

JAN 2024

Agenda Item: 10  
Meeting Date: January 25, 2024

# 2023 Accomplishments and Plans for 2024

Dr. Lisa Wainger, Chair



**Delta  
Independent  
Science Board**

DELTA STEWARDSHIP COUNCIL

# Who We Are?



Dr. Lisa Wainger  
Economics



Dr. Inge Werner  
Ecotoxicology



Dr. Steve Brandt  
Fish & Food-webs



Dr. Tom Holzer  
Geology



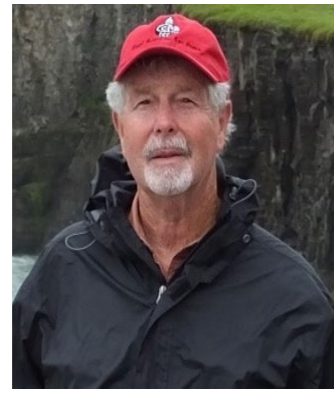
Dr. Virginia Dale  
Landscape Ecology



Dr. Tanya Heikkila  
Governance



Dr. Diane McKnight  
Biogeochemistry



Dr. Bob Naiman  
River Ecology



Dr. Jayantha Obeysekera  
Engineering



Dr. Anna Michalak  
Engineering



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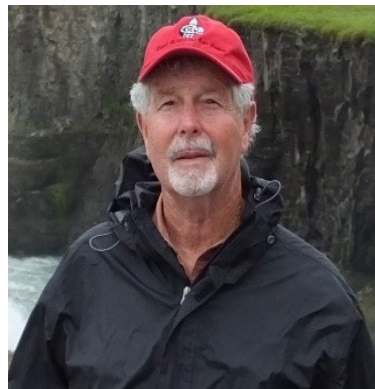
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Engineering



Dr. Kenny Rose  
Fisheries





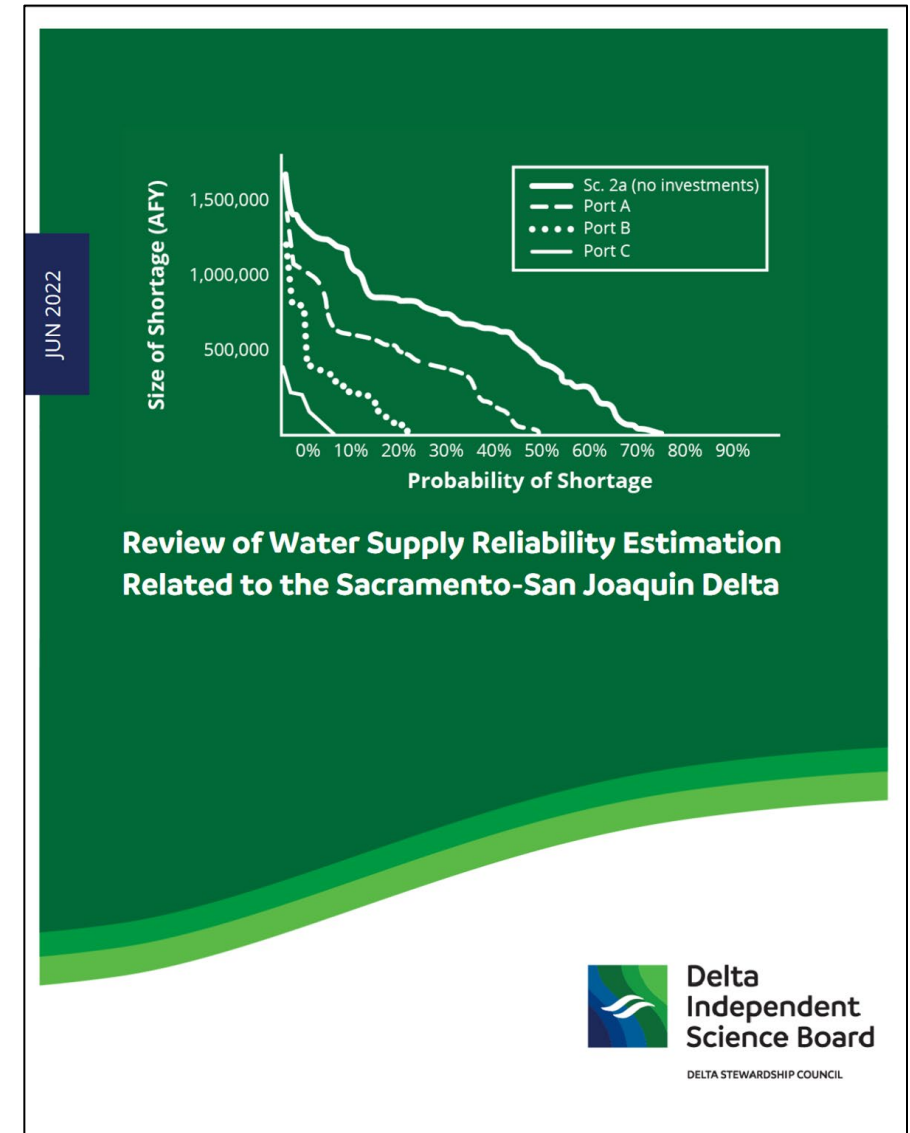
## What We Do?

