

EBQ #7 Pallid Sturgeon

Effects of flow management to benefit WC, PP, LT in central Platte on PS in lower Platte?



Ed Heist (SIU) and Junman Huang (SIU)

Mark Pegg (UNL), Jonathan Spurgeon (USGS Co-Op Unit, UNL), Kirk Steffensen (NGPC),

Jenna Ruoss (UNL), Chris Pullano (UNL)

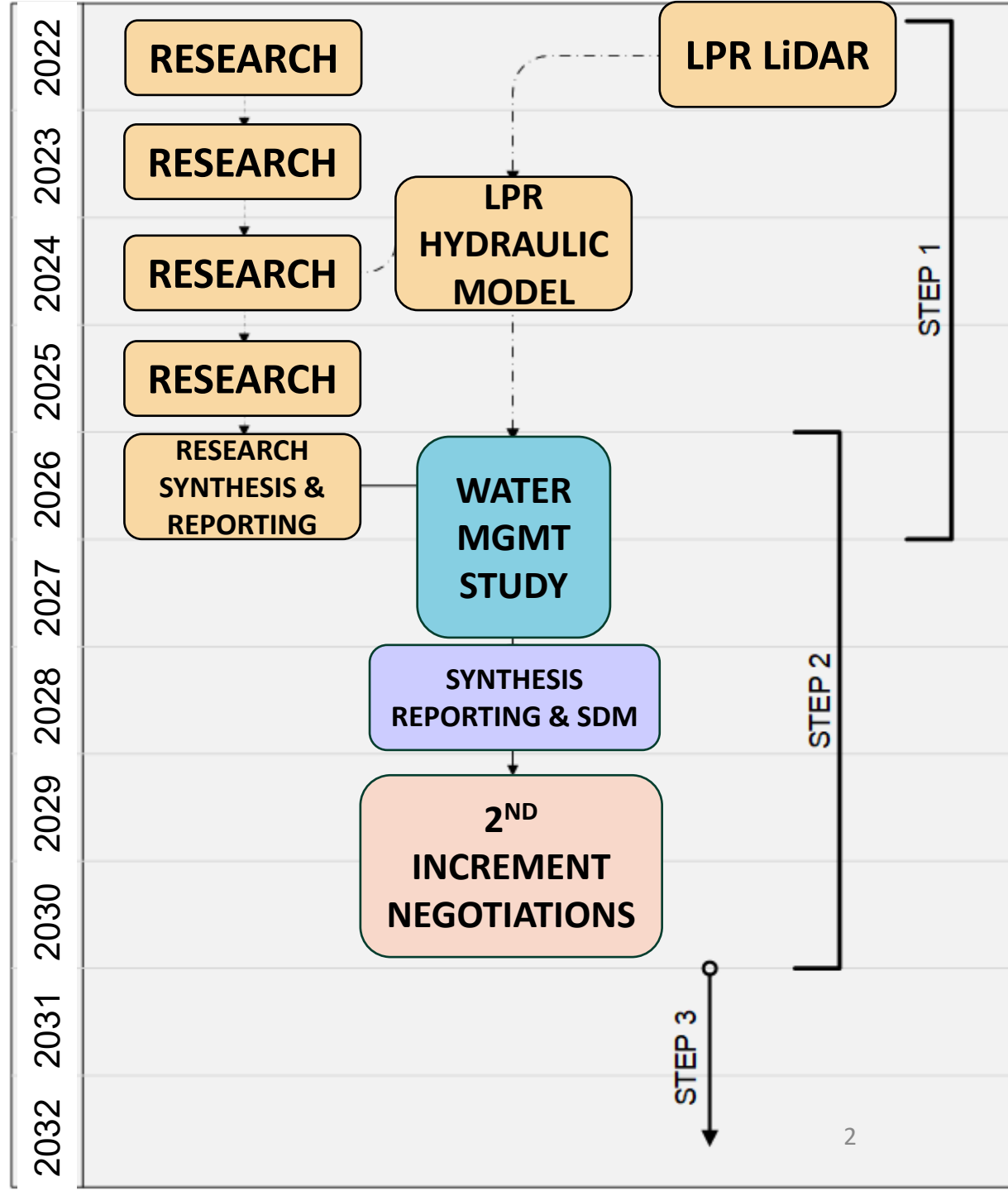
Malinda Henry (PRRIP EDO)



