

Researchers rush to find cause of contagious cancer in PNW clams | The Seattle Times

[Isabella Breda](#) May 22, 2023 at 6:00 am

By

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WHIDBEY ISLAND — As Michael Metzger pressed his thumb against a ridged shell, the clam split in two. It was dead.

Metzger and his research team in late April scoured the mucky sand for living basket cockles, a type of mollusk native to the Northwest, as wind whipped through Penn Cove.

At Salish Sea beaches like this they're collecting dozens of the shellfish, a traditional food for many Coast Salish people, studying a concerning increase of disease: a leukemia-like contagious cancer called disseminated neoplasia.

The cancer, found in dozens of shellfish species around the globe, was first discovered in Salish Sea cockles during a 2018 health screening as the Suquamish Tribe began [rolling out a hatchery program](#).

Now researchers are hauling hundreds of cockles into a Seattle lab in hopes to probe mysteries that might explain a decline in population that has been reported by tribal members, and offer means of preserving the species.

Over the next five years the researchers will draw the cockles' "blood," look

for the presence of cancer and begin genetic analysis of how the disease evolves and spreads.

The disease can't be passed to humans, but the research is critical for the Indigenous people who have since time immemorial cared for and relied on the mollusks and their ecosystems for sustenance.

As traditional foods like salmon and shellfish face threats from pollution, barriers to migration, and climate-driven heat and drought, opportunities to pass on these teachings have become increasingly rare. Tribes like Suquamish have spent millions on habitat restoration and hatcheries to help recover dozens of native species.

At the tribe's Chief Kitsap Academy, Suquamish elder Jay Mills helps students learn how to properly harvest, fillet and smoke salmon, something he says is a dying art.

"It's about trying to protect what you have now for future generations," Mills said. "We're planting that seed."

Unraveling the disease

In 2021, a large ridge of high atmospheric pressure trapped hot air over the region and brought unprecedented temperatures to the region. The so-called "heat dome" coincided with a massive [shellfish die-off](#).

It appeared to hit cockles, which live just 1-2 inches under the sand, the hardest.

Penn Cove is one of the Swinomish Indian Tribal Community's important clam beaches, said Julie Barber, senior shellfish biologist for Swinomish.

"When our team went back a year later, it was just covered in cockle shells,"

Barber said. "It looked like a huge mass mortality event."

They can't say definitively that the heat dome caused the die-off, but the shells were covered in barnacles that were approximately the same size, implying everything died around the same time a year prior.

Barber led a study of four decades of data that revealed the native littleneck clam population has been declining, while butter clams had gradually increased but were more recently beginning to decline. But in cockles, population changes varied by beach.

She hopes new cockle research will help explain how changing ocean acidity and marine heat affect the transmission or lethal effects of the cancer, and offer methods to protect other native shellfish.

(related: <https://www.seattletimes.com/seattle-news/environment/what-happened-to-the-sunflower-sea-star-this-captive-breeding-lab-is-working-to-find-out/>)

Cockles are one piece of the glue that holds the marine ecosystem together. They feed on plankton and other nutrients, in turn keeping the water's dissolved oxygen levels in balance for fish.

State data corroborates tribal members' observations: Cockle populations go through periods of boom and bust, said Elizabeth Unsell, a Suquamish shellfish biologist. They are sensitive to heat and other environmental disruptions.

Metzger leads the only lab in the Pacific Northwest Research Institute that doesn't focus on humans. Instead, it has provided clues to how human activity may be disrupting marine ecosystems.

The lab's recent [unpublished research](#) suggests the cancer found in soft-

shell clams on the East Coast is 200 years old. Meanwhile, the researchers found the cancer in Puget Sound mussels has also been found in Asia and northern Europe, suggesting it was almost certainly spread by boat.

They also know that the cancer cells survive well in the sea.

Still, the researchers have more questions than answers.

Scientists from local, national and international research institutions were awarded a \$3 million grant from the National Science Foundation's Division of Ocean Sciences for the research.

On the shore of Penn Cove, Metzger and his crew were painting the shells of cockles found above the sand with a stripe of seafoam-colored nail polish. They're trying to discern if the ones they find lying on the surface might be more or less vulnerable to cancer, Metzger said.

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Typically, the DNA of cancer cells looks like that of the cells of the animal that has the cancer. However, the cancer DNA in cockles looks closer to DNA from other cockles.

"This tells us that all of those nearly identical cancers came from a single cockle in the past," Metzger said.

Researchers know the cancer is in Penn Cove, but as of April, there was no evidence of the cancer in the South Sound.

For future generations

In a photo from the 1980s, steam rolls toward the sky as cockles and manila clams cook atop a hot pile of rocks.

These clambakes are a family and tribal tradition, said Mills, the Suquamish elder. They'd lay down a pile of rocks, build a fire on top until the rocks heat up, then knock down the ashes. They'd pour the cockles and clams on top of the hot rocks and cover them with canvas, or wet newspaper, and let them steam for 20 minutes.

"And then you've got just an incredible flavor in the clams," he said.

Suquamish families hosted many of these big clambakes — thick with sweet chewy cockles — in the '70s and '80s. But over the years, tribal people have found it harder to find cockles on the beaches.

Mills grew up near Phinney Bay in Bremerton where his great-grandmother Cecilia Jackson laid down their family's roots.

It's a beautiful property surrounded by beaches where he learned to fish for cutthroat trout and dig for cockles and littleneck and butter clams.

"It wasn't like there was a McDonald's and Burger King and a Kentucky Fried Chicken on every corner," he said. "We truly lived off of what the Salish Sea had to provide."

Flipping through photos on his iPad, Mills paused on images of his students beaming after their first bite of smoked salmon and elders laughing as they haul salmon onto the boat during a summer fishing excursion.

As he walked into the House of Awakened Culture on the shore of Port Madison Bay, he stopped at a photo of Suquamish Chair Leonard Forsman welcoming canoes at the 2009 landing at Suquamish. That same year, the city of Seattle [dumped thousands of gallons](#) of raw sewage into Puget Sound.

Spills like these can lead to long shellfish harvest closures, cause algal

blooms that choke off the oxygen supply for fish, and poison other creatures.

"I wish people could imagine what this was like in the 1800s," Mills said. "And then what development that was done that didn't consider the impact to the environment. Now we're paying the price."

Outside the house stands a wood plank smokehouse, flanked by a barbecue pit and pile of rocks. Here Suquamish will hold its massive seafood bake this July to feed hundreds of paddlers from tribal nations across the region during the annual canoe journey.

"I'm hoping my grandkids, my great-grandkids will have the opportunity to enjoy the things that I had the opportunity to enjoy," Mills said. "To continue living off the Salish Sea."

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