

ANNUAL MEETING - JUNE 1964Report on Researches and Status of the Fisheries in Subarea 4 in 1963

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Reports of interest to Panel 4 have been submitted by the following countries:

Canada	No.36, 50, 66, 72, 73, 76, 101
Germany	29
Poland	58
Portugal	51, 57, 68
Spain	79
U.K.	14, 56
U.S.A.	18, 75, 87
U.S.S.R.	59, 61, 62

1. Research work carried out

A. Hydrography. Hydrographic observations were continued by Canada from the Gulf of St.Lawrence southward to the Bay of Fundy. Long-term observations show year-to-year variations and the downward trend in temperatures continued in 1963. Different proportions of Atlantic and Labrador waters result in warming and cooling periods of the waters of the shelf.

Seven hydrographic surveys were carried out by U.S.S.R. in the area from St.Pierre to Browns Banks which provided information on water conditions at all seasons of the year and on their influence on the distribution of silver hake mainly in the Sable Island area.

B. Plankton. Continuous plankton recordings were made by U.K. in 1963, mainly from British merchant ships.

Plankton studies by USSR in the Browns Bank area at different seasons in 1963 have shown that phytoplankton was generally more abundant in May-June 1963 than in 1962. In 1963, Peridineans replaced Diatoms as the dominant group. The biomass of seston in summer was larger in 1963 than in 1962.

C. Benthos and Bottom Deposits. Canada carried out studies of benthic communities and bottom deposits in the southern Gulf of St. Lawrence.

D. Cod. Canada tagged 2,700 cod in September in Division 4S in order to identify Gulf of St.Lawrence stocks and further define migration patterns. Studies of vertical migrations of cod showed that light, feeding and spawning are, in that order of importance, the factors responsible. Other field studies showed that nocturnal upward movements of cod are greater (as much as 30 m) in deep water than in shallow water. Laboratory feeding studies showed that feeding and growth are highest at 12°C and lowest at 5°C.

Portugal carried out measurements of length, weight and girth in Division 4R in 1963.

E. Haddock. Preliminary serological studies by U.S. have shown differences between haddock from Cape Cod (Subarea 5), Browns Bank and Emerald Bank (Subarea 4). Further research is necessary in order to establish the genetic significance of these differences.

Haddock distribution in relation to depth and temperature in Division 4X was studied by Canada in March. Good catches of large and small fish were made on Little LaHave and Browns Banks in 60 to 180 m and at temperatures of 3° to 5°C.

F. Silver Hake. Seasonal distribution of silver hake of various sizes and degrees of sexual maturity in relation to depth and bottom temperatures in the Sable Island area was studied by USSR. During the period November to February silver hake was found mainly at depths of 100 to 150 m. and at bottom temperatures from 5.5° to 7.8°C. The sizes ranged from 25 to 29 cm. From February to June, they were concentrated at 140 to 250 m and at temperatures of 7° to 10°C. Sizes ranged from 29 to 35 cm (mature and pre-spawning fish). Spawning was found to occur in August-September in shallow water (up to 50 m) and at temperatures ranging from 9° to 12°C.

G. Redfish. Research-vessel surveys in the Gulf of St. Lawrence showed that redfish which were detected as 8 to 16-cm fish (mostly 3-years old) in 1959 had reached a mode of 26 cm for males and 28 cm for females in 1963. This new size-group is abundant (up to 3 metric tons per 1/2 hour tow).

H. Halibut. Returns from Canadian halibut taggings in Divisions 4V and 4W indicate extensive movement to the eastward. Gulf of St. Lawrence halibut resemble those of the Grand Bank (Subarea 3) in that they are larger and older than those from southwest Nova Scotia (Division 4X).

I. Flounders. The study by Canada of American plaice in the Magdalen Shallows (4T) was completed in 1963. Tagging has shown that two groups are present in the southwestern Gulf of St. Lawrence: a northern group in 4T and a southern group in 4T and 4V. American plaice are found at depths of 200 to 500 m in winter and at 40 to 100 m in summer.

A study of witch in the Cape Breton area (4T and 4V) was started in 1963. Witch move from depths of 800 m in winter to 100 to 200 m in summer. Adults have a restricted diet of worms, amphipods and crustaceans.

