



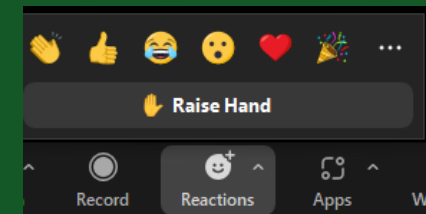
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DPIIC RESTORATION SUBCOMMITTEE MEETING

March 7, 2024

- Please raise your hand if you wish to speak / for any questions or comments
- Any technical issues or as an alternative way to provide public comment:
 - email engage@deltacouncil.ca.gov or...
 - call/text **(916) 902-6459**

- If participating via Zoom's online platform, use the "raise hand" feature to indicate you would like to make a comment.



- If participating by telephone, dial *9 to raise your hand

March 2024

DPIIC Restoration Subcommittee Meeting



**Delta Plan Interagency
Implementation
Committee**

DELTA STEWARDSHIP COUNCIL

Agenda

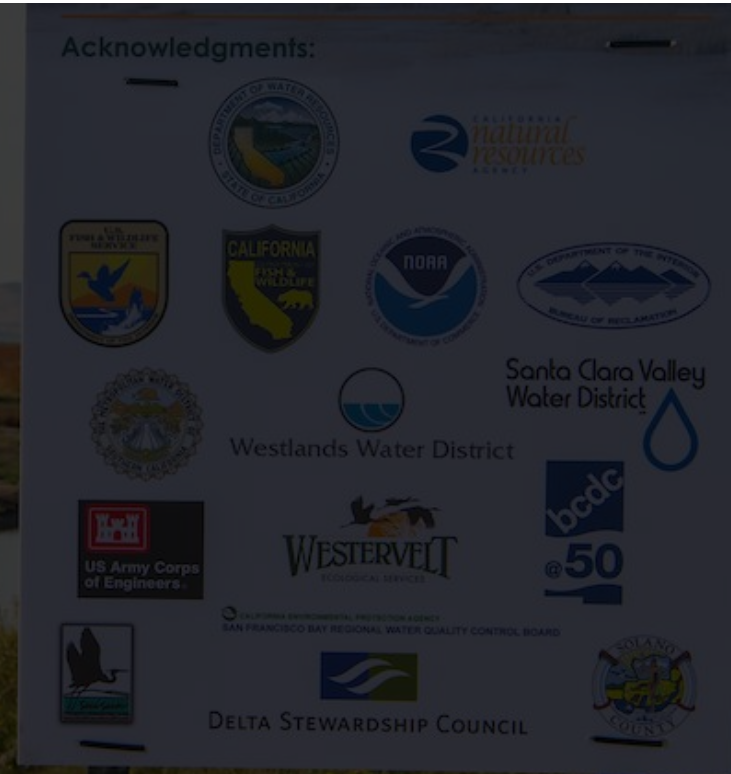
1. Welcome, Introductions, and Announcements
2. Impacts, Risks, and Management of Invasive Aquatic Vegetation in Tidal Wetland Restoration Projects (Information Item)
3. Recap of Delta-Suisun Tidal Wetland Restoration Symposium (Information Item)
4. Recap of Delta Restoration Forum (Information Item)
5. General Public Comment

Agenda Item 1: Welcome, Introductions, and Announcements

Introductions

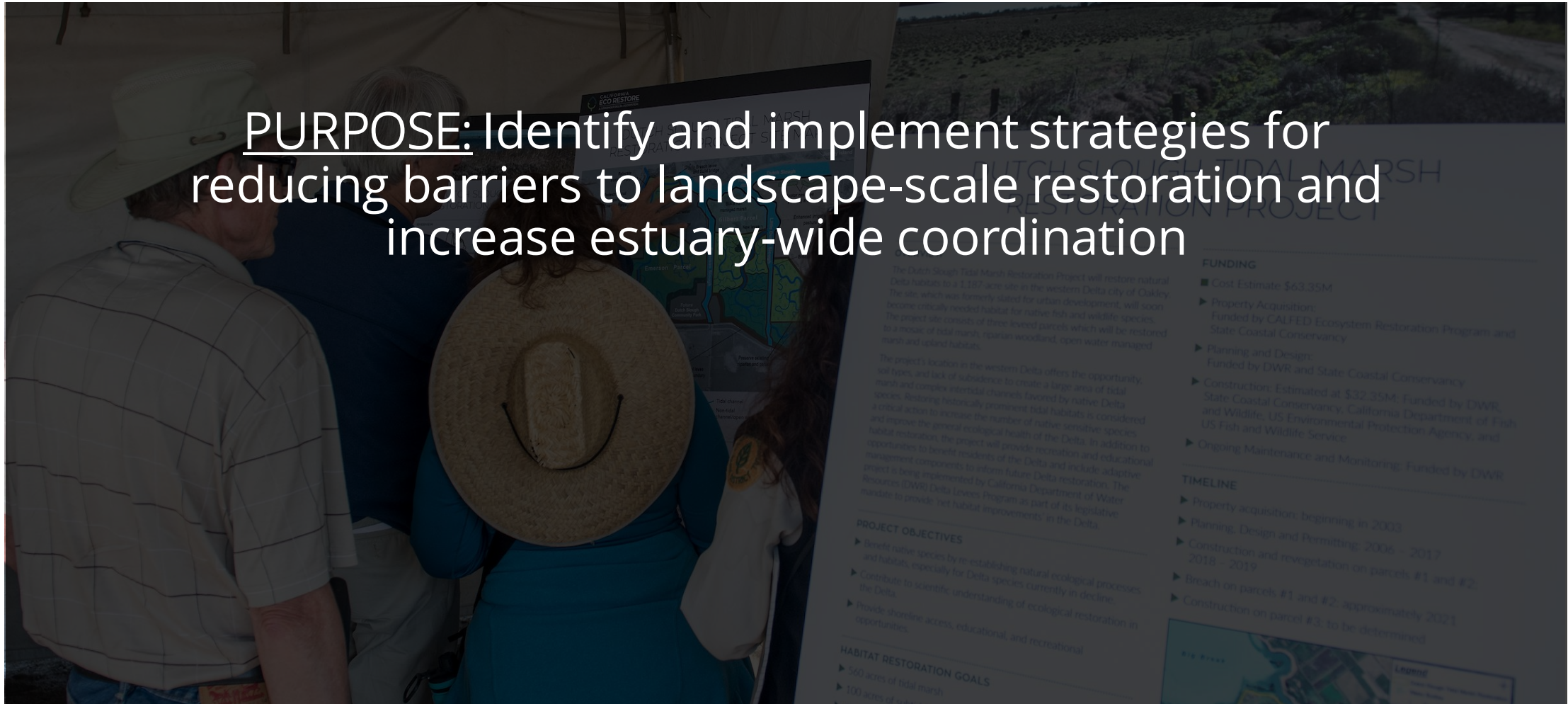
- Name
- Agency or Group

Announcements



Subcommittee Purpose and Structure

PURPOSE: Identify and implement strategies for reducing barriers to landscape-scale restoration and increase estuary-wide coordination



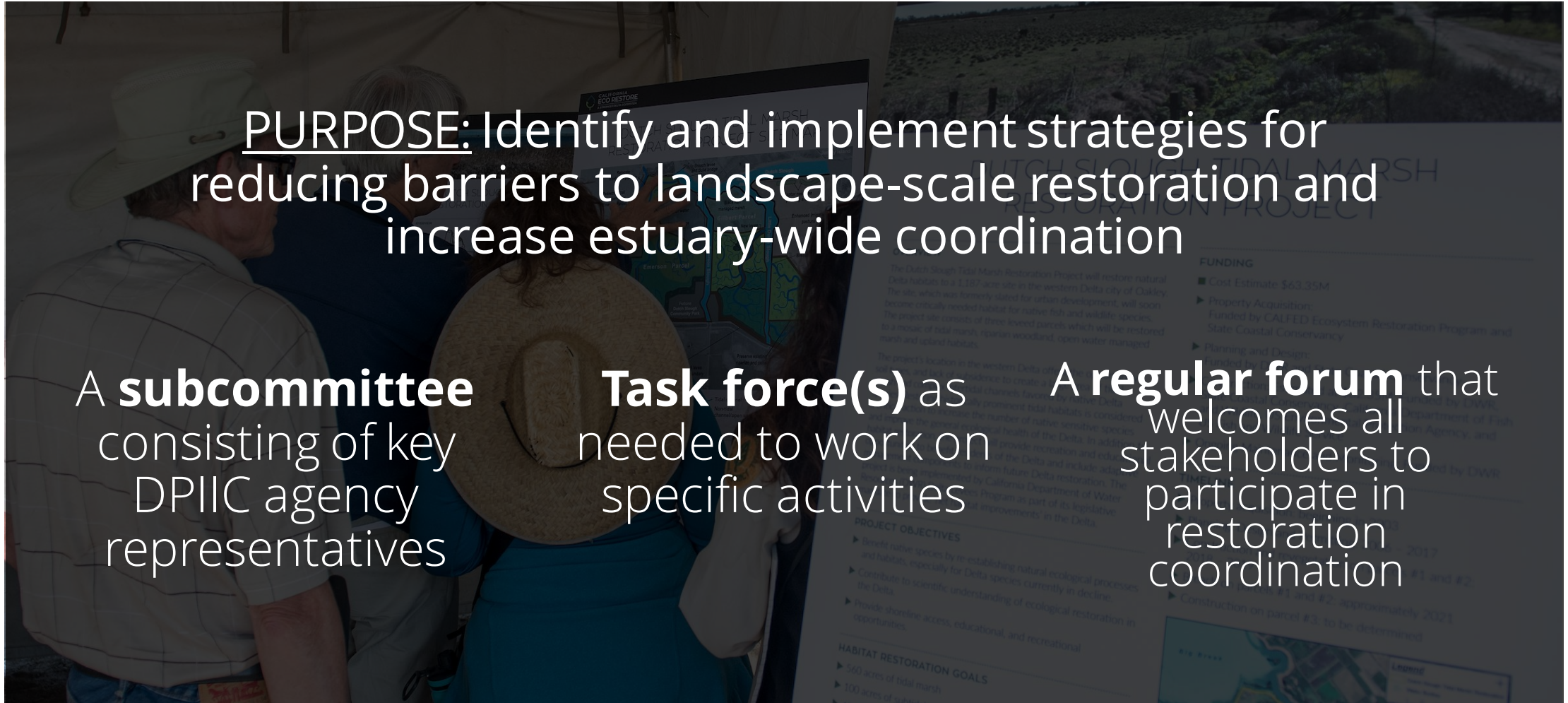
Subcommittee Purpose and Structure

PURPOSE: Identify and implement strategies for reducing barriers to landscape-scale restoration and increase estuary-wide coordination

A **subcommittee** consisting of key DPIIC agency representatives

Task force(s) as needed to work on specific activities

A **regular forum** that welcomes all stakeholders to participate in restoration coordination



A photograph of a wetland area. In the foreground, there is a dense field of bright green aquatic vegetation, likely a type of water hyacinth or similar plant. The plants are growing in a shallow, calm body of water. In the background, there is a line of trees and a fence, suggesting a managed or restored wetland area. The overall scene is lush and green.

