

Platte River Pallid Sturgeon Research Update



February 15, 2022

All images are from UNL unless otherwise noted.

Pallid Sturgeon Biology in the Platte River and Its Tributaries

OBJECTIVES (2020 – 2025)

1. Identify relations among environmental conditions (i.e., river discharge and temperature) with the timing and extent of Pallid Sturgeon movement into and within the lower Platte River.
2. Identify Pallid Sturgeon spawning habitat in the lower Platte River and its tributaries.
3. Verify successful spawning by Pallid Sturgeon in the Platte River and/or its tributaries.
4. Provide Pallid Sturgeon genetic samples for further population and hybridization assessment (in collaboration with Dr. Heist's parallel project – sample from all pallid sturgeon collected).



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Image from GLATOS
<https://glatos.glos.us/acoustic>

General telemetry details



Image from InnovaSea
<https://www.innovasea.com/fish-tracking/>

Transmitter implants will occur mostly during springs of 2022-2024

Transmitter battery life:

V-16 – ~1415 days

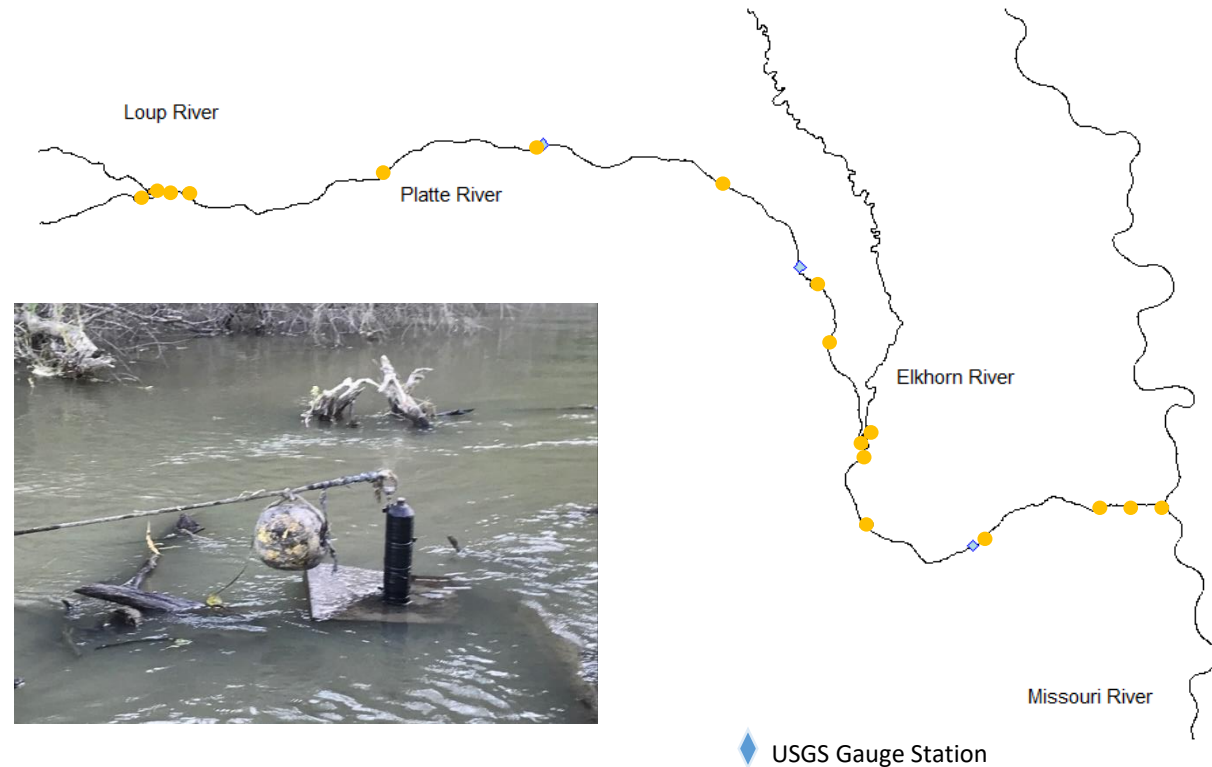
V-13 – ~342 days

Two-part approach to accomplish telemetry associated objectives

1. Passive Tracking

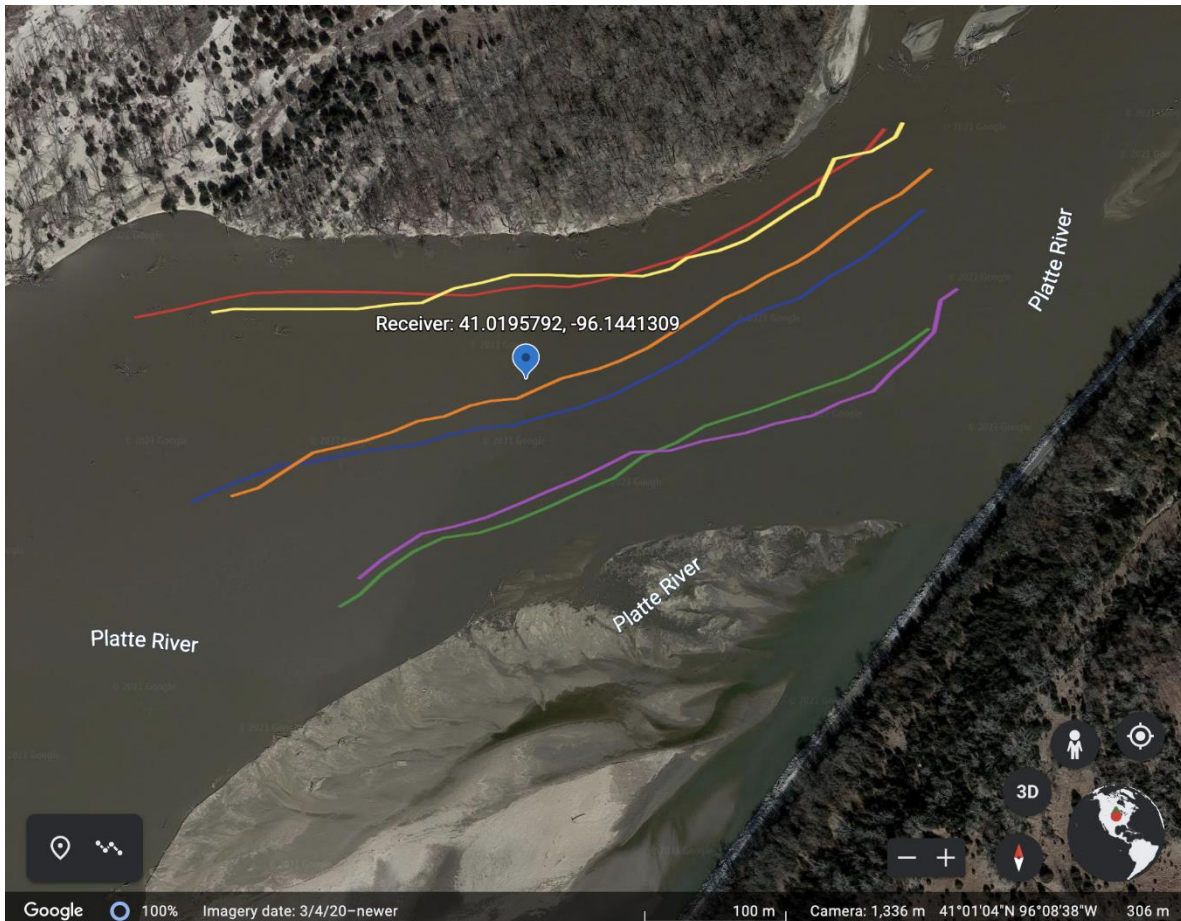
- Purpose:
 - Gated passage information
 - Tributary movements
 - Facilitate active tracking
- Target fish prioritization
 - Adults (> 870 mm; reproductive)
 - Adults (>870 mm; off cycle)
 - Juveniles

Tentative listening station locations



Acoustic receiver detection evaluation

(started in 2021 and will continue)

