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2007 Haddock Trawl Workshop Summary

The National Marine Fisheries Service (NMFS) in 2005 implemented a pilot Eastern U.S./Canada Area Haddock Special Access Program (SAP) for the limited access Northeast multispecies fleet that required the use of a haddock separator trawl. The separator trawl gear mandate was employed to reduce fishing mortality on a stock of concern, Georges Bank cod, while allowing access to other relatively healthy stocks, particularly Georges Bank haddock. This mandate was initiated through a trawl workshop held at the NMFS Northeast Regional Office on May 27, 2004 that solicited input from fisheries researchers with a range of expertise regarding trawl gear and identified trawl gear that could be used to minimize the capture of cod. This meeting concluded that, if used properly, haddock separator trawl gear could substantially reduce the amount of cod caught while maintaining commercial catch rates of haddock. The resulting creation of the SAP is an example of the use of innovative, conservation-oriented fishing gears for the benefit of fishery resources as well as the fishing community.

Currently, a haddock separator trawl that employs a horizontal separation panel is the only type of trawl gear that can be used in the SAP. Over recent years, seven cooperative gear research projects have been conducted or are underway to more rigorously test haddock separator trawls with horizontal separation panels as well as to develop other types of trawl gear modified to target haddock and reduce cod catch. On April 3, 2007, a workshop was held at the University of New Hampshire to discuss and evaluate these gears for applicability in the Northeast multispecies trawl fishery.

The objectives of the workshop were to:

- Identify current haddock separator strategies,
- Discuss the current state of the technology (limitations, data analysis, future research)
- Recommend appropriate methods as "industry ready" for pilot testing by commercial fishermen, and
- Identify topic-specific research needs.

The meeting was convened by several of the gear researchers involved in the cooperative research, including Dr. Pingguo He and Dr. Ken La Valley of the New Hampshire Sea Grant/University of New Hampshire (UNH), Laura Skrobe of Rhode Island Sea Grant/University of Rhode Island (URI), Dr. Paul Winger of the Marine Institute of Memorial University, Catherine Salerno of the Gulf of Maine Research Institute (GMRI), and Michael Pol of the Massachusetts Division of Marine Fisheries (DMF). The meeting was attended by regional scientists involved in haddock separator gear research, their cooperative research industry partners, and research grant administrators. A full participant list and agenda will be included in a final report.

Seven experimental gear designs tested on Georges Bank and in the Gulf of Maine were presented and discussed. Projects conducted by UNH, URI, GMRI, DMF plus projects led by Dr. Chris Glass of the University of New Hampshire/Manomet, Dana Morse of Maine Sea Grant/University of Maine (UME), and David Martins of the School for Marine Science and

Technology (SMAST), University of Massachusetts-Dartmouth were presented. Dr. Paul Winger presented a summary of haddock harvesting research recently conducted in Canada.

Separation Strategies

The net designs were in various stages of development, and their corresponding investigators gave detailed presentations which covered field trial status and data analysis. Separation strategies varied from project to project. One design (GMRI) sought to describe spatial and temporal separation of cod and haddock by surveying potential fishing areas. The DMF design attempted to elevate the trawl mouth to pass over cod; the UME design uses a positively buoyant sweep and ground cables to pass over cod; the URI trawl allows escapement of cod in large meshes in the trawl mouth. Another UME design uses square mesh side panels to allow cod to escape. The UNH rope separator uses ropes instead of a netting panel to direct cod out of the lower half of a trawl. Both GMRI and SMAST presented research documenting the performance of the currently mandated separator design.

State of the Technology

The group generally agreed that horizontal separator panels can successfully separate co-mingled cod and haddock and that panel height above the seafloor was a critical factor. Increasing the height of the panel decreased cod catches in the upper codend while also decreasing haddock catches. Adjustment of panel height is easy to do in the field and has both negative and positive implications on the performance of the gear. Most of the experimental designs presented were determined to require further field testing due to limited data from a combination of low haddock and cod catch rates and limited species mixing. This low level of mixing may have been the result of seasonal and geographical effects. Of the seven designs, the UNH rope separator trawl alone was tested on relatively high concentrations of intermingled haddock and cod and produced a cod reduction rate of 60-80%, a haddock loss between 16-35% and a flounder reduction of nearly 100%.

Gears that employed strategies other than horizontal separator panels were also successful in reducing cod capture. The URI "Eliminator" trawl provided a 20:1 ratio of haddock total weight versus cod total weight, a 15:1 ratio of haddock to yellowtail flounder and a 19:1 ratio of haddock to winter flounder. The DMF Five-Point sweepless raised foot-rope trawl provided up to a 98% reduction in cod with no significant reduction in haddock landings over 91 experimental tows. However, subsequent field trips did not produce equivalent results. This difference may be the result of low haddock catches and discrepancies in net geometry.

The group recognized that the desired degree of separation of cod and haddock varied between interested parties. For example, managers might favor 100% separation of cod and haddock while industry members might view the loss of all cod as a loss of vital income. It is highly unlikely that any gear would be able to achieve 100% separation between these two species when both are present in any given area. However, industry participants indicated that they could "make the gear work" given clear goals, such as B-day use requirements.

Recommendations

• The conveners acknowledge that there will not be one gear design that will work in every situation. Different habitat types (mud, sand, gravel/rocky) will favor different gear types. The conveners recommend that a variety of gears be immediately identified for pilot use by the industry and are confident that industry members have the necessary experience to employ the most efficient gears for their harvest areas and bottom types.

• The conveners recommend that the "Eliminator" separator trawl tested by URI and the UNH Rope Separator trawl be considered for pilot-scale use by the industry in the Eastern U.S./Canada Area SAP and/or the Regular B Days-at-Sea (DAS) Program. Data collection on landings, discard and catch rates should be required for participation in these programs to confirm expected gear performance under commercial conditions.

• The conveners recommend further consideration of the DMF Five Point Trawl once additional stability testing is completed.

• The conveners request that NMFS and/or the New England Fishery Management Council develop more specific gear requirements and performance standards necessary to gain authorization for use in a haddock SAP and the Regular B DAS Program.

Suggested Future Research

• *Investigate seasonal effects on experimental gear performance*
Some of the variation in gear performance may be the result of seasonal changes in groundfish distribution. A better understanding of seasonal changes in performance may allow managers to identify specific time/area combinations in which a SAP may be approved for specific conservation gears.

• *Evaluate time/area avoidance of cod*
Are there areas of predictably low cod abundance in which separator trawls could be used to meet the discard limitations of a SAP and/or the Regular B DAS Program? To answer this question, an improved understanding of migratory patterns and specific habitats favored by species of concern is necessary.

• *Industry-based pilot programs*
Haddock separator technologies should continue to be evaluated in areas of high and low species mixing and abundance. This objective could be realized through the use of industry based pilot programs or experimental fisheries.

• *More behavioral work*
Fish will behave differently under different conditions (i.e. haddock tend to stay closer to the bottom in low densities but will utilize more of the water column in higher densities). What other types of behavioral variation occur under different conditions and how does this affect performance of these types of gears?