



Invasive Mussel Water Agency Summit 2025

Questions and Answers

- 1) False Mussels (also a Dreissenid) already inhabit the San Francisco Bay and brackish areas and appear similar to the golden mussel. Do you have any comments on deciphering the two?

Dark false mussel (*Mytilopsis leucophaeata*) are not known to be present in California. Asia date mussel (*Arcuatula senhousia*) is known to be present in the San Francisco Bay. The shell of Asia date mussel has alternating bands of brown and white, more similar in coloration to quagga and zebra mussels, but their bulbus hinge readily differentiates it from quagga or zebra. Golden mussel (*Limnoperna fortunei*) can be differentiated from dark false, quagga, and zebra mussel by their uniform dark brown to gold color.

- 2) Are golden mussels related to green mussel (*Perna viridis*)?

Both green mussel (*Perna viridis*) and golden mussel (*Limnoperna fortunei*) are in the Order Mytilida but are in different Families. Green mussel is in the family Mytilidae and golden mussel is in the family Modiolidae.

- 3) Where do you get these water tolerance limits? There is lots of peer-reviewed literature indicating that golden mussel populations can establish themselves in waters with calcium below 2 mg/L.

We concur, the literature indicates golden mussel are tolerant of intermittent very low calcium fluctuations. CDFW's synthesis of peer-reviewed literature has focused on identifying the limiting conditions necessary for golden mussel to complete their lifecycle and sustain a reproducing population. In the absence of environmental conditions that preclude establishment (such as high salinity or temperature, or low pH), water calcium at or above 5 mg/L is necessary for spawning and larval development.

- 4) What is the suitable pH range for golden mussel calcification?

The suitable pH range for golden mussel is 5-10 with an optimal range of 7-10.

- 5) Do mussels attach to plastics, aluminum, wood, etc.?

Based on existing literature and our observations in the Delta, yes.

- 6) How long do both golden mussel adult and veligers live out of water?

Adult golden mussel can live out of water 2 to 10 days depending on the ambient air temperature and humidity (Andrade et al. 2020; Montalto 2015). Golden mussel mortality occurs 11 to 12 days out of water (Andrade et al. 2020; Montalto 2015). Golden mussel veligers cannot survive out of water. CDFW is still reviewing literature to identify how long veligers can survive in standing water. CDFW will need to test golden mussel survivability out of water in California.

- 7) Is there a depth limit to golden mussel survival?

Existing literature documents golden mussel to a depth of 40 meters. There is no research on limiting depth.

- 8) Are golden mussels affected by going through hydropower dams?

We are aware there is some published information related to turbulence damaging veligers, but we have not explored it deeply relative to golden mussel.

- 9) Does the lower limit of calcium tolerance/survivability change from veliger to adult? Which is lower?

Based on existing literature, veligers need somewhat more calcium to progress to adults. CDFW is still reviewing research on veligers and calcium requirements. Adult golden mussels need an average water calcium level of 5 mg/L to complete their life cycle based on the research CDFW has reviewed.

- 10) What is the life span of adult golden mussels? How long can they continue to propagate after they become adults?

Based on existing literature, golden mussel average lifespan is about 3 years with a range of 2 to 10 years. The lifespan estimation varies depending on the location of the golden mussel population that was studied (Argentina, Japan, Korea, China). CDFW has not reviewed anything in the literature that indicates they stop propagating at a certain age.

- 11) Are there any other water quality characteristics that may affect the proliferation of golden mussels (i.e. nutrients)?

CDFW has not investigated this.

- 12) Are there any hydrologic conditions that may limit the development of colonies in selected waterbodies (i.e. river velocity)?

Water velocity can preclude mussel settlement, however there are typically refugia from the limiting velocity in natural environments suitable for mussel establishment.

- 13) Can you speak to the longevity of veligers in moving water? Can you confirm that veligers are able to move many miles down turbulent rivers to connect reservoirs?

