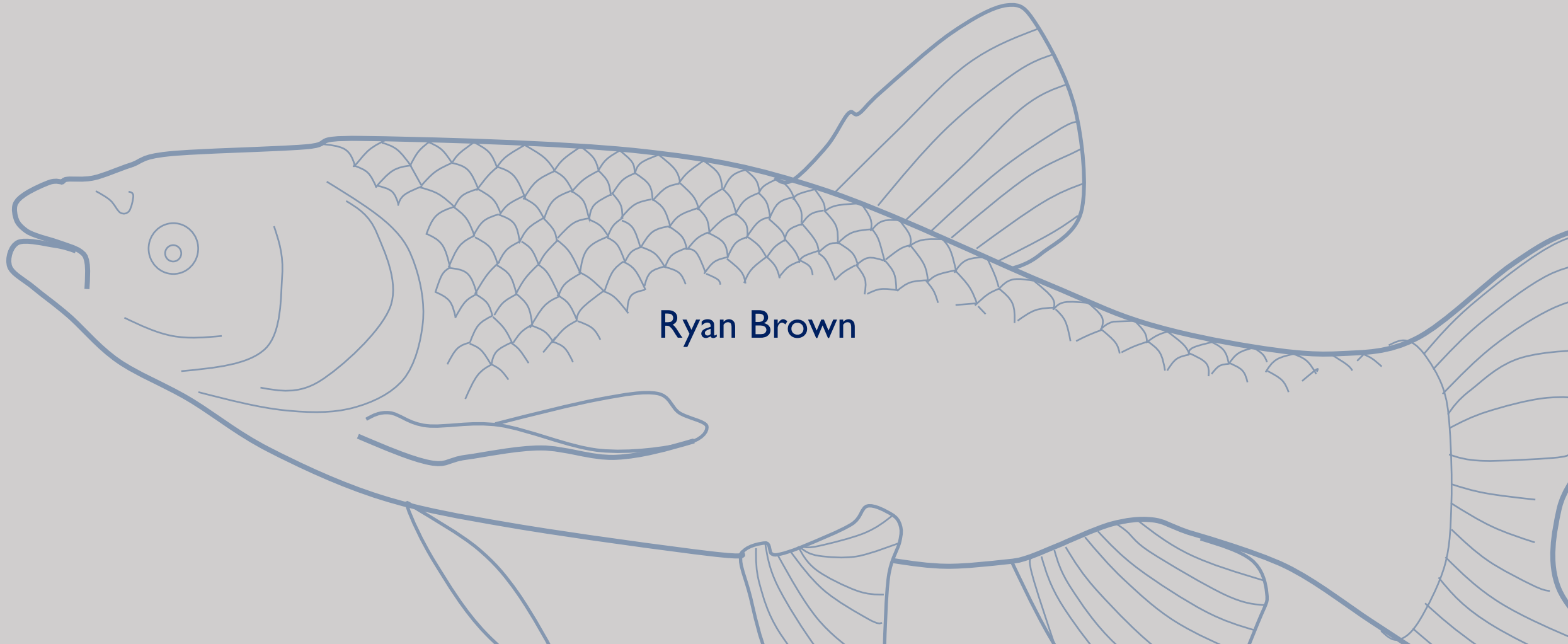
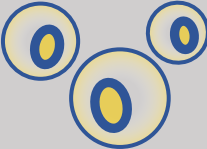
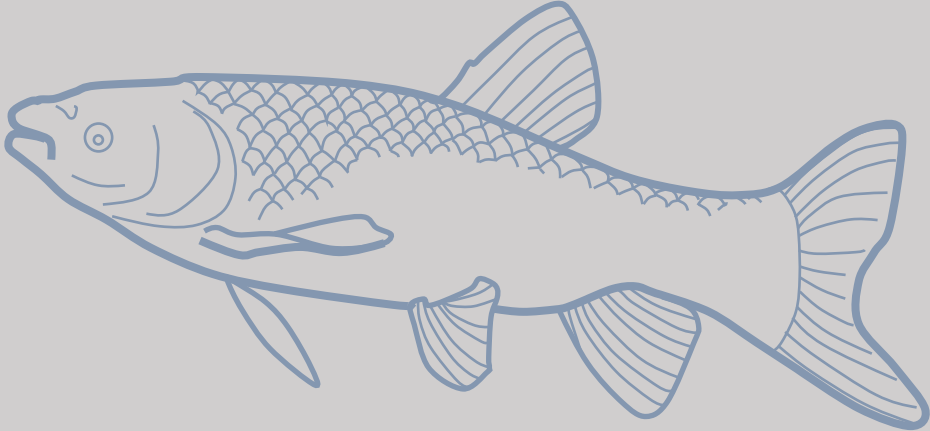