Agenda Item 2:
Impacts, Risks, and Management of
Invasive Aquatic Vegetation (IAV) in
Tidal Wetland Restoration Projects

Presenters

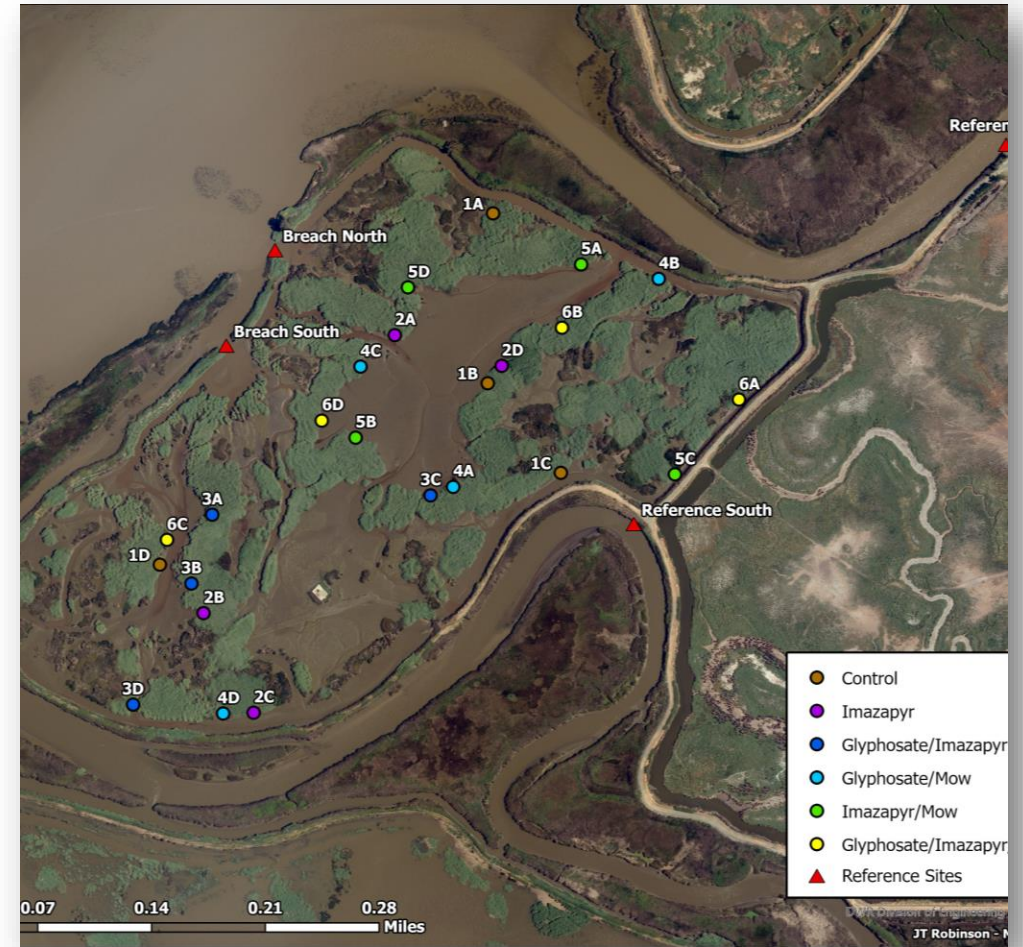
- Dylan Chapple, Delta Stewardship Council
- Louise Conrad, Department of Water Resources (DWR)
- Gina Darin, DWR
- Jeffrey Caudill, Department of Parks and Recreation, Division of Boating and Waterways (DBW)

Additional Contributors

- Elizabeth Brusati, Delta Stewardship Council
- Edward Hard, DBW
- Shruti Khanna, Department of Fish and Wildlife
- Nicholas Rasmussen, DWR
- Rachel Wigginton, Sacramento-San Joaquin Delta Conservancy

Discussion Topics

1. Possible approaches for expanding and permitting adaptive management of invasive aquatic vegetation (IAV) control in or near restoration sites.
2. Possible approaches to better integrate invasive aquatic vegetation monitoring and control actions into the restoration planning and permitting process.
3. How agencies and interested parties might support ongoing adaptive management for invasive aquatic vegetation control.

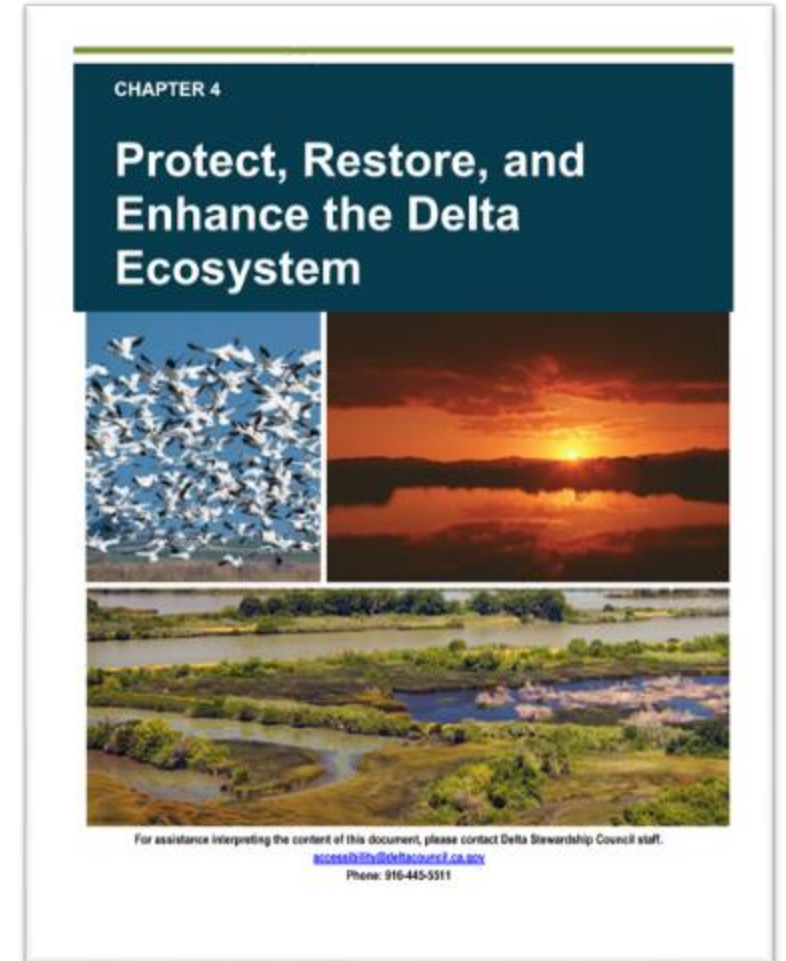


Invasive *Phragmites* invading Blacklock restoration (DWR)

Why DPIIC RSC?

Delta Plan and Other Connections

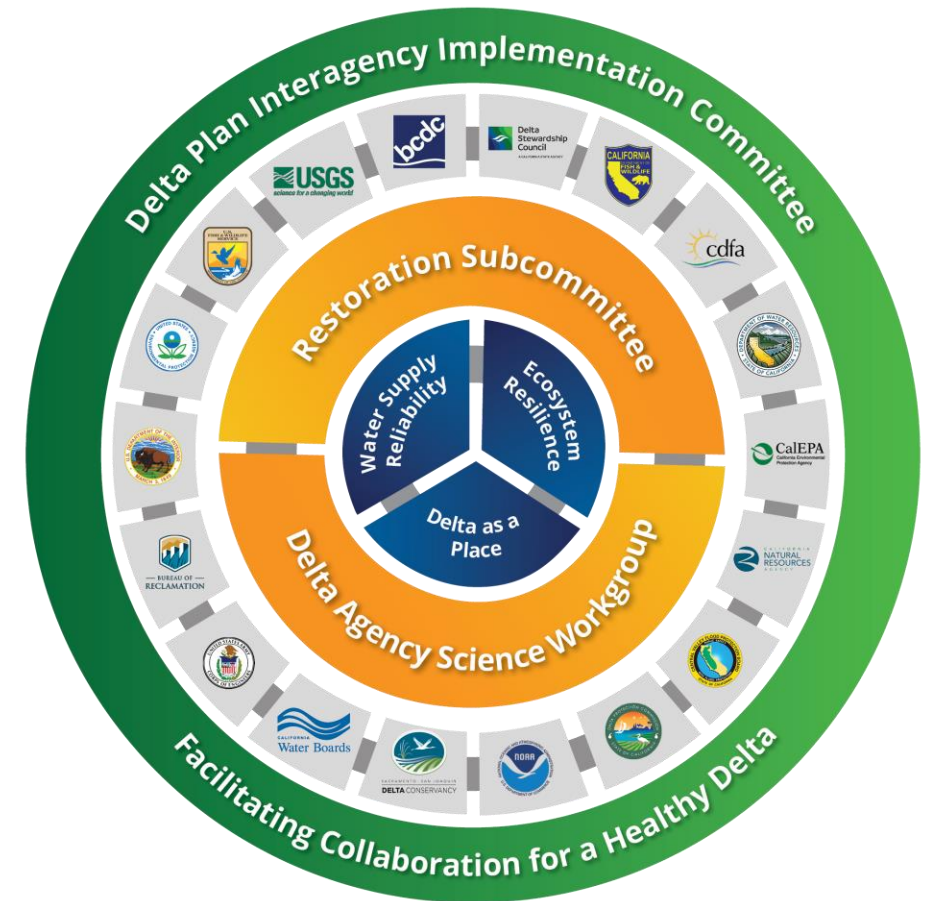
- Chapter 4: Protect, Restore, and Enhance the Delta Ecosystem
 - ER P5. Avoid Introductions of and Habitat Improvements for Invasive Nonnative Species
 - ER R7. Prioritize and Implement Actions to Control Nonnative Invasive Species
 - ER F(d). Establish program-level endangered species permitting mechanisms that increase efficiency for Ecosystem Restoration actions
- Science Action Agenda, Action 5A
- Other state and federal initiatives
 - ESA Recovery Plans, Water Resilience Portfolio, 30x30



Why DPIIC RSC?

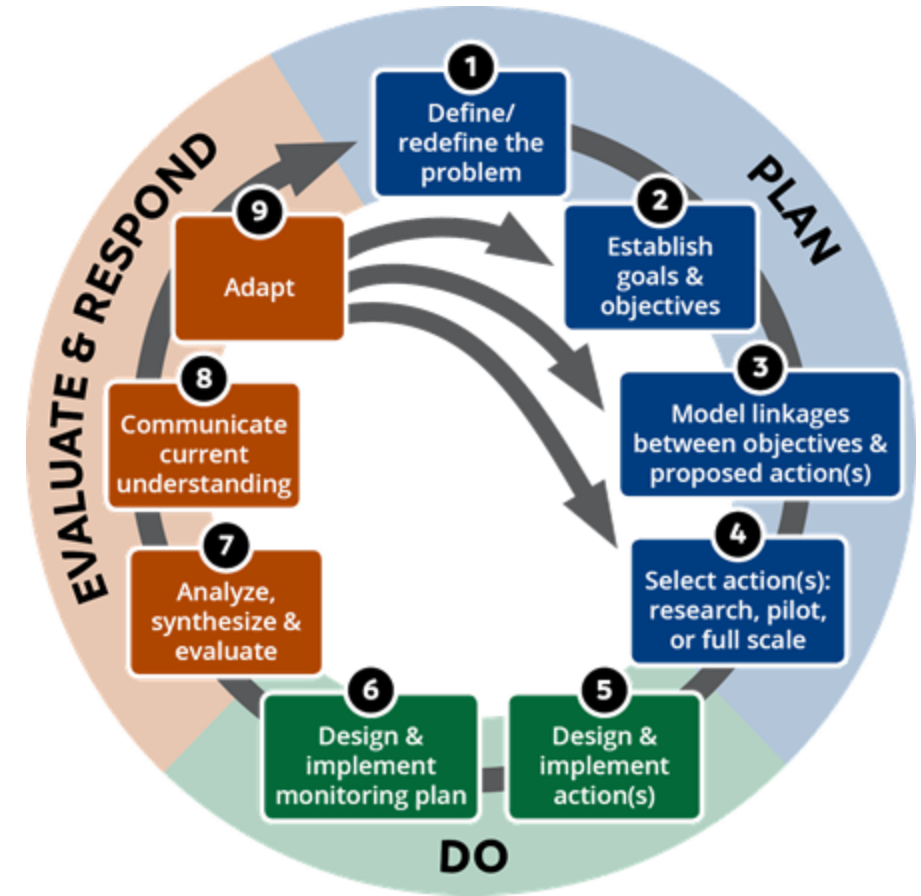
Restoration Subcommittee Workplan

- **G2 Objective 1:** Identify regulatory challenges to restoration and potential solutions to these challenges
- **G2 Objective 2:** Identify efficiencies and areas for improved collaboration in long-term management of restoration lands
- **G3 Objective 2:** Identify mechanisms for evaluating the effectiveness of restoration and opportunities for better implementing long-term adaptive management, monitoring, and synthesis



