CFRF tests lobster electronic data collection

KINGSTON, RI – Imagine using wireless electronic calipers to measure lobster size with the push of a button and entering gender, v-notch, and other data onto a small tablet computer at the culling station. Then imagine being able to send that data to the Atlantic States Marine Fisheries Commission (ASMFC), the National Marine Fisheries Service's (NMFS) Northeast Fisheries Science Center, and state agencies, giving them real-time observations on catch, discards, and juveniles to better inform stock assessments.

The Commercial Fisheries Research Foundation (CFRF) is bringing the industry a little closer to this kind of electronic data entry through a pilot project that will enlist a dozen lobster boats from Maine to New Jersey to gather information throughout Lobster Conservation Management Areas (LCMAs) 2 and 3.

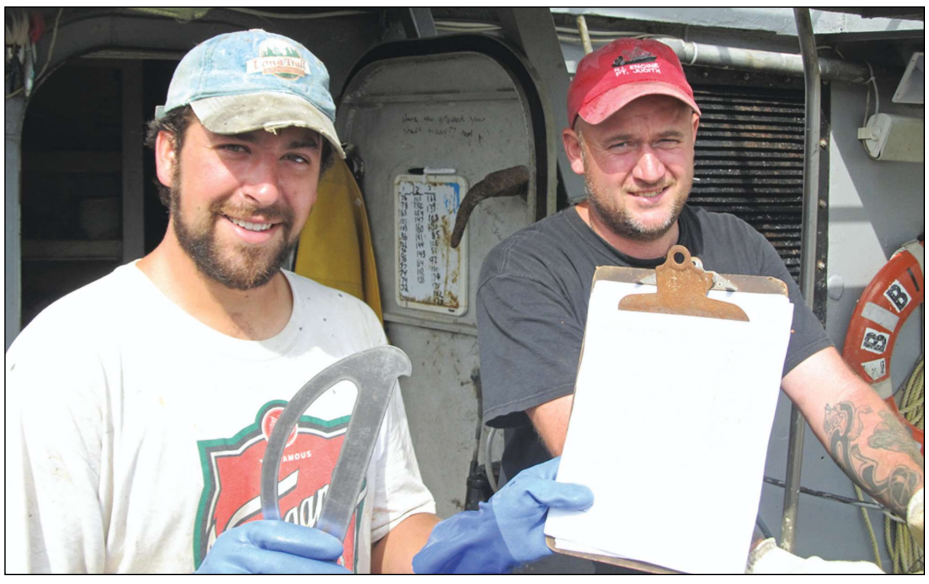
The project also will develop a new collaborative process in which managers, scientists, and lobstermen work together from the beginning to build a program that both sides can buy into. That will include engaging in ongoing discussions throughout the pilot project and establishing a data management system that makes the collected information accessible, at least in aggregate format, to all interested parties.

"Our initial focus is to build a collaborative team of managers, scientists, and industry leaders with support staff to help direct and implement this pilot project, people who are dedicated to the idea of lobstermen playing an important role in contributing much needed data for lobster management," said Peg Parker, executive director of CFRF.

The Kingston-based nonprofit, which was founded by fishermen in 2004 to support collaborative research, is redirecting $200,000 in funds left over from a NMFS grant program to pay for the "CFRF Lobster Research Fleet Pilot Project."

CFRF will make applications available to lobstermen interested in participating in the project by the beginning of March and will complete the selection process that month. The project, including training, at-sea trials, and field data collection, will run through June 2014.

"The time and resources to support this pilot project are limited, but we hope to learn some important lessons that will help evolve the process of lobstermen-collected data," said Parker.



FV Debbie Ann photo

AOLA Sampling Program members John Moore, left and Sean McMullen show the current tools for at-sea lobster data collection, a gauge and clipboard. A CFRF pilot project will move the lobster industry toward electronic data entry using wireless electronic calipers and a small tablet computer.

Sampling

Bob Glenn is a senior biologist with the Massachusetts Division of Marine Fisheries, chairman of the ASMFC lobster stock assessment subcommittee, and a member of the project steering committee. He explained that scientists have only limited data for offshore lobsters since much of the research focus to date has been on the bays and inlets that serve as nursery grounds and are predictive indicators of future stock strength.

But, as higher inshore water temperatures have driven female lobsters offshore, sampling inshore nursery grounds may no longer provide a full picture of abundance.

"We hope to get information from commercial fishermen that defines their fisheries in areas that are poorly sampled," Glenn said. "And we'll get to observe the presence and absence of juveniles in Southern New England."

> *Piloting this technology means working through the bugs to the point where fishermen can use it efficiently in swell, wind, water, and slop.*
>
> —Anna Malek

Fishery dependent surveys provide information from the grounds that fishermen actually work on as opposed to sampling specific areas at preset times, according to Heidi Henninger, research assistant at the Atlantic Offshore Lobstermen's Association (AOLA) and a member of the technical team supporting the pilot project.

"If we collaborate with scientists from the start, data collected can go straight into stock assessments," Henninger said.

The 2014-2015 stock assessment may not directly benefit from this project, but project results could affect how assessments are performed in the future.

"The goal is to determine which sorts of data can be directly applicable to the models," said Burton Shank, a lobster biologist at the Northeast Fisheries Science Center and a participant in the project.

Shank and the project team believe this fleet approach will produce very different results than traditional sampling.

With 12 different lobster boats – six in LCMA 2 and six in LCMA 3 – hauling at 12 different locations and taking three sets of 100 lobsters monthly, the 3,600 lobsters sampled will tell more about variances within the stock.

"Getting samples from multiple locations will yield high-quality data," Shank said. "Having a distributed network of sampling will be fantastic."

