

Shell Game

How recycling shells can boost oyster production and clean up the water at the same time

By Laurie Balliett

In front of an audience at the Wellfleet Harbor Actors Theater last August, Curt Felix set up two fish bowls filled with murky water and placed a few oysters in one of them. The house lights dimmed while the crowd watched "Shellshocked: Saving Oysters to Save Ourselves," a film by science and nature documentary producer Emily

Driscoll. When the lights came back on 90 minutes later, Felix pointed to the fishbowls. One remained murky; the other, the one with the oysters in it, was clear.

Oysters clean water as well as provide shoreline protection and habitat for other organisms. The more oysters there are, the cleaner the water. One adult oyster can filter up to 50 gallons of water a day. So a few years ago when the Town of



Wellfleet's shellfish constable, Andy Koch, surveys oyster beds he helped seed by laying down rows of sea clam shells for the baby oysters to set in.



Steve Heaslip/Cape Cod Media Group



Steve Heaslip photos/Cape Cod Media Group

Mesh bags filled with growing oysters are laid on steel racks where they are surrounded with water when the tide comes in.

Wellfleet was looking to improve the quality of its water, it looked outside the box. In addition to considering traditional landside treatment options, the town decided to take a more comprehensive look that included nature's water treatment systems. Using oysters and restoring salt marshes, they reasoned, would not only save the town money but also generate income through more oyster production. Felix, Vice Chair

of the Wellfleet Comprehensive Wastewater Committee, says it's incumbent upon all the towns on Cape Cod to look at the cost and efficacy of all possible solutions before deciding to pour money into costly public sewer systems.

Murky water, like that in Felix's fish bowls, is an all too familiar sign on the Cape of too much nitrogen, which in turn increases algae production. When the algae

decompose, it depletes oxygen in the system, thus compromising the water quality. Over the last 150 years these natural nitrogen sinks have been reduced by over 95%, according to The Nature Conservancy.

Can oysters be an answer to the Cape's nitrogen problem? The answer to clearing up the nitrogen could very well be the silvery shells that lie silently beneath the water.

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A sea clam shell packed with young oysters that have set in the shell.

To create a new oyster reef, Andy Koch, Wellfleet's shellfish constable, placed several hundred tons of shells into the muck at the mouth of Duck Creek at the beginning of spawning season in late June 2011 and again, at the same time of year, in 2012. In addition, he invented a barge with a conveyor belt on it that helps place the shells into the harbor.

Loaded onto that barge last fall were also more than five tons of shells recycled from the shellfish consumed at Wellfleet's annual OysterFest, which was attended by more than 20,000 people last year. On those shells, about 600,000 baby oysters, called spat, were also returned to the harbor. Over the last two OysterFests, about one million spat were returned to the harbor, and over the past three years OysterFest has recycled 15 tons of shell, says Michele Insley, manager of Wellfleet Shellfish Promotion and

Tasting, Inc., producers of the weekend-long festival.

Dr. Anamarija Frankic is the director and founder of the Green Harbors Project for Coastal Ecosystem Stewardship at the Center for Governance and Sustainability at UMass Boston. She works with the Town of Wellfleet to monitor the two-acre oyster spawning ground that was created at Duck Creek. When Frankic founded the Green Harbors Project in 2008, "The whole idea [was] to establish green harbors worldwide by improving ecological conditions in urban coastal areas," she says.

Where oysters used to thrive worldwide, only five percent of the world's natural oyster reefs still exist. As a keystone species, oysters provide habitat for all of the other creatures that share their ecosystem. Without oysters, the other species die out as well.

"Urban harbors need oysters like we need kidneys," says Frankic.

In the film "Shell Shocked," Driscoll addresses the importance of oyster reef restoration projects and shows how the new reefs clean up dead waterways. She also reviews the history of New York's Hudson River at the turn of last century.

In the Hudson River, as human populations increased, oysters died out, largely from overfishing and contamination. New York's sewage and industrial pollution contaminated the waters and with the spread of typhoid and overfishing the oyster beds were quickly destroyed. "Shell Shocked" demonstrates how marine life bounces back once oyster reefs are restored.