### **The Delta Reform Act (2009):**

- Provide oversight of the scientific research, monitoring & assessment programs that support adaptive management in the Delta
- Provide independent advice on the Delta Plan
- Consult with the Council on the appointment of the Delta Lead Scientist

# Current Process

- Review Delta science by themes. Thematic reviews presented to the Council:
  - 1) Water Supply Reliability Estimation (2022)
  - 2) Monitoring Enterprise (2022)
  - 3) Non-native Species (2021)
  - 4) Interagency Ecological Program (2019)
  - 5) Water Quality (2018)
  - 6) Delta as an Evolving Place (2017)
  - 7) Levees (2016)
  - 8) Adaptive Management (2016)
  - 9) Fish & Flows (2015)
  - 10) Restoration (2013)
- Review agency documents

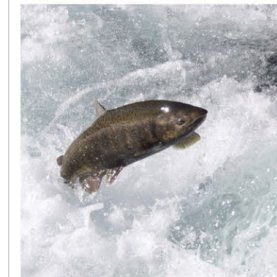




# Completed reviews since last update to the Council

Comments on the Draft Staff Report for Sacramento/Delta Updates to the Bay-Delta Water Quality Control Plan – **January 19, 2024**

***Delta ISB Review Scope:** Examined the draft Staff Report for responsiveness to our earlier comments on the VAs scientific basis report supplement and MOU.*



DRAFT

**Staff Report/Substitute Environmental Document in Support of Potential Updates to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary for the Sacramento River and its Tributaries, Delta Eastside Tributaries, and Delta**

September 2023

State Water Resources Control Board

# Delta ISB Review & Comments

- Some edits were responsive to Delta ISB comments, but some primary recommendations were not fully addressed
- Unclear if the scope and scale of monitoring, assessment and reporting is sufficient for a rigorous scientifically-based program to support successful adaptive management
- Concrete plans for data management, analysis and synthesis will need to support detection of changes in a complex and dynamic system
- The metrics being proposed may not fully support evidence-based adaptive management decisions
- We strongly recommend the inclusion of appropriate scientific and community input and mechanisms for providing sufficient funding to support the approach



January 19, 2024

State Water Resources Control Board  
Division of Water Rights  
Attn: Bay Delta & Hearings Branch  
P.O. Box 100  
Sacramento, CA 95812-2000

Sent via email: [SacDeltaComments@waterboards.ca.gov](mailto:SacDeltaComments@waterboards.ca.gov)

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Robert Naiman, Ph.D.  
Jayantha Obeyesekera, Ph.D.  
Kenneth Rose, Ph.D.

