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Northeast Cooperative Research Program Feature **GearNet: Engineering a Cleaner Catch**

The Northeast Groundfish Gear Conservation Engineering & Demonstration Network--GEARNET--is a primary part of the region-wide conservation engineering network put together over the past year by the Northeast Cooperative Research Program.

The network comprises fishermen, fishing businesses, and scientists from a variety of institutions, and aims to develop and test gear modifications and other tools that reduce unwanted fish in the catch while promoting efficient harvest of landable fish, as well as those that reduce the environmental effects of fishing.

Some GEARNET projects are working to improve the "selectivity" of gear, that is, its ability to capture specific sizes and types of fish while leaving others in the water. Increasing the selectivity of gear can lead to harvesting more of fishermen's allotted catch while avoiding bycatch that could reduce allotments in the next fishing year.

Other projects are exploring ways to avoid excessively large hauls that result in high discards of unwanted or unmarketable fish, and ways to increase the fuel efficiency of fishing activities, thus reducing both operating costs and effects on the environment.

Current GEARNET projects bring together resources from the Gulf of Maine Research Institute; the University of Massachusetts, Dartmouth; School for Marine Science and Technology; the Massachusetts Division of Marine Fisheries; the Rhode Island Coastal Resources Management Council, and New Hampshire Sea Grant.

Initial industry participants include: Trawlworks Inc., Superior Trawl, and fishermen David Goethel of Hampton, N.H., Carl Bouchard of Exeter, N.H., and Daniel Murphy of Gloucester, Mass.

After consulting with each groundfish sector and fishermen in the common pool, GEARNET is helping each group develop a project that addresses their highest gear-related priority. GEARNET projects that are underway for fieldwork or analysis include the following:

- **Topless flounder trawl net** -- This project is developing and testing a groundfish net modified into a topless trawl to better target flounder while avoiding cod and haddock. The testing phase, in which the modified net was compared to a standard trawl, was completed in June 2011, and data analysis is currently underway to determine the selectivity of the net—that is, did it avoid more cod and haddock than the standard net and still catch flounder?
- **Codend selectivity and sensors** -- This project is developing a net that gets cleaner catches of larger, more valuable cod and that reduces catch of smaller cod as well as other fish species. The gear will also be fitted with sensors in the trailing end of the net—called the codend-- to demonstrate their effectiveness on smaller vessels in controlling the amount of fish caught in a single tow. A standard 6-½" codend is being compared with three 7"-to-7-½" square and diamond mesh codends to determine the selectivity of the experimental gear. Fuel use also will be monitored to determine the overall cost effectiveness of the modified gear in comparison to

standard gear. The hope is that results from the study will aid fishermen in fishing both more selectively and more economically.

- **Detaching codend** -- This proof-of-concept project focuses on developing an inexpensive codend that detaches from the body of the net when it captures a set volume of fish. Fish already in the codend are retained, and any fish in the body of the net are released. Such a net could help address the problem of catching large volumes of unwanted fish. When the codend detaches, a parachute is released, increasing the drag, which acts as an indicator to the vessel to retrieve the gear. Fieldwork for this project was

completed in the summer of 2011, and underwater video was taken to confirm that the codend was performing as intended.

GEARNET projects draw on the knowledge of fishermen, experts in gear design, and government and academic scientists to develop and test innovative ideas. These partnerships are yet another way the Northeast Cooperative Research Program is working to make fisheries more sustainable, more efficient, and more profitable. For more information, visit <www.gearnnet.org>.