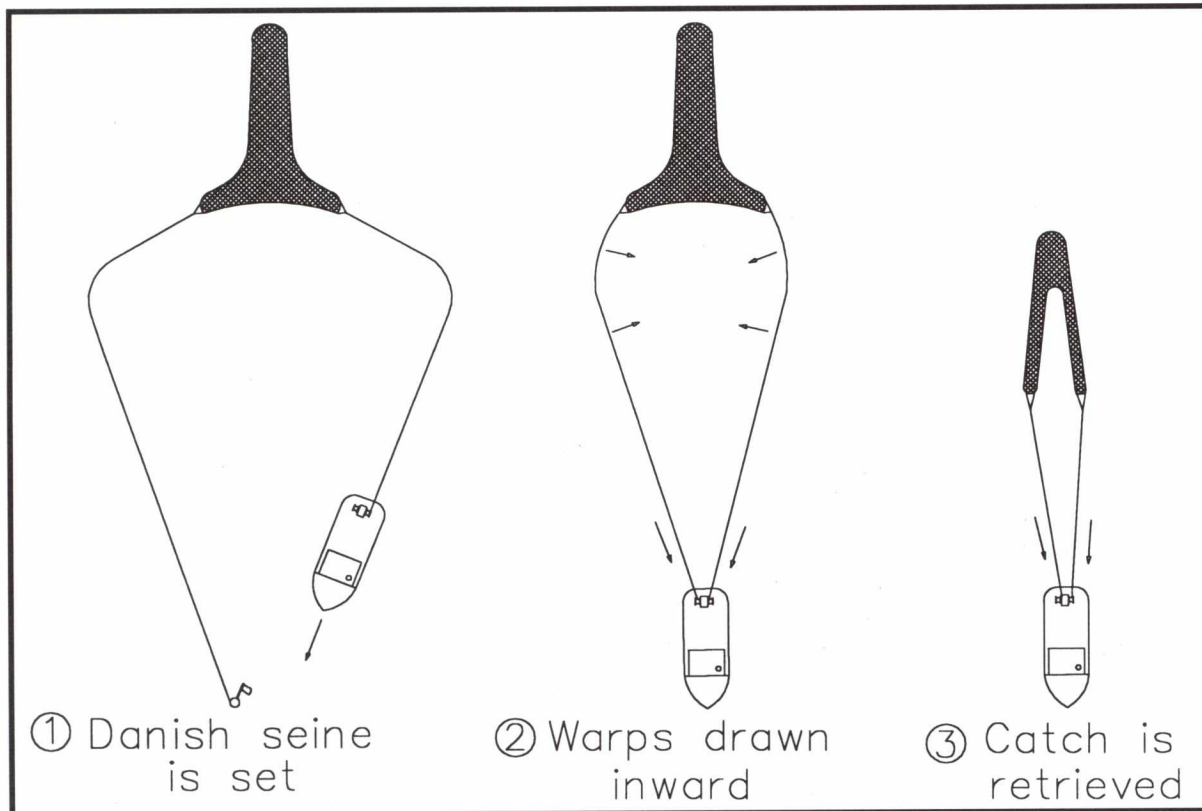


PROJECT SUMMARY

*Danish Seine Mesh
Size Selectivity Study
St. George's Bay, Newfoundland 1996*

CAFID #31

1997



INTRODUCTION

The Newfoundland fleet of eight Danish seine net vessels usually fish each spring and fall in St. George's Bay, in the southern part of NAFO division 4R. They direct their fishing efforts for flatfish (American plaice and witch flounder). The fishing activity of this mobile gear fleet was

halted in the spring of 1996 when the by-catch of cod exceeded the allowable limit of 5% (by weight). The second closure occurred because the catch of small American plaice exceeded the 15% small fish (ie less than 30 cm. (12") protocol. Because cod and under size flatfish are caught while Danish seining, it has become increasingly difficult to continue this fishing

activity and meet DFO's by-catch and small fish protocols.

