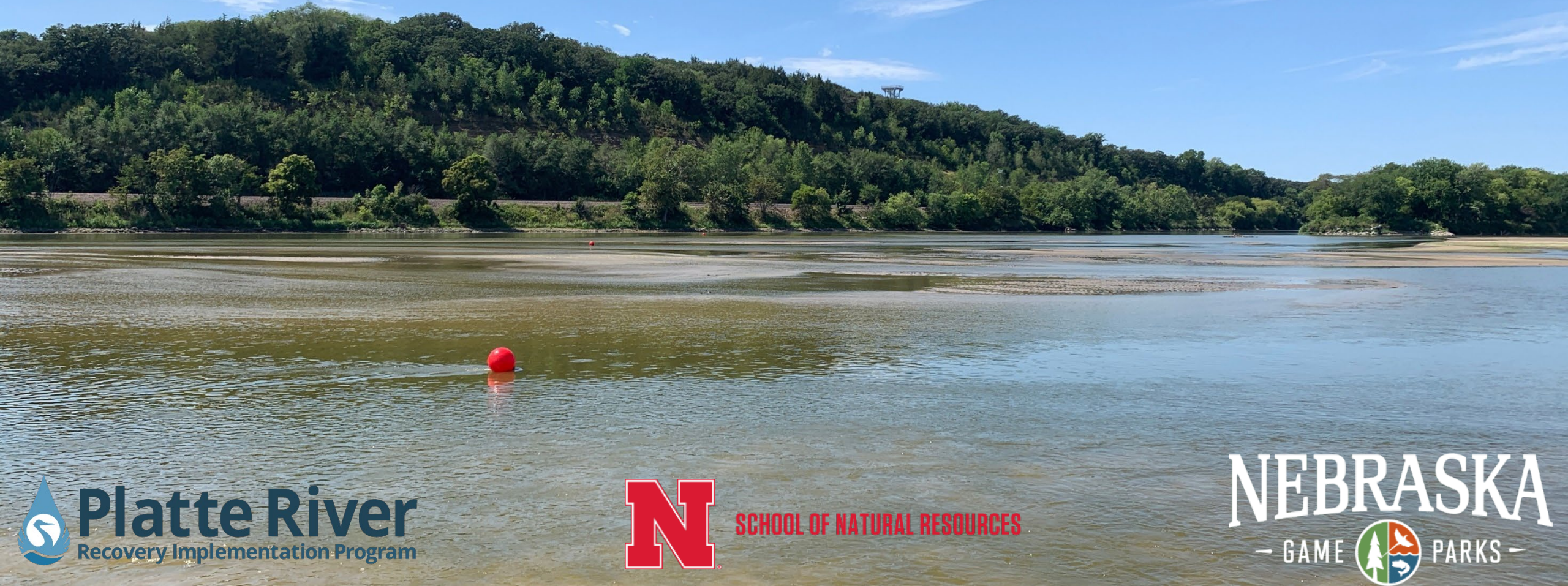


TAC/ISAC July 2024 update



Pallid Sturgeon Biology in the Platte River and Its Tributaries

OBJECTIVES

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).

