



PLATTE RIVER RECOVERY IMPLEMENTATION PROGRAM (PRRIP -or- Program)

TO: Governance Committee (GC)
FROM: Executive Director's Office (EDO)
RE: Pallid Sturgeon Framing Document – Clarification of Science Implementation Activities
DATE: September 29, 2023

Background

The endangered pallid sturgeon (PS) is one of four Program target species. It differs from the others in that it occurs in the lower Platte River. The Program does not undertake management activities to directly benefit this species but has been tasked with learning how Program water management in the central Platte to benefit the whooping crane, piping plover, and interior least tern may affect PS in the lower Platte. The Program's commitment to PS during the Extension is achieved through implementation of a three-step science learning process formalized by the GC in a [June 2021 Framing Document](#). Broadly speaking, the process identifies a progression of species and physical habitat learning that will allow decision-makers to 1) identify water operations rules to minimize/avoid impacts to PS in the Lower Platte and 2) quantify the assumed benefits of central Platte River (CPR) water management for PS in the lower Platte. The three steps include:

- Step 1: Research to assess PS use, spawning habitat and spawning success in the lower Platte, assess hybridization, reassess population structure, and estimate effective population size.
- Step 2: Use step 1 learning to identify water operations rules to avoid/minimize impacts on PS in the LPR and quantify benefits of central Platte flow management to PS in the lower Platte.
- Step 3: Manage water in accordance with operational rules during Extension and Second Increment.

Merging Science Plan and PS Framing Document Activities

The activities outlined in the 2021 PS Framing Document are included in the Program's [Extension Science Plan](#) though are not categorized according to framework step along the implementation timeline (pg. 72). Below, current and future Science Plan activities are described and placed in the appropriate step of the PS framework. Page three of this memo also includes a PS activity diagram from the Extension Science Plan that has been revised to identify corresponding framework steps (Figure 1).

Pallid Sturgeon Research (FRAMEWORK STEP 1)

In 2022, two interrelated PS research projects were initiated in collaboration with the University of Nebraska, Lincoln (UNL) and Southern Illinois University (SIU). UNL is leading general habitat and spawning research in the LPR. General habitat research will identify environmental metrics that are the best predictors of PS occurrence and movement. This includes flow-dependent metrics like depth and velocity as well as others including temperature and season. *General habitat research will be used to identify how and how much CPR flow management is likely to influence general PS use in the LPR.* Spawning research will identify instances of spawning, spawning habitat, and likelihood of spawning success. *As above, spawning research will be used to identify how and how much CPR flow management is likely to influence the occurrence and success of PS spawning in the LPR.*



Genetics research led by SIU involves genetic identification of PS tagged as part of UNL research. *Genetics research will be used to assess PS hybridization, population structure, and effective population size.*

Bridging Framework STEP 1 and STEP 2

Framework Step 1 and Step 2 require the ability to 1) translate flows from the central Platte to the LPR, 2) model changes in LPR flow-dependent metrics due to Program flow management, and 3) predict PS response to those changes.

Lower Platte River Hydraulic Modeling

Two-dimensional hydraulic modeling bridges the gap between Framework Step 1 and 2 – providing a unifying tool to be used in both steps to model changes in flow-dependent metrics. A modeling contractor has been selected and model development will begin in late 2023.

Flow Management Study (STEP 2 PHASE 1)

Central Platte to Lower Platte River Hydrologic Modeling

Hydrologic modeling will be included as a task in a flow management study to be conducted by a contractor in cooperation with the EDO. The contractor will be responsible for using the two-dimensional hydraulic model along with hydrologic modeling to route central Platte flow to (and through) the LPR for the purpose of identifying potential impacts and benefits to PS in the LPR. The EDO will be responsible for defining potential water management/operations scenarios.

Synthesis Reporting & Structured Decision-Making Tool (STEP 2 PHASE 2)

Technical work products from Steps 1 and 2 will be synthesized into a predictive modeling framework that can be used in a stand-alone structured decision-making (SDM) process or as part of a broader SDM process to inform allocation of defined contributions during a Second Increment. As part of the SDM process, policy makers will identify operational rules for CPR flow management that will minimize/avoid impacts and provide benefits to PS in the Second Increment (and possibly remainder of Extension).

Program Water Management (STEP 3)

Program water will be managed in accordance with results of the SDM process.

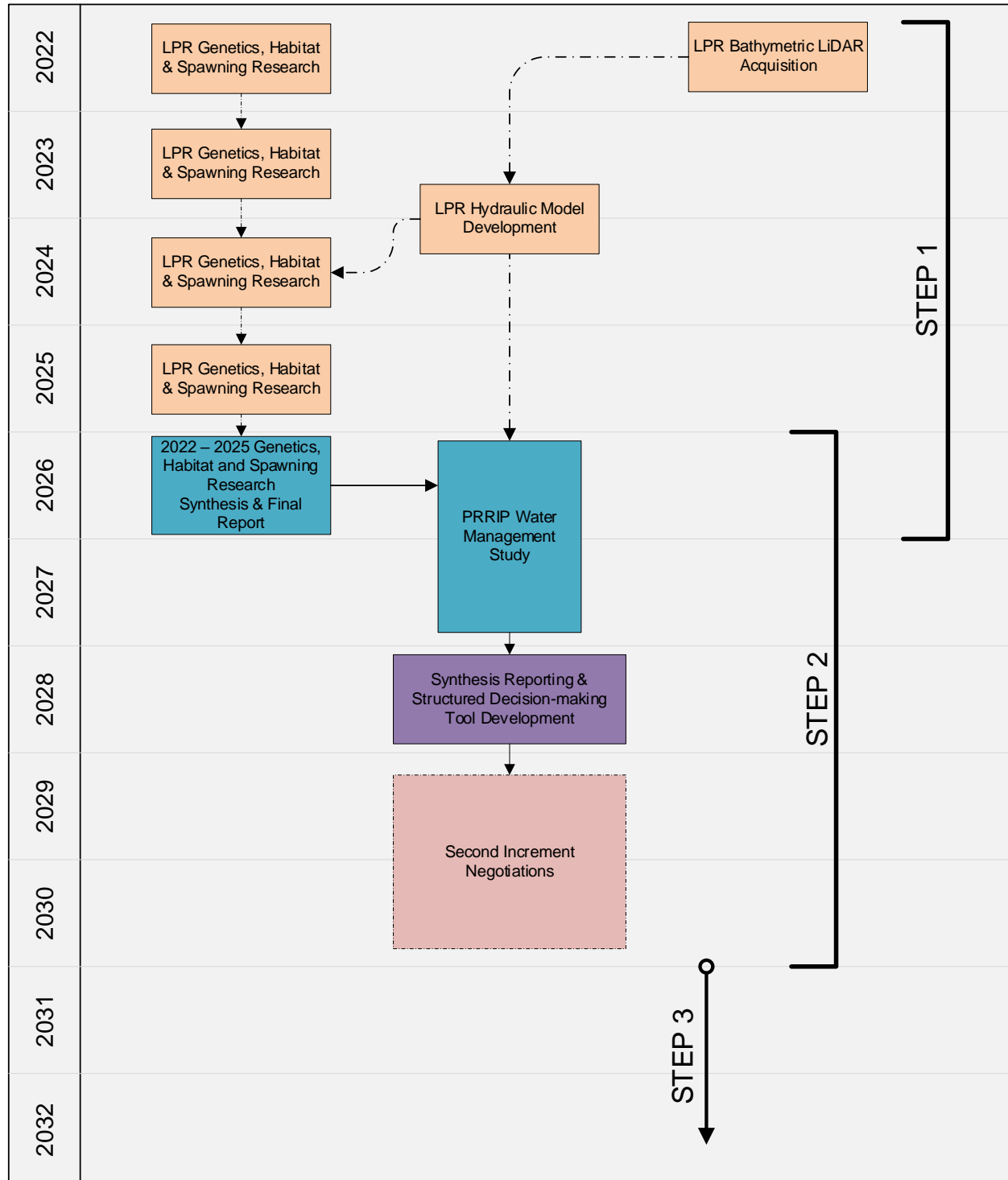


Figure 1. Pallid sturgeon activity diagram from the Extension Science Plan that has been revised to show corresponding Steps from the pallid sturgeon policy framework.