INFORMATION ITEM

Lead Scientist's Report

Summary: Delta Lead Scientist Dr. Laurel Larsen will discuss a study by *Lukovic et al.* (2021). The study uses six decades of rainfall data to show a progressively delayed onset to California's rainy season. Dr. Larsen will also provide report-outs from the Adaptive Management Forum and Steelhead Trout Workshop and highlight upcoming events such as the 11th Biennial Bay-Delta Science Conference and ongoing Delta Science Proposal Solicitations.

A LATER ONSET OF THE RAINY SEASON IN CALIFORNIA. GEOPHYSICAL RESEARCH LETTERS. LUKOVIC ET AL. 2021.

Reliable water supplies have always been a concern in California due to its Mediterranean climate with wet, mild winters and hot, dry summers. In recent years, California and other Mediterranean climates have experienced drought and wildfires of increasing frequency and intensity. Previous investigators showed that the frequency of wildfire-associated weather in the autumn season has more than doubled in California since the 1980s due to increases in temperature and decreases in precipitation. Additionally, a delayed start to the rainy season and drier than normal conditions contributed to the incredibly destructive Camp fire, which burned over 150,000 acres (Herring *et al.,* 2020). Projections of climate change-influenced shifts in California's winter precipitation have been the subject of considerable uncertainty. This study aims to understand changes in the seasonality of the California rainy season and the mechanisms that control it.

To achieve this objective, Lukovic *et al.* used daily and monthly precipitation data, spanning the years 1960-2019, from 407 stations maintained by the National Weather Service Cooperative Observer Program (NWS COOP). The study area encompasses the entirety of California. The data suggest a statistically significant delay of 27 days in the onset of the California rainy season during the investigated period. The research team also found evidence for large-scale atmospheric circulation changes in the North Pacific, consistent with their interpretation of the delayed onset of the rainy season. In addition to the delayed rainy season onset, the team found that the precipitation seasonal cycle became sharper over the same period; the same amount of precipitation, on average, was delivered in a shorter amount of time. While higher monthly rainfall totals were associated with these sharper seasonal cycles during the peak of the wet season, there was no change in the timing of the end of the rainy season. Although these shifts are likely the result

of human-caused influences on the climate, further work is needed to support this conclusion.

This study is in line with action two (capitalize on existing data through increasing science synthesis) of the 2017-2021 Science Action Agenda. The study also relates to Chapter 3 of the Delta Plan, "A More Reliable Water Supply for California," by highlighting the shift in the timing of precipitation delivery that occurred after reservoir and other operational standards were established.

ON YOUR RADAR

Steelhead Trout Workshop Report Out

The Delta Science Program hosted the Monitoring Steelhead Populations in the San Joaquin Basin Workshop virtually on **February 17-19, 2021**. At the workshop, participants reviewed the management challenges and monitoring framework for *Oncorhynchus mykiss* and explored analytical approaches to measure the impact of management actions on San Joaquin Basic steelhead. Breakout sessions explored examples of monitoring steelhead populations in the Central Valley and successes that could potentially be leveraged within the San Joaquin Basin, identified relevant stakeholder groups and top monitoring priorities, as well as information needs given those priorities, current monitoring efforts, and existing programs that could be modified to meet needs, and charted a potential path forward. On the final day, breakout sessions explored what a balanced sampling framework that accounts for geographic heterogeneity and different life stages would entail, as well as the tools needed to make a regional monitoring plan successful. Participants in breakout sessions concluded that this is a complicated management and resource challenge with broad stakeholder interests. Although the current monitoring framework is sophisticated, there are still many opportunities to better align, coordinate, and create consistency. The next steps include scoping a potential manuscript, reconvening agency members that assisted with the Long-Term Operations non-flow action steelhead charter and drafting a San Joaquin Basin Monitoring Plan. The workshop supported the Biological Opinion on Long-Term Operation of the Central Valley Project and State Water Project – 3.6.2, which aims to develop a plan to monitor steelhead populations within the San Joaquin Basin and/or the San Joaquin River downstream of the confluence of the Stanislaus River, including steelhead and rainbow trout on non-project San Joaquin tributaries.

11th Biennial Bay-Delta Science Conference

The 11th Biennial Bay-Delta Science Conference will be held virtually **April 6-9, 2021** and is jointly sponsored by the Council and the U.S. Geological Survey. It represents a forum for sharing scientific information relevant to managing the connected San Francisco Bay and Sacramento-San Joaquin Delta systems. This year's conference theme is Building Resilience through Diversity in Science. Participants include, but are not limited to, natural scientists, engineers, resource managers, and stakeholders working on Bay-Delta issues. Details about the presenters, the conference agenda, and how to access the conference are available on the conference website: https://deltacouncil.ca.gov/delta-science-program/11th-biennial-bay-delta-science-conference

Please direct questions to: BDSC@deltacouncil.ca.gov.

Delta Science Proposal Solicitation Notice

The Delta Science Proposal Solicitation, supported by the Council's Delta Science Program, the U.S. Bureau of Reclamation (Reclamation), and California Sea Grant, closed on February 12, 2021. The Council received 99 proposals for research, responsive to the 2017-2021 Science Action Agenda. The total award amount is expected to be up to $9 million, including up to $5.5 million from the Council and up to $3.5 million from Reclamation. These proposals are now being thoroughly evaluated by independent subject matter experts. A public announcement of the awarded projects is anticipated in June 2021.

For more details about the Proposal Solicitation, please visit: https://deltacouncil.ca.gov/delta-science-program/delta-science-proposal-solicitations

BY THE NUMBERS

Delta Science Program staff will provide 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 Report

Attachment 2: Visual Abstract of Article Summary 1

CONTACT

Dr. Laurel Larsen
Delta Lead Scientist
Laurel.larsen@deltacouncil.ca.gov