

An ancient mound of shells has been mined in the San Francisco Bay for 100 years—but the oyster's future is uncertain

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For years now, if a commuter were to glance to the north side of the San Mateo Bridge, they might see a lonely barge, painted with the words "Lind Marine," floating a few hundred yards from the shoreline.

A stray vessel in the San Francisco Bay is not an uncommon sight. But this particular barge is the last sign of one of California's oldest mining industries, which trades in what might be the Bay Area's most unusual non-renewable natural resource.

Not gold. Not oil. Oyster shells.

For thousands of years, the San Francisco Bay was home to hundreds of millions of Olympia oysters. Native to the West Coast, they were one of the defining species of the bay's ecosystem. They were also engineers—ubiquitous creatures that formed enormous reef structures, cleaned the water and sheltered other organisms.

The 1,000-acre stretch of water just north of the San Mateo Bridge was an especially appealing location for the 3-inch-long mollusks. Over the millennia, as generations of oysters lived and died, their shells accumulated into an enormous, underwater shell mountain. Although now hidden under 30 feet of silt, the oyster shell deposit is considered one of the largest of its kind on the west coast.

"It's this massive, natural and totally irreplaceable resource," said Matthew Booker, an environmental historian who has researched and studied the bay's natural history.

Oysters are a bigger part of that history than most locals know. They were so plentiful that they were used to build walkways in the late 1800s and have been commercially mined in the bay since 1924, mainly for use in cement. In recent years, the ancient deposit of shells has found new purpose as a calcium-rich dietary additive in chicken feed.

For the last 40 years, the massive deposit has been mined by Lind Tug and Barge. The Vallejo-based company has mined at least 22,000 tons of [oyster shells](#) every year since 2006, using a hydraulic suction dredge to

remove shells from the silt and transfer them a processing plant in Petaluma.

Lind currently leases a 1,560-acre plot of the bay adjacent to the bridge from the California Lands Commission, and maintains a "take permit" from the California Department of Fish and Wildlife. Lind Tug and Barge declined to comment on their mining activities.

For decades, the company has had nearly unfettered access to the underwater mountain of oyster shells. But that access is now coming under scrutiny as a groundswell of agencies and volunteer organizations look to restore oysters in the San Francisco Bay, and rethink the relationship with the body of water that defines the region.

"We know humans going back to the Ohlones' time had a very strong connection to the submerged bay," said Marilyn Latta, a project manager with the State Coastal Conservancy, referring to the Indigenous people of the Bay Area. "It's important to figure out ways to keep that understanding and awareness alive."

Today, Olympia oysters remain in the bay, but 200 years of industry has left its mark. Hydraulic mining during the gold rush sent millions of tons of silt downriver from the Sierra foothills to the bay, forever changing the habitat. And the largest known storm in California history, which hit in the winter of 1863, turned the bay essentially entirely into freshwater for a period of time.

"Basically, existing oyster beds got over-harvested, buried in toxic sludge, or drowned in freshwater," said Casey Harper, deputy director of the Wild Oyster Project, a volunteer-based organization looking to restore native oysters.

A 2008 study estimated that there were about 600,000 oysters

remaining—which, while likely an undercount, illustrated the longterm decline of the species.

To some, that decline is emblematic of a diminishing connection with the San Francisco Bay as a living ecosystem, rather than an empty space between cities.

But a number of groups are working to restore the mollusk's rightful place in the bay. The Living Shoreline Project, operated by the coastal conservancy and regional partners, has been creating and monitoring native oyster reefs since 2012 in an effort to boost populations.

Restoration organizations like the Watershed Project and Harper's Wild Oyster Project have installed artificial oyster reefs in places like Point Pinole and San Francisco's Heron's Head Park, providing the type of hard materials that oysters need to latch onto and survive.

One factor driving this restoration effort is a growing understanding of the ways in which oysters can help protect against rising sea levels. Oyster reefs create habitat for wetlands, protecting the shoreline and reducing the strength of waves that come to shore.

"They're the opposite of erosion. They're building the bottom up," Booker said. "That's good in a time of increasing sea levels."

Ted Grosholz, a professor at University of California, Davis who has been monitoring bay oysters for decades, said oyster restoration and other efforts to revitalize the bay are having a measurable impact. As recently as the 1950s, it was a dumping ground with a noxious smell due to raw sewage and other pollutants. Today, water quality is much improved.

For advocates, there is a certain irony to the fact that thousands of tons of oyster shells are mined from the bay every year while numerous

groups are working to restore the mollusks' health.

Last March, for the first time, the local environmental group Citizens Committee to Complete the Refuge began pushing the California Regional Water Quality Control Board to consider the potential impacts of Lind Marine's mining operations on living Olympia oysters. The group, along with a different environmental nonprofit, SF Bay Keeper, submitted a public comment asking to cap Lind's maximum harvest, limit its water quality certification to a five-year term, and require Lind to fund scientific research into the health of the shell deposit.

"Our concern was twofold—No. 1, how sustainable is this activity?" said Carin High, the co-chair of the Citizens Committee to Complete the Refuge. "They have a permit that's been authorized up to 80 thousand cubic yards per year, but there has been no monitoring of the resource. No. 2., do we know that these shell deposits aren't in fact capable of supporting new oyster growth?"

The Olympia oysters recovery effort in the San Francisco Bay is still in its very early stages. There is no path to the past, and—despite its name—the urbanized Bay Area is unlikely to make the same connection to these waters that people here did two hundred years ago.

But one [oyster](#) at a time, it may forge a new one.

"Our plan is not to go back in time, but find a new way forward that's not extractive, but beneficial," Harper said. "We think we can do that."

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