# What's the Catch? Trends in Grass Carp Adult and Egg Captures



# Grass Carp Invasion Timeline



Imported to U.S. to control aquatic vegetation

Reports of Grass Carp captured by commercial fishers in Lake Erie

Grass carp eggs found in the Sandusky River

Continued effort

1963

1983

1980's

2012

2015

2018


2019-2023

Triploid (sterile) Grass Carp developed

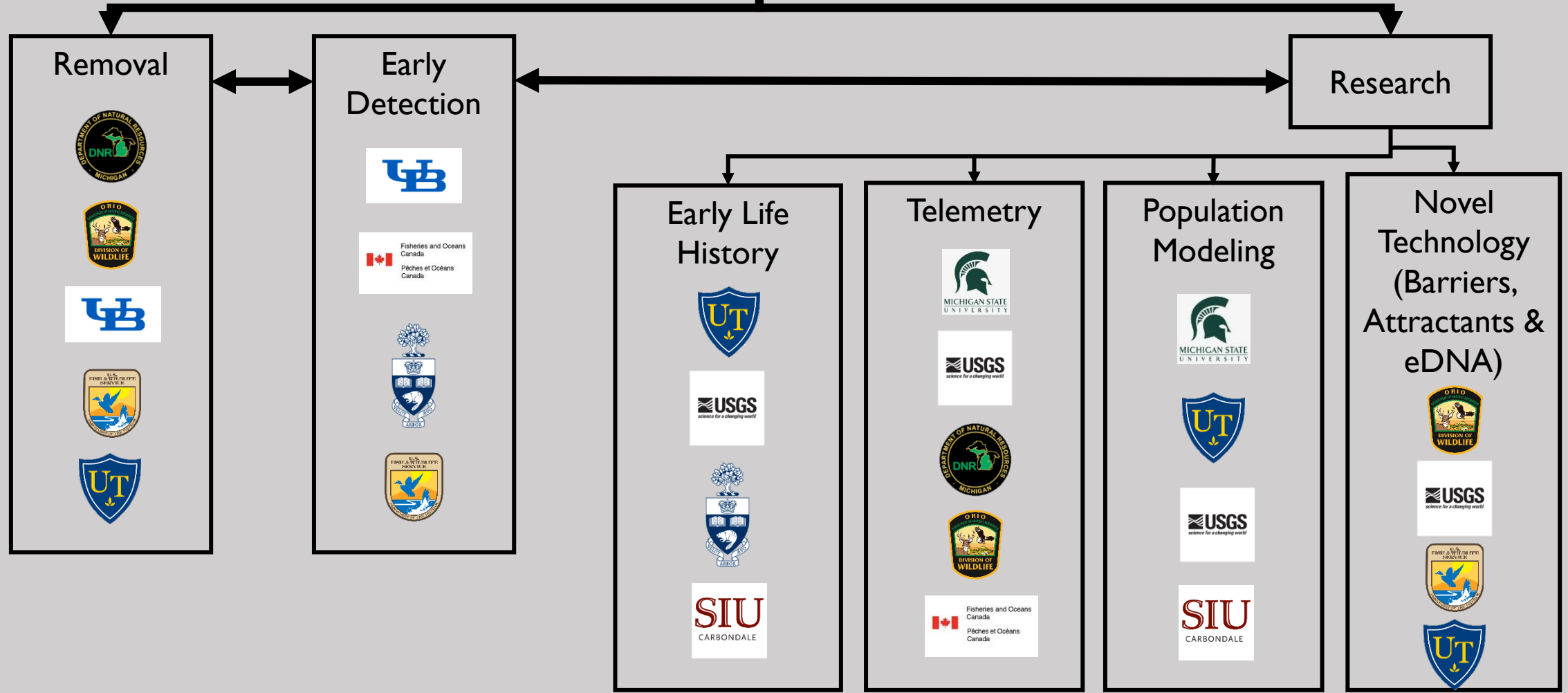
Diploid Grass Carp that originated from the Sandusky River were captured

First strike teams deployed, grass carp larvae found in Maumee River

# GC control and research collaborative structure

Lake Erie Committee & GLFC 

Grass Carp Advisory Committee & Structured Decision Making



# Management Strategy

- Prevent Grass Carp from attaining densities that cause adverse impacts
  - Certain number to remove to each year
- Minimize the likelihood of introduction and establishment of new breeding populations

Lake Erie Grass Carp Adaptive Response Strategy  
2019-2023



Photo source: J. Francis, Michigan Department of Natural Resources

# Core vs New Adult Removal Areas

- Core

- Sandusky: RKM 0.5-25.5
- Maumee: RKM 0.5-27

- New

- Upstream exploration
- What do catches look like in newly explored areas?
- What does the ploidy breakdown look like?



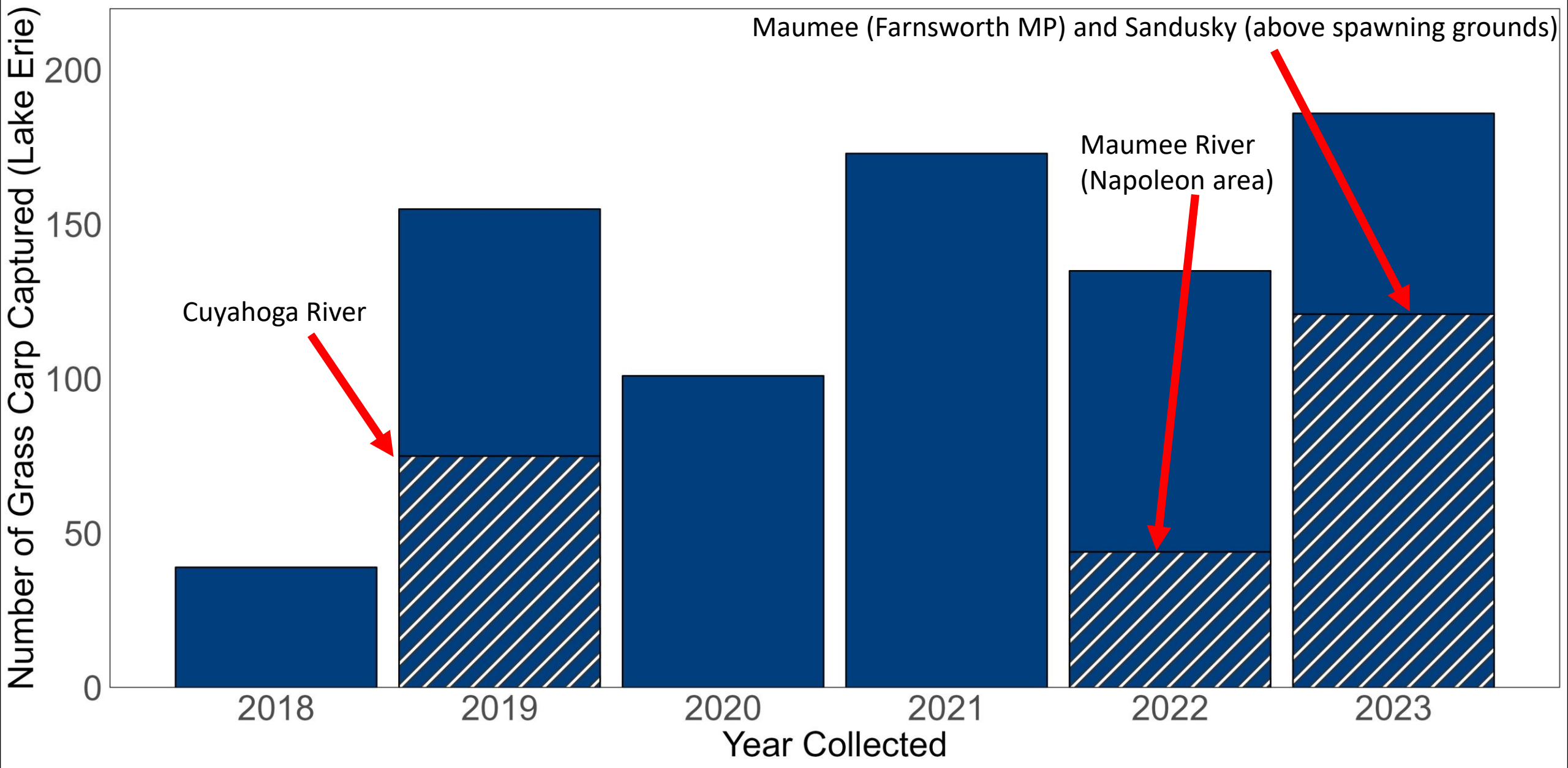
Previously Unexploited Area:  No  Yes    Source:  Targeted Effort

