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The Norwegian fisheries for Norway pout

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Introduction

During the last ten years the Norwegian effort in the North Sea trawl fisheries has multiplied several times. The Norwegian fishery originally started to exploit the North Sea herring, and later also sand-eel, but it soon developed into a multi-species industrial trawl fishery. Herring is still one of the major species, but during the last five years Norway pout has become of increasing importance, and this small gadoid is now the dominating species in these fisheries.

The Danes were the first to start active fishing for Norway pout on a large scale. This happened in 1958, and already in 1959 the Danish catch had reached 100,000 tons. Some Norway pout catches were also landed by Norwegian vessels in 1958, but our national statistics do not give separate figures for this fish before 1959.

In Table I are given the landings from the Norwegian industrial trawl fisheries in the North Sea and Skagerak for the years 1959 to 1963 broken down by the main species. Since these fisheries are mainly for reduction purposes (only small quantities of consumption fish are landed) there are no discards and the quantities given refer to the actual catches at sea. The commercial statistics apparently give fairly accurate estimates of the landings of herring and sand-eel, but the quantities specified as Norway pout also include various other species, mainly gadoids.

The fisheries

The fishery is carried out from relatively small vessels, mostly between 60 and 90 feet in length, fishing with small-meshed bottom trawl and some with pair-trawls. The cod end mesh size varies according to the main species fished. Thus, when fishing for sand-eel very small meshed trawls are used (approx. 12 mm mesh size), while mesh sizes of 22 to 35 mm are applied when fishing for herring and Norway pout.

From Table I it is noted that the total yield from the Norwegian industrial trawl fisheries have increased greatly in recent years, and that the increase is mainly due to a rising catch of Norway pout. The largest quantities of this fish are landed from April/May to October, whereas the winter fishery is of less importance (Fig. 1). Thus in the two first years, in 1959 and 1960, hardly any catches of Norway pout were landed in January and February.

Presently, however, the industrial trawl fisheries are pursued all year round, although the amount of effort is low during the winter months. Also during a short season in the middle of the summer, mainly in June and July, a great part of the effort is diverted towards sand-eel fishing near Jutland coast and on Dogger Bank. Norway pout are fished mainly in the Egersund area, on the Patch and on Fladen ground. Substantial quantities are in most years also landed from Bressay Shoal and the Viking Bank (Table 2). Thus, by far the largest part of the Norway pout catch is taken in the northern part of the North Sea, i.e. the ICES sub-division IV a.

Investigations of the Norway pout fisheries.

The industrial trawl fisheries are so-called Article 6 fisheries, and from time to time the Institute of Marine Research has been requested to analyse the composition of landings for the purpose of investigating whether the landings complied with the regulations of the 1946 Fisheries Convention. These ad Hoc investigations, however, did not suffice for estimating the composition of landings on a yearly basis, and therefore in July 1961 a regular sampling program was established in Egersund, one of the major ports for our North Sea fleet. Since then approximately 4 samples per month, 100 kg each, have been collected from individual landings. Originally the samples were sorted according to species and length measurements were taken of the so-called protected species. Since July 1962 measure-

ments have also been taken regularly of herring, sand-eel and Norway pout.

The available data suggest that the by-catch of protected species is generally low, and that the percentage by-catch is reduced when the fishing for the main species is good and vice versa. During the winter months when the catch of Norway pout is low, other species, particularly blue whiting may substitute as the species sought for. The catch of such species is also listed in the commercial statistics as Norway pout, and the quantities given are therefore overestimating the true landings of Norway pout. However, for the main Norway pout season this bias is probably small.

In Fig. 2 are shown the bi-monthly length-frequency distributions of Norway pout from commercial catches taken on the Egersund bank. Additional samples from Fladen Ground and some also from the Patch and Bressay Shoal are available. There is no apparent systematic difference in the length distribution between these samples and those from the Egersund bank, and the distributions shown in Fig. 1 may therefore be fairly representative for the Norwegian catch during the same period.

This series of samples compares very well with those of Christensen (1964) taken in 1960 and 1961 from the same locality, and they are also in general agreement with the description of the Danish fisheries for Norway pout given by Poulsen (1964).

Thus it appears that already in September-October, when the 0-group of Norway pout is approx. 6 months old, the commercial exploitation of a new year-class starts. However, these young fish do not seem to be fully recruited to the fishery until the following spring when they are 12 to 14 months old, i.e. 10 to 14 cm in length, but they are still outnumbered by the 2-year-olds. In the middle of the summer there appears to be a shift, and in the samples from July/August the I-group usually becomes more abundant than the older age groups, which in the following months subsequently fade out. Thus, in late autumn the catches are mainly composed of $1\frac{1}{2}$ -year old fish with some of the 0-group and remnants of the older age groups. This general pattern which has been apparent at least for the last 3 years, may of course be more or less modified by fluctuations in year-class strength.