PLATTE RIVER
RECOVERY IMPLEMENTATION PROGRAM

3 Step Process

- Step 1: Research
- Step 2: Water Management Study
- Step 3: Program Water Operations Management

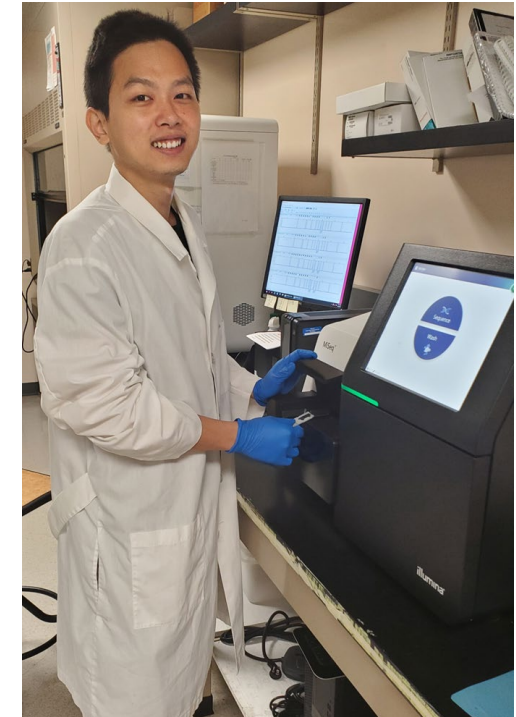


SIU Genetics Research

Ed Heist (SIU) and Junman Huang (SIU)

Objectives

- 1. Refine species ID and identify hybrids**
2. Population structure
3. Population composition (pallid, shovelnose, hybrid)
- 4. Effective population size**

