

# Fishermen, scientists expand search for young-of-year SNE lobsters

NARRAGANSETT, RI – Twenty one years after the first suction survey sampling in Rhode Island's Narragansett Bay of post-larval lobster settlers, known as young-of-year (YOY), Rick Wahle returned in 2011 and 2012 to resample the bay's Southern New England nursery grounds.

Despite including additional sites recommended by industry, the results were disappointing.

"It was rather disturbing. It was especially shocking that, in 2011, juveniles had fallen below detectable levels at the six sites that are sampled annually," said Wahle, a marine biologist at the University of Maine's Darling Marine Center.

Back in 1990, with support from the then-Narragansett Bay Project, Wahle and his team conducted visual surveys at 17 sites and then suction sampled eight of those sites. Two of the original sites continued to be monitored by suction sampling as part of the annual American Lobster Settlement Index, along with four outer coastal sites.

Additionally, in 2011, the Kingston-based Commercial Fisheries Research Foundation (CFRF) funded a two-year collaborative study conducted by Scott Olszewski, a lobster biologist

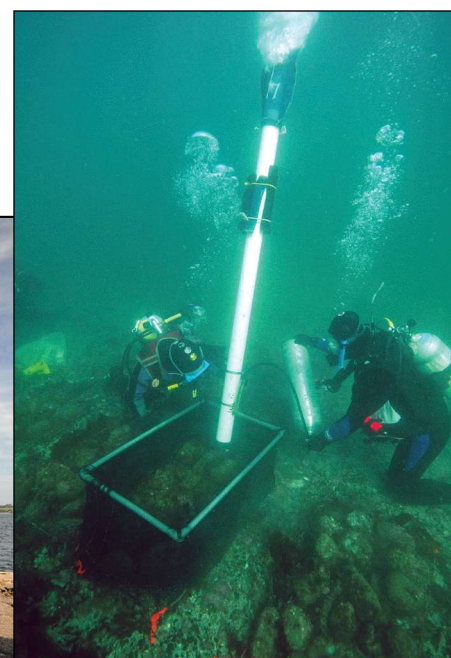
***This doesn't mean that the young-of-the-year lobsters are completely gone. It is more like having a signal that is too faint for radar to pick up.***

—Rick Wahle

with the Rhode Island Department of Environmental Management's Division of Fish and Wildlife (F&W), and Wahle. Fisherman and Rhode Island Lobstermen's Association President Lanny Dellinger aboard his Newport-based Megan and Kelsey provided vessel support.

The goal of the project, which runs through this coming June, is to evaluate alterations in Narragansett Bay after two decades of environmental change.

Wahle visually surveyed the 17 sites again as part of the project and suction sampled the eight original sites in the bay. Four industry-selected sites also



UME Darling Marine Center photo

***Rick Wahle and his dive team monitor lobster settlement sites using the suction sampling method.***

UME Darling Marine Center photo

***RI lobsterman and project participant Lanny Dellinger with a "cricket" size lobster on the palm of his hand.***

were added to the mix. The sampling effort further included post-larval rock collector trays placed at all sites except Fort Wetherill, a deep-water site off Jamestown that was added to the project.

Suction sampling measures the number of YOY and juveniles per square meter at each site, which, when combined with data collected at other sites from Canada to Rhode Island, is used to create the settlement index (see CFN June 2012). YOY and settlers measure 5 millimeters (mm) to 13 mm carapace length. Juveniles measure up to 60 mm carapace length.

In 2011 and 2012, the researchers found less than one settler per 10 square meters. That compared to 1990, the first year of the index, when there were closer to 10 or more settlers in those same 10 square meters, according to Wahle.

To get the same number of YOY now as 22 years ago, Wahle and his team would have to put in 10 times the effort and cover 10 times the area to find them, he said.

Wahle noted that there was a slight uptick in 2012 compared to 2011, but the increase was not enough to change estimates of abundance for the Southern New England lobster population.

"This doesn't mean that the YOY are completely gone," Wahle said. "It is more like having a signal that is too faint for radar to pick up."

## Lobstermen not convinced

Still, some lobstermen firmly believe that the young-of-year *are* settling out in the region, but at different locations and different times.

Dellinger said commercial fishermen are pulling up settlers and juveniles in their gear at odd times.

"Fishermen are finding them in places where there's not a lot of information," he said.

Dellinger said there are concerns

that the data cover too short a time span to determine that Southern New England lobsters are in a state of permanent decline. A number of environmental factors can change from year to year and affect settler abundance, he suggested.

