Drop chain plus headrope slack combine to cut blackback bycatch

RIVERHEAD, NY - When Capt. Dave Aripotch offered advice on where to test modified small-mesh gear in an experiment to reduce winter flounder bycatch in the *Loligo* squid trawl fishery, Emerson Hasbrouck listened.

At the time, Hasbrouck, director of Cornell Cooperative Extension's Marine Program, was trying out an experimental net system using a 12" drop chain on the sweep while varying headrope height from on-even (0") to 36" in 6" increments.

Adjusting the drop chain and headrope resulted in pulling up the front of the net to create an approximately 1' gap between the sweep and the net that allowed winter flounder to scoot through and escape, Hasbrouck explained.

Aripotch's boat, Caitlin and Mairead, which fishes out of Montauk, NY, was chosen as the research vessel for the "proof of concept" phase of the research project during the summer of 2010.

Because retention of blackbacks is prohibited from Massachusetts to North Carolina, commercial fishermen are forced to either discard them or find ways to avoid them. The goal of this project was to reduce winter flounder bycatch while maximizing the retention of *Loligo*.

Photo courtesy of Rory MacNich/CCE

Cornell Cooperative Extension staffers Joe Costanzo, Marie Romanoski, and Tara Froehlich aboard Dave Aripotch's Caitlin and Maired, which was fishing south of Shinnecock, NY with modified gear designed to reduce the bycatch of blackbacks in the Loligo fishery in August 2010.

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>
> **—Phil Ruhle Jr.**

After this initial round of testing was completed, Aripotch suggested trying out the gear modification inshore in shallow waters, where, he theorized, the combination of the visibility of the exit opening created by the raised footrope and the water direction flow created by the drop chain might decrease the squid catch.

He also suggested that the Cornell researchers try testing the gear between April and June when the winter flounder and *Loligo* squid interact most often.

Second round

That initial drop chain project was conducted during a "proof of concept" phase under the "Challenge Grant Program for Conservation Engineering Projects" administered by the Commercial Fisheries Research Foundation (CFRF).

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> **—Peg Parker**

A nonprofit research organization based in Kingston, RI, CFRF was established by a group of fishermen in 2004 to administer federal and private funds in support of collaborative research projects focused on issues affecting members of the commercial fishing industry based in Southern New England.

Working on behalf of the foundation's board of directors, the CFRF Conservation Engineering Review Panel established for the Challenge Grant Program reviewed the results from the proof of concept phase of the drop chain project and then recommended to the CFRF board that Cornell go forward with a full project with funding from a $220,000 challenge grant.

Based on the results of the first phase, Hasbrouck decided to go with a 24" slack on the headrope in combination with the 12" drop chain sweep for more rigorous testing.

A total of 72 paired tows were made by two vessels between June and October 2011 on both inshore and offshore grounds, with one boat towing the control net and the other the experimental net, then switching at the end of the day.

According to Hasbrouck, this allowed the researchers to test the nets using different vessel sizes, horsepower, and net sizes as well as in different fishery areas and times of the year.

Capt. Phil Ruhle Jr. on the Sea Breeze Too and Capt. Steve Arnold on the Elizabeth Helen, both out of Point Judith, performed the inshore trawl tests in Block Island Sound for four days in June 2011. The study will be completed when they perform four more days of testing the gear this spring.

"The question was, 'Can we still catch the squid?' And we did," said Ruhle.

The Pontos, owned by Capt. Richie Jones, and the Perception, owned by Capt. Bill Grimm, both out of Montauk, performed the offshore trawl tests south of Long Island last fall. Each vessel alternated between using the experimental net and a control net over two four-day trips.

"It works well," said Jones. "It was amazing how close the (squid) catch was to the control."

While Jones said he doesn't usually see much winter flounder these days, there are still other groundfish such as skates and the ever-present spiny dogfish that he'd rather avoid when fishing for *Loligo*.

Promising results

Data analysis showed that there was no significant difference between the control and the experimental net in terms of squid retention. But project participants saw a 76% reduction in winter flounder catch for all areas combined in the experimental net, according to Hasbrouck.

"And we saw a 70% reduction in combined demersals for both inshore and offshore in the experimental net," he added.

A particular benefit was the reduction in skates and dogfish, which can damage the squid catch.

"It's a great project. The preliminary results are very, very encouraging. It's very easy to construct the 12" drop chain sweep," Hasbrouck said.

Project participants still need to put in the remaining four days of inshore trials this spring. But, barring surprises, Hasbrouck anticipates those trials will yield similar results.

