



# 2025 INVASIVE MUSSEL WATER AGENCY SUMMIT

## PRESENTED BY:

California Department of Fish and Wildlife  
Invasive Species Program

January 28, 2025



**GOLDEN MUSSEL**



**QUAGGA MUSSEL**



**ZEBRA MUSSEL**

# Summit Agenda

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9:10 am – 10:00 am: Golden Mussel Update, CDFW

10:00 am – 10:15 am: Quagga/Zebra Mussel Prevention and Control Review

10:15 am – 10:45 am: Quagga/Zebra Mussel Infestation Prevention Grant Program

10:45 am – 11:00 am: Break

11:00 am – 12:00 pm: Agency Panel Questions and Answers

12:00 pm – 12:15 pm: Available Resources and Closing

12:15 pm – 1:00 pm: Lunch Break

1:00 pm – 2:30 pm: CDFW Office Hours (Optional, Not Recorded)

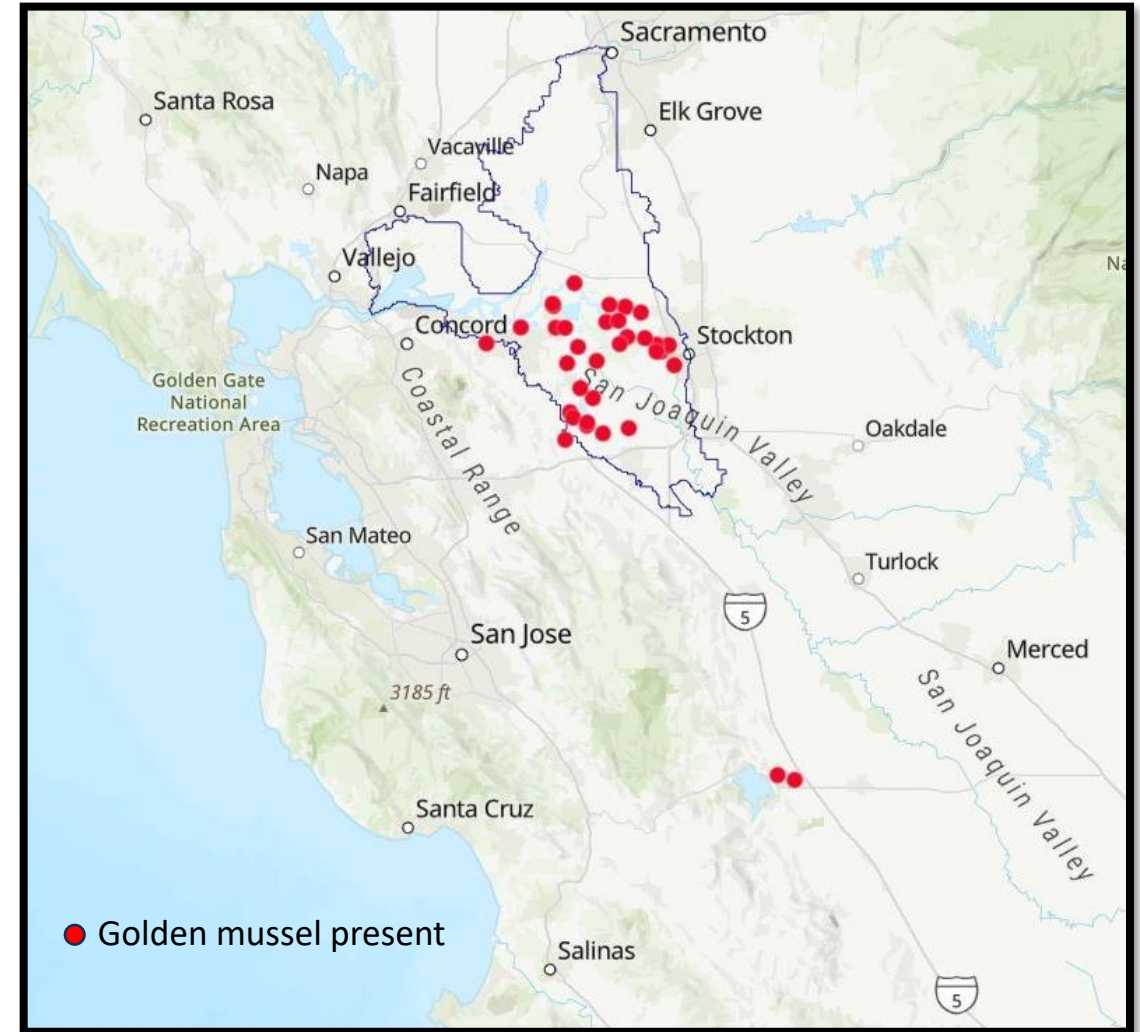
# Summit Purpose

- Provide information about the threat of golden mussel
- Equip you with the necessary tools, resources, and contacts to develop or revise a comprehensive prevention plan for your waterbody utilizing the Dreissenid mussel framework
- Promote collaboration with other local water managers on prevention efforts



# Golden Mussel Response Overview

- Detected in Sacramento-San Joaquin Delta and O'Neill Forebay in October 2024
- Developed an interagency Golden Mussel Task Force
- Golden mussel added to 14 CCR §671, List of Restricted Animals effective 12/19/25



*Golden Mussel Detections, 01/27/2025*

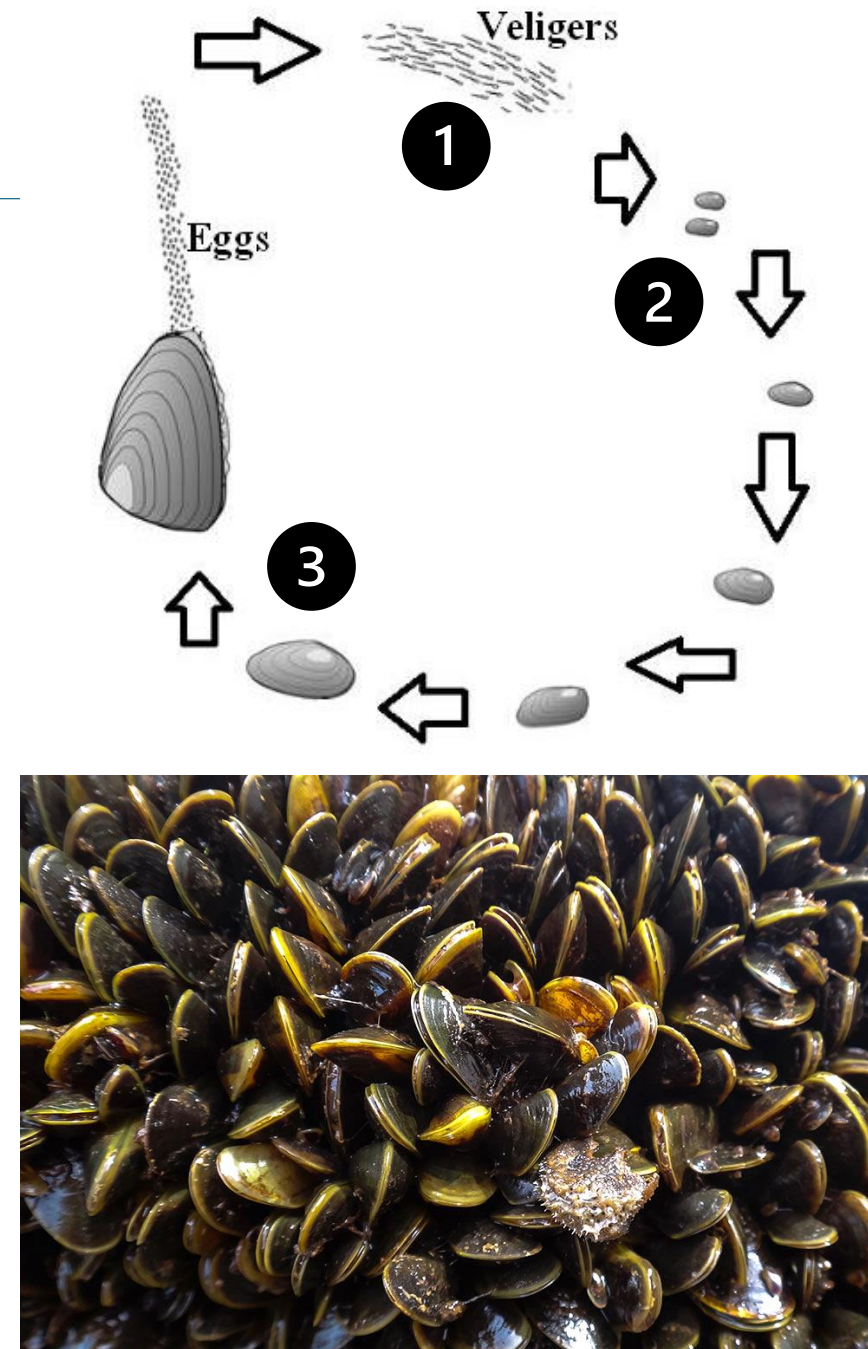
# Invasion History

- Native to China and Southeast Asia
- Invasive in east Asia and South America
- Very rapid spread in navigable waterways in South America (up to an average 150 miles/year)
- Discovery in the Delta is first record for North America



# Biology

1. Veliger – In water column, not visible to naked eye
  2. Settlers – Settle on surfaces, feel like sandpaper
  3. Adults – up to 1-2 inches in size
- Rapid reproduction and growth rate
  - Filter feeders – consume large amounts of algae



# Impacts

- Impede water delivery, hydroelectric power generation
- Densities up to 23,000 mussels/square foot
- Damage watercraft
- Increased harmful algal blooms