Invasive Aquatic Vegetation and Adaptive Management

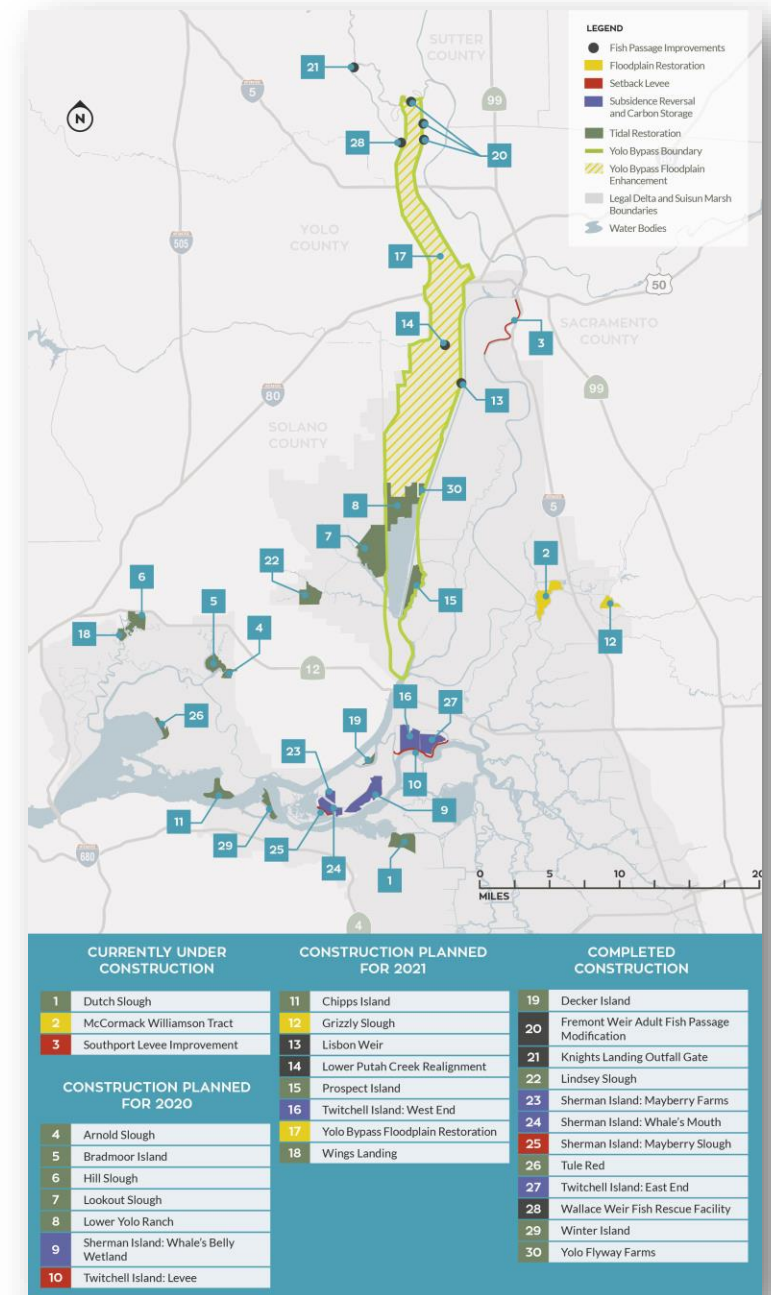
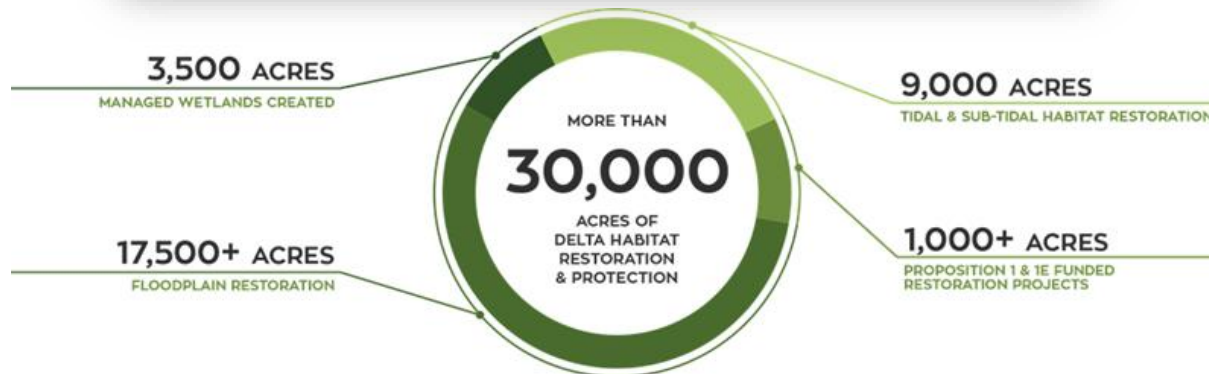
- Delta Plan requires adaptive management
- Adaptive management requires:
 - Pilot studies
 - Monitoring and data
 - Evaluation and synthesis
 - Ability to change with new information
 - Regulatory and permitting flexibility
 - Coordination between entities



What's at stake

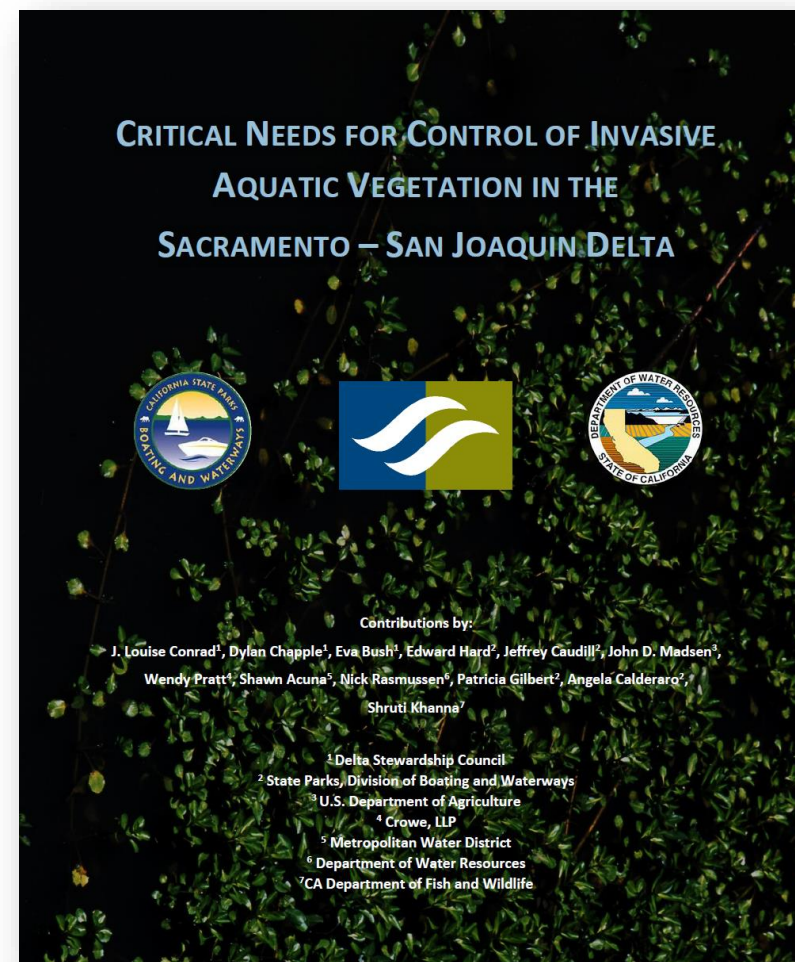


Dutch Slough



Synthesis for Adaptive Management: *2020 White Paper*

- Recommendations
 - Add proactive Adaptive Management to IAV control
 - Identify funding to establish a consistent monitoring program for aquatic weed coverage
 - Prioritize authorization and funding to test new tools at Fish Restoration Project restoration sites
- Contributors: Delta Stewardship Council, State Parks Division of Boating and Waterways (DBW), DWR, CDFW, USDA, Metropolitan Water District



Invasive Aquatic Vegetation Species

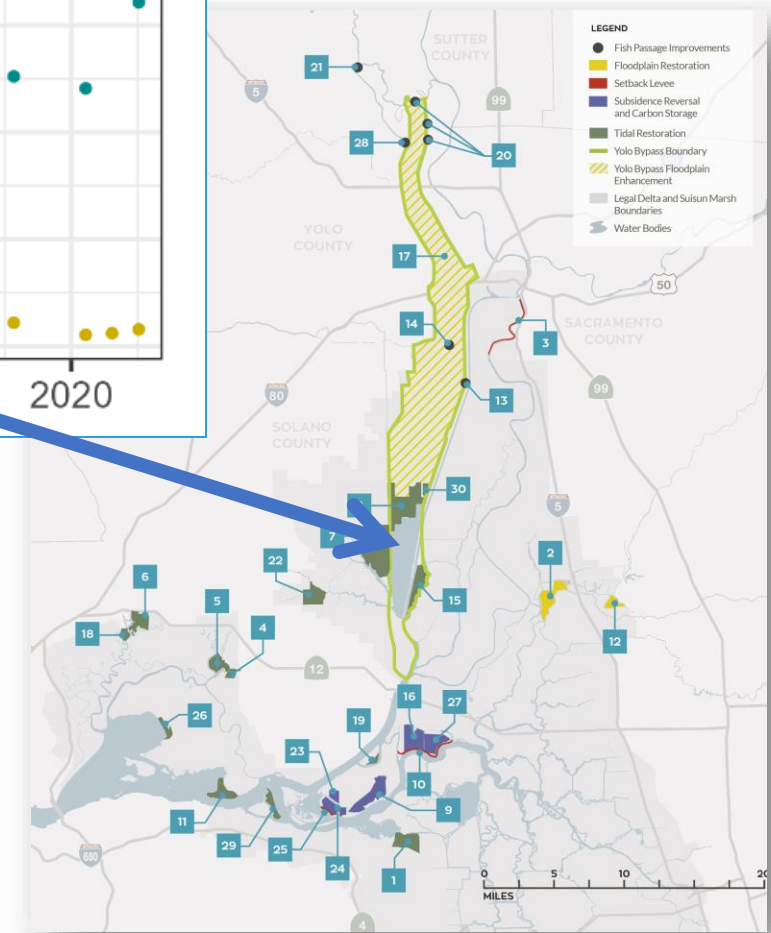
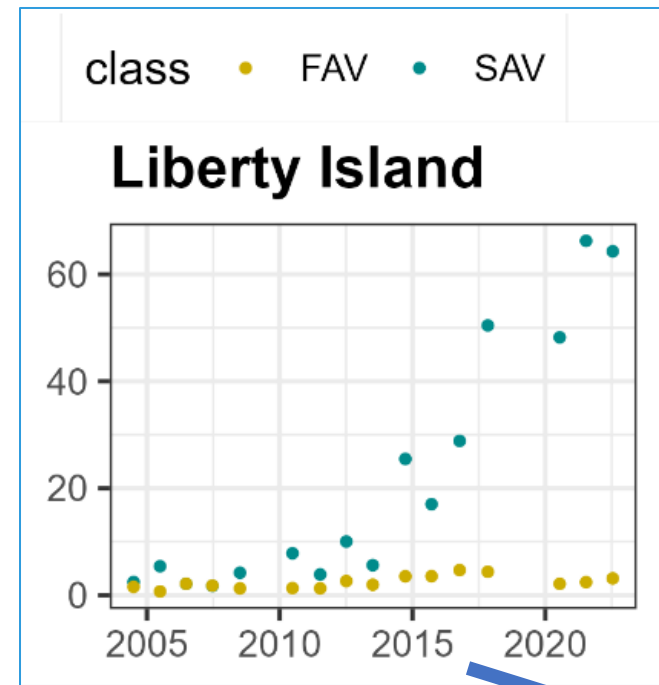
- Floating Aquatic Vegetation (FAV):
 - Water hyacinth (*Eichhornia crassipes*)
 - South American spongeplant (*Limnobium laevigatum*)
 - Uruguay water primrose (*Ludwigia hexapetala*)
 - **Alligatorweed (*Alternanthera philoxeroides*)**
- Submersed Aquatic Vegetation (SAV)
 - Brazilian waterweed (*Egeria densa*)
 - Curlyleaf pondweed (*Potamogeton crispus*)
 - Eurasian watermilfoil (*Myriophyllum spicatum*)
 - **Ribbon weed (*Vallisneria australis*)**
 - Fanwort (*Cabomba caroliniana*)
- Emergent Aquatic Vegetation (EAV)
 - Common reed (*Phragmites australis*)



DBW and DWR

IAV Expansion

- SAV more than doubled in North and Central Delta 2004 to 2018.
- SAV spreading in North Delta areas targeted for restoration.



