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Field Trials of 4" Rings in the Inshore Scallop Fishery in the Gulf of Maine

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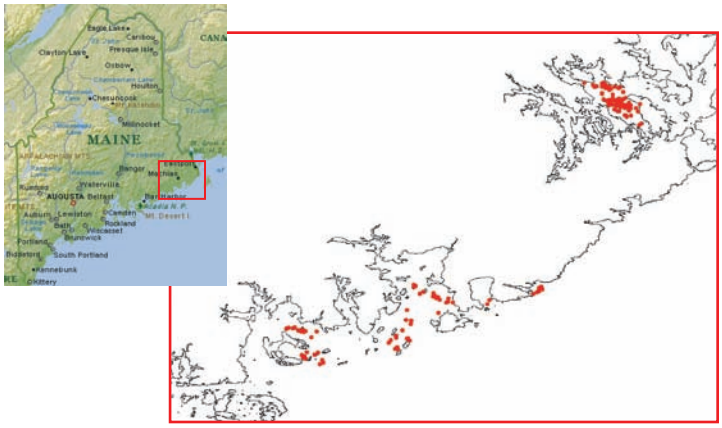
In November of 2003, a project in eastern Maine coastal waters evaluated the selectivity of 4″ (101.6mm) diameter rings used in a scallop drag, as compared to a drag rigged with the regulation-sized 3.5″ (88.9mm) rings. The fieldwork used side-by-side tows by two fishing vessels, and a paired tow analysis. Experimental and control drags were switched between vessels each day. Data collection included: catch volumes of scallops and other species, and scallop shell heights (SH), as a function of location and bottom type.

Ten fishing days were completed in eastern Maine, both inside and outside of Cobscook Bay. Vessels in the study were the 49-foot *Northern Eagle*, and the 44-foot *Double J*, owned by Steven Patryn and Robert Holland respectively, both of Jonesboro.

Scallop numbers caught in the drags were analyzed, with respect to sub-legal and legal sizes. Loss of legal scallops, by number, at the 2003-2004 regulated SH of 3.75″ (95.2mm) was approximately 10% for the experimental drag. Loss of legal scallops, by number, when judged at the present regulated SH of 4.00″ (101.6mm) was 3% for the experimental drag. Sub-legal scallop catch was reduced by approximately 25.5%. Further testing in deeper waters along the coast will help to understand selectivity patterns more fully.



◀ Locations of tows used in the study: 6 fishing days were completed in Cobscook Bay before moving westward, for 4 fishing days in the Cross Island/Roque Island area.

Drags:

Drags were built by Blue Fleet, Inc. of New Bedford, MA. The drags measured 5.5′ (1.7m) between the outside edges of the shoes, in compliance with size limitations for Cobscook Bay. Head bails were constructed of 2″ (50mm) round iron stock. Twine tops were 6″ (152mm) diamond mesh. Since both vessels are set up to empty drags through the club end, the drags were equipped with a 'pocketbook' style dump. NOTE: An error resulted in the twine tops being different between the two drags, with the Control drag being hung with a 3:1 ratio, and the Experimental drag hung at 2:1 (51 vs. 36 meshes across).

Control (3.5″ ring) drag on the left, and the Experimental drag (4″ ring) on the right. Twine top differences visible.

Sea Grant Maine

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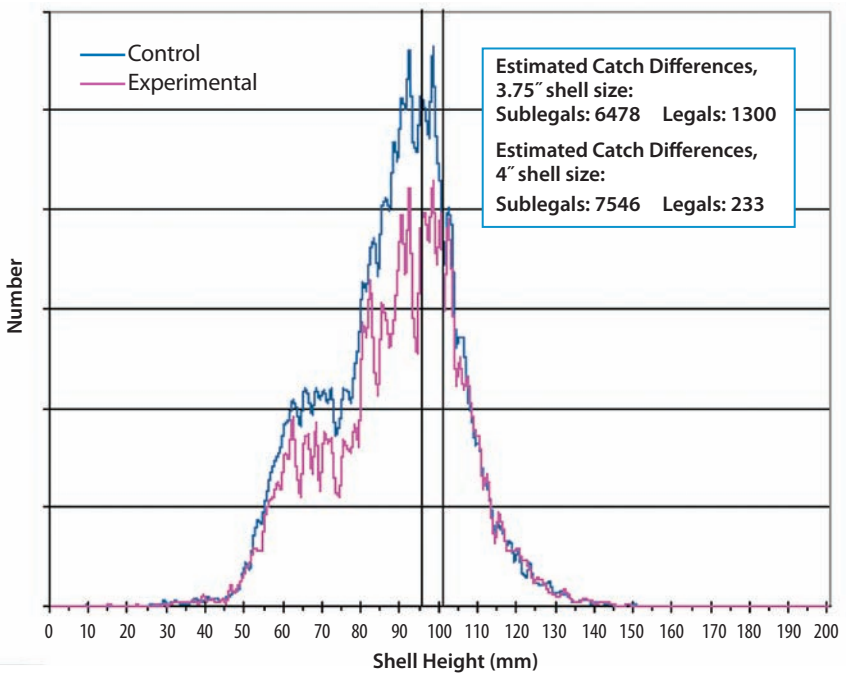
Location	Size Group	Number Caught 3.5″ Rings	Number Caught 4″ Rings	Difference	% Reduction
Cobscook Bay	Short	26798.7	20418.1	6380.6	23.8
	Legal	4483.2	4388.8	94.4	2.1
Outside Cobscook	Short	3141.5	1976.2	1165.2	37.1
	Legal	2491.1	2352.7	138.3	5.6
Total	**Short**	**29940.2**	**22394.4**	**7545.8**	**25.2**
	Legal	**6974.3**	**6741.5**	**232.8**	**3.3**

Table of catches estimated at the current regulated shell size of 4″ (above) and graph (below) of estimated catches over all tows. Vertical lines in the graph indicate previous and current regulated shell heights (3.75″ and 4″).



Conclusions and Discussion

In this study, the use of 4″ rings resulted in an estimated loss of 3% of the total number of legal-size scallops. As could be expected, those scallops just over the legal limit constituted the largest percentage of the lost catch. No difficulties were observed in the actual fishing and maintenance of the drags, and the larger rings held up well over the life of the study. This study constitutes a snapshot of the selectivity of 4″ rings in inshore Maine waters, and comprises a limited geographical scope. Further work should be undertaken over a broader area, and in greater depths. The effect of the differing twine top hanging ratios remains unknown, and opinions vary regarding those effects. It is at least a source of unquantified error, and must be corrected in future work. Lastly, though the 3% loss figure appears minimal, it was ascertained during a time when the legal size was in flux. At present (July 2007), the new minimum shell size of 4″ has been in effect for a time, and the current size composition of the wild stock would likely have bearing on catch figures in any future work.

A complete report of this study can be found at Maine Sea Grant, *www.seagrant.umaine.edu* or from the Northeast Consortium Web site at *www.northeastconsortium.org*

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