

Cal-IPC 2024

# Adaptive management of invasive aquatic vegetation in the Delta: Successes and challenges

Elizabeth Brusati  
Senior Environmental Scientist (Specialist)  
[Elizabeth.Brusati@deltacouncil.ca.gov](mailto:Elizabeth.Brusati@deltacouncil.ca.gov)



Delta  
Science  
Program

DELTA STEWARDSHIP COUNCIL



# Contributors

- Jeffrey Caudill, Department of Parks and Recreation, Division of Boating and Waterways (DBW)
- Dylan Chapple, Delta Stewardship Council
- Louise Conrad, Department of Water Resources (DWR)
- Gina Darin, DWR
- Edward Hard, DBW
- Shruti Khanna, Department of Fish and Wildlife
- Nicholas Rasmussen, DWR
- Rachel Wigginton, Sacramento-San Joaquin Delta Conservancy



**Delta  
Stewardship  
Council**

A CALIFORNIA STATE AGENCY



California Department of  
**Fish and Wildlife**



CALIFORNIA DEPARTMENT OF  
**WATER RESOURCES**



SACRAMENTO - SAN JOAQUIN  
**DELTA CONSERVANCY**  
A California State Agency



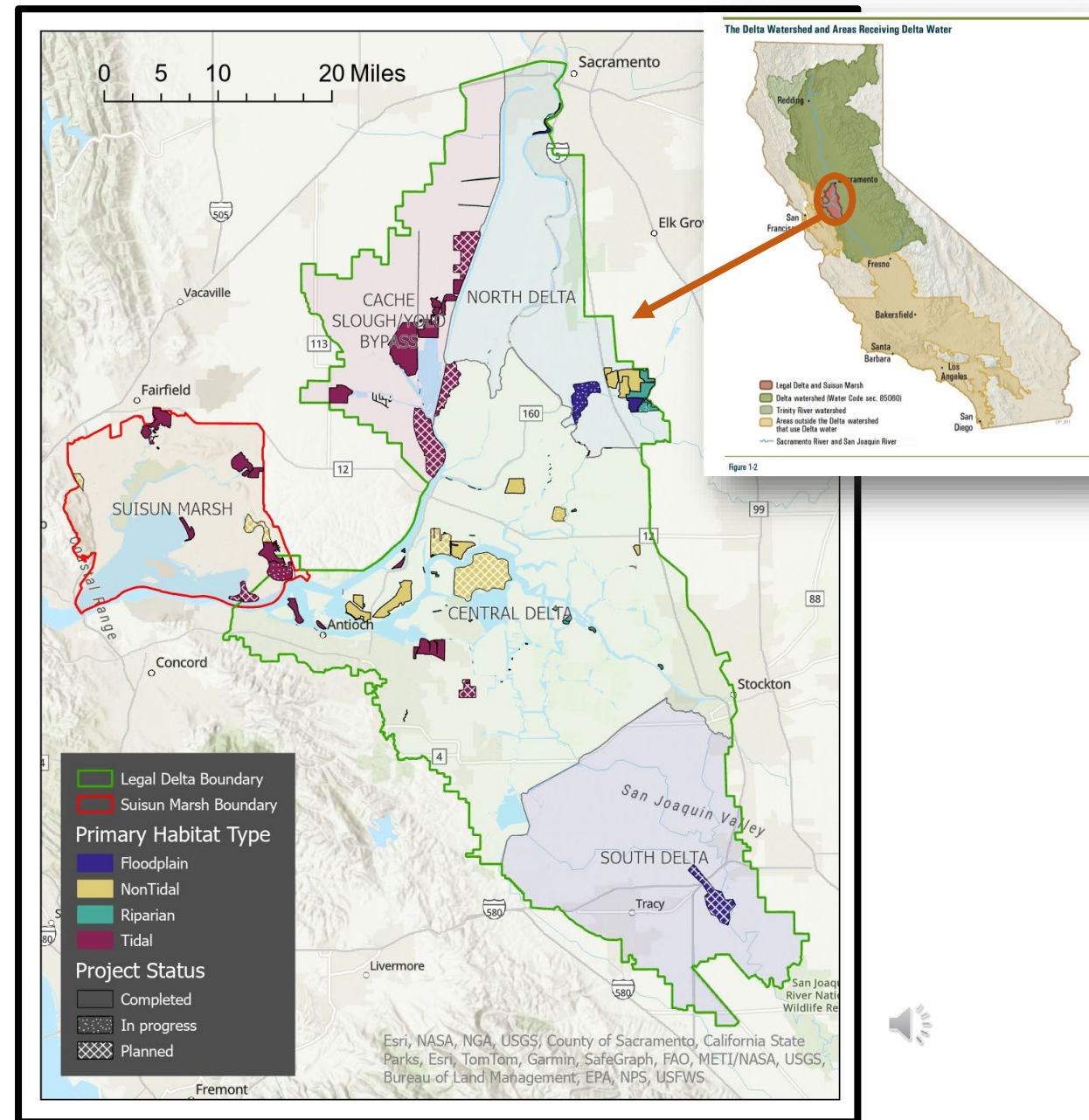
# What's at stake

## Dutch Slough tidal wetlands restoration (DWR)



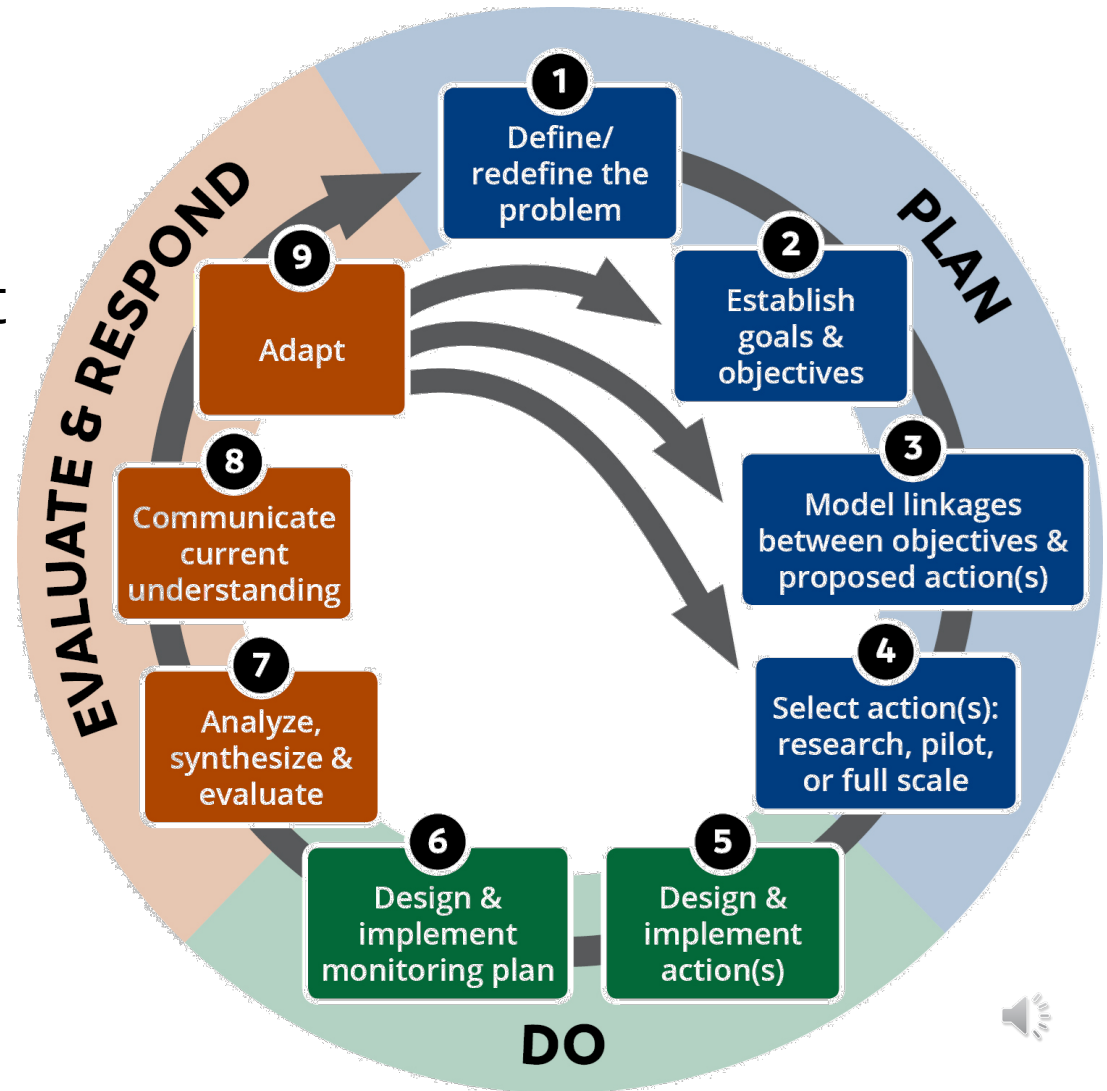
### Delta Plan restoration targets by 2050:

- Total: 60-80,000 ac
  - Tidal wetlands
  - Non-tidal wetlands
  - Riparian/floodplain



# Adaptive Management

- Delta Plan requires adaptive management in restoration project plans.





