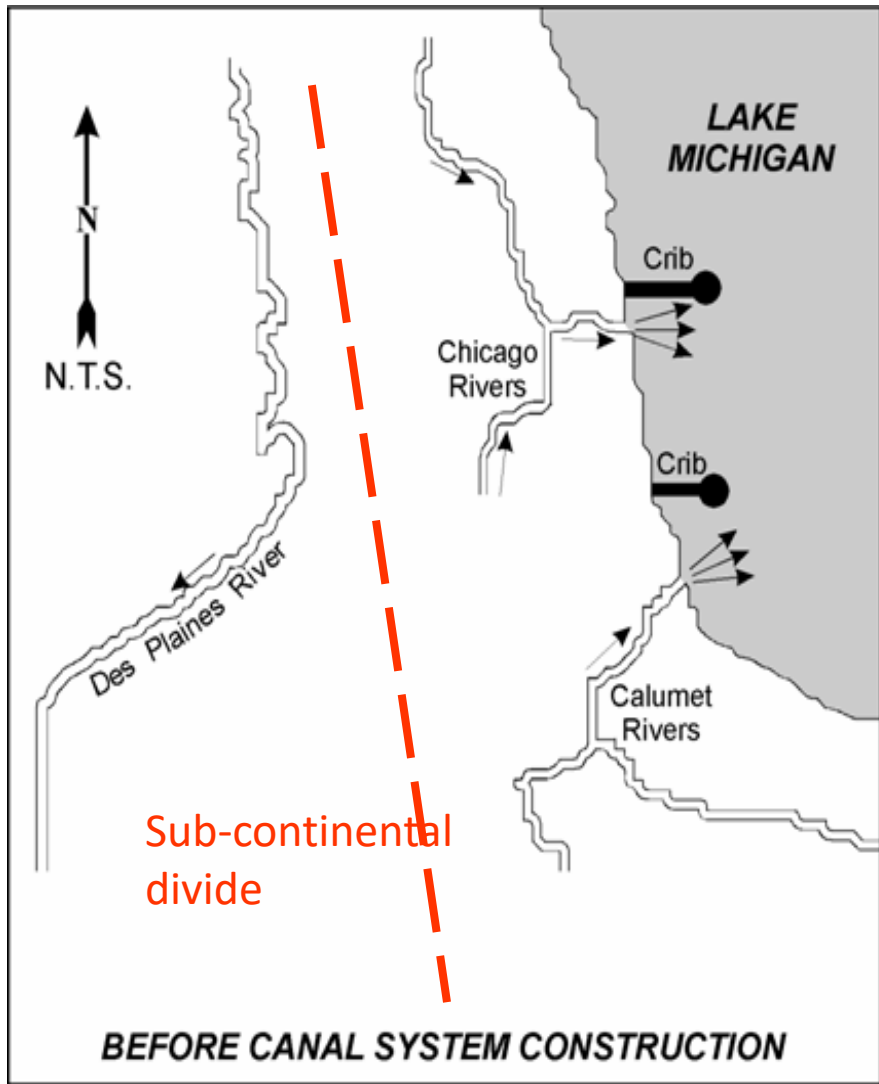




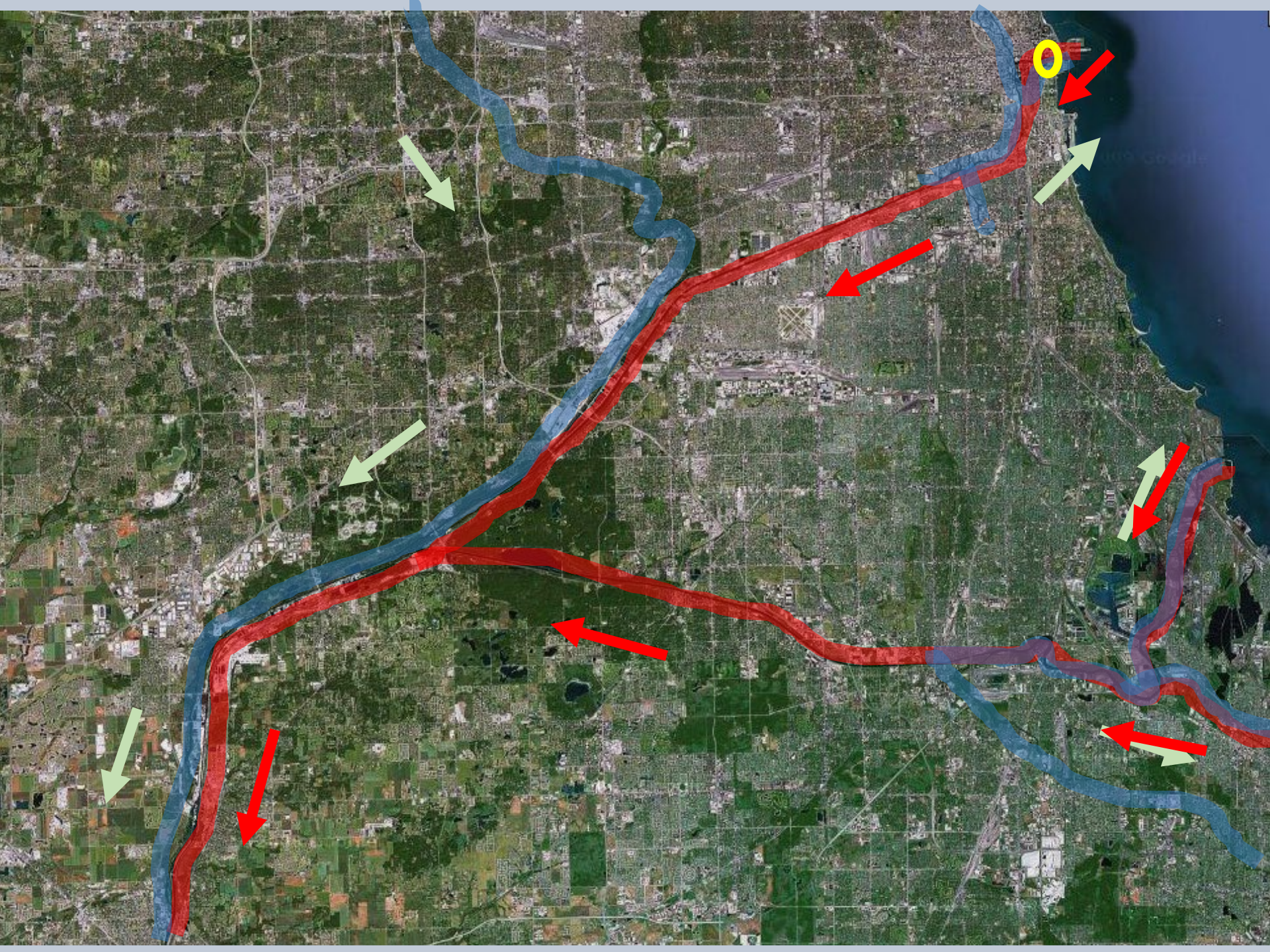
Great Lakes basin

Mississippi River basin











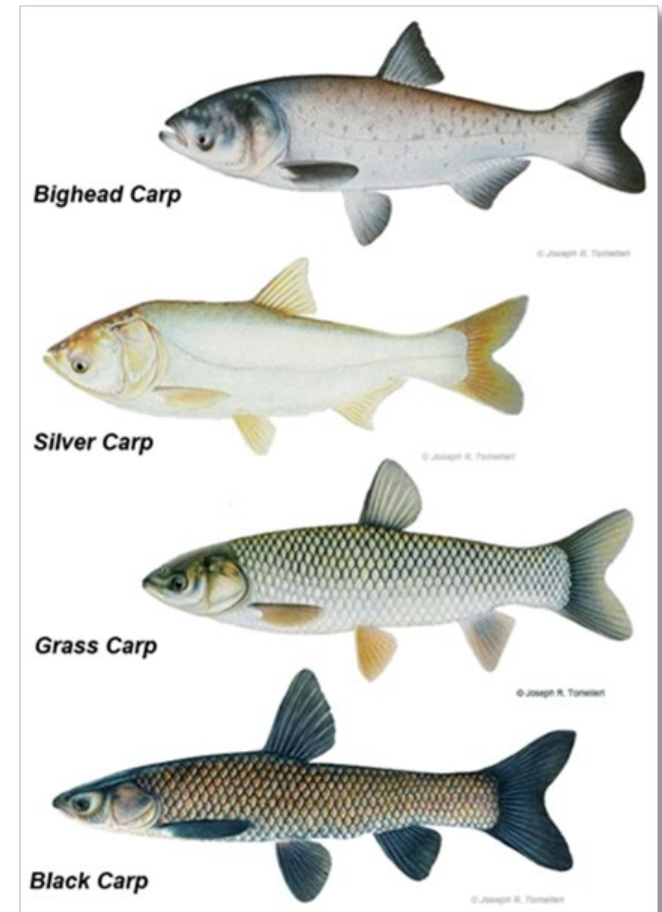
The Threat



- Asian Carps: Four species (Bighead, Silver, Black and Grass Carp)
- Imported into United States in 1960's/1970's (escaped)
- Established in major U.S. river basins (Mississippi, Missouri, Ohio)