Based on existing literature, veligers are able to spread downstream by being transported by moving water. Spread by natural water flow in rivers has been documented in South America. They can establish new populations given adequate resources and favorable water conditions. River velocity and turbulence can affect veliger survival although there is research indicating slower water, like pools in rivers or established reservoirs, can serve as refuges for seeding populations.

- 14) Are there any known environmental/physical limitations for golden mussel proliferation, such as water velocity or sun exposure?

Based on existing literature, there are several environmental/physical limitations for golden mussel. Available suitable substrate for adult golden mussels to attach to could be an environmentally limiting factor. Oxygen depletion in water, from HABs for example, can kill golden mussel populations. Water turbidity influences veliger survival. Increased water turbidity presents a lower chance of early stage veliger survival but better chance of survival for late stage veligers. Less turbid water presents a higher chance of early stage veliger survival and a lower chance of late stage veliger survival.

- 15) Is there any information available about how golden mussel survive or reproduce in reservoirs with wide fluctuations in lake levels over a season (say 100 feet vertically)?

Golden mussel survival in waterbodies with fluctuating water levels is unknown at this time. There have been water level draw down studies for Dreissenid mussels that have shown to be somewhat effective in controlling those populations.

- 16) Would CDFW recommend restricted boating seasons or temporary closures due to the golden mussel?

CDFW recognizes the impact temporary closures have on recreational access and local economies. However, in the interest of the long-term

protection of recreational access and water management, CDFW supports water managers in taking interim action to prevent the introduction of golden mussel while they develop long-term capacity to prevent the introduction of golden mussel.

17) What are the containment practices at Bethany Reservoir? Exit inspections?

There are currently no containment measures in place at Bethany Reservoir. California Department of Water Resources (DWR) is working with the California State Parks local district to coordinate containment effort.

18) If we are required to provide continuous flow from our reservoirs downstream to creeks to improve habitat conditions including fish, what actions need to be taken once a reservoir is infested with golden mussels? Should we stop moving water downstream as a part of control/containment plan?

There is currently no requirement to contain golden mussels or for infested waters to have a control plan for golden mussels.

19) Since the Delta spread very fast to San Luis Reservoir, what is the timeline for the whole system to be inundated?

To date, golden mussel have been detected in O'Neill Forebay, but not yet in San Luis Reservoir.

20) Are there plans or actions geared specifically towards controlling golden mussel in the Delta?

There is currently no control plan for the Delta as there are many users, boat facilities, launch ramps, and organizations involved with the management of water and recreation in the Delta. The Golden Mussel Task Force is developing a statewide response plan that will suggest containment strategies for the Delta.

21) Does the state have any plans for establishing a permanent inspection station along I-5 to inspect boats that are coming from southern California and heading north? (Similar to what Oregon currently has.)

CDFW is not aware of California Department of Food and Agriculture (CDFA) having any plans or discussion about establishing inspection stations within California.

22) Are there currently any approved chemical control methods for mussel infested waterways in California?

There are various effective products, but they require the appropriate permits for use. Using these products may affect other species or have adverse environmental impacts.

- 23) Will DWR be suspending any water deliveries to southern California since the pstream source has golden mussels.

DWR is not considering suspending water deliveries to southern California as the State Water Project is an important water source for numerous cities, industries, and agricultural lands. Containment strategies to minimize golden mussel impacts to the State Water Project are being reviewed.

- 24) How much of a risk are firefighting efforts for introduction? Specifically, aviation craft water withdrawals from reservoirs?

Emergency response operations are aware of the threat of spreading aquatic invasive species through firefighting efforts. Their priorities, and the priorities of the state, are to preserve life and property which takes precedence over invasive species control. CDFW promotes prevention procedures that do not impair the effectiveness of those operations.

- 25) How many citations or enforcement actions were taken in 2024 between CDFW Wardens and boaters that did not display their state mussel fee sticker? What is the fee or consequence for not having a current state mussel fee sticker?

