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# 2024 Draft Annual Workplan

Delta Independent Science Board



**Delta  
Independent  
Science Board**

DELTA STEWARDSHIP COUNCIL



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### Report Hyperlinks

All links in this report have been created with meaningful text. If you have a printed version of this document, you can find the [electronic copy](https://deltacouncil.ca.gov/pdf/isb/meeting-materials/2024-01-17-isb-draft-workplan.pdf) of the report at <https://deltacouncil.ca.gov/pdf/isb/meeting-materials/2024-01-17-isb-draft-workplan.pdf>.

## Background

The Delta Independent Science Board (Delta ISB; Board) is charged by the 2009 Delta Reform Act to “provide oversight of the scientific research, monitoring, and assessment programs that support adaptive management of the Sacramento-San Joaquin Delta through periodic reviews of each of those programs that shall be scheduled to ensure that all Delta scientific research, monitoring, and assessment programs are reviewed at least once every four years” (California Water Code 85280 (a)(3)). To meet its legislative mandate, the Delta ISB is currently reviewing “programs” by thematic or topical areas. To date, the Delta ISB has completed the following thematic reviews: restoration (2013), fish and flows (2015), adaptive management (2016), levee hazards (2016), the Delta as an evolving place (2017), water quality (2018), the Interagency Ecological Program (2019), non-native species (2021), the monitoring enterprise (2022), and water supply reliability estimation (2022).

The process for selecting topics has changed over time. Topics were originally selected in alignment with the chapters of the Delta Plan, but selection now also involves stakeholder feedback through retreats, panel discussions, and questionnaires to the Delta community.

In addition, the Delta ISB also reviews specific science documents related to adaptive management or the Delta Plan. These reviews can be either self-initiated or based on a specific request from an individual or entity. Document reviews are usually undertaken to meet other legislative mandates, such as (1) providing independent advice to the Delta Stewardship Council on the Delta Plan (California Water Code 85308 (a)) or (2) consulting with the California Department of Water Resources on the Bay-Delta Conservation Plan (California Water Code 85320 (c)). Furthermore, the Delta ISB periodically prepares call-to-action letters or memos to specific agencies, such as the State Water Resources Control Board, in which the Delta ISB shares emerging insights, key findings, or recommendations that require action. Additional details on the Delta ISB review processes can be found in its [operating guidelines](#) or in the Delta Science Program’s [Assessment of the Value and Impact of the Delta ISB](#).

Lastly, the Delta ISB consults with the Delta Stewardship Council prior to the Council's appointment of the Lead Scientist for the Delta Science Program. As part of the consultation, the Delta ISB makes a recommendation to the Council on who it should appoint as the Lead Scientist. Dr. Lisamarie Windham-Myers' limited term appointment as Lead Scientist will end in June 2024. The Delta ISB will continue working with the Council to recruit the next Lead Scientist in 2024.

## 2023 Accomplishments and 2024 Plans

In 2023, the Delta ISB completed three review memos: (1) [Comments on the Scientific Basis for Implementation of Voluntary Agreements for the Sacramento River, Delta, and Tributaries](#), (2) [Comments on the Delta Conveyance Project Environmental Impact Statement](#), and (3) [Comments on the Draft Pyrethroid Control Program and Research Plan](#). In addition, the Delta ISB scoped out three new thematic reviews by finalizing prospectuses on (1) food-webs, (2) subsidence, and (3) decision-making under deep uncertainty (DMDU). Prior to undertaking a major review, the Delta ISB prepares a brief prospectus describing the review's purpose and process based on engagement with interested parties including agencies and stakeholders. The Delta ISB was able to meet key milestones in 2023 by hosting four seminars to educate the community on decision-making under deep uncertainty, and two major workshops to inform the food-webs and subsidence reviews.

In 2024, the Delta ISB plans to continue its work on these three reviews and may undertake new reviews and activities. This workplan provides an overview of each of the current Delta ISB activities planned for 2024. The workplan is subject to change as the Delta ISB discusses the efforts, receives public comments, and considers additional requests for advice and review from individuals or entities in the region, such as the Delta Stewardship Council.



