

Interagency Ecological Program Management, Analysis, and Synthesis Team (MAST) Report

Summary: Two representatives from the Interagency Ecological Program (IEP) Management, Analysis, and Synthesis Team (MAST), Dr. Ted Sommer (DWR) and Dr. Larry Brown (USGS), will discuss the latest synthesis report from the IEP MAST: *An updated conceptual model of Delta Smelt biology: our evolving understanding of an estuarine fish*, and provide recommended applications of the model.

Background

The MAST report's updated Delta Smelt conceptual model is based on a review and synthesis of existing published literature and new analyses of long-term monitoring data. This conceptual model expands the previous version that focused only on the fall (Fall Low Salinity Habitat (FlaSH) model; Brown et al. 2014) to year-round. Dr. Anke Muller-Solger, the former Interagency Ecological Program's lead scientist, is among the report's coauthors. It was among several important products of her employment by the Council in that role. The report is an example of the science synthesis undertaken by the Delta Science Program and called for in the Delta Science Plan.

The new lifecycle model was used to explore a number of questions, among them why years with high delta inflow may result in dramatically different reproductive success and survival. For example, why the differences in observed abundances in the 2011/2010 wet/dry water years versus the 2006/2005 wet/dry water years? The report concludes that it's important to look at the entire one-year life cycle of Delta Smelt – conditions need to be favorable for multiple life cycle stages: spawning, growth and survival.

The Delta Smelt conceptual model has been useful in deriving testable hypotheses about the responses of Delta Smelt to changing habitats and for identifying critical information gaps such as contaminants, toxicity, predation risk, entrainment and harmful algal blooms, among others.

The Delta Smelt MAST conceptual model may be used to inform year-round adaptive management of Delta Smelt and is also providing the basis for work under a newly formed interagency Tidal Wetlands Monitoring Team. Predictions from the Delta Smelt MAST report were also used to inform additional work on drought monitoring of aquatic weeds and a resident fishes study that surveys predators.

The MAST report will be available in early winter 2015 on the IEP's website:
<http://www.water.ca.gov/iep/pod/mast.cfm>.

Questions the Council may wish to consider include:

- 1) To what extent has the updated life cycle model informed the drought operations of the CVP and SWP?
- 2) To what extent has the model been used to test some of the factors believed to be important in reducing entrainment at the pumps?
- 3) What other synthesis reports would be most useful to Delta managers?

References

Brown, L.R., R. Baxter, g. Castillo, L. Conrad, S. Culberson, G. Erickson, F. Feyrer, S. Fong, K. Gehrts, L. Grimaldo, B. Herbold, J. Kirsch, A. Mueller-Solger, S. Slater, K. Souza, and E. Van Nieuwenhuysse. 2014. Synthesis of studies in the fall low-salinity zone of the San Francisco Estuary, September – December 2011. U.S. Geological Survey Scientific Investigations Report 2014-5041. 136 p.

List of Attachments

Attachment 1: Presentation on Application of the Delta Smelt MAST

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