There were a relatively small number of mussel fee sticker citations in 2024 by CDFW wardens, Captain Smith will report final numbers. These citations are minor violations, known as a "Fix It Ticket". The boater, if issued a citation, can make the correction by purchasing and displaying the mussel fee sticker from the DMV website and only pay the court processing fees. Those court processing fees are retained by the county it was issued in. The regulation specifies the need to use various tools such as education and warnings in addition to citations to gain compliance: <https://www.law.cornell.edu/regulations/california/14-CCR-5206>

Additionally, some water managers are denying launch of watercraft not displaying the mussel fee sticker or showing proof of sticker purchase.

- 26) Can California State Parks Division of Boating and Waterways' (DBW) Quagga and Zebra Mussel Infestation Prevention Grant Program (QZ Grant) funding be used to purchase eDNA equipment?

DBW will fund activities related to Dreissenid mussel prevention for the QZ Grant Program. If the eDNA equipment will be used for Dreissenid mussel prevention, it may qualify and be considered for DBW grant funding. Visit DBW's QZ Grant web page for 2025 updates and a review of the program: <https://dbw.parks.ca.gov/QZGrant>

DBW's QZ Grant Program cannot be utilized to fund golden mussel activities, based on current legislation.

- 27) I believe I heard that previous recipients of DBW's QZ Grant Program are no longer eligible to apply. Could you please provide clarification on that?

If the reservoir is within the first year of a two-year QZ Grant, then that reservoir cannot be funded with a new QZ Grant this year; applicants may apply for that reservoir every other year. The every-other-year restriction is based on the reservoir, not on the eligible agency. If an eligible agency wishes to apply for QZ Grant Funding for a different reservoir, one that meets the minimum qualifications, and is also not within the first year of a QZ Grant, they can.

- 28) Would a golden mussel detection terminate a DBW QZ Grant and funding?

A golden mussel detection at a waterbody would not terminate a DBW QZ Grant, based on current legislation.

- 29) If the owner of the reservoir conducts the monitoring portion of the program, and the manager of the reservoir conducts the vessel inspection and education and outreach, could each of them apply for separate DBW QZ Grants for the specific tasks they conduct?

Multiple agencies cannot receive QZ Grants for the same reservoir within the same start-year regardless of whether each agency is eligible and with different responsibilities. If the owner would like to apply for one year and the manager would like to apply the next eligible year (every other year), they may do so.

- 30) How do we apply for DBW's QZ Grant for quagga and zebra mussel prevention?

Apply at DBW's Quagga and Zebra Mussel Infestation Prevention Grant Program website and following the directions for funding opportunities for reservoir owners and managers: <https://dbw.parks.ca.gov/QZGrant>

- 31) Some boat hull cleaners use a pepper based anti-fouling coating to prevent barnacle growth. Has anyone looked at using something similar for water intake pipelines from lakes?

CDFW is not currently reviewing anti-fouling coatings for golden mussel.

- 32) What are the latest CDFW-approved protocols for inspecting and decontaminating boats and equipment to prevent golden mussel introduction?

Assumptions for golden mussel decontamination is based on Dreissenid mussel research are being made for the purpose of rapid response. CDFW's current recommended standard is hot water (140 F) contact for 10 seconds minimum. Refer to our CDFW decontamination protocol for AIS recommendations.

- 33) Can you touch on any studies/scientific evidence you have about decontamination for the golden mussel. Do the current protocols for Dreissenid mussel of 140F water or a 30-day dry quarantine apply to killing all life stages of the golden mussel?

Assumptions for golden mussel decontamination is based on Dreissenid mussel research are being made for the purpose of rapid response. CDFW's current recommended standard is hot water (140F) contact for 10 seconds minimum. Refer to our CDFW decontamination protocol for AIS recommendations.

- 34) What's expected from an exit inspection?

Exit inspections are intended to prevent the overland spread on invasive mussels and vary between waters where invasive are known to be present and where they are not known to be present. CDFW recommends referencing procedures developed by the Western Regional Panel on Aquatic Nuisance Species: <https://www.westernais.org/trainer-resources>

- 35) Is there a recommendation for decontamination stations?

