

## Attachment 2

# Ecosystem Restoration Evaluation Tools

The following provides an overview of a suite of analytical tools being developed for use in scientifically evaluating proposed ecosystem restoration actions for the Delta. These tools are well suited to evaluate 'Actions' at preliminary and in-depth levels, allowing their outputs to be gauged according to the requirements of the particular application. These tools also set the foundation for adaptive management by identifying where our science needs reside and what restoration actions lend themselves to critical hypothesis testing. For more information, go to [www.delta.dfg.ca.gov/erpdeltaplan/](http://www.delta.dfg.ca.gov/erpdeltaplan/). These tools are:

### 1) Ecosystem Element and Species Conceptual Models

- Compiles the current state of scientific knowledge into single documents
- Formal 'academic-level' peer review conducted by expert scientists
- The following conceptual models are currently in the final stages of development:
  - ⊖ **Processes:** transport, aquatic food web, sedimentation, organic carbon
  - ⊖ **Habitats:** aquatic vegetation, tidal marsh, aquatic habitats, floodplains, riparian
  - ⊖ **Stressors:** toxicity, Pyrethroids, mercury, selenium, low dissolved oxygen, temperature
  - ⊖ **Species:** Delta smelt, Longfin smelt, chinook (four runs), steelhead, white sturgeon, green sturgeon, splittail
- Additional conceptual models will be prepared in the short term as needs dictate; many are scheduled for preparation over the longer term

### 2) Standardized Outcomes and Stressors

- Promotes consistency of terminology and thoroughness in identifying outcomes and stressors relevant to each action being vetted
- Drawn from conceptual model development and from BDCP efforts

### 3) 'Actions' Writing and Parsing Guidelines

- Assists any entities that are writing ecosystem restoration actions to prepare the actions in a format well suited for vetting with these tools

### 4) Scientific Evaluation Process

- Provides a comprehensive method for carrying out a scientific review of a restoration action that addresses magnitude and certainty of outcomes, gaps in understanding or data, estimating the degree of 'worth' and 'risk', assessing reversibility and opportunity for learning (adaptive management), and an implementation recommendation (full scale, pilot, research, set aside)
- Relies upon application of all the previous elements
- Results in documented conclusions at each step in the evaluation

- **Evaluation Worksheet and Guidelines:** guided step-wise evaluation form; a worksheet completed for a particular action becomes the administrative record for that action's evaluation