The project is particularly timely, he added, since there's scarce funding for sampling and enlisting the help of lobstermen is cheaper than paying to put observers on boats.

"Having more data leads to better management," Shank said.

After training, crewmembers on the participating lobster boats will record the following data when they take samples: lobster size, distribution, sex ratio, and the number of egg-bearing

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Lobster data collection

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females among all catch and discards.

They also will record the presence of shell disease and take photos. To capture bottom temperatures, the support team may partner with the science center's popular "eMolt" program, which involves attaching temperature sensors to lobster traps. Data also will be gathered from ventless traps to help count and measure juveniles.

Technical challenges

The challenges of this project are daunting. Keeping track of regular calipers on a pitching vessel in stormy weather with gloves on is tricky enough. Now picture lining a lobster up to electronic calipers. And if you've ever had difficulty using a stylus at the grocery store checkout counter, then you know entering data under at-sea conditions will take some practice.

"Piloting this technology means working through the bugs to the point where fishermen can use it efficiently in swell, wind, water, and slop," said CFRF Program Administrator Anna Malek.

Everything from power source connections to the size of the "record" button on the electronic calipers has to be designed and tested to make sure that using the device doesn't interrupt the workflow at the culling station. Although electronic calipers have been used before, typically they have been wired to a recording device and used by scientists, said Malek.

We hope to learn some important lessons that will help evolve the process of lobstermen-collected data.
—Peg Parker

"We've narrowed it down to two options – a pre-ruggedized tablet or a regular tablet with a waterproof box," Malek said in mid-February.

A tablet computer, or "tablet" for short, looks like the screen of a laptop and is used by itself. The screen is either a touchpad, meaning it responds to finger pressure, or resistive, meaning it requires a special pen – the stylus – to register a command.

Tablets have been designed to surf the net rather than handle ocean surf. But their small size – about the size of a piece of copy paper – and one- to two-pound weight make them relatively easy to carry on a boat. Tablets also have GPS-navigation capabilities and, so, can automatically record the location of the catch, although Malek stressed that fishing ground locations will remain confidential.

And these devices can take both photos and video, which will be used to further support the data lobstermen collect.

Because this hasn't been done before, part of the pilot project involves hiring a software developer to create an "app" or application that takes the raw data entered into the tablet and sends it to a database at CFRF.

What the fisherman will see on the tablet screen is a series of steps guiding them through the data collection.

More information on the pilot project and an application form to participate is available on the CFRF website at <www.cfrf.org>.

Joyce Rowley

CFRF Lobster Research Fleet Project steering committee members

- Lanny Dellinger, lobsterman and Rhode Island Lobstermen's Association president;
- Mark Gibson, Rhode Island Department of Environmental Management Division of Fish & Wildlife chief;
- Bob Glenn, Massachusetts Division of Marine Fisheries lobster biologist;
- Greg Mataronas, Rhode Island lobsterman and Commercial Fisheries Research Foundation (CFRF) board member;
- Genny Nesslage, Atlantic States Marine Fisheries Commission senior stock assessment scientist;
- Burton Shank, Northeast Fisheries Science Center lobster biologist;
- David Spencer, CFRF president and Atlantic Offshore Lobstermen's Association (AOLA) president;
- Bonnie Spinazzola, AOLA executive director; and
- Norbert Stamps, offshore lobsterman and AOLA co-vice president. **/cfn/**

Mid-Atlantic plan

Continued from previous page

fishermen," he said.

Hemilright recommended that regulations be consistent for fish caught in federal waters throughout their range.

Governance and regulatory decision-making issues also were vetted as the council sought ways to get greater and more meaningful input from members of the public who, in turn, explained that it is often unclear to them how decisions are made.

"One thing we've been talking a lot about is how we can revise the decision-making process and how we can improve communication," said Mary Clark, council staffer for the project.

It was a matter of helping people find agreement despite holding completely opposite views.
—Adam Saslow

One theme that was not completely finalized by the working group was the "Science and Data" section, although consensus was reached on the goal and objectives (see box previous page).

"These are a starting point for the council to work from," Clark said, adding that the staff will refine strategies that are in keeping with the goal and objectives the working group came up with.

Also, the working group agreed that an ecosystem/environmental goal will be incorporated in the council's "Ecosystem Based Approach Guidance Document," a separate planning effort that began prior to the strategic planning process. That document is now under review.

Final products

The public will have the opportunity to comment on the strategic plan before it is finalized. Implementation will occur through an operational plan developed by the council staff and presented to the full council for approval.

"The commercial industry has played an invaluable role in our visioning and strategic planning initiative," Robins said. "One message that came through loud and clear is that we need to do a better job of soliciting the industry's input and incorporating it into the decision-making process."

He added that the council and its staff already have taken several steps to improve both the quality and quantity of stakeholder participation.

"And, I expect that this will continue to be a high priority for the council for years to come," Robins said.

Ruhle said he hoped the plan will address the council's ability to make decisions based on real-time data.

"The Mid-Atlantic council could be the first to have adaptive management for short-lived species like *Loligo* (longfin) squid," he said. "They need to have more timely management based on timely data. Using four-to-five-year-old data for a species that lives two to three years doesn't make sense."

Greg DiDomenico, executive director of the Garden State Seafood Association, attended the planning sessions.

"I didn't realize it would be such an intense effort," he said.

As for the end result, DiDomenico concluded, "It will be up to everyone to make it work."

More information on the Visioning and Strategic Planning Project is available on the council website at <http://mafmc.org/vision> or by contacting Mary Clark by phone at (302) 526-5261 or by e-mail at <mclark@mafmc.org>.

Joyce Rowley