Thus, in the case of Norway pout a year-class passes very quickly through the fishery and is fully exploited for little more than one year only.

This condition is very similar to the fisheries for other short-lived fishes, such as sprat and capelin, and fluctuations in brood-strength will therefore have a very marked effect on the yield of the fisheries.

Unfortunately no detailed effort statistics are available for the Norwegian industrial trawl fisheries and estimates of CPUE as indices of stock abundance cannot be made at present. The information available, however, suggests that the interest in these fisheries has increased and, consequently, a gradual increase in effort has occurred over the last five years.

It is therefore conceivable that the low catch in 1961 was caused by a reduced abundance of Norway pout. This confirms Christensen's (1964) suggestion that the 1960 year-class was less numerous than those of 1959 and 1961.

Raitt (1963) on the basis of Scottish research vessel catches concluded that the abundance of the year-class from 1962 was far below the average of previous brood-strengths. He found that "there were fewer 1-year old fish in March 1963 than in any year of sampling since 1935, so few in fact that there were more 2-year olds, a year-class which they normally outnumber by upto 8 to 1".

In our samples from the Egersund fisheries in March/April 1963 the majority of the fish were from 13 to 17 cm, in all probability mainly fish of the 1961 year-class. There was also a group from 10 to 13 cm, i.e. 1-year olds of the 1962 year-class. This seems to be the normal catch composition at that time of year, and Raitt's samples from the years prior to 1963 would therefore seem to be rather atypical for the exploited population of Norway pout.

The length compositions for July/August 1963 are also in agreement with the usual pattern of previous years, indicating that the bulk of the catch consisted of 1-year old fish. The Norwegian catches in these months were quite high, indeed the total Norwegian catch of Norway pout in 1963 increased with more than 100 per cent over that of the previous year. This rate of increase is far above the corresponding one of the increase in Norwegian effort, as far as can be judged from the available information regarding the number of vessels participating in these fisheries. Consequently, the present data seem to contradict the conclusion of Raitt that the 1962 year-class of Norway pout was a particularly weak one.

Final remarks

The case of the Norway pout is a very interesting one as the importance of this species, beyond that for the Danish and Norwegian fisheries, is great because of its role as a major link in the food chain of the North Sea area. This emphasizes the desirability of more intensified studies of this and other "poor relatives" of the cod.

It would also seem that this stock of fish lends itself very well to detailed studies of various aspects of population dynamics. It inhabits the best known area of the sea as regards environmental factors. It is fished by two nations only, using one type of gear, and the cost of collecting detailed statistics for these fisheries as well as carrying out intensive tagging experiments would not become prohibitive.

The interests of Denmark and Norway, however, may not be sufficiently great to justify investigations of such detailed nature, considering all the research projects on commercially more important species which the national laboratories have to undertake. It might therefore be worthwhile for this committee to consider the possibility of an international study of Norway pout sponsored by ICES.

References

- Christensen, K. G. 1964. "A study of age, growth and reproduction of Norway pout in the North Sea." I.C.E.S., C.M. 1964, paper no. 121.
- Poulsen, E.M. 1964. "Om spærtingen i industri-fiskeriet." Skrifter fra Danmark fiskeri- og havundersøgelser. nr.24.
- Raitt, D.F.S. 1963. "Further observations on the age-composition and abundance of Trisopterus (Gadus) Esmarkii (Nilsson) in the North Sea." I.C.E.S., C.M. 1963, paper no. 127.

Table 1. Records of landings from the Norwegian industrial trawl fisheries in the North Sea and Skagerak 1959 to 1963 (in tons).

Year	Area	Herring	Sandeel	Norw. pout	Others	Total
1959	N.Sea and Skagerak	11770	8459	1877	362	22468
	N.Sea	11158	10856	22337	1274	45625
1960	Skagerak	2633	2404	101	917	6055
	Not specified	423	380	406	1050	2259
	N. Sea	13487	5238	14446	541	33712
1961	Skagerak	4757	151	258	641	5807
	Not specified	145	-	28	10	183
	N. Sea	11137	13089	41730	1524	67480
1962	Skagerak	5160	403	510	-	6073
	Not specified	21	-	37	16	74
	N. Sea	26921	11531	107294	3331	149077
1963	Skagerak	9402	55	580	161	10198
	Not specified	-	-	-	-	-

Table 2. Landings in Norway of Norway pout (in tons) by month and main fishing grounds, 1962 to 1963.

