EWA Workshop

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Can we characterize & quantify the effects of EWA on delta smelt & salmon?

- We can not currently quantify the effects of EWA actions with certainty
- Magnitude of manipulation is relatively small
  - <300 taf versus >6 maf (<5% of the water) – difficult to measure change (lack of precision in metric)
- Bay-Delta system is a poor “laboratory”
  - Can not currently eliminate (or measure) confounding effects of variation in uncontrolled factors in Delta environment
  - No “without action” case with which to compare observed result

Can we identify knowledge gaps that we wish had been filled?

- Effect of upstream conditions on survival and migration patterns of early life stages of salmonids
- Importance of specific habitat for salmonids – growth and mortality rates
- Survival of salmonids through the river and delta
- Life stage-specific responses to delta flows (salmonids and delta smelt)
- Ability to properly characterize salmon by race
- Factors limiting salmon and steelhead production
- Spawning areas and egg placement of delta smelt
- Cumulative factors limiting delta smelt population recovery
- Age-group contribution to population fecundity and fertility for delta smelt

Can we identify key areas in which additional research or monitoring is needed?

- Conceptual model of population bottle necks
- Measures of relative abundance and survival between different life stages
- Long-term monitoring to address all life stages
- Behavioral studies on movement, flow response, residence time, prey/predation, and reproduction
- Habitat manipulations experiments to assess population responses
- Assessment of non-native species impacts at the population level relative to EWA releases
- Explore ways to overcome institutional/regulatory impediments to experimentation and adaptive management ?