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(LOUIS KRAUSS | THE DAILY WORLD) Lines of oysters growing at the Markham Oyster farm in Westport. The lines on the right are beginning to sink into the mud due to shrimp infestations.

Tiny shrimp poses big threat to oyster growers

LOUIS KRAUSS (HTTP://WWW.THEDAILYWORLD.COM/AUTHOR/LOUIS-KRAUSS/) • Sun Jun 24th,

To explain the impact of a tiny troublemaker on his business — Markham Oysters — owner Dave Hollingsworth walks a visitor out across the mudflats along the South Bay of Grays Harbor, not far from the airport in Westport.

The ground is littered with clam shells, oyster shells and holes, indicating the presence of burrowing shrimp. The holes are filled with water, and when Hollingsworth stomps his boot down into the mud, streams of water shoot up.

Just last spring, Hollingsworth was able to farm on this section of mud. The oysters thrived here, growing in clusters on ropes strung between PVC pipes sticking up from the mud.

But the shrimp have taken over, burrowing into the mud and turning it into a slurry. This causes the PVC pipes to sink, the oysters to drop down into the mud and die — and owner Hollingsworth to despair.

“At the rate the shrimp are going, I’m done,” he said.

(LOUIS KRAUSS | THE DAILY WORLD) An oyster grower holds a burrowing shrimp after digging it out of the mud.

It's even more challenging for bottom-culture oysters, which aren't being supported by suspended ropes and sit on the ground.

In recent decades, the burrowing shrimp populations have gone up, and pose a dire threat to local oyster farms that have their land overtaken by shrimp. In April, the state Department of Ecology (DOE) denied a permit for imidacloprid, a pesticide that seemed, to many of the oyster growers in Willapa Bay and Grays Harbor, like the last effective method to manage the shrimp.

In comparison to the section that is overrun with shrimp, the ground beneath Hollingsworth's lines of healthy oysters features a diverse collection of small crabs, fish and clams, all surrounded by eel grass. But it's a constant struggle for him to maintain the healthy oyster land.

As Hollingsworth walks toward one end of the oyster lines, they gradually appear to be lower and lower in the mud. In some sections, the oysters are barely breathing with just the tips of their shells exposed to the air. He then tugs on the rope where some are buried to dislodge them from the mud, in an attempt to save them a little longer.

Hollingsworth gestures to an oyster farm on the opposite shoreline and explains that his uncle-in-law is already going out of business due to the shrimp.

"He's done, he's picking the last of them this spring, and he's hoping to get all of them out of there before they completely die," he said.

For years, oyster growers used a neurotoxic pesticide called carbaryl to kill the shrimp, but in the early 2000s it was deemed too harmful to the environment, and was phased out of use.

Since 2013, when oyster growers stopped using carbaryl, Hollingsworth said he's lost 40 of the 150 acres on which he grows oysters.

Imidacloprid, an alternative pesticide to carbaryl, was believed to be less environmentally harmful, but is now off the table because DOE deemed it also to be too harmful.

Kim Patten, a Washington State University scientist who operates a research station in Pacific County, has spent years looking for a way to control the effects of burrowing shrimp. He's tested dredging rakes through the soil, electrocuting them and injecting freshwater, but nothing has been sufficiently effective, he says.

“We’ve gone through a whole suite of mechanical options and biological control, and nothing has provided suitable control at the level the industry needs it,” said Patten.

In terms of its environmental impact, Patten said he was surprised that imidacloprid wasn’t approved by DOE.

“It was several orders of magnitude safer than carbaryl, and was a suitable replacement for chemical control of burrowing shrimp,” he said.

Imidacloprid was originally approved by DOE for use in 2015, but there was significant backlash in the public from seafood restaurant owners and others who were upset the growers would be using imidacloprid. Taylor’s Shellfish, one of the largest companies in the Willapa-Grays Harbor Oyster Growers Association (WGHOGA), decided to back away from the plan following that backlash. Weeks after the permit was approved, WGHOGA asked the state to withdraw it.

In 2016, 13 of the 19 oyster growers in WGHOGA reapplied to have imidacloprid approved by DOE, but it was denied. According to DOE, the decision was made because recent studies found imidacloprid to be more harmful than they were aware of in 2015.

“The science around imidacloprid is rapidly evolving and we can’t ignore it,” DOE Director Maia Bellon wrote in the press release denying the permit. “New findings make it clear that this pesticide is simply too risky and harmful to be used in Washington’s waters and estuaries.”

In the DOE press release, they “conservatively” estimated that for every one acre of tideland treated with imidacloprid, it would spread and affect five acres. Instead of using a helicopter, growers were going to use their hands or ground equipment to administer the pesticide so it had less chance to spread and harm the environment.

Marilyn Sheldon, who owns about 1,500 acres in Willapa Bay, said imidacloprid would have been useful not just to grow oysters, but in order to protect the ecosystems with eel grass and other sea life. She said the pesticide’s application would have involved treating a “buffer” area between the shrimp and oysters, and wouldn’t result in actually treating the oyster beds directly.

“If you have a 50-acre bed, and can spray a five-acre buffer around it, you protect the whole acreage just by treating the edges,” she said. “That’s how we can protect vast amounts of habitat with very little treatment.”

Even if the pesticide was approved by DOE, Patten said there still would have needed to be a few years of experimenting with imidacloprid to figure out how to use it safely and effectively.

“(Imidacloprid) would’ve required much more finesse in terms of application and timing,” he said.

Patten said it is possible to appeal DOE's decision to not approve imidacloprid, but pointed out that "that means legal fees, and lawyers are not inexpensive."

Now that the pesticide is off the table, Patten is once again looking at different non-chemical ways to control shrimp, such as dredging rakes to disturb newborn shrimp, and is working to better understand their population cycle.

In March, Commissioner of Public Lands Hillary Franz announced that more than $1 million in funding to boost rural economies would pay for research on the burrowing shrimp problem. The money will be used to test new shrimp-control techniques, potentially provide grants to test control methods, and identify unused DNR land that could be made available to growers.

Josh Wilund, senior strategic adviser for the DNR, said the agency is looking to further research into dry harrowing, and that test results suggest it might be more effective than other shrimp-control methods.

"There were some significantly different outcomes with dry harrowing versus wet harrowing and flooding," said Wilund. "While we don't believe there's any silver bullet to this, we're going to pursue that, and this is real time we're discussing this and working with the growers."

When testing dry harrowing, DNR has used a vehicle called a "marshmaster," which can traverse mud flats and tows a large metal roller with prongs that dig underground and disrupt shrimp in upper parts of the mud. As the prongs on the roller cut into the ground, they disrupt the shrimp burrows.

Wilund said he wasn't sure how long it will take to find a suitable solution for growers. But he said the DNR hopes to "not leave any stone unturned" when it comes to potential creative control methods, and that he realizes time is of the essence.

For Patten, although he thinks there could be a solution eventually discovered for the longterm, he's not sure how long that will take, and agreed with the growers' assessment that things are dire now.

"It's extremely serious," he said. "It's probably a 'We're going out of business soon,' 'We're laying off employees soon' type of serious."