1962

Fishing ground

Month	Viking Bank and Tampen	The Patch Fladen Ground	Egersund Area	Other IV a Areas	Sub. div. IV b and III	Sum	
Jan.	16.0	38.9	263.4	764.8	40.3	1123.4	
Febr.	6.1	26.2	259.1	280.6	-	572.0	
March	123.2	832.4	673.0	1248.8	12.7	2890.1	
Apr.	59.4	1787.2	373.6	898.5	1.2	3119.9	
May	238.0	3061.9	146.3	2400.3	0.8	5875.2	
June	324.7	1188.5	253.8	1429.9	3.3	3398.4	
July	129.7	163.1	14.6	1152.2	7.9	1552.1	
Aug.	153.8	800.8	-	682.8	-	91.1	1728.5
Sept.	641.1	3538.7	1907.7	762.9	-	952.5	7802.9
Oct.	26.4	243.2	6206.2	1523.6	-	109.1	8108.5
Nov.	256.9	636.4	231.5	1478.6	-	3.6	2607.0
Dec.	74.3	816.2	131.7	1789.2	-	100.2	2911.6
Total	2049.6	13133.5	10460.9	14412.2	13.2	1620.2	41689.6

1963

Fishing ground

Month	Viking Bank and Tampen	The Patch Fladen Ground	Egersund Area	Other IV a Areas	Sub. div. IV b and III	Sum	
Jan.	335.5	3537.2	84.5	1814.3	10.0	5781.5	
Febr.	1248.7	2012.3	128.4	1576.0	95.8	5061.2	
March	236.6	265.5	85.8	1712.2	77.2	2404.3	
Apr.	3275.4	1295.1	148.5	1455.4	35.0	6209.4	
May	1953.2	1280.0	16.9	1983.7	52.9	5286.7	
June	775.0	393.2	3926.8	2205.8	40.7	7341.5	
July	449.5	770.5	6528.6	2637.0	41.0	10426.6	
Aug.	1251.9	7026.5	5020.5	4236.7	2100.1	202.5	19838.2
Sept.	715.3	1421.2	3870.6	2449.2	4339.8	84.7	12880.8
Oct.	438.7	2528.4	5102.8	2632.7	12.2	83.4	10798.2
Nov.	2279.3	625.5	2351.6	1831.3	-	1.7	7089.4
Dec.	1272.6	5275.9	251.3	7854.5	-	102.0	14756.3
Total	14258.7	26431.3	27516.3	32388.8	6452.1	826.9	107874.1