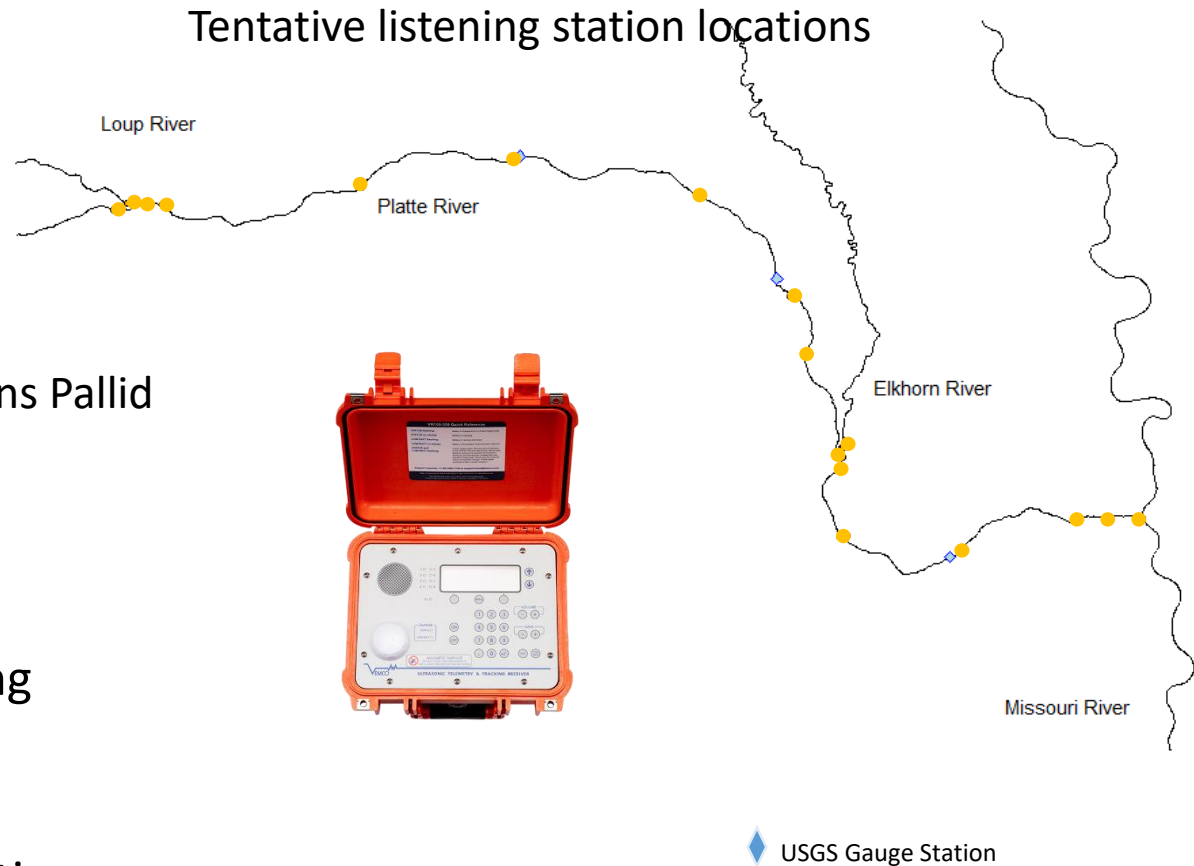


- Detection distance can be influenced by water conditions and line of sight.
- Testing to date suggests a single station positioned mid-river may not detect a fish passage under some conditions due to limited range.
- Need for several stations in some locations to cover width of river.
- We will continue to assess detection capabilities throughout the project.
- The receiver used for active tracking seems to have greater range.

Two-part approach to accomplish telemetry associated objectives

2. Active Tracking

- Purpose:
 - Fine-scale movements
 - Habitat use
 - Env. data collected at all locations Pallid Sturgeon are found.
- Tracking prioritization
 - Targeted tracking during spawning
 - Daily location info
 - Spawning behavior (if any)
 - At least monthly locations other times



A little insurance for Platte River telemetry



Radio Telemetry

Backup tracking option for conditions where acoustic telemetry may not be optimal

Good –

- Potentially effective in the Platte River
- Minimal cost (UNL has all but transmitters in hand already)

Bad –

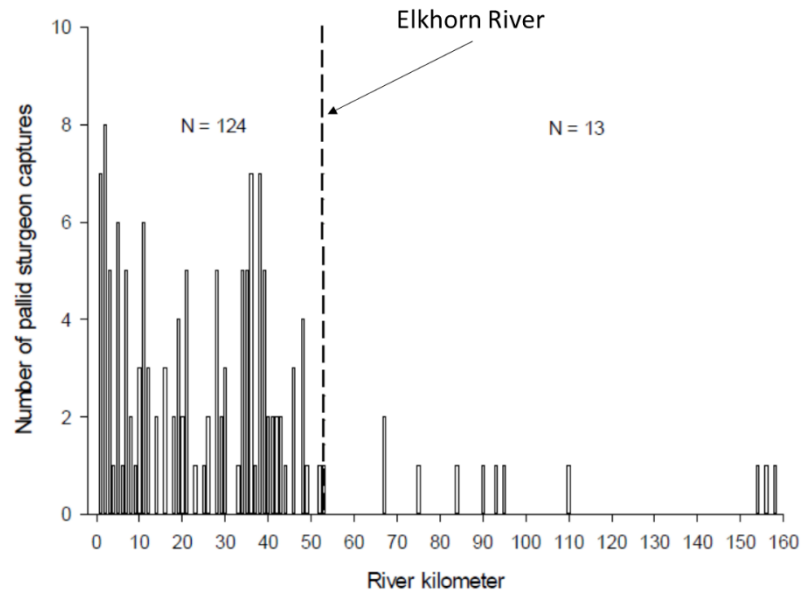
- Not compatible with rest of Pallid Sturgeon telemetry network
- Functionally useless in Missouri River (depth and conductivity)
- Need a relatively large fish (adult) to accommodate both tags



Trial planned for 5 fish during spring 2022.