Like the Hudson River, Wellfleet Harbor used to be full of natural oyster reefs. Unlike the Hudson River, Wellfleet Harbor isn't polluted. Overfishing and new oyster



Fran and Peter Woytowich, foreground, scratch for clams along the rows of oysters in Wellfleet Harbor.



Steve Heaslip photos/Cape Cod Media Group

To create a new oyster reef, WellfleetShellfish Constable Andy Koch placed several hundred tons of shells into the muck at the mouth of Duck Creek at the beginning of spawning season in late June 2011 and again, at the same time of year, in 2012.

diseases are the primary causes of oyster depletion here. Once the natural reefs disappeared, the harbor's habitat changed to the sandy tidal flats that we see today, with only about five percent of the harbor's previous abundance.

"We don't know what a natural reef habitat looked like," says Bob Prescott, director of Mass Audubon Society Well-

fleet Bay Sanctuary, who has started a restoration area in flats off of the sanctuary. "Wellfleet Harbor, Pleasant Bay and Nauset Harbor were once inhabited with thick oyster reefs."

Indeed the reefs were so thick that when explorer Samuel de Champlain arrived in Wellfleet in the 1600s, he noted in his captain's log that because of them,

Shell fishermen work their grants outside Wellfleet Harbor at low tide, as the sun filters through the clouds on a late autumn afternoon.



he had to turn around. He named Wellfleet Harbor Port Aux Huitres (Oyster Port).

"Those were natural reefs, not the farmed type that we see in cages along the shores now," says Prescott, referring to the private oyster grants, or shellfish farms, that line the harbor. "We look at the tidal flats and assume that's how they've always been. But the natural habitat includes reefs, eel grass ... much more of a mix and matrix than what it is today."

An old Colonial ordinance says that any oyster fishing area cannot be closed to fishing unless it is polluted. The way the law is written, all oyster habitat must be open for fishing. The town is trying to work with the shell fishing community to dramatically increase the oyster population while at the same time providing propagation areas that will be a baseline for maintaining water quality. Otherwise, there is a risk that the oysters will be perennially at a low population, overly susceptible to a disease outbreak, and at too low a population to maintain water quality, protect the shoreline, and provide important habitat for other marine life.

Oysters typically reach the legal three-inch size limit in two to three years. They can grow up to 80 years and reach at least eight inches or more in length. Harbors that are allowed to repopulate with large oysters provide tremendous filtering and genetic stock that is more resistant to local diseases.

Prescott says that the laws can change and that regulators are considering adapting them as needed to our current situation, so that we could actually raise the larger, older oysters that would provide significant ecosystem services.

As the town of Wellfleet attempts to evolve a new management plan that will clean up the water of the estuaries naturally, "it is working on a strategy that's a win-win for shell fishermen and the community," says Felix. "The beauty of the Duck Creek project," he continues, "is it could save taxpayers over a hundred million dollars, while protecting Wellfleet Harbor and also increasing the amount of oysters in the harbor available to fish." ■



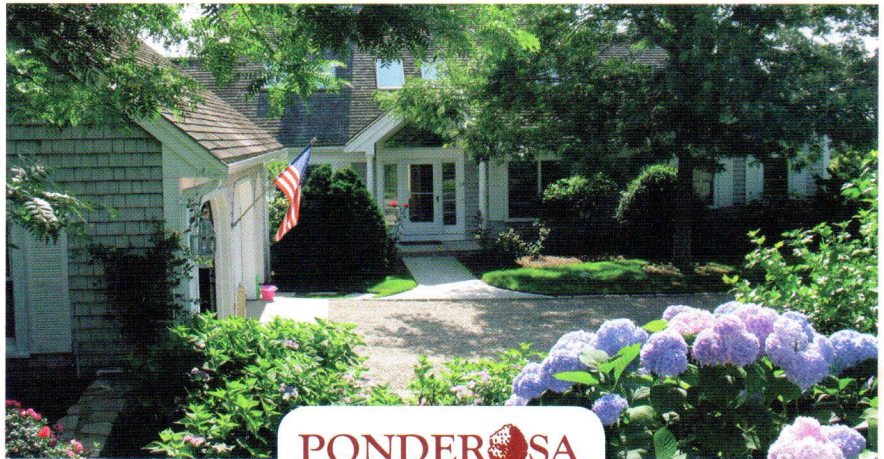
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