CDFW does not recommend a specific brand of decontamination stations, but does recommend stations that meet specifications detailed in the Watercraft Inspection and Decontamination (WID) Manual, Page 91:

https://www.westernais.org/_files/ugd/bb76e5_2365dcceac934437889569dde9b4a5dd.pdf

36) Does white vinegar will kill golden mussel? Frozen/freezing water temps?

CDFW is not aware of white vinegar for golden mussel decontamination. Freezing water temperatures can affect golden mussel adult and veliger survival. Adults can survive water temperatures as low as 41 F and veligers as low as 61 F.

37) Have there been any studies looking at waterbodies that use copper sulfate-based products for algal control for its effect on mussel control since copper is toxic to them?

There has been research that examines copper sulfate to treat golden mussel. Copper sulfate is toxic to golden mussels but can harm other species and the environment.

38) Are there any effective eradication treatments for the golden mussel that are in an infested waterbody?

CDFW is not currently aware of any specific eradication treatments that affect golden mussel without harming other species or having adverse environmental impacts.

39) Can privately operated business become certified in decontaminations? If so, how?

Currently, there is not a California certification for an entity performing decontaminations. Pacific States Marine Fisheries Commission hosts training for water managers on watercraft inspections and decontaminations. They provide a PSMFC completed certificate. You can find more information about their offered training here:

<https://www.westernais.org/overview-and-glossary-of-terms>

40) We have a lot of questions from private businesses/marine repair shops asking to get certified in decontaminations. Are there any mechanisms that would enable them to do so and become state certified, or measures preventing this business from being able to assist with decontamination services?

Currently, there is not a California certification for an entity performing decontaminations. Pacific States Marine Fisheries Commission hosts training for water managers on watercraft inspections and decontaminations. They provide a PSMFC completed certificate. You can find more information about their offered training here:

<https://www.westernais.org/overview-and-glossary-of-terms>

- 41) Do the CD3 decontamination systems meet grant standards for decontamination for boats at exit/entrance inspections?

CD3 systems do not meet the minimum recommendations for a decontamination station. CD3 systems are an excellent outreach tool to promote clean boating practices and have value for AIS prevention. Cleaning watercraft, even with cold water, can help prevent the spread of AIS but it is not equivalent to hot water watercraft decontamination. In the case of DBW's QZ Grant, a CD3 system could be funded, depending on its use within the project, and available funding.

- 42) Liquid ionic copper has been widely used in other states and has proven very effective at preventing biofouling of infrastructure like pipelines and intakes by Dreissenids, even at low doses (like <0.05 mg/L as copper). Do you have a stance regarding the use of this same approach for preventing fouling by golden mussels? Is a California-registered pesticide label sufficient for utilities to adopt this management approach, or are additional local permits required, and from whom?

CDFW defers to CalEPA agencies for questions related to the efficacy and application of chemicals.

- 43) I would think that ultrasonic waves could be used to control the propagation of the veligers. Do you know if there have been any studies on this method of control?

CDFW has not found research regarding ultrasonic wave treatment for golden mussel control.

While not specific to golden mussels, California State Lands Commission (CSLC) is aware of ultrasonic technologies that are used to deter settlement and prevent biofouling accumulation on commercial trading vessels. These types of applications are not common, but when used they are typically restricted to localized recesses in ships' hulls.

- 44) Does CDFW have any insight into the tolerance of sodium hypochlorite (bleach) for golden mussels for those that use sodium hypochlorite to manage and prevent Dreissenids from upstream contaminated sources?

CDFW is not investigating the application of bleach in open water.

- 45) Are kayaks (for fishing) a risk for golden mussels and need to follow the "clean, drain, dry"?

Kayaks, along with most other paddlecraft, can contain water that can carry golden mussel adults and/or veligers. CDFW recommends following the clean, drain, and dry directions to prevent the spread of AIS.

- 46) Are there special golden mussel grants that we can get on top of our normal QZ grants?

CDFW is optimistic there will be funding available for golden mussel containment and prevention in the future. At this time, there are no special golden mussel grants available.

