

ANNUAL MEETING - JUNE 1955Report of the Scientific Advisers to Panel 3

The Scientific Advisers to Panel 3 held meetings at St. John's, Newfoundland, on March 21, 22 and 23, 1955. The following were present:

<u>Canada</u>	<u>France</u>	<u>United States</u>
A.M. Fleming	M.J.J. Eude	J.R. Clark
J.L. Hart		H.W. Graham
B.G.H. Johnson		G.F. Kelly
A.C. Kohler	<u>Portugal</u>	A.F. Rollins
W.R. Martin		C.C. Taylor
F.D. McCracken	M.J.O. Ruivo	W.N. Terry
H.D. Macpherson		L.A. Walford
J.E. Paloheimo		J.P. Wise
E.J. Sandeman	<u>Spain</u>	<u>ICNAF</u>
H.J. Squires	A. Rojo	E.M. Poulsen
T.N. Stewart		
W. Templeman (Chairman)		

Mr. Rojo reported on cod and haddock observations on the Spanish trawler MISTRAL on the Grand Banks in June and July, 1954 (see Spanish Research Report for 1954, Document No. 2). The following information concerning mesh sizes of the trawl net was presented:

	<u>Manufactured</u>	<u>New and Dry</u>	<u>Used and Wet</u>
Wings	150 mm.	133 mm.	117
Cod-end	130 mm.	127 mm.	115

Mr. Rojo presented conversion data for cod and haddock. For both species, the conversion factors were shown to vary with relation to time of spawning, weight of fish, and position and length of time in the hold.

Information was presented concerning length frequencies, catch per hour's trawling, year class strength and day and night catches for cod and haddock. A growth curve for haddock was given. All data presented by Mr. Rojo were for the Southeast Shoal.

Mr. Eude reported for France that the French home trawler fleet is not interested in fishing for haddock. These boats use nets with an average mesh size of 140 mm. dry and presumably about 114 mm. wet.

The St. Pierre fleet fished haddock only since 1954 when about 1,400 metric tons were landed, all from St. Pierre Bank. This whole quantity was frozen. The average size of the round fish was about 40 cm., using mesh size the same as the Newfoundland ships (about 2 7/8 inches). The industrial reaction to mesh change is the same as in Newfoundland.

For Newfoundland, a review of statistics on cod and haddock was presented. Export figures on salted cod showed a peak of about 1,800,000 quintals* (about 408,000 metric tons round fresh) cod about

* A quintal = 500 lb. round fresh cod
= 112 lb. salted dry cod

1918-20, following which it declined to, and remained at about 1,000,000 quintals (227,000 metric tons round fresh). The decline in recent years is presumably due to a decrease in effort through the virtual cessation of the dory schooner fishery on the Banks, and a decline in the Labrador and shore fisheries.

Using 1953 figures as exemplary of present conditions, it was shown that from the Convention Area most cod is landed from Subarea 3, where 729 million pounds (324,000 metric tons) of round fresh cod were landed. Of this total, Canada landed 58% (50% being landed by Newfoundland). Less than 5% of the Newfoundland catch came from the offshore area, the remainder being landed by the in-shore fisheries. Newfoundland's offshore landing amounted to only 2% of the total cod landings from Subarea 3.

The shore fishery landed about 290 million pounds (154,000 metric tons) from Subarea 3, 20 million pounds (11,000 metric tons) from Subarea 2 and 30 million pounds (17,000 metric tons) from Subarea 4. These were landed by boats using cod-trap, hand-line, and line trawls from which there were quite different size composition of catches using the different types of gear, but the difference is apparently due more to the differential size distribution of the fish than to selection by the different types of gear.

Haddock landings since 1944 show for Spain and Canada - the two most important countries concerned with the haddock fishery in Subarea 3 - a total peak landing of about 150 million pounds (65,000 metric tons) in 1949, with Canada taking about 22%. Since 1949, the Spanish landings have been declining steadily. Canada's landings decreased to a low of about 10 million pounds (4,500 metric tons) in 1951 but have been increasing since. About 60% of Canada's catch from Subarea 3 is landed by Newfoundland. The new practice, begun late in 1953, of landing small haddock (34-43 cm.) in an un-gutted condition, has resulted in a tremendous increase in Canada's landing.

The culling habits of the Newfoundland otter trawl fishermen and the relation of the discard to the size of year classes were discussed. Prior to 1954, haddock less than about 45 cm. were discarded as unsuitable for filleting. The advent of the extremely large 1949 year class, together with the introduction of filleting machines, changed culling practices so that all fish above 35 cm. were landed.

Dr. Templeman reviewed the biology of haddock populations in Subarea 3. The great variability in year class strengths and in growth rates was pointed out, together with comparisons of the growth of haddock from other Banks.

Mesh selection experiments were reviewed and inconsistencies between the results of various investigators pointed out and possible sources of these inconsistencies discussed.

Length frequency and age composition data collected on the research ship "Investigator II" and by observers on commercial vessels were presented. Haddock mortality rates calculated from percentage size frequencies during the relatively virgin period prior to a fishery were shown to be higher than the total mortality calculated from similar data after fishing began.