Pallid Sturgeon Biology in the Platte River and Its Tributaries

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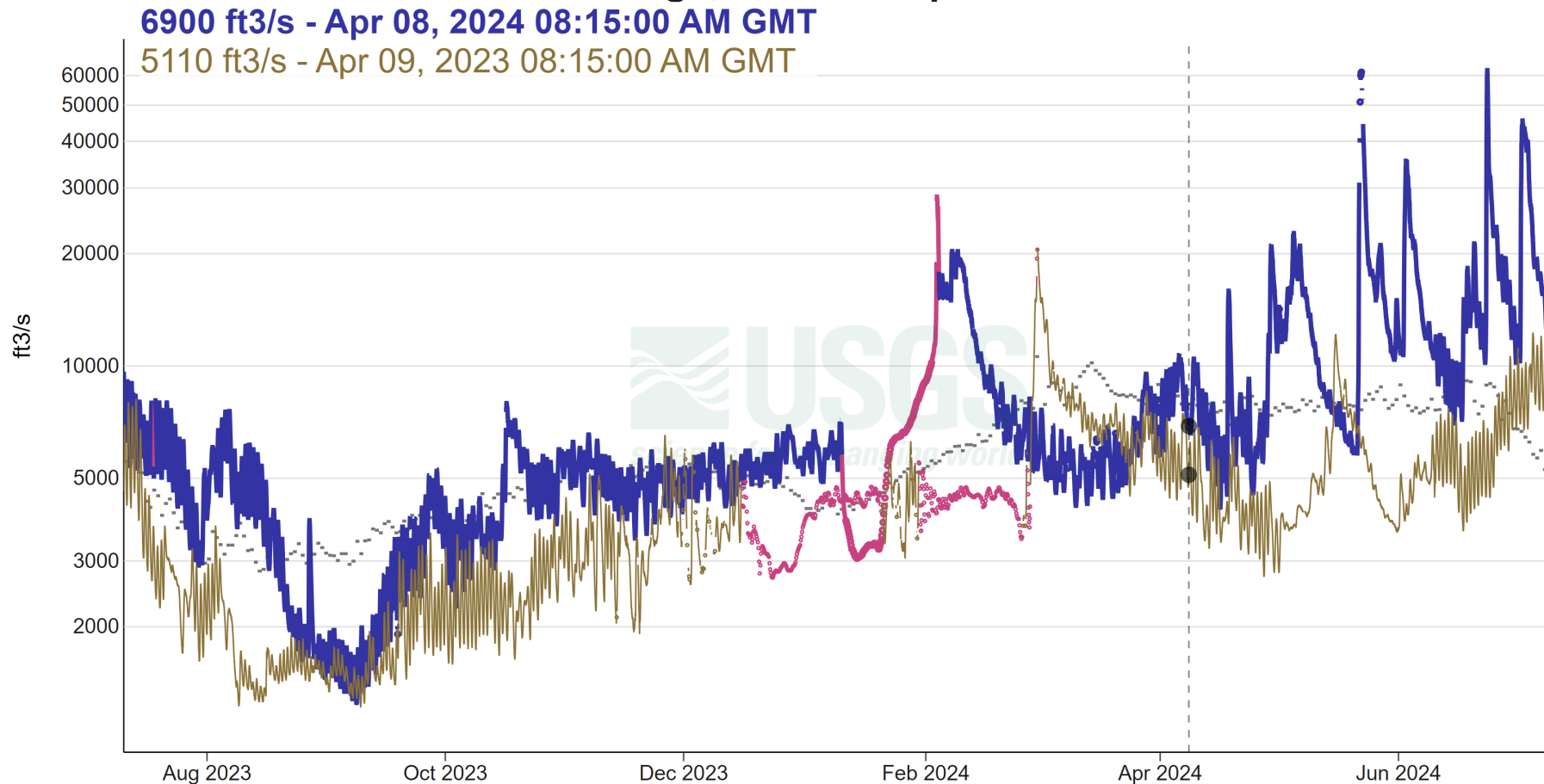
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A tale of two rivers:

Platte River at Louisville, Nebr - 06805500

July 10, 2023 - July 9, 2024

Discharge, cubic feet per second



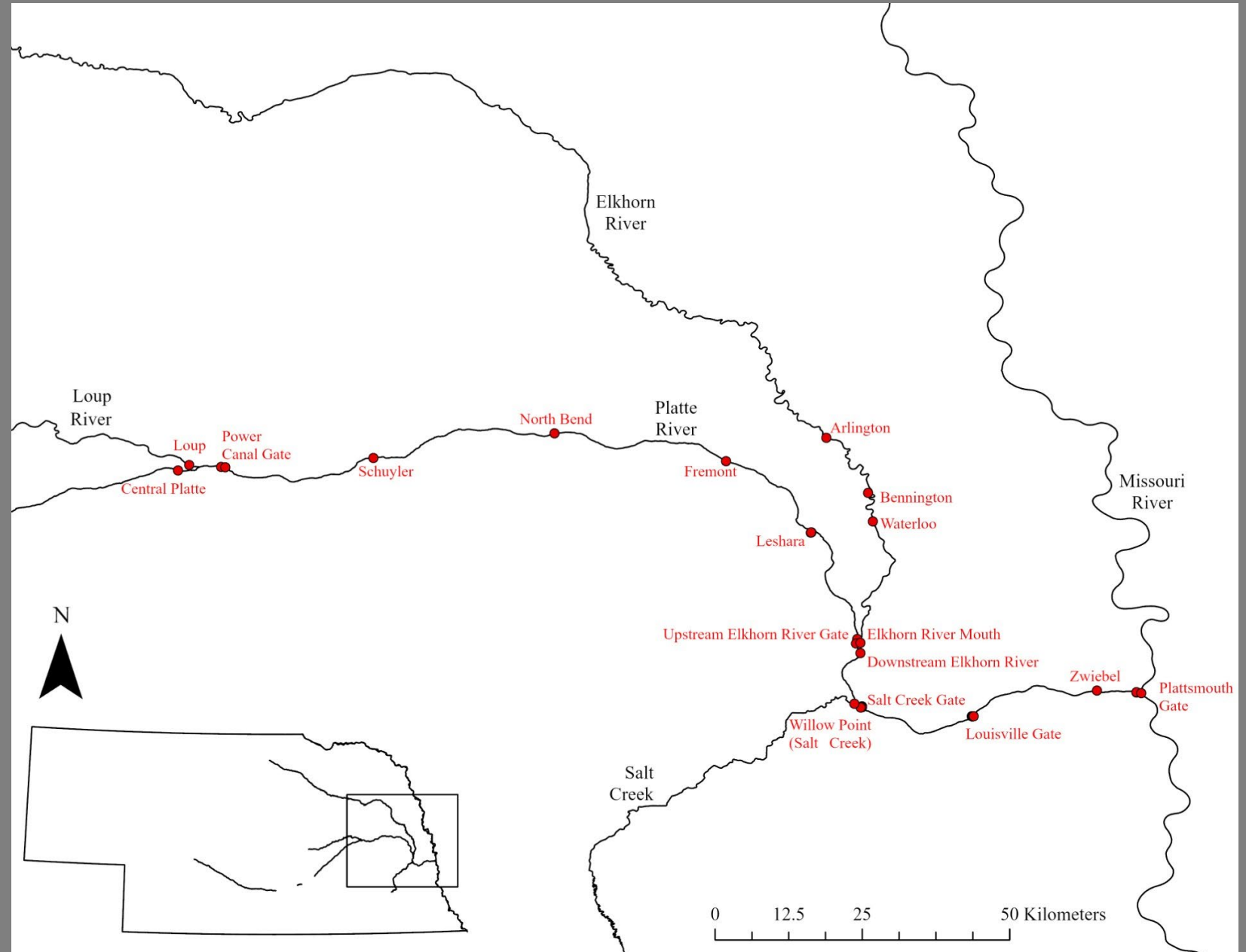
Spring 2024 Pallid Sturgeon Tagging:

- 11 Pallid Sturgeon tagged (trot line)
- All hatchery origin

70 total Pallid Sturgeon captured with 41 implanted with acoustic tags by UNL



Receiver Locations 2024

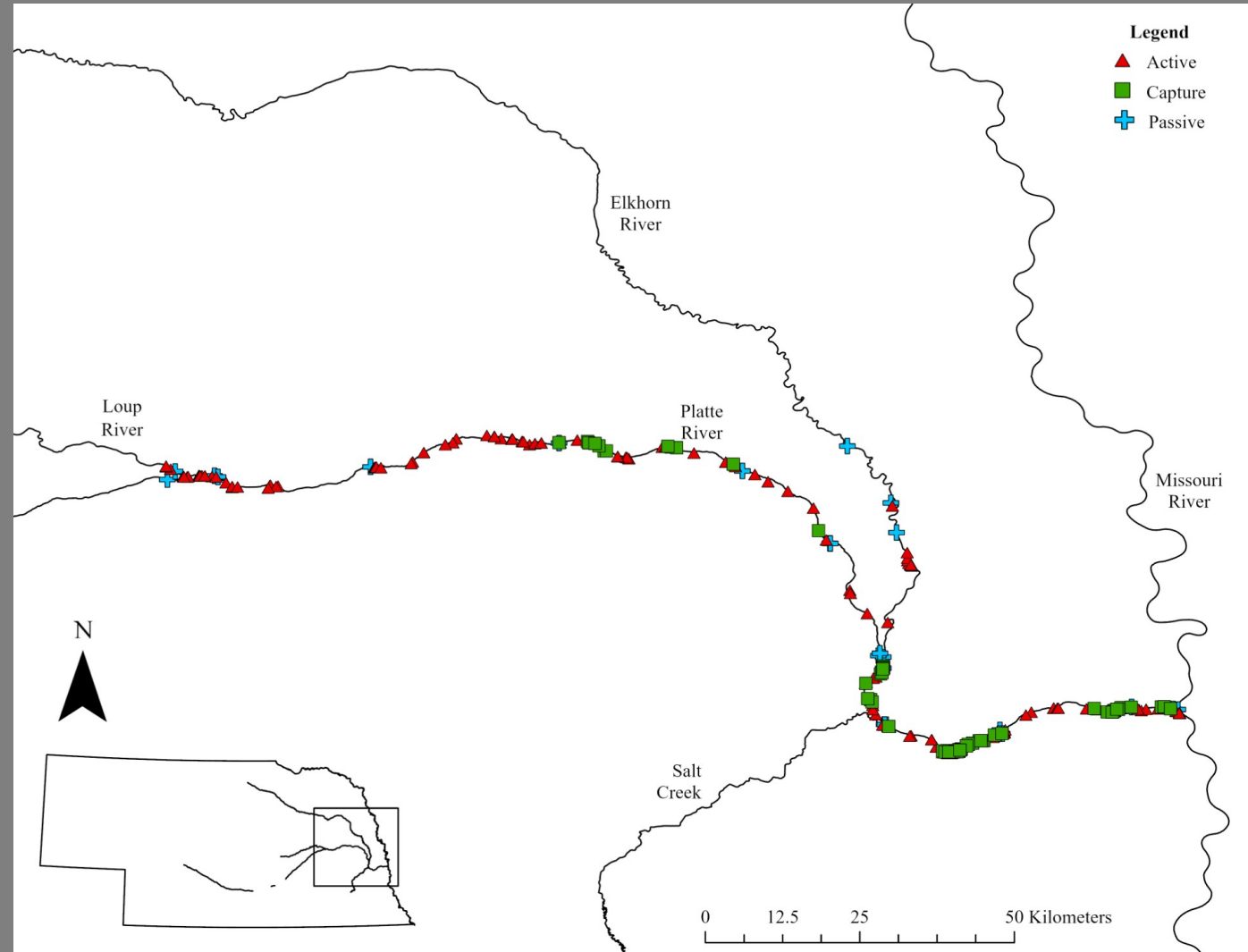


Captures, Active and Passive Detections

2022-2024

2024 highlights

- 2 detections in Central Platte
 - April 10, 2024 (back in Loup April 17)
 - April 28, 2024 (Spawned in 2023 near Ponca, NE)
- Several fish at or near Loup River confluence



Pallid Sturgeon Detections:

- 66 unique Pallid Sturgeon detected
 - Active and Passive
 - Active: 74
 - Passive: 8,319+
 - 54 non-reproductive
 - 12 reproductive