Cornell previously investigated a large-mesh belly panel modification to small-mesh trawl nets that yielded an 88% reduction in winter flounder bycatch and 73% reduction in demersal retention (see CFN February 2012).

"This is another low cost tool for the fishermen to use to avoid winter flounder," Hasbrouck said.

He added that the modified gear technique may have applications to other small-mesh fisheries, such as whiting, where winter flounder bycatch is also a problem.

Gear trials program

CFRF is currently in the process of developing a "gear trials" program, which it expects to launch later this year, according to CFRF Executive Director Peg Parker.

This third component of the Challenge Grant Program will provide financial assistance to fishermen to put the gear on board for further testing. In return, CFRF will ask fishermen to provide feedback on how the gear works. Both the 12" drop chain and the large-mesh belly panel net are candidates for the gear trials program.

"The fishing vessel captain may say they don't like the gear and that's fine, but we will ask them to tell us why," Parker said. "Or, they may say, 'I tweaked it and it works better.' What we're trying to do is provide fishermen with tools that help them comply with fishing regulations so they can make their own choices about how best to avoid unwanted bycatch."

Ruhle couldn't agree more. Since different nets function better in different areas at different times of the year, requiring fishermen to use a specific net in the squid fishery all the time doesn't work.

What does work is collaboration, he said.

Ruhle noted that his family has a long history of working with researchers, dating back to his grandfather's involvement with National Marine Fisheries Service tuna and swordfish studies in the late 1960s. And his father, Phil Ruhle Sr., who was lost at sea in 2008, was a principal investigator in the development of the award-winning "Eliminator" trawl in 2007.

"The fleet doesn't fish with the same gear as it did 25 years ago," Phil Ruhle Jr. said. "We do the research because a lot of good comes out of it."

Joyce Rowley

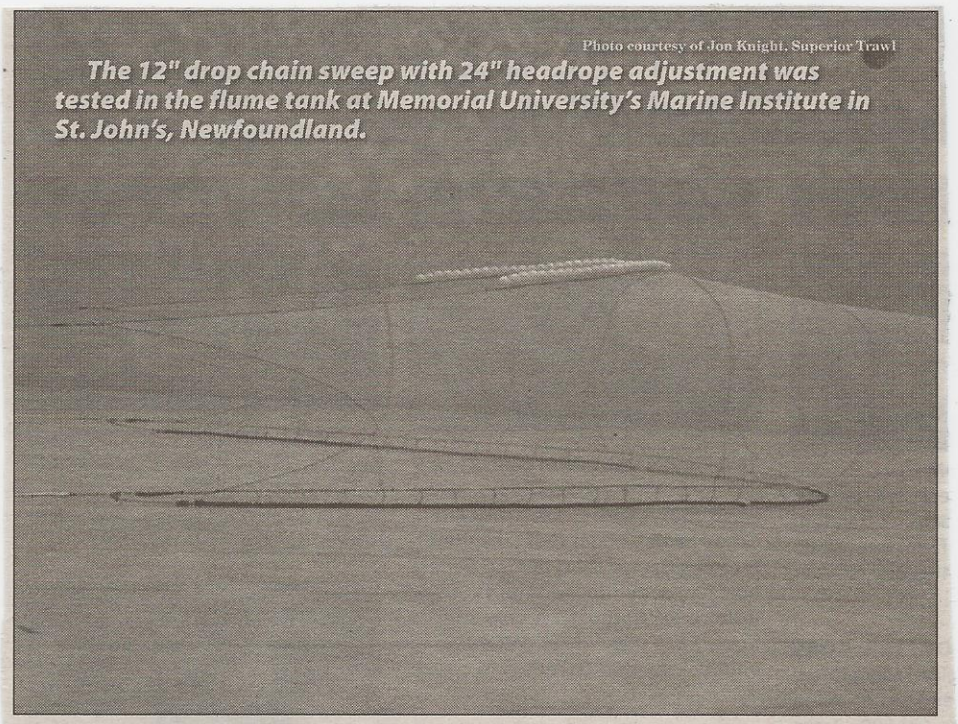

Photo courtesy of Jon Knight, Superior Trawl

The 12" drop chain sweep with 24" headrope adjustment was tested in the flume tank at Memorial University's Marine Institute in St. John's, Newfoundland.

Blackbacks in a basket aboard the Sea Breeze Too, Long Island Sound, July 2011.

Photo courtesy of Tara Froehlich and Phil Ruhle Jr.