## Overview

The table below provides a high-level overview of rough target dates for various Delta ISB activities in 2024. Target dates are subject to change. Many of the activities are multi-year projects so only key target dates are shown for 2024. Additional details on each activity are described in the sections below.

Activity	Q1 (Jan-Mar)	Q2 (Apr-Jun)	Q3 (Jul-Sept)	Q4 (Oct-Dec)
Food-webs Review	<b>Feb/Mar:</b> Release draft review report to the Delta ISB for discussion	<b>Apr:</b> Present at the Interagency Ecological Program Workshop  <b>Apr:</b> Release draft review report for a 60-day public comment period	<b>Jun</b> Discuss public comments on draft report and revise report	<b>Aug:</b> Finalize review and findings  <b>End of 2024:</b> Present final report to the Delta Stewardship Council
Subsidence Review	<b>Mar/Apr:</b> Release draft review report to the Delta ISB for discussion	<b>Apr:</b> Present poster on preliminary findings at the Interagency Ecological Program Workshop and the National Conference on Ecosystem Restoration  <b>Apr/May:</b> Release draft review report for a 60-day public comment period	<b>Jul:</b> Discuss public comments on draft report and revise report	<b>Sept:</b> Finalize review and findings  <b>End of 2024:</b> Present final report to the Delta Stewardship Council
Decision-making under Deep Uncertainty Review	<b>Jan:</b> Host final seminar with the potential for more seminars in 2024  <b>Feb:</b> Complete scenario inventory and qualitative analysis. Begin interviews.  <b>Mar:</b> Complete seminar summary	<b>May/June:</b> Complete interviews and analysis	<b>Jul:</b> Release draft review report to the Delta ISB for discussion	<b>Sept:</b> Release draft review report for a 60-day public comment period  <b>Dec:</b> Discuss public comments on draft report and revise report
Final Delta Conveyance Project EIR Review	<b>Feb:</b> Discuss comments on the final EIR and flesh out work plan.	<b>Jun/Jul:</b> Aim to complete review		
Delta Lead Scientist Recruitment	<b>Feb/Mar:</b> Conduct interviews with candidates	<b>Apr:</b> Make a recommendation to the Council on who to appoint as Delta Lead Scientist		
Outreach and Communication	The Delta ISB will continue to perform outreach and communication of its completed and current reviews.			
Other Reviews?	The Delta ISB will continue to consider requests for review and advice throughout 2024 and may take on new reviews.			

## Food-webs Review

Food-web interactions may directly influence how environmental drivers and management actions affect the abundances of individual species, as changes in one species can affect the abundances of other species. This review will assess the importance of upper trophic level food-web interactions in the Delta and to identify where improved understanding and tools (e.g., food-web models) might substantially improve predictions of an individual species' response to environmental drivers and management actions. This review will evaluate the degree to which the inclusion of food-web interactions can benefit and facilitate multi-species management in the Delta and whether available data and science can support the development of such tools. To help inform this review, the Delta ISB hosted a workshop on November 8-9, 2023, in Sacramento, California (see [day 1](#) and [day 2 recording](#)).

The workshop brought around 200 participants together to learn how food web models are being used for management in other large, complex ecosystems similar to the Delta, and about data collection techniques that could lower the cost of understanding food web interactions and developing food web models. In 2024, the Delta ISB will work on synthesizing information gathered from the workshop and completing the review. For more information, please refer to the [final prospectus](#).

Target Date	Benchmark
February/March 2024	Release draft review report to the Delta ISB for discussion
April 2024	Present initial findings at the Interagency Ecological Program Workshop.
	Release draft review report for a 60-day public comment period
June 2024	Discuss public comments on draft report and revise report
August 2024	Finalize review and findings
End of 2024	Present final report to the Delta Stewardship Council

## Subsidence Review

Subsidence is particularly pronounced in the Central Delta where approximately 50,000 acres of agricultural land lie several meters below sea level, protected by over 1,000 miles of levees. A broad cross section of stakeholders, including both public agencies and private sector parties, are developing approaches to mitigate subsidence. The purpose of this review is to support ongoing and future subsidence management efforts by summarizing, examining, and assessing the existing or planned programs, barriers and opportunities, state of scientific understanding, and the scientific gaps in knowledge related to management of subsided lands . In October 2023, the Delta ISB hosted a two-day public workshop (see [day 1](#) and [day 2](#) recording). This workshop brought ~165 participants together to understand management practices and evaluate the state of science on Delta subsidence, providing for meaningful interactions among agency officials, scientists, farmers, and other interested parties. In 2024, the Delta ISB will work on synthesizing information from panel presentations and discussions from the workshop and completing the review. For more information, please refer to the [final prospectus](#).

Target Date	Benchmark
March/April 2024	Release draft review report to the Delta ISB for discussion
April 2024	Present poster on preliminary findings at the Interagency Ecological Program Workshop and the National Conference on Ecosystem Restoration
April/May 2024	Release draft review report for a 60-day public comment period
July 2024	Discuss public comments on draft report and revise report
September 2024	Finalize review and findings
End of 2024	Present final report to the Delta Stewardship Council

## Decision-making under Deep Uncertainty (DMDU) Review

This review will build an understanding of the scientific tools and concepts that can inform management and policy decision-making under rapid change and increasing uncertainty of future forecasts. Deep uncertainty is system variability that cannot be well characterized with existing data, models and understanding, such as impacts from climate change. Activities will include public seminars, an inventory and analysis of current uncertainty and scenario planning efforts in the Delta, and discussions with members of the Delta scientific and management communities. Insights gained through these activities will be summarized in a report with recommendations to help the Delta science and management community better characterize, prepare for, and adapt to uncertainty for a range of management needs. The review kicked off in 2023 with a series of seminars to introduce the concepts of DMDU and how they are being applied in practice. The Delta ISB is targeting a draft report in late 2024. For more information, please refer to the [final prospectus](#).

Target Date	Benchmark
January 2024	<p>In 2023 and January 2024, the Delta ISB hosted five public seminars to (see <a href="#">seminar playlist</a>):</p> <ul style="list-style-type: none"> <li>a) Introduce concepts of DMDU</li> <li>b) Explore/identify deep uncertainties in the Delta as perceived from diverse individual and/or organizational perspectives,</li> <li>c) Identify some signals of future change, and</li> <li>d) Provide other useful background information</li> </ul> <p>Additional seminars could be scheduled if the need arises.</p>
February 2024	Develop inventory and do qualitative analysis to systematically characterize and critically evaluate existing Delta scenario design and development processes through an interdisciplinary decision science and futurism lens.
March 2024	Complete seminar summary and synthesis to introduce and explain concepts of DMDU.
May/June 2024	Finish interviews with Delta scenario developers and analyze data to flesh out understanding of scenario development and use to address uncertainty in their decision-making processes.



Target Date	Benchmark
July 2024	Release draft report for Delta ISB discussion, summarizing information gained through seminar series, scenario inventory, interviews, and analysis, with recommendations to improve science of scenario development and analysis to inform decision-making under deep uncertainty in the Delta.
September 2024	Release draft review report for a 60-day public comment period
December 2024	Discuss public comments on draft report and revise report
Early 2025	Finalize review and findings
	Present final report to the Delta Stewardship Council

## Outreach and Communication

The Delta ISB does outreach throughout all stages of its reviews, providing regular updates at Delta ISB and Delta Stewardship Council meetings. Upon completion, final Delta ISB reports are provided and presented to the Council, which considers implementing Board recommendations. In addition, the Delta ISB conducts additional outreach to share its findings with relevant entities in the larger Delta community. Current outreach activities may include presentations at scientific workshops, conferences, or meetings at other venues (e.g., DPIIC), direct follow up with entities who could implement recommendations, and preparation of a summary sheet and/or a peer-reviewed journal article. The Delta Science Program helps distribute many completed products to various outlets including the Delta Stewardship Council listserv, [Maven's Notebook](#), and Delta eNews.

Throughout 2024, the Delta ISB will continue to publicly engage with partners to discuss Delta ISB recommendations. For example, the Delta ISB has advised managers and social science researchers to help address some recommendation from its [Delta as an evolving place review](#). Those recommendations included expanding and sustaining a commitment to social science research to improve understanding of the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.

Furthermore, the Delta ISB will track the Delta Plan Interagency Implementation Committee's (DPIIC's) long-term Science Needs Assessment, which was based on the [recommendations from the Delta ISB](#) to initiate and lead a bolder, forward-

looking, and better integrated science and management program that provides policy-makers and managers with better information to address rapid environmental change. The Science Needs Assessment was endorsed by DPIIC as part of the [DPIIC Delta Science Funding and Governance Initiative](#).

Lastly, Delta ISB will continue its outreach and communication on its most recent thematic reviews. Below is a summary of outreach that has been completed to date and current plans, if any, for its most recent reviews of [non-native species](#), [the monitoring enterprise](#), and [water supply reliability estimation](#).

- **Non-native species review:** Since its release in 2021, the Delta ISB has prepared a [summary sheet](#) and presented findings and recommendations to the Delta Stewardship Council and the Delta Interagency Invasive Species Coordination (DIISC) Team. The Delta ISB also presented at the 2021 Bay-Delta Science Conference and the 2021 Delta Invasive Species Symposium.
- **Monitoring enterprise review:** Since its release in 2022, the Delta ISB has prepared a [summary sheet](#) and presented findings and recommendations to the Delta Stewardship Council, Delta Plan Interagency Implementation Committee, Interagency Adaptive Management Integration Team and the Collaborative Science and Adaptive Management Program (CSAMP)/Collaborative Adaptive Management Team (CAMT). The Delta ISB also presented at the 2022 Interagency Ecological Program (IEP) Workshop. In 2024, there are plans to present findings and recommendations of this review at the 2024 State of Estuary Conference.
- **Water supply reliability estimation review:** Since its release in 2022, the Delta ISB has prepared a [summary sheet](#) and [blog post](#). The Delta ISB also presented findings and recommendations to the Delta Stewardship Council, the California Department of Water Resources, the Sacramento Chapter of the Environmental & Water Resources Institute of the American Society of Civil Engineers. In 2022, the California Environmental Modeling Forum (CWEMF) held a Technical Workshop on Water Supply Reliability Estimation and Protocols for Water and Environmental Modeling where findings from this review were discussed among CWEMF participants. Additionally, the Council [provided a letter to the Delta ISB](#) in September 2022 to communicate a number of ongoing and future efforts that align closely with and will implement the findings and recommendations of this review.

## Other Reviews

Throughout 2024, the Delta ISB may initiate new reviews and will also consider other requests for advice and review from individuals and entities in the region, such as the Delta Stewardship Council.

### Bay-Delta Water Quality Control Plan Update

The State Water Resources Control Board is considering updates to the Bay-Delta Water Quality Control Plan focused on the Sacramento River and its tributaries, Delta eastside tributaries (including the Calaveras, Cosumnes, and Mokelumne Rivers), interior Delta flows, and Delta outflows, including consideration of proposed voluntary agreements. Recently, the Delta ISB submitted [comments](#) on the draft Staff Report in support of Sacramento/Delta updates to the Bay-Delta Plan in January 2024. If needed, the Delta ISB may continue to provide feedback on the Bay-Delta Water Quality Control Plan update.

### Delta Conveyance Project Environmental Impact Report

The California Department of Water Resources released the Final Environmental Impact Report for the Delta Conveyance Project on December 8, 2023, and certified the report on December 21, 2023. In 2024, the Delta ISB will draft a memo on how well its [comments on the draft Environmental Impact Report](#) were addressed. In February 2024, the Delta ISB will flesh out the workplan for this review with the goal of completing it by summer 2024.