- 47) We have many lakes that are unstaffed during the summer (inaccessible in winter from snow). Attempting to staff these lakes throughout the summer is a huge lift for this small District. Will there be any state funding to aid with additional staffing and/or improving launch ramps with gates?

CDFW is optimistic there will be funding available for golden mussel containment and prevention in the future. At this time, there are no special golden mussel grants available.

- 48) In addition to the focus on prevention plans, given the increase in aggressive invasive species, are there any plans to increase invasive species grant funding for the development of eradication response plans for identified infested waters, why or why not? These plans would prove to be a valuable pilot, source of data collection, and compilation of treatment strategies for the management of California waters, thus streamlining implementation and the state of knowledge on procedures for combatting the further spread of invasives.

CDFW currently does not have funding for, nor are we aware of any available funding, for eradication efforts.

- 49) How will the current Administration's decision to pause all federal grant and loan disbursements affect invasive mussel efforts in California?

The federal government's decision was rescinded on January 29, 2025.

- 50) Will there be funding in the future for exit inspections and decontaminations if a waterbody gets golden mussel? Wouldn't that be prevention as well?

CDFW is unaware of any future funding at this time.

- 51) Is there any plan for additional State funding for water managers, other than the DBW QZ Grant?

CDFW is unaware of any future funding at this time.

- 52) How do you determine if your water quality is suitable for quagga and zebra mussels or golden mussels?

You can collect your own water quality data for your waterbody or contact your CDFW regional scientist to check if CDFW has water quality data for your waterbody. Refer to the CDFW regional scientist resource to find the respective regional scientist contact information for your waterbody location:

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=4955&inline>

- 53) How do golden mussels increase harmful algae blooms?

Golden mussels target smaller algae and microcystis species (harmful) often have large colonies and are generally larger. As golden mussel consume smaller algae, microcystis is left over and has reduced competition. Golden mussels excrete waste that has a high phosphorus to nitrogen ratio. Since phosphorus is a limiting nutrient for a lot of water bodies, that can encourage the growth of cyanobacteria. Microcystis species can produce toxins which may also deter grazing by golden mussels. While golden mussels can increase harmful algal blooms, the blooms can also have negative impacts on golden mussels. The toxin that is excreted by microcystis is also highly toxic to golden mussel larvae and the toxin may also affect gamete production and survival, fertilization, and hatching.

- 54) Will expanded measures add more financial barriers to recreation and give preference to economically advantaged groups to access waters of the state?

CDFW supports access to recreational opportunities for all Californians. We are unable to forecast the economic impacts golden mussel prevention efforts will have on recreationists.

- 55) Is the State considering the Brazil strategy of producing sterile mussels to reduce reproduction as discussed in last week's CALMS webinar?

CDFW is not considering the Brazilian strategy of producing sterile mussels at this time.

- 56) In South America they are researching altering DNA sequences in mussels to reduce reproduction. Is the State doing any such research, since treatments don't seem to be effective?

CDFW is not considering the Brazilian strategy of producing sterile mussels at this time.

- 57) I heard that CDFW is setting up a lab to analyze eDNA samples to detect for golden mussels. Please let us know when this will be available and the pathway for getting our samples to you, cost, turn-round time etc.?

CDFW is not currently providing eDNA sample analysis.

- 58) Is CDFW considering accepting eDNA testing?

CDFW is not currently providing eDNA sample analysis.

- 59) How is the development of eDNA resources with CDFW and could there be free testing available?

CDFW is not currently providing eDNA sample analysis.

- 60) Is there a list of labs in California who can process veliger samples?

No.

- 61) It was mentioned that 2023 samples had evidence of golden mussels at O'Neill Forebay. I'm assuming they were re-run for golden mussel. Have other older samples from other areas of the system been re-evaluated for golden mussel. If so, where else has eDNA detections prior to the October 2024 discovery?

The positive eDNA samples were collected at West Canal in the South Delta area, not at O'Neill Forebay. These archived eDNA samples were collected in Spring of 2023 and 2024, and were reanalyzed for the presence of golden mussel DNA.