Sources of fish for telemetry objectives

Platte River fish



Captures during previous sturgeon sampling (2009 - 2012) in lower Platte River.

Missouri River fish

(In collaboration with NGPC)

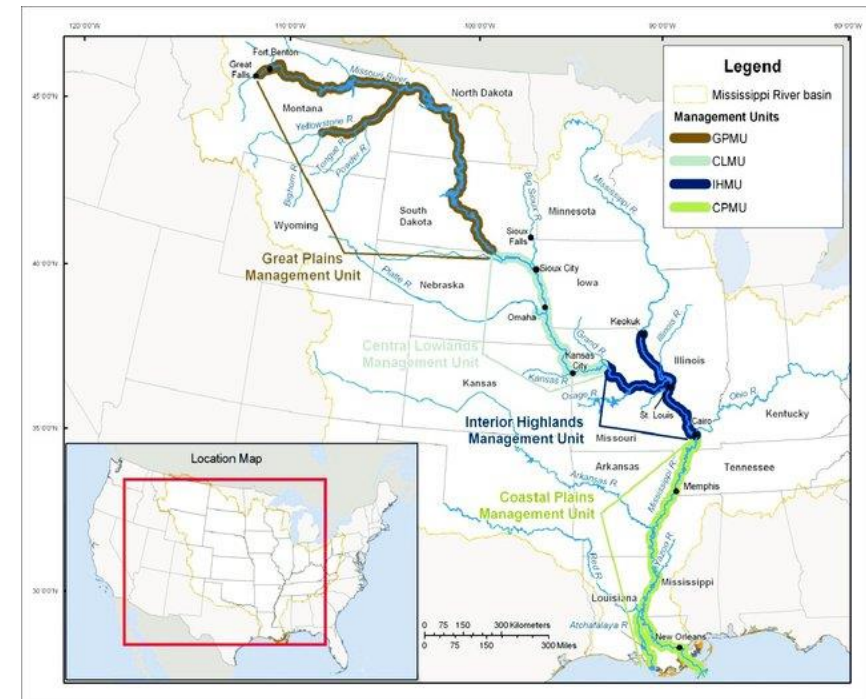
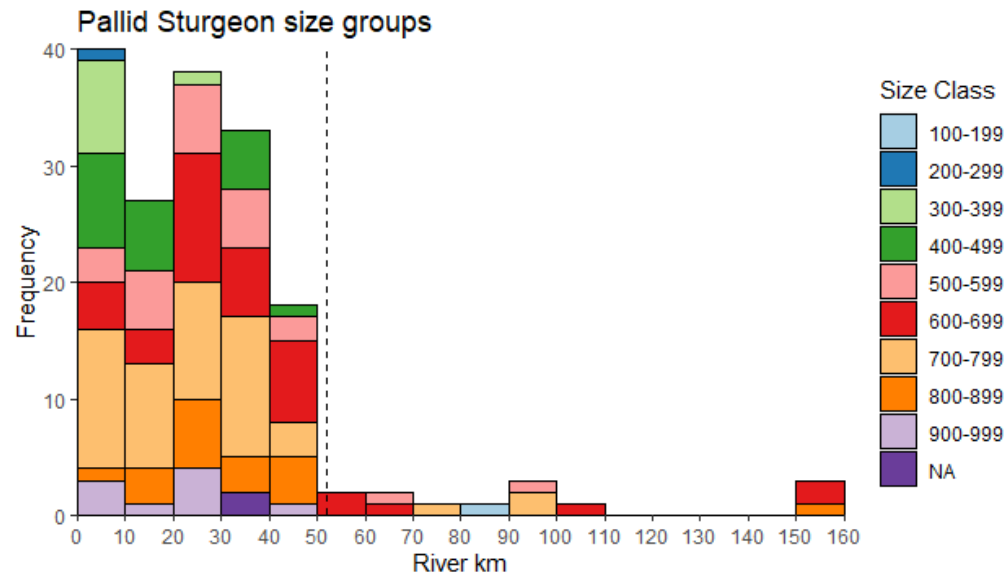


