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Summary of Research Work carried  
out in Subarea 3 in 1960

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Researches

The research information available for Subarea 3 is increasing rapidly as more countries enter the field and increase their research and especially as background information increases with time.

Very interesting new information on the distribution of larval redfish and on the abundance and seasonal distribution of many plankton organisms is being produced by the Continuous Plankton Recorder Surveys carried out by the Scottish Oceanographic Laboratory and reported in Doc. No. 6 for redfish and in Doc. No. 14 for plankton.

The United States redfish fishery on the Grand Bank (31 million pounds in 1960; Doc. No. 8) has shown no decline in catch per ship per day since 1954 but catch per ship per day is lower than at the beginning of the fishery in 1951-53. The United States continued to sample its redfish landings from the subarea. Considerable hydrographic work in the subarea has been carried out by the International Ice Patrol.

Canada has continued the usual life-history researches on cod, haddock, redfish and American plaice. The cod catch per unit effort in the Bonavista area (Division 3L) has continued its gradual decline and is now only about half that of 1954. This is an area where during the period after 1954 there was a great increase in the amount of European trawler and longline fishing in addition to the long established local inshore and longline fisheries. There have been interesting observations on the effects of hydrography on inshore cod catches by traps which benefit by the prolonged presence of a relatively shallow layer of slightly warmed water near shore. Danish-seine hauls for young cod of precommercial sizes have been continued on the beaches of the east coast of Newfoundland in the hope of predicting year-class size. Haddock surveys length measurements and age readings showed that the present haddock fishery is sustained chiefly by the 1955 year-class with some addition, mainly from smaller 1956 and the disappearing 1952 and 1953 year classes. There have been no successful year classes of haddock in the period 1957-60. As a result a crisis in the haddock fishery is evident with a rapidly declining population of haddock in view at least for the period 1962-64. The routine hydrographic surveys across the Labrador current were carried out in July-August. A list of the locations and times of Canadian oceanographic observations in the subarea is given in Doc. No. 21.

The United Kingdom measured and sampled cod for age and growth studies during a voyage of the Fairtry I to the subarea

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(Doc. No. 13).

Spain carried out length measurements of cod (Doc. No. 15), and reported results since 1955 on age growth of cod of the subarea in Doc. No. 18. There is no evidence of great variations in year-class strength.

Portugal (Doc. No. 17) collected length-frequencies and otoliths of cod from her trawlers fishing in the subarea.

West Germany sent a scouting trawler to the subarea in April-May. The distribution and abundance of redfish, cod, haddock and pollock were investigated (Doc. No. 26). Length and otolith sampling of cod and redfish and racial investigations on redfish were continued.

The USSR (Doc. No. 27) sent one research vessel and 5 scouting trawlers with research scientists on board to the ICNAF area for a total of 13 cruises. The information on the number of fish examined is not separated by subarea but in all 439 plankton samples were taken, 105,000 cod, 19,000 haddock and 256,000 redfish were measured and material for age determination was collected from 12,000 redfish, 8,000 cod and 1,500 haddock. The USSR has also contributed a valuable account of division of stocks of mentella-type redfish and a hypothesis of larval drift to account for the distribution of these stocks of redfish in Subareas 2 and 3. In 1960 the USSR diverted a large proportion of its fishing effort from redfish to haddock and cod.

France (Doc. No. 33) sampled the cod caught by a French trawler in Division 3P in March and April. Lengths, stages of sexual maturity and otolith collections were obtained.

#### Landings

Cod landings from Subarea 3 in 1960, exclusive of the USSR and Iceland, were 407 thousand metric tons compared with 425 thousand metric tons in 1959 and 286 thousand metric tons in 1958. The highest landings in recent years were in 1954 when 475 thousand metric tons were landed.

Redfish landings from Subarea 3, exclusive of Iceland, were 98 thousand metric tons. The 1959 catch was 212 thousand metric tons and the 1959 catch exclusive of Iceland was 187 thousand metric tons. The drop of about 100 thousand metric tons was partly due to a diversion of the USSR fleet from redfish to haddock and cod, and partly to an apparent decline in the abundance of redfish.

Haddock landing, exclusive of the USSR and Iceland were 30 thousand metric tons compared with 35 thousand metric tons in 1959 and the highest landings of 104 thousand metric tons in 1955. The USSR, however, entered the haddock fishery for the first time in 1960 and in Doc. No. 27 has stated that 40% of the USSR landings of 220,000 tons in 1960, were taken in 3N. The landings from 3N evidently consisted chiefly of haddock. Estimating about 70 thousand metric tons of the 79 thousand metric tons of cod and haddock caught in Subarea 3 by the USSR to be haddock, the total landings of haddock become 100 thousand metric tons. This is an increase of about 65 thousand metric tons over 1959 and approximately the same as the 1955 landings. It is hoped that these rough figures can be corrected at an early date when the USSR combined statistics have been separated into cod and haddock. In addition to these landings there are landings by the USSR of 35,000 metric tons, as yet unassigned by species or subarea.

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