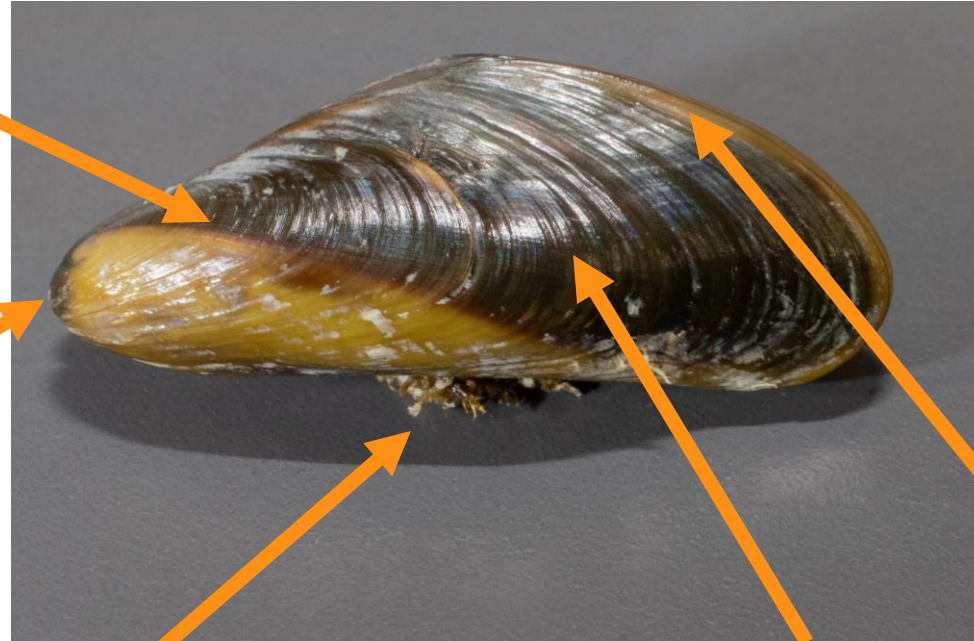
# Identification

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Often dark brown above, yellow below

Rounded anterior end

**Byssal threads!**



Elongated, rounded triangle shape

Very sharp dorsal margin, often have yellow rim

Smooth, shiny exterior

Report any attached mussel to [invasives@wildlife.ca.gov](mailto:invasives@wildlife.ca.gov)