Image from:

Conservation Plan for the Interior Least Tern, Pallid Sturgeon, and Fat Pocketbook Mussel in the Lower Mississippi River (Endangered Species Act, Section 7(a)(1))
MRG&P Report No. 4 • November

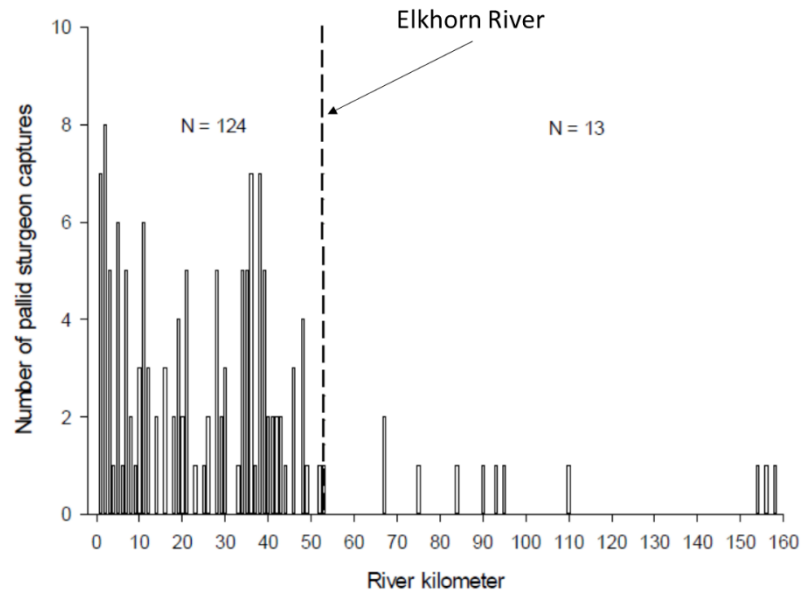
Sources of fish for telemetry objectives