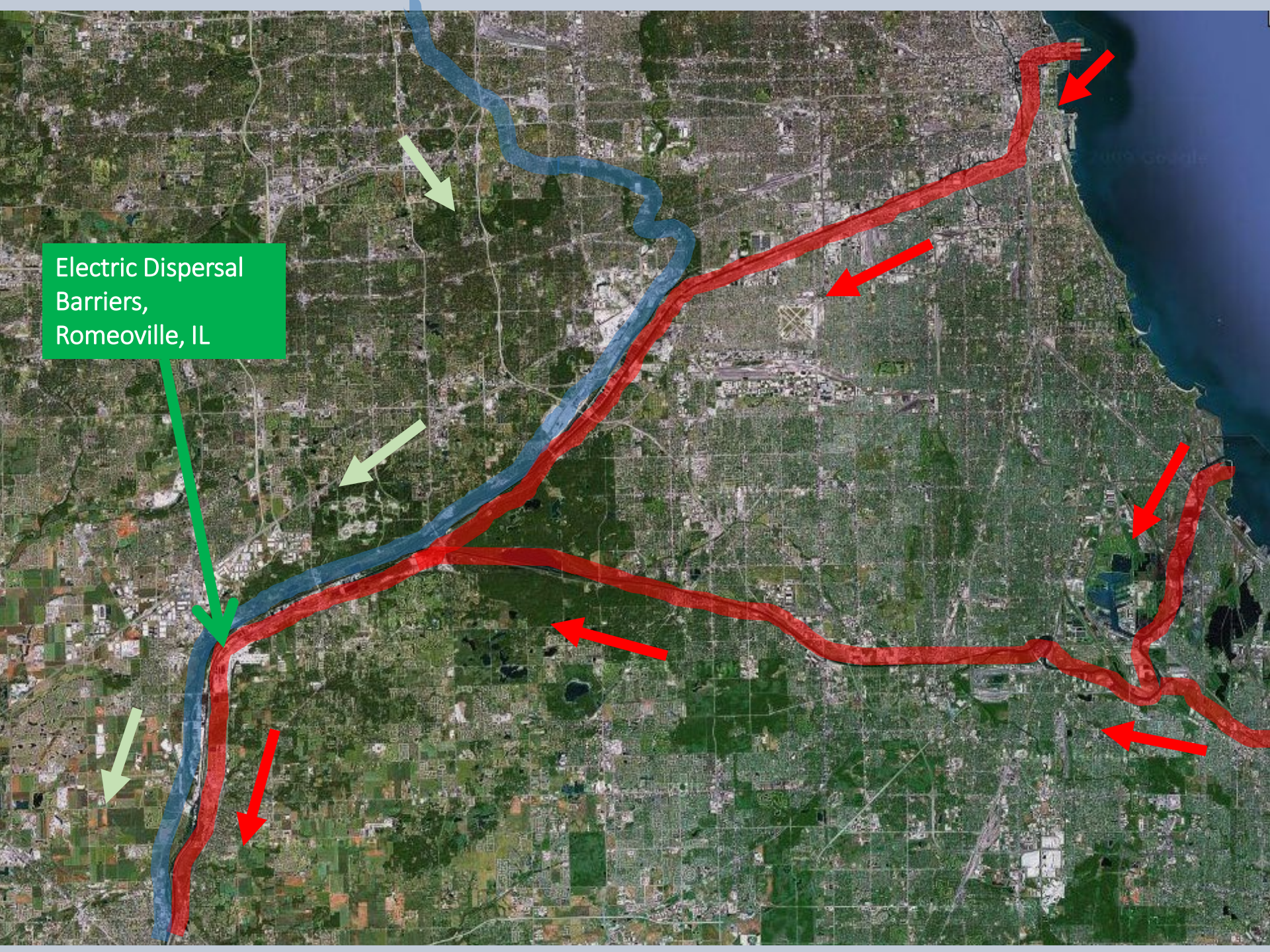


Asian carp imported for aquaculture research





Electric Dispersal
Barriers,
Romeoville, IL





Binational Ecological Risk Assessment of Bigheaded Carps for the Great Lakes

**Becky Cudmore, Nick
Mandrak** – Fisheries and
Oceans Canada

John Dettmers – Great Lakes
Fishery Commission

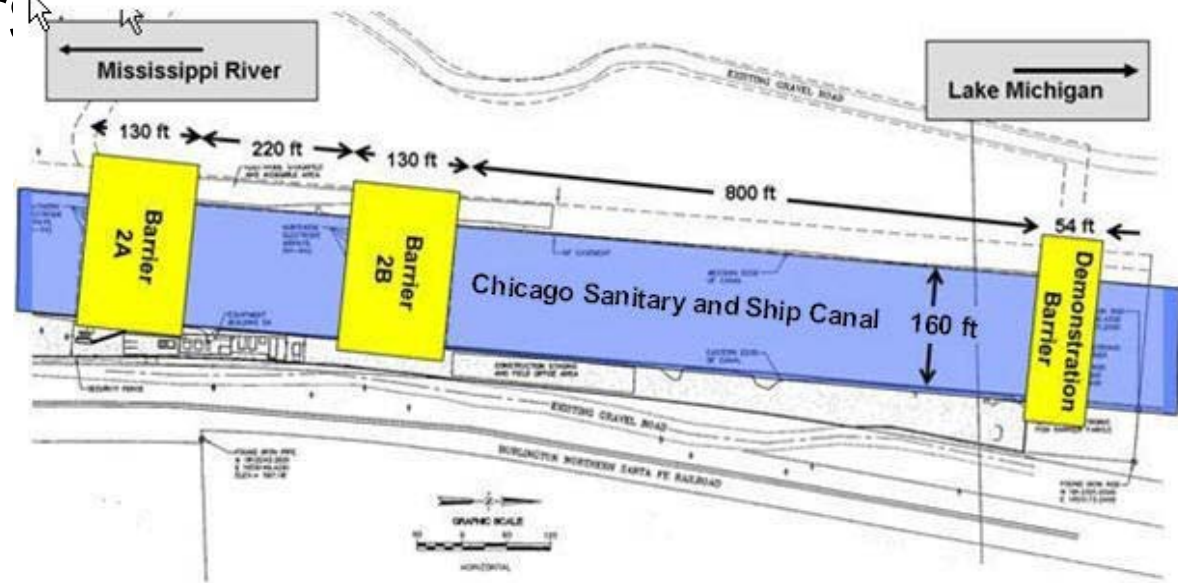
**Duane Chapman, Cindy
Kolar** – US Geological Survey



