

Help Prevent the Spread of Invasive Golden Mussels

Golden mussels (*Limnoperna fortunei*) are an invasive freshwater mussel that can attach to hard surfaces such as rocks, docks, boat hulls, intake pipes, screens, and other submerged infrastructure, forming dense colonies and reproducing quickly.

In California, golden mussels are a growing concern because they can spread through connected waterways by human activities such as by moving boats and equipment.

Golden mussels were first discovered in California in October 2024 within the Sacramento-San Joaquin Delta via the Port of Stockton and have now spread throughout the state.

Golden mussels can cause significant harm by:

- Clogging water intake systems, increasing operations and maintenance costs for water infrastructure
- Altering aquatic ecosystems by competing with native species and changing habitat

The Department of Fish and Wildlife maintains a [map of where they have been found](#).

The two main ways to reduce the harm caused by golden mussels include:

- Using pesticides to kill mussels growing on infrastructure.
- Removing and preventing the growth of mussels on boat hulls and other equipment.

Using Pesticides to Kill Mussels Requires a Permit

The application of pesticides to control mussel growth on infrastructure in most surface water bodies requires a Clean Water Act National Pollutant Discharge Elimination System (NPDES) permit because pesticide residuals in waters of the United States are a point source pollutant.

The Aquatic Animal Invasive Species Control Permit regulates this discharge when the active ingredient of the pesticide is both of the following:

- Copper, sodium hypochlorite, or *Pseudomonas fluorescens* strain CL145A cells and spent fermentation media (Pf CL145A-S) and
- Used to control invasive aquatic animals, such as zebra, quagga, and golden mussels.

For more information see the [Animal Invasive Species Permitting webpage](#).

Removing and Preventing Mussels on Boat Hulls and Other Equipment

To remove and prevent mussels and larvae on boat hulls and equipment, thoroughly clean, drain, and dry all surfaces and components before transporting them between waterbodies.

- Have the equipment out of the water when you physically remove mussels to prevent reinfestation and protect water quality.
- Collect and properly disposed of paint scrapings, as they may be hazardous, depending on the type of paint used on the hull.
- Find more on boat maintenance in the Water Boards' [nonpoint source pollution encyclopedia](#).

Other Water Quality Regulations for Stopping Invasive Golden Mussel Spread

Vessel-Related Discharges

Commercial vessel discharges are regulated at both state and federal levels:

Federal regulations

The U.S. Coast Guard (USCG) requires all vessels 1,600 gross registered tons and above and equipped with ballast tanks to use a USCG type-approved ballast water treatment system to:

- Treat all ballast water discharged into U.S. waters.
- Ensure the discharged ballast water meets the [USCG ballast water discharge performance standards](#), including:
 - No more than 10 living organisms > 50 µm in size per cubic meter.
 - No more than 10 living organisms \geq 10 µm and < 50 µm in size per ml.
 - Additional standards for indicator microbes.

For commercial vessels greater than or equal to 79 feet in length, the U.S. Environmental Protection Agency's (USEPA) Vessel General Permit (VGP) has requirements to control discharges that are part of normal onboard water systems and vessel maintenance operations to help reduce the transport of invasive organisms, like golden mussels, between waterbodies.

- [Vessel Permit Guidance](#) has further guidance on the requirements in the USEPA VGP.
- Information about Commercial Vessel [Discharge Standards](#) from US EPA.

Note: Once the United States Coast Guard releases final regulations implementing the Vessel Incidental Discharge Act, the VGP will no longer be in effect. The U.S. Coast Guard must develop compliance and enforcement regulations to implement the USEPA's performance standards. Get information on the transition from the VGP on [USEPA's website](#).

State regulations

The California State Lands Commission (CSLC) regulates ballast water management for vessels that are capable of carrying ballast water and are 300 gross registered tons and above.

The CSLC:

- Requires all ballast water discharges to meet the state's ballast water discharge performance standards ballast water discharge performance standards that are identical to federal standards.
- Adopted [emergency regulations](#) to require vessels carrying ballast water with a salinity below 18 parts per thousand to perform a mid-ocean ballast water exchange in addition to meeting the performance standards prior to discharging in any of California's freshwater or low-salinity ports (i.e., Sacramento, Stockton and within the Carquinez Strait east of the Port of Rodeo). This additional ballast water exchange requirement is intended to add high salinity ocean water to ballast tanks with freshwater or low-salinity

ballast water, as salt should kill freshwater or low-salinity species. This emergency rule will expire, so CSLC aims to make the rule permanent by July 1, 2026.

For vessels operating within the San Francisco Bay Regional Water Quality Control Board jurisdiction, a permit covering vessel cleaning is being developed. Please reach out to the San Francisco Bay Regional Water Quality Control Board for further [updates](#).

California Ocean Plan

The [California Ocean Plan](#) contains implementation provisions for vessel dischargers (section K). Vessel discharges must comply with State Lands Commission requirements for ballast water discharges and hull fouling to control and prevent the introduction of non-indigenous species. Requirements are found in the [Public Resources Code sections 71200 et seq. and title 2, California Code of Regulations, section 22700 et. seq.](#)

Resources from Partner State Agencies

More information on golden mussels, ongoing golden mussel response efforts, and other regulations for recreational boats from partner state agencies:

- California Department of Fish and Wildlife: [Golden Mussel Program Page](#)
- California Department of Water Resources: [Invasive Mussel Mitigation Program Page](#)
- Department of Boating and Waterways: [Quagga, Zebra, and Golden Mussels](#)
- Department of Pesticide Regulation's anti-fouling paint presentation: [Copper Anti-Fouling Paint Regulations: What You Need To Know](#)

These sites have information on golden mussel biology and pathways of spread, as well as current responses for early detection, containment, monitoring, and agency coordination.