## Re: Comments on the Sacramento / Delta Draft Staff Report

The Delta Independent Science Board (Delta ISB) examined the draft Staff Report/Substitute Environmental Document (Staff Report) in support of possible updates to the Water Quality Control Plan for the San Francisco Bay/Sacramento San Joaquin Delta Estuary (Bay Delta Plan) for responsiveness to our [earlier comments](#) on the [Draft Scientific Basis Report Supplement in Support of Proposed Voluntary Agreements](#) (hereafter the "Scientific Supplement") and the Memorandum of Understanding Advancing a Term Sheet for the Voluntary Agreements to Update and Implement the Bay-Delta Water Quality Control Plan, and Other Related Actions ([MOU of 29 March 2022](#) and [revised 10 November 2022](#)).

We are writing this letter to emphasize our previous comments about the critical importance of a rigorous scientifically-based monitoring, assessment, and reporting program for the selected implementation pathway. While the Final Draft Scientific Supplement provided in Appendix G2 of the Staff Report includes revisions that were responsive to some of the Delta ISB's recent comments, details regarding the implementation plan are not described in the draft Staff Report. We emphasize three key points below.

First, a monitoring, assessment, and reporting plan needs to be carefully designed to provide the scope and scale of scientific evidence necessary for adaptive management. In doing so, the plan should identify feasible and relevant



# 2023 Accomplishments

- Completed 3 document reviews
  - Delta Conveyance Project Environmental Impact Statement (March 2023)
  - Scientific Basis Supplement Report to inform the Bay-Delta Water Quality Control Plan Update (March 2023)
  - Pyrethroid Research Plan (Sept 2023)
- Educated the community on decision-making under deep uncertainty via seminar series
- Completed two major workshops
  - Subsidence (October 2023)
  - Food-webs (November 2023)

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# What is Deep Uncertainty?

- **Unpredictability** - Likelihood of future events & outcomes cannot be well-characterized with existing data and models
- Uncertainty cannot be easily reduced
- Stakeholders may disagree on consequences of actions