Photo: asiancarp.gov

Completed in 2012

Dispersal Barrier



- Constructed in the Chicago Sanitary and Ship Canal (CSSC)
 - **First operational April 2002**, second and third **barriers added 2009, 2011**
 - Requires cyclic shut down of barriers for **regular maintenance**
- Intended to prevent upstream dispersal towards the Great Lakes
- One Bighead Carp collected below barriers (Dec 2009)
- One Bighead Carp collected above barriers at Lake Calumet (July 2010)

Risk Assessment Conclusion

- **If no additional actions are taken**, the overall **ecological risk** of bigheaded carps to the Great Lakes is **high**, especially to central lakes.
- The impact of bigheaded carps on the Great Lakes is directly related to establishment. Therefore, **preventing establishment is critical.**

Prevention

- **Prevention actions**
 - Electrical barrier system
 - Brandon Road structure
- **Control measures**
 - Contract fishing
 - Mass removal of Asian carp
- **Early detection, monitoring, and assessment**
- **Technology development**
 - Acoustic deterrents
 - Carbon dioxide
 - Microparticles
- **Communications**
- **Supports goals of National Asian Carp Plan**





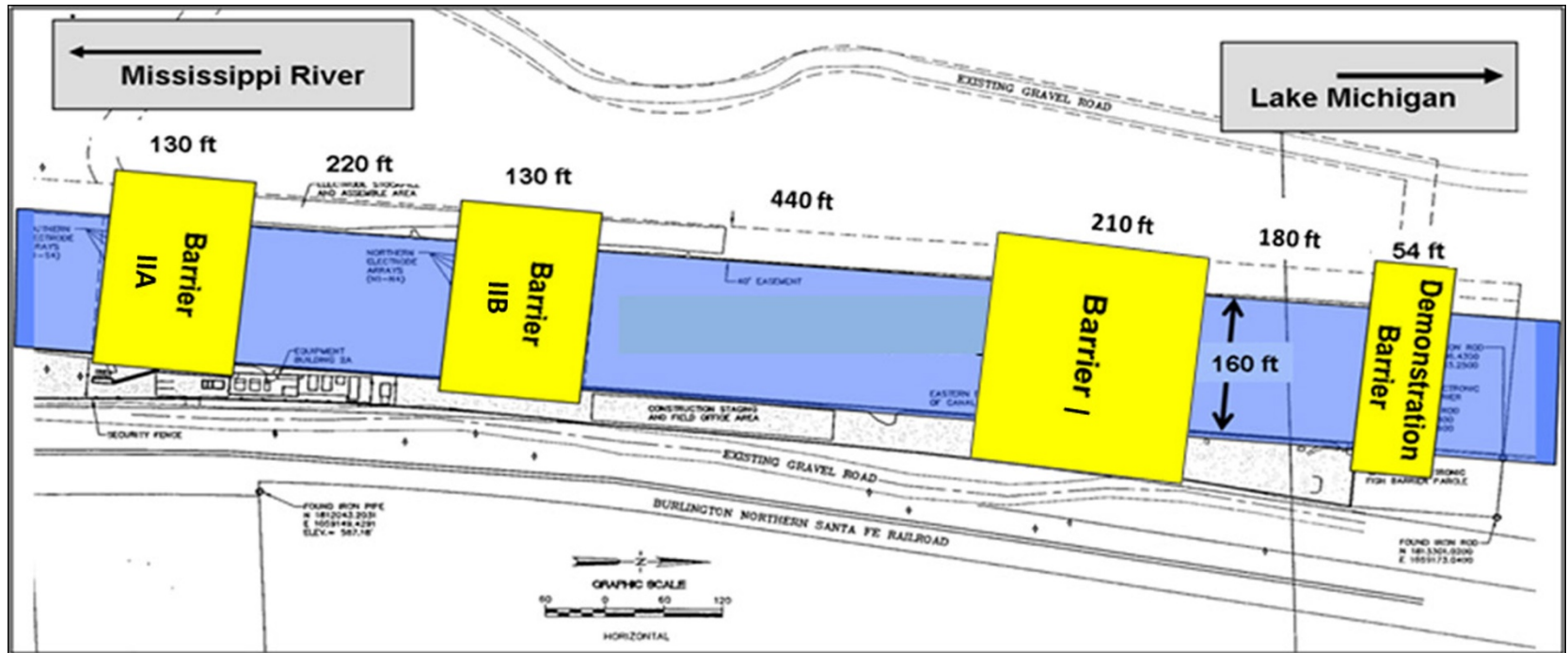
Danger

Electric Charge in Water
Do Not Stop, Anchor or Fish
No Mooring or Passing
Type 1 Lifejacket Must Be Worn