J. Wolffish and Cusk. Studies of these species were undertaken by Canada in 1963 in order to assess the possibilities for expanded exploitation.

K. Herring. Larval studies were carried out by Canada. No clear relationships have appeared between larval abundance and subsequent recruitment to the commercial fishery in Division 4T. In 4X, these studies are designed to discover the source or supply of "sardine" herring to the Bay of Fundy.

L. Swordfish. Studies of swordfish by Canada indicate that the swordfish fished in October on the Nova Scotia Banks is not the same as the one fished on Georges Bank in November. These observations tend to discredit an earlier view that there is a migration of swordfish north-eastward in the spring and early summer and a retreat to the south and west in the autumn. But more observations are necessary.

M. Scallops. Laboratory studies of spawning adults and rearing of larvae on cultured algae were continued by Canada. Larvae were reared up to 125 days to a size of 293 microns in length. They are believed to settle at a length of 300 microns.

2. Status of the Fishery

Groundfish catches in Subarea 4 have increased by 133,459 metric tons (34%) reaching 530,576 t in 1963. This increase is due mainly to the development of the silver hake fishery by USSR which landed 123,000 t from Subarea 4 in 1963, instead of 8,800 t in 1962, the bulk of the catch coming from Division 4W (109,000 t) off Sable Island.

Due to decreased landings by Canada and France, which apparently expended less effort in this subarea in 1963, cod landings have decreased by about 3% to 212,000 t. Recruitment and size composition of cod stocks in Subarea 4 have not altered conspicuously from last year. Discards remain at a low level.

Haddock landings on the other hand have increased by 16% to 51,000 t due to more important catches by Canada, Germany and Spain. In 1963 a larger proportion of the Canadian catch came from 4X than 4W, whereas in 1962 the opposite was true. The year-classes of 4W haddock seem to be below average strength (except that for 1959). Those in 4X seem strong and prospects for 1964 fishing in this division are good.

Redfish landed amounted to about 59,000 t, a 13% increase over 1962, mainly by Canada and USSR. The assessments made in 1961 remain the best estimates for redfish in Subarea 4. They show immediate and probably long-term losses for any mesh greater than 102 mm.

Flounder landings increased by 20% to about 30,000 t, mainly by Canada. Discards of small fish reported in American plaice fishery in 4T (more than 50% by number) are very large and an increase of mesh up to 152 mm would release small non-market size fish. This would certainly give long-term gains, possibly substantial, for this particular species.

Herring catches have decreased by 5% to about 109,000 t. This is due mainly to smaller landings by USSR, Canadian landings remaining at about the same level.

Finally one should note the remarkable development of swordfish and tuna fishing in Subarea 4. The first, through the use of long-lines resulted in landings from 1,600 t in 1962 to 5,600 t in 1963. The second, using purse-seine, yielded 452 t in 1963 compared with 116 t in 1962.

Landings of main species from Subarea 4 (in metric tons)

G.F.	Canada	France	Ger-many	Po-land	Portu-gal	Spain	USSR	UK	USA	Japan	Italy	Total	± metric tons
Cod	1962	130,126	15,330		14,413	54,593	2,463		1,257		659	218,848	- 6,655
	1963	125,058	1,928	22	13,638	59,524	10,221	23	1,347	206		212,193	
Haddock	62	30,687	13	1,040		4,329	2,567		6,440		15	44,046	+ 6,958
	63	31,068				7,853	3,701	48	7,286	8		51,004	
Redfish	62	9,906		6			3,995		29,437		2	43,320	+ 5,637
	63	17,495					12,288	2	28,161	5		58,957	
Halibut	62	2,282	3	14			21		17		3	2,326	- 242
	63	2,002					45	2	21			2,084	
Flounders	62	24,304					671		316			25,282	+ 5,017
	63	29,353					586		349	11		30,299	
O.F.	62	47,504	259	277		1,489	11,784		2,259			63,295	+ 112,744
	63	43,838				2,797	126,579	29	2,504	15		176,039	
Total	62	244,581	15,599		14,413	60,408	21,331		39,698		679	397,117	+ 133,459
	63	249,814	1,928	1,563	13,638	70,174	153,420		39,668	245		530,576	
Herring	62	106,359					9,260					115,614	- 6,740
	63	105,911		256			2,707	104				108,874	