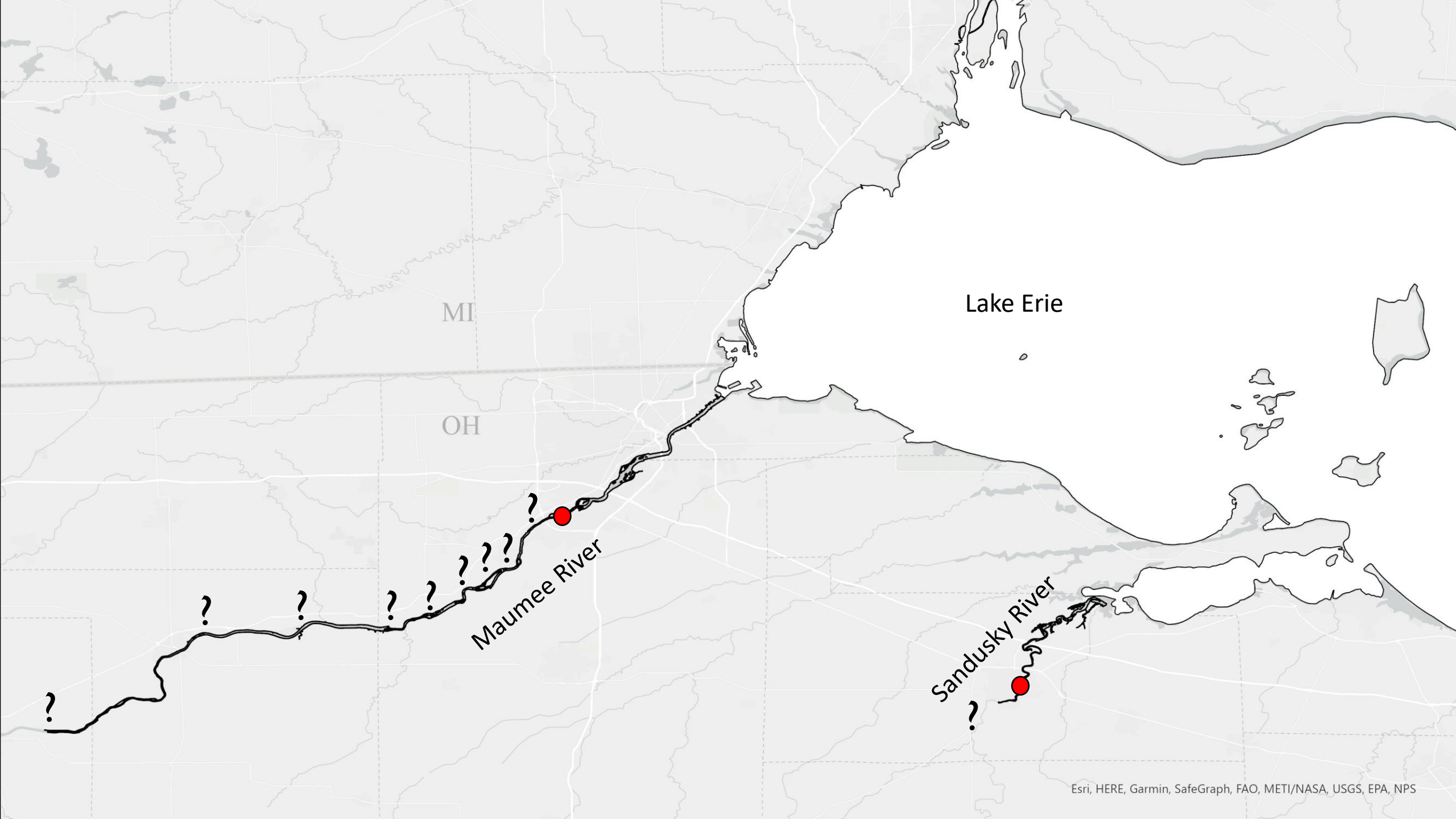
Number of Grass Carp Captured (Lake Erie)

Maumee (Farnsworth MP) and Sandusky (above spawning grounds)

Cuyahoga River

Maumee River (Napoleon area)





