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2023 Draft Annual Workplan

Delta Independent Science Board

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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 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 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. As the current Lead Scientist, Dr. Laurel

Larsen, is completing her term in June 2024, the Delta ISB is expecting the Council to begin consultation in 2023.

In terms of thematic reviews, the Delta ISB plans to continue its work on three reviews: (1) subsidence reversal, (2) food-webs, and (3) decision-making under deep uncertainty (DMDU). Prior to undertaking a major review, the Delta ISB will prepare a brief prospectus describing the review's purpose and process based on engagement with interested parties including agencies and stakeholders. Each prospectus will be posted for public comment. The topic and scope of these thematic reviews may change as the Delta ISB considers public input prior to finalizing the prospectus for each review.

Throughout 2023, Delta ISB will perform outreach and communication of its findings and recommendations. This will include the Science Needs Assessment, which originated based on the Delta ISB's recommendations to the Delta Plan Interagency Implementation Committee (DPIIC). This workplan provides an overview of each of the current Delta ISB activities planned for 2023. 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 2023. Target dates are subject to change. Many of the activities are multi-year projects so only key target dates are shown for 2023. Additional details on each activity are described in the sections below.

Activity	Q1 (Jan Mar)	Q2 (Apr Jun)	Q3 (Jul Sept)	Q4 (Oct Dec)
Subsidence Reversal Review		May: Finalize prospectus June: Finalize workshop agenda and invite speakers	August: Open registration for workshop	October: Host workshop Post-workshop: Prepare draft report for public comments
Food-webs Review		April: Finalize prospectus June: Finalize workshop agenda and invite speakers	July: Finish literature review, annotated bibliography; Open registration for workshop August: Host workshop	Post-workshop: Prepare draft report for public comments
Decision-making under Deep Uncertainty (DMDU) Review		May 2023: Finalize prospectus	Summer: Complete survey and qualitative analysis	Fall: Complete interviews with Delta decision-makers to understand use of scenarios Post-interviews: Perform qualitative analysis and prepare draft report for public comments
Host DMDU seminars throughout the year				
Science Needs Assessment	Mar/Apr: Prepare Discussion Summary	May: Delta ISB to discuss next steps based on the discussion summary	TBD	TBD
Outreach & Communication of Completed Reviews	Ongoing			
Delta Lead Scientist Recruitment	TBD			
Other Reviews?	Consider other requests for review and advice			

Subsidence Reversal 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 and deficiencies of interconnected areas of subsidence. This review will be based on synthesizing information from panel presentations and public discussions with invited experts at a two-day public workshop. For more information, please refer to the [draft prospectus](#).

Target Date	Benchmark
May 2023	Prospectus finalized
June 2023	Finalize workshop agenda and invite speakers
August 2023	Open registration for workshop
October 2023	Host workshop
January 2024	Release draft workshop summary report for public comments
Spring 2024	Finalize summary report and findings



Food-webs Review

Food web interactions are central in understanding how environmental drivers and management actions affect the abundances of individual species. The purpose of this review is to assess the importance of food web interactions in the Delta, and to identify where improved understanding and tools (e.g. primarily food web models) might substantially improve predictions of species' responses to environmental drivers and management actions. This review will be based on synthesizing information from panel presentations and public discussions with invited experts at a two-day public workshop, which will be informed by a literature review and stakeholder discussions. For more information, please refer to the [draft prospectus](#).

Target Date	Benchmark
April 2023	Prospectus finalized
June 2023	Finalize workshop agenda and invite speakers.
July 2023	Finish literature review, annotated bibliography Open registration for workshop
August 2023	Host workshop
January 2024	Release draft workshop summary report for public comments
Spring/Summer 2024	Finalize summary report and findings



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, a survey 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. For more information, please refer to the [draft prospectus](#).

Target Date	Benchmark
April 2023	Prospectus finalized
Ongoing (Throughout 2023)	Hold public seminar series to: <ol style="list-style-type: none"> a) Introduce concepts of DMDU b) Explore/identify deep uncertainties in the Delta as perceived from diverse individual and/or organizational perspectives c) Identify some signals of future change d) Provide other useful background information
Spring-Summer 2023	Survey and qualitative analysis to systematically characterize and critically evaluate existing Delta scenario design and development processes through an interdisciplinary decision science and futurism lens.
Summer-Fall 2023	Interviews with Delta decision-makers to understand use of scenarios to address uncertainty in their decision-making processes.
Winter 2024	Release draft report summarizing information gained through seminar series, scenario inventory and analysis, and interviews, with recommendations to improve science of scenario analysis to inform decision-making under deep uncertainty in the Delta.
Spring 2024	Finalize summary report and findings

DPIIC Science Needs Assessment

Based on the [recommendations from the Delta ISB](#) and the endorsement of the DPIIC, a long-term Science Needs Assessment is being developed, as part of the [DPIIC Delta Science Funding and Governance Initiative](#). The Science Needs Assessment will identify key science efforts to provide long-term management insights in the context of rapid environmental change and recommendations for organizing the science enterprise to better address complex and changing problems. In 2023, a discussion summary will be developed based on a 2020 workshop and seminar series, as well as post-workshop discussions. Subsequently, the discussion summary will be provided to the Delta ISB for review and possible next steps on the Science Needs Assessment.

Target Date	Benchmark
March/April 2023	Finalize discussion summary for presentation at the Delta ISB meeting
May 2023	Delta ISB discusses potential next steps on the Science Needs Assessment based on the discussion summary

Outreach and Communication

Upon completion, final Delta ISB reports are provided and presented to the Council, which considers implementing Board recommendations. As findings and recommendations are applicable to many other organizations as well, the Delta ISB typically conducts additional outreach to share its findings with 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.

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

- **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. There are current plans to prepare a blog post and journal article for this review.
- **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. There are current plans to prepare a journal article for this review.
- **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 and 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. There are current plans to continue presenting findings and recommendations from this review to various entities, including DPIIC and the California Department of Water Resources.

Other Reviews

Throughout 2023, 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. At the time of this workplan, the Delta ISB recently submitted its reviews on the [draft Environmental Impact Report](#) and [draft Environmental Impact Statement](#) for Delta Conveyance Project, as well as the [Voluntary Agreements for the Sacramento River, Delta and tributaries](#).