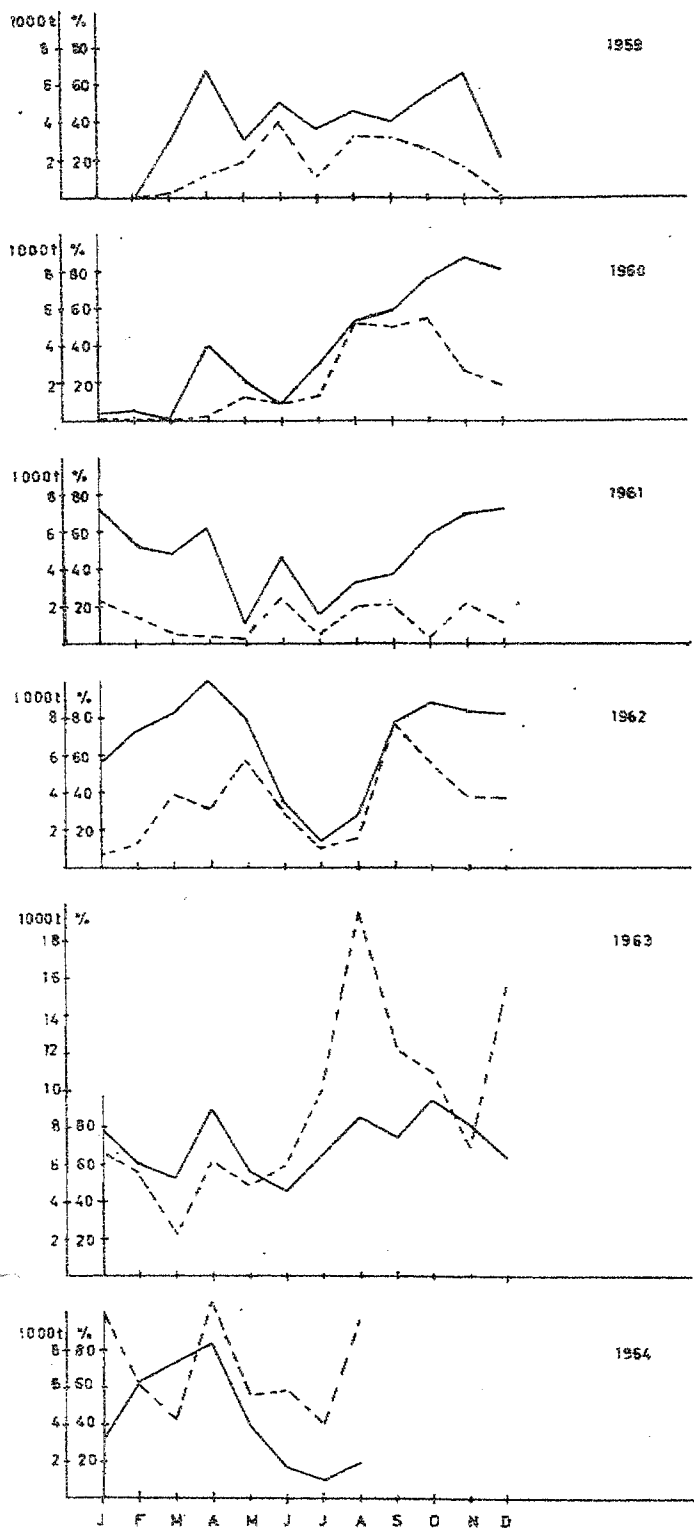


Fig. 1. Monthly landings of Norway pout (broken line) and the corresponding percentages of Norway pout in the total landings from the industrial trawl fisheries.

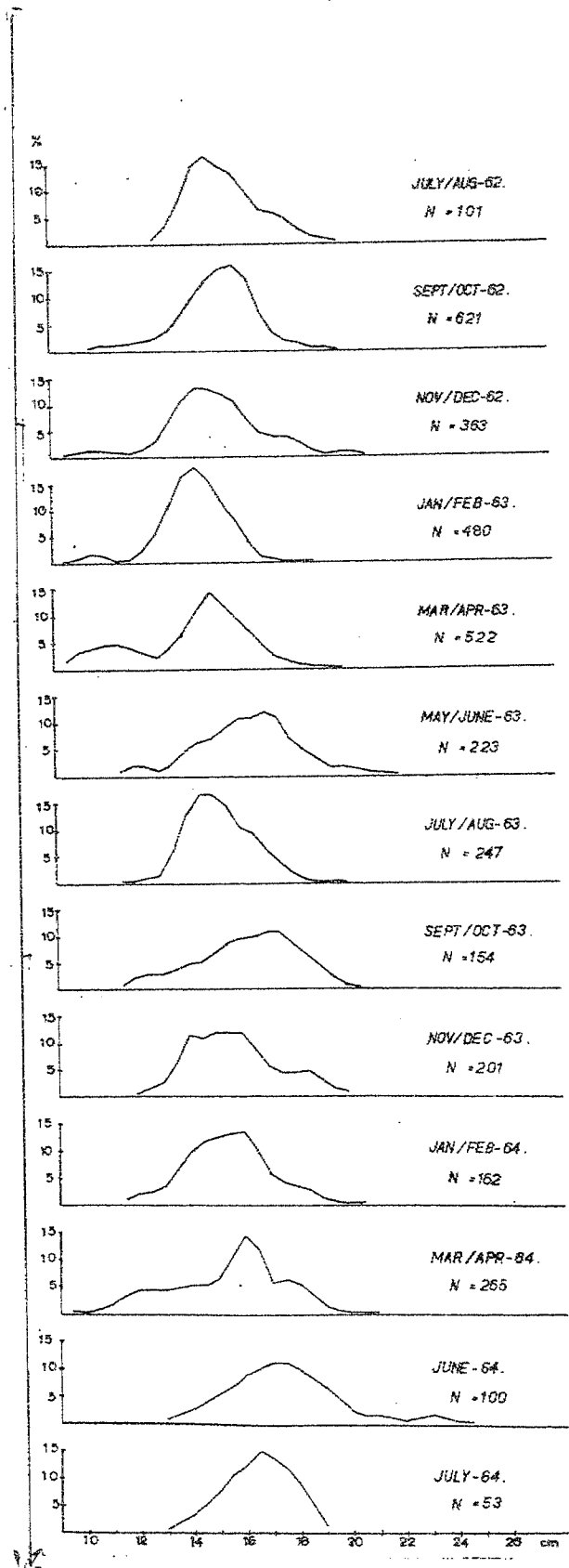


Fig. 2. Bi-monthly length distribution of commercial catches of Norway pout from the Egersund area.