Assuming a natural mortality of 15% and no fishing, calculations were presented showing that the maximum population weight for the 1949 year class on both St. Pierre Bank and the Grand Bank was at an age of about 5 years.

A comparison of the results of age estimation by means of scales and otoliths of the same haddock showed fair agreement up to the age of 8 years, the average sizes back-calculated for each age by scale and otolith determinations being in close agreement. Beyond the age of 8, however, agreement was poor, otoliths giving in general a greater age, with a resultant divergence of the two growth curves.

In a general discussion of the problem of determining an optimum size of first capture, Mr. Paloheimo observed that for the growth rate of the 1949 year class, a mesh size as low as 3½ inches might be desirable. Dr. Graham suggested that since an optimum size of first capture appeared to be indeterminate for the range of growth rates of the various year classes, the problem might be approached from the immediate losses or gains resulting in the application of various 50% selection points to the size frequencies in the 1954 fishery. Clark presented calculations by himself and McCracken on the presumed effects of nets with meshes of various selection points on the Newfoundland haddock fishery. To obtain these figures, the selection curves were applied to the landed haddock frequencies from Newfoundland commercial otter trawlers, January-June 1954, January, February 1955. The results are summarized in the following table:

Expected Initial Effect of Various 50% Selection Points

Wet Mesh Size (In.)	50% Point (Cm.)	Covered Net (%)
3.7	31	-2
3.8	32	-4
3.9	33	-6
4.0	34	-8
4.2	35	-11
4.3	36	-15
4.4	37	-19
4.5	38	-24
4.6	39	-30
4.8	40	-37
4.9	41	-46

After some discussion the group arrived at the following conclusions from population dynamic studies of Subarea 3 haddock:

From a study of the growth, mortalities, and population characteristics of Subarea 3 haddock, it is concluded that for the 1949 year class there may be some long-term loss from use of a 50% selection point at 38 cm. For the year classes with faster growth, such as the 1942 and 1946 year classes, no harm would be expected with a 50% selection point at 38 cm., even with a cull as low as 35 cm. With a higher cull, advantages can be expected. If the cull is as high as 43 cm., advantages can be expected to be substantial.

For the United States, data were presented showing the actual wet-used mesh sizes in the U.S. haddock fleet over the period October, 1953 to September 1954. Sizes of haddock caught by these nets were shown to correspond to the actual selection expected on the basis of covered net experiments. The effect of changes in the efficiency of large mesh nets on the 50% selection point, and the possibility that changes in efficiency might alter this point were discussed at length.

The question of the appropriate mesh size for the Subarea 3 cod and haddock fisheries was re-examined. It was the consensus of the group that this question must be determined by the Commissioners after placing before them all available facts on the effects

of various 50% selection points on the present and past conditions of the fishery.

Research Program, Subarea 3, 1955

Portugal: Program of research is as reported in document dated 24 January, 1955, issued from ICNAF Headquarters.

Spain: Program of research is as reported in the document dated 10 February, 1955, issued from ICNAF Headquarters.

Canada: (a) Mainland. The sampling of catches of commercial trawlers for cod and haddock, landed sizes, etc. Hydrographic program extended to Subarea 3.
(b) Newfoundland. The sampling of landings of commercial trawlers and collection of catch and effort data (all commercial species). The sampling of catches made by the various types of gear used in the inshore fishery (cod). Cod tagging for studying migration. Relation between temperature and cod concentration. Haddock survey of southern Grand Bank and St. Pierre Bank. Regular redfish cruise each month to Hermitage Bay. Savings gear experiment using commercial trawlers. Hydrographic cruises by "Investigator II" in April and July.

United States: Analysis of redfish landings, and age composition of redfish taken in Subarea 3.

The group agreed to the following suggestions for long-term cod and haddock research in Subarea 3:

1. For all offshore otter trawling by all countries, precisely defined mesh information in terms of dry and wet measurement, material, twine size, etc. An extension of work already carried on in Subarea 4. (McCracken and Clark continue as a committee to collect such data.)
2. Statistics by subdivisions, by species and by country (From the Commission Secretariat).
3. Information on sizes caught and landed, particularly for cod and haddock.
4. Population dynamics of haddock. Necessary information available be passed over to Paloheimo and Taylor to carry out studies.
5. Information on recruitment of new year classes to assess initial effect of any mesh regulation.
6. Growth of individual year classes.
7. Study of tagging results insofar as they may be useful for mortality studies.
8. Information on exemptions:
 - (a) Relationship of cod and haddock catches to catches of other species.
 - (b) Study of effects of chafing gear on net selectivity.

It was emphasized that suggestions 1 to 3 should be carried out in preparation for the Fifth Annual Meeting in June 1955.

The scientific advisers decided to report to the Commission the evidence available on the possible results of the introduction in Subarea 3 of different mesh sizes larger than the smallest in present use. It was also decided to ask the Executive Secretary to arrange for the discussion of this matter at the next Annual Meeting of the Commission.

- THE END -