# Invasive Aquatic Vegetation (IAV) in the Delta



Common reed (*Phragmites australis*)



Brazilian waterweed (*Egeria densa*)



Alligatorweed (*Alternanthera philoxeroides*)



Water hyacinth (*Eichhornia crassipes*)

CRITICAL NEEDS FOR CONTROL OF INVASIVE  
AQUATIC VEGETATION IN THE  
SACRAMENTO – SAN JOAQUIN DELTA

Logos for California State Parks & Boating and Waterways, Department of Water Resources, and State of California.

Contributions by:  
J. Louise Conrad<sup>1</sup>, Dylan Chapple<sup>1</sup>, Eva Bush<sup>1</sup>, Edward Hard<sup>2</sup>, Jeffrey Caudill<sup>2</sup>, John D. Madsen<sup>3</sup>,  
Wendy Pratt<sup>4</sup>, Shawn Acuna<sup>5</sup>, Nick Rasmussen<sup>6</sup>, Patricia Gilbert<sup>2</sup>, Angela Calderaro<sup>2</sup>,  
Shruti Khanna<sup>7</sup>

<sup>1</sup> Delta Stewardship Council  
<sup>2</sup> State Parks, Division of Boating and Waterways  
<sup>3</sup> U.S. Department of Agriculture  
<sup>4</sup> Crowe, LLP  
<sup>5</sup> Metropolitan Water District  
<sup>6</sup> Department of Water Resources  
<sup>7</sup> CA Department of Fish and Wildlife

Speaker icon in the bottom right corner.





# IAV and Restoration Projects

- Spreads into restoration sites as they are breached.
- Restoration projects designed for listed species (fish).
  - IAV control restricted by concern for those same species
- IAV cause reduced ecological function.
- Restoration investment compromised.

