

NORWAY POUT, *TRISOPTERUS ESMARKI* (NILSSON), FROM THE LITTORAL ZONE OF THE NORWEGIAN SKAGERRAK COAST

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SARSIA



GJØSÆTER, JAKOB, KATE ENERSEN, KNUT HANSEN, ØYSTEIN PAULSEN & AADNE SOLLIE 1993
12 10. Norway pout, *Trisopterus esmarki* (NILSSON), from the littoral zone of the Norwegian Skagerrak coast. – *Sarsia* 78:101–103. Bergen. ISSN 0036-4827.

A total of 313 *Trisopterus esmarki*, was caught in 11 beach seine-hauls in the littoral zone along the Norwegian Skagerrak coast in October 1992. The fish measured 5–10 cm (total length) and therefore belonged to the 1992 year-class. Similar surveys have been made annually since 1919, and this is the first time Norway pout has been caught.

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INTRODUCTION

Norway pout, *Trisopterus esmarki* (NILSSON), is a boreal gadid fish distributed from the English Channel and Kattegat in the south to Iceland and Bear Island in the north (RAITT 1968). It is mainly found in shoals over soft bottoms from 80 to 300 m depth, but may also occur pelagically feeding on plankton (DAMAS 1909; POULSEN 1968). In Skagerrak the largest catches of Norway pout are taken between 180 and 240 m (ALBERT 1989). Norway pout are spawning at temperatures around 6–7° C in January till March (DAMAS 1909). Eggs and larvae are found in pelagic waters along the coast and in the deep fjords of western Norway. At the Skagerrak coast eggs are caught from February till March (DANNEVIG 1922) and pelagic larvae and fry are caught from April till August (DAMAS 1909; SCHMIDT 1909; LINDQUIST 1968). The distribution of the fry after settling is not well known, but they are frequently found on the deep trawling fields for shrimps (ALBERT 1989; Institute of Marine Research, Flødevigen Marine Research Station, unpubl. data).

MATERIAL AND METHODS

In September–October, every year since 1919 about 120 localities between Kristiansand and the Norwegian-Swedish border were sampled by beach seine. Each year exactly the same sites were sampled and the seine operated in the same way. In addition to this annual survey, some areas (i.e. Sandnesfjorden near Risør) were visited regularly to monitor seasonal variation in the fish fauna.

The seine used is 40 m long and 1.7 m deep. The stretched mesh size is 1.5 cm. The area covered by one haul is unto 390 m². The greatest depth sampled varies between sites, but range from 3 to 15 m.

All fish caught are identified, and the gadoids are counted.

Material from three shrimp trawl surveys in the Skagerrak area (October 1984, 1989, and 1992) were also ana-

lysed for Norway pout (S. Tveite, Institute of Marine Research, Flødevigen Marine Research Station, unpubl. data 1992).

Daily observations on temperature and salinities at 1, 19 and 75 m during February to June (the period of egg and larval drift) were taken at Flødevigen near Arendal.

RESULTS AND DISCUSSION

In the September 1992 beach-seine survey a total of 312 Norway pout were caught in 11 hauls (Table 1, Fig. 1). The fish measured 5–10 cm (total length)

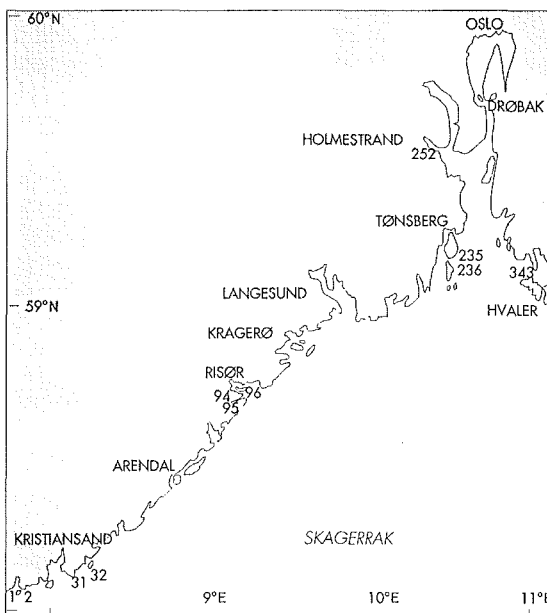


Fig. 1. The Norwegian Skagerrak coast. The beach-seine stations where Norway pout were caught are indicated.

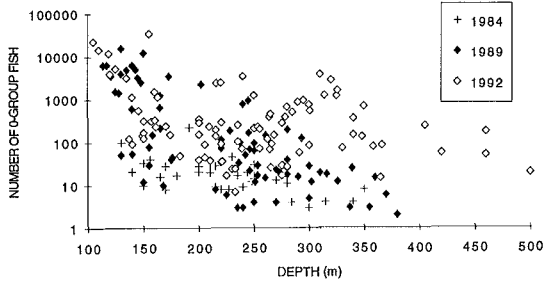


Fig. 2. Catches of 0-group Norway pout in shrimp trawl in Skagerrak in 1984, 1989, and 1992 (unpublished data from S. Tveite).

and therefore belonged to the 1992 year-class (i.e. ALBERT 1989).

The Norway pout occurred throughout the area studied and both in the fjords and at the open coast (Table 2). Torvefjorden (Stns 1 and 2), Sandnesfjorden (Stns 94, 95, 96) and the fjord at Holmestrand (Stn 252) are so shallow that it is very unlikely that adult Norway pout live and spawn there (Table 2). It seems therefore that the Norway pout caught in the sublittoral, must have originated from offshore spawning with subsequent transport of eggs and/or larvae.

Large numbers of Norway pout were caught between 100 and 500 m depth in the annual shrimp trawl survey in Skagerrak in October 1992. In 1984 and 1989 the numