

2023 Season Summary

Pallid Sturgeon Habitat Research

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Study Objectives:

The Pallid Sturgeon Biology in the Platte River and its Tributaries project is intended to provide information pertaining to known knowledge gaps about environmental correlates of Pallid Sturgeon use, spawning habitat, and reproduction in the lower Platte River and its tributaries. The specific objectives are to:

- 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 and its tributaries,
- 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, and
- 4) Provide Pallid Sturgeon genetic samples for further population and hybridization assessment (in collaboration with Southern Illinois University's parallel project).

Methods:

This study relies on 3 sources of information to address these objectives:

- captures – setting trotlines to capture, tag pallids
- passive telemetry – tagged fish picked up by passive telemetry receivers set throughout the reach
- active tracking – extensive monthly sweeps to locate tagged pallids from the Loup to Missouri confluence, and intensive tracking or follows of priority reproductive fish

Habitat metrics associated with each pallid detection are recorded.

In 2023 capture efforts were expanded to include both upstream and downstream of the Elkhorn. Locations upstream of the Elkhorn were associated with known locations of reproductive females in the system this spring. With temps decreasing, fall captures may add to our telemetry catalogue.

This year 31 passive “listening stations” or receivers have been deployed from the Loup down to the Missouri confluence with better upstream coverage this year. Receivers have been added to the system in front of fish as they move past receivers and up tributaries. Receivers collect data on tagged fish that pass within their detection range. Christopher Pullano is working on detection ranges for 3 receivers: 1 at Louisville (lower Platte), 1 at North Bend (lower Platte) and 1 at Waterloo in the Elkhorn.

Results:

As a result of efforts thus far in 2023:

- captured 22 pallid sturgeon (all hatchery origin) – 9 new individuals received UNL tags this year
- plus 42 individuals detected in the Platte system this year that were captured and tagged by others
- 64 individual pallid sturgeon detected in the lower Platte and tributaries so far for 2023
Reminder: 52 individuals detected in total for 2022 – 16 tagged by UNL
- 25 UNL tagged fish added to telemetry effort in 2022 + 2023

Passive and active tracking efforts documented pallid movement throughout the Lower Platte in 2023. Notably including 10 km up the Loup (54336) and 50+ km up the Elkhorn (54337) by gravid females.

We tagged and/or tracked 3 black egg female Pallid Sturgeon in spring/summer 2023. Specific details are below for each:

- PLS22-018 (A69-1604-30833) was tagged by NGPC in September, 2022. She moved upstream in the Platte River an area between Columbus and Schuyler in the spring. She began rapid downstream movement around May 6. Our recapture indicated she had not spawned (i.e., no loss in mass, black eggs present) and left the Platte River on or about May 15. She then proceeded upstream in the Missouri River to the Ponca, NE area. The USFWS recaptured her on her movement downstream on June 7 and confirmed she was void of eggs.
- UNL-885 (A69-9001-54337) was tagged in the Platte River on April 18 near Louisville. The fish subsequently moved upstream into the Elkhorn River beyond the passive listening station. She is presumed to have remained within the Elkhorn River system to date.
- UNL23-793 (A69-9001-54336) was initially captured and implanted on 4/9/23 in North Bend at RM 70. On 4/17 she was actively detected downstream of the Schuyler bridge near RM 86 and passed by our passive station at RM 87 on 4/18. On 4/24 she was actively detected in Richland near RM 95 and again at RM 96 on 4/25. By 5/8 she had reached Bellwood and sat for the entire day at RM 98. On 5/9 she was passively detected moving past the Loup Power Canal (RM 100) and was actively tracked throughout the day moving 2 mi into the Loup River. By 5/11 she had moved up past our passive listening station in the Loup at RM 03 and was detected at RM 04 on 5/12. The location on 5/12 at Loup RM 04 (just downstream of the Columbus bridge) was her furthest upstream detection (apex). By 5/13 she had dropped back downstream to the confluence of the Loup and Platte rivers (RM 01). However, 5/14 she was actively detected again downstream of the Columbus bridge. She was actively detected and recaptured on 5/25 in the Loup River at RM 01 for reproductive reassessment. Upon reassessment she was found to be 75g lighter than her initial capture weight and eggs appeared to still be in viable condition. She was not encountered again until detected passively on 7/3/23 near the confluence of the Elkhorn River (Platte RM 32). NGPC was notified on 7/12 and successfully recaptured her on 7/13.

Along with trawling efforts to collect eggs/larvae downstream of apex movement by gravid females, UNL deployed 26 egg mats this year to increase chances of collecting pallid eggs. No sturgeon eggs have been collected from egg mats thus far. Additionally, no larval sturgeon were collected during larval trawl sampling under the Pallid Sturgeon effort. However, three sturgeon larvae were collected during concurrent invasive carp sampling research being conducted in the Platte River. All three individuals were Shovelnose Sturgeon per genetic results.

Fish kills occurred in the lower Platte River in late July and early August. Water temperatures peaked at 99.68 degrees Fahrenheit at the Lashara gage – well outside thermal tolerance limits for many native fish species. We conducted an extensive search from Columbus downstream to about the Lashara/Valley area during the die-off in collaboration with NGPC. One of the NGPC crews found a deceased Pallid Sturgeon on a sand bar near Lashara on July 29, 2023. The fish was a hatchery fish stocked in 2014.