



Habitat use by Lake Sturgeon (*Acipenser fulvescens*) using acoustics and stable isotopes

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NATURAL RESOURCES

Project Details



Acoustics and stable isotopes



Tracking movement
Characterize habitat use
Compare approaches



Minnesota DNR
US EPA – GLTED
St. Louis River Resource Managers



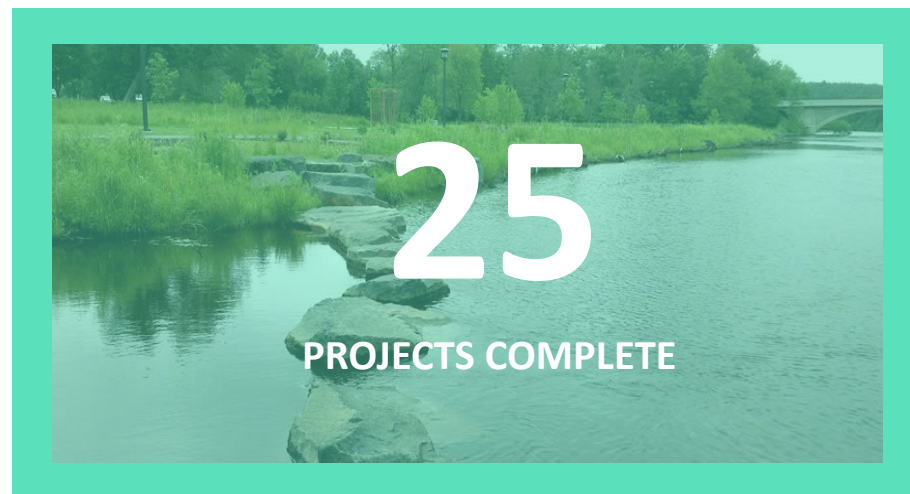
Lake Sturgeon Recovery

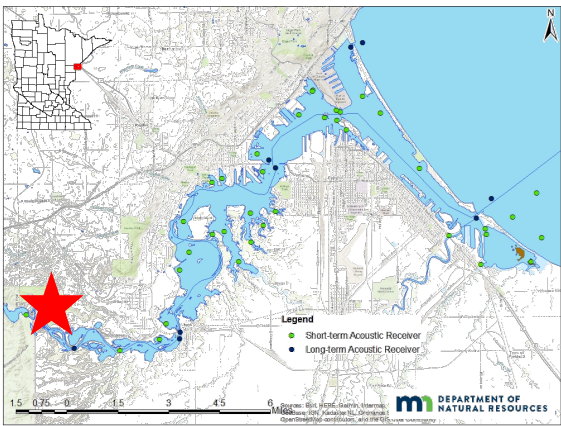


Where in the world is... the St. Louis River?



Why is this little corner of Minnesota so important?





Chambers Grove

One example of Lake Sturgeon habitat restoration

2015



**Hardened shoreline
demolition and removal**

2017

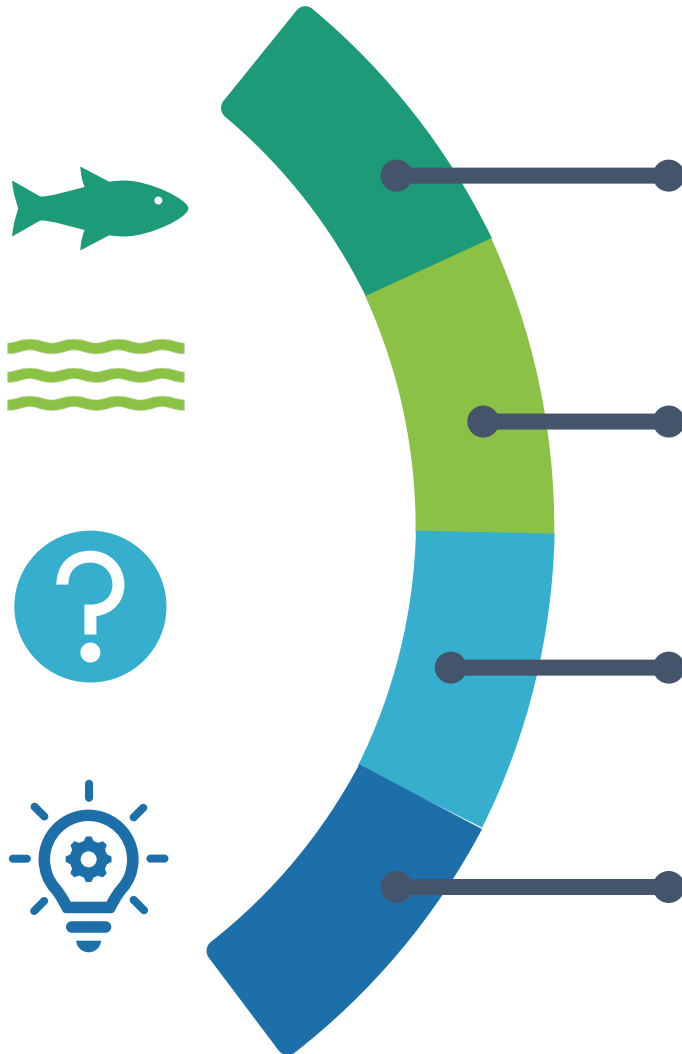


**Natural shoreline restored,
stone jetties create riffle habitat**



**Possible Lake Sturgeon
spawning habitat**

Study Goals



Lake Sturgeon are a key conservation species, recovery has been challenging for this species

