INFORMATION ITEM

Lead Scientist Report

Summary

In summer 2025, the Wetlands Regional Monitoring Program, the Delta Stewardship Council, the San Francisco Estuary Institute, and the Department of Water Resources partnered to across the entire Bay-Delta. This collaborative project created a continuous, high-resolution dataset of elevation—essentially a highly precise 3D map of the region's landscape. This dataset provides an unprecedented view of how the land is shaped and how habitats are structured across the region. The improved extent and level of detail are both critical for several management priorities, including flood modeling (predicting areas subject to flooding), subsidence tracking (tracking where land levels are lowering), ecosystem restoration project design, and supporting long-term climate adaptation planning.

The Bay-Delta Lidar Mapping Collaboration

Elevation data is vital to managing the Bay-Delta. It is used to construct detailed 3D pictures of the landscape, which helps scientists, engineers, and planners do things like monitor landscape changes, assess flood risks, and plan restoration or infrastructure projects. The more accurate and comprehensive the elevation data, the better. Until recently, elevation maps of the Bay-Delta were patchy. Some areas were mapped well, while others relied on older, less accurate data. Agencies often had to combine different datasets and make educated guesses about areas in between. This added uncertainty to important decisions about flood protection, habitat restoration, and water management.

A regional collaboration

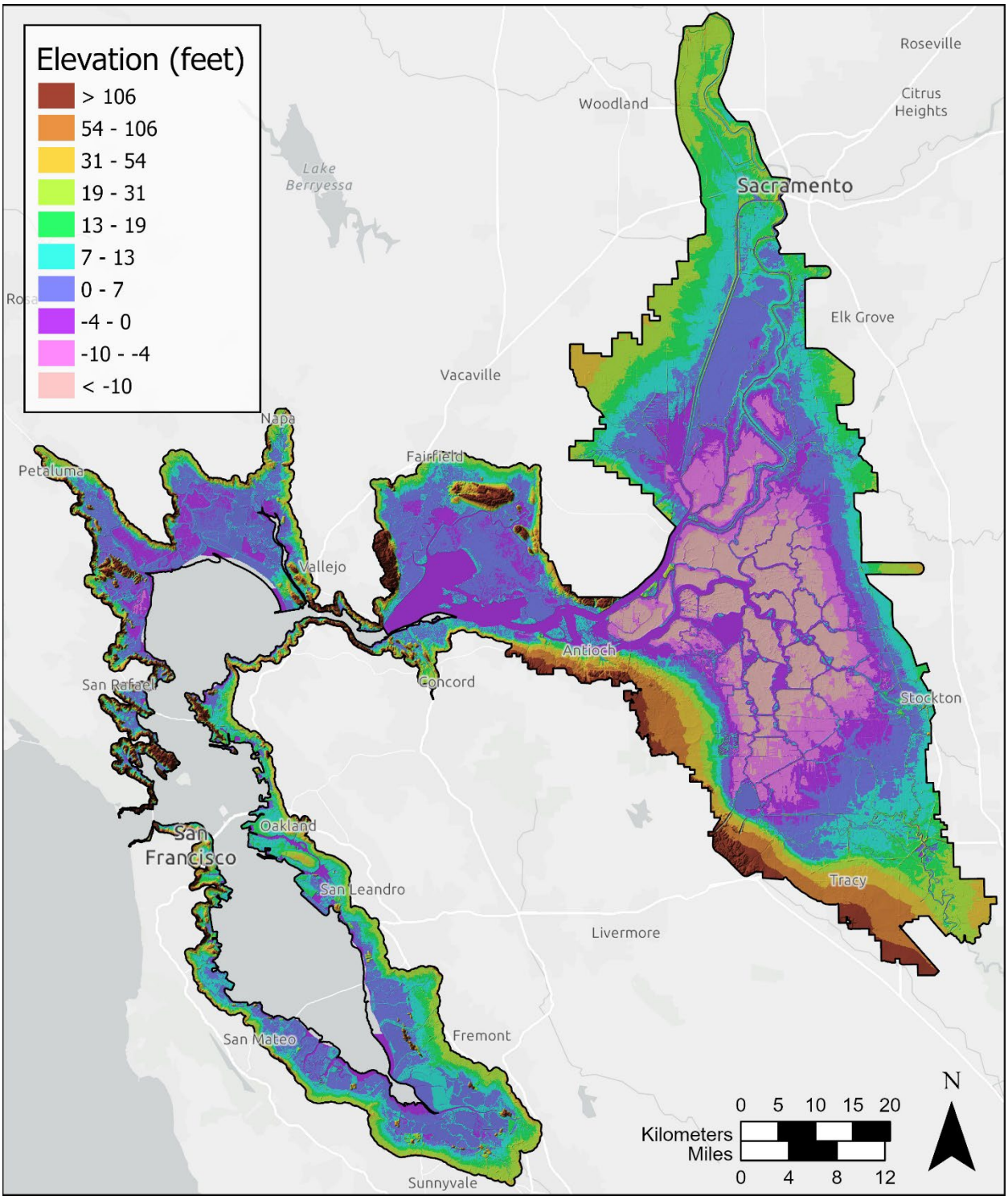
Recognizing the need for a major upgrade to regional mapping data, the San Francisco Bay Wetlands Regional Monitoring Program brought together the Council, the San Francisco Estuary Institute, and the California Department of Water