- 62) Is the veliger image of golden mussel veligers under cross-polarized microscopy? Are more images available?

No.

- 63) Will the environmental suitability map and information be available?

Yes. CDFW's goal is to make the waterbody suitability map available to water managers on the CDFW golden mussel web page, but cannot commit to an availability date at this time.

- 64) Is there an established method to deploy recruitment plates for monitoring?

Yes. CDFW has developed an artificial substrate protocol for water managers to use. Review this protocol, as well as protocols for surface surveys, plankton tows, and biobox monitoring, on our Summit 2025 web

page under Meeting Materials:

<https://wildlife.ca.gov/Conservation/Invasives/Quagga-Mussels/Summit-2025>

- 65) Is there a list of California waterbodies with a current infestation of golden mussels or are they currently only found in the Delta?

No, we are not currently maintaining a list, just the distribution map on our CDFW golden mussel web page. The map shows all current detected and confirmed locations of golden mussels. The distribution map is updated as new reports are received:

<https://wildlife.ca.gov/Conservation/Invasives/Species/Golden-Mussel>

- 66) Being that in Brazil the biggest vector for spread was recreational boating, is there some kind of app or database available for us to use to monitor (as best we can) where/when watercraft are accessing waterways? I've heard of an app from Colorado called WID where this information can be collected. This seems like a good start to monitor the movement of these recreational watercraft.

Contact Colorado Parks and Wildlife.

- 67) Are you going to update the California mussel map that includes infestations of golden, quagga, and zebra mussels for reference? The map hasn't been updated in a long time.

The California Dreissenid Mussel Map lists the first detection of Dreissenid mussels at a waterbody. It is updated as new detections are found and confirmed. CDFW maintains a separate golden mussel distribution map on our CDFW Golden Mussel web page. Golden mussel will not be incorporated on the California Dreissenid Mussel Map due to golden mussel not being listed in regulations and codes at this time.

- 68) What is another program besides QUID?

Watercraft Inspection and Decontamination (WID) program hosted by Colorado Parks and Wildlife is a watercraft tracking program to identify previous waters watercraft have launch at and document inspection and decontamination by watercraft.

- 69) Is it possible to add closed waterbodies to the golden mussel detection map? Or is that too hard to track?

Because CDFW does not manage waterbody closures and prevention programs it is impossible for us to maintain accurate information about

them. We recommend the public contact the waterbody directly to receive the most accurate information.

- 70) What is your current confidence level that the monitoring is sufficient in deeming a waterbody negative?

CDFW reports individual early-detection monitoring results, as "detected" or "not detected." A result of "not detected" should not be assumed to mean mussels are not present.

- 71) Do you have guidance for monitoring veligers and substrates with danger advisories for Cyanobacteria?

Artificial substrate monitoring can be altered or modified to protect staff, in the field and lab, from harmful algal blooms (HABs). For example, CDFW does not go out and check substrates, conduct surface surveys, or collect plankton tow samples if HABs are present. This keeps field and lab staff safe. CDFW encourages water managers to consider this when monitoring.

- 72) If outreach and education is one of the main strategies, what state-wide signage / billboard efforts are being done at the state level? Collaboration with CalTrans? This is a very expensive burden for local water body managers and takes significant funds from staffing and inspection resources. Can CDFW prioritize help with this?

The Golden Mussel Task Force has an Education and Outreach committee that is developing an outreach plan for California and working to develop educational materials for water managers and the public. Statewide billboard/signage efforts will be discussed at the next Education and Outreach task force meeting as a possible method to educate the public.

- 73) What guidance does CDFW have for providing clear, transparent, and informative updates to the public about the golden mussel threat, its potential impact on recreation, and how it may affect access to our lakes this coming season?

There are several outreach items available like the CDFW golden mussel fact sheet and the Golden Mussel Task Force updated rack card. Our hope is these materials, along with materials being developed now, will educate the public on this issue and what they can do to stop the spread of AIS. CDFW encourages the public to sign up on our newsletter distribution list to receive notifications on golden mussel information as soon as it is available.

