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STATUS OF FISHERIES AND RESEARCH

CARRIED OUT IN SUBAREA 4 in 1971

by

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Reports on research in Subarea 4 were submitted by Canada, France (St. P), Japan, Poland, Spain, USSR, United Kingdom, and United States. Research Documents, 1, 10, 11, 12, 17, 18, 21, 29, 33, 36, 37, 39, 40, 41, 42, 43, 45, 51, 52, 53, 54, 55, 57, 98, 111, 120, 123, and 124 all include information of interest to the Panel members.

1. Status of Fisheries

The nominal catches of the major species fished in Subarea 4 are listed in Table 1. The total catch dropped about 130 thousand (K) tons (12%) below 1970, the peak year, but was slightly higher than 1969, the previous high. The greatest decreases were in herring (105K tons), cod (45K tons), and silver hake (40K tons). Redfish rose 23K tons and flounders 13K tons.

Most of the herring (279K tons) was taken by Canada; almost half (134K tons) from 4T. Canada took more than half the cod (123K tons), Spain was next (48K tons), while France (M) took 25K tons. Haddock which averaged about 50K tons in the early 60's, and rose to a peak of 85K tons in 1965, was down to 31K tons with 17.5K tons from 4X of the 18K ton quota.

Table 1. Nominal catches from Subarea 4, 1967-71
(thousands (K) of metric tons, roundfresh)

| | 1967 | 1968 | 1969 | 1970 | 1971 |
|------------------|------|------|------|------|------|
| All Species | 680 | 882 | 915 | 1069 | 936 |
| Cod | 194 | 247 | 206 | 262 | 217 |
| Haddock | 49 | 46 | 42 | 28 | 31 |
| Redfish | 88 | 104 | 111 | 119 | 142 |
| Flounders | 43 | 74 | 54 | 43 | 56 |
| Silver Hake | 2 | 3 | 46 | 169 | 129 |
| Other Groundfish | 43 | 38 | 34 | 32 | 50 |
| Total Groundfish | 419 | 512 | 493 | 653 | 625 |
| Herring | 261 | 370 | 422 | 416 | 311 |

2. Work Carried Out

- a) Canada. Dispersal of herring larvae from 4X. Distribution of ichthyoplankton in 4T. Sampling for pollutants between Halifax and Bermuda. Investigations of the evolutions of the thermocline in the Gulf of St. Lawrence. Groundfish survey, March, July and September, 4X to 4T. Age structure of 4T cod. Haddock recruitment in Div. 4V-W and 4X. Migratory behavior and feeding habits of yellowtail flounder. Ecology of sand lance. Parasites of flatfish. Food habits of sea ravens and cod. Submersible studies of the effects of dredging on sea scallops. Migration and racial studies of herring. Tagging of salmon smolts, grilse and salmon. Biochemical racial studies on salmon. Physical characteristics of otter trawls.
- b) France. (St. P) Trawl surveys were made in 4Vs, 4W, 4X. Ichthyoplankton surveys in 4X.
- c) Japan. Length composition of redfish and argentines in the catch.
- d) Spain. Length, age, and sex ratio of cod in 4Vs.
- e) USSR. Growth rate and meristics of argentine in 4VWX. Age composition of herring and silver hake. Trawl survey on Scotian Shelf. Ichthyoplankton survey in 4X.
- f) United Kingdom. 2,345 miles of CPR records.
- g) United States. Abundance of haddock in 4X. Sexual maturity and spawning of 4X haddock in cooperation with Canada. Trawl survey on Scotian Shelf. Ichthyoplankton survey in 4T.

3. Hydrography

Water temperatures on the Scotian Shelf were warmed in 1971 than in 1970.

4. Cod.

The 4T-Vn stock abundance is at about the long term level. Growth rate has increased, leading to earlier recruitment to the fishery. This stock can stand a moderate increase in F. The inshore stock in 4Vn seems to be stable.

Abundance in the 4Vs-W stock seems to have declined slightly. The 1966, 1967, and 1969 year-classes are poor but the 1968 year-class appears to be good. If F is held at its present level (0.49), a 1973 catch of about 60K tons will be close to the maximum sustainable yield.

Abundance of the 4X offshore stock is extremely low and continuing to decline. Prospects for recruitment are poor. The present fishing mortality rate is twice that calculated to give maximum yield per recruit.

5. Haddock.

The 4V-W stock will have poor recruitment through 1975; the 1967-70 year-classes are all poor. Stock size has declined from about 78K tons in 1958-64 to about 19K tons in 1972. Removals from this stock should be minimal, preferably by closing the fishery and restricting the landings to the by-catch.

The 18K ton quota in 4X in 1971 was not quite reached. Abundance continues to decline and the 9K ton quota for 1972 is not likely to arrest it. The 1964-71 year-classes were all very poor. Complete closure of this fishery would still result in a 6K ton by-catch.

6. Herring.

There are two stocks on the Scotian Shelf, Banquereau and 4Xa. The 4Xa stock does not contribute to the New Brunswick juvenile fishery.

7. Silver Hake.

The stocks in 4X are considered separate from those in 4W. USSR data from 4W show the population increasing from 1969 to 1971 with 3 and 4 year olds dominating the catch.

8. Salmon.

The Northwest Miramichi salmon populations are low and recovery would require drastic curtailment of the fishery. Tag returns from West Greenland show that smolts from the Miramichi contribute heavily to the fishery.

9. Ichthyoplankton

A major survey of the dispersal of herring larvae was conducted by Canada, France (St. P), Fed. Rep. of Ger., USSR, and USA. The larvae from the Lurcher Shoal area (4X) drifted north along the eastern side of the Bay of Fundy. Egg and larval surveys were conducted by Canada in Div 4Tr in May and August of 1971.