Serial #39

The Status of the Ground Fisheries and the Research Program of the United States Government in the Convention Area

by Herbert W. Graham

A report on the status of the United States ground fisheries in the Convention area was presented to the Commission in April 1951 and constituted Document 9 of the First Annual Meeting.

The general condition of the fisheries has changed very little since that date. Some preliminary estimates of the 1951 total landings of all fish (fin fish and shellfish) can be made at this time. Final figures will be available for the Second Annual Meeting to be held in St. Andrews, New Brunswick. Total landings in New England ports in 1951 probably exceeded 775 million pounds. This is the second largest production in the history of the industry. The highest landings were in 1950 when production exceeded 876 million pounds.

Haddock

The preliminary estimate for the 1951 haddock catch from the Convention area is approximately 135 million pounds. This figure is about the same as for 1949 and 1950 and lower than the figure for several years just previous to 1949.

The landings of haddock from Georges Bank (Subarea 5) in 1951, however, were a little higher than the landings for the last two years due to the strong dominant year class of 1948. This year class accounted for 54 percent of the landings for the year. Present indications are that the 1949 year class is of only average strength or less.

The method for predicting the landings of haddock from Georges Bank developed last year has proven successful in the first prediction. This method depends upon the accurate knowledge of the relative strength of year classes in the Georges Bank population. The prediction for 1951 was 92.8 million pounds whereas the actual landings were 91.3 million pounds, an accuracy of 98.6 percent. The prediction for 1952 based on 1951 data is 89.0 million pounds, assuming the same fishing effort as in 1951.

Actual fishing on Georges Bank during the early months of 952 has been unusually light because of the unusual abundance f fish on Nova Scotian Banks during that time. Up until the middle of April, the larger trawlers had practically deserted Georges Bank for the much richer grounds off Nova Scotia.

The research of the Fish and Wildlife Service in the North Atlantic during the past year was centered about studies pertaining to the proposed mesh regulation for haddock fishing in Subarea 5.

An intensive study was made of the haddock data accumulated for Georges Bank with the view toward determining the best possible way of managing the Georges Bank fishery.

Theoretical models were constructed to show the catch per recruit for various mortality rates and ages of first capture. Models were also constructed to show the effects on landings of changing the age of first capture of the haddock on Georges Bank with the present fishing effort.

All available data on mesh selectivity were assembled in order to refine our knowledge of the sizes of mesh which are required to effect the escapement of undersized fish.

A study was made of the methods used in measuring mesh size. A gauge was designed and constructed for measuring the inside stretched mesh opening under a standard pressure.

A program of observing the fish discarded at sea by commercial trawlers was instituted. Several trips have been made and a program has been initiated whereby an observer will be at sea each week of the year insofar as boat schedules will permit. Data on quantities, numbers, sizes, and ages of discarded haddock are being collected. It is planned to have this work continue up to and after the regulation becomes effective.

A study was made of the possible effect the mesh regulation might have on boats fishing for species other than haddock.

The investigation of the comparative growth rates of Georges Bank and Browns Bank haddock was completed. The results demonstrated the independence of the two stocks of fish.

A study of the vertebral counts of various populations of haddock on the banks within the Convention area was completed. Analysis of these data indicated an individuality of a number of stocks in Subareas 3, 4, and 5. Of particular interest was further evidence of the distinctness of the Georges Bank stock as opposed to the haddock on Browns Bank. Significant correlations were found between number of vertebrae and temperature of the water.

The analysis of landings of haddock from Georges Bank for the years 1931 to 1948 by pounds, numbers, and sizes was completed. This study summarizes basic information required for the appraisal of changes taking place in the fishery.

Redfish

The redfish fishery has continued its phenomenal rise reaching its highest level of production in 1951 amidst alarms from the industry that stocks had been depleted in nearby areas. More vessels made longer trips to distant banks to secure adequate fish to fill the demand for this product.

The preliminary estimate for the 1951 landings of redfish is about 261 million pounds. This is an all time record surpassing the 1950 landings by 53 million pounds. However, during the early months of 1952 demand suddenly slackened and production was curtailed accordingly.

Exact data on the relative amounts caught on the different banks within each subarea are not yet available but it can be said at this time that most of the increased landings of redfish in 1951 were due to increased catches from the Convention subareas 4 and 3, rather than from increased production of the New England Banks. Beginning in the summer of 1951 the redfish fleet extended its fishing to the Newfoundland Banks (Subarea 3). A considerable proportion of the landings during the last half of the year came from that subarea.

There is a widespread opinion throughout the industry that the populations of fish are being reduced and that the size of fish landed is likewise diminishing. The Fish and Wildlife Service has been studying this fishery since 1942.

The populations of redfish as measured by catch per day have, indeed, dropped off appreciably in particular areas. In the Gulf of Maine, for instance, the catch per day dropped from 18 thousand pounds in 1943 to 10 thousand pounds in 1949. The average size of fish landed from this area, however, has not diminished from 1937 to 1950.

The Nova Scotian Banks (Subarea 4) are much richer redfish grounds. For this area our records of abundance begin only in 1945. For one area in these grounds, around Sable Island, the abundance index reached 43 thousand pounds in 1946 and then declined to 19 thousand pounds in 1950.

Thus, the initial abundance on these banks has been considerably reduced although not nearly to the extent it has in the Gulf of Maine.

The Newfoundland Banks (Subarea 3) have very rich redfish grounds judging from reports of the fishermen but no index of abundance has been developed for this area as yet.

Continued intensive study of the redfish populations is required to yield information which is needed for the sound management of this fishery.

Present studies of the redfish include research on the determination of age by otolith readings; studies of growth rates in various populations; studies of the incubation period, fecundity values, and spawning periods; studies of parasite incidence as related to stocks, and determination of vessel efficiency in order to improve the accuracy of the abundance indices.

Present indications are that many independent stocks of redfish are involved in the fisheries. Intensive studies of particular stocks may be necessary in order to arrive at the basic information necessary for sound management.

Census

The census data collected by the Albatross III on Georges Bank are now being analyzed. The distribution of species conforms well with a theoretical distribution. The species composition of catches is significantly related to type of bottom and does not vary significantly with depth over the range 0-150 fathoms. The availability of several species shows a statistically significant 24-hour cycle. Redfish, for instance, are more available during daylight hours.

The concentrations of fish agree in a general way with concentrations of fleet activity but the concentrations of haddock as derived from Albatross III data do not agree well with the values obtained by analysis of commercial catches. Analysis of commercial landings appears to be a more reliable method of determining concentrations of fish of commercial sizes because of the more representative sample obtained.

A study of the relation of year class strength with wind direction over Georges Bank has been initiated as part of a program of investigation of the causes of the fluctuations in brood strength from year to year.

Research Planned

Plans for future research call for continuation of present studies and some expansion of investigations relating to the proposed mesh regulation.

Intensive collection of data on catch per effort and age and size composition of the catch and landings will be continued.

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The following abbreviations have been used:

Report of the Commissioner of Fish and Fisheries -- Report

Bulletin of the United States Fish Commission, Bulletin of the Bureau of Fisheries, Fishery Bulletin of the U.S. Fish and Wildlife Service -- Bulletin

Special Scientific Report -- Spec. Sci. Rep.

Special Scientific Report -- Fisheries -- Spec. Sci. Rep. Fish.

U.S. Bureau of Fisheries, Fishery Circular -- Fish. Circ.

U. S. Bureau of Fisheries, Investigational Report -- Invest. Rep.

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