MI

OH

Lake Erie

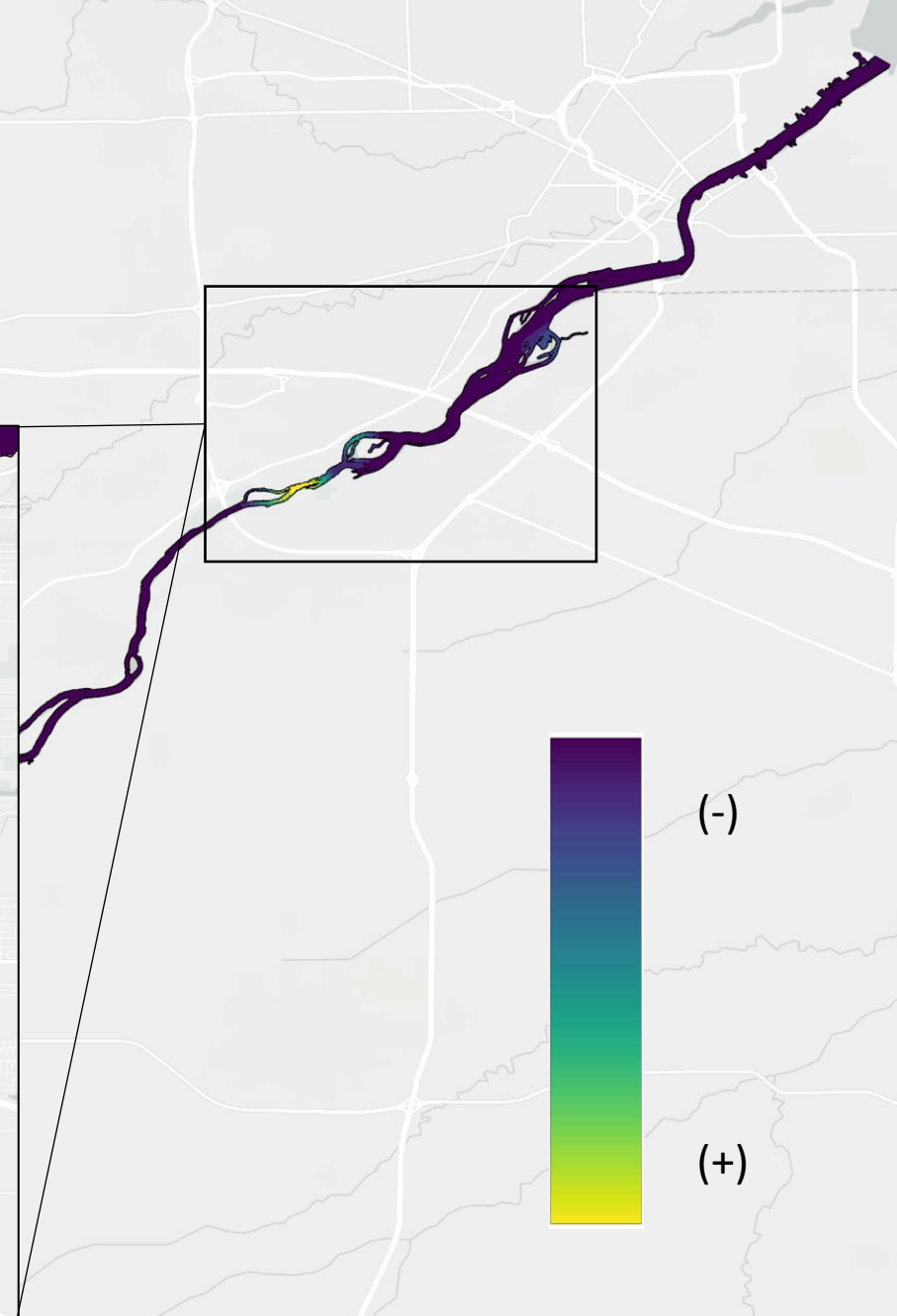
Maumee River

Sandusky River

# Maumee 2018-2021

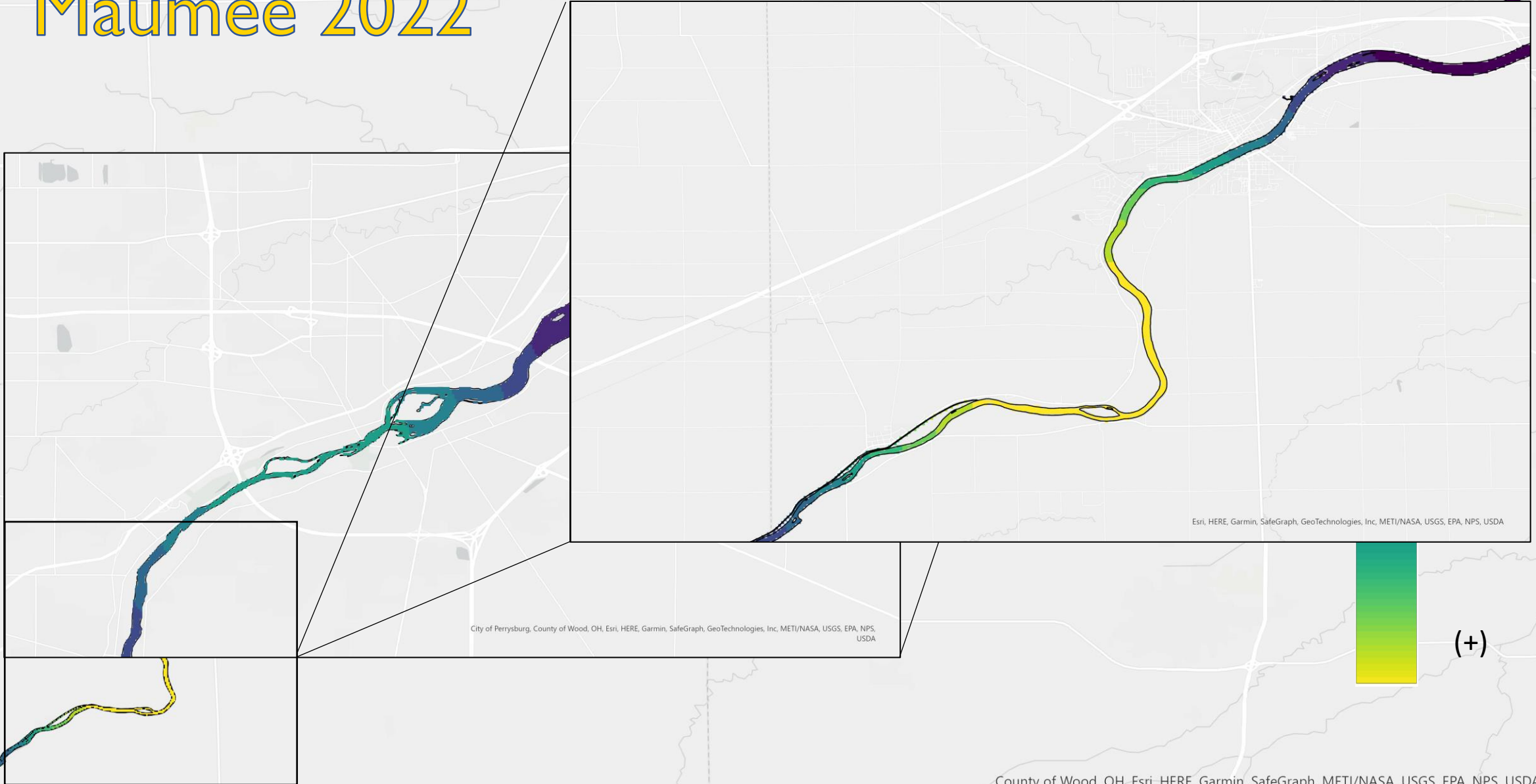


County of Wood, OH, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA

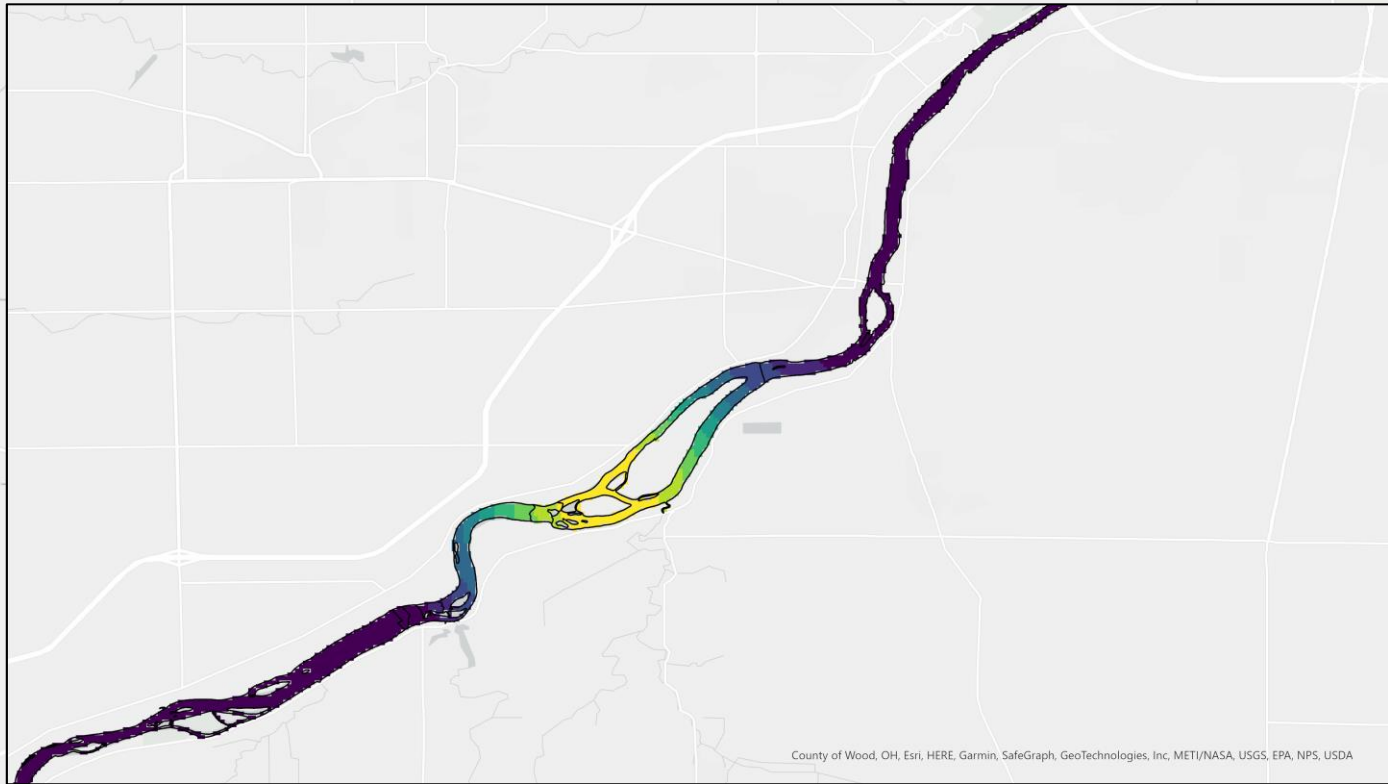


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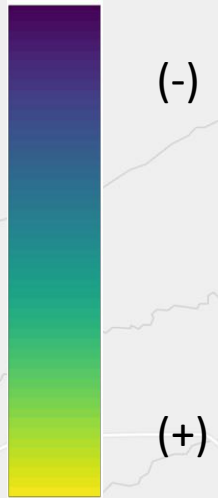
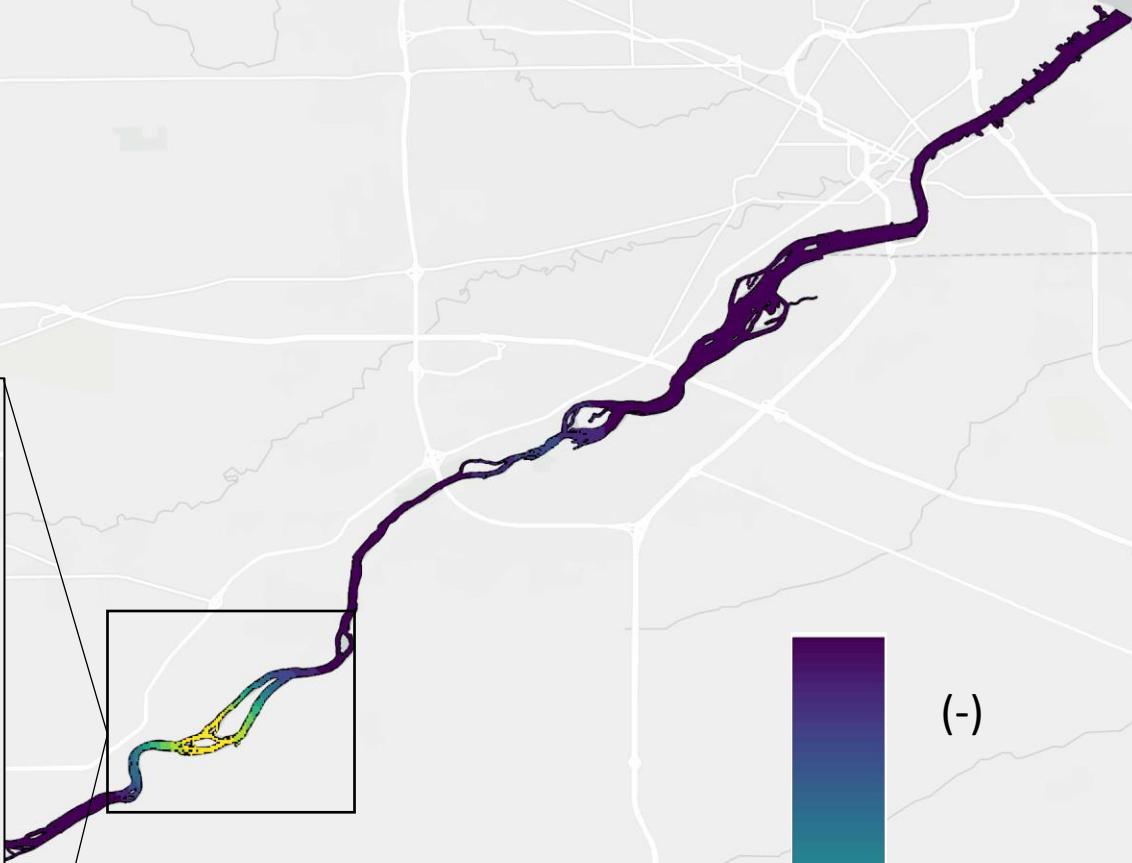
# Maumee 2022



