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0-GROUP SAITHE IN THE WEST SPITSBERGEN AREA

BY

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INTRODUCTION

International 0-group fish surveys have been carried out in the Barents Sea and adjacent waters during August/September 1965-1970 (Benko et al. 1970, Anon. 1970, 1971). The technique and method applied were described by Dragesund and Olsen (1966) and by Dragesund, Midttun and Olsen (1970). The method used is a combination of echo sounding and fishing experiments with pelagic trawl.

A few specimens of 0-group saithe have been caught in the western part of the Barents Sea during all the surveys except in 1967. However, in 1967 0-group saithe were shown to form shoals with high target strength (Benko et al. 1970), and a considerable number of shoals were in 1967 found along the West Spitsbergen shelf. 0-group saithe were also found in cod stomachs near Bear Island (Berger 1968). Those shoals were not followed by surveys later on, but some observations during the autumn 1967 and the winter 1968 throw an interesting light on the occurrence of 0-group saithe along the West Spitsbergen shelf.

RESULTS AND DISCUSSION

A Norwegian trawler fishing along West Spitsbergen for cod in the period 27 October to 6 November 1967 from the Lerryggen

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in the north to the Hornsundryggen in the south reported that all cod stomachs were full of saithe from 10-24 cm in length. The fishermen reported also high abundance of small saithe in the area. Another trawler fishing in the area Hornsundryggen-Lågnesfeltet 7-14 November at a depth of 60-90 fathoms reported also that the cod in the area were full of saithe from 12-15 cm.

It was later reported by Mr. O.Bakken, who was in charge of the telegraph station in Ny-Ålesund, that small fish were observed from the quay in Kings Bay during the autumn 1967, before the ice was formed. In the beginning of March 1968 dead icebound small fish were observed in Kings Bay, when the fjord ice, west of the curved broken line in Fig. 1, had drifted away and new ice had been formed. Small saithe were later also found in the older snow-covered ice east of the broken line in Fig. 1. The abundance of fish in the ice was about one fish per 10-20 m, but hundreds of fish could be found in frozen cracks in the ice. Most frequently the fish were found nea the surface, always in a horizontal position. In the cracks, however, the fish were also found often in an upright position.

Mr. O.Bakken adds to his observations that the veterans among the people in Ny-Ålesund had some times during winter seen small fish in Kings Bay. However, the veterans could not remember that small fish were called "icemort". Mr. Finn Devold, who is in charge of the herring section at the Institute of Marine Research, Bergen, has mentioned that people living at Spitsbergen are calling polar cod (Boreogadus saida (Lepechin, 1773)) "icemort"

Observations of the behaviour of 0-group saithe (Mironova 1957, Lie 1961) indicated that the young saithe recorded in West Spitsbergen waters during the autumn 1967 would tend to occur in the near-shore region. The fact that one icebound specimen mailed to the Institute of Marine Research was a 13,3 cm long saithe of the 1967 year class, indicated that the "icemort" in Kings Bay in the winter 1967/68 were saithe of this year class.

The occurrence of the 0-group saithe in the West Spitsbergen area during the autumn 1967 might explain some irregularities in a local Norwegian fishery for saithe off the More coast in West Norway. The northern part of this area, Nordmøre, have yearly landings of 15-25 000 metric tons of saithe (fresh weight). Most of the landings comprise small and immature saithe caught by purse seine. The rest is chiefly otter trawl catches of varying fish sizes. Age data from earlier years (Hylen 1968) show that three years old saithe are normally the most abundant age group in the purse seine catches. Two and four years old fish may also contribute large parts of the catches.

The saithe fishery off Møre is carried out during the whole year, with some seasonal variations. From January to April a large proportion of the landings are trawl catches. The purse seine landings reach their first peak in May or June and are normally at a high level until about August, after which it gradually decreases. The trawl fishery is carried out the whole year, but has a down period in July and August.