Notice
Leaving Electrical Shock
Hazard Area








NO MOORING
DANGER
NO ACCESS

Electric Dispersal Barrier System



Geography

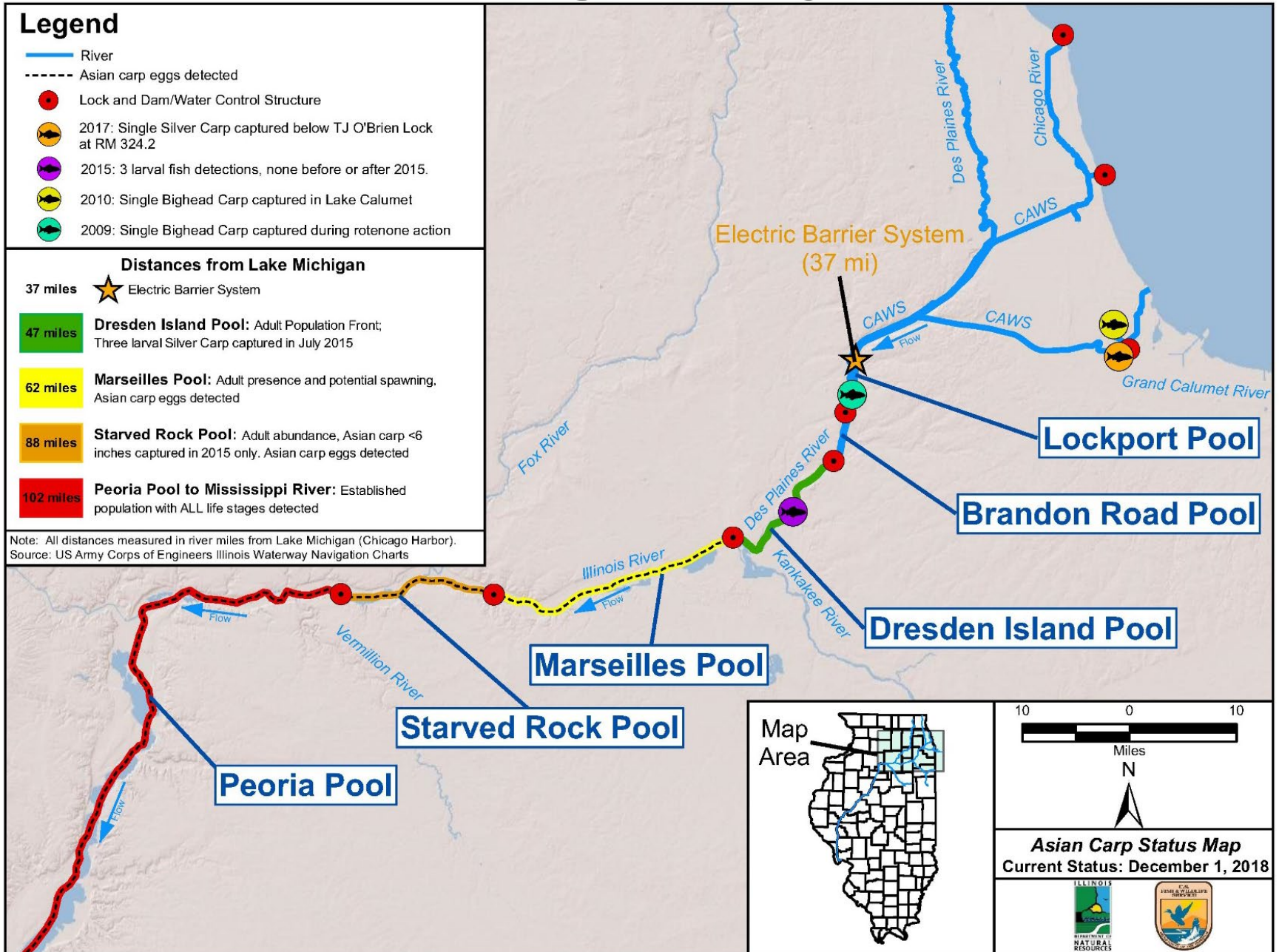
Legend

-  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

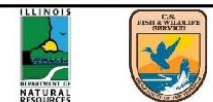