Habitat remediation and restoration is expected to improve recovery conditions

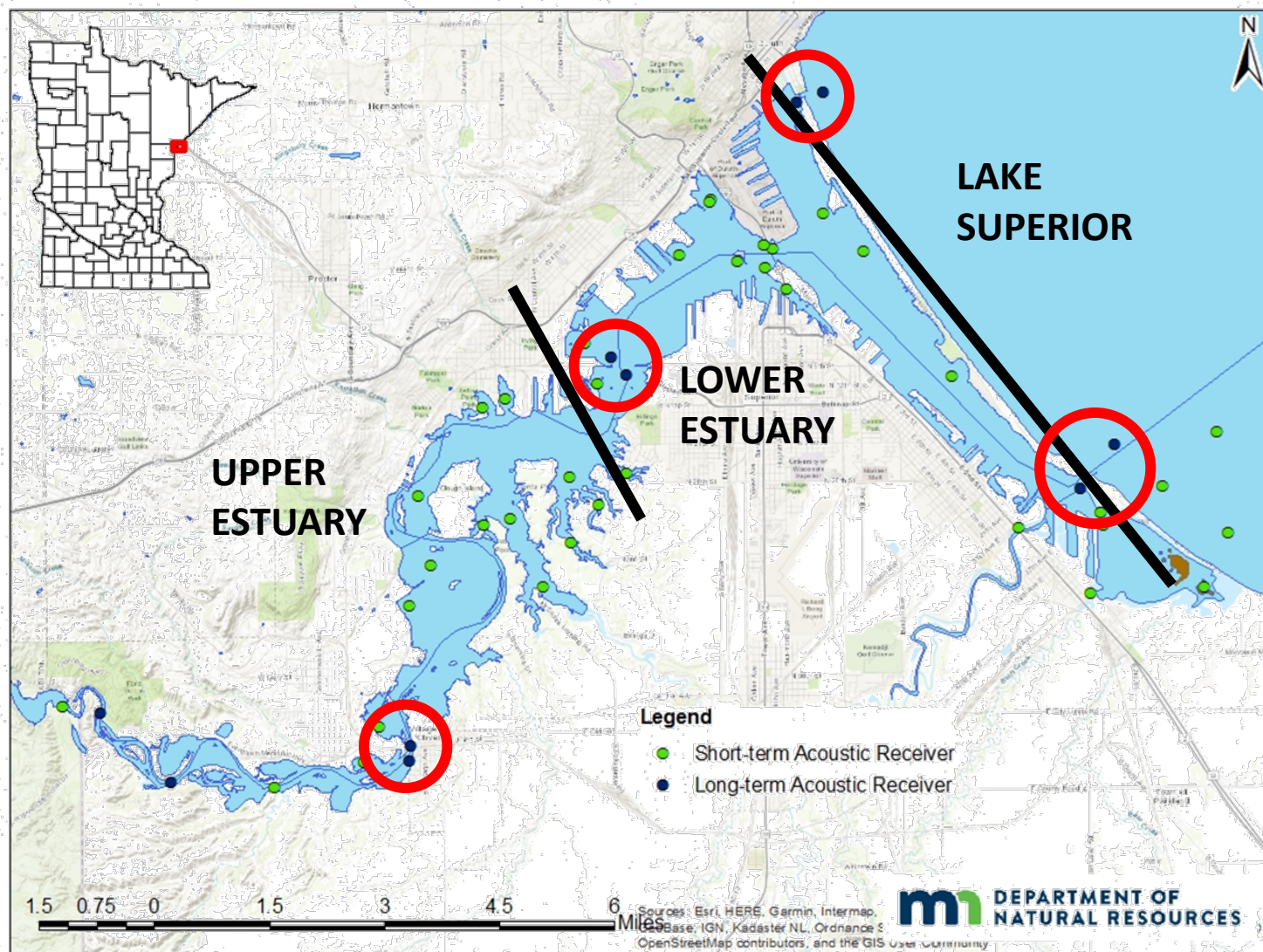
We don't understand how Lake Sturgeon are using their habitat as juveniles and adults outside the spawning season