In August 1970 an unusually sudden drop was reported in the saithe landings at Nordmøre. Saithe of fair size that had been present on the fishing grounds all summer suddenly disappeared, and were replaced by saithe of 300-400 gr., which constituted most of the purse seine catches the rest of the year. Age data showed that most of them were two years old, i.e. the 1968 year class (Fig. 2, A). No samples of purse seine landings had been taken in the district earlier in the season. It was reported, however, that the saithe during the summer had been somewhat larger than normal, and hence probably were mostly four years, i.e. from the strong 1966 year class. This indicated a poor representation of the three years old fish, i.e. the 1967 year class. Four years old saithe, which approach maturity, may have left the purse seine fishing grounds in August. Since three years old fish normally constitute a major part of the catches in autumn, these circumstances provide an explanation of the sudden drop in the landings.

The saithe fisheries off Nordmøre had by the end of July 1971 only yielded slightly more than half of the 1970 quantity at that time. The 1968 year class has contributed most to the catches, whereas the proportion of the 1967 year class was less than 1% (Fig. 2, B).

Age data from saithe caught by trawl off Nordmøre in March 1971 confirm that the 1967 year class is poor in the area (Fig. 2, C, D). Data from North Norway, however, gives the impression that it is fairly strong in that area (Fig. 3).

Shoals of 0-group saithe in the Bear Island/Spitsbergen area have in the period 1965-1970 only been recorded in 1967. It is therefore likely that the saithe progeny this year to a greater extent than normal was transported northwards from the spawning areas at the Viking Bank, Halten Bank, and off Møre, resulting in a low abundance of the 1967 year class in the Møre area.

SUMMARY

Cod were during the autumn 1967 feeding heavily on 0-group saithe recorded in shoals at the West Spitsbergen shelf in August/September 1967. Great numbers of this year class were during the winter

1967/68 found dead in the ice in Kings Bay at the northern part of West Spitsbergen. This indicate that the abundance of the 1967 year class in the West Spitsbergen area was greatly reduced during the autumn 1967 and the winter 1967/68.

The high abundance of 0-group saithe along the West Spitsbergen shelf in 1967 might have been caused by an unusual northward transportation of the progeny. This might have caused a low abundance of the 1967 year class in the More area.

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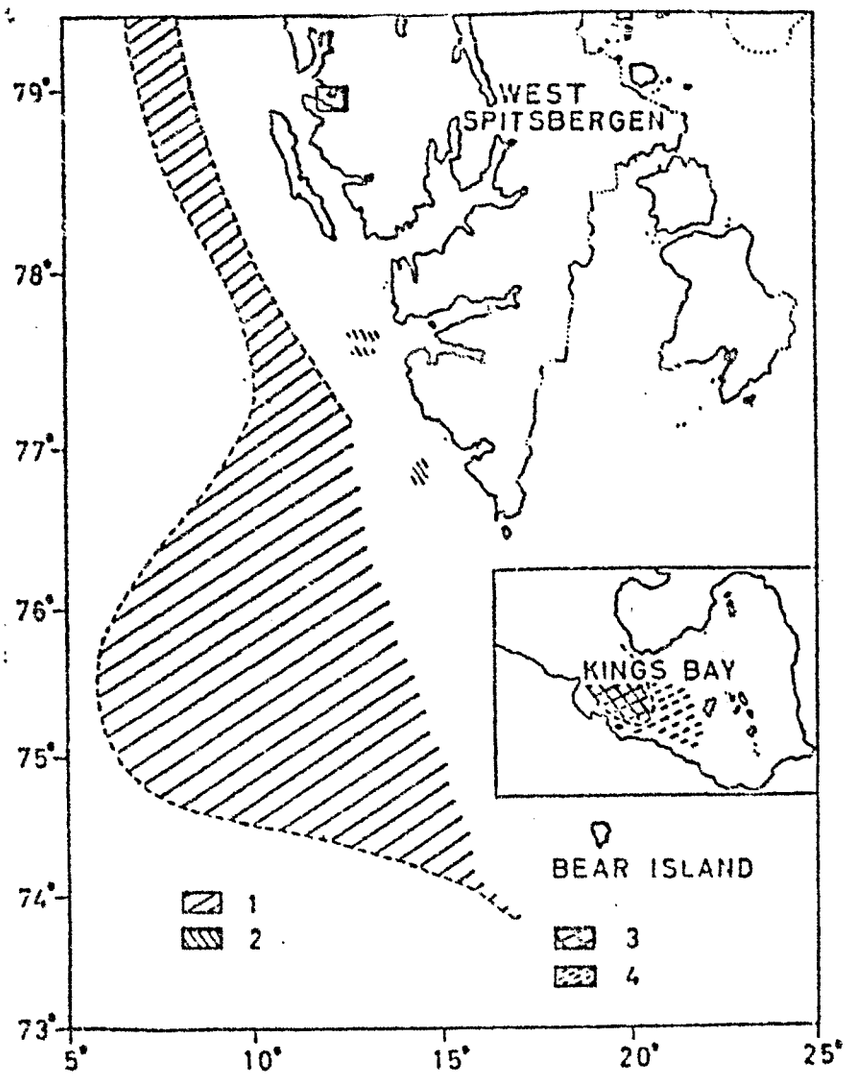