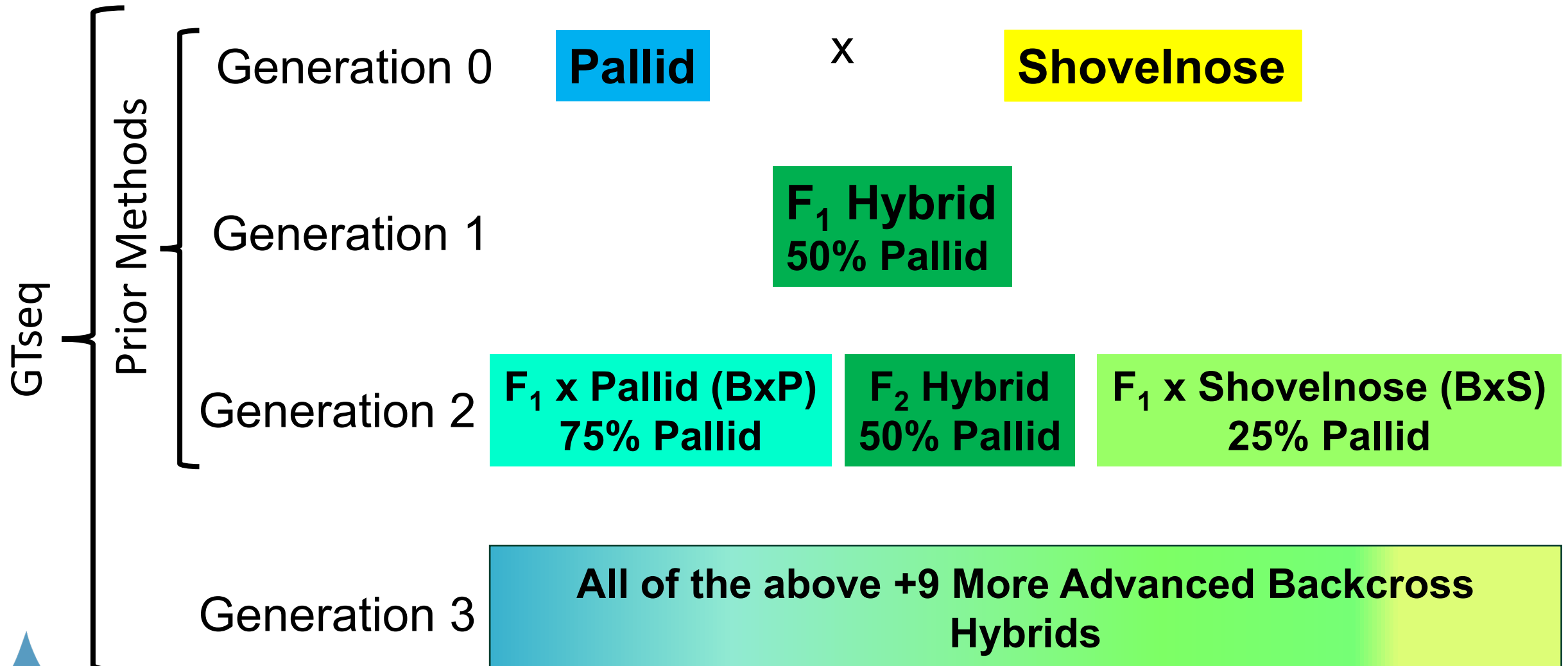


Objective 1: Refine species ID and identify hybrids

- Assignment as pallid, shovelnose, hybrid using GTseq
 - No fixed differences occur between species
 - Pallid and shovelnose less distinct than many intraspecific populations
 - Wild hybrids exist in all management units
 - Hybrids are fertile and can backcross



Hybrids are fertile and can backcross



Objective 4: Effective population size (N_e)

- Pallid Sturgeon Recovery Criteria
 - Self-sustaining genetically diverse population of 5,000 adults in each management unit
- Based on an effective population size $N_e=500$
 - Target for a genetically healthy population