# Maumee 2023

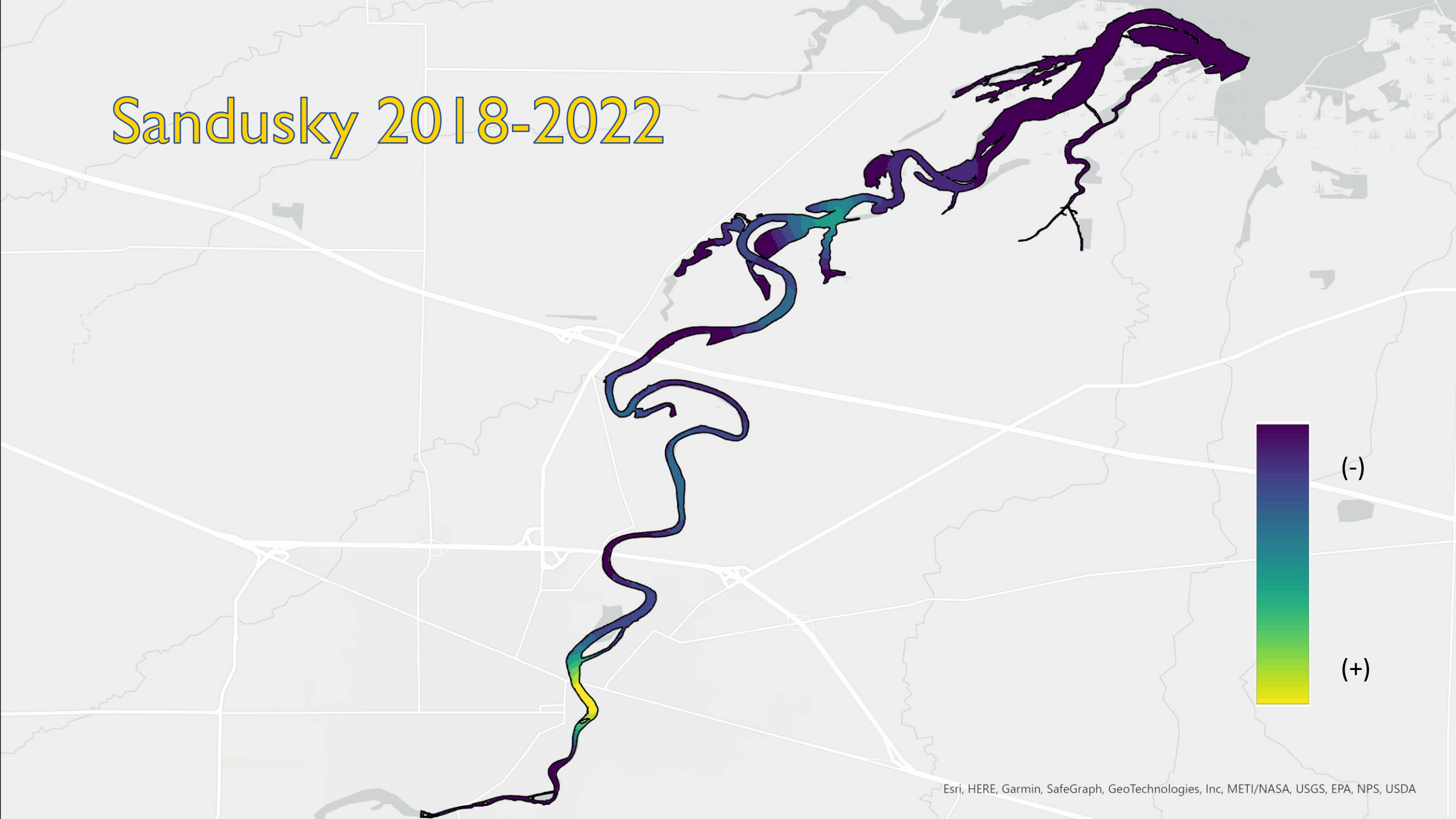


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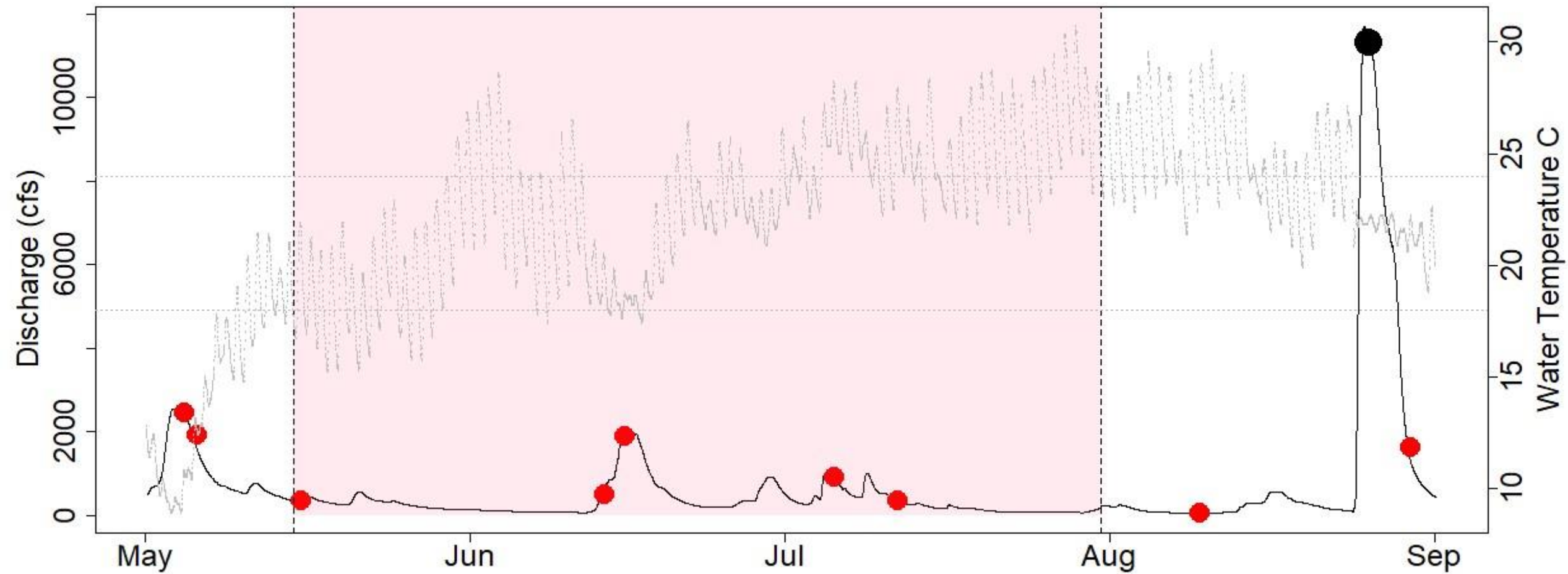