Resources to collaborate on updating and modernizing Bay-Delta elevation data. The four institutions, with additional support from the South Bay Salt Pond Restoration Project and Santa Clara County's Valley Water, pooled their resources and expertise to commission a comprehensive lidar survey of the whole Bay-Delta and give the region something it had never had before: one consistent, high-quality elevation map of the entire system. The joint undertaking has deepened the collaboration and ties between different parts of the Bay-Delta and resulted in cost savings for organizations who would otherwise have needed to obtain the data individually.

Capturing the Bay-Delta in high definition

Between August 22 and October 6, 2025, lidar data was collected by plane over an area of some 1.25 million acres. Lidar stands for Light Detection and Ranging. This is a technique that bounces specialized laser pulses off the Earth's surface and measures how long they take to come back, which is used to calculate elevation. When you combine many millions of these surface elevation data points, you can ultimately build up a detailed 3D picture of the terrain, vegetation, and even buildings on the Earth's surface. The lidar data provides high-resolution, region-wide elevation data for the entire San Francisco Bay-Delta estuary, offering an unprecedented view of the landscape, landforms, and habitat conditions.

As well as replacing the patchwork of different datasets with one consistent, high-quality map, the new seamless map can show smaller ground features more clearly and has improved vertical accuracy. In a region where small changes in elevation have a large effect on how water flows, every inch of improved accuracy matters. And because the data was collected during summer, when water levels and tides were lowest, the new dataset shows more detail in river channels and wetlands than in many previous maps.



Preliminary Delta surface elevation map derived from the collaborative summer 2025 lidar collection. Note the data are preliminary and still undergoing quality checks.

Better data, better decisions

The more accurate map will help scientists better understand how water moves through the Bay-Delta, where land is sinking (or rising), and where flood risks may increase. It will improve computer models that predict how storms or sea level rise could impact communities. It will also help agencies plan restoration projects more effectively and analyze the results of previous restoration projects. This matters for everyone. Better flood modeling helps protect homes and communities.

More accurate water modeling supports clean drinking water. Stronger planning improves the success of wetland restoration, which benefits wildlife and water quality. Because the data will be publicly available, researchers and community members will be able to see how the landscape is changing and use the data to understand environmental conditions in their neighborhoods and to inform local projects. This kind of transparency also gives the public a way to understand and visually follow the impact of planning decisions that are being made on behalf of communities.

Where to access the new data

Products are expected to be publicly released and available for download in late summer. The public will be able to access the data in various places, including on the California Natural Resources Agency Open Data Portal (https://data.cnra.ca.gov/), at the SFEI Data Center (https://www.sfei.org/data-center), and via the National Oceanic Atmospheric Administration Digital Coast Data Access Viewer (https://coast.noaa.gov/dataviewer/#/). The National Map (https://www.usgs.gov/programs/national-geospatial-program/national-map) also plans to host the data when U.S. Geological Survey acceptance protocols are completed.

More information will be added to the Council's Delta Science Tracker (a web-based product to track Delta research and monitoring efforts and improve science communication and collaboration) as it becomes available (https://sciencetracker.deltacouncil.ca.gov/activities/san-francisco-bay-delta-estuary-2025-lidar-mapping-collaboration).

Delta Science Program Activities

Peer review update – Winter-Run Chinook Annual Loss

In February, a three-member panel of independent scientific experts completed its report for the *Water Year 2024 and 2025 Winter-Run Chinook Salmon Annual Loss Independent Peer Review*. The "annual loss threshold" is the maximum number of juvenile salmon (natural and hatchery-raised) that can be drawn into water export facilities each year. This limit is established in the Incidental Take Permit (ITP) issued to the California Department of Water Resources (DWR). The loss threshold for natural winter-run was exceeded in March 2024 and the loss threshold for hatchery winter-run was exceeded in March 2025, which triggered this peer review.

The panel reviewed actions and decisions that contributed to these events and provided the U.S. Bureau of Reclamation and DWR with recommendations on how to stay within the ITP's allowable threshold for winter-run salmon in the future. The panel's report is very thorough and provides multiple recommendations that encompass changes in management, improvements to monitoring and predictive modeling methods, and expanding information sharing between agencies. Peer review final reports are made available on the Council's website: https://deltacouncil.ca.gov/delta-science-program/scientific-peer-review.