Platte River fish

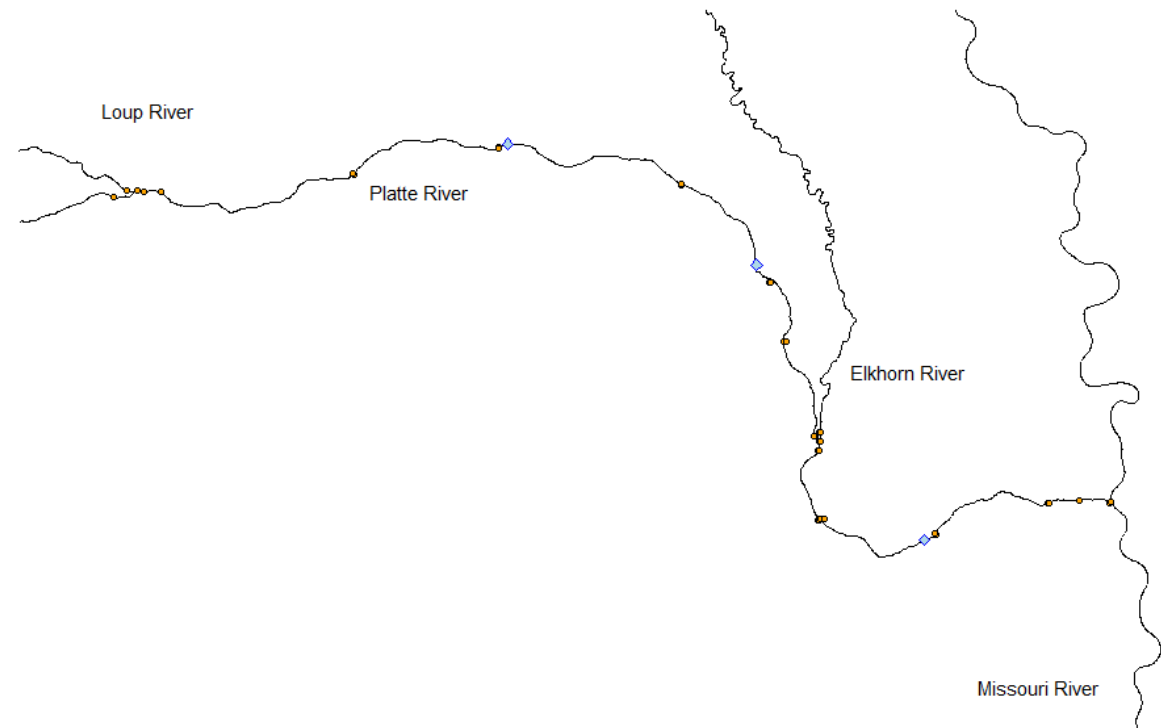


Sources of fish for telemetry objectives

Platte River fish

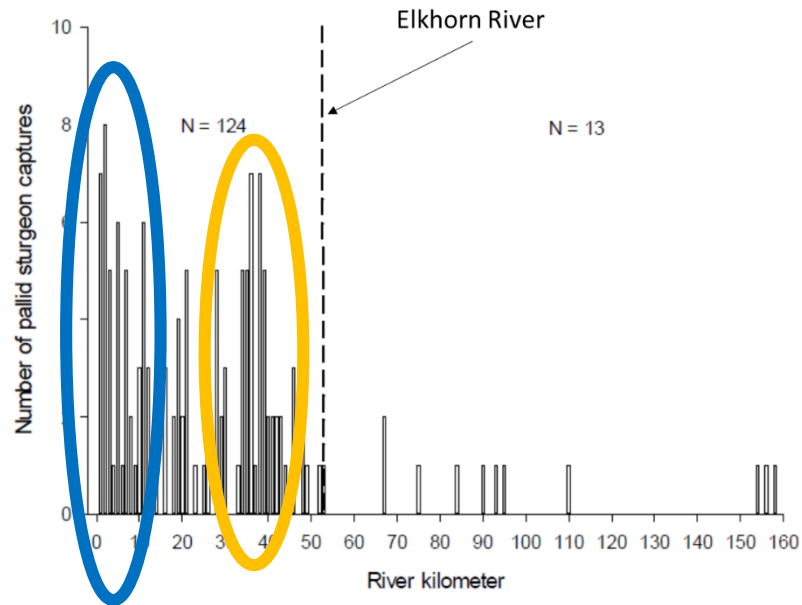


Captures during previous sturgeon sampling (2009-2012) in lower Platte River.