Distances from Lake Michigan

- 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

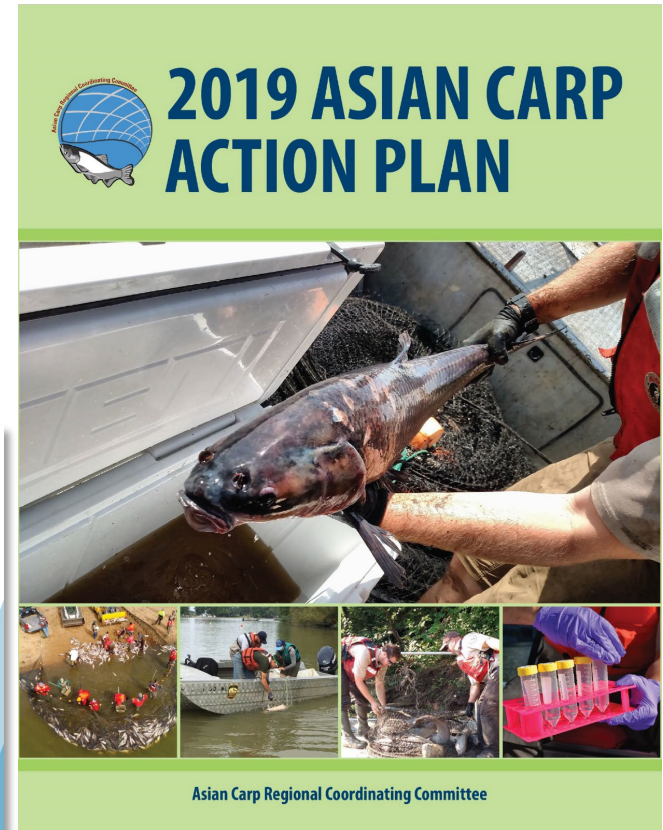
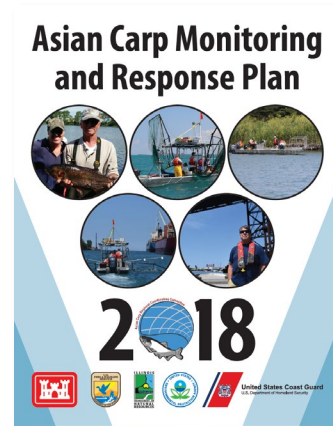
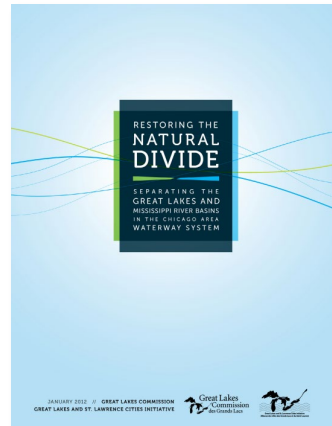
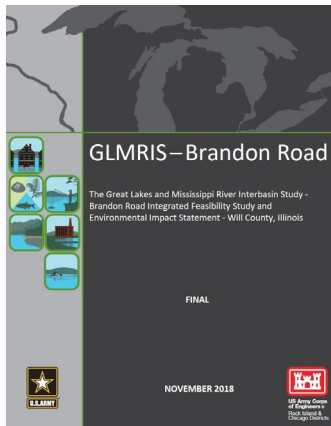


