

Serial No.1403Document No.107ANNUAL MEETING - JUNE 1964Summary of Research Work carried out in Subarea 1 in 1963

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The present summary is based on the research reports from the following countries: Denmark, Germany, Iceland, Norway, Portugal, Spain, U.K. and U.S.S.R.

A. Status of the fisheriesI. Coda. Inshore fisheries

The cod fishery carried out by Greenland fishermen in inshore waters was very poor in 1963. The landings dropped from 36.3 thousand tons in 1962 to 23.3 thousand tons in 1963. The cod did not come to the shore following the capelin as usually in May and June for which reason the pound net fishery failed completely. Also later in the season the cod failed to appear in the inshore waters. This phenomenon may perhaps be ascribed partly to low water temperatures and partly to unfavourable meteorological conditions in winter and spring. The former was unusually warm and the latter was extremely cold and stormy. These conditions have probably had an influence on the production of plankton which was very poor and adverse influence on the food organisms on which the cod depend.

b. Offshore banks

The best season for the cod fishery was February to May, while summer and autumn gave rather poor fishing.

Heavy concentrations of cod were found in April and May in the Subdivisions 1D and 1E on the western slopes of Banan, Fylla and Dana Banks. In 1F the occurrence of cod seemed to have been lesser than in previous years.

Germany and U.K. had an increase in their landings. Germany increased the effort by 13.5% and had an increase in landings by 10%. In West Greenland waters the German catch was about 118 thousand tons and off East Greenland the catch was about 11 thousand tons.

U.K.'s catches increased in 1C, D and E from 5 thousand tons in 1962 to 12 thousand tons in 1963, while the catches in 1F increased very slightly. The total landings were about 27 thousand tons. The increase was mainly due to more fishing (nearly double that in 1962). In C, D and F, there was a rise by about 40% in the catch per unit effort. In 1F the catch per unit effort fell though the effort rose. Iceland carried out a fishery especially in 1D and 1E where the greatest concentrations of cod were found. The catch per trip was about 2 1/2 times that of 1962. The total catch was about 4000 tons. In East Greenland waters the catch was about 1400 tons. Spain has only fished 479 tons in Subarea 1 in 1963. Spanish trawlers tried in late summer on Store and Lille Hellefiske Banks but due to poor results they returned to Subarea 2.

Several USSR trawlers fished in Subarea 1 in the first half of 1963. In the second part of the year only one scouting vessel and one

fishing ship operated in the subarea. The landings of cod were 5053 tons. Dense concentrations of cod were found in February and March on Banan Bank (1C) in 130-150 m depth and on Dana Bank (1D). In June good cod fishing was carried out on Frederikshaab and Dana Banks (1D and 1E), and in October-November cod were caught on the southern slope of Store Hellefiske Bank.

Portugal's total catch of cod in Subarea 1 was about 63,200 tons, which means a decrease by 30% from 1962.

The output of the cod fishery carried out by Norway was about 19,400 tons which is a decrease from 1962 when the catch was 34,000 tons.

The Faroes cod fishery dropped from about 96 thousand tons in 1962 to 78 thousand tons in 1963.

The landings of cod from Subarea 1 by all nations was in 1962 about 451 thousand tons. In 1963 it was about 382 thousand tons which means a decrease by 69 thousand tons.

c. Forecast for the cod fishery in Subarea 1

The cod fishery in 1964 will probably depend mainly on the year-classes 1957 and 1956, especially 1957. It must be expected, however, that both year-classes will decrease, 1956 more than 1957. The year-class 1958 will be of some importance mainly in Subdivision E and probably in F.

The young year class 1960 will enter the commercial catches for the first time while the year class 1953 and older year classes will nearly disappear.

The catches will consist of cod of sizes between 70-80 cm together with many small cod of about 45-55 cm. There is reason to believe that the output of the cod fishery will be smaller than in 1963.

## II. Redfish

Only three nations have carried out redfish fishery to some degree: namely: Germany, Iceland and USSR.

The German catches in Subarea 1 decreased by 23% owing to lack of fish.

It seems like the stock of redfish has decreased since 1961. The average annual catch per fishing day dropped from 13.9 tons in 1959 to 5.5 tons in 1963. In the second half of the year the German fishery off East Greenland was strongly intensified. But also in this region there are several indications that the stock of redfish is decreasing.

Iceland reports that redfish seem to have been less abundant in Subarea 1 in 1963 than in 1962.

USSR has carried out fishery for redfish in April, June, July and in November, December mainly on the western slope of Banan Bank.

In April 30-40% of the trawl catches at 275-300 m depth were redfish. It was found that redfish were more abundant in November-December than in spring and summer. The sizes were between 35-40 cm.

