

Shasta RPA Adjustment:

Science and Monitoring Work Plan

NOAA Fisheries & US Bureau of Reclamation
December 14, 2017

Status of the Plan

The current document is a Reclamation and NMFS product originally envisioned to be similar to the *CVP and SWP Drought Contingency Biological Monitoring Plan* (Dec. 2014).

The Science Plan has undergone internal review and the next steps should include:

- agency management review, and
- discussion about distribution to a wider audience to solicit input from technical teams and stakeholders on the research methods, studies, and monitoring that can address specific management questions.

Concurrent Effort

The Science Plan is intended to complement Reclamations (?) *Modeling Workplan* (Nov. 2016), the objective of which is to update and refine modeling capabilities to:

- Identify initial cold water pool volumes
- Based on the initial cold water pool volume, forecast the effects of potential operational strategies on water temperatures through the temperature control period (late spring into fall)
- Assist in the development of a cold water management plan, with incorporation of uncertainty in model representation and future conditions (e.g., inflow quantity and temperature, meteorology, etc.)

Science Plan Objectives

To be used to help guide the “budget in Federal fiscal year 2018, if possible, and into fiscal year 2019 and beyond.”

Specifically by:

- Reducing uncertainty on the conditions necessary to achieve desired fish and water management goals
- Identifying near-term monitoring, biological modeling, and analysis and synthesis needs to improve fish and water management decision-making regarding Action Suite I.2
- Coordinating activities between agencies, stakeholders, and other interested parties.

Fish and Water Management Goals

Environmental Watering Approaches

Maintain

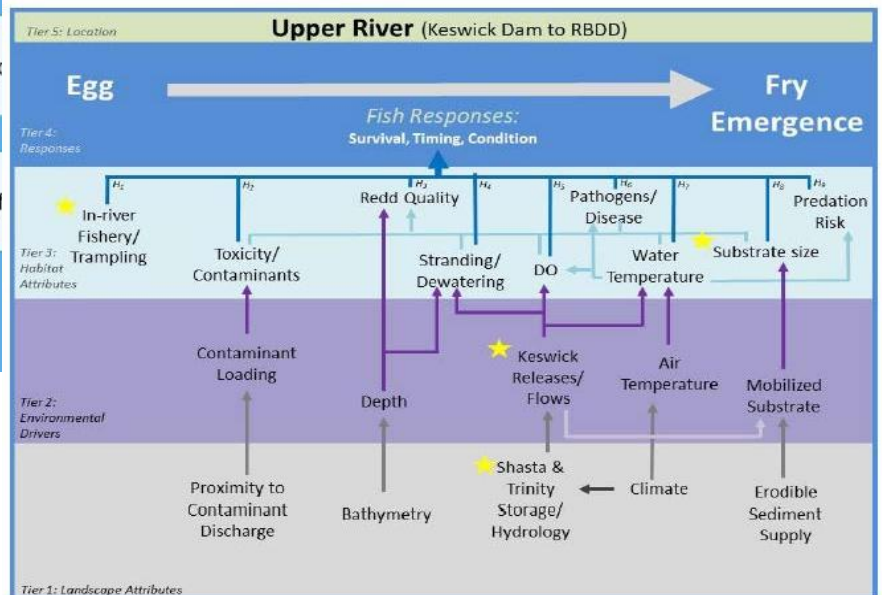
- Sustain populations
- Activities stabilize the natural population

Restore

- Improve juvenile productivity
- Activities increase survival and condition
- Activities increase flow and non-flow actions

Protect

- Avoid extinction
- Activities are off-the-shelf non-flow actions



Management Questions

- Forecasting (biological modeling and synthesis)
- Species Viability and Variability (mechanistic studies of observation and experiments)
- Interactions between Stressors (community studies)
- Structural Modification and Facilities (engineering studies)

Monitoring

The Science Plan identifies a number of new and ongoing monitoring programs the data of which currently inform, or may be used in the future to inform Project operations. This monitoring may be further used to answer the proposed management questions.

- Core Monitoring (existing, compliance monitoring)
- Special Studies (Short-term, opportunistic studies)

Time Table and Next Steps

Task	Timeline
Final version of Science Plan	November-December 2017
Study prioritization and planning	January- June 2018-2020
Study funding and implementation	October 2018- September 2021
Study Status Reporting	Semiannually WY 2019-2021
Monitoring Status Reporting	Open data approach
Biological Review Panel (Independent review of final findings and monitoring)	September 2019, 2021, 2023