

ANNUAL MEETING - JUNE 1961Summary of Research Work Carried out in Subarea 5 in 1960

Research Conducted and Status of the Fisheries in Subarea 5, 1960

by Herbert Graham

Landings from Subarea 5 in 1960

Canadian landings of groundfish for the subarea in 1960 were 2,832 metric tons, up 1,134 tons over 1959. Most of this increase (2,222 metric tons) was in the category of "other groundfish", consisting of pollock, hake, cusk, catfish, skate and scale. Canadian landings of cod were 132 tons and haddock 163 tons. Canadian landings of sea scallop meats were 3,400 metric tons, up markedly from the 2,000 metric tons landed in 1959.

United States landings of groundfish for the subarea in 1960 were 194,000 metric tons, as compared with 255,000 metric tons in 1959. The drop was due largely to a decrease in the activity of the industrial fishery, which took only 23,000 metric tons in 1960 as compared with 85,000 metric tons in 1959. Redfish landings dropped from 15,000 metric tons to 9,000 metric tons; haddock increased from 42,000 metric tons to 47,000 metric tons. Whiting held steady at about 48,000 metric tons; flounder increased 3,000 metric tons to 27,000 metric tons, while cod decreased 2,000 metric tons to 14,000 metric tons. Pollock held steady at 8,000 metric tons and "other fish" was up slightly to 7,000 metric tons. United States landings of sea scallops were 10,000 metric tons, surpassing the record year of 1959, when 8,500 metric tons were landed.

Research

The United States and Canada continued their sampling of the commercial catch of major species taken in Subarea 5 (see Documents Nos. 8 and 10).

Abundance indices for Georges Bank haddock maintained by the United States show that the downward trend experienced in recent years continued and indices reached a low in 1959. The index for 1960 was higher than for any year since 1956. The increased abundance is due to a large year-class (1958) recruited in 1960. The fishery should improve in 1961 as the fish in the 1958 year-class grow to larger size. Fall survey cruises in 1960, designed to assess the abundance of pre-recruit haddock, showed relatively low numbers of young-of-the-year. Thus, it is expected that scrod landings will drop in 1962, which may possibly have an effect on total landings, depending upon the abundance of the 1958 year-class which will then be four years old.

An analysis of tagging records showed fewer recaptures of haddock with evidence of scale loss or subcutaneous bleeding as compared with undamaged fish at time of tagging. Early returns were higher for spaghetti tags than for Petersen disc tags. Both types of tag were attached through the dorsal musculature.

Three research vessel cruises were made during the summer and fall to three areas where small haddock are taken by various small boat fisheries. Prior to 1960, when the industrial fishery was operating, samples from these areas were obtained from industrial landings. Comparison of samples from commercial landings with those from the research vessel indicates some avoidance of the small haddock by fishermen. However, analysis of the samples show that the industrial fishery (when operating), the silver hake fishery, and the animal food fishery do take sufficient quantities of small haddock to create a management problem. This analysis is presented in Document No. 19.

United States studies of cod have continued. The initial program which comprised studies of the number of stocks, migrations, and growth rates has now been largely completed. Determination of age compositions have now been started. These data are essential to population studies of the fish in the subarea and should provide vital information on the effects of fishing.

Indices of abundance for silver hake maintained by the United States since 1956 showed some decrease in abundance on all grounds fished. The cause of this is

Survey cruises were conducted to determine the winter distribution of silver hake, which in summer is fished in comparatively shoal waters. The largest number was caught in depths greater than 100 fathoms, in temperatures ranging from 44°F. to 52°F. (6.7 - 11.1°C.) in the general area between Cape Cod and Cape Hatteras.

Redfish abundance indices maintained by the United States show a stabilized condition over the last decade in the Gulf of Maine.

Studies of the Eastport stock of redfish continued. Analysis of recaptures of tagged fish has provided valuable information on growth rate, natural mortality, and estimation of population size. Reports on this work were submitted to the Marking Symposium in Woods Hole.

Yellowtail flounder landings in the United States have increased greatly during the last few years due to large year-classes spawned in 1955 and 1956. Another large year-class appeared in 1958. This entered the fishery in 1960 and should help to maintain the fishery in 1961. United States research during the past year has centered on stock identification, relative abundance, and age and growth studies. Emphasis can now be directed toward obtaining a series of age compositions for population studies.

United States benthic studies this year indicated that the pronounced differences in the haddock's diet from one locality to another on Georges Bank are due largely to differences in available food on different parts of the bank. Marked variations in species composition and quantities of benthic organisms were correlated with sediment type. Gravels and coarse sand supported greater numbers of benthic organisms than fine-grained sediments.

Canada carried out tagging studies on pollock in Passamaquoddy Bay, which lies just over the border in Subarea 4. Pollock tagged here yielded some recoveries from near Cape Cod as well as from southwestern Nova Scotia.

The United States continued its investigations of the sea scallop and the sea scallop fishery. Data on location fished and days spent on the grounds are obtained from vessel captains at the return of each trip. Weight of meats is obtained from the buyers. A monthly summary of the landings by unit areas from 5Z is sent to ICNAF headquarters and to the St. Andrews Biological Station of the Fisheries Research Board of Canada. Canadian scientists have sent similar data for their fleet to the United States.

Data on size composition of scallop landings were obtained from samples of shells brought into port by fishermen. The United States made one cruise with a research vessel using small mesh gear to collect quantitative length-frequency samples of the populations on the various fishing grounds, as well as samples for calculating growth and mortality rates.

Canadians made two trips to Georges Bank on commercial scallop draggers to observe industrial practices and on a United States research vessel to observe methods of investigation.

The growth rate of Georges Bank sea scallop is now well established. United States research during the year has provided sufficient data on mortality rates that it is now agreed that population studies have reached the point where a statement can be made regarding the optimum age of first capture. The studies indicate that an increase in ring size of scallop dredges above that now in use would result in increased sustained yield per recruit (see Document No. 31).

Both Canada and the United States have initiated early life history studies of the sea scallop. United States studies of gametogenesis show that sexual products are rapidly regenerated during winter and spring and the animals remain fully ripe for almost six months before spawning. Evidence of mass mortalities on certain parts of the bank have been observed by both Canada and the United States.

Canadian experiments with "cluckers" (attached empty shells) show their lifetime to be greater than formerly supposed. This decreases estimates of normal natural mortality rate used in forecasts of conservation values of various fishing practices.

Hydrographic work in Subarea 5 during the year consisted of observations

made through co-operating agencies and by the United States research vessel on its series of cruises in the subarea. The lightship program, consisting of daily surface temperature and salinity observations, bathythermographs daily, and bottom water temperatures weekly, was continued. Drift bottles have been released from lightships and from weather ships.

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