

ANNUAL MEETING - JUNE 1965Status of Fisheries and Research Carried out in Subarea 4

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Reports on researches carried out in 1964 were submitted by the following member countries: Canada, Poland, Spain, UK, USSR, and USA.

1. Work carried out

- a. Canada: A.T.Cameron and other research vessels. Oceanographic conditions at coastwise stations and along established sections. Detailed bottom topography for restricted areas. Benthos and plankton studies in 4T. Egg and larva studies. Cod populations in 4T. Cod feeding habits. Haddock year-class strength. Effects of cod grazing on American plaice. Age and growth of witch. Herring lengths and ages. Tagging cod, halibut, witch and herring. Species association studies. Estimates of harp seal population. Studies on argentinies, silver hake, sea scallops and fishing discards. (Res.Doc.12)
- b. Poland: Research trawler Wieczno. Hydrography. Sampling research trawler catches in 4WX. Sampling herring in 4W. Length, age and maturity studies, and catch per unit effort for argentinies. (Res.Doc.14)
- c. Spain: Commercial otter trawler Aquilon. Length, age and studies of age and size at first maturity in cod. (Res.Doc.19)
- d. UK: Sampling cod, haddock, and pollock from factory trawlers for length and age. Continuous plankton recorder surveys. (Res.Doc.13)
- e. USSR: Five hydrographic cruises by research exploratory vessels with standard sections and studies of conditions in fish concentrations. Length and age composition of silver hake. (Res.Doc.18)
- f. USA: Albatross IV in 4X. Haddock fishery in 4X. Surveys in 4X to determine distribution of ground fishes and year-class abundance of haddock. The 1963 year-class was well represented. Cooperative studies of the commercial fishery were continued in collaboration with Canada. (Res.Doc.9)

2. Hydrography

Canadian observations showed surface temperatures to be generally lower than average especially from the Scotian Shelf (4VW) to the Bay of Fundy (4X). Bottom temperatures in the Bay of Fundy and along the Halifax monitoring section (4W), run 7 times, were also lower than average. In these areas water temperatures were generally lower than in 1963. Five cruises by USSR also showed water temperatures lower than in 1963 attributed to increased influence of cold Labrador water (Labrador Current). Late in 1964 water temperatures approached those of the previous year. Canada continued the study of non-tidal drift at both surface and bottom.

3. Plankton

Canada studied daily patterns of plankton and fish vertical movements in Chaleur Bay (4T). Zooplankton volumes there seemed lower than in 1963 and 1962. Continuous plankton recorder surveys were continued in 1964 by the UK. Egg and larva surveys were carried out by Canada in 4TVW.

4. Benthos

Canada has begun a study of the relationships between bottom sediments and the abundance of certain benthic organisms.

5. Cod

Using echo sounding and otter trawls, Canada studied distribution and abundance of cod in 4V_n in relation to depth, fish size, age and feeding. Maturity studies in 4T indicated the spawning period as from May to October with a peak in June. Computer analyses of stomach contents showed cod to change diet with growth from crustacea, to molluscs and echinoderms, to fishes. Cod samples from commercial catches were taken by Canada, Spain and UK. Canada tagged cod in 4RST.

6. Haddock

Canadian predictions that 1957 and 1959 year-classes would be relatively strong on the Scotian Shelf and that 1958 and 1960 relatively weak were borne out by samples of 1964 landings. Differences between day and night trawl catches were studied and the results of exhaustion caused by capture in trawls measured. UK and USA sampled commercial catches.

7. Silver hake

Canada analysed information on silver hake obtained in surveys from previous years. Observations in 1964 in 4W showed spawning to take place mainly in September and October. Examination of USSR catches for length and age showed most of the catch composed of 3- and 4-year-olds. Catches were mainly 3-year-old males and 4-year-old females which had attained maturity for the first time at a mean length of about 30 cm.

8. Halibut

Canada tagged 174 halibut in the Subarea and collected age composition material.