- 74) Do you have a packet of pictures and notes that show early signs of golden mussels build up on turnouts?

CDFW has some pictures on our golden mussel web page. The Education and Outreach committee of the Golden Mussel Task Force is working on developing more material for waterbody staff as well as the public. New golden mussel photos will be shared on the CDFW golden mussel web page when they are available.

- 75) Has CDFW considered wide public outreach/education through regional news stations?

CDFW has an assigned media officer for golden mussels. We are working across agencies in the Education and Outreach committee of the Golden Mussel Task Force to develop a comprehensive outreach plan. Engaging media will be a considered component in the outreach plan.

- 76) Are there advertising funds set aside for outdoor recreation publications to help educate boaters in the Central & NorCal region?

No, there are no funds set aside to cover costs of advertisements.

- 77) Will rack card digital files be available so we can add our names to them?

A [digital copy](#) of the interagency golden mussel rack card is posted on our Summit 2025 web page and DBW's web page. If you are interested in adding your agency's logo to the card and printing them, please contact Invasives@wildlife.ca.gov.

- 78) Boats are a vector, but is there a prevention plan for reservoirs that receive water from the south bay aqueduct since mussels are already there?

CDFW and DWR encourage all reservoirs that receive State Water Project water to establish a CDFW-approved Dreissenid mussel prevention plan and conduct a vulnerability assessment for mussel infestations.

- 79) What is the likelihood of golden mussels being transported via the California Aqueduct versus being transported via watercraft?

Both the flow of water via the California Aqueduct and overland movement of trailered watercraft are pathways for the spread of golden mussel.

- 80) How is "public recreation" defined? Motor vessels on the reservoir?

"Public recreation" is characterized by Fish and Game Code Section 2302 as "recreational, boating, or fishing activities." This includes activities where the public interact with the water. The public being allowed to launch

motored watercraft on the reservoir would qualify as a boating activity under this list.

- 81) Our agency has an approved Dreissenid mussel plan with an active monitoring program resulting in an annual report sent to CDFW. Will our current plan be sufficient to handle the golden mussel infestation or does new language need to be added?

Currently, there is no legal requirement to address golden mussel in prevention plans. Existing law stipulates minimum content requirements for prevention plans, and CDFW encourages water managers to consider golden mussels when developing or revising an invasive mussel prevention plan.

- 82) Will we be required to add golden mussels to existing prevention plans?

Currently, there is no legal requirement to address golden mussel in prevention plans. Existing law stipulates minimum content requirements for prevention plans, and CDFW encourages water managers to consider golden mussels when developing or revising an invasive mussel prevention plan.

- 83) Should we implement mandatory boat quarantines or inspections for vessels traveling to our reservoirs? If so, what duration and protocols are recommended for golden mussel prevention specifically?

CDFW supports water managers in taking interim action to prevent the introduction of golden mussel while they develop long-term capacity to prevent the introduction of golden mussel. We encourage water managers to work with CDFW Region Scientists to tailor a program to address your individual circumstances.

- 84) How will prevention of canoes and kayaks be controlled on reservoirs upstream? Will USGS have a plan for equipment used in for water measuring to address wader usage and stream gauging equipment?

You should contact water managers upstream of waters you manage to understand what access controls they have in place. CDFW partners with USGS/DOI regarding prevention measures around fieldwork.

- 85) What is the possibility of a statewide banding program to be implemented across all reservoirs in California?

As part of our mission statement, CDFW encourages and aims to facilitate the recreational use of waterbodies. We hope to facilitate the

coordination of programs like this, but do not have the authority to institute ourselves.

86) Are water utilities required to develop a prevention plan for golden mussels?

Fish and Game Code Section 2302 states "Any person, or federal, state, or local agency, district, or authority that owns or manages a reservoir, as defined in Section 6004.5 of the Water Code, where recreational, boating, or fishing activities are permitted, except at a privately owned reservoir that is not open to the public" shall develop and implement a Dreissenid mussel prevention program.

