

Shellfish farmers confront silent watershed crises

Recent problems facing the shellfish industry have made nurturing the tender little bivalves a little tougher, leaving farmers struggling to stay productive and sustainable.

By Tiffany Ran

August 31, 2011.

Ask a shellfish farmer about his plans and he would first consult his tide calendar. Between now and the equinox, Gary Webb of Eagle Rock Shellfish Company, must use any remaining daylight low tide hours to finish up maintenance and work on his nets. As of the first week of October, he will no longer be able to see his tideflats without a head lamp. This he knows for a fact.

The farming of bivalves, like mussels, oysters, clams, geoducks, and scallops, has long been regarded as one of the most sustainable forms of aquaculture. Unlike fish farming, which requires added feed, the suspended bivalves feed off nutrients in the water and act as filters.

In 2010, the World Wildlife Federation released a list of global standards for sustainably farming bivalves. This year Food Alliance started training certifiers to accredit North American shellfish farms practicing sustainable aquaculture. These standards touch upon a variety of issues like pesticide use, avoiding the co-optation of bays with structures friendly to other wildlife, and international protocols for disease prevention, as well as providing a safe working environment and fair wages to workers.

“Sustainability, especially for a small guy like me, it’s everything,” said Webb. “There is sustainability, and you also need consistency.”

Consistency is where it gets dicey. Four years earlier, when the Bivalve Aquaculture Dialogue and other experts sat down to create standards of sustainable shellfish aquaculture, growers along the West Coast found that much of their shellfish larvae had died. Sue Cudd and Mark Wiegardt of Whiskey Creek Shellfish Hatchery purchased a \$200,000 filtration system to sterilize water from the bay and rid them of a larvae-eating bacterium, *Vibrio tubiashii*. Yet the greater culprit, ocean acidification — ocean water made more acidic due to increased CO₂ in the atmosphere — proceeded to destroy the remaining larvae at Whiskey Creek. The acidification also affected companies like Taylor Shellfish, eventually showing up in waters on the East Coast.

Like geneticist Gregor Mendel to his peas, shellfish farmer and lead researcher at Taylor Shellfish, Joth Davis stands over a male and female oyster, takes the sperm and egg from each one and combines the two. But unlike Mendel’s hand selection, Davis’ process of crossbreeding mates two separate sets of brother and sister oysters and uses the two resultant offspring to create a hybrid. He then crosses unrelated, high performing hybrids to make optimized double hybrid crosses. He also creates triploid oysters which retain an extra set of chromosomes after fertilization and are resistant to spawning (which makes oysters unpalatable). The objective is to domesticate shellfish for human consumption — cultivating shellfish with higher growth and resilience, thereby improving yield.

However with shellfish resilience at risk, Davis is beginning a study with the University of Washington on the effects of ocean acidification on native geoducks and finding ways to breed shellfish to be resistant to high CO2 conditions.

“These animals are on the brink of not being able to do it anymore,” said Davis. “Aside from ocean acidification, they’re also dealing with temperature change, and different kinds of bacteria and viruses. Nothing is simple. You tweak it one way and something else happens.”

This year an algal bloom in Sequim Bay, which has long remained neutral in Washington waters, suddenly turned toxic. Scientists have not been able to pinpoint the cause.

The shellfish beds in Samish Bay have been closed for over a month due to fecal contamination. Samish Bay is one of many distressed watersheds affected by nonpoint pollution. The contamination is likely caused by a combination of failing septic tanks, urban and agricultural activities, and storm water runoff from surrounding areas. Lacking a single source at which to point their fingers, farmers, scientists, and health officials are looking beyond the tidelands for solutions.

“We have embraced technology as a way of monitoring water quality,” said Davis.

A gadget fondly called “the Burkalator” came to the rescue for Taylor Shellfish and Whiskey Creek. “The Burkalator” — an ocean monitor developed by an Oregon State oceanographer Burke Hales — measures the temperature, salinity, and dissolved carbon dioxide in the water and helps hatcheries like Whiskey Creek and Taylor select the best times or depth from which to pump ocean water into their hatcheries. Whiskey Creek has resumed their seed (larvae) production and Taylor Shellfish had successful yields in the last two years.

“It’s a low-tech operation,” said Webb about his business, which grows primarily clams and some oysters. “I can put myself 300 years back and [the Native Americans] were doing the same thing. They were tying the line to a bag and going out and picking them.”

“When we first started, we wanted to do something unique that fit in with the ecology out here; that wasn’t intrusive, didn’t require machinery, and was part of the culture that’s out here,” said Webb.

Though different in practice, small scale operations like Eagle Rock Shellfish and larger companies like Taylor Shellfish both agree that the industry must constantly be vigilant.

“Your short term goal is filling your bucket and getting paid but if it’s your own property and you’re looking at it as your income for the year and the next—it’s like anything, when you’re done with it, you want it to be in better shape than when you started,” said Webb. “I have to be very cognizant and vigilant about what I do. Most people overextend themselves. It’s really about calculating what you think is realistic,” said Webb.

“I can assure you that the smaller growers feel buffeted by all that’s going on, that there is so little they can do much about. It has really been on bigger companies to lobby for change to keep the industry sustainable,” said Davis.

Aside from being good to eat, oysters are indicators of ecological health, vital to a research perspective. Shellfish growers and researchers are working together to assess water quality and its effects on shellfish, both to help ensure success for all growers and provide information for citizens on how to protect their local watersheds. Watersheds that, though deceptively peaceful, are vulnerable to the developments around it.

The peace is what Webb enjoys the most about being on the water, sitting in his canoe on the still waters of his tideland. He is making space for more clam beds and intends to expand on oyster production. While some other shellfish farms are struggling, he hopes to double production once his wife is able to work at his side. The two of them started the company by learning from other shellfish growers and by frequently asking, "Is it even feasible?" The answer then was yes, and he feels lucky that the answer holds true today.

Tiffany Ran is a freelance writer. Her work has also appeared in publications including the Northwest Asian Weekly and Yes! Magazine.

Comments:

Comment by **klis**, posted Wed, Aug 31, 4:06 p.m.

"The contamination is likely caused by a combination of failing septic tanks...." Septic systems fail from neglect. We need a requirement to pump and inspect every septic system every five years, or whatever time period the experts decide.

— **klis**

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