The Council welcomes five new California Sea Grant State Fellows

In February and March 2026, five new California Sea Grant State Fellows began 12-month fellowships within units of the Delta Science Program and Planning and Performance Division at the Council. State Fellows are recent post-graduates interested in exploring a career path in the public sector at the science-policy interface. Fellows are matched with municipal, state, or federal agencies to gain experience in marine, coastal, and/or watershed resource management in California.

The Council has hosted a total of 50 fellows through this program over the past 13 years. Previous work performed by fellows includes working with the Delta Lead Scientist on monthly Lead Scientist Reports to the Council; supporting the Delta Independent Science Board; participating in the Delta Science Plan and Science Action Agenda Updates; and assisting in Delta Plan amendments and updates. Fellowship placements for the class include:

- Alyssa Burns – Adaptive Management unit and Independent Science Board
- Addison (Addie) Gleekel – Delta Plan Development, Implementation & Policy unit
- Melissa Palmisciano – Science Communication and Synthesis unit
- Jessica (Jessie) Patzlaff – Research Funding unit
- Brayden Wiley – Collaborative Science and Peer Review unit

Staff from the Science Program and the Planning and Performance Division participated in the annual matching workshop for the California Sea Grant State Fellowship Program in September 2025. The contract amendment to support the 2026 class of fellows was approved by the Council at the January 2026 meeting.

IEP Annual Workshop

The 2026 Interagency Ecological Program (IEP) Annual Workshop took place at the California Natural Resources Agency headquarters on March 16–18, 2026. The Annual Workshop is an informal event held each spring to share new research that advances science important to the IEP and the larger Delta science community. Topics covered this year included emerging technologies and artificial intelligence, physical and biological effects of flow, contaminants and water quality, harmful algal blooms, wetland habitats, Delta and longfin smelt, salmon, and zooplankton and other invertebrates. Science Program staff gave talks on contaminants monitoring, the Delta Modeling Collaboratory, the 2026 update to the Delta Science Plan, and the recent initiative to assess how research funded by the Council's Delta Science Program has impacted Delta management decisions. Delta Science Program staff also presented posters on science investments, managing invasive aquatic vegetation, and the Delta Science Tracker, and even contributed to the workshop's art exhibits!

The 2026 IEP Annual Workshop presentations were recorded and will be posted to the IEP Master List on the California Department of Fish and Wildlife's YouTube Channel (https://www.youtube.com/playlist?list=PL-PEXRYYBP1TfHYR2o4tupieGQphEPhDa).

On Your Radar

Collaboratory session at CWEMF Annual Meeting, April 20–22

From April 20 to 22, modelers, researchers, and water resource professionals from across California will gather at Lake Natoma Inn, Folsom, for the California Water and Environmental Modeling Forum (CWEMF) Annual Meeting. Delta Science Program staff are coordinating a session entitled "Collaborative modeling in the Delta: exploring feasibility using three use cases." The session will feature talks from Delta Lead Scientist Dr. Lisamarie Windham-Myers, UC Merced Associate Professor of Environmental Engineering Dr. Josué Medellín-Azuara, San Francisco Estuary Institute Clean Water Program Co-Director Dr. David Senn, U.S. Geological Survey research fish biologist Dr. Matthew Young, and Delta Science Program Senior Environmental Scientist Dr. Michelle Stern. These talks will present the overarching vision for a Delta Modeling Collaboratory alongside preliminary results from three modeling projects exploring the benefits and possibilities of a Collaboratory to address salinity, harmful algal bloom, and tidal wetland management questions.

Save the date! Bay-Delta Science Conference, September 28–30

The Delta Stewardship Council and U.S. Geological Survey are pleased to announce that the 13th Biennial Bay-Delta Science Conference will be held in person at the SAFE Credit Union Convention Center in Sacramento, California, from September 28–30, 2026. The theme of this year's conference is "Opportunity of Change: Building and Being the Future." This is an exciting opportunity to learn about the latest research in the Bay-Delta, network with professionals working and researching in the system, and contribute to the advancement of science-informed decision-making. Registration and a call for sessions/abstracts will open later this spring. Stay tuned to the Council's website and email announcements for updates or visit the conference website at https://www.baydeltascienceconference.com/. To inquire about supporting the event through sponsorship, contact bdsc@deltacouncil.ca.gov.

By the Numbers

Science Program staff will summarize 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

Attachment 2: Mapping California's Bay-Delta Like Never Before: Information Sheet

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A recording of the presentation will be available on the Delta Council's YouTube page at https://www.youtube.com/@DeltaCouncil.