Our goal was to quantify specific habitat use with two approaches

1. Where do they go
2. Where do they feed

Acoustics

Minnesota DNR



- Coarse-scale movement data
- Gates
- % days spent at large in each area

- Movement
- Receivers / tags
- Daily measurements

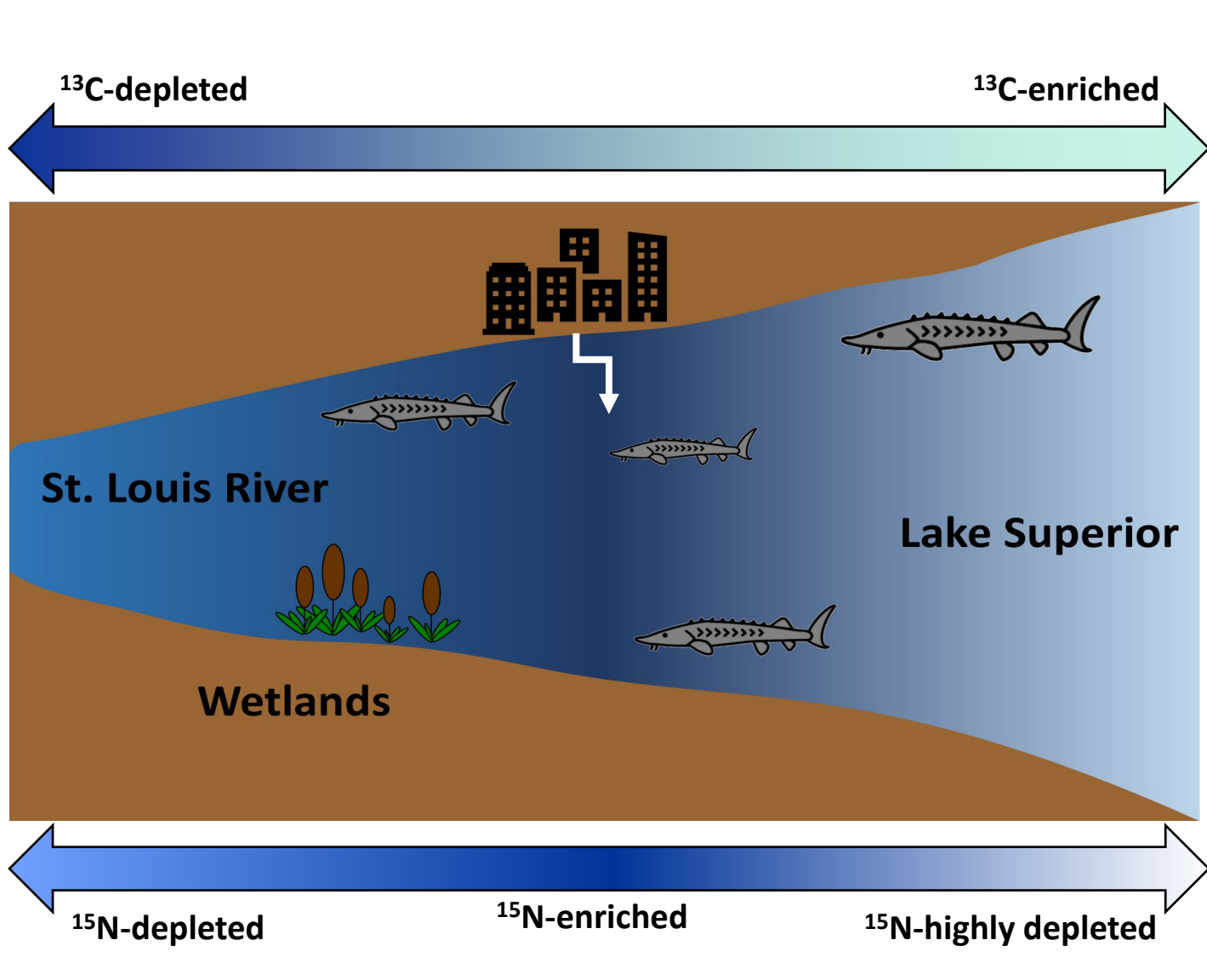


Acoustic tag implantation

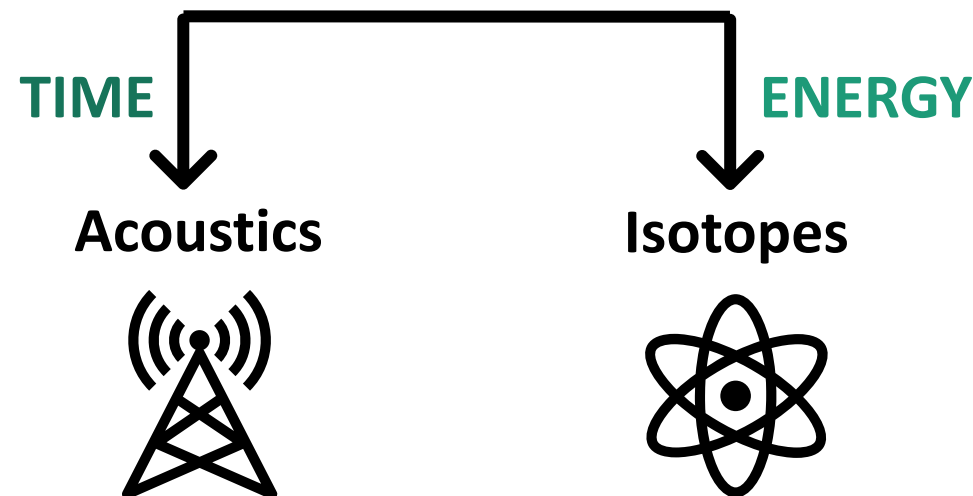


Stable Isotopes

US EPA

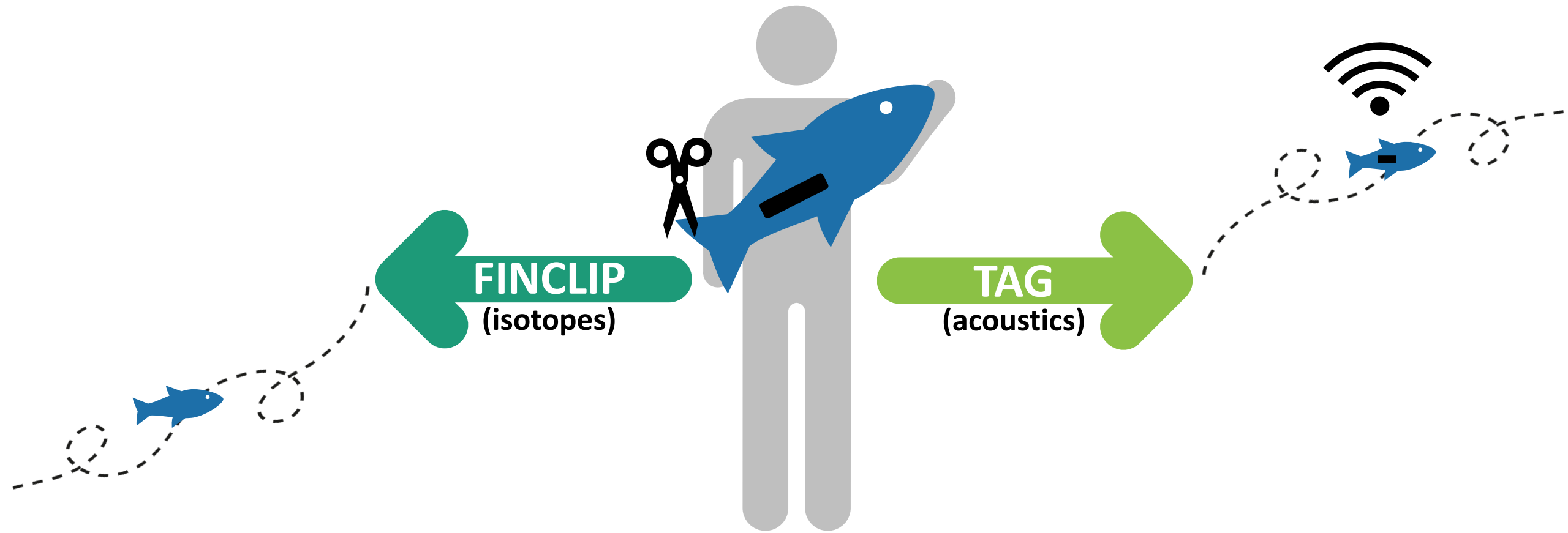


Complimentary Measurements



- Movement
- Receivers/tags
- Daily

- Diet tracers
- Fin clip
- 6 – 12 months?