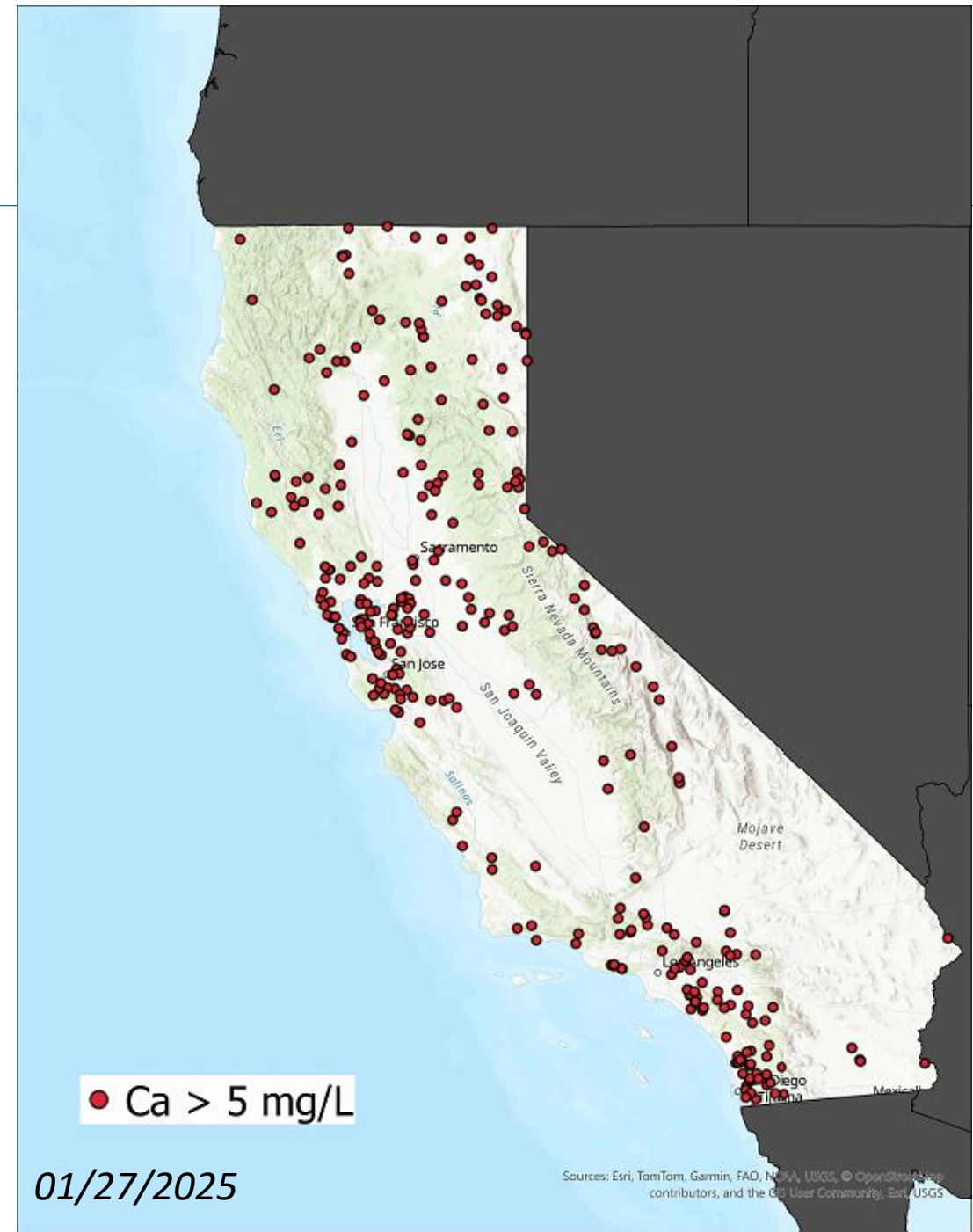


# Parameters for Survival/Reproduction

<b>Reported Value</b>	<b>Survival</b>	<b>Reproduction</b>
Calcium (mg/L)	< 3	5 >
Salinity (ppt)	0 - >15	0 - 5
Temperature (°F)	41-95	61 - 82

# Habitat Suitability Map

- Waterbodies with adequate calcium for adult survival and reproduction
  - All waterbodies displayed have mean salinity <5 ppt
  - California's temperate weather means most waterbodies have suitable temperatures, especially in the summer when recreation is most popular
- Tools like monitoring, outreach & education, and prevention plans can help contain Golden Mussels



# Golden Mussel Monitoring

Juvenile and adult mussels



Surface surveys

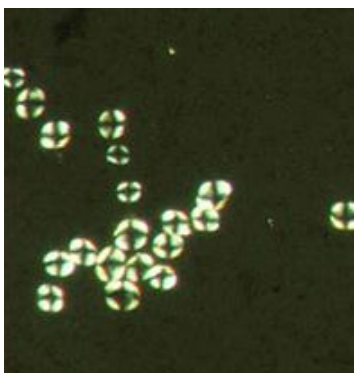


Artificial substrate

Planktonic larvae (veligers)



Plankton tows



Microscopic veligers



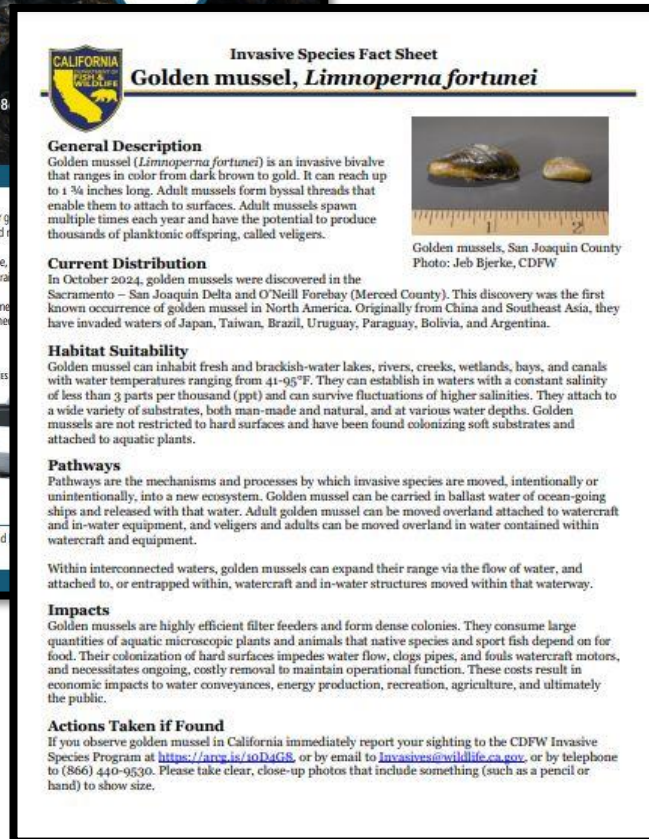
*Golden Mussel Monitoring, 01/27/2025*

# Golden Mussel Education and Outreach



Rack card  
(above)

