

The Heavy Lift to Muscle Out Golden Mussels

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Introduction

Golden mussels are a highly invasive species first detected in the Bay-Delta in 2024 that have since spread rapidly throughout the state.

The impacts of golden mussels are significant as they attach to infrastructure in dense clusters, **clogging water conveyance systems**, pipelines, pumps, filters, hydropower facilities, agricultural operations, and other critical elements. They also **degrade water quality**, alter food webs and nutrient cycles, outcompete native species, threaten fisheries, and impact recreational opportunities.

Unlike quagga and zebra mussels — two other invasive aquatic mussels in the state — golden mussels are more challenging because they can establish in a wider range of water conditions. Left unaddressed, their continued spread will put a massive strain on California's water system, leading to increased costs which will ultimately be borne by ratepayers.

Challenges to California Public Water Agencies

Water System Impacts: Golden mussels pose a significant threat to water systems' ability to store and convey drinking and irrigation water, generate hydropower and manage flood control facilities. Once established, golden mussels rapidly spread through connected water systems, compounding their impacts over time.

For example, the mussels can:

- › Clog intake equipment and pipes
- › Restrict or block water flow into conveyance systems, drinking water treatment facilities and irrigation canals
- › Interfere with dam operations and reduce hydropower energy generation
- › Create serious operational challenges, including impeding water flow
- › Damage infrastructure as they attach in dense clusters

What is at Risk?



Drinking
Water



Flood
Management



Fisheries &
Ecosystems



Agriculture



Hydropower



Recreation

Prevention Efforts

Golden mussel infestation requires ongoing maintenance, containment and treatment. Protecting uninfested systems is equally critical to prevent further spread, safeguard infrastructure and maintain the ability to move and store water supplies.

Public water agencies are investing in prevention and response measures, such as:

- › Inspection of watercraft and equipment
- › Decontamination of watercraft
- › Quarantine of watercraft
- › Reservoir/boat launch closures
- › On-going monitoring
- › Education & outreach

Treatment Efforts

Once golden mussels are detected, water managers must develop a treatment plan that balances costs with local conditions, unique challenges and individual system needs. Such efforts are evolving as research advances, but may include:

- › On-going monitoring to evaluate the level of impact
- › Physical removal from equipment and infrastructure. This process is costly and time-consuming, diverts staff from other operations, may require facilities to shutdown, and may need to be performed more frequently as infestations spread or become denser.
- › Evaluation of chemical treatments, such as copper-based products, carbon dioxide and chlorine. Water managers must also evaluate potential negative impacts, such as effects on downstream users and protected species.
- › Evaluation of ultraviolet light treatment.
- › Hot water treatment is being used at watercraft decontamination stations and has been found to be effective.



Future Needs

Water managers face complex challenges when preventing and treating golden mussels, as each system has distinct risks and vulnerabilities that require locally informed solutions. Maintaining local flexibility will be key to effective management across California.

Prevention and treatment require significant upfront and ongoing investment to protect water storage and delivery for all Californians, and it is crucial to note that these costs will be largely borne by ratepayers. As such, as policy develops, identifying diverse and sustainable funding sources will be essential to keeping water rates affordable.



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