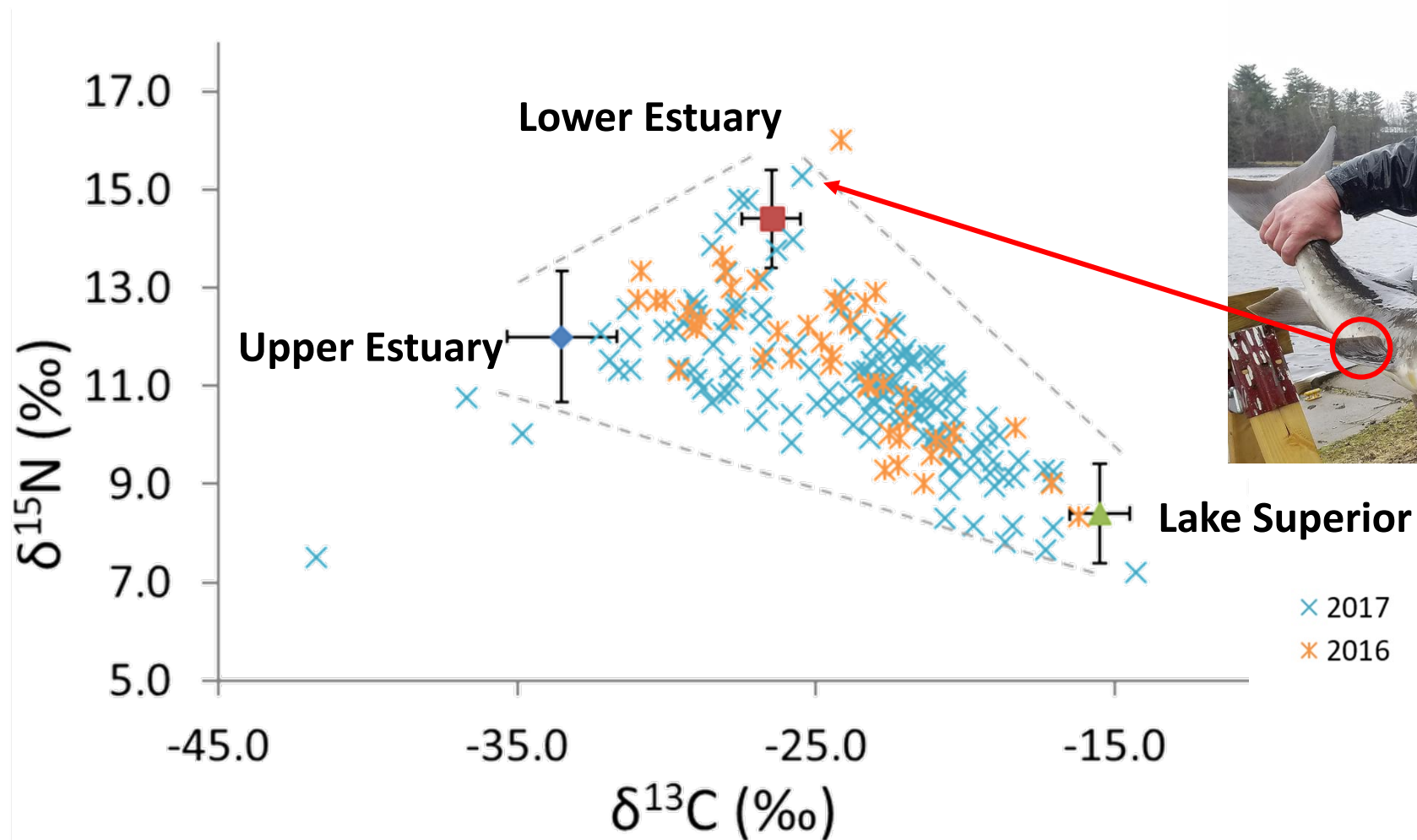


Diet prior to capture

Movement after capture

Stable Isotopes