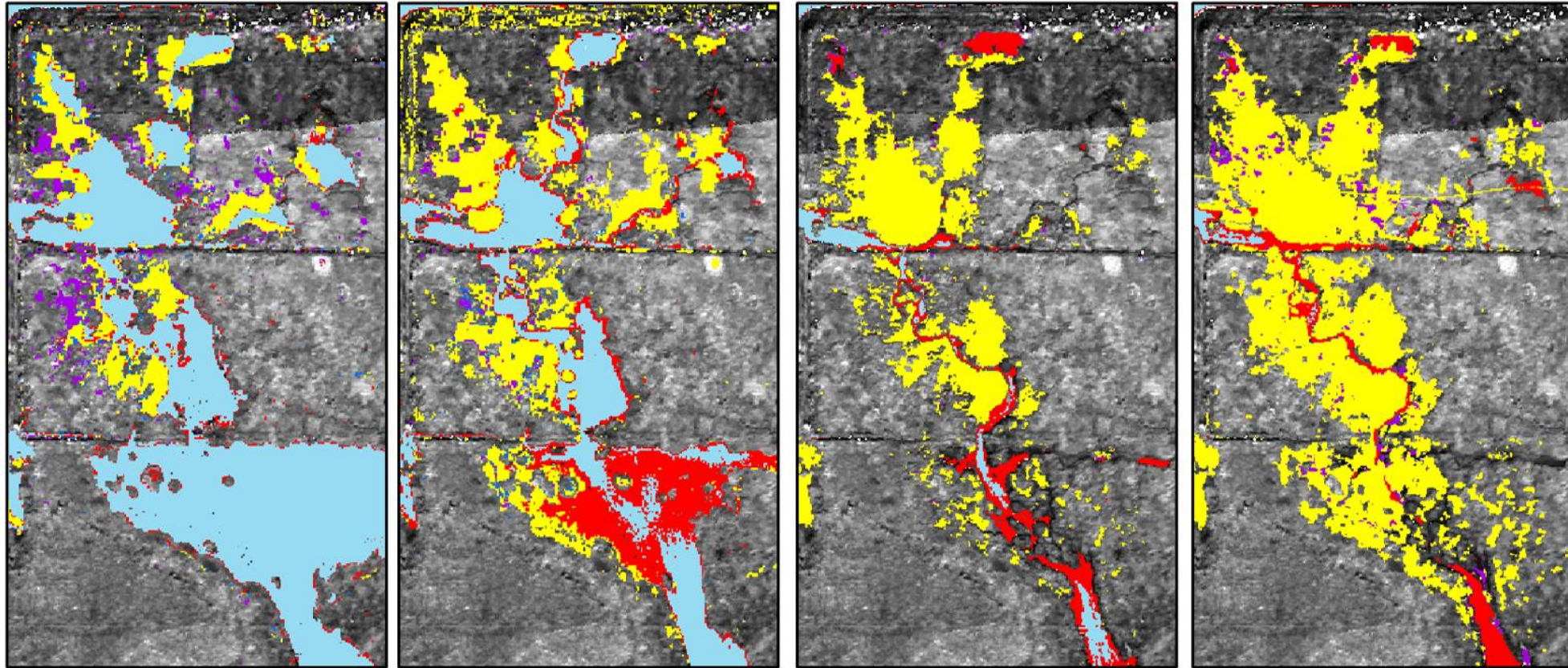
Expansion in North Delta





June 2004

June 2008

November 2014

October 2016



 *Ludwigia*  *Eichhornia crassipes*  SAV  Water

Impacts on Listed Fish Species

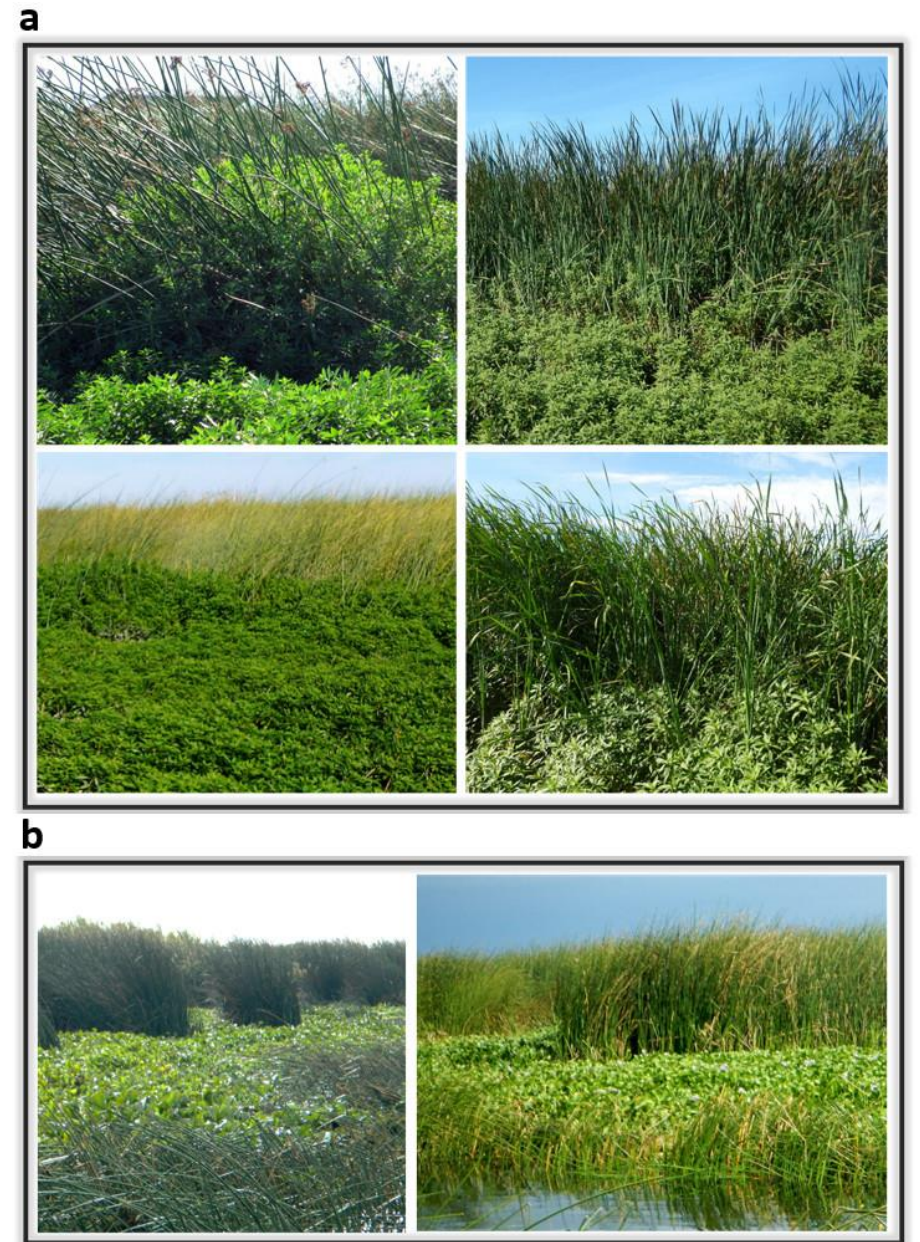
- IAV decrease dissolved oxygen, increase water temperature, slow water velocity, reduce turbidity.
- IAV changes food web pathways.
- SAV and FAV create habitat for non-native fishes that compete with and predate on native fishes.
- IAV reduces effectiveness of the 8,400 tidal wetland acres required as mitigation for operating State Water Project



Delta smelt, USFWS Digital Library

Impacts to Restoration Sites

- IAV control *is* restoration.
 - Spreading into restoration sites as they are breached.
- Restoration projects designed for listed species (fish).
 - IAV control restricted by concern for those same species
- Reduced ecological function.
 - IAV outcompete or shade out native vegetation, including rare species
- Restoration investment wasted.
 - State Water Project mitigation requirements



IAV Impacts



Invasive *Phragmites* shading out rare Mason's lilaepsis (yellow circles) in Suisun Marsh (DWR).



Vernon Smith, CalPhotos

DBW Aquatic Invasive Plant Control Program (AIPCP)

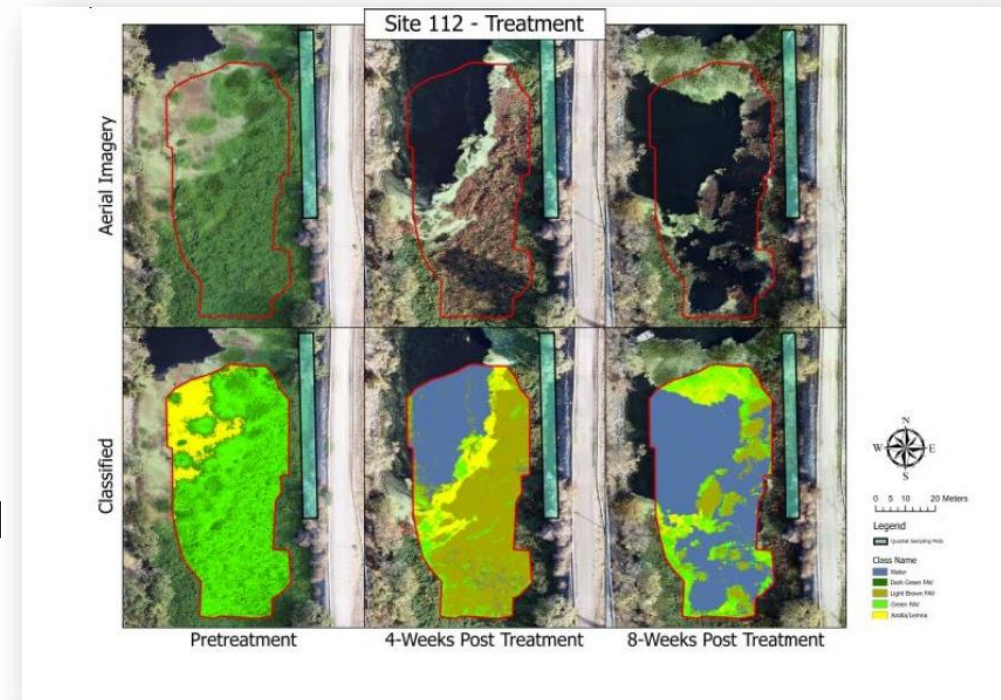
- Mandate to control IAV in Delta to help protect the environment, economy, and public health.
 - Authorized for up to 15,000 acres of IAV annually
 - Authorized to control 10 species (70+% to chemical control of SAV)
 - Currently \$5.3 million/yr. Reduced from \$12.6 million.



DBW

Successes: Permitting

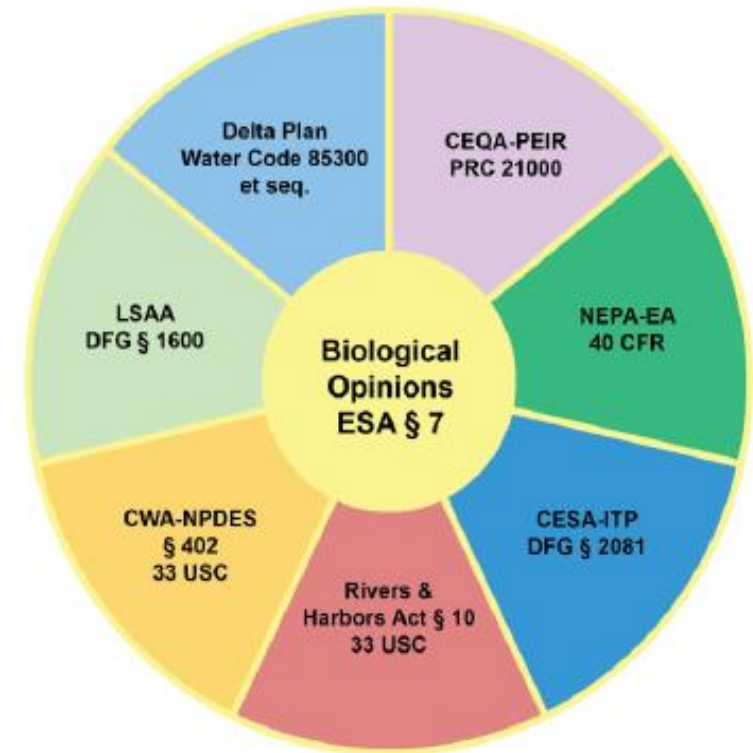
- Streamlined risk assessment process for DBW treatment species no longer requires legislative action per AB 763 (2013).
- Increased flexibility and authorization for more tools in restoration sites from recent Biological Opinions (2019) and working more closely with USFWS and NOAA-NMFS.
- Increased communication with CDFW for shorter turnaround times for risk assessments, allowing for better chance at control for new IAV in pursuit of early detection and rapid response.



DBW

Challenges: Permitting

- Numerous approvals required with many rounds of revisions for each permit required.
- Many different state and federal agencies issue permits.
- Existing authorization doesn't cover extent of IAV in Delta, Suisun Marsh and its Tributaries.
- Challenges in scaling up Demonstration Investigation Zones (DIZ's) to restoration project size.