Effective Population Size Estimates

Measures N_e for the parents of the sampled generation

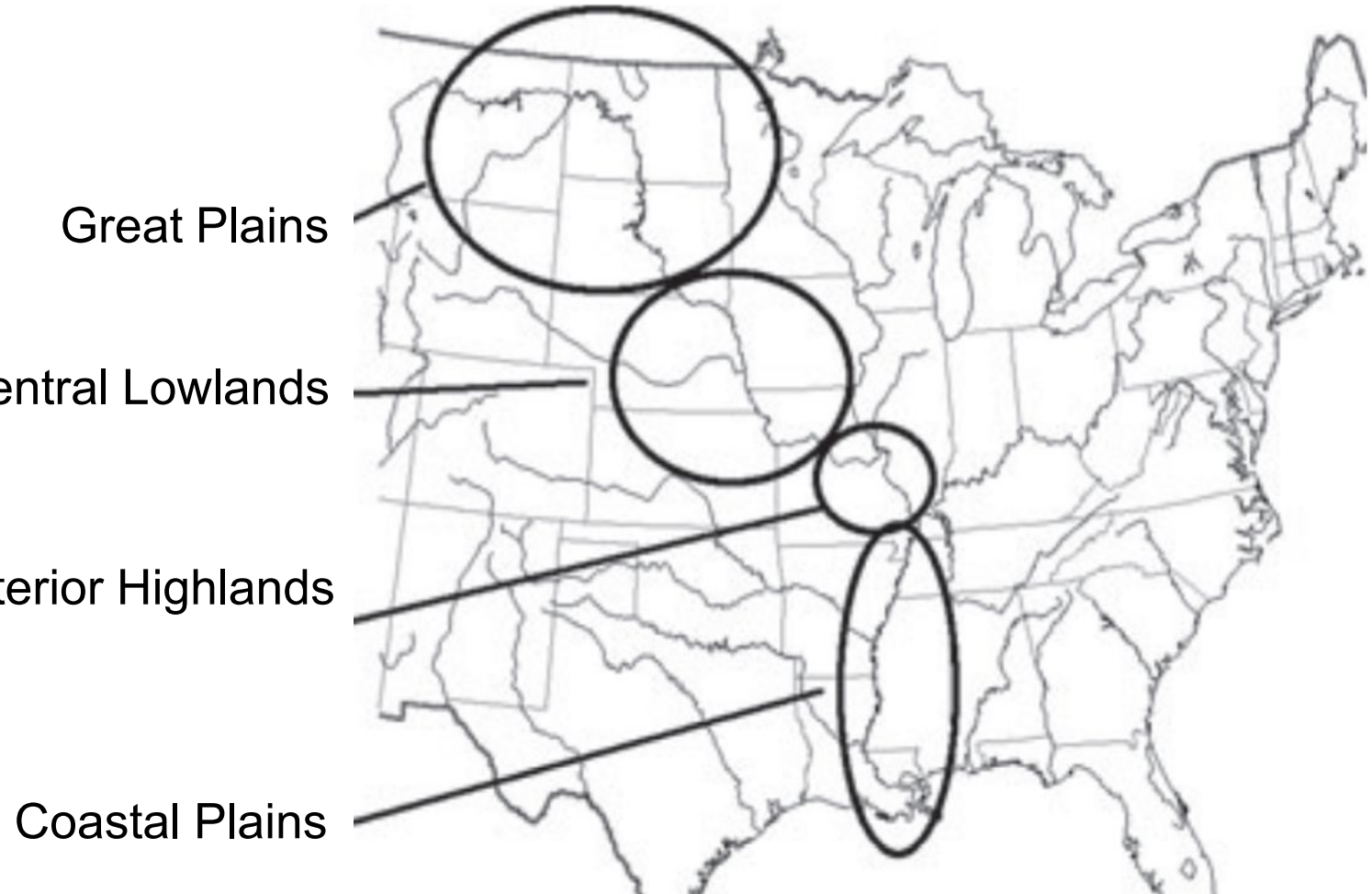
Great Plains Management Unit

- Heist estimate $N_e = 233$

Lower Basin

Central Lowlands and Interior Highlands

- Heist estimate $N_e = 68.3$
- Does not include impact of stocked fish, which has lowered N_e



Estimating Current Lower Basin N_e

- Based on 2021 larvae
- N_b = effective number of breeders in a single year
- Heist pallid estimate **$N_b = 37.2$**





EBQ #7 Pallid Sturgeon

What are the effects of flow management to benefit WC, PP, LT in central Platte on PS in lower Platte?

UNL Habitat and Spawning Research

Mark Pegg (UNL), Jonathan Spurgeon (USGS Co-Op Unit, UNL), Kirk Steffensen (NGPC), Jenna Ruoss (UNL), Chris Pullano (UNL)

