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FOR IMMEDIATE RELEASE:

August 2, 2023

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State Water Contractors Partner with DWR to Award Over \$4 Million in Funding for Science Projects Through First-Ever Science Proposal Solicitation

Funding Supports Studies to Advance Understanding of San Francisco Bay, Sacramento-San Joaquin Delta and Upper Watersheds

Sacramento, CA – The State Water Contractors (SWC) awarded funding for six projects that will be conducted by leading researchers from some of the top institutions and firms in California and across the nation. These projects will investigate information gaps related to Delta Smelt, Longfin Smelt, Chinook Salmon and Central Valley Steelhead – helping reduce uncertainties in the effects of non-flow mechanisms that affect species growth, migration and survival. The SWC’s initial investment is supplemented with funding from the California Department of Water Resources (DWR), which brings the total scientific research investment above \$4 million.

“These awards are an exciting milestone for the SWC and the SWC’s Science Program. The projects we are funding will explore new lines of research and help fill in critical knowledge gaps to improve management of both water supply and ecosystem health. We are thankful to have a funding partner in DWR, as we share the goal of funding high-quality, management relevant science,” said **Darcy Austin, Science Manager for the State Water Contractors**.

The SWC Science Program collaboratively funds and facilitates objective, relevant, rigorous science that advances the understanding of factors affecting water supply reliability and habitat restoration for improved decision-making and management in the San Francisco Bay, Sacramento-San Joaquin Delta and watershed. The SWC’s first-ever science proposal solicitation requested proposals for solution-based studies that would inform critical uncertainties related to State Water Project (SWP) water operations, including habitat and ecology, Delta outflow and non-operational stressors.

The SWC selected the final projects through a three-phase review process, including screening, an independent peer review of scientific merits, and a panel review of the study design and

management relevance by scientists with experience in management relevant science in estuaries and watersheds. The SWC developed its review process based on similar processes followed by several other science organizations that have proven successful in selecting research with the greatest potential to make meaningful contributions to the field.

“We followed a transparent and rigorous process of requesting, reviewing, and ranking proposals and we are happy with the outcome of our first-ever science proposal solicitation,” continued **Austin**. “This level of rigor is important, as California must use the best available science to inform the way we meet the challenge of protecting fish species while ensuring a reliable water supply for millions of Californians.”

Project Overviews

Testing and Quantifying a Conceptual Model for the Response of Longfin Smelt to Outflow

- Wim Kimmerer, Co-Investigator, ICF Jones & Stokes, Inc.

“Longfin Smelt, once abundant throughout the San Francisco Estuary, has declined in abundance and is now listed as a threatened species. Yet its abundance can rebound when spring outflow is high. The focus of our research is to understand how abundance of Longfin Smelt varies between dry and wet years. Recent evidence shows that an interaction between the complex flow patterns of the estuary and the vertical swimming behavior of Longfin Smelt larvae may improve their survival during wet springs. If further evidence supports this idea, management of spring outflows could be focused to increase survival and subsequent abundance of Longfin Smelt.”

Evaluation of the Influence of State Water Project and Central Valley Project on Chinook Salmon and Steelhead Movements and Distribution in the South Delta

- Michael MacWilliams, Principal Investigator, Anchor QEA

“We are very excited that the State Water Contractors has provided funding to further investigate the effects of water project operations on the Chinook Salmon and steelhead movements and distribution in the South Delta. This project builds on our previous steelhead research conducted with the State Water Contractors under the Delta Science Program and will help us better understand differences in behavior and response of these two species in the South Delta to better inform water project operations.”

Improving Understanding of Survival, Mortality and Habitat Use of Emigrating Salmonids Through Applications of Multistate Survival Models

- Matt Peterson, Principal Investigator, FISHBIO

“Our research would improve our knowledge of how Chinook Salmon and steelhead survive or perish during their migration to the ocean. We will develop numerical models to simultaneously estimate survival and distinguish between sources of mortality. Estimates of the relative strength

among different sources of mortality will allow for more targeted management actions that directly address the underlying causes of mortality.”

Central Valley and Delta Salmon Habitat Data Modeling and Management

- Rene Henery, Principal Investigator, Trout Unlimited

“Recovering salmon in the Central Valley will require us all working together, which in turn requires a toolkit and information base that facilitates common understanding and collaboration. We hope this work will improve our ability to plan and implement habitat projects that work synergistically across the Central Valley landscape. We are grateful to SWC for investing in a more coherent and collaborative future.”

Applying a Response Spectrum Model to Assess Spatial and Temporal Differences in Effects of Pesticide Mixtures on Juvenile Chinook Salmon in the Delta

- Richard Connon, Principal Investigator, UC Davis

“The purpose of this project is to assess the variation in pesticide bioaccumulation and resulting biological effects in Chinook Salmon through their outmigration routes. We expect that concentrations of three commonly detected pesticides (DDT, bifenthrin, and fipronil) in juvenile Chinook Salmon will differ spatially and temporally in the Delta due to variation in factors such as land use, fish diet, and magnitude and timing of flood events during the salmon rearing season. By enhancing our understanding of the relationship between contaminant bioaccumulation and effects in juvenile salmonids, the proposed research will enable a predictive assessment of the likelihood of Delta pesticide loadings to cause negative individual-level effects and population declines. Results of the proposed study will provide a framework for evaluation of habitat restoration efforts through an improved understanding of how risks and effects of bioaccumulated pesticides in juvenile Chinook Salmon vary across habitats in the Delta, including reconnected floodplain rearing habitats.”

Cooling California Rivers: Developing a Spectral Physically Based Energy Balance Model to Predict and Manage River Temperatures for Salmon Under Current and Future Climates

- Erin Bray, Ph.D., Principal Investigator, San Francisco State University

“The overarching question we aim to answer is: How does understanding the mechanics about how rivers warm and cool help us to make decisions based on the best available science to sustain cool temperatures for salmon under a warming climate? We will further develop a model that will not only accurately predict river water temperature but also understand the mechanisms by which rivers warm downstream of dams.”

Learn more about the SWC Science Program by reviewing our [2023 Annual Science Plan](#).

For more information about the State Water Contractors, please visit www.swc.org.