

## The Boston Globe

### Hatcheries see signs that lobster 'seeds' taking hold

By Beth Daley, Globe Staff | August 22, 2008

TABUSINTAC, New Brunswick - On a rocking fishing boat half a mile from shore, a scientist screwed a blue hose to a water tank filled with 16,500 penny-sized lobsters. The other end was dropped to the sea floor.

Seconds later, baby crustaceans streamed onto the rocky bottom of the Gulf of St. Lawrence, with what scientists say is a vastly improved chance to wind up red and juicy on dinner plates around the world.

The biologist and two fishermen were seeding the ocean with lobsters in a reinvigorated effort to preserve the fabled catch of New England and eastern Canada. While lobsters are abundant in Maine and Massachusetts, there are growing concerns that New England's most valuable catch might one day fade away, like cod and flounder before it. Mysterious lobster population declines in Long Island Sound and off Prince Edward Island are accelerating century-old efforts to raise baby lobsters in hatcheries and use them to seed the sea.

After decades of frustrating effort, there are now early signs that hatchery-raised lobsters are thriving in the ocean off New Brunswick, and scientists say a suite of new techniques might allow them to substantially supplement - and, if need be, save - the nearly \$1 billion US and Canadian lobster industry.

"They said that cod would be there forever, too," said fisherman Shane Ross, whose boat, the *Mist-Defier*, held the cache of baby lobsters. He, along with 31 other lobstermen around Tabusintac, are paying 25 cents each for the tiny animals from a hatchery in Shippagan, New Brunswick. The nonprofit hatchery expects to release a world record of about 350,000 baby lobsters this year.

Interest in raising hatchery lobsters has grown along with environmental consciousness. Paturel, a giant lobster company, recently announced plans to build a Canadian lobster hatchery with hopes of eventually releasing a juvenile lobster for every adult the company sells. Owners of the Red Lobster restaurant chain signed an agreement with the New Brunswick government in late July to help seed the sea. And a community-based lobster hatchery began in Stonington, Maine, three years ago, sparked by fishermen concerned about future lobster populations.

Some New England and Canadian lobstermen laugh at fears that lobsters could disappear, saying the catch is heavily regulated and the animals have been found in abundance ever since Native Americans ground them up to use as fertilizer. But isolated population crashes have been recorded since the late 1800s, and scientists say they don't have a good handle on what drives abundance - or declines - of the mottled greenish-brown animals.

While some fishermen point to global warming and pesticide runoff as possible causes of the sharp decline in lobster populations in Long Island Sound and off Prince Edward Island, scientists and other fishermen say not knowing for sure frightens them.

"If this [decline] spreads, there would be big troubles," said Martin Mallet, director of a nonprofit research arm of the Maritime Fishermen's Union in Canada, which is spearheading the New Brunswick hatchery effort. "We want to have the tools to fix the problem in case the fishery collapses."

Lobster hatcheries in the United States began in the 1880s after a dramatic decline in lobster landings, but early efforts were crude and failed to keep many young lobsters alive. Today, scientists take female lobsters out of the wild and place them in seawater tanks until each of their 10,000 to 50,000 sticky, transparent eggs hatch into shrimp-like larvae. The young are then

raised for about two weeks to bypass a perilous period in the sea when fewer than 1 in 1,000 survive predators.

Raising hatchery lobsters, it turned out, was not easy. Fiercely cannibalistic, the animals devoured one another if they weren't fed a constant diet of brine shrimp 24 hours a day. At the University of Maine at Machias, researchers Brian Beal and Sam Chapman invented a system that bubbles air through lobster larvae tanks so the animals cannot get close enough to one another to chomp off a claw or tail. Baby lobster survival rates increased to about 50 percent in many hatcheries, according to Beal.

A bigger problem exists: No one knows whether releasing hatchery lobsters in the wild works. Lobsters tend to stay put until their fourth year of life, when they begin scurrying across the sea floor. Researchers released thousands of tiny lobsters in an area, but when they went back the following year, they couldn't tell whether the lobsters they were seeing were the ones they had released. Attempts to place tags on the tiny crustaceans failed because they molt too often in their early years.

Some researchers even bred bright, blue lobsters, assuming that if fishermen caught them they could tell it was a hatchery lobster. But the effort was eventually abandoned as funding dried up. "What is your survival rate? That was really, really hard to prove," said Mike Syslo of the Massachusetts Department of Marine Fisheries. In 1949, Massachusetts opened the nation's first sophisticated lobster hatchery on Martha's Vineyard, but six years ago, hatching was abandoned because of cost-cutting.

New Brunswick scientists believe the answer lies in sheer numbers. In the past, a few thousand baby lobsters were released in any one area - far too few to see whether they significantly contributed to the local lobster population, Mallet said. But the Shippagan hatchery released 50,000 at one site in 2004 and is comparing it with a site where no baby lobsters were released. Already, Mallet said, they have seen a fourfold increase in the abundance of lobsters at the seeded site compared with the other site - but more research is needed. The hatchery is funded by the New Brunswick government, fishermen, and industry.

So many Canadian Maritime lobstermen are eager to buy lobster babies that Mallet says he has orders for half a million more than the hatchery can produce this year. He is working to bring down costs because a fisherman's 25-cent contribution remains less than half of what it can cost to raise a baby lobster. Hatcheries around the region report the same problems with cost.

Two weeks ago, New Brunswick hatchery workers took adult female lobsters into a birthing room where they released thousands of larvae that were then scooped up and transferred to water tanks in another room. By manipulating temperature and light, the lobsters were enticed to grow to "stage four" - when they begin to look like miniature lobsters and can survive better at sea. In nature, growing to stage four can take 2 1/2 to three months. In the hatchery, it takes 12 to 15 days.

The group of baby lobsters destined for Shane Ross's boat was loaded into a truck.

An hour and a half later, Ross cupped his hand to catch a wriggling tiny lobster from the waist-high tank on board the *Mist-Defier*. Although he's been fishing his whole life, Ross had never seen a baby lobster before he visited the hatchery.

Examining the creature's tiny claws as it clung to his fingertip, he said, "This is going to make sure the lobsters are there for us in the future."

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