

Lead Scientists' Report

Summary: This report presents four items, 1) highlights from the 2011 State of the Estuary Conference, 2) current and upcoming Delta Science Program independent science reviews, 3) a summary of the recent paper by Cloern et al. (2011) entitled, "Projected Evolution of California's San Francisco Bay-Delta-River System in a Century of Climate Change", and 4) delta smelt trends and investigations.

2011 State of the Estuary Conference

The State of the San Francisco Estuary Conference is a biennial assessment of the ecological health of the San Francisco Bay-Delta Estuary. This year's conference was held on September 20-21, 2011 in Oakland, California. Plenary sessions were held each morning of the conference and concurrent sessions on four topics, 1) species/restoration, 2) management challenges, 3) water quality and 4) sustainable communities, were held each afternoon. The first plenary session focused on the recently released report, "State of the San Francisco Bay 2011" (<http://www.sfestuary.org/StateofSFBay2011/>), with presentations on how indicators of Bay health were assessed and what they mean. The second plenary session focused on long-term sustainable use of Delta and Bay water and included a talk from Chair Phil Isenberg on "Achieving the Delta Plan's Coequal Goals". The Delta and Bay water plenary session was followed by two Delta-focused sessions, "The People Factor in Delta Ecosystem Restoration" and "Ecosystem Restoration in an Evolving Delta".

For more information about the conference please visit:
<http://www.sfestuary.org/soe2011/index.html>

Independent Science Reviews Organized by the Delta Science Program

The Delta Science Program is actively planning several scientific reviews:

- **Bay Delta Conservation Plan (BDCP) Effects Analysis Review** – This will be a two-phase review. The first phase will cover the BDCP Effects Analysis Conceptual Foundation and Analytical Framework and the Entrainment Appendix. The second phase will cover the BDCP chapter that summarizes the effects analyses and the remaining technical appendices of the effects analysis. The first review will be held on October 25-26, 2011. For more information please visit: <http://deltacouncil.ca.gov/event-detail/3700>.
- **Delta Economic Sustainability Plan Review** – This review will occur on November 1-2, 2011 and will focus on the October 10, 2011 draft Delta Economic Sustainability Plan (http://www.delta.ca.gov/res/docs/ESP_10_10_11.pdf).
- **2011 Operations Criteria and Plan (OCAP) Annual Review** – This is the second OCAP Annual Review coordinated by the Delta Science Program. The purpose of this review is to advise the National Marine Fisheries Service and U.S. Fish and Wildlife Service as to the efficacy of the prior years' water operations and regulatory actions prescribed by their respective OCAP Reasonable and Prudent Alternative Actions. The goals of the

review are to develop lessons learned, incorporate new science, and make appropriate scientifically justified adjustments to the RPAs or their implementation to support real-time decision making for the next water year. The review will be held on November 8-9, 2011.

Projected Evolution of California's San Francisco Bay-Delta-River System in a Century of Climate Change (Cloern et al. 2011)

An overview paper highlighting the key findings of the U.S. Geological Survey's research project, CASCaDE, was recently published in the open-access journal, PLoS One (Cloern et al. 2011). The CASCaDE project linked a wide range of models (from climate to hydrology to sediment transport to phytoplankton to fisheries) for the Central Valley and Sierra Nevada, Delta and San Francisco Bay. The project explored linkages and cascading effects of climate change based on two plausible future climate conditions identified by the researchers. Key findings in the paper include linking climate change effects for the river and the estuary, showing variable sensitivity for environmental indicators to climate change, and the inevitability of biological community changes from climate change and habitat transformations. The CASCaDE project was funded by the CALFED/Delta Science Program. The resulting synthesis paper serves as an example of integration among multiple disciplines needed to inform management decisions. The analyses presented in the paper will be useful for guiding the development of performance measures for the Bay-Delta-River system. To access the Cloern et al. 2011 paper please visit: <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0024465>

2011 Delta Smelt Abundance Indices and Fall Habitat Investigations

The California Department of Fish and Game (DFG) conducts year-round fish monitoring surveys in the Delta. These surveys are an integral component of the Interagency Ecological Program (IEP). Survey results are used to calculate abundance indices for a variety of fish species and to track relative fish abundance over time. In 2011, abundance indices for delta smelt have increased compared to preceding years, but remain low compared to historical levels. The 2011 spring delta smelt abundance index for young delta smelt larger than 20 mm is 8.0, an increase from 2010 (3.8) and the highest index since 2006. The 2011 abundance index from the Summer Towntnet Survey (TNS) for juvenile delta smelt is 2.2, an increase from 2010 (0.8) and the highest index since 2004. The Fall Midwater Trawl (FMWT) survey is conducted monthly from September to December. Results for September are now available and show a considerable increase in delta smelt abundance over previous years: the September delta smelt index is 50, a large increase from 2010 (6). The September index is also higher than the annual abundance indices since 2005, and higher than September indices for all the POD years (2002-2010). The September index is the first of the four monthly indices that will be used to calculate the annual FMWT index for 2011. Delta smelt collected during the FMWT survey are also studied to assess their condition, health, and growth. This is part of a comprehensive set of studies aimed at understanding the reasons for this year's delta smelt trends and at more generally understanding the relationship between delta smelt abundance and habitat properties such as food availability, predation pressure, contamination effects, temperature influences, turbidity regimes, flow characteristics, and salinity, expressed as X2. X2 is the distance in km from the Golden Gate to the location where salinity is 2 parts per thousand. In the wet year 2011, X2 has been considerably lower (farther west) than in preceding dry years such as 2009 (see attached monthly X2 graph). The most recent wet year before 2011 was 2006. Monthly average X2 values in winter and spring 2011 were higher (further east) than in 2006, similar to 2006 in the summer months, and lower (further west) in September (74 km in 2011 versus 79 km in 2006) and the beginning of October (72 km versus 80 km for October 1-12 of 2011 and 2006, respectively).

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List of Attachments

Attachment 1: Monthly X2 Graph
Attachment 2: DFG Fall Midwater Trawl Memo

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