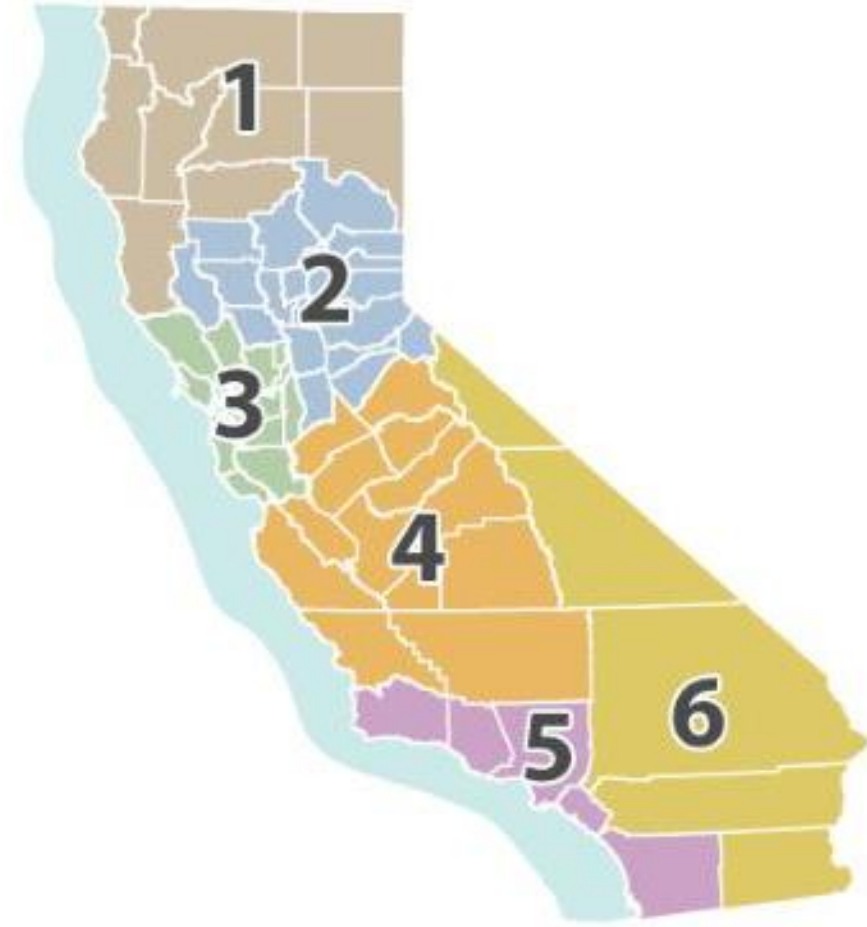
Fact sheet  
(right)



- Delta containment will be challenging
  - Water movement
  - Moored vessels
  - Overland movement
- Increase engagement with groups to educate on golden mussel, stop the spread, and report sightings
- Provide informational resources to handout to public
  - [CDFW golden mussel page](#)
  - [Fact sheet](#)
  - Rack card
- Promote Clean, Drain, Dry message

# Dreissenid Mussel Program

- Program formed in 2007 in response to Dreissenid mussel detections in CA
- Program comprised of CDFW Headquarters and Regional staff
- Program goal is to prevent further introductions of mussels and contain mussels within waters where they are present
- Fish and Game Code 2301 and 2302