Asian Carp Status Map
Current Status: December 1, 2018

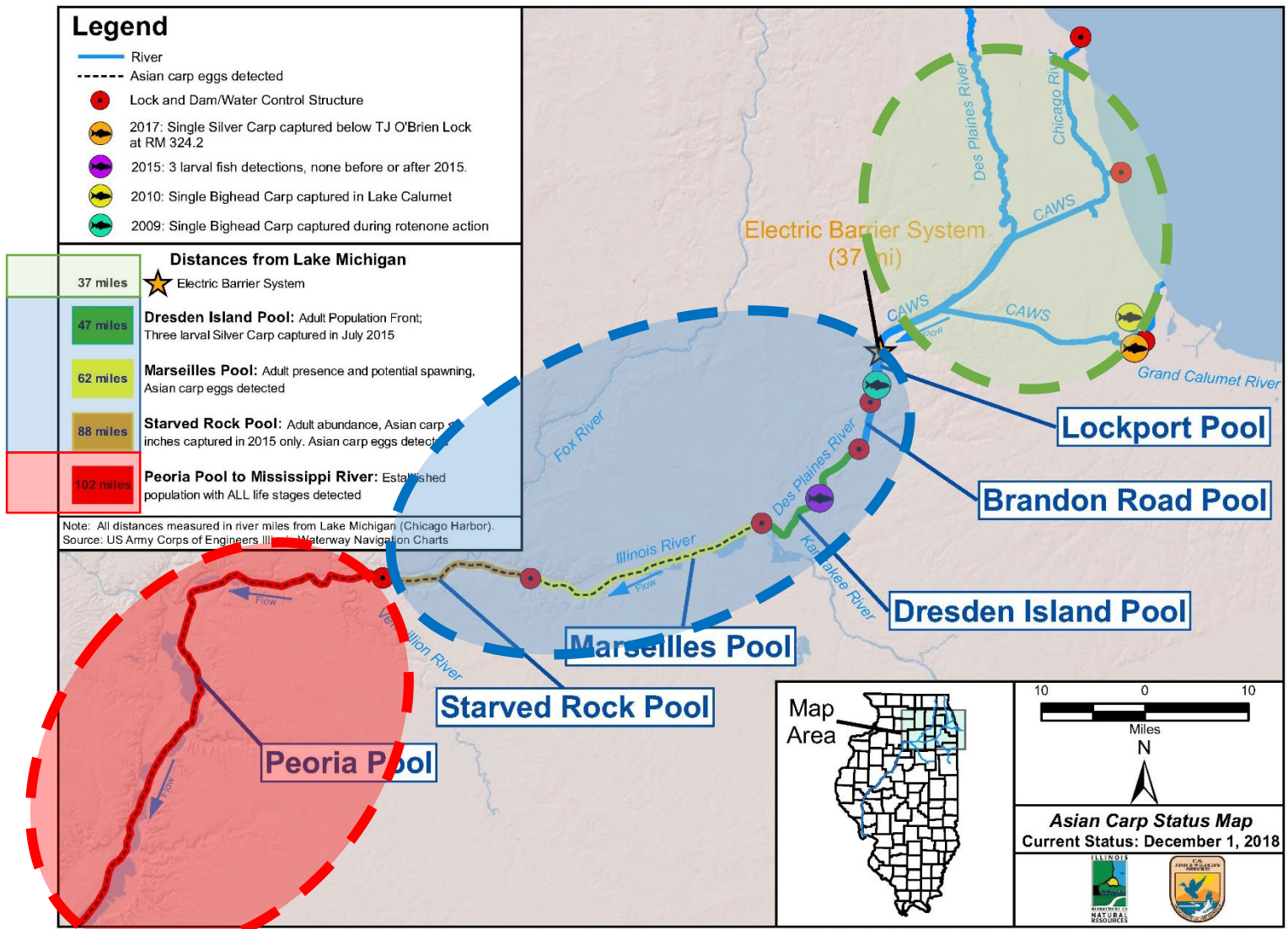


What is Happening Now?

- Action Plan
- Monitoring and Response Plan
- Long Term
 - Engineering Solutions
 - GLMRIS—Brandon Road
 - Separation



Summary www.asiancarp.us: Protecting the Great Lakes

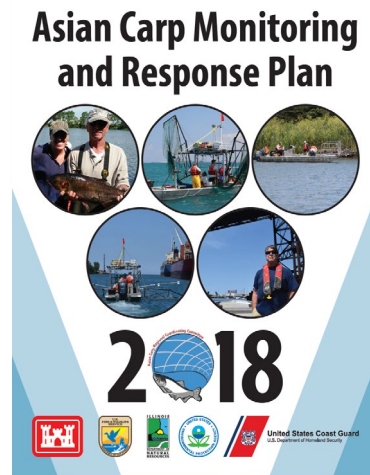


Monitoring and Response Plan

- Complements ACRCC's 2019 Action Plan
- Interagency operational plan for CAWS/IWW
- Four priorities
 - Detection (above Brandon Road L&D)
 - Removal (between Starved Rock L&D and Brandon Road L&D)
 - Increased mortality (below Starved Rock L&D)
 - Response (if needed)
- Directly informs USACE Emergency Protocols
- “Living”, adaptive document (updated regularly)