Fig. 1. Observations of O-group saithe in the Spit bergen area in the autumn 1967 and in the winter 19(

1. Pelagic distribution c O-group saithe in August/ September 1967.

2. Fishermen's observatic of O-group saithe in cod stomachs in October/Novem 1967.

3. Observations of O-grou saithe in newly frozen ice in March 1968.

4. Observations of O-grou saithe in Kings Bay in the old snow-covered ice in March 1968.

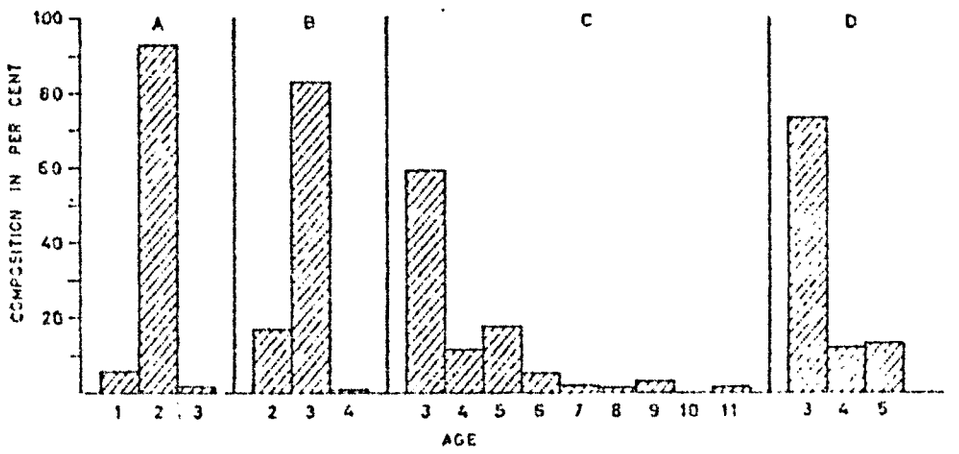

Fig. 2. Age distributions of saithe caught in the Nordmøre area in 1970/1971.

A. Purse seine. December 1970.
B. Purse seine. June 1971.
C. Otter trawl. March 1971.
D. Pelagic trawl. March 1971.

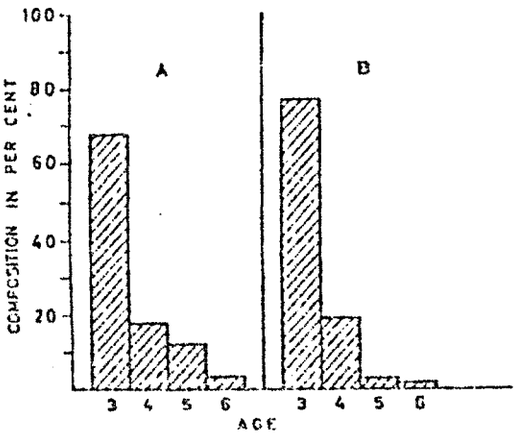

Fig. 3. Age distributions of saithe caught in North Norway 1970.

A. Otter trawl. The Fugløy Bank, Tr November 1970.

B. Otter trawl. Sleppen, Finnmark. November 1970.