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<u>The Distribution of some Groundfish Species and Short-finned Squids on the</u> <u>Scotian Shelf during the 1980 Fishing Season</u> from the Data of the Soviet Observers

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Abstract

The distribution of some groundfish and short-finned squid catches from the Nova Scotian Shelf per hauling hour during the period from May to August 1980 is given from the data of Soviet observers. Peculiarities of the distribution of silver hake, haddock, cod, redfish and short-finned squid catches are compared with the same period of 1979.

Introduction

In accordance with the bilateral agreement the Soviet observers continued to collect the data for the length-age composition and to study the species composition of commercial catches. In the present paper the 1980 data describing the distribution of some groundfish and short-finned squids, <u>Illex</u>, in the Nova Scotian shelf area alloted for the USSR are given.

Materials and Methods

The sampling was made in May, June, July and August. Two or three Soviet observers were constantly present aboard the commercial ships throughout this time. The data on the site, time, depth and duration of the haul, the length composition of massive fish species and <u>Illex</u>, the size and species composition of the catches were obtained daily from at least four hauls. The length measurements were taken in accordance with NAFO methodical directions. The otoliths were collected according to the AtlantNIRO methods. The amount of gained materials is presented in table 1.

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Waldron's procedure(1978,1979) was used to study the species distribution. The area was divided into the squares with 10 min. sides. The mean catch (kg) per hauling hour by species and month was estimated for each square. . 9

Results and Discussion

Silver hake (Merluccius bilinearis)

The distribution of silver hake catches by month is shown in Figs.1-4. In May 1979 and 1980 no significant difference was observed in the distribution, exept for a certain westward shift of the aggregations compared with the same period in 1979 (Rikhter et al., 1980). The hake was associated with the shelf slopes and was found in the depth range between 110 and 350 m. In the subsequent months the hake was also caught beyond the southern limit, which is a considerable difference from 1979, when some Soviet ships had an opportunity to fish with bottom trawls with 60 mm mesh size in the area to the north of the above-mentioned line. The hake distribution in June and in the first half of July 1980 was similar to that in May (Figs.2,3). The hake kept mainly to the shelf, having risen to smaller depths (100-250 m). The density of aggregations in the given months maintained approximately at the same level. In August, when large numbers of hake moved to the north, their abundance beyond the southern limit sharply reduced, which has resulted in decreased catches per unit effort (Fig,4). During this period the hake was caught at 110-150 m depths. In August 1979 no fishing for hake on the shelf slopes was practically conducted.

Haddock (Melanogrammus aeglefinus)

The species was mainly found at 100-260 m depths. During the entire observation period (Figs.5-8) the catches were much smaller than in 1979 (Rikhter et al.,1980). The explanation for decreased catches appears to be based on restriction of the fishing area (see above), and on increased skill of the fishermen (a factor of training) to avoid the places with more or less considerable haddock aggregations during the directed fishing for hake. According to Waldron (1979), the highest recorded by-catch of haddock in 1978 was from the shelf beyond the limit-line.

Cod (Gadus morhua)

During the period from May to August the cod catches were in_ significant (Figs.9-12), although this species occurred over greater area than in 1979 (Rikhter et al.,1980). The cod was common at 100-300 m depths. As is evident from the data, the density of the cod and haddock aggregations to the south of the limit-line was about the same.

Redfish (Sebastes mentella)

This species was rather common, although not numerous fish were taken as a by-catch in May (Fig.13). It occurred at depths ranging between 150 and 420 m. In other months the redfish was practically absent from the catches (Figs. 14,15). Compared with 1979 no difference was observed in the redfish distribution (Rikhter et al., 1980).

Short-finned squids (Illex illecebrosus)

As it had been expected, the squids taken as a by-catch during the directed fishery for hake in May were not numerous (Fig.16), which is consistent with the 1979 data (Rikhter et al.,1980). The proportion of squids in the catches increased in June (Fig.17), which can be attributed both to massive migration of the species to the shelf slopes and considerable increase in biomass of some specimens. Directed fishing for squids was conducted in July, when maximum catches were taken (Fig.18). The aggregations ranged along the shelf slopes between 60° and $63^\circ 30^{\circ}W$ at 100-300 m depths. In August, the squid abundance to the south of the limit-line declined (Fig.19), which can be related to the migration of Illex to the shelf in the Emerald Deep area, where it was caught in 1979.

Conclusion

In the area, where the fishing with the bottom trawl with 60 mm mesh size was permitted, the largest hake abundance in 1980 was observed during the period from May to mid-July, and that of the squids in July. Later both species (particularly hake) migrated to the north in large numbers and the density of their aggregations on the Nova Scotian Shelf sharply declined. Consequently, the catches also grew smaller, since there was no possibility for the fleet to change the fishing area. That is why, the catch distribution differred from that in 1979.

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The by-catch of haddock was smaller than in 1979. The by-catch of cod and redfish in 1980 maintained at the previous year level. No considerable variation was observed in the catch distribution of the above-mentioned species compared with 1979.

References

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Graning	: : Mass	ive measu		
opecies	% Meas	ured, sp.	No.of sample	sp° * sb°
Silver hake	97	450	487	1515
Argentine	11	39	6	379
Mackerel	6	44	3	160
Cod	1	22	1	60pp)
Haddock	10	47	5	Emap
Short-finned squid	14	004	70	big t
Total :	11	4406	572	2054

The amount of materials collected by the Soviet observers aboard the commercial ships on the Nova Scotian Shelf in 1980





(kg) in May.



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Fig. 5. Distribution of haddock catches per hauling hour (kg) in May.



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in July.



in August.

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