

"This is the first site where we have seen the snails in San Francisco Bay, and we hope it is the last."

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Photos special to the IJ/Darcy Holdorf

SNAIL HUNT: Deborah Schoenbaum, deputy director of the Marin Conservation Corps, helps her 3-year-old daughter, Sarah, search for the invasive Japanese mud snail at Loch Lomond Marina. The snail has invaded a number of estuaries along the West Coast,

Invasive snail imperils ecology near marina in San Rafael



CULPRITS: The invasive Japanese mud snail disrupts the marine food cycle by replacing native snails that serve as a food source, converting the mud flat into a hard surface that is hard for animals to forage in and spreading a virus to native fish.

By Mark Prado
IJ reporter

On a muddy bank near the bay in San Rafael, volunteers got on their hands and knees during low tide to find tiny snails that threaten to disrupt the ecology near the Loch Lomond Marina.

The tiny, cone-shaped, hard-shelled Japanese mud snail looks innocuous, but biologists say it can wreak havoc on native snails, fish and shorebird species if left unchecked.

"It was never found here, so when we saw it, it was a big deal," said Heidi Weiskel, a graduate student at University of California at Davis, who is heading the snail-busting project. "This is the first site where we have seen the snails in San Francisco Bay and we hope it is the last."

The snail — *batillaria attramentaria* — is a threat because it competes with the native California horn snail species critical to the bay's food web. The Japanese snail also carries parasites that can infect native fish and can play host to a non-native anemone.

If the invasive snail's population grows, it could alter the mud flat ecosystem by creating a hard layer of dead shells that prevents shorebirds and other species from foraging.

"You would have a pavement of shells," Weiskel said.

The arrival of the snails dates back decades. As the aquaculture industry grew in Marin in the early 20th century, oysters were brought from Japan. With the oysters came mud and other species, including the snail, which ended up in Tomales Bay. Biologists theorize over the years the snail hitched rides on the anchors of recreation boats and made it from Tomales Bay to San Francisco Bay.

Researchers from UC Davis and the Smithsonian Environmental Research Center, along with the Marin Conservation Corps and the Bay In-

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stitute, are leading the effort to stifle the invasive snail.

Last Friday, Marin Conservation Corps volunteers donned rubber boots and got down and dirty to pluck snails from the mud. They were put in buckets and later were killed.

The Japanese mud snail has invaded a number of estuaries

along the West Coast, but in San Francisco Bay its appearance has been limited to Loch Lomond Marina. Because the snail is found in only one location and does not have free-swimming larvae, scientists believe it can be eradicated.

"San Francisco Bay already suffers as the most invaded estuary in the world," said Christina Swanson, Bay Institute senior

scientist.

"Proactive prevention of the establishment of new invasives, which we hope to help achieve with this effort, is much more effective than trying to control them after they've become a problem."

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