County of Wood, OH, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA

# Sandusky 2018-2022



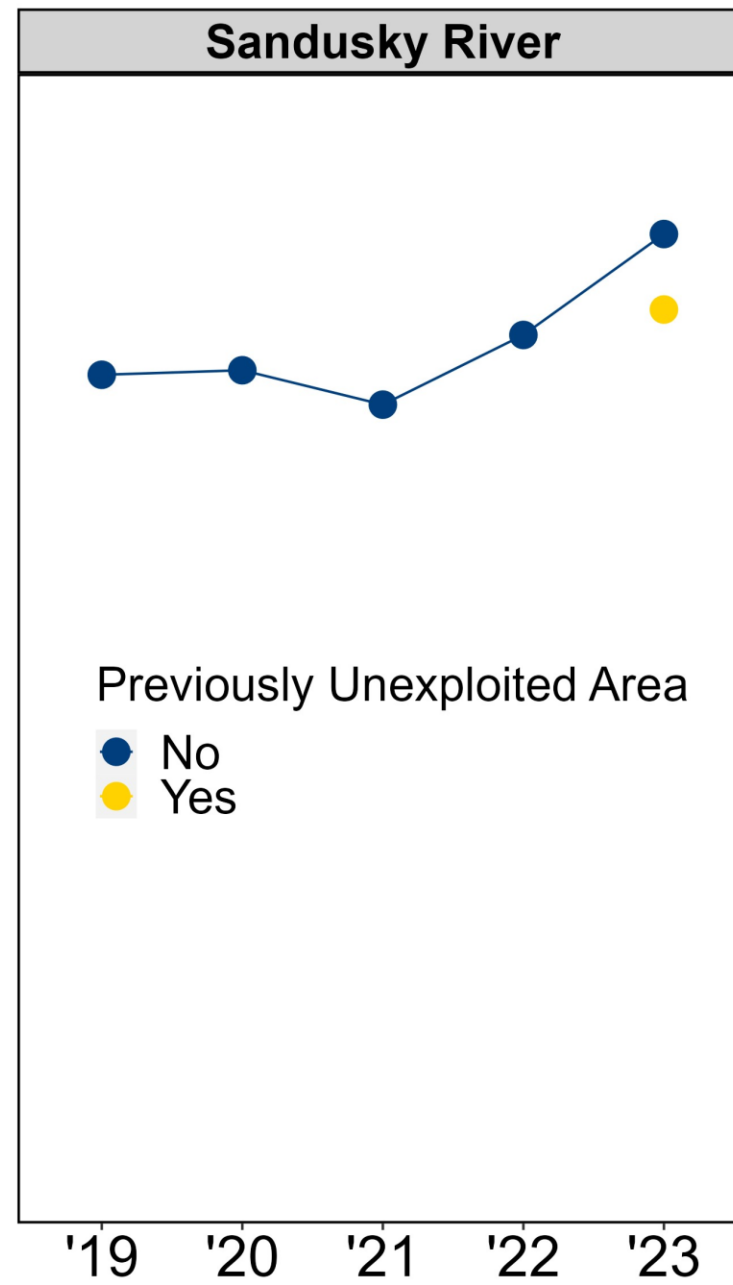
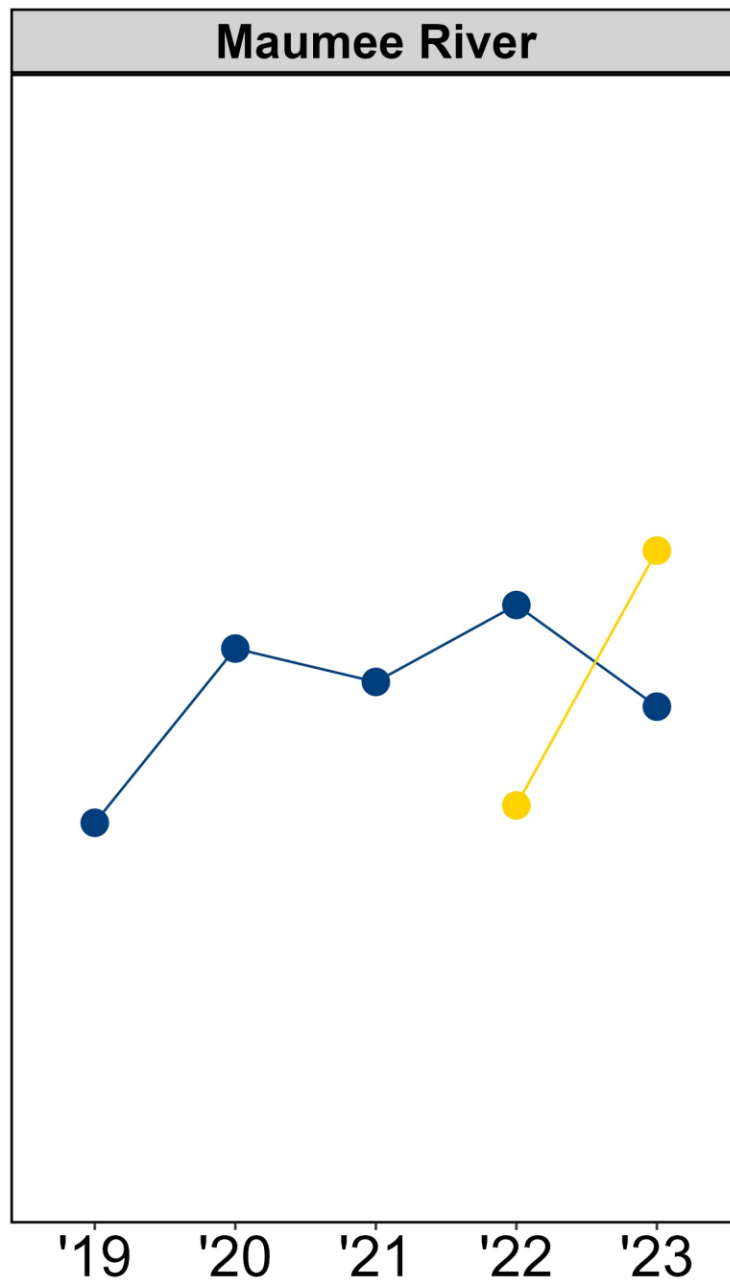
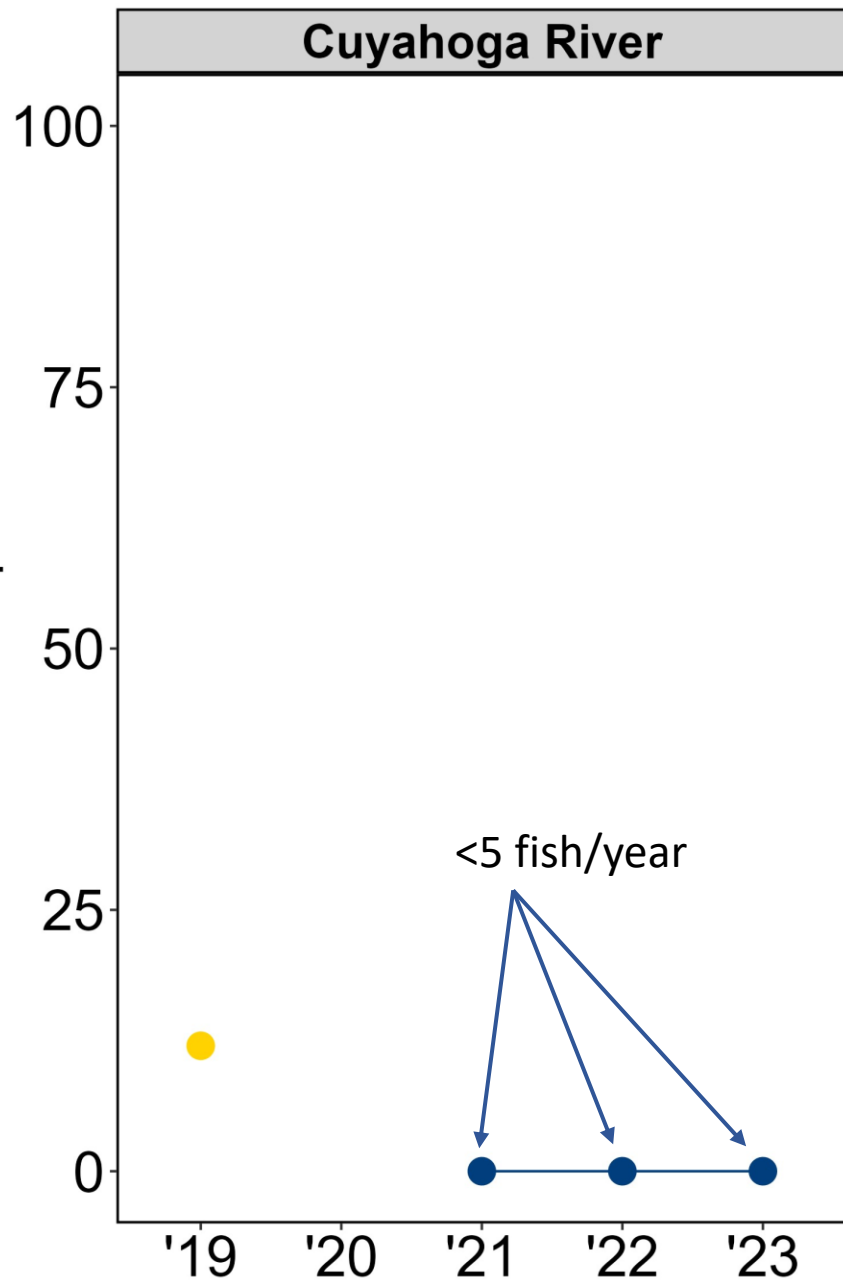
# SANDUSKY RIVER 2023