Regulatory Requirements for Aquatic Invasive Plant Control Program in the Delta (from 2020 white paper).

Successes: Control

- Demonstration Investigation Zones (DIZ) allow testing of new tools in small areas.
 - Two herbicides and drones
 - More effective and less resource intensive
 - Helps decrease herbicide resistance and increase efficacy
 - Allows for treatments in areas inaccessible by boat
 - Promotes Adaptive Management
 - Replacing fluoridone with more effective herbicides
 - Physical controls such as Bubble curtains or Benthic Mats



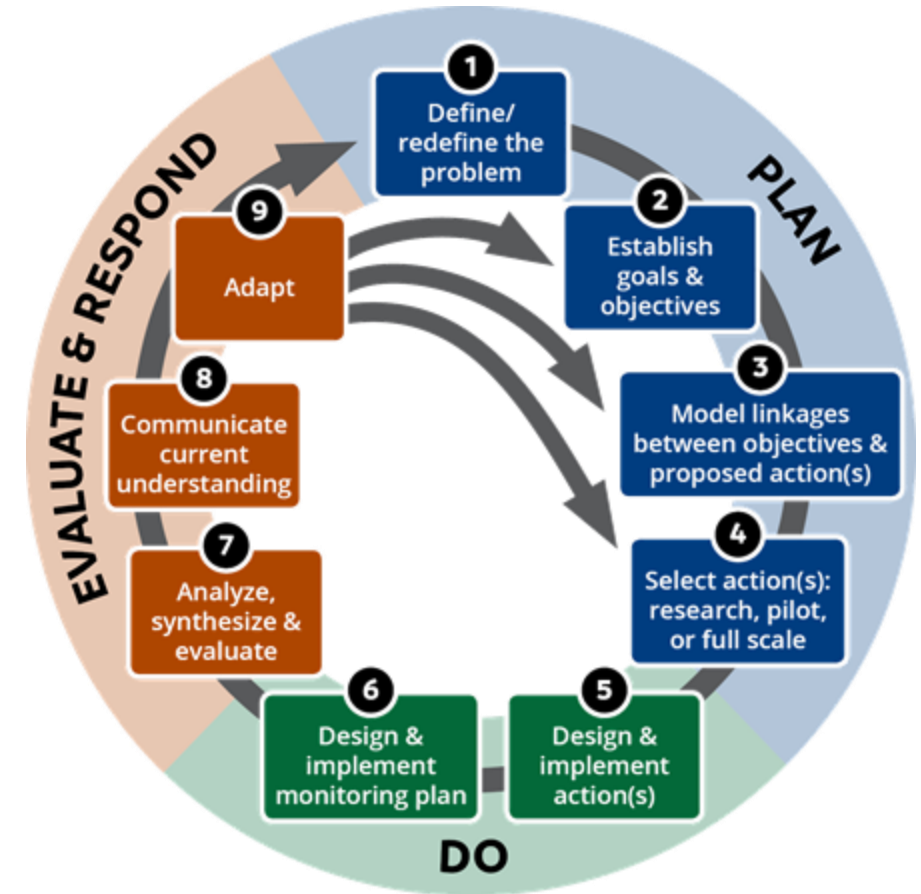
Challenges: Control and Monitoring

- Balancing specific species treatment, acreage allowed, tools allowed, and effectiveness.
- Need effectiveness monitoring to answer these questions and adaptively manage, but no consistent monitoring for effectiveness of control and continued spread.
- No Early Detection – Rapid Response Plan for new IAV.



IAV and Adaptive Management

- Delta Plan requires adaptive management
- Adaptive management requires:
 - Pilot studies
 - Monitoring and data
 - Evaluation and synthesis
 - Ability to change with new information
 - Regulatory and permitting flexibility
 - Coordination between entities



Discussion Topics

1. Possible approaches for expanding and permitting adaptive management of invasive aquatic vegetation (IAV) control in or near restoration sites.
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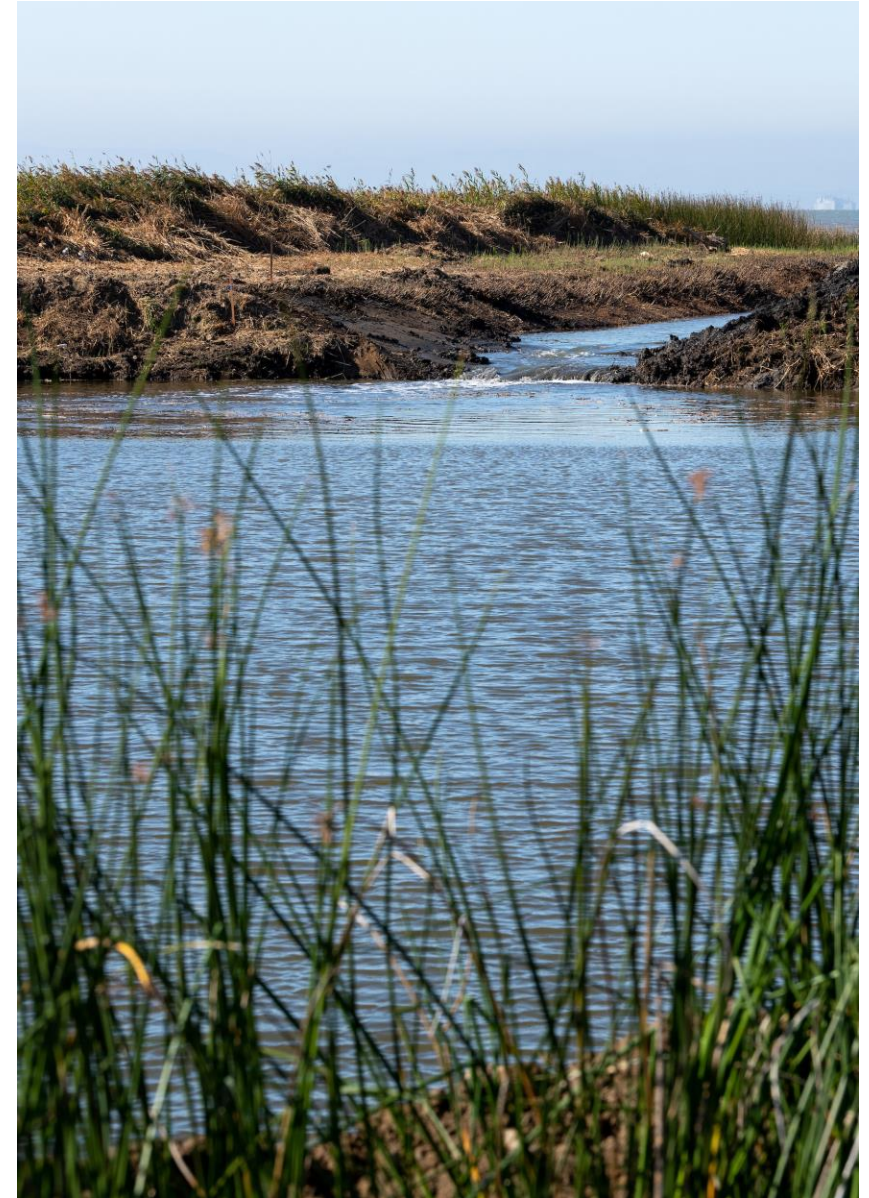
Agenda Item 3:
Recap of Delta-Suisun
Tidal Wetland Restoration Symposium

Presenters

- Dylan Chapple, Delta Stewardship Council
- Rosie Hartman, Department of Water Resources

Tidal Wetland Restoration Science Symposium

- Co-hosted by DWR and State Water Contractors on November 1st, 2023
- ~230 participants, 30+ presenters
- **Goals:**
 - Provide a forum for wetland researchers and restoration managers to collaboratively discuss the state of the science.
 - Identify high-priority science activities needed to support adaptive management of wetland restoration sites.
 - Identify high-priority adaptive management activities needed to maximize effectiveness of wetland restoration.



Tule Red Restoration Project, DWR

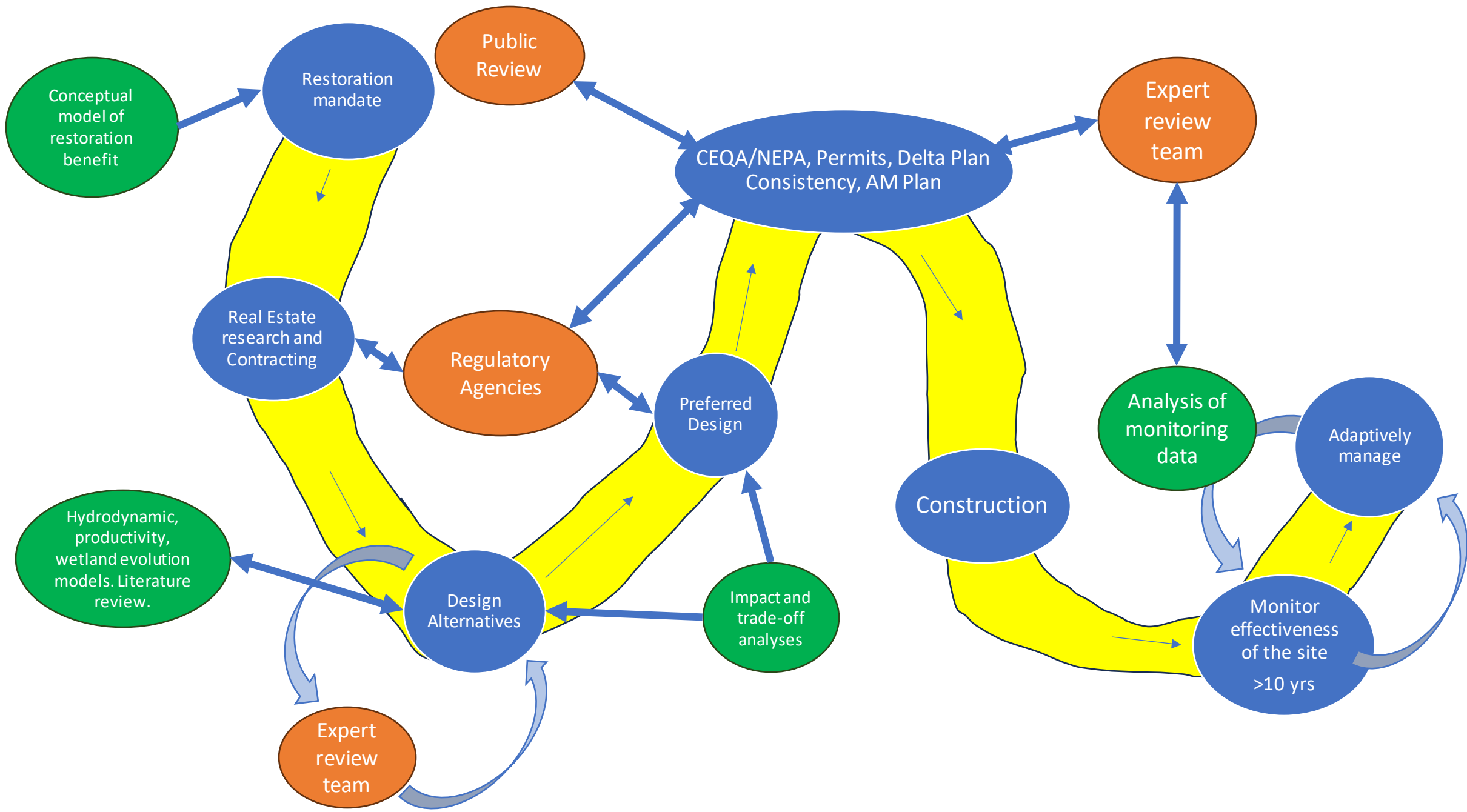
Delta Plan Connections

- Ecosystem Restoration Targets: 32,500 acres of tidal wetland restoration by 2050
- Adaptive management
- DPIIC Restoration Subcommittee Workplan
 - G2 O2 Action 1: Survey current agency and restoration practitioner processes used to collect post-project data and perform post-project maintenance/management
 - G3 Objective 2: Identify mechanisms for evaluating the effectiveness of restoration and opportunities for better implementing long-term adaptive management, monitoring, and synthesis