In 1996 the Fish Harvesters Resource Center (FRC), on behalf of the 3PS seine net fishers, submitted a project proposal related to fish size and species selectivity to the Canada/ Newfoundland Cooperation Agreement for Fishing Industry Development (CAFID). The overall objective was to reduce the by-catch of cod below 5% and reduce the retention of immature flatfish caught in Danish seine nets below 15%. The project was conducted over a ten day period during October and November, 1996 using two Danish seine vessels from Margaree on the southwest coast of Newfoundland. A complimentary codend selectivity project was also carried out in 1996 by two Danish seine net vessels from New Brunswick in NAFO division 4T.

PROJECT DESCRIPTION

Prior to project start up the FRC, the Department of Fisheries and Oceans (DFO) and the Danish seine net fishers agreed to experiment with 155 mm diamond and square mesh codends, as shown in Figure 1, to reduce cod by-catch and allow small flatfish to escape. When the codends arrived from the gear supplier however, it was discovered they had 145 mm rather than 155 mm diamond and square meshes. Due to the non-availability of the larger mesh, it was decided to test these codends during the first five days of

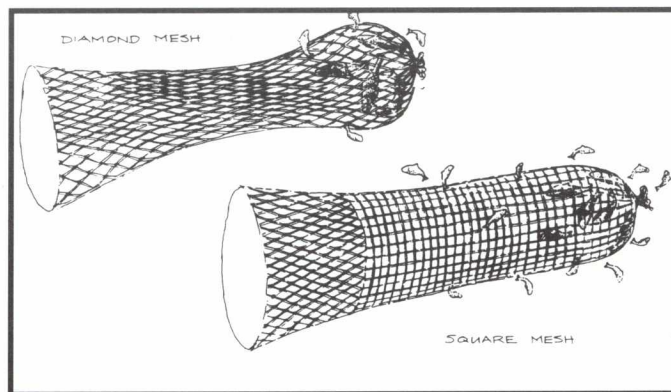


Figure 1: Square and Diamond Mesh used in the codend.

the project. The codends were then changed to 159 mm diamond and square mesh since the 155 mm size was still unavailable. Both codends were constructed of 5.5 mm double polyethylene while the lengthening pieces were 3 mm single polyethylene. Figure No. 2 shows a codend coming aboard a vessel. The Danish seine net vessels involved in the project were the 15 m (49') "Lori and Madonna" owned and operated by John Tom Warren and the 16 m (52') "Gregory D. Patsey", owned and operated by Gerald

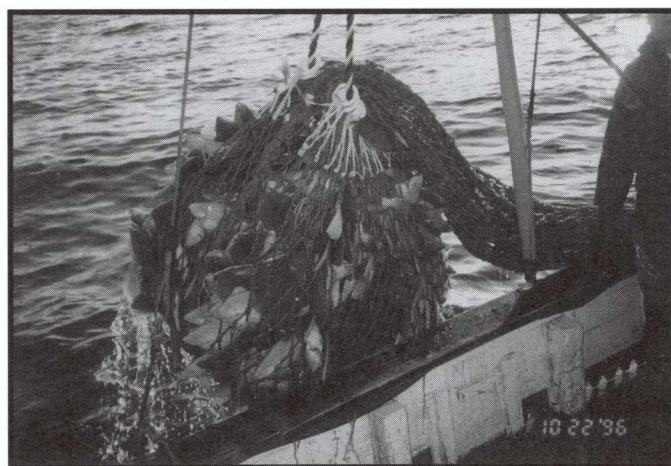


Figure 2: A bag of American Plaice being hoisted on board. Note the 159 mm diamond mesh.

Vautier. These vessels are representative of those used in the Danish seine net fishery on Newfoundland.

Throughout the project a monitor was on board each vessel to collect samples, complete length measurements for each species, measure mesh size and record all pertinent catch and effort data. A DFO gear technologist made one trip, alternating between vessels to establish sampling procedures and to ensure that experimental fishing gear conformed to project plans.