*CDFW Region Map*

# Dreissenid Mussel Control

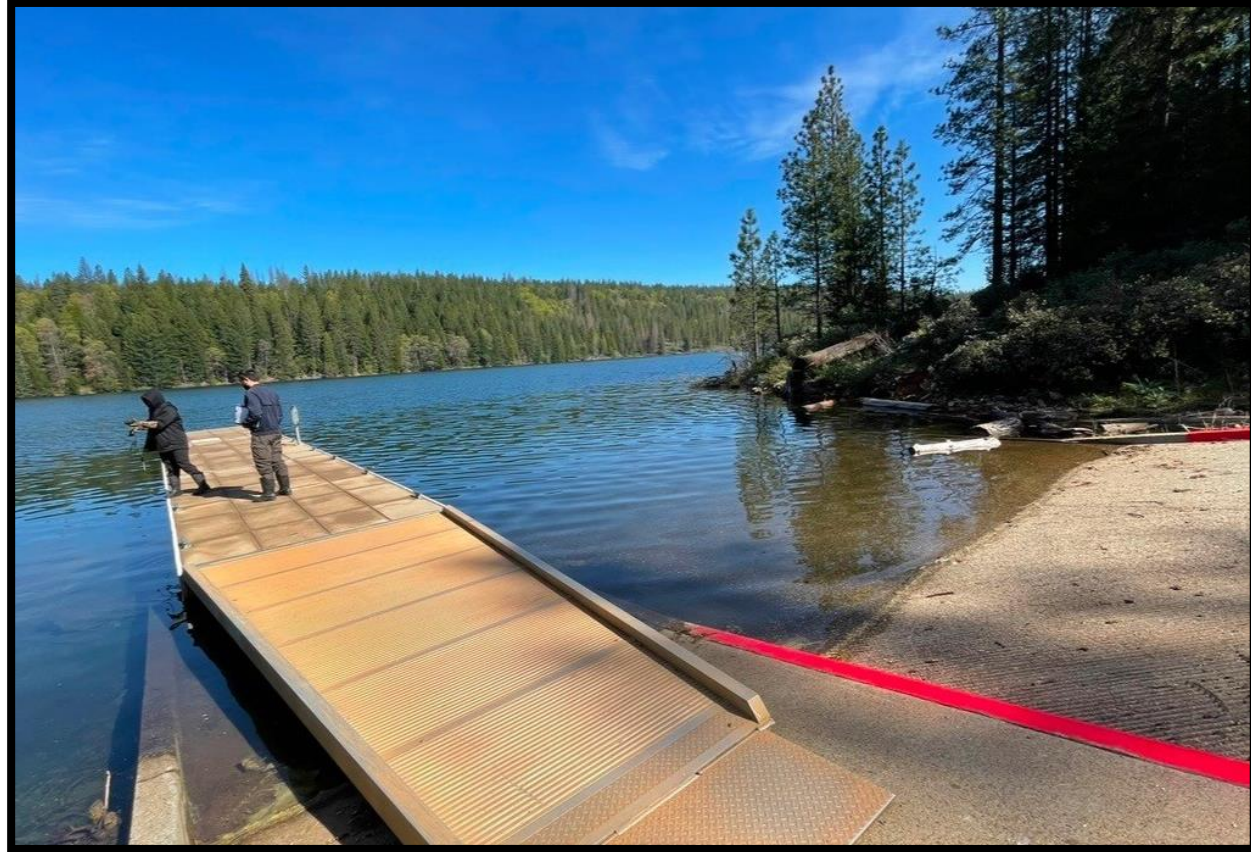


*CDFW, San Justo Reservoir, 2008*

- Fish and Game Code 2301
- 14 CCR §672.1 (a)
- Who is required to have a control plan?
  - Public or private agency that operates a water supply system where dreissenid mussels are detected
- Control Plan Components:
  - Methods for delineation of infestation, including both adult mussels and veligers
  - Methods for control or eradication of adult mussels and decontamination of water containing larval mussels
  - A systematic monitoring program to determine any changes in conditions
- Annual reports submitted to CDFW

# Dreissenid Mussel Prevention

- Fish and Game Code 2302
- 14 CCR §672.1 (b)
- Who is required to have a prevention plan?
  - Reservoir (Water Code §6004.5)
  - Open for public recreation
  - Not infested with Dreissenid mussels
- Prevention Plan Components:
  - Vulnerability Assessment
  - Monitoring program
  - Management of recreational activities
  - Education and outreach
- Annual reports submitted to CDFW



*CDFW, Surface Survey, 2024*

# Division of Boating and Waterways



Aquatic Invasive Species Section

**Quagga and Zebra Mussel  
Infestation Prevention Grant  
Program (QZ Grant Program)**

January 28, 2025





# QZ Grant Team

- Edward Hard, Environmental Program Manager
- Cara Roderick, Senior Environmental Scientist (Supervisor)
- Timothy Giles, Park and Recreation Specialist
- Mike Rodriguez, Environmental Scientist
- Brandy Vang, Environmental Services Intern



# QZ Funding Overview

Harbors and Navigation Code, Section 675-676 Mussel Fee Sticker funds dreissenid work

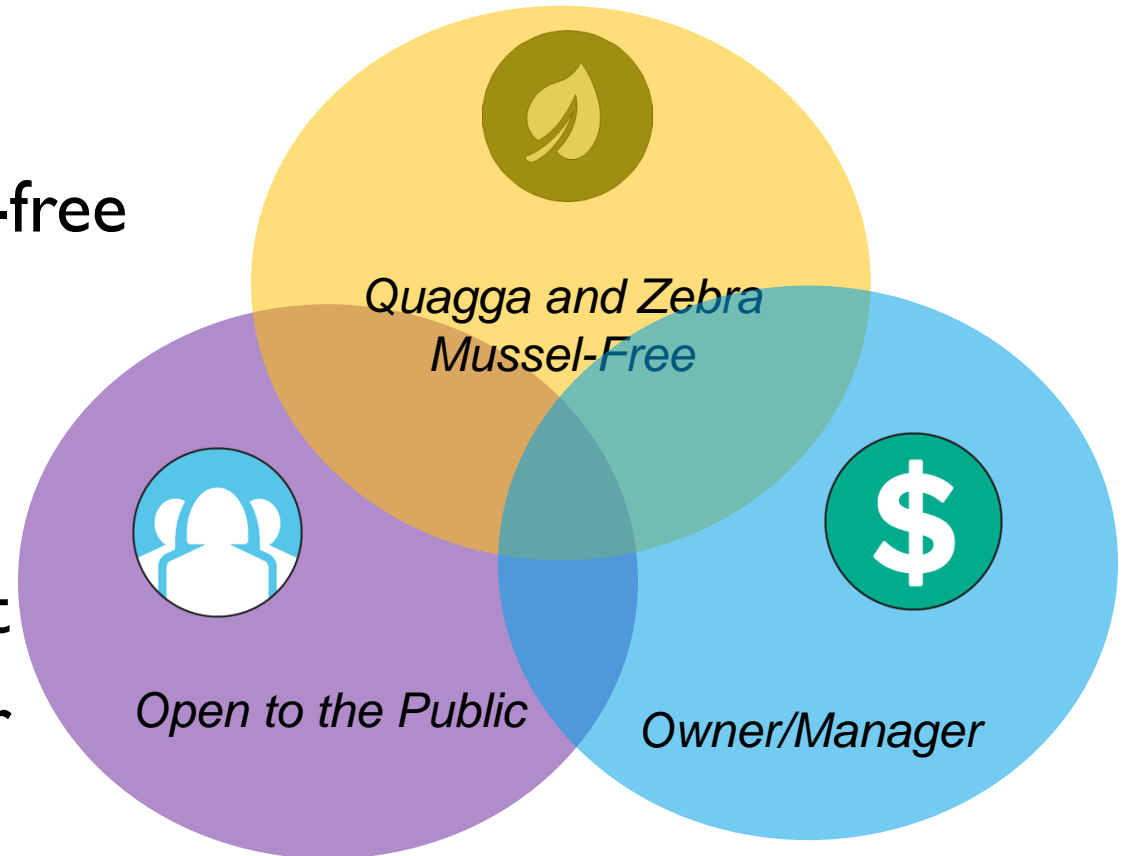
- ▶ At least 85% of the fees from the Mussel Fee Sticker funds prevention programs at *un-infested* reservoirs.
- ▶ Up to 15% of sticker fees fund **CDFW's** QZ prevention.