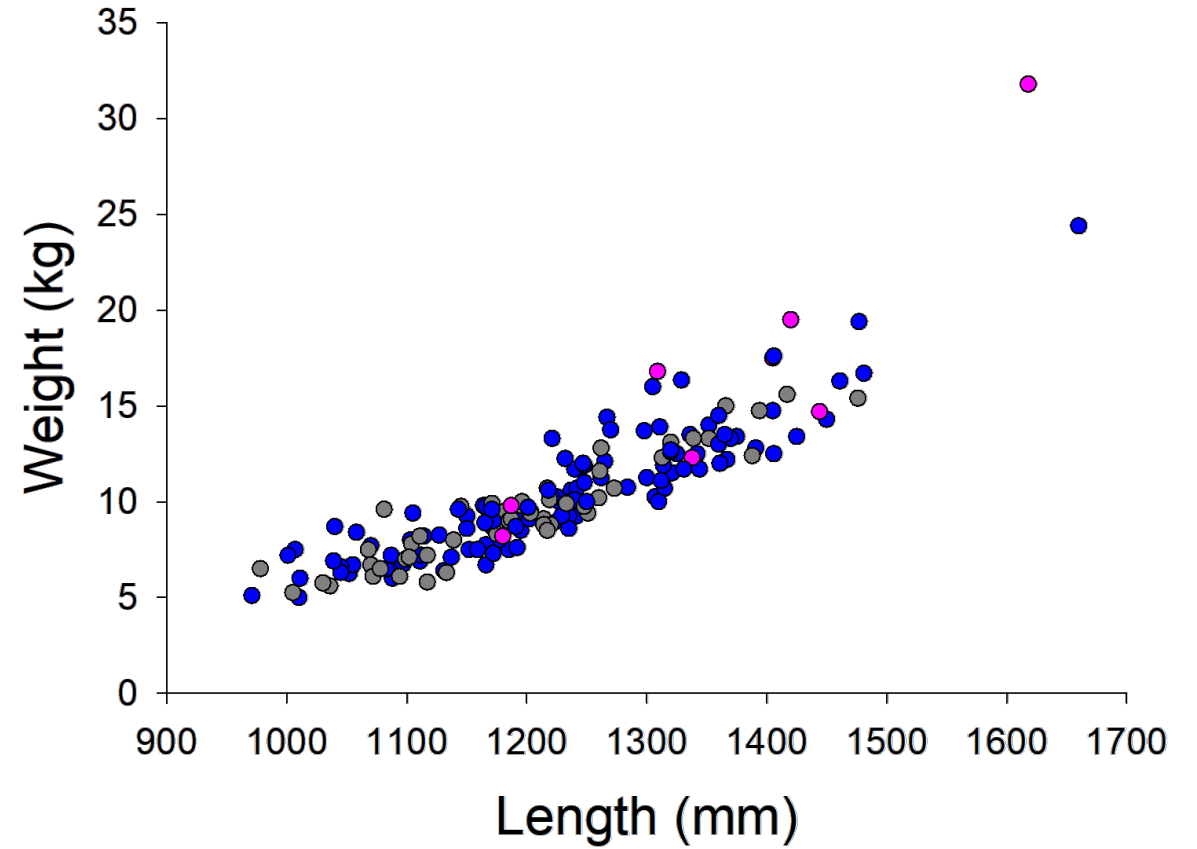
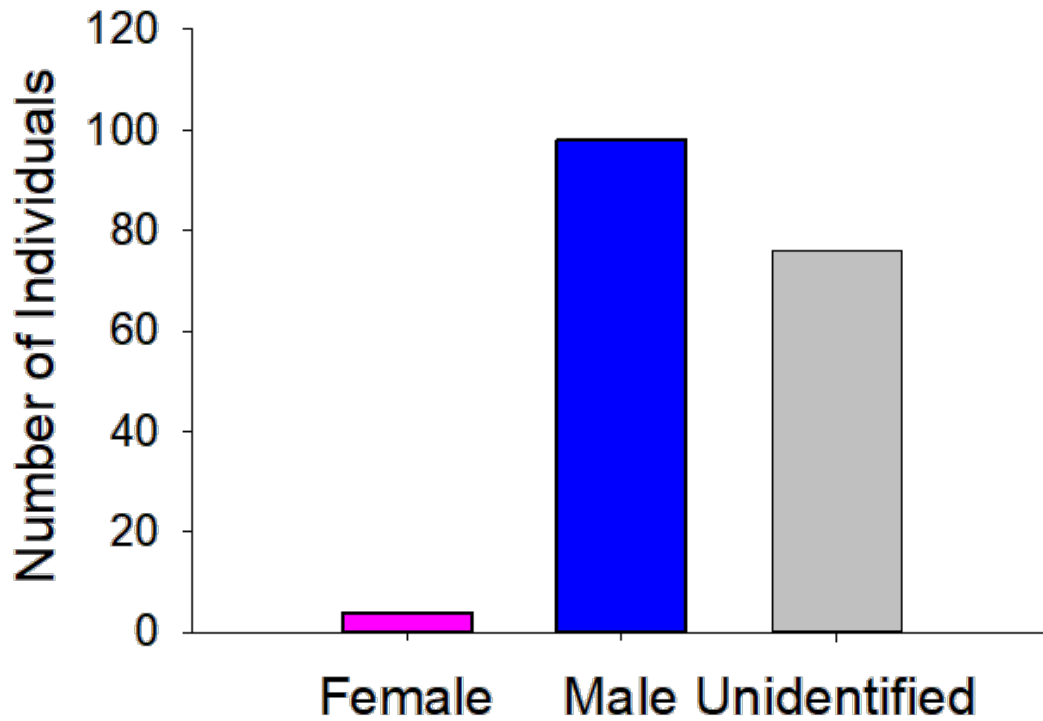
US EPA



