



TO: Governance Committee (GC)
FROM: Executive Director's Office (EDO)
RE: Budget Justification for PRRIP FY22 Budget Line Item PS-1
DATE: November 16, 2021

In June 2021, the GC approved a three-step process related to pallid sturgeon (PS) science actions during the First Increment Extension. Step 1 consists of five-year habitat/spawning and genetics research projects. Step 2 consists of a PRRIP water management study to identify/quantify potential impacts and benefits of Program water management to PS in the lower Platte River (LPR), forming the basis of recommendations for Program water management moving forward. Step 3 consists of management of PRRIP water to avoid/minimize impacts and/or provide benefits of central Platte River (CPR) water management to PS in the LPR.

While developing the PS policy framing document, the EDO concluded LiDAR acquisition and detailed hydraulic modeling (like the original Stage Change Study) would be of little use in evaluating the impacts/benefits of PRRIP diversions and flow releases and recommended the water management study rely on qualitative tools such as scenario planning.

Preliminary conversations with the UNL spawning/habitat research team led us to reassess the need for a LPR hydraulic model. During development of the Pallid Sturgeon Agreement Framing Document, the EDO concluded passive telemetry data would be our best tool for qualitatively identifying impacts and benefits of Program flow management actions. Specifically, the EDO envisions an analytical comparison of reach-scale fish movements in relation to reach-scale flow, temperature, and turbidity measurements. That approach relies on the passive telemetry network having complete channel coverage. Early discussions with the UNL research team indicate this may not be possible in all reaches, creating "blind spots" in portions of the LPR that confound non-detection with non-use, making reach-scale analyses to define suitable habitat inaccurate. While passive telemetry will still contribute information on the general distribution and timing of pallid sturgeon use of the LPR, UNL researchers are anticipating the passive network being most useful in directing active tracking effort by identifying reaches with higher fish numbers.

The UNL team also indicated they will be focused on characterizing habitat at fish use locations as identified by active tracking efforts and want to be able to compare habitat at those locations to reach-scale availability. We anticipate active tracking will identify a range of channel depths and velocities suitable for PS use. Without the ability to characterize availability of suitable habitat at a reach scale (for a range of discharges), it will be difficult to address priority issues such as channel connectivity at low discharges that may limit pallid use of the LPR or develop rules to manage PRRIP water operations for the purpose of avoiding/minimizing PS impacts or quantifying the benefits of CPR water management during time of low discharge in the LPR.

Given uncertainty about passive telemetry coverage and the potential need to be able to quantify habitat availability across a range of discharges, the EDO recommends the Program develop a 2-D hydraulic model that can be used to both inform the UNL research and our subsequent water management study. To develop the model, the Program would need to conduct one bathymetric LiDAR collection during the five-year habitat research project covering the reach of the LPR extending from the Loup River confluence to the Missouri River confluence. Given LPR turbidity, it will be imperative to



collect LiDAR at a time when either 1) LPR flow is low enough to expose >90% of the channel bed or 2) when turbidity is low enough to accommodate >95% channel coverage.

To accommodate acquisition restrictions, the EDO recommends the LiDAR data acquisition cost be budgeted annually until adequate conditions occur and the LiDAR data is collected.¹ Once data acquisition and processing are complete, the EDO would develop the same type of SRH-2D hydrodynamic model for the LPR that we produce for the AHR each year. Model results would then be shared collaboratively with the UNL research team to inform their research and ensure their report to the Program provides the information needed to complete the Step 2 water management study.

Overall, this additional data acquisition is expected to increase the cost of Step 1 by \$310,000 and that amount is included in the FY22 budget estimate for line item PS-1 (pallid sturgeon monitoring and research). We do not anticipate a need to modify Step 2 or Step 3 as presented in the Pallid Sturgeon Agreement Framing Document.

¹ If adequate conditions don't occur during the study period, the utility of the data would need to be reassessed.