# Upstream Implications

- Need to expand temporally and spatially as we look for grass carp
  - Keep removals high
- How do they use river habitat for spawning and staging?
  - Telemetry

Percent Diploid



Previously Unexploited Area

- No
- Yes

# Ploidy Implications

- Not all unexploited populations are triploid
- Sandusky has the highest percentage of diploids
- We need to watch the increasing diploid percentage trend
  - Are we removing triploids faster than they immigrate into system?

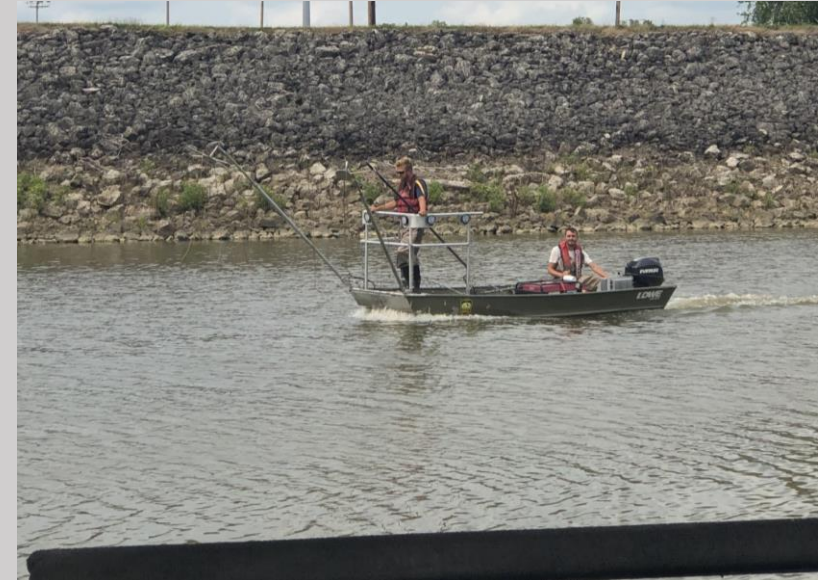
# Upstream Exploration is Essential

- Gears may be saturated in lower river
- High catch in unexploited areas
  - 2023 mostly diploids
- Generally better habitat
  - Pools between shallow rapids



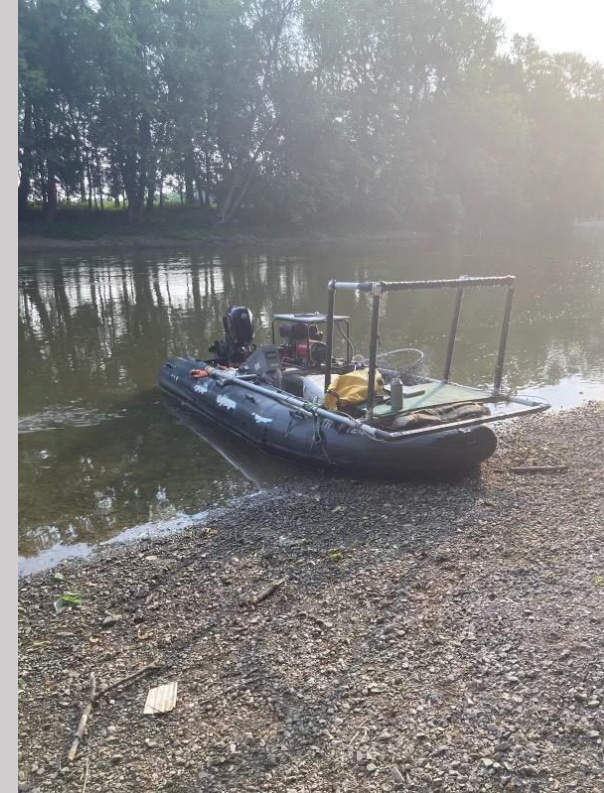
# Upstream Exploration: What we used

- “Little Shock Boat”
  - ODNR loaner
  - Metal hull = not ideal
  - Maneuverable
  - Mostly used in the Sandusky in 2023
- USFWS Ecat
  - Limited maneuverability
  - Easily launched at canoe ramps
  - Better suited for narrow rivers?



# Upstream Exploration: What we NEED to use

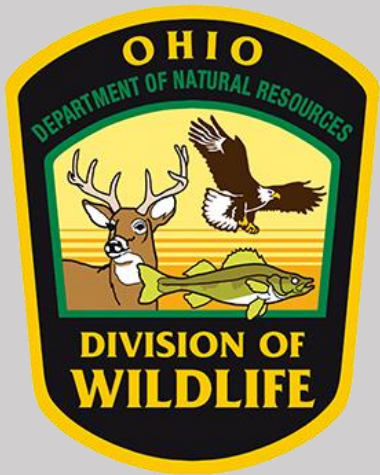
- Inflatable raft with motor
  - Maneuverable
  - Better hull material
  - Easy to launch
- Trucks with winch
- Similar to MBI setup



# Management Implications

- Upstream exploration has provided areas of high adult catch
  - Need to keep exploring unexploited areas
  - Need to examine how grass carp use the river for staging and spawning
- New areas of catch are not all triploids
- Fine-tuning more appropriate vessels to expand our search areas
- Grass carp able to spawn outside the expected May-July window
  - Same flow and water temperature conditions must still be met

# Questions?



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