**Fin clips taken from
the pelvic fin**
(Dan Wilfond, MN DNR)

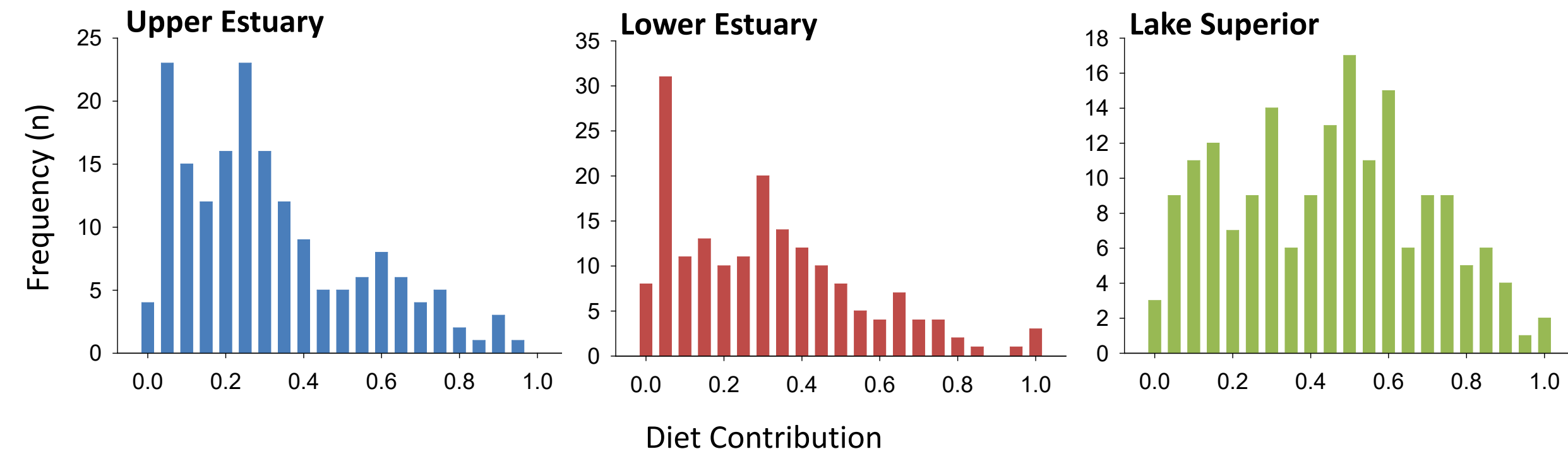
Isotope values between 3 locations in St. Louis River Estuary

Demographics



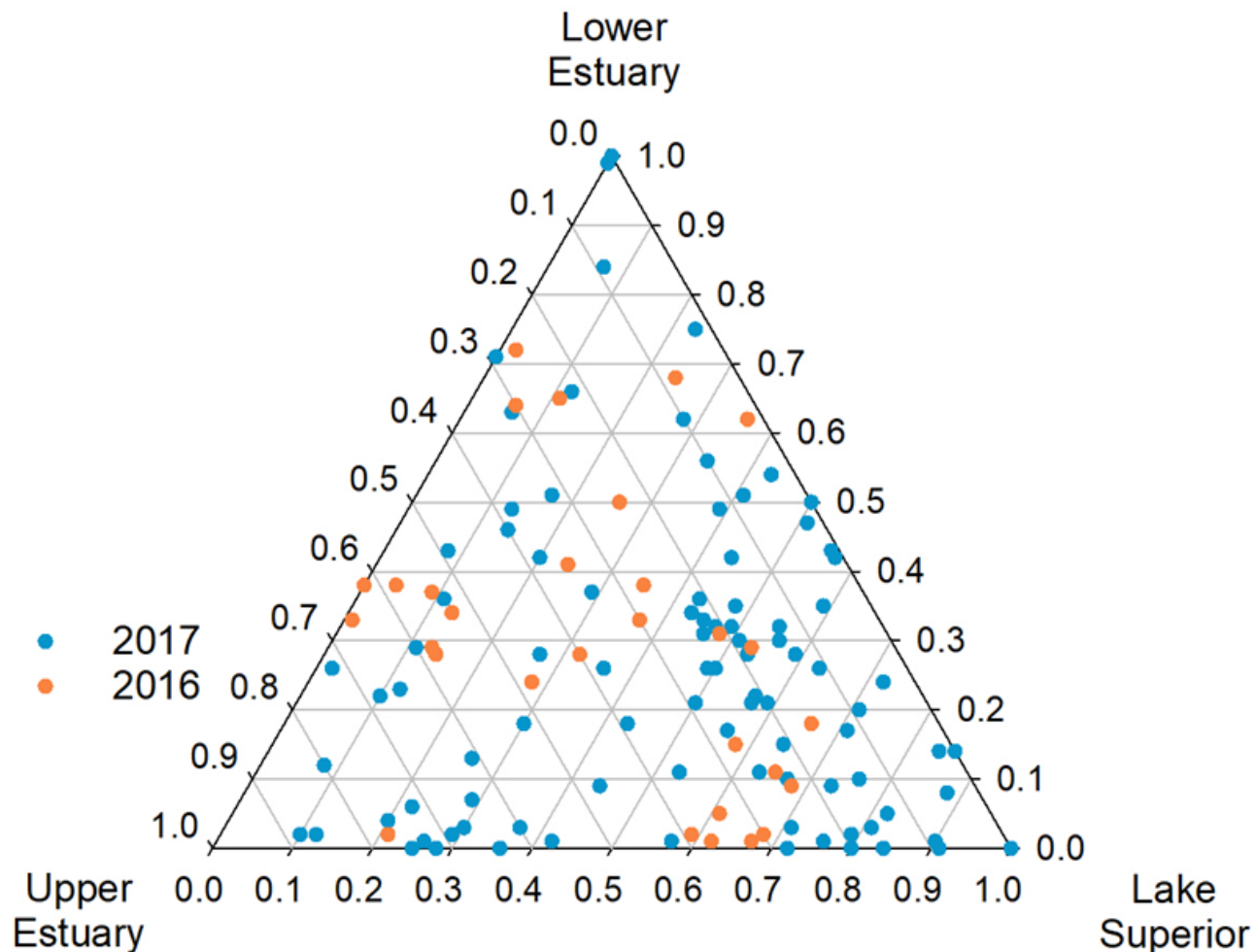
Highly skewed sex ratio, fish size distribution