Restoration Science

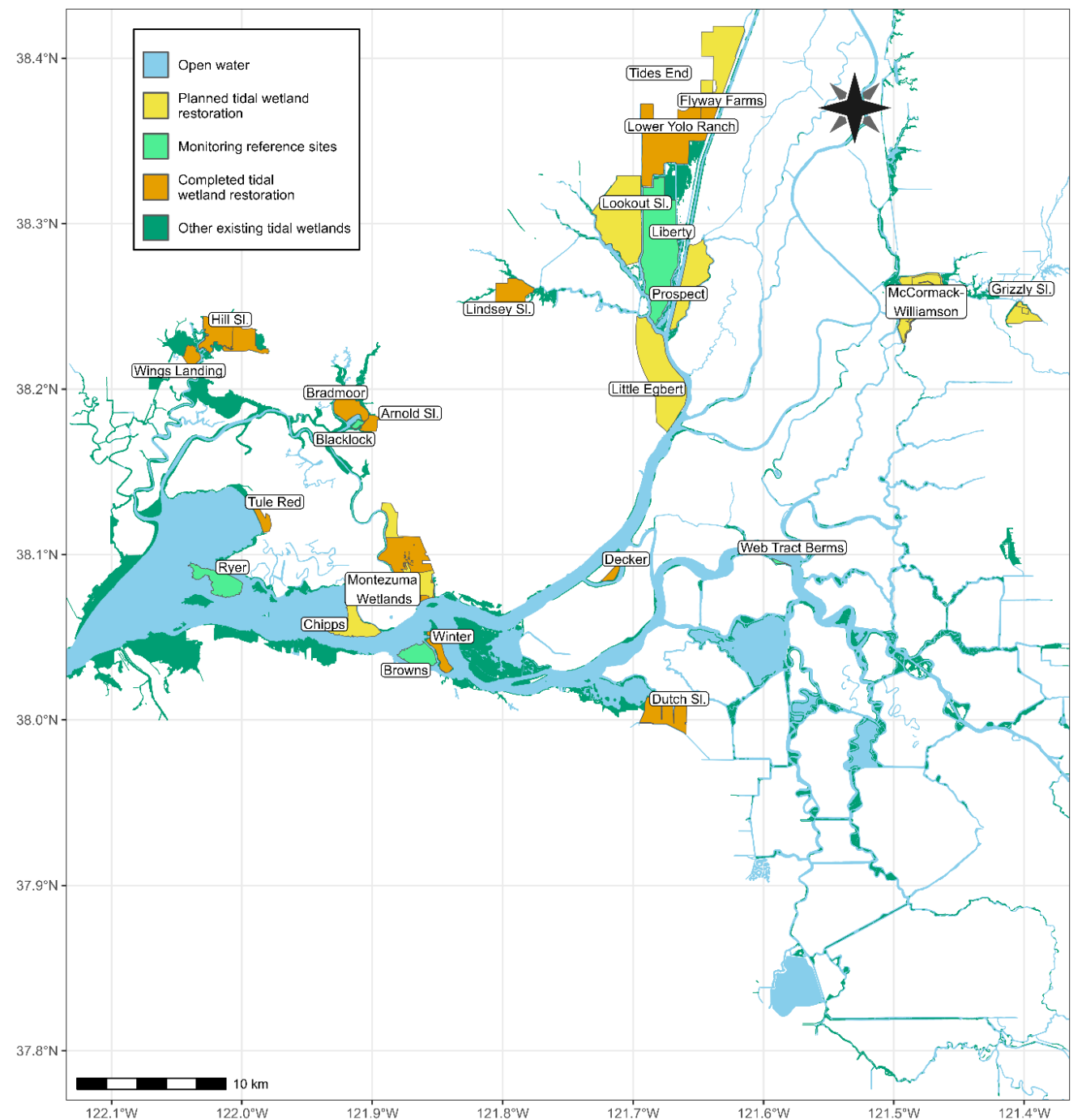
- 2013 Symposium: *Tidal Marshes and Native Fishes in the Delta: Will Restoration Make a Difference?*
- Accelerated pace of restoration and associated science since 2018
- Need to Inform future restoration site monitoring, scientific studies, adaptive management, funding, and prioritization
- **Given restoration and science progress, what is the current state of the science and what are the information gaps?**





Current Restoration

- Fish Restoration Program
- Multi-benefit projects
- Healthy Rivers and Landscapes Program
- For-profit restoration
- Mitigation Banks



Monitoring



- *Compliance* monitoring
- *Effectiveness* monitoring program
 - Interagency planning and review
 - Before-After-Control-Impact comparing restoration and reference sites