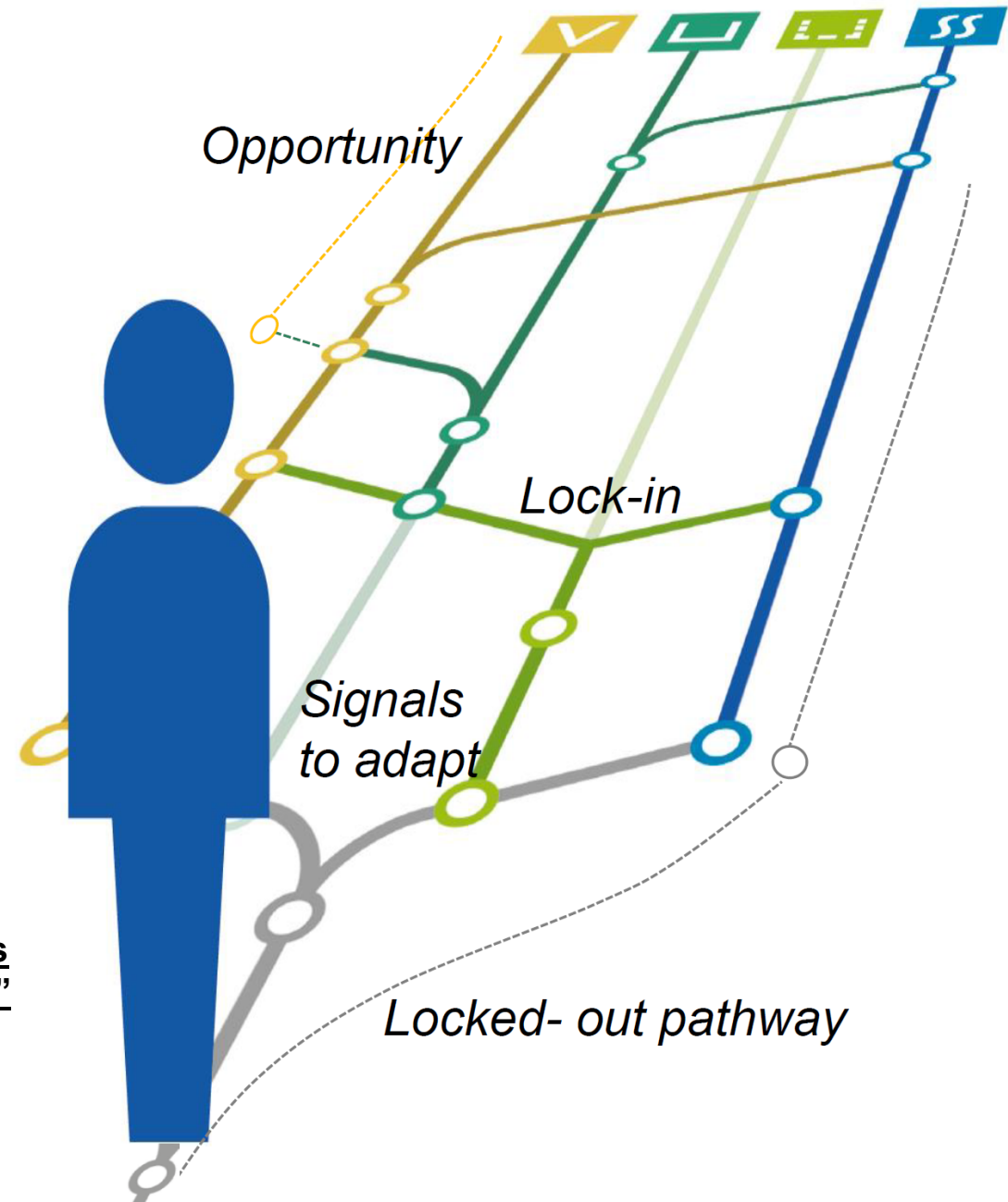


**Last seminar on dynamic adaptive planning on January 18, 2024 with Marjolijn Haasnoot and Andrew Warren (Deltares, Utrecht University)**

# Exploring adaptation pathways

- Break adaptation into manageable steps. Link short-term to long-term.
- Adjust depending on how the future unfolds.
- Avoid maladaptation.
- Every decision a meaningful step towards the long-term.

Taken from January 2024 seminar, “Using an adaptation pathways approach to explore the solution space and accelerate adaptation” by Marjolijn Haasnoot, Andrew Warren (Deltares, Utrecht University)