The total landings of redfish from Subarea 1 were in 1963 42,986 tons compared to 60.4 thousand tons in 1962. The decrease was 17.4 thousand tons.

### III. Other groundfish

The small fjord cod (*Gadus agac*) occur in inshore waters in West Greenland in increasing numbers year by year. This fish, which was very common before the warm period set in about 1920, nearly disappeared during this period and at the same time the cod grew more and more numerous.

The Arctic fish, the Greenland Halibut, which also decreased in number during the warm period is also more common in recent years and is again like in the years before 1920 an important fish to the Greenlanders' fishery. The landing of Greenland Halibut was 1590 tons in 1963 which is double the amount of the landing in 1955.

The increasing occurrence in West Greenland waters of *Gadus agac* and Greenland Halibut makes it possible that Greenland is going into a cold period. At the present time, however, it is impossible to predict if this period will be of a short or a long duration.

### IV. Atlantic Salmon

The fishery on Atlantic Salmon (*Salmo salar*) is a new fishery in Greenland. From 55 tons in 1960 it increased to more than 200 tons in 1963.

Recaptures of tagged salmon have shown that salmon from both sides of the Atlantic move to West Greenland on feeding migrations where they occur along the coast in inshore as well as in offshore waters.

Until now 26 tagged salmon have been recorded. The places where they had been tagged were as follows: Maine (USA) : 1 spec.; New Brunswick and Newfoundland: 10; England: 8; Scotland: 5; and Sweden: 2.

Most of them have been tagged as smolts (length 17-20 cm). The recaptures have been made in most cases 1 or 1 1/2 years after tagging.

### Special Research Studies

#### I. Hydrography and Plankton

Hydrographic work and collection of plankton has been made according to the Norwestlant research programme.

1963 seemed to be an abnormal year colder than 1962.

The amount of plankton was lesser than in previous years. *Calanus* larvae, the most important food for fish larvae appeared unusually late.

#### II. Biological Studies of Fish by Species

##### a. Cod

##### 1. Occurrence of cod eggs and larvae

In inshore waters and in the fjord the occurrence of cod eggs was rather poor.

In April large numbers of cod eggs were found in the Davis Strait and in the southern part of the Denmark Strait. The northern boundary for the distribution of cod eggs was about 65°N in the Davis Strait. The temperature on the surface where eggs were found was between 1° and 3°.

Cod larvae were found in much smaller amount than in all previous years in which research work has been carried out. The poor

occurrence of cod larvae can possibly be explained by the late occurrence of their most important food, the calanus larvae. There is reason to believe that under such conditions the greatest number of cod larvae have died by starvation.

2. Occurrence of small cod (age-groups I, II and III)

Catches of small cod with fine meshed gears in inshore waters showed that the two year-classes 1961 and 1960 must be considered as good year-classes, especially 1960, while 1962 seemed to be a rather poor year-class.

3. Year-classes in commercial cod stock

As in 1962 the two rich year classes 1957 and 1956 predominated in the catches. The former in the northern Subdivisions (B-D) and the latter in the southern (E and F). The 1957 year class had a more southern distribution than in previous years. The year class 1958 was rather common especially in Subdivision 1E. The old year classes 1953, 1950 and 1947 were without any importance.

4. Tagging experiments with cod

Tagging experiments have been carried out by Denmark and Germany. Germany has tagged 93 cod in Subdivisions 1D and 1E. Denmark has tagged 4616 cod including 1840 small cod (age-groups II and III) distributed in all Subdivisions.

Germany reports 135 recoveries from 2081 taggings in previous years in Southwest and Southeast Greenland. 26 were recovered off Iceland, 6 off East Greenland.

b. Redfish

Redfish larvae occurred in smaller numbers than in 1961. They were generally found in deeper water layers than usual and were distributed farther to the West.

USSR have studied the distribution of small redfish (4-6 cm) in the Davis Strait by examining the stomach content of cod. In that way it was found that great numbers of young redfish must be common in November in Subdivisions from 1F to 1C (western slope of Banan Bank). In December young redfish were found in cod stomachs on Store Hellefiske Bank. This shows that there are nursery grounds for redfish in the Davis Strait as in some of the West Greenland fjords. In Godthaab Fjord growth studies on small redfish have been continued. A number of 743 redfish has been tagged in the Godthaab Fjord.

c. Haddock

German trawlers have caught haddock on Walloe Bank off Southeast Greenland in 1963. The year class 1959 predominated in the catches. The growth rate was very much like the growth rate of the Iceland haddock but the composition of year classes tends to show that the haddock originate from East Greenland where spawning haddock were found in April 1963 on Fylkir Bank.