Project Totals -
129 Pallid Sturgeon
106 non-reproductive
23 reproductive



Assessing movement

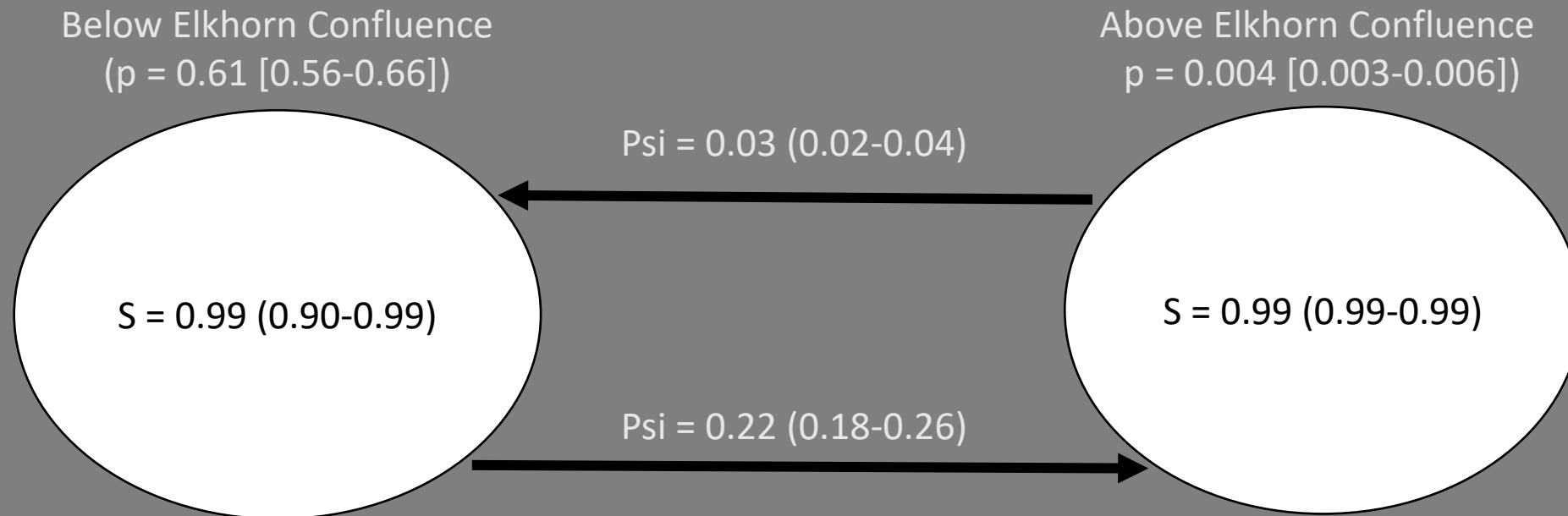
Preliminary multi-state model (2022-2023 data)

	MO	LPL	ELK	UPL	LOUP
MO	705	84	0	0	0
LPL	74	327	24	27	0
ELK	3	16	64	0	0
UPL	1	14	2	28	2
LOUP	0	1	0	0	3

Preliminary multi-state movement model

2 state model:

Movement above or below the Elkhorn River confluence (daily time step)



Evidence of Pallid Sturgeon spawning

A69-1604-22188

- **Sept 20, 2023** - tagged by NGPC near Platte River mouth
- **October 23, 2023** - detected at Louisville (passive receiver)
- **March 17, 2024** - detected at Fremont
- **May 13, 2024** - entered Loup River
- **May 19, 2024** - exited Loup River
 - **Recaptured and confirmed spawned May 20, 2024**
- **June 15, 2024** - detected at Elkhorn River confluence



