

Lead Scientist's Report

Summary: This report covers six items:

Collaborative Science Activities: (1) Planning for upcoming Invasive Aquatic Weed symposium,

Science Communication: (2) Brown bag seminar on integrated ecosystem modeling for adaptive management, (3) Brown bag seminar on using remote sensing to assess levee hazards, (4) July 2015 issue of the San Francisco Estuary and Watershed Science (SFEWS) journal, (5) Two posters from the 2014 Bay-Delta Science Conference, (6) "By the Numbers" summary.

Collaborative Science Activities

1. Invasive Aquatic Weed Symposium Planning

Staff is working with a planning committee that includes representatives of the Department of State Parks, Delta Conservancy, Department of Food and Agriculture, NASA Ames, UC Davis, Department of Fish and Wildlife, and the U.S. Fish and Wildlife Service to organize this symposium. The planning committee has set a tentative date of September 15, 2015 for the symposium, to be held at the UC Davis Conference Center.

Science Communication

2. Brown Bag Seminar on Management Lessons Learned from the Great Lakes and Implications for the Bay-Delta

John Wolfe from LimnoTech described the benefits of integrated modeling as part of an adaptive management approach plied in the Great Lakes region. Lessons learned and application to the Bay-Delta were discussed. (July 7)

3. Brown Bag Seminar on Radar-Based Monitoring of Delta Levees

Levee monitoring currently is done primarily through ground-level observations and instrumentation. Cathleen Jones of the Jet Propulsion Laboratory discussed the status of a Delta study to determine the feasibility of radar remote sensing to assess structural threats to Delta levees. (July 15)

Archives of all Brown Bag Seminars are on the Council's website.

4. July 2015 Issue of the SFEWS Journal

The July issue of the SFEWS Journal is currently available online. This open access journal, funded by the Council, is a key venue for publishing the latest research addressing Delta scientific questions. This edition includes one essay paper and three research papers:

Essay

Storage in California's Reservoirs and Snowpack in this Time of Drought.

Dettinger, M., Anderson, M.

Research

California Central Valley Water Rights in a Changing Climate. Schwarz, A.

Temporal Trends in Hatchery Releases of Fall-Run Chinook Salmon in California's Central Valley. Huber, E.R., Carlson, S. M.

Evolution of Arability and Land Use, Sacramento–San Joaquin Delta, California. Deverel, S., Lucero, C., Bachand, S.

The essay by Dettinger and Anderson provides a comprehensive look at snowpack and reservoir storage following the fourth year of drought. While California's reservoirs overall are unlikely to empty completely in this continuing drought year, reservoir storage may decline to levels that have not been witnessed in the past 45 years. The major reservoirs—some of which are the principal controls on Delta inflows—will empty far more than the others, in aggregate, if history is our guide.

The article on water rights in a changing climate by Andrew Schwarz represents an evaluation of future water rights reliability in the Sacramento–Feather–American river watersheds. They used a condition placed into certain water rights, known as Term 91, to model projected water rights curtailment actions (instead of relying on inadequate or unavailable data to conduct a comprehensive analysis of reliability). Water rights holders are likely to be curtailed much more frequently, and for significantly longer durations, as we move through the 21st century. Further, many more water rights holders will be affected by curtailment actions in the future. These activities will likely ratchet up the potential for additional conflicts over water in the Delta watershed.

Eric Huber and Stephanie Carlson's article describes the impacts of hatchery practices on the sustainability of fall-run Chinook Salmon in the Central Valley. Population resilience and persistence is presumably under threat when fish are released in large numbers at restricted times, sizes, and locations, a common current practice at all of the Central Valley fall-run Chinook salmon hatcheries (see also poster on salmonid habitat conditions). This article is relevant to a future Council agenda item regarding hatchery management.

Lastly, the article on the evolution of arability and land use describes trends in wet, non-farmable, and marginally farmable (WNMF) areas in the Delta from 1984 to 2012. The cumulative area of non-farmable or marginal land increased linearly about 10-fold, from about just under 677 acres in 1984 to about 6,900 acres in 2012. Moreover, several islands have experienced land use changes associated with increased wetness. These have occurred primarily in the western and central Delta, where organic soils have thinned, there are thin underlying mud deposits, and drainage ditches have not been maintained.

5. Poster Summaries from 2014 Bay-Delta Science Conference

The biennial Bay-Delta Science Conference is a forum for presenting technical analyses and results relevant to the Delta Science Program's mission to provide the best possible, unbiased, science-based information for water and environmental decision-making in the Bay-Delta system. The following posters from the last conference are a sampling of the 175 posters presented at the conference and were selected because they are relevant to the topics in this month's Lead Scientist's Report Council agenda.

○ ***Warming Water Temperatures In California's Central Valley: Potential Effects On Upstream Salmonid Habitat Conditions***

Analysis from a climate model predicts that salmonids will experience a consistent two- to three-fold increase in suboptimal temperature conditions during upstream migration within the next 50 years. Suggested management solutions include: expanding upstream habitat, promoting life history diversity (see also journal article by Huber and Carlson summarized above), and altering water management strategies.

○ ***Relationships between Water Quality Constituents in the Delta and the Influence of Different Sources of Water***

Drinking water and other beneficial uses are often considered in terms of constituents other than salinity including: chloride, bromide, sodium, and total dissolved solids. Results from this study indicate that different water quality constituents in the south and central Delta depend upon the particular mixture of seawater and agricultural drainage from the San Joaquin River and Delta islands.

6. By the Numbers

Delta Science Program staff will give a summary of current numbers related to Delta water and environmental management. The summary (Attachment 1) will inform the Council of recent counts, measurements, and monitoring figures driving water and environmental management issues.

List of Attachments

Attachment 1: By the Numbers Summary (*to be provided at Council meeting*)

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