Diet Contributions



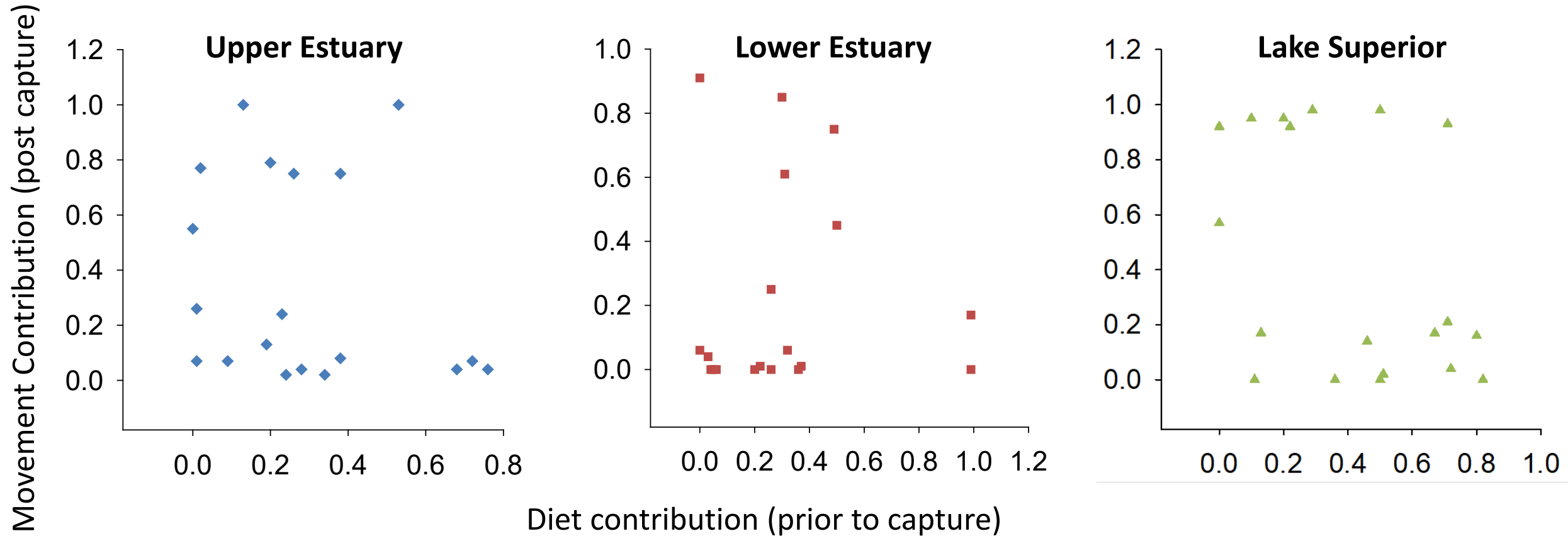
Varied use, maybe more towards Lake Superior

Diet Contributions



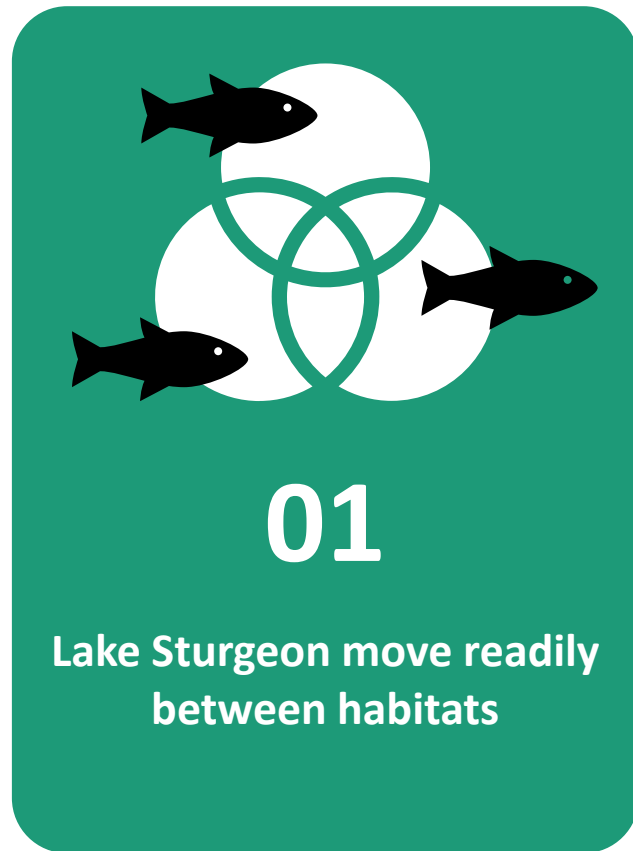
Varied use individually, biggest cluster near Lake Superior/Upper Estuary