9. Flounders

Analyses of cod stomach contents in 4T by Canada showed that cod grazing significantly affects the mortality rate among young American plaice.

Fishing records were studied by Canada to show the most productive areas for witch. Best catches were usually deeper than 200 m. Age distribution and growth rate in relation to sex and location were based on otolith examinations. Canada carried out tagging in 4V and the eastern part of 4W.

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10. Herring

Routine sampling for length and age and sexual state of herring in southwest 4X off Nova Scotia and in Passamaquoddy Bay was continued by Canada. Poland also reported sampling herring in 4WX and compiled records of frequency of occurrence of herring on the Scotian Shelf. Herring in 4X tagged with spaghetti tags by Canada were found to produce about 10 times as high a proportion of recoveries as opercular tags. Canada also explored length and weight losses in samples of herring preserved in different ways.

11. Argentines

Canadian exploratory fishing for argentinines found them absent in the Bay of Fundy (4X) and scarce in the Gulf of St. Lawrence (4T) but available in quantity in 4VWX. Extensive work by Poland studied argentine sizes, yields on different fishing grounds and at different depths, and ages and sexual condition. On Browns Bank (4X) fish taken on deeper grounds were larger and older with a higher proportion of males. (Res.Doc.34)

12. Other research

Canada carried out other studies of ICNAF interest. Mackerel sampled for age and length in 4X showed younger fish entering the fishery with the advance of the season. Laboratory studies on growth of sea scallops were continued. Photographic surveys of harp seals on the ice in 4T and tagging-recovery calculations of abundance gave different but comparable estimates of the population (95,000 and 120,000) for the area studied. Cod discard studies in September in 4TR showed that all fish caught were landed. Species association studies were begun to determine the way in which one kind of fish affects others in the same area. UK sampled commercial landings of pollock off Nova Scotia.

13. Status of the fishery

Commercial fishing was carried out in Subarea 4 by the following ten countries which reported landings: Canada, East Germany, France, Federal Republic of Germany, Iceland, Portugal, Spain, UK, USSR, and US.

Total groundfish landings fell slightly to 520,000 from 531,000 metric tons in 1963 as a result of reduced landings of silver hake. Herring landings increased to 135,000 metric tons from 109,000 metric tons in 1963.

Cod catches increased to 231,000 metric tons although Canadian landings from 4T were down somewhat. US landings from 4X were up about 8 percent. Cod sizes showed little change from previous years throughout the Subarea. Spain, France and Portugal had productive fisheries in the Subarea.

Haddock landings increased again to 60,000 metric tons. Canadian catches in 4X were up by 25 percent when effort was diverted from 4W. US landings, almost entirely from 4X, increased to 8,600 metric tons in response to increased effort and improved catch per day. A decline in abundance is anticipated in 4X until the 1962 and 1963 year-classes are recruited in 1967. USSR landings were up by about 50 percent to 5,500 metric tons.

Canadian redfish landings were up 7 percent and were made mainly from 4RST by exploiting the 1956 year-class. US landings from the Subarea increased to nearly three times the 1963 landings because of a shift in effort from Subarea 3 to 4RST. USSR catches were down to 4,000 metric tons from 12,000 tons. Total landings from the Subarea were little changed at about 52,000 metric tons.

Flounder landings increased to 32,000 metric tons. Canadian landings continued to increase. Discards of American plaice continued high in 4T.

The USSR landings of silver hake declined from 123,000 metric tons to 81,000 metric tons attributed to unfavourable fishing conditions resulting from low water temperatures during the fishing season.

Canadian herring catches were up by about 23 percent to 141,000 metric tons due to good catches in the Bay of Fundy section of 4X where a record catch of 84,000 metric tons was produced. USSR landings were little changed from 1963.

Catch per unit effort of all species combined by USSR factory trawlers increased to 2.97 tons per hour fished in 1964 from 2.94 tons per hour in 1963 and 2.15 tons per hour in 1962.