87) I am the Director of the Sacramento State Aquatic Center, located on Lake Natoma, Gold River, CA, downstream from Folsom Lake. Who is the lead contact person for those bodies of water? We work closely with both California State Parks and Department of Boating and Waterways. What mitigation plans do you see taking place at those locations?

CDFW North Central regional scientist, Angie Montalvo, can provide contact information for Bureau of Reclamation and California State Parks. You can find all regional scientist contact information here:
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=4955&inline>

88) Are canine inspections accurate and efficient?

Canine inspections can be effective and accurate and are one of multiple tools in the toolkit of an effective invasive mussel prevention program.

89) Is it possible for golden mussel to enter the California Aqueduct and what is being done to prevent this? What impacts would golden mussel have on the California Aqueduct?

Golden mussel has entered the California Aqueduct, as indicated by a golden mussel population in O'Neill Forebay. Golden mussel can and are expected to be moved in water carried by the California Aqueduct. The impacts will include biofouling, increased maintenance costs, and expansion of golden mussel distribution in the state.

90) How does the CDFW Aquaculturist Licensing Program prevent Dreissenid vector pathways into waters in California, such as fish hatchery plantings?

State and federal hatcheries have plans in place to prevent the spread of AIS. There is no mandate for private hatcheries to have these plans in place so the responsibility lies with the purchaser to determine the safety of planting stock.

- 91) Does the state regulate or otherwise monitor private fish hatchery/fishery operators? How can reservoir operators be sure fish stocking programs don't introduce golden mussels?

State and federal hatcheries have plans in place to prevent the spread of AIS. There is no mandate for private hatcheries to have these plans in place, so the responsibility lies with the purchaser to work with private aquaculturists to assess what measures they take to prevent the introduction of invasive species with stocked fish.

- 92) Will there be any point to try to prevent quagga since golden mussels are more dominate?

At this time, it is unknown if one species will outcompete other mussel species, but regardless, CDFW encourages continued efforts to prevent additional invasive species into waterbodies where other invasive species are present.

- 93) Protocols for golden mussel are seen as drastic measures already taken. No recreational boats allowed on the water. Are there any alternatives? Someone that fished the Delta can bring golden mussels from their fishing gear.

CDFW supports water managers in taking interim action to manage watercraft launching to prevent the introduction of golden mussel while they stand up long-term prevention programs.

- 94) Will the various state and federally operated lakes cooperate with each other and "honor" each other's decontamination protocols so that boaters will have reasonable and easy access to all waterways - for recreational purposes?

CDFW is encouraging and hopeful that water managers will coordinate their mussel prevention programs with each other.

- 95) If a reservoir is downstream from an infected source, how best can it prepare its infrastructure?

CDFW defers to other water managers of quagga mussel infested waters. CDFW plans to host a summit for water managers of infested waters in 2025 to share their knowledge with others.

- 96) What recommendations do you have for preventative measures that lakes can do that don't have a mussel presence already and are looking to prepare?

Two actions reservoirs can take to prepare against mussel introductions are conducting a vulnerability assessment for your waterbody and developing or implementing a Dreissenid mussel prevention plan per Fish and Game Code Section 2302. Developing a prevention plan will help you identify potential pathways of mussel introduction specific to your waterbody and what management actions can be implemented to interrupt those pathways.

97) Is there a location of all the current prevention programs in the state?

Currently, CDFW does not have a map of the waterbodies in California with an approved prevention plan.

98) If golden mussels are added to FGC 2301 and 2302, do we need to prepare a separate vulnerability assessment and prevention plan for golden mussels or the existing ones for quagga and zebra mussels are sufficient?

Unknown, but the Invasive Species Program will support the most efficient approach to satisfy any future requirement enacted.

99) What, if anything, are state agencies doing to get golden mussels included or added to all Dreissenid mussel regulations and policies?

Golden mussel was added to the restricted species list (14 CCR 671) effective December 19, 2024. The Golden Mussel Task Force is considering other statutes and regulations that may be relevant to addressing golden mussel.