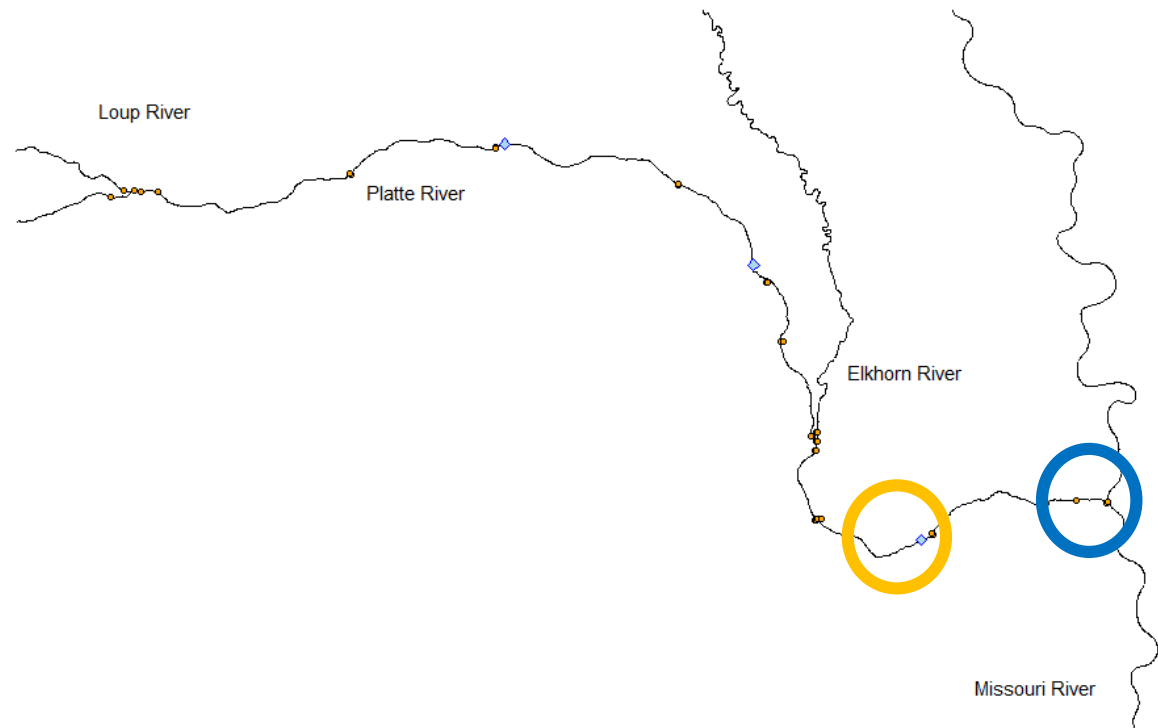


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Platte River fish

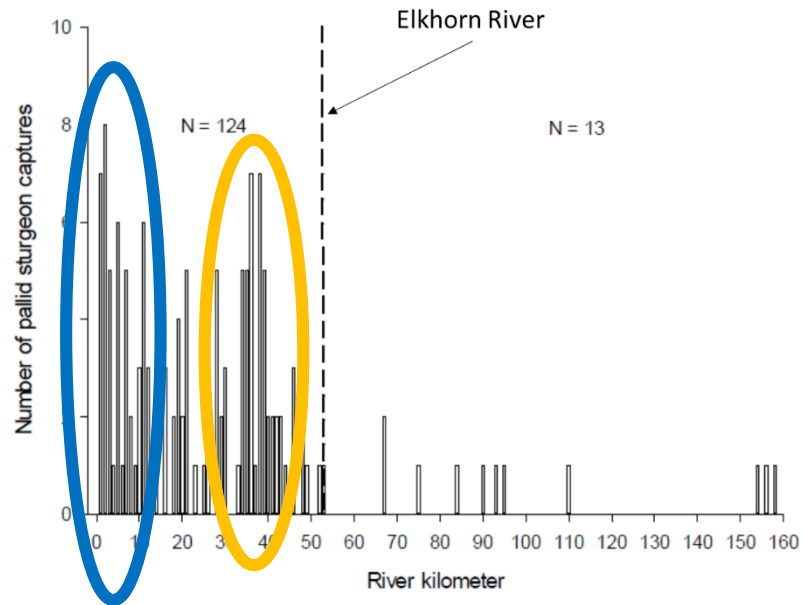


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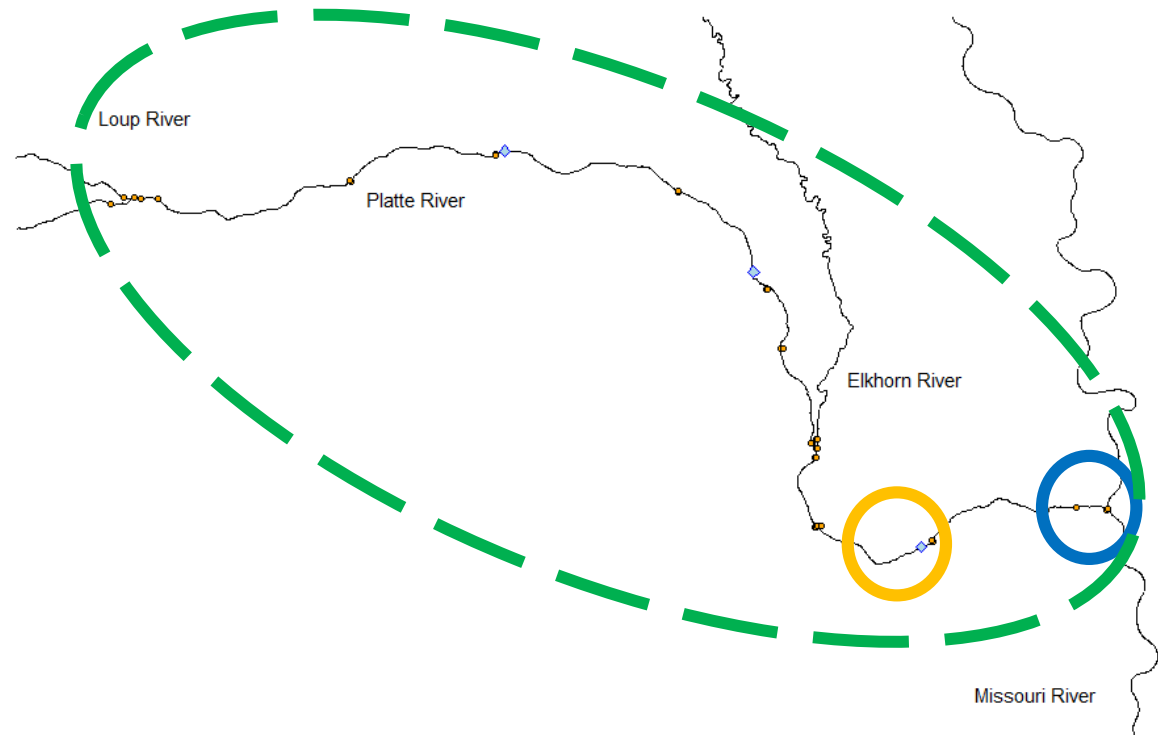


Sources of fish for telemetry objectives

Platte River fish



Captures during previous sturgeon sampling (2009-2012) in lower Platte River.