RESULTS

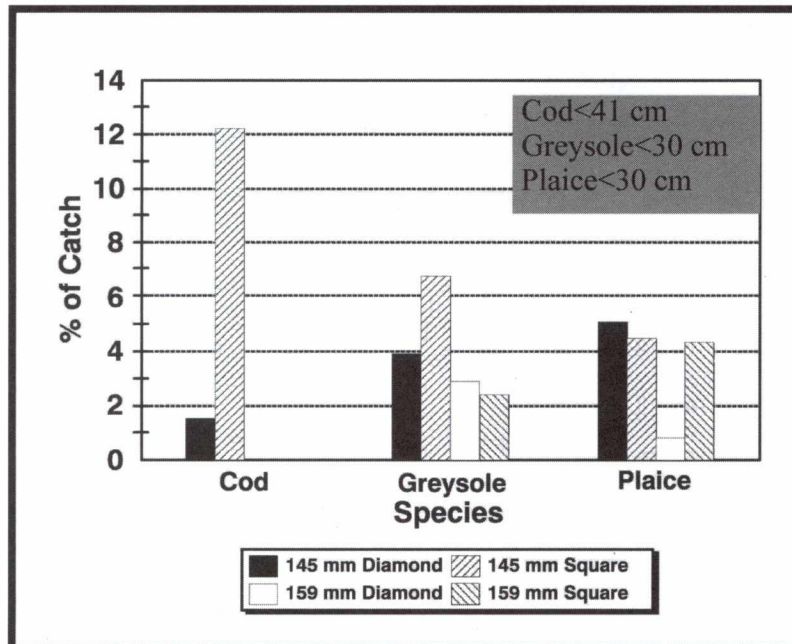
A total of 52 sets were made by the two vessels during ten days of fishing. Codends with four different mesh sizes and shapes were tested; 145 mm diamond and square and 159 mm diamond and square. The cod by-catch varied from a high of 7.8% of the total catch in the 159

mm diamond mesh codend to a low of 2.3% in the 159 mm square mesh codend. The total catch of 37,747 kg. for both vessels consisted of 51.1% American plaice, 44.3% witch flounder and 4.6 % cod.

The percentage of small fish caught by all mesh sizes tested is shown in Graph No. 1. The 145 mm square mesh codend which showed the



Figure 3: American Plaice on deck caught with 159 mm mesh codend. Note the absence of cod and juvenile American Plaice.



Graph 1: Percentage of small fish caught by different mesh sizes. (Note: The 159mm diamond and square mesh did not catch any cod.)

highest catch rate also had the highest percentage (by weight) of small fish; 4.4% American plaice, 6.7% witch flounder and 12.2% cod. There were only 77 cod caught in two sets and none in the other sets when 145 mm square mesh was tested. This is not a sufficient number to give any statistical reliability. The 159 mm diamond mesh codend had the lowest percentage of small fish (by weight), 0.8% American plaice, 2.9% witch flounder and 0% cod. The 159 mm square mesh codend did not catch any small cod and also had a low percentage of small American plaice and witch flounder. A typical catch is shown in Figure No. 3.

DISCUSSION

The various codend mesh sizes and shapes tested retained very few small cod, American plaice and witch flounder. This indicates there were few small fish in the area during the experiment or they were able to escape through the codend. The 145 mm and 159 mm square mesh appeared to be the most effective in not retaining undersize cod. Further testing of the square mesh codends is required to quantify their overall effectiveness in reducing the by-catch of cod and undersize American plaice.

In related, but non-CAFID projects, two New Brunswick vessels fished with a modified seine net to reduce cod by-catch. Results showed that very few cod were caught when the square and top belly were removed from the seine and the headline extended. This resulted in little or no loss of American plaice. The second

vessel tested 130 mm and 145 mm diamond and square mesh codends. Both of these retained more than 15% small flatfish. Codends with 145 mm diamond mesh in the top and 130 mm and 145 mm square mesh in the sides were tested with encouraging results. Throughout the testing, square mesh codends retained more small flatfish than the same size diamond mesh.

THE CAFID PROGRAM

The Canada/Newfoundland Cooperation Agreement for Fishing Industry Development (CAFID) is a multi-year development agreement jointly administered and delivered through the Federal Department of Fisheries and Oceans (DFO) and the Provincial Department of Fisheries and Aquaculture (DFA). The objective of the Agreement is to assist the Newfoundland fishing industry to be self-sustaining and viable in the present resource short environment.

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