Objectives

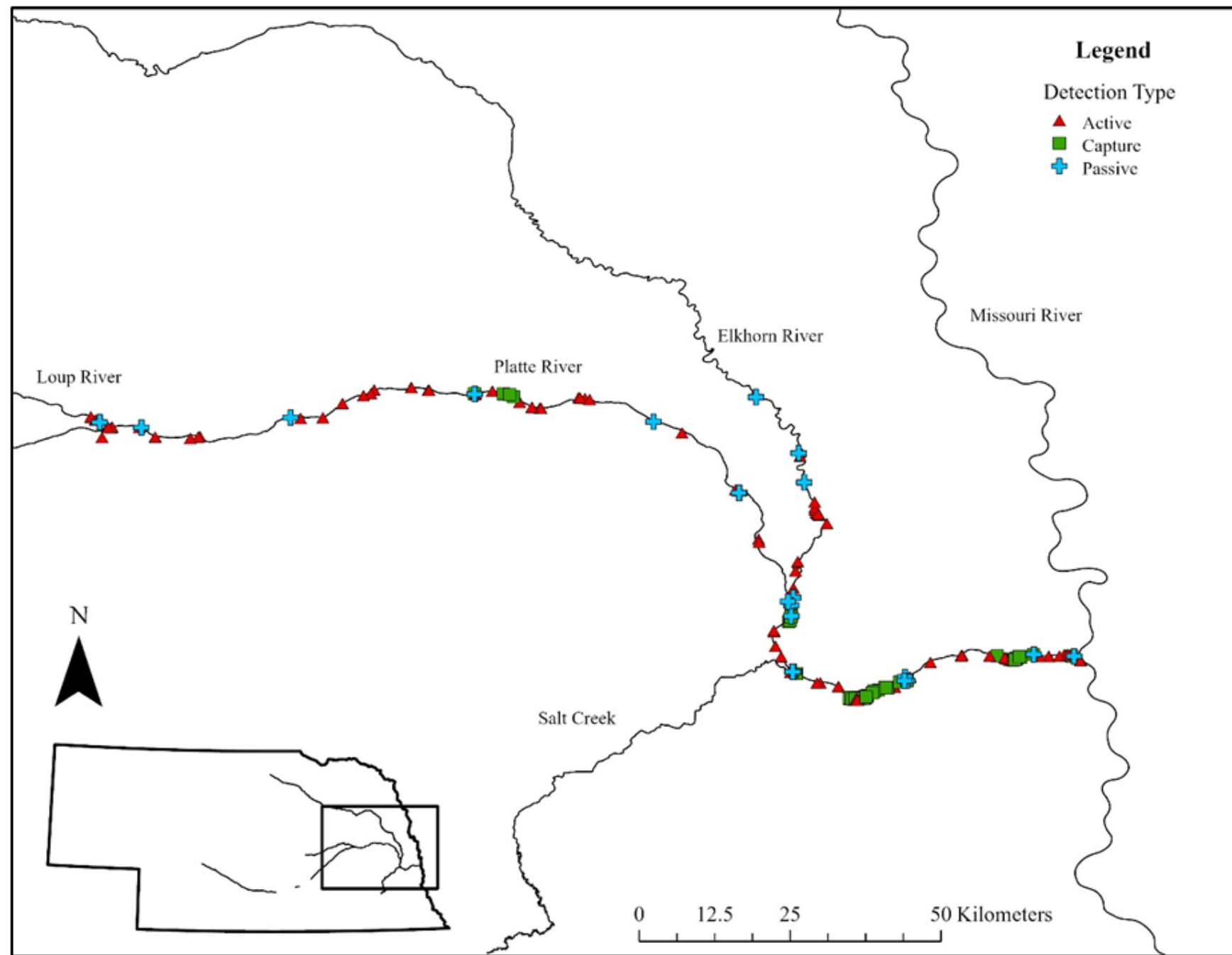
1. Identify relations among environmental conditions with the timing and extent of Pallid Sturgeon movement into and within the LPR
2. Identify Pallid Sturgeon spawning habitat in LPR
3. Verify successful spawning in LPR
4. Collect Pallid Sturgeon genetic samples for further population and hybridization assessment



2022-2023

PS use of LPR

- 94 individuals
- Throughout LPR
 - 4 miles up Loup
 - 30 miles up Elkhorn
- Reproductive and non-reproductive
- Potential Platte spawning
- No genetically confirmed PS eggs or larvae



TAC/ISAC Discussions

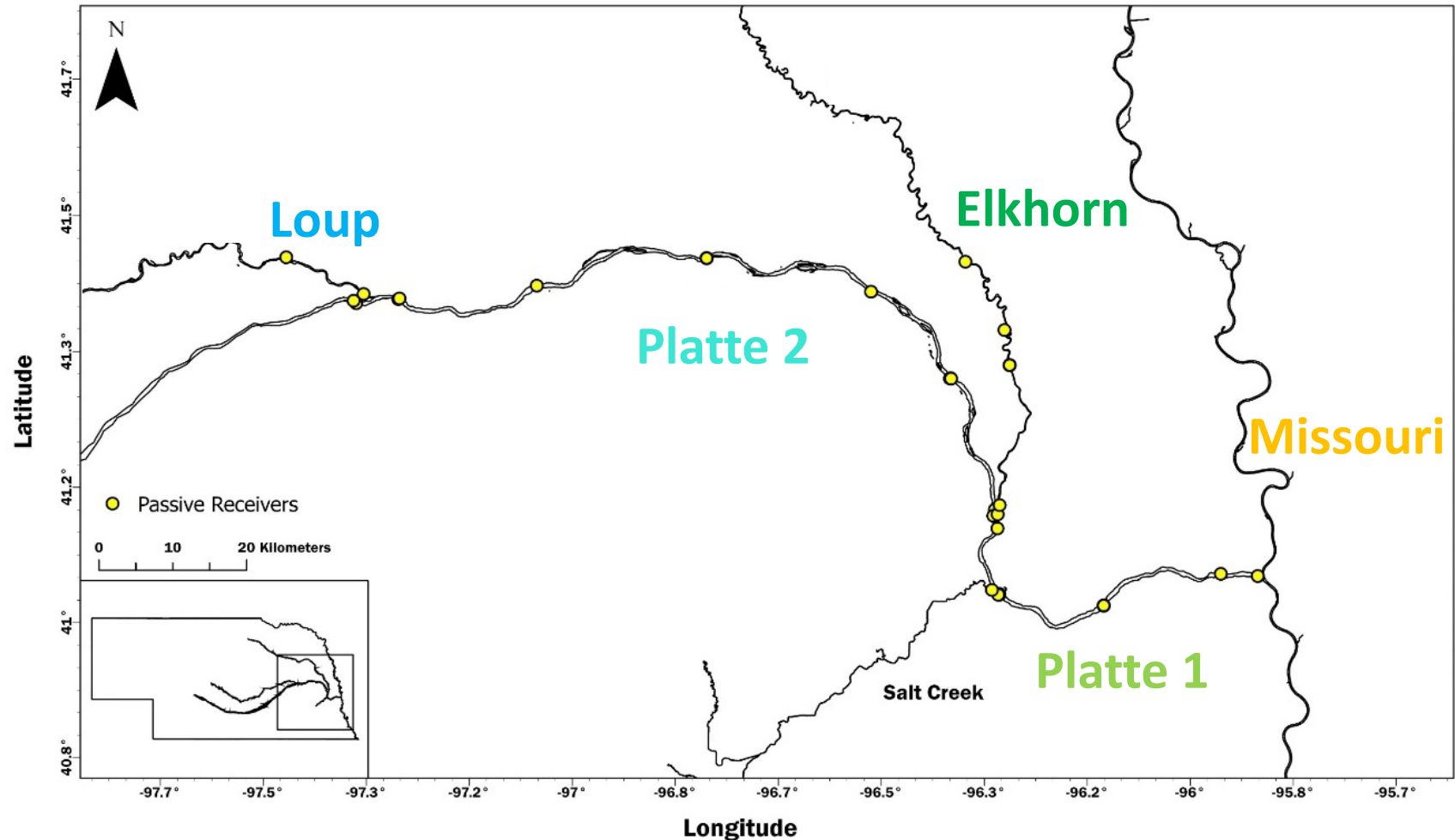
- Summarize information generated
- Expectations
- Changes for 2024



Objective

1. Identify relations among environmental conditions with the timing and extent of Pallid Sturgeon movement into and within the LPR

River	Year	Transmitters
Platte Segment 1	2022	49
	2023	66
Platte Segment 2	2022	9
	2023	15
Elkhorn	2022	10
	2023	15
Loup	2022	0
	2023	2



A69-9001-54336 (89 detections)

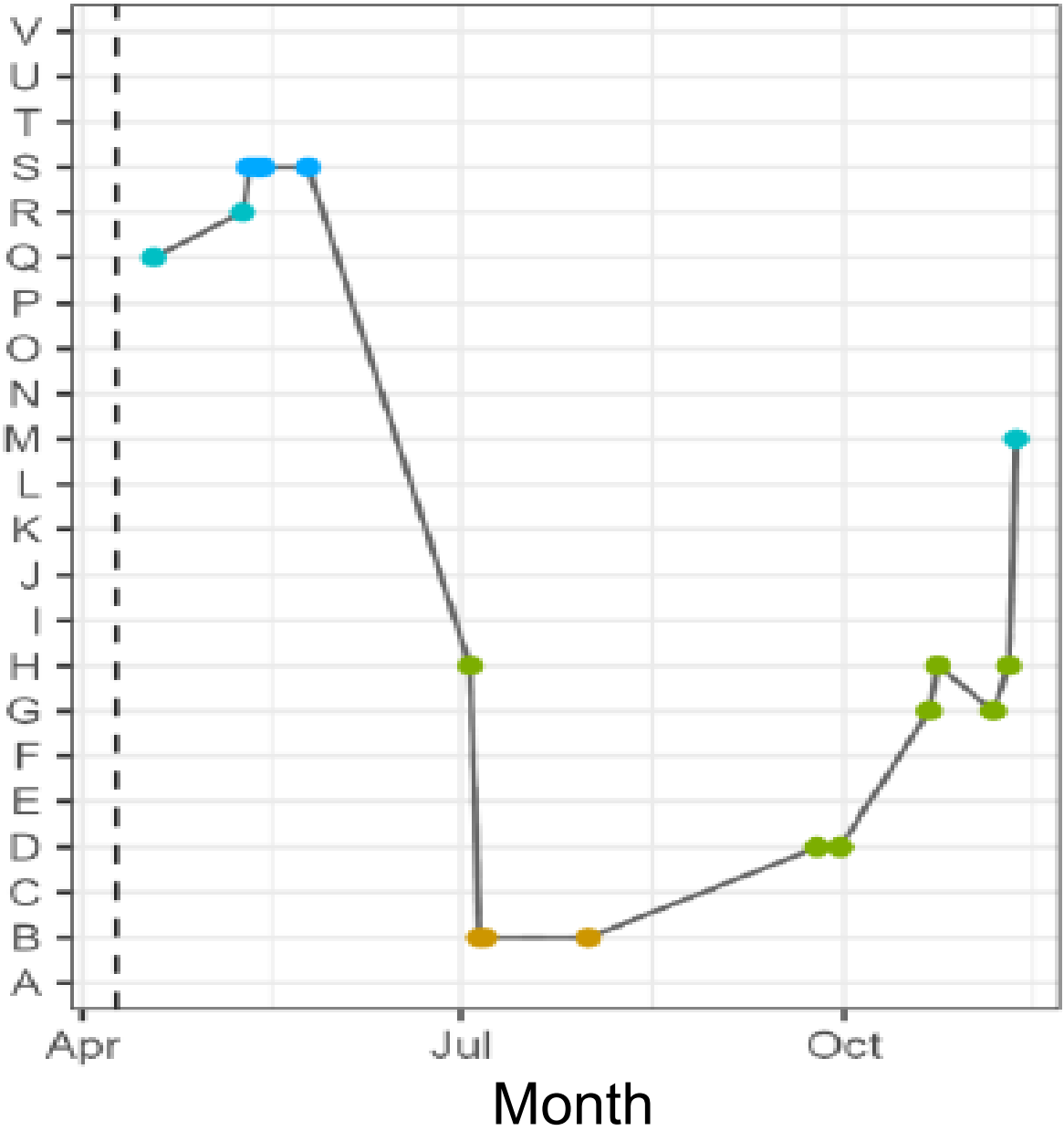
Loup

Platte 2

Platte 1

Missouri

Passive Receiver Array



2024 Changes

- Add additional receivers at confluences to improve detection efficiency and better determine directionality
- Adjust spring active tracking and prioritization plan
 - Continuous intensive tracking of reproductive fish will stop in favor of gathering more information on movement of multiple fish throughout the system.

Objectives

2. Identify Pallid Sturgeon spawning habitat in LPR
3. Verify successful spawning in LPR

2022 – 2023 Larval sampling (N = 967)

PRRIP funded – 279 tows

Other samples – 688 tows

0 Pallid Sturgeon collected



2024 Changes

- Stop egg and larval collection via ichthyoplankton trawling
 - Effectively terminates work on Objective 3 of the original proposal outside of behavioral observations.

2024 UNL Proposed Budget Changes

- MS student graduating in December 2024
 - transitions to a Research Technologist
- No new MS student
- Labor costs for 2025-2026 will increase, but not exceed original contract budget





Questions?