a



b



# State Parks' Division of Boating and Waterways (DBW) Aquatic Invasive Plant Control Program

- 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



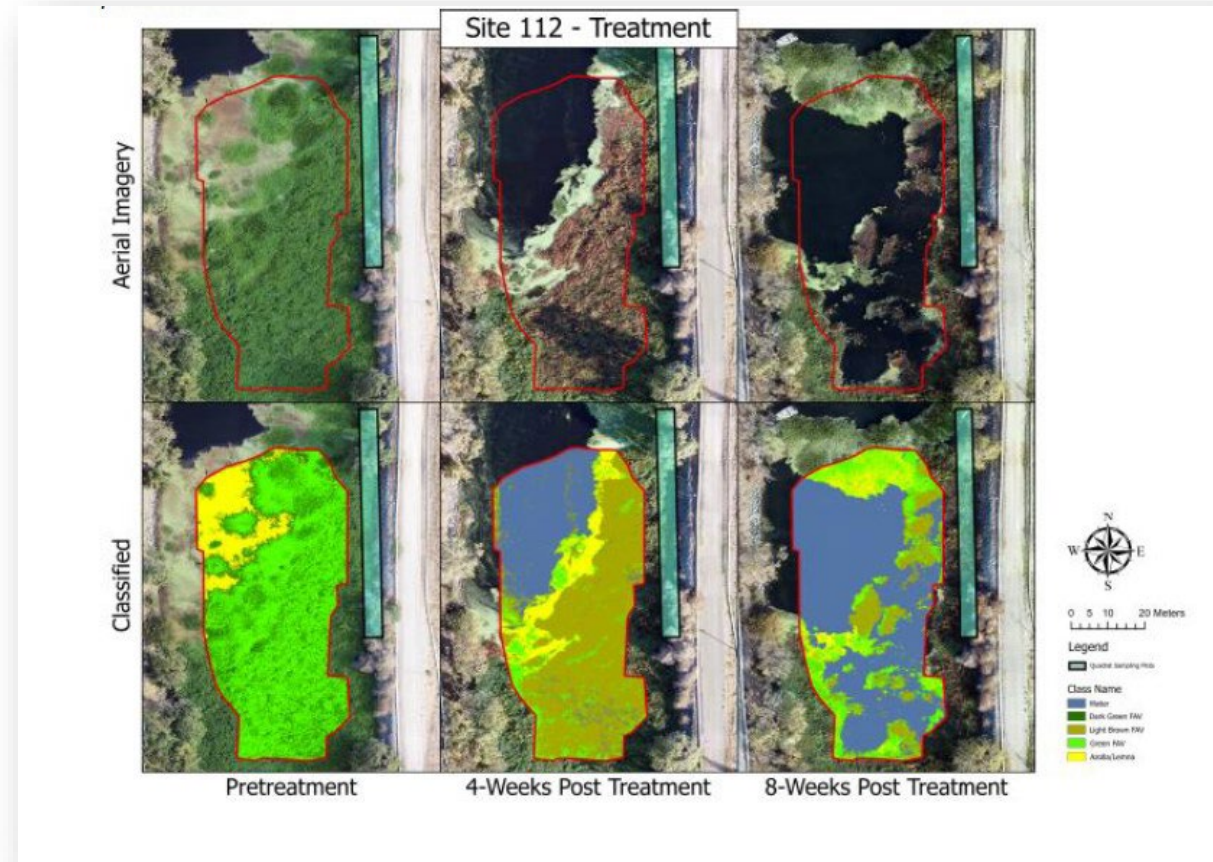
DBW





# Successes: Permitting

- Streamlined risk assessment process for DBW treatment species no longer requires legislative action
- Increased communication with CDFW for shorter turnaround times for risk assessments
- Increased flexibility and authorization for more tools in restoration sites from recent Biological Opinions (2019) and working more closely with USFWS and NOAA-NMFS.



DBW

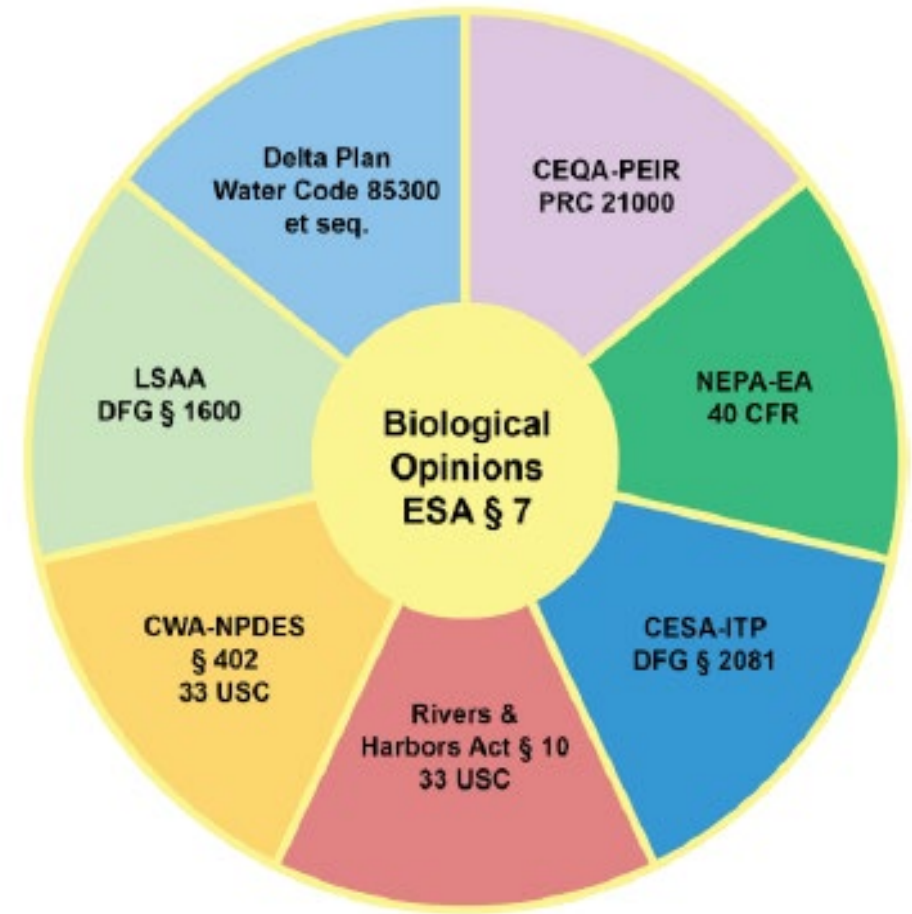






# Challenges: Permitting

- Numerous approvals with many rounds of revisions for each permit.
- Many different state and federal agencies.
- Existing acreage authorization for DBW 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.



# Successes: Control

- Demonstration Investigation Zones (DIZ) allow testing of new tools in small areas.
  - Two herbicides and drones
  - 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.
- No consistent monitoring for effectiveness of control and continued spread of IAV.
- No Early Detection – Rapid Response Plan for new IAV.



## Coming Soon

- Quick-start guidance document for managing IAV on tidal wetlands
- Release date: 2025
- Contact me to see a draft or join our working group!
  - [Elizabeth.Brusati@deltacouncil.ca.gov](mailto:Elizabeth.Brusati@deltacouncil.ca.gov)



DWR