Among them are predation by black sea bass. Another is the timing of state trawl surveys, particularly if the weather gets too cold or too hot. In both cases, settlers and juveniles may go into the mud for protection, he said.

Al Eagles is the owner and operator of the Catherine Ann out of Newport and fishes in Lobster Conservation and Management Area 2. He said he saw a settler in May for the first time last year and, in June, found a lot of juveniles caught up in red seaweed that invaded his traps in deep water. Eagles saw so many of these small lobsters that he contacted F&W and brought 150-200 juveniles dockside for Olszewski to measure.

***Fishermen are finding small lobsters in places where there's not a lot of information.***

—Lanny Dellinger

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*Dockside at Beavertail Point in Jamestown, RI in June 2012. RI F&W biologist Scott Olszewski measures juvenile lobsters brought in by lobsterman Al Eagles from his traps in deep water in LCMA 2.*

Jim Violet photos



**What we do know is that the sites we looked at in 1990 have collapsed. We know that there has been a great change.**

**—Mark Gibson**

By midsummer, the juveniles had disappeared from the deeper water. But, in late January of this year, Eagles said they reappeared, again in deep water.

Eagles theorized that the small lobsters might have gone into the mud last summer to avoid the heat. Or, possibly, fishermen are observing a new behavior related to the depth they're finding the small lobsters in.

Whatever the reason, he objects to fishery managers making regulations based on what may be a short-term depletion of the area's lobster population and feels strongly that more data is needed, particularly if the ocean is changing.

"I've been fishing 50 years," Eagles said. "I used to be able to predict what kind of season we'd have. But not anymore."

#### **Predictability**

F&W Deputy Chief Mark Gibson said what is not clear is whether the

juveniles in deeper water were always there.

"What we do know is that the sites we looked at in 1990 (have) collapsed. We know that there has been a great change. The immature levels, the next stage of lobster after settlers and juveniles, are also collapsing in the agency trawl survey. And that stands to reason: If there's fewer settlers, there will be fewer juveniles several years later," Gibson said.

The American Lobster Settlement Index has a solid track record of accurately predicting population abundance four to six years into the future. Annual monitoring along Rhode Island's outer coast over the past 22 years has enabled scientists to confidently draw a strong correlation between the number of YOY and the number of lobsters recruiting to the fishery several years later.

Early on, researchers found that YOY mortality was due almost entirely to predators. Starting in 1997, they

added epizootic shell disease, which hampers molting, to the mix. In 1999, the stock saw a sharp decline and, four years later, in 2003, abundance was determined to be at an all-time low. Now the settlement index also requires an annual index of shell disease prevalence to accurately predict future stock abundance.

Olszewski, who participated in the CFRF study with Wahle, said that F&W has built a longstanding relationship with local lobstermen through the monthly trap survey that it has run since 1991. He asks lobstermen to let him know anytime they see something out of the ordinary, so he took a look at the juveniles when Eagles brought them in.

"It's good to know they're out there," Olszewski said.

#### **Rising ocean temps**

When the sampling found negligible YOY in 2011 at the traditional sites in Narragansett Bay and elsewhere

throughout the southern New England area, researchers looked for an overarching change that would have tipped the balance against the YOY.

One new site in deeper water, not previously sampled, yielded better results, according to Wahle. Older juveniles were found in about 50'-60' of water at the mouth of Narragansett Bay off Fort Wetherill in 2012. In collectors deployed nearby in about 25'-30' of water, they found two settlers.

Wahle pointed to a recent study of 191 sites from Newfoundland, Canada to Rhode Island that also demonstrated the strong correlation between YOY, juveniles, and temperature. In the Gulf of Maine, where the water is cooler, summer temperatures are prime for YOY. Rhode Island's ocean waters become stressfully warm during midsummer. The problem is that the water is getting warmer.

And lobster growth rate slows at the cooler temperatures, so if juveniles are found in deeper waters that are too cool, they may have another problem surviving their new habitat.

"The sooner they outgrow their predators, the better chance they have of surviving," said Wahle.

Dellinger said that it's possible the settlers are molting faster due to the higher temperatures and are growing to juvenile size in less than a year. He pointed to a study released in 2012 by Raouf Kilada, a research associate at the University of New Brunswick, and others that found it is possible to determine the age of a lobster by lines in its eyestalk, much like counting rings on trees. That's an idea that warrants further investigation, he said.

"If they got to 15 mm to 16 mm by September, they may not be counted as YOY," Dellinger said. "There's still a big question mark about whether the entire Southern New England lobster stock is in decline."

Joyce Rowley

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