# Who is eligible for a QZ Grant?

## Eligibility Requirements

- ▶ Quagga and zebra mussel-free reservoir
- ▶ Reservoir is open to the public for recreation
- ▶ Owns/manages any aspect of the water in a reservoir



# Tier 1 & Tier 2 Projects

## Tier 1 Projects:

Development of or improvement to a Prevention Plan.

- ▶ \$200,000 Max Funding

## Tier 2 Projects:

Implementation projects  
**(CDFW-approved prevention plan required)**

- ▶ \$400,000 Max Funding



# Tier 2 Funded Projects



Vessel Decontaminations



Pressure Washer



Mussel Monitoring



Canine Inspections



Mobile Decon Unit



Decontamination / Hydro Pad

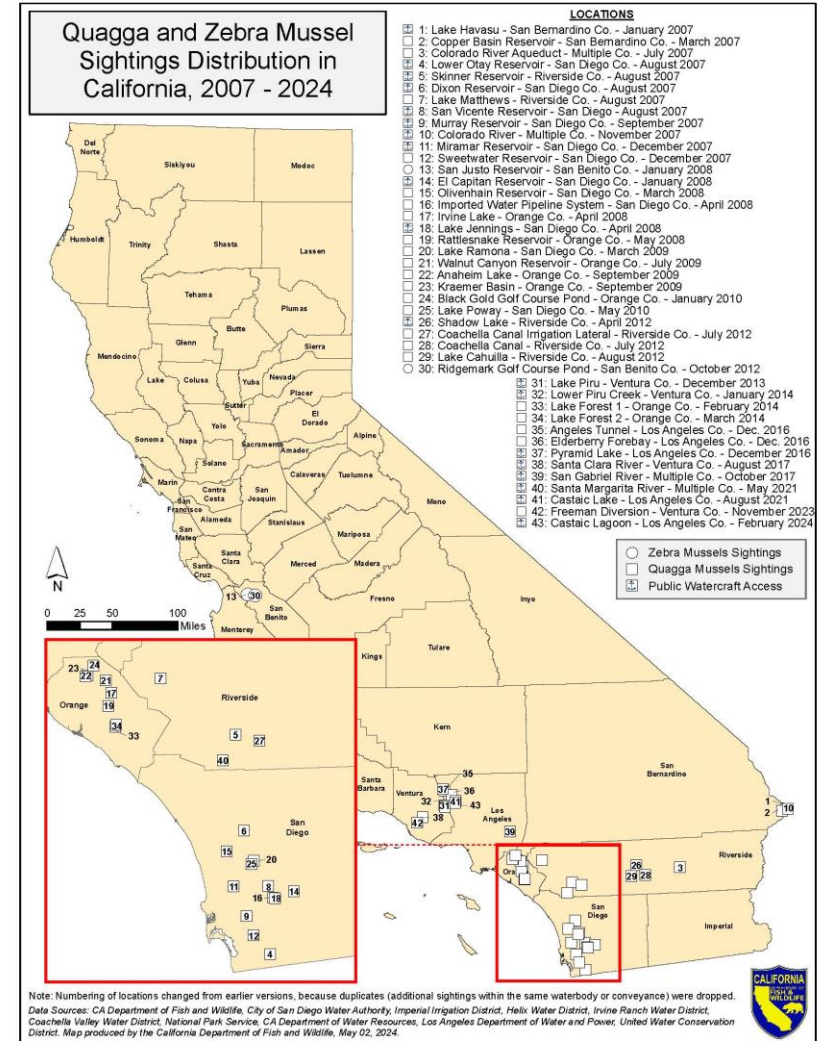


Educational Signage



# Risk Factors Considered

- Water chemistry
- Open to the public?
- Number of boaters/events
- Number of launch ramps/access points



# QZ Program Update - 2025



## Next cycle 2025:

- ▶ Application window expected:  
March 10 – April 18, 2025
- ▶ Grant Webinar:  
March 13, 2025
- ▶ Sign up for notices at:  
[dbw.parks.ca.gov/QZGrant](http://dbw.parks.ca.gov/QZGrant)  
and click on:

[CLICK HERE](#) to Subscribe  
to the QZ Grant Program  
Notifications



# New Developments

## Golden Mussel

- Interagency team is looking into additional funding
- New rack cards available, provide contact, quantity and reservoir(s) name:  
**QZGrant@parks.ca.gov**