Evidence of Pallid Sturgeon spawning

A69-1604-30379

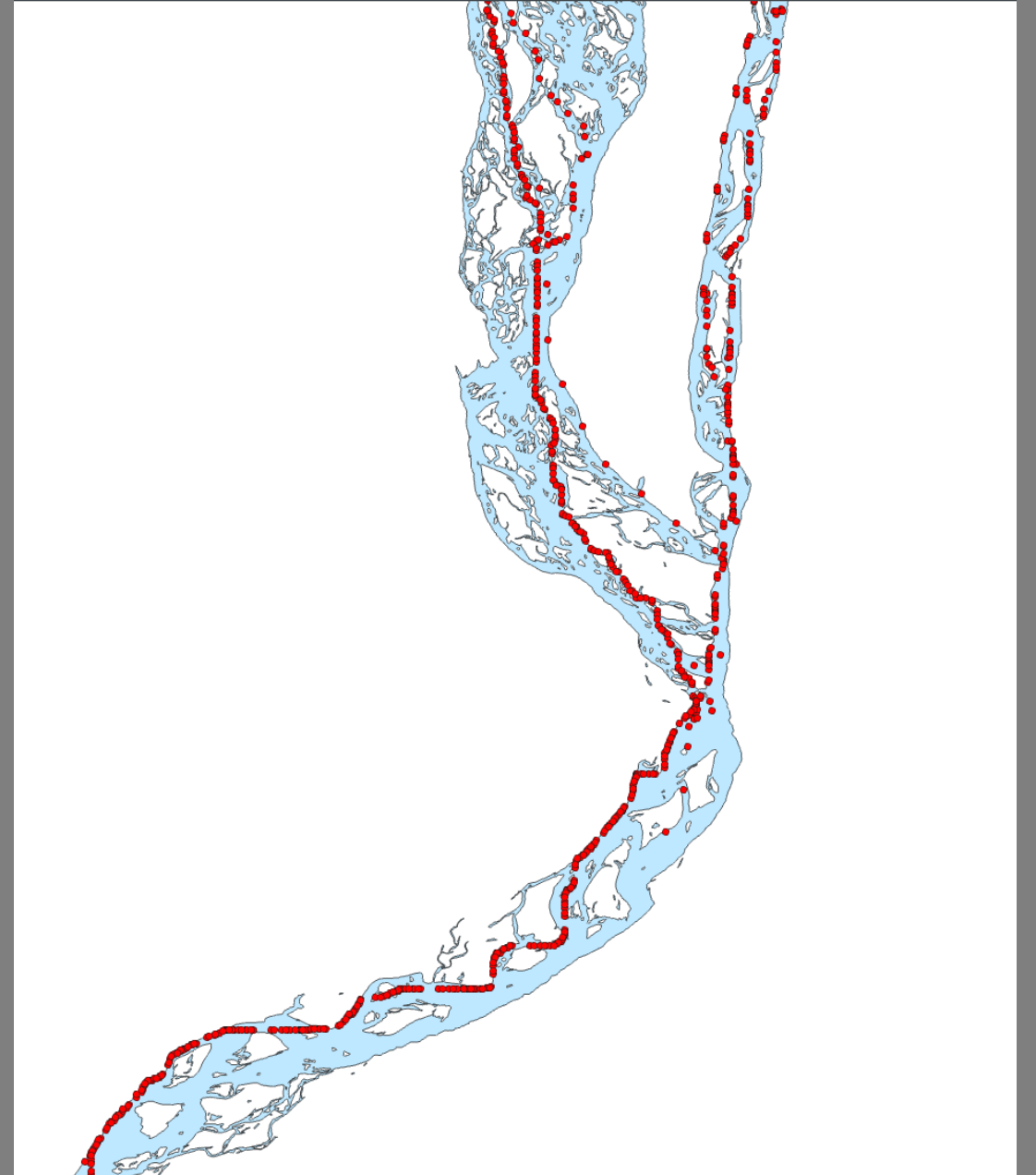
- **March 20, 2024** - evaluated by MDC and deemed reproductive-ready
- **April 28, 2024** - entered Platte River
- **May 1, 2024** - actively detected at Louisville
 - Displayed spawning behavior
- **May 9, 2024** - exited Platte River
- **May 30, 2024** - captured by USGS in Missouri River
 - Confirmed spawned



- Planning ahead:
 - Further refine entry/exit models with covariates (as discussed in February)
 - Assess different multi-state modeling approaches (Bayesian, continuous-time models, etc.)
 - Models are extremely data hungry and difficult to converge
 - Incorporate active detections into multi-state models
 - Continue monthly river sweeps
 - Maintain passive array system

Seasonal Space Use

- Models are in development
- Least-cost-path trajectories completed using HDR LiDAR rivers edge layer
- Seasonal space use (dBBMMs) models running through UNL HPC cluster
 - Very memory intensive - 1200gb RAM



Thank You Questions?