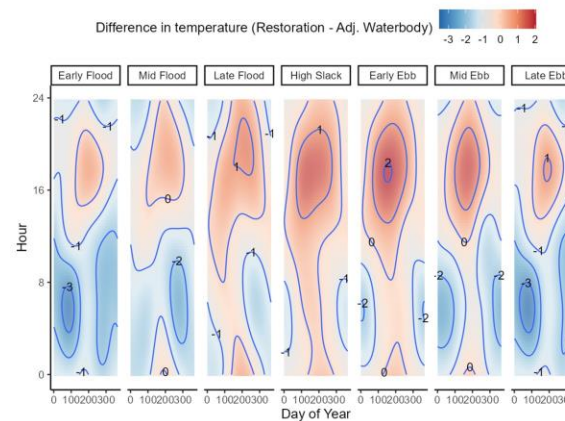


Preliminary Insights

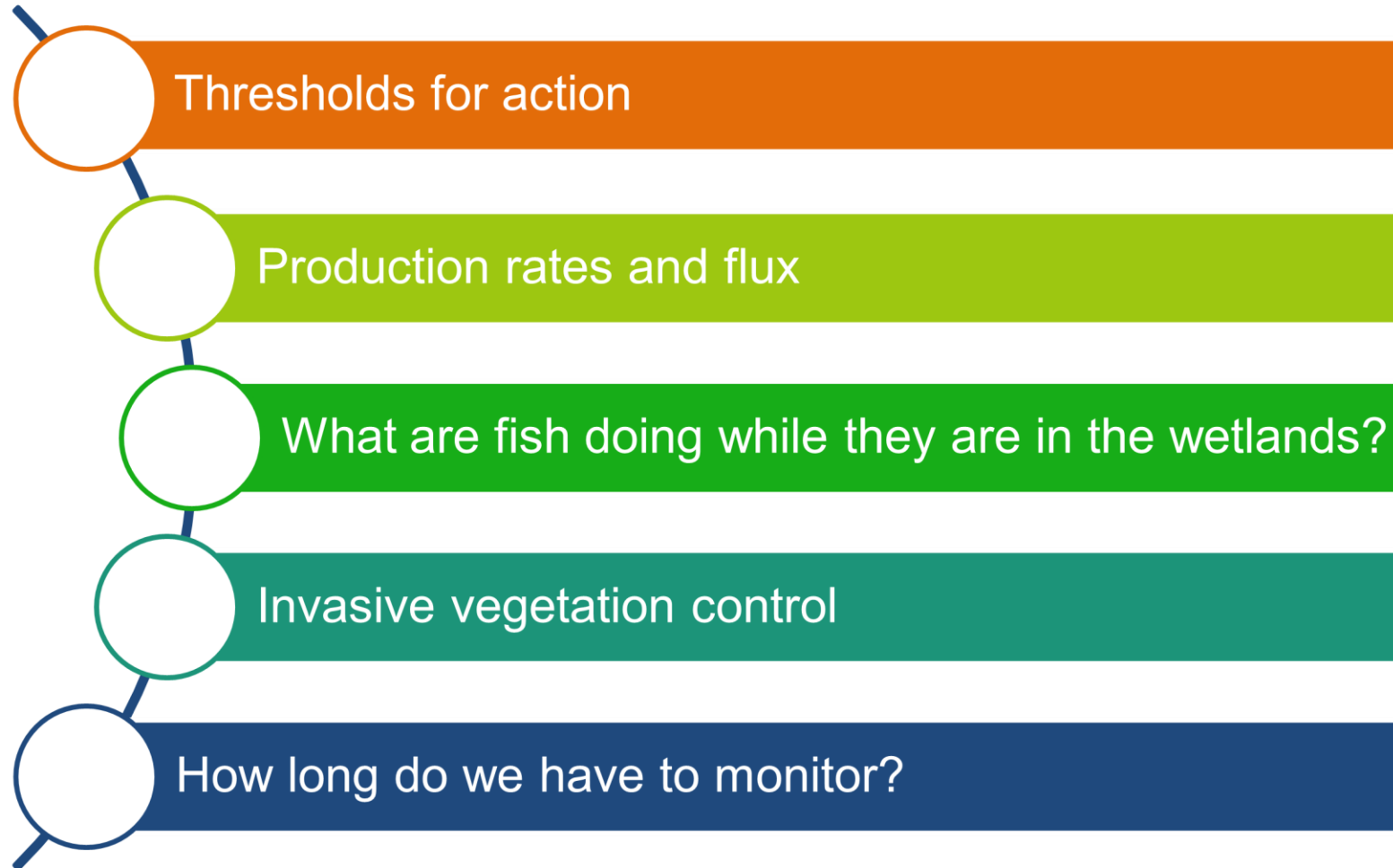
Invertebrate Productivity

Temperature refugia

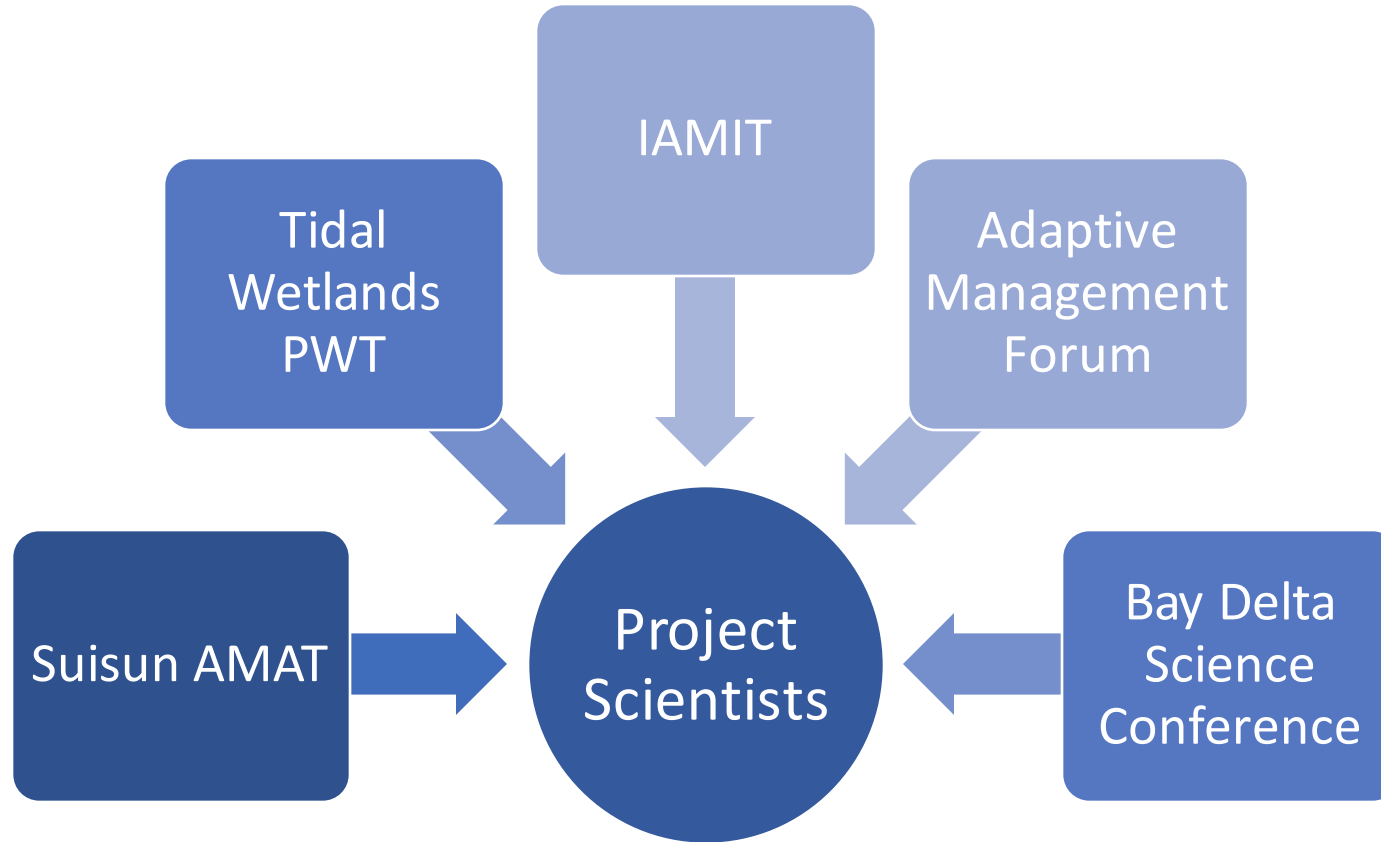
Presence of salmon and smelt



Data Gaps and Unknowns

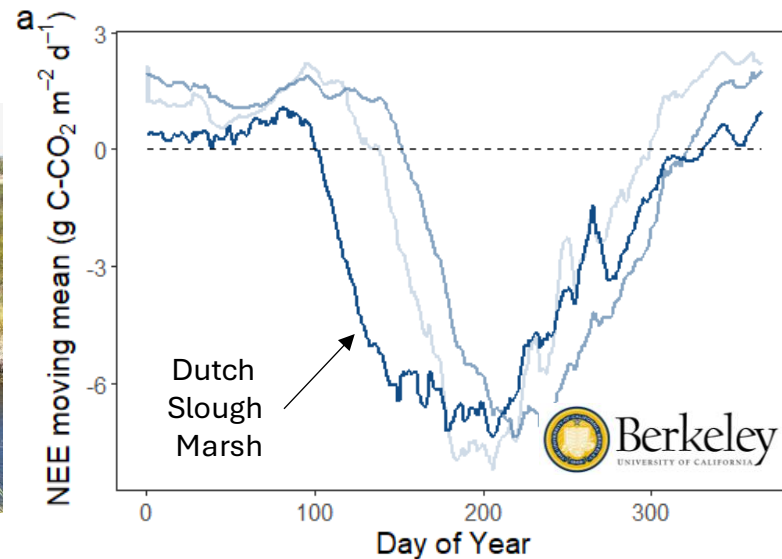


Communication and Collaboration



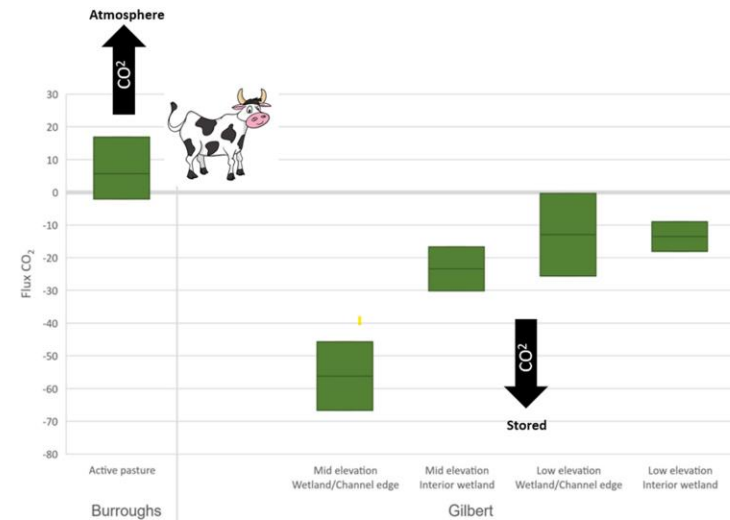
Dutch Slough

- Top 1% carbon sequestration
- High terrestrial biodiversity
- Value of long-term data, research partnerships, and regular coordination



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UNIVERSITY OF CALIFORNIA

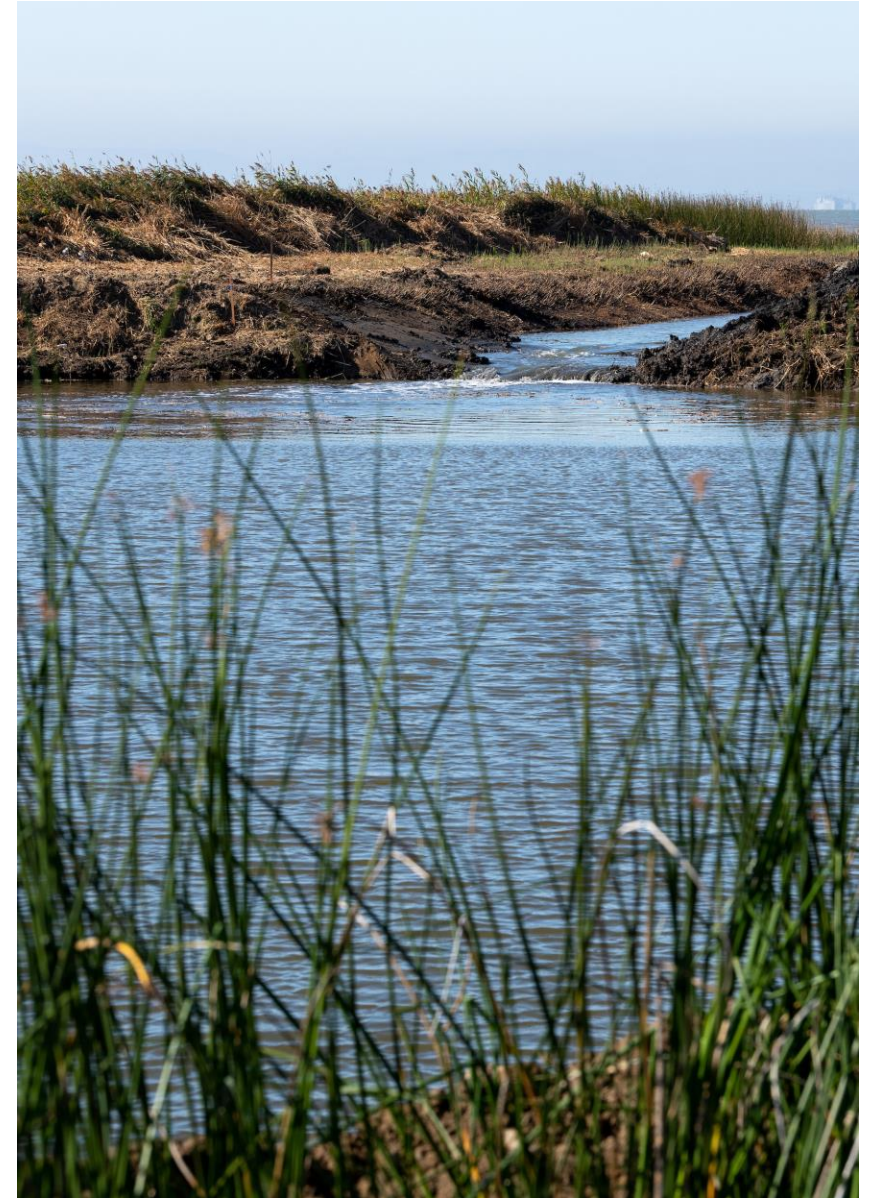


Draft Management Priorities

1. Ensure that models used in design are validated, expanded, and updated for future use
2. Incorporate experimental design and opportunities for adaptive management in restoration planning
3. Clearly define the adaptive management timeframes for various performance metrics of tidal wetlands
4. Identify pathways to take corrective action on existing sites (e.g., resizing breaches, treating weeds, dredging) when the site has passed an ecological threshold
5. Invest in monitoring realized function to inform adaptive management.
6. Connect outcome of scientific studies to Long-Term Management Plans for restoration projects to increase resiliency to future change

Tidal Wetland Restoration Science Symposium: Next Steps

- Planning team working on paper to distill main findings
- Synthesizing participant feedback on high-priority science activities needed to support adaptive management
- Identifying high-priority adaptive management activities for current and future projects



Tule Red Restoration Project, DWR



Agenda Item 4:
Recap of
2nd Delta Restoration Forum

Forum Goals

1. Share information about a wide variety of Delta and Suisun Marsh restoration projects and programs
2. Encourage networking among sectors implementing and interested in restoration projects



Historic Ryde Hotel, site of November Restoration Forum

Building on February 2023 Forum

February Forum attendees asked for:

- More focus on projects
- Less formal presentations
- A more central Delta location

• November Forum was:

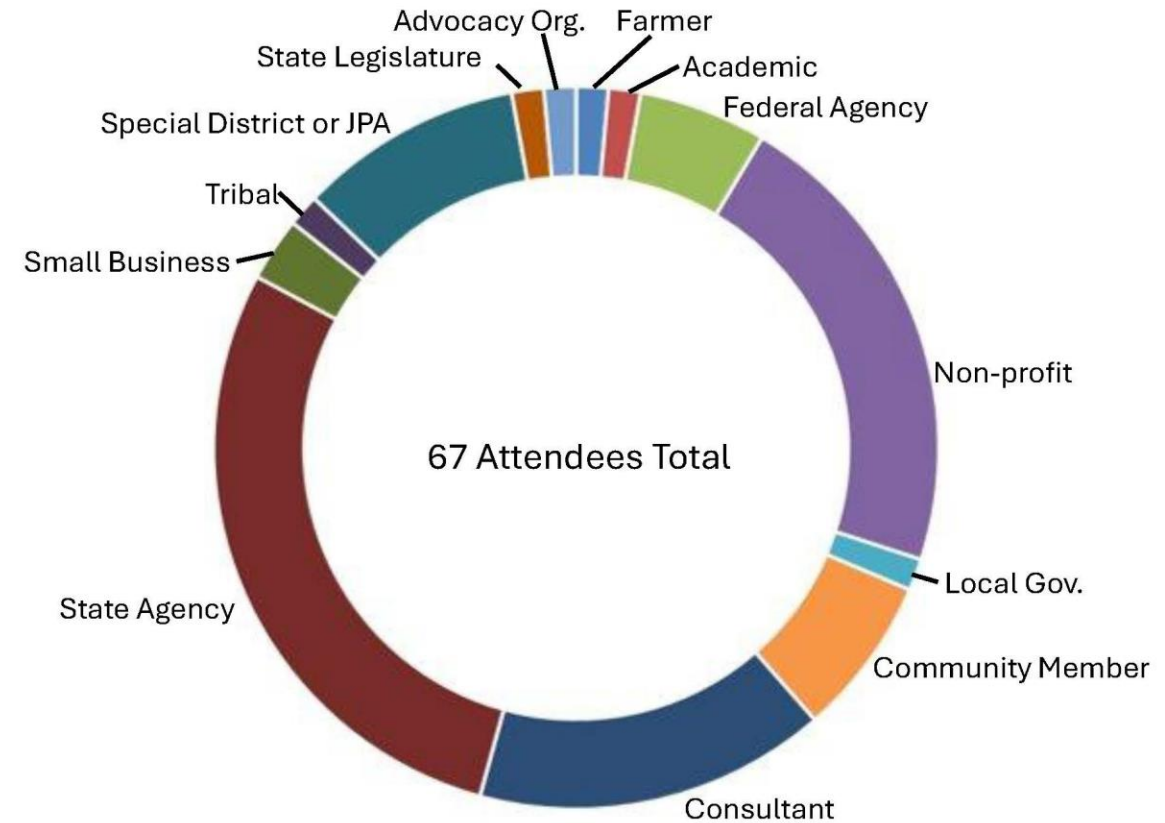
- Held in open house format
- No formal presentations
- Held in the heart of the Delta



Attendees at November Forum, Ryde Hotel

Second Delta Restoration Forum

- November 2, 2023, at the Ryde Hotel in Walnut Grove
- Attended by 67 in-person participants
- Planning Team members:
 - Doug Brown (Douglas Environmental)
 - Gilbert Cosio (River Delta Consulting)
 - Sara Medina (Restore the Delta)
 - Ivan Senock (Buena Vista Rancheria of Me-Wuk Indians)



Attendees at the November Forum

Presenters

- >20 projects and programs
- Presenter materials compiled on an online Mural board to extend reach of information

Organizations that presented materials at the second Delta Restoration Forum

American Rivers East Contra Costa County Habitat Conservancy
CA Dept. of Fish & Wildlife GEI Consultants
CA Dept. of Water Resources National Audubon Society
CA Dept. of Parks & Recreation Restore the Delta
Center for Land-Based Learning River Delta Consulting
Conservation Farms & Ranches San Francisco Estuary Institute
Delta Stewardship Council The Nature Conservancy
Delta Conservancy U.S. Army Corps of Engineers

Presenter organizations at November Forum

Forum Materials



Lower Sacramento River to Get New Life as Haven for Recovering Wildlife, Flood Safety

Critical salmon habitat and flood safety along one of the most habitat-poor stretches of the Sacramento River are getting a boost from recent state and federal funding.

The California Department of Water Resources (DWR) funded the acquisition of approximately 1,000 acres of former farmland along the Sacramento River between Colusa and the city of Sacramento. The property, historically referred to as China Bend and what project proponents call the Turning Point Preserve, will be restored to native floodplain habitat in several phases to benefit endangered salmon and other imperiled wildlife. As part of the revitalization, the floodplain will be reconnected with the river to boost flood safety for downstream communities and recharge groundwater aquifers.