**DON'T MOVE  
A MUSSEL**

**Clean, Drain, and Dry  
to Protect California Waters**



[www.wildlife.ca.gov/Invasives](http://www.wildlife.ca.gov/Invasives) | 866-440-9530



GOLDEN MUSSEL



QUAGGA MUSSEL



ZEBRA MUSSEL





# Resources

- ▶ DMV Mussel Fee Sticker purchase:

- ▶ [dmv.ca.gov/musselfee](http://dmv.ca.gov/musselfee)

- ▶ DBW Mussel Fee Sticker info:

- ▶ [dbw.parks.ca.gov/StopQZ](http://dbw.parks.ca.gov/StopQZ)

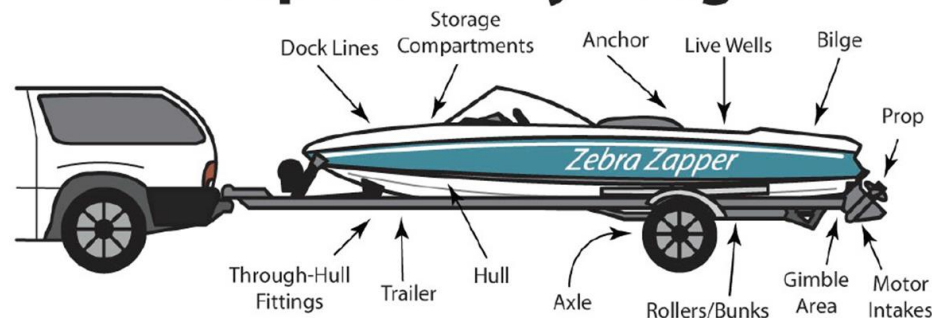
- ▶ DBW QZ Grant:

- ▶ [dbw.parks.ca.gov/QZGrant](http://dbw.parks.ca.gov/QZGrant)



**Scan to  
request your  
sticker**

## inspect everything!



## **Break – 10:45 am to 11:00 am**

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The Summit will continue at 11:00 am with Agency Panel Questions and Answers.

# Agency Panel Questions and Answers

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Submit your question using  
the Q&A feature on Zoom



California Department of Fish and Wildlife, Martha Volkoff



California State Parks, Division of Boating and Waterways, Edward Hard



California Department of Water Resources, Tanya Veldhuizen



California State Lands Commission, Chris Scianni

# Available Resources

CA  
California Department of Fish and Wildlife  
Home Fishing Hunting Licensing Conservation Learning

Species Monitoring Program

## Purpose

The 2025 Invasive Mussel Water Agency Summit (Summit) is intended for waterbody managers in California. The purpose of the Summit is to provide an update on the recently discovered golden mussel and to review quagga/zebra mussel prevention and control measures. There will also be a Q&A panel with staff from CDFW, Department of Water Resources, Department of Parks and Recreation Division of Boating and Waterways, and State Lands Commission. CDFW staff will be available during "office hours" to answer specific questions from waterbody managers.

Summit Registration

## Meeting Materials

- [Final Agenda \(PDF\)](#)
- [Guidance for Developing a Dreissenid Mussel Prevention Program \(PDF\)](#)
  - [Appendix 1. Fish and Game Code Section 2302 \(PDF\)](#)
  - [Appendix 2. California Code of Regulations, Title 14, Section 672.672.2 \(PDF\)](#)
  - [Appendix 3. CDFW Regional Scientist Contact List \(PDF\)](#)
  - [Appendix 4. Dreissenid Mussel Prevention Program Template \(Word\)](#)
  - [Appendix 5. Surface Survey Monitoring Protocol \(PDF\)](#)
  - [Appendix 6. Artificial Substrate Monitoring Protocol \(PDF\)](#)
  - [Appendix 7. Plankton Tow Monitoring Protocol \(PDF\)](#)
  - [Appendix 8. Biobox Monitoring Protocol \(PDF\)](#)
  - [Appendix 9. Dreissenid Mussel Prevention Program Annual Report Template \(Word\)](#)

- [CDFW Regional Scientist Contact List \(Appendix 3\)](#)
- Prevention plan guidance documents and templates (Appendices 1, 2, 4, 9)
- Early Detection Monitoring Protocols (Appendices 5, 6, 7, 8)
- Golden Mussel Outreach and Education Material (Fact sheet, rack card)
- [Watercraft Inspection and Decontamination \(WID\) Training](#)
- Regional Summits

# CDFW's Invasive Species Program

Contact Information:

(866) 440-9530

[invasives@wildlife.ca.gov](mailto:invasives@wildlife.ca.gov)



DWR

# Lunch Break – 12:15 pm to 1:00 pm

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The Summit's Office Hours with CDFW will begin at 1:00 pm and conclude at 2:30 pm.

*You may submit your questions during the break using the Q&A feature on Zoom.*

# CDFW Office Hours – 1:00 pm to 2:30 pm

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Submit your question using the Q&A feature on Zoom



California Department of Fish and  
Wildlife  
Martha Volkoff and Invasive Species  
Program Staff