Comparison of methods

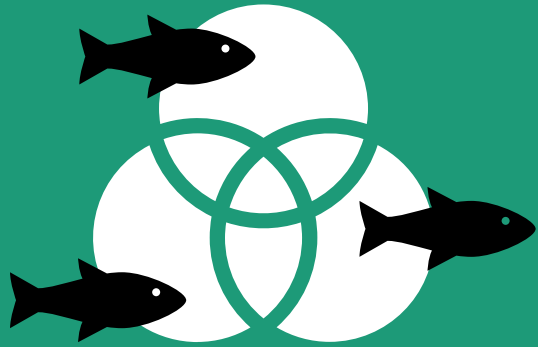


No clear pattern... but what does this mean?

What does this mean?

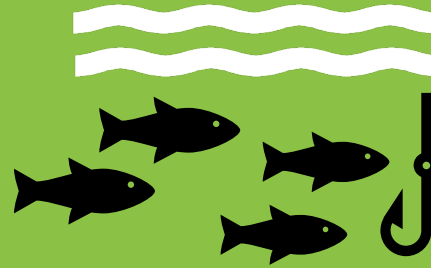


What does this mean?



01

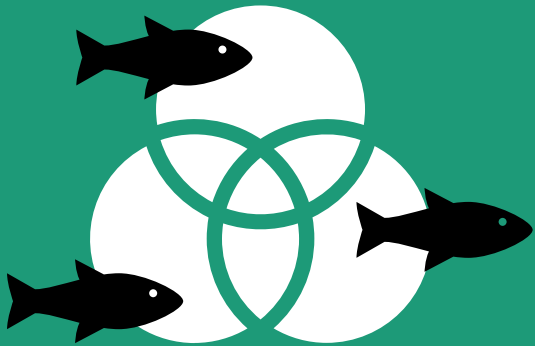
Lake Sturgeon move readily
between habitats



02

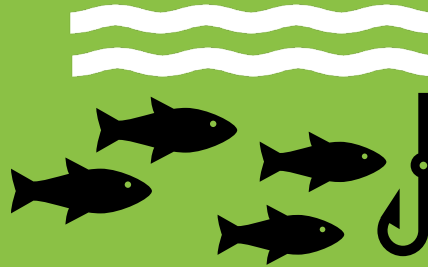
We need more recaptures

What does this mean?



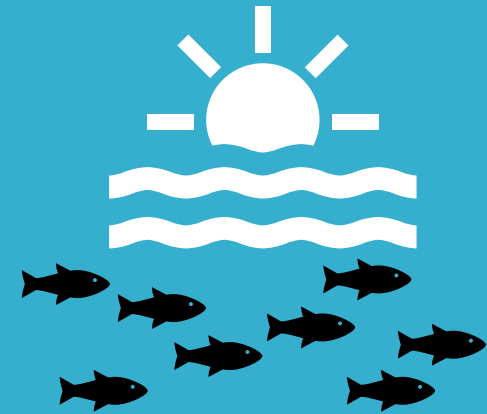
01

Lake Sturgeon move readily
between habitats



02

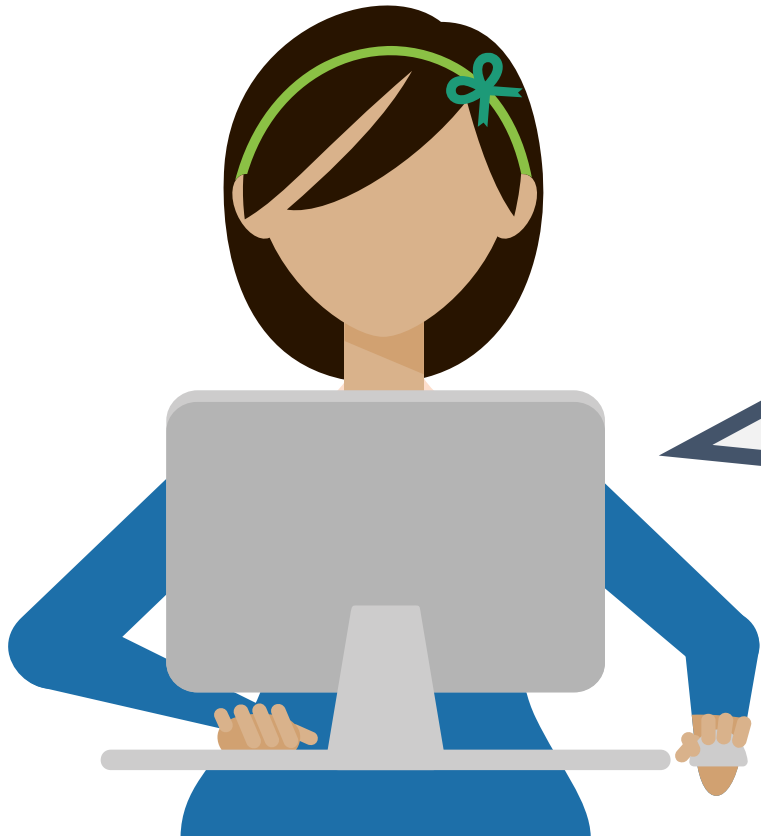
We need more recaptures



03

Improved river conditions
will benefit further
population recovery

Thanks for listening!



Questions? I can answer
them, send me an email!

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