The \$17.5 million acquisition was made possible through California's Proposition 1 and DWR's Central Valley Tributaries Program.

The U.S. Bureau of Reclamation (USBOR) also recently awarded \$10 million through its Central Valley Project Improvement Act Fisheries Habitat and Facilities Improvement Program for the initial restoration of nearly 200 acres of the property into native habitat over the next five years. The first phase of restoration will begin after extensive public scoping and permitting is completed.

The statewide river-restoration nonprofit River Partners, which has restored nearly 20,000 acres of important riverside lands throughout California since its founding 25 years ago, will oversee on-the-ground restoration. American Rivers, a national organization working to protect and restore all rivers, from remote mountain streams to urban waterways, including the rivers so vital to life in California, will lead overall project management.

The effort is part of the regional Floodplain Forward initiative and coalition to expand floodplain habitat to benefit recovering salmon populations. Floodplain Forward is a public-private partnership facilitated by the Northern California Water Association which advances Sacramento Valley sustainability by enhancing and preserving water rights, supplies, and quality.

A River without a Floodplain

Historically, the Sacramento River carved its way throughout the region, continually flooding and washing away the banks restraining its course and forming new pathways. This resulted in wide and frequently inundated floodplains that



The California Department of Water Resources provided critical funding to acquire the approximately 1,000-acre Turning Point Preserve and U.S. Bureau of Reclamation is funding the first phase of restoration on nearly 200 acres over the next five years.



The Lookout Slough Tidal Habitat Restoration and Flood Improvement Project

Charlotte Biggs (DWR), Michelle Jespersen (DWR) and Stephanie Freed (EIP).

Unique Approach to Project Implementation

DWR partnered with EIP, leveraging their unique expertise in planning, permitting, and constructing large-scale restoration projects, to implement the project in a timely manner.

Providing Benefits to Native Fish Species

The project provides design elements for multiple species not limited to Delta smelt, longfin smelt, steelhead, salmon, sturgeon, and giant garter snake, as well as other native species and numerous native and sensitive plant species.

The habitat design process was a collaboration between species experts, agency personnel, the project design team, tribes, other interested parties, and a restoration contractor, to incorporate both aquatic and terrestrial habitat elements for species needs while meeting project goals for habitat mitigation crediting and flood risk reduction and planning for constructability efficiencies of this large-scale restoration project.

Flood Risk Reduction & Public Access

The project will meet the objectives of the Central Valley Flood Protection Plan to reduce flood risk. The project includes construction of a new setback levee along the west and north edges of the site to allow for breaching the existing Yolo Bypass West Levee along Shag Slough. The new setback levee will provide 100-year flood protection with additional height for climate change and sea level rise resiliency for nearby infrastructure, agricultural lands, and communities.

The project includes new public access points to facilitate water-based recreational opportunities.

Tribal Engagement

DWR consulted with tribes including Yocha Dehe Wintun Nation (YDWN), Ione Band of Miwok Indians, and United Auburn Indian Community of the Auburn Rancheria of California through AB-52 and Section 106 consultation

processes. Through engagement, YDWN provided input as part of early project design discussions and throughout the design development process. DWR and EIP have been consulting with YDWN throughout project construction to complete the necessary cultural sensitivity trainings.



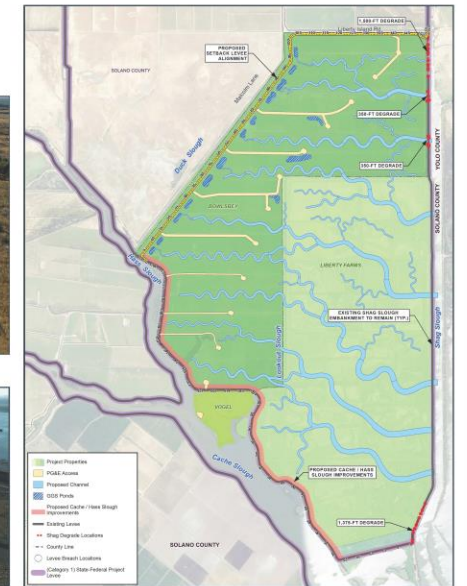
Existing levee pre-construction (will be breached)



Interior of site pre-construction (will be under tidal influence)



Site in progress as of October 2022 (interior channels constructed)



RESTORATION DESIGN CONCEPT

The **Lookout Slough Tidal Habitat Restoration and Flood Improvement Project** is a multibenefit habitat restoration project that is being implemented through a public-private partnership between DWR, Ecosystem Investment Partners (EIP) and Reclamation District 2098. The multi-benefit Lookout Slough Tidal Habitat Restoration and Flood Improvement Project will restore over 3,100 acres of freshwater tidal wetland habitat for the California Department of Water Resources within the Cache Slough Complex and increase the flood conveyance capacity of the lower Yolo Bypass. The project is currently in its second year of construction and is anticipated to be completed in fall of 2024.

American Rivers handout and DWR Lookout Slough Poster

Attendee Feedback

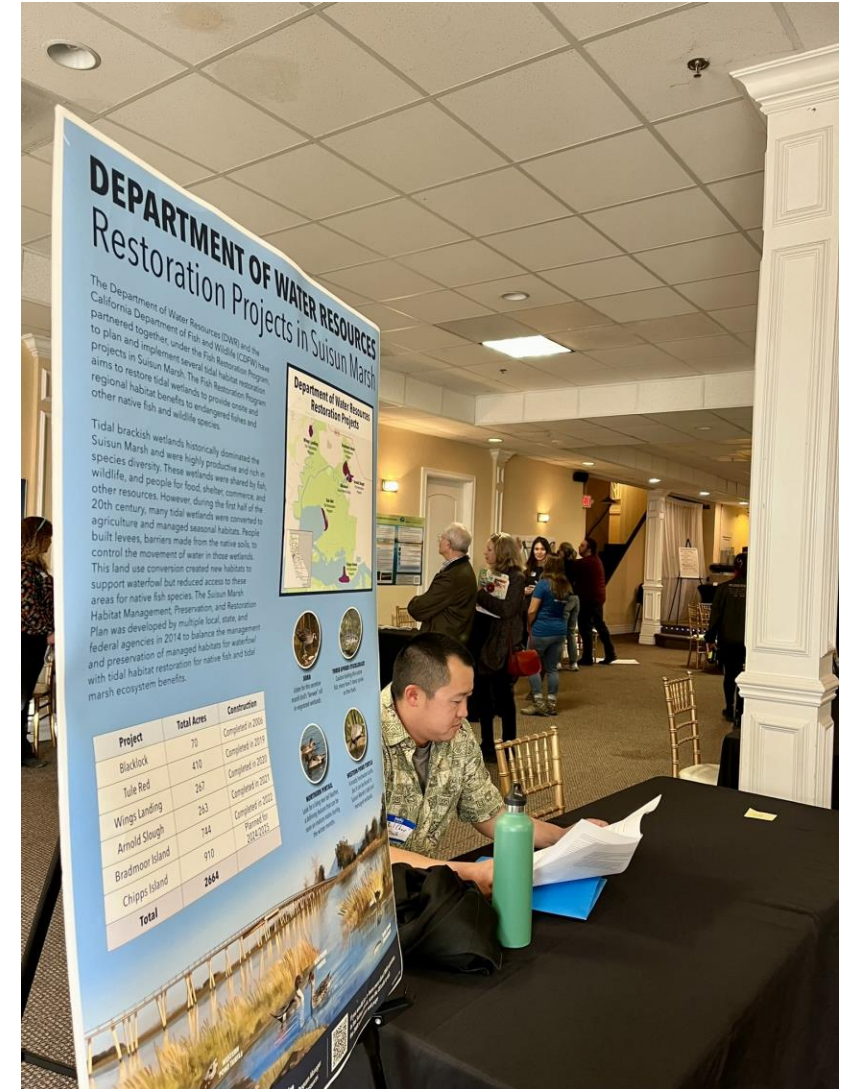
- “Seeing and talking to the various, diverse folks involved in restoring the Delta face to face in a relaxed atmosphere.”
- “Enjoyed the in-Delta location, time of day, and the wide variety of organizations represented.”
- “I got an unexpected benefit of collaborating with folks from other organizations/agencies. It is also nice to see some of the folks that I meet with over Zoom in person. This seems small but can make a big difference down the road.”



Attendees at November Forum, Ryde Hotel

Attendee Feedback

- Provide additional structuring information
- Increase community involvement
- Increase landowner and grower involvement
- 79% of survey respondents are “very likely” to attend another similar event



Attendees at November Forum, Ryde Hotel

Future Directions

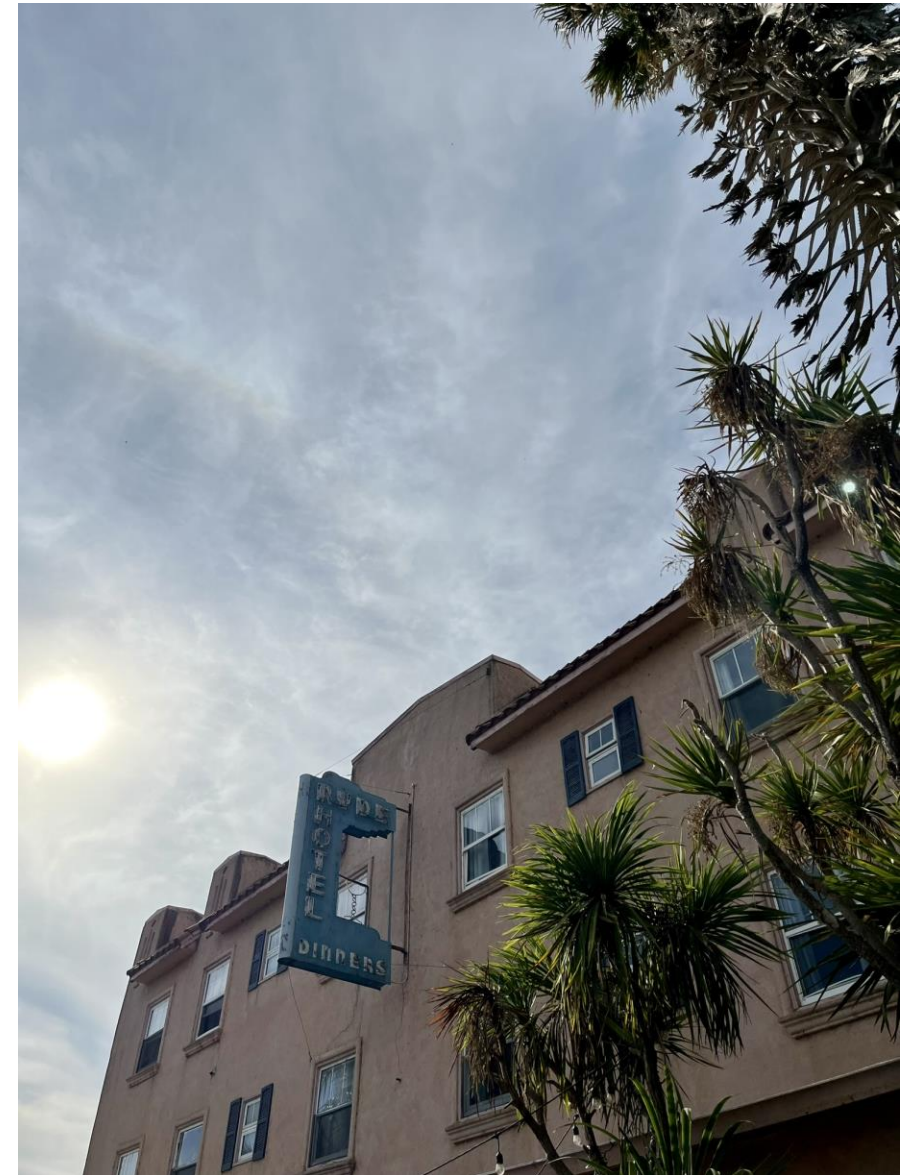
- Broaden involvement of community members, particularly the agricultural, Tribal, and environmental justice communities
- Consider hosting targeted, small-group meetings
- Consider tabling at community events



Attendees at November Forum, Ryde Hotel

For Discussion

- What groups and organizations should engage in targeted conversations?
- Are there other groups or organizations we should try to engage for a future Forum?
- Would tabling at pre-existing community events further our aims? Which events?
- Should we hold another Forum like November's in 2024? How often?



Historic Ryde Hotel, site of November Restoration Forum

Agenda Item 5: General Public Comment