Pallid sampling and sample size targets



- Telemetry

- Project budgeted target is $N = 80$
- [More] Realistic targets for 2022:
 - 5 Adults (reproductive or > 870 mm)
 - 15 Juveniles
 - Plus any that move in from Mo River

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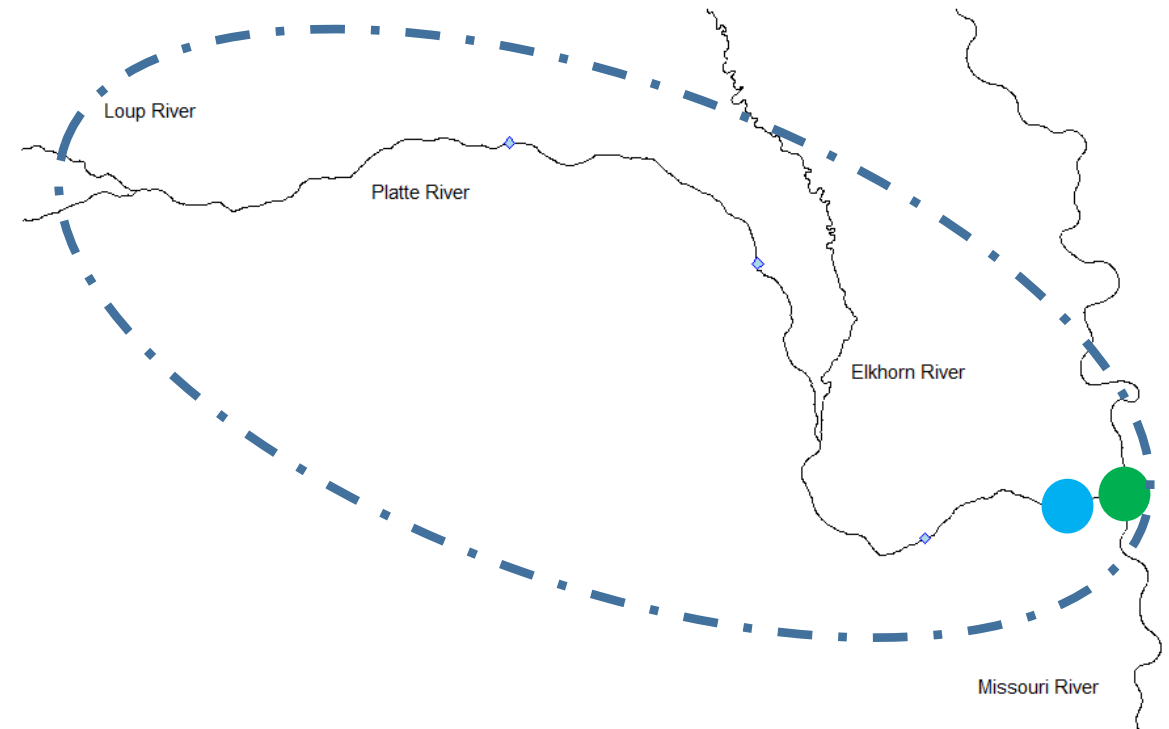
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Image from USGS
Marlene Dodson, photographer

Larval sampling approach

- Fixed site sampling
 - Confluence with Mo River (green)
 - Known concentration area (blue)
 - Shift will occur if telemetry data suggest other locations
- Telemetry outcomes
 - Targeted sampling based on behavior
 - Reproductive adult pause (apex) in upstream movements
 - Larval sampling immediately below apex



Pallid sampling and sample size targets



Image from NGPC
Ryan Ruskamp, photographer

- Larval sampling
 - Fixed sites
 - At least weekly sampling April – June
 - Sample frequency likely 2-3 times per week pending weather and water conditions
- Telemetry determined
 - Daily for 7 days following suspected spawn event (when identified)

Spring/Summer 2022 timeline*

1. Deploy listening stations (late February/early March)
2. Fish collection for transmitter implants (March-April)
 - Continual coordination and collaboration with NGPC Missouri River office
 - Identify any Missouri River fish that move into the Platte River (ongoing by NPGC)
3. Active tracking of any tagged fish in the system (starting March)
4. Fixed and targeted larval fish sampling (April/May – June)
5. Transition to monthly active tracking (June – end of 2022 season)

*Actual start dates are TBD pending water conditions and water temperatures in compliance with Pallid Sturgeon handling protocols