Enhanced Great Lakes defense

Manage and control Asian carp to reduce their impact



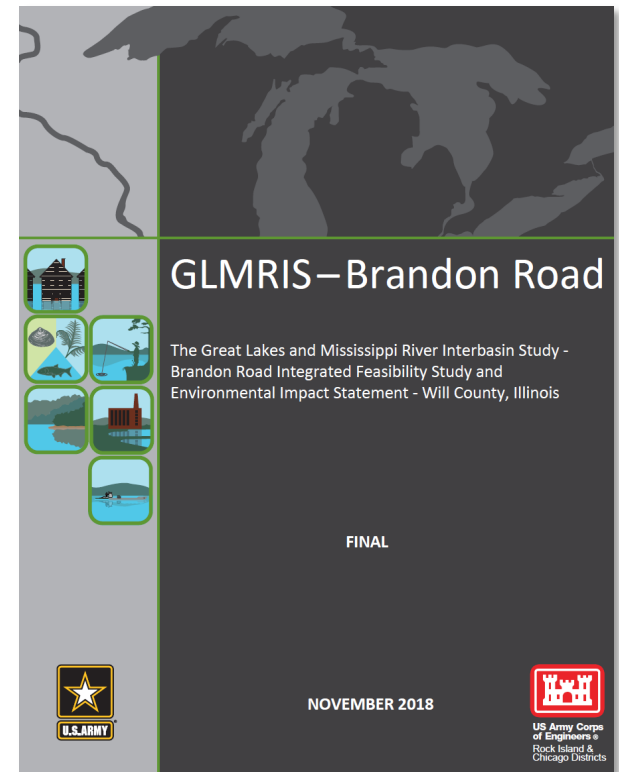
Status of removal effort 2010-2019

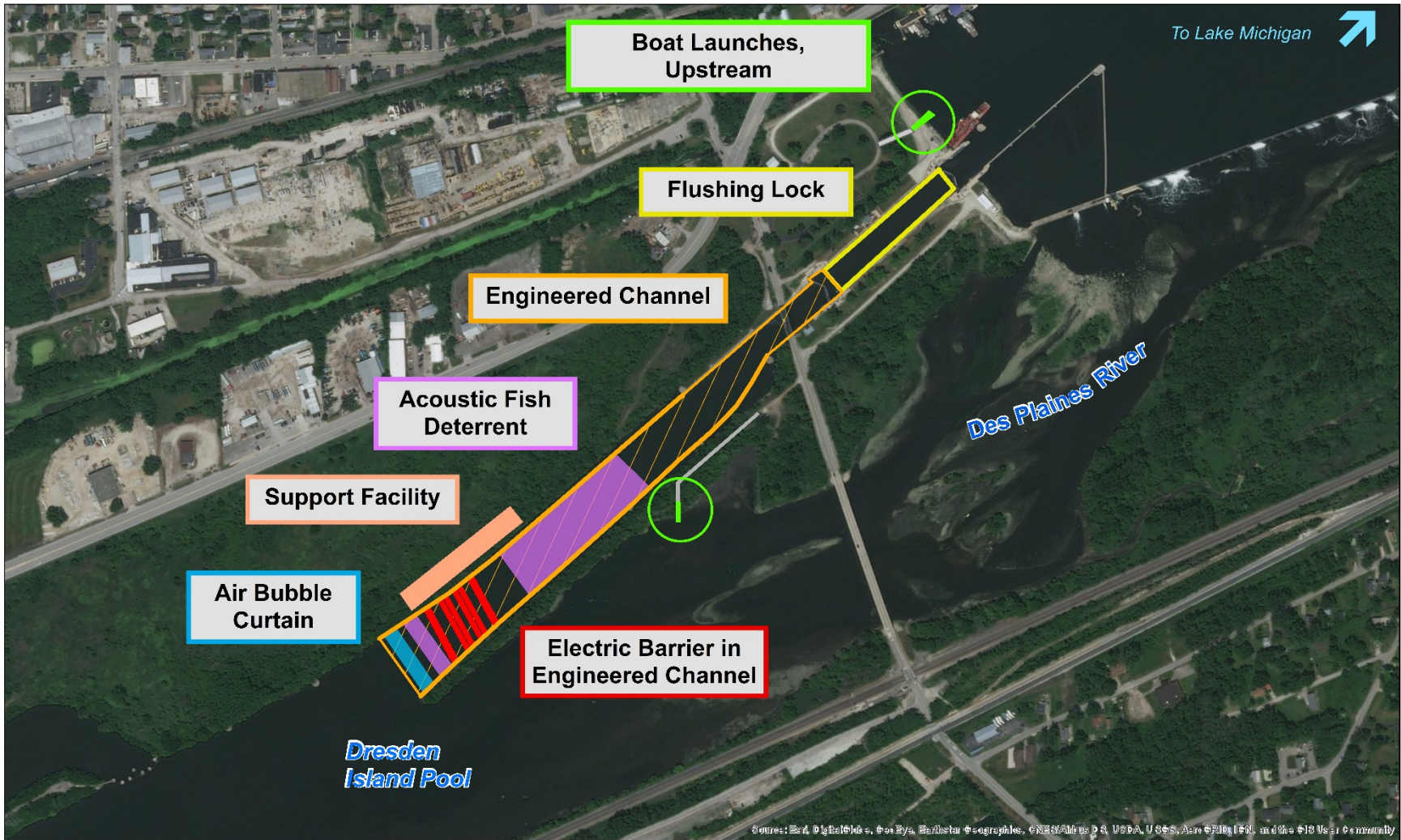
>1M pounds annually (> 8.5 M pounds to date)



GLMRIS Brandon Road

- **Non-Structural measures**
 - Monitoring
 - Netting
 - Piscicides
- **Structural measures**
 - Acoustic fish deterrent
 - Electric dispersal barrier
 - Engineered channel
 - Flushing lock
- **Chief's Report signed May 2019**
 - Congress must authorize the project
 - Funding!
- **Preliminary Evaluation and Design**
- **Final design and construction**
- **Completed March 2027?**





Boat Launches,
Upstream

To Lake Michigan

Flushing Lock

Engineered Channel

Acoustic Fish
Deterrent

Support Facility

Air Bubble
Curtain

Electric Barrier in
Engineered Channel

Des Plaines River

Dresden
Island Pool

How Can the GLLC Help?

- **Prevention as a priority**
 - **GLSLGP Mutual Aid Agreement**
- **Continued governors' and premiers' support for Brandon Road**
 - **Consider contributing to the non-federal match**
- **Support Brandon Road with House and Senate colleagues**
 - **Need for appropriate funding to keep momentum**
- **Keep the Great Lakes Great!**

