

# Delta Science Fellows

2022 Award Recipients



Delta  
Science  
Program

DELTA STEWARDSHIP COUNCIL

## Overview

Delta Science Fellowships have been awarded to one Master's students, four PhD students, and three post-doctoral researchers from five academic institutions in the University of California and California State University systems. Over the next two years, these early career scientists will conduct high-priority research in the Sacramento-San Joaquin Delta relevant to management needs identified in the [2022-2026 Science Action Agenda](#). Their research in the natural and social sciences covers a broad range of topics, including wetland restoration, water quality, fish and predator ecology, pesticides, and harmful algal blooms.

Fellowship recipients will work with research mentors at academic institutions and community mentors from State and federal agencies who provide their expertise in using scientific information to advance management and decision-making in the Delta. This year, the State Water Contractors are providing funding to support one fellow, and seven fellows are supported from the Delta Stewardship Council's General Fund.

## Connections to the Science Action Agenda

Delta Science Fellows were selected in part based on the relevance of their research to the **Science Action Agenda**, which 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, 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

## Fellowship Recipients

Fellow	Project Title	Management Needs
<b>Elsie Carrillo</b> UC Santa Cruz PhD Student	<b>Functional diversity and predator-prey dynamics along the Sacramento and San Joaquin River Delta</b> Elsie will measure species diversity, habitat use, and diet of native snakes in the Delta. Results will inform the role that native species can play in controlling invasive pests such as crayfish, bullfrogs, and nutria.	1, 2, 3
<b>Andreja Kust</b> UC Berkeley Postdoctoral Scholar	<b>Identification of environmental conditions driving cyanobacterial multi-species blooms and their toxicity using genome resolved metagenomics</b> Andreja will use new genomic techniques to identify and link cyanobacteria taxa and cyanotoxins within harmful algal blooms (HABs). Results will leverage existing monitoring data from the Interagency Ecological Program to help identify drivers and impacts of HABs and cyanotoxins.	5

Fellow	Project Title	Management Needs
<p><b>Garfield Kwan</b> Scripps Institution of Oceanography Postdoctoral Scholar</p>	<p><b>Fish out of breath: Assessing, developing, and validating physiological bioindicators of hypoxia across the Delta</b> Garfield will use lab experiments to measure the combined effects of temperature and hypoxia on Chinook salmon smolts and juvenile Delta Smelt. Results will help managers determine habitat viability and conservation plans for these native species.</p>	2, 5
<p><b>Maiyah Matsumura</b> CSU East Bay Master's student</p>	<p><b>Using high frequency flux measurements to constrain dissolved inorganic carbon in a tidal wetland carbon budget</b> Maiyah will collect field data on atmospheric and hydrologic carbon fluxes in restored tidal wetlands to construct a net carbon budget. Results will improve our understanding of wetlands as both sinks and potential sources of carbon dioxide, thus informing tradeoffs of wetland restoration.</p>	3
<p><b>Megan Pagliaro</b> UC Berkeley PhD Student</p>	<p><b>Restoring tidal marsh food-webs: assessing restoration effects on trophic interactions and energy flows in the San Francisco Bay-Delta</b> Megan will use stable isotopes to characterize and compare food webs in restored and reference tidal marshes. Results will address whether breaching dikes to restore wetlands translates into recovery of robust aquatic food webs that support native fish species.</p>	3, 5

Fellow	Project Title	Management Needs
<p><b>Nicol Parker</b> UC Santa Barbara PhD Student</p>	<p><b>Harmonizing pesticide risk management of the Bay Delta watershed</b> Nicol will expand upon the Pesticide Management Prioritization Model that she developed under her 2020 fellowship by adding multi-species indices, pesticide transport under diverse irrigation practices, and pesticide degradation in a range of Bay-Delta soils. Results will enable farmers and other residents of agricultural areas to better understand their exposure to pesticides and identify opportunities to improve pesticide practices.</p>	<p>1, 2, 5</p>
<p><b>Tara Pozzi</b> UC Davis PhD Student</p>	<p><b>Mapping the adaptation governance network of the Delta</b> Tara will conduct a survey and in-depth case studies to assess learning and cooperation within the governance system for climate adaption in the Delta. Results will inform governance strategies for adapting to climate change, particularly for climate-vulnerable communities.</p>	<p>4, 6</p>
<p><b>Parsa Saffarinia</b> UC Berkeley Postdoctoral Scholar</p>	<p><b>Examining the relationship between Longfin Smelt, zooplankton, and flow in the San Francisco Bay Delta</b> Parsa will leverage existing large datasets from three State and federal agencies to develop models that examine whether flow-ecology relationships for Longfin Smelt have changed over time. Results will inform ongoing management and conservation actions for this threatened species.</p>	<p>1, 2, 3, 5, 6</p>