2025 Delta Research Awards Summary

Information Sheet

Delta Science Program
DELTA STEWARDSHIP COUNCIL

Overview

The Delta Science Program and California Sea Grant are excited to announce projects have been selected for the 2025 Delta Research Awards. **The projects intended for funding will be up to three years in duration and were selected according to how well they advance the state of knowledge underlying high-priority science issues identified in the 2022-2026 Science Action Agenda** (SAA) (available at scienceactionagenda.deltacouncil.ca.gov) that affect the Sacramento-San Joaquin Delta and its management as an integrated social-ecological system.

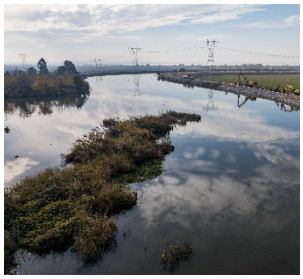
The SAA was developed by and for the Delta science community to align science actions to inform the following **six priority Management Needs**.

1. Improve coordination and integration of large-scale experiments, data collection, and evaluation across regions and institutions
2. Enhance monitoring and model interoperability [ability to exchange information], integration, and forecasting
3. Expand multi-benefit approaches to managing the Delta as a social-ecological system
4. Build and integrate knowledge on social process and behavior of Delta communities and residents to support effective and equitable management
5. Acquire new knowledge and synthesize existing knowledge of interaction stressors to support species recovery and ecosystem health
6. Assess and anticipate impacts of climate change and extreme events to support successful adaptation strategies

The 2025 Delta Research Awards will fund a total of 10 projects for a total of $7.8 million, and 8 of those projects will be funded by the Council totaling $5.9 million. These projects are responsive to one or more of the priority Science Action(s) identified in the 2022-2026 SAA. The new research covers a range of topics including harmful algal

blooms, eco-cultural restoration, Tribal Knowledge, subsidence, hydrology, acoustic telemetry, endangered species, and more.

$1,500,000 – Advancing a Collaboratory for Equitable Stewardship of the Sacramento-San Joaquin River Delta Watershed



T. Grantham, M. Rohde, J. Stella, J. Gilbert, N. Thomas, J. Fantauzza, W. Medema

The Delta faces challenges such as habitat loss, declining species, and water quality issues. This project aims to include marginalized communities in decision-making by integrating diverse knowledge sources, including indigenous and local knowledge, into management decisions to support ecological resilience and inclusive stewardship. The project will use innovative models and interactive platforms to bring together various perspectives for better decision-making and resource management. The project aims to integrate an understanding of the social-ecological uses and diverse values of Delta waterways to inform equitable solutions to Delta management challenges, promote public engagement, and support equitable stewardship of the Delta's vast resources.

Primary Science Action Agenda Items Project Addresses: 4A and 1A

$1,348,477 – Eco-Cultural Renewal of Delta Tule Landscapes

A. Robinson, M. Tayaba, P. Cubbler, S. Pang, J. Sarmento, K. Moreno, Z. Emerson, L. Feinstein, V. Lee, L. Vaughn, A. Whipple

The Eco-Cultural Renewal of Delta Tule Landscapes is a collaborative project between the San Francisco Estuary Institute (SFEI) and two Delta area Tribes, the Shingle Springs Band of Miwok Indians and the Koy'o Land Conservancy. The project aims to interweave Traditional Ecological Knowledge (TEK) with Delta science, management, and policies to make these processes more inclusive. Data will be collected through interviews, literature reviews, and a Tribal workshop to guide future management efforts. The project addresses the need for better collaboration between Delta agencies and Tribes, while supporting effective and equitable management by including Tribal perspectives in decision-making.

Primary Science Action Agenda Items Project Addresses: 4A and 3A

$875,241 – Understanding Social-Environmental Interactions in Suisun-Delta Tidal Marsh Restoration

S. Siegel, J. Gonzalez, C. Grosso, M. Haeffner

Tidal marsh restoration in areas like Suisun Marsh and the Sacramento-San Joaquin Delta is crucial for ecosystem services, especially in response to climate-driven sea level rise. However, there are knowledge gaps in how different communities perceive and interact with restored habitats. This project seeks to integrate ecological data with social metrics to address environmental justice concerns, enhance public engagement, and improve restoration outcomes. By understanding how communities value and use restored habitats, the project will provide insights to inform management, planning, and policy decisions.

Primary Science Action Agenda Items Project Addresses: 4A and 4B

$772,992 – Optimizing Monitoring Tools for Cyanobacterial Harmful Blooms in the Sacramento-San Joaquin River Delta

H. Bowers, G.M. Berg, E. Preece, L. Nickelhoff, S. Fern, G. Batten, T. Hinkelman, Z. Gigone

Harmful algal blooms (HABs) of *Microcystis*, a toxin-producing cyanobacteria, have increased in the Delta due to warming temperatures, drought, and reduced water flow. The *Microcystis* Visual Index (MVI) helps assess bloom density, but it has limitations. This project aims to improve MVI by developing an image classification model to link MVI rankings to *Microcystis* biomass and toxicity, enhancing our understanding of health risks. It will improve monitoring of *Microcystis* density and microcystin concentrations, a harmful toxin created by cyanobacteria that can contaminate drinking water and it will create user-friendly tools for better monitoring of HABs in the Delta.

Primary Science Action Agenda Items Project Addresses: 2B and 1A

$511,845 – Analyzing Flow Regime Effects on Adult Green Sturgeon Migration in Central California Rivers: Science and Policy

K. Börk, J. Walter, E. Tracy, S. Colbourne, F. Bellido-Leiva, S. Yarnell

There are two populations of green sturgeon, with the Southern Distinct Population Segment (sDPS) found in the Sacramento-San Joaquin Delta. This population is vulnerable to habitat loss and water management impacts, such as altered flow and temperature. This project aims to use fish movement data to develop an individual-based model (IBM) that simulates green sturgeon migration and evaluates the effects of water management and climate change. By understanding how water management practices impact the spawning and survival of the threatened sDPS green sturgeon, the project will provide tools for conservation and policy efforts. It will help managers and policymakers assess how water management and climate changes affect green sturgeon populations.

Primary Science Action Agenda Items Project Addresses: 5D and 6E

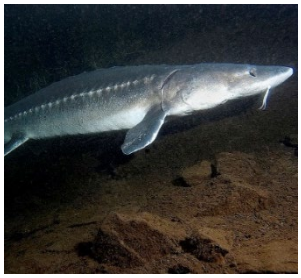
$203,718 – From Source to Sea: Building an Integrated Cross-Cultural Vision of Sierra Headwaters and Delta Resilience

J. Lauder, D. Herbst, H. Fitanides, S. Covert, A. Zettler-Mann, K. Strohm

The impact of climate change on the Sierra Nevada headwaters, which supply water to the Sacramento-San Joaquin Delta, is not well understood. This project combines climate change modeling with tribal knowledge to develop a framework for increasing climate resilience. It will integrate data on benthic macroinvertebrates (small, bottom-dwelling organisms often used as water quality indicators), hydrology, climate, and Traditional Ecological Knowledge (TEK) to create tools for predicting ecosystem resilience and prioritizing conservation efforts. Integrating TEK into climate change modeling will close knowledge gaps, include indigenous perspectives, and help implement management strategies to enhance climate resilience.

Primary Science Action Agenda Items Project Addresses: 1A and 1C

$200,000 – Leveraging Citizen Science to Study Sturgeon Mortality in the San Francisco Estuary



B. Burford, N. Demetras

The San Francisco Bay Delta Estuary is home to both white sturgeon and the federally threatened green sturgeon. White sturgeon has recently been designated as a candidate species under the California Endangered Species Act, prompting the

California Department of Fish and Wildlife (CDFW) to evaluate their status. Key threats include harmful algal blooms (HABs) and vessel strikes, particularly in the Carquinez Strait, a critical migratory corridor for sturgeons. This study will use citizen science to gather data that will support CDFW's evaluation and guide management strategies to help recover adult green and white sturgeon populations.

Primary Science Action Agenda Items Project Addresses: 5B

$197,507 – Improving Subsidence and Carbon Emissions Modeling

S. Deverel, M. Olds, S. Haas

The oxidation of Delta organic soil causes subsidence, threatening infrastructure, water systems, biodiversity, and agriculture, while releasing about 1.2 million metric tons of CO_2 annually. The SUBCALC model is a tool that estimates subsidence rates and CO_2 emissions, aiding carbon offset validation and land-use decisions. The tool helps landowners convert drained farmland into wetlands, reducing subsidence and flood risks. Ongoing research is using data like LiDAR and UAVSAR remote sensing to improve SUBCALC's accuracy. The improved model will better predict subsidence, protect infrastructure, reduce flood risks, support carbon market participation, and inform sustainable land management strategies.

Primary Science Action Agenda Items Project Addresses: 3D

2025 Delta Research Award recipients funded by the State Water Contractors

Fit for the Wild: Cultivating Release-Ready Delta Smelt in Impoundments

F. Mauduit, N. Fangue, A. Segarra, D. Cocherell, T. Hung, S. Acuña

The Delta Smelt is a small fish found only in the San Francisco Bay-Delta that were once abundant but are now critically endangered. Despite ongoing conservation efforts, captive-bred smelt struggle to survive when released into the wild. This project will explore the use of natural impoundments (enclosed environments that mimic wild conditions) to improve rearing methods. Researchers will compare the fitness of smelt raised in impoundments compared to those raised in traditional hatcheries. The goal of this project is to raise

Delta Smelt that are better adapted to survive in the wild which could contribute to Delta Smelt's long-term survival.

Uncovering Genetic and Life History Resilience in Spring-Run Chinook Salmon

F. Cordoleani, M. Meek, C. Jeffres, M. Willmes, R. Johnson, G. Whitman, A. Sturrock

California's spring-run Chinook salmon, a critically important species for freshwater ecosystems and tribal communities, face a high risk of extinction despite their historical abundance. This project aims to develop an innovative toolbox using genetic and isotopic markers to assess the diversity of Central Valley spring-run Chinook salmon populations. Researchers will analyze adult spawners across the population range by examining Chinook salmon DNA, ear bones of the fish, and chemical markers in fish eye lenses to study migratory strategies, habitat use, and age structure. The goal is to provide insights to guide recovery efforts, support sustainable populations, and inform restoration strategies in the face of environmental challenges.