

## IEP Science Highlights

### March 2016

#### Monitoring Highlights

##### Delta Smelt:

- The 2015 Fall Midwater Trawl survey Delta Smelt annual (Sep-Dec) abundance index was 7, making it the lowest on record.
- The 2016 Spring Kodiak Trawl Survey has completed two of five monthly surveys. Catch of adult Delta Smelt from surveys 1 (n=7) and 2 (n=6) fish were exceptionally low.
- The Smelt Larva Survey in 2016 has conducted 3 surveys occurring every other week beginning January 4<sup>th</sup>. No Delta Smelt larvae have been detected in samples processed so far. Survey #4 begins the week of February 15<sup>th</sup>.

##### Longfin Smelt:

- The 2015 Fall Midwater Trawl survey Longfin Smelt annual abundance index was 4, making it the lowest on record.
- Larval Longfin Smelt catches in the first two Smelt Larva Surveys have also been very low. Total larva catch through surveys 1 and 2 was 143, or about 56 % of the previous low catch and 10% or less of other combined survey 1 and 2 catches from other years since 2009, when the survey started (These 2016 catches are likely somewhat negatively influenced by increased outflow transporting some larvae downstream of SLS sampling range)

##### Chinook Salmon:

- Initial Red Bluff Diversion Dam egg-to-fry survival for 2014 (5% survival) and 2015 (4% survival) were significant deviations from longer-term average. The recently experienced highest air and water temps on record and anomalous warm ocean conditions may provide looming insights into the vulnerability of the species to new climate regimes.
- Acoustic telemetry tracking of Winter Run chinook from Redding: Survival of out migrating salmon has increased from 2013 to 2015- despite drought- mostly through adaptive management to release fish on higher flows during storms. 2016 Fish are on their way out now.

#### Research and Synthesis Activities

- USGS Physical and Biological Drivers project- This project continues research and development for non-lethal evaluation of delta smelt and other endangered species. It will also seek to elucidate processes driving Delta Smelt distribution and movements.
- USFWS Sturgeon habitat use via fin-ray microchemistry- the study exposed rapidly growing juvenile hatchery sturgeon in laboratory tanks to selected water sources exhibiting distinctive <sup>87</sup>Sr:<sup>86</sup>Sr signatures to identify how exposure time and water source are archived in pectoral fin ray microchemistry. The lab study shows potential for application to wild fish to have age, growth, recruitment, mortality, and migration history information from fish across a significant, and interesting, period of time.
- Multi-partner Salmon habitat use via otolith structure/microchemistry- Using otolith-derived assessments of juvenile salmon Delta habitat use in individuals captured as they leave fresh water could form a long-term monitoring tool to track the use and population-level effectiveness of restored Delta habitats.

## The Interagency Ecological Program for the San Francisco Estuary



- Multi-partner predation studies have measured salmonid predation along the San Joaquin, quantifying relative contributions of habitat, flow, time, and season. These studies confirm bass and catfish predation on salmonids with estimated predation rates for index reaches.
- Salmon and Sturgeon Assessment, Indicators, Life Stages (SAIL) analysis is progressing well with outreach at Project Work Teams (PWTs) and pending development of publications.

### Estuarine Research Station

- The Rio Vista Estuarine Research Station (RVERS) is a proposed science and research center in the Delta. The project would consolidate a number of existing and new Bay-Delta monitoring activities and agency locations into a single State and Federal facility, and thereby allow for increased efficiencies and enhanced interagency coordination and collaboration on similar Bay-Delta issues. The preferred alternative is the construction of an IEP field station at the decommissioned Rio Vista Army Base site. A USFWS Fish Technology Center (FTC) has also been proposed at the same location. The specific objectives for the IEP facility area are as follows: 1) Establish a research station in a central location within the Bay-Delta to facilitate ease of conducting monitoring and research; 2) Co-locate the research station with the FTC; and 3) Provide facilities to conduct monitoring and research on the Bay-Delta's aquatic resources. More details about the project are available at: <http://www.deltaresearchstation.com/> Recent accomplishments include:
  - Release of Draft EIR/S for IEP RVERS and USFWS FTC projects.
  - Review of public comments for EIR/S.
  - Completion and submission of draft Biological Assessment text for projects.
  - Consultant workshops with agency tenants to design laboratory and marina facilities.
  - Website design and execution

### Workshops and Work Teams (see <http://www.water.ca.gov/iep/activities/calendar.cfm>)

- The 2016 IEP Annual Workshop is scheduled for April 20-22 at Lake Natoma Inn, Folsom.