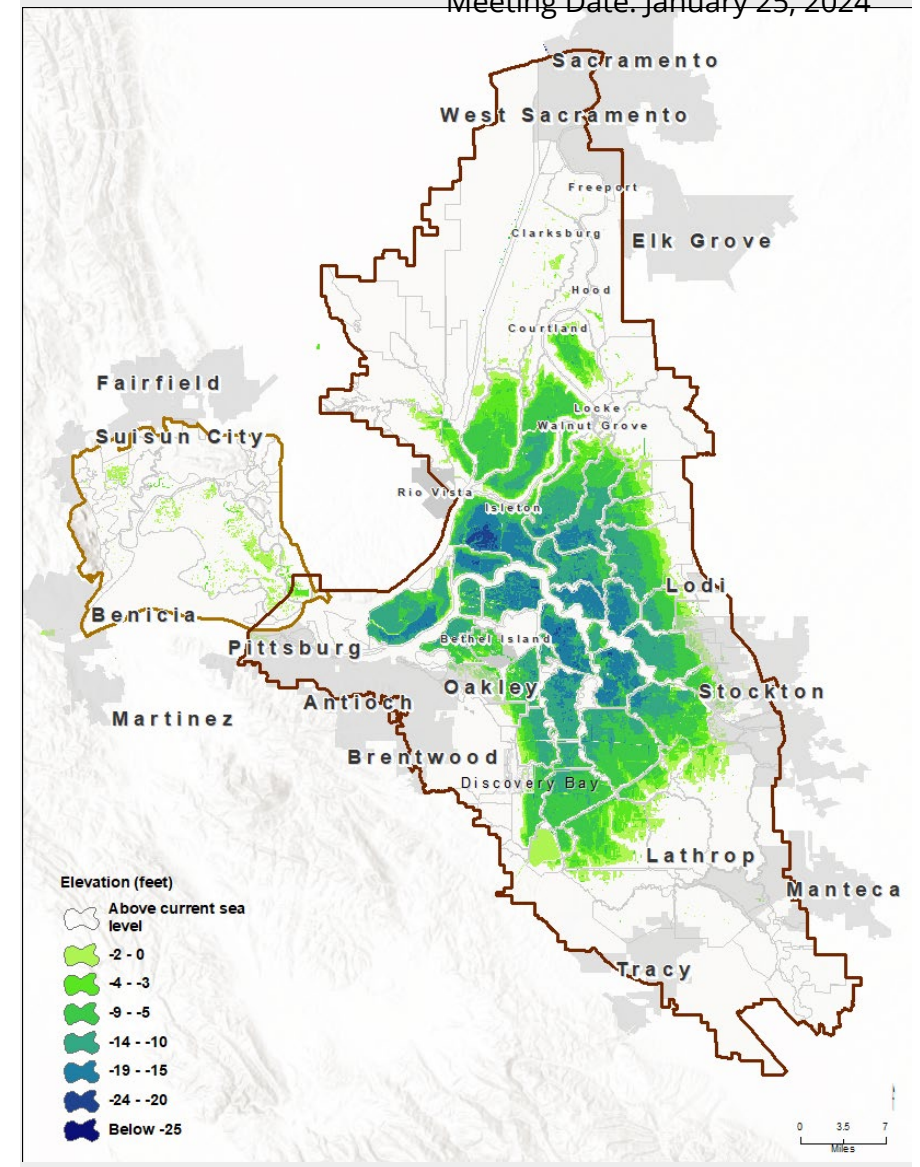
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# What is subsidence in the Delta?

- Subsidence is the loss of elevation due to draining and decay of organic soils
- In some parts of the Delta, subsidence has lowered the soil surface up to 9 m in the last 170 years



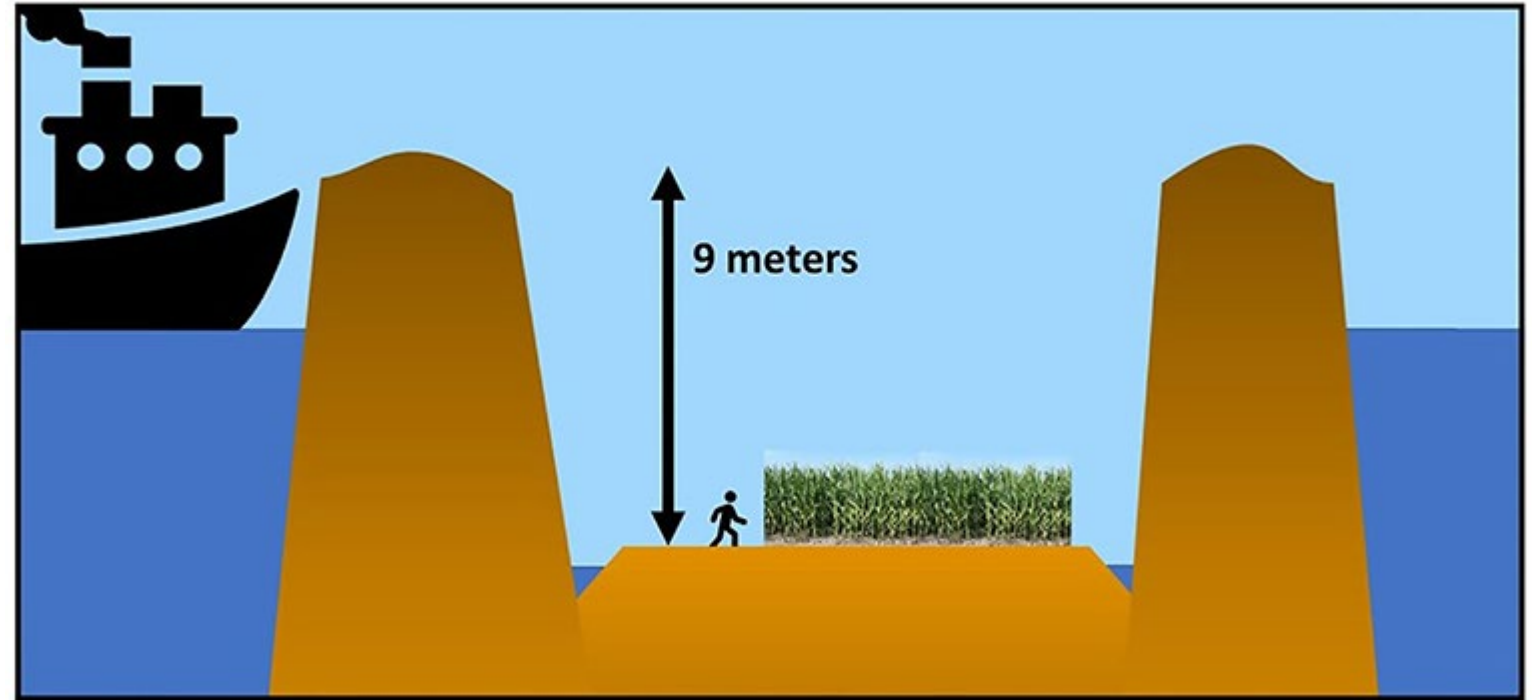
Negative elevations are below sea level



# Why is subsidence a problem?

Source: Stern et al. 2022

- 1) Increasing costs to drain soils
- 2) Impacts to agricultural production
- 3) Water quality degradation
- 4) Vulnerability to levee failure and flooding
- 5) Substantial emissions of greenhouse gases in areas where peat soils still remain



*Levees surround land and constantly hold water back. When water is drained from wetlands and the ground disappears due to subsidence, the levees are at greater risk of breaking, which could flood many farms and homes.*

# Subsidence Workshop

- October 19-20, 2023
  - Zoom: 82 attendees
  - Cal-Span: 32 attendees
  - In-person: 52 attendees
- Scope
  - To synthesize and evaluate the state of science related to management of subsided lands
  - Provide recommendations to address knowledge gaps

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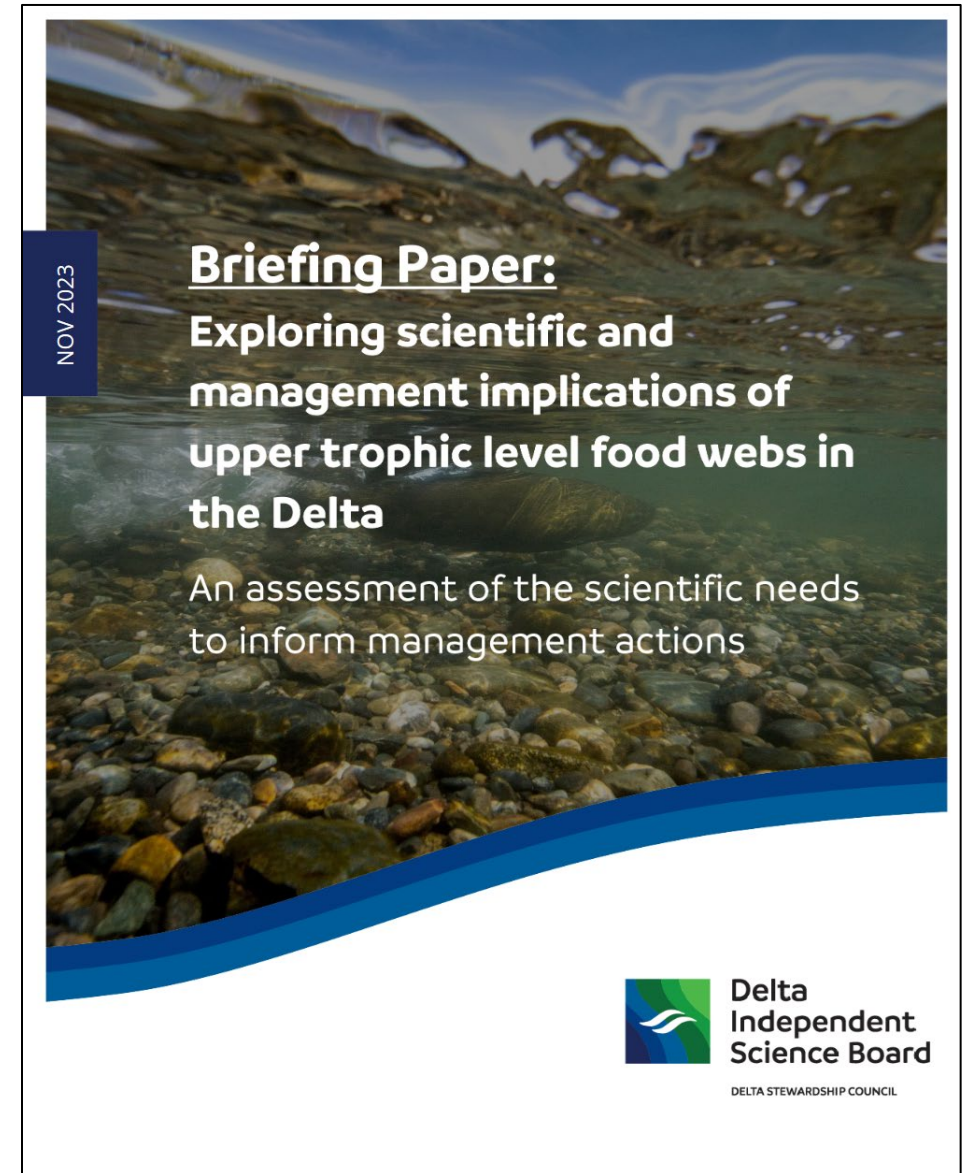
# Immediate Outcomes

- Meaningful interactions between agency officials, scientists, farmers and other interested parties
- Insights about opportunities for land management that can promote economic activities while also improving the environment



# What do we mean by food-webs?

- Describes the trophic (feeding) relationships and flows of energy and nutrients among species in an ecosystem
- 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





# Food-webs Workshop

- November 8-9, 2023
    - Zoom: 101 attendees
    - Cal-Span: 36 attendees
    - In-person: 63 attendees
- ~200
- Scope
    - To assess the importance of upper trophic level food-web interactions in the Delta and help identify where improved understanding and tools (e.g., food-web models) might inform management





# Highlights

- **Case studies** - Learned how food web models are being used for management in other large, complex ecosystems, similar to the Delta
- **Tool & Techniques** - Learned about data collection techniques that could lower the cost of understanding food web interactions and developing models
- **Application** - Discussed the key management questions, science priorities, and science gaps to incorporate food web science into management



# 2024 Plans

- Complete three thematic reviews
  - Subsidence
  - Food-webs
  - Decision-making Under Deep Uncertainty
- Final Environmental Impact Report for the Delta Conveyance Project
  - Prepare memo assessing adequacy of DWR responses to Delta ISB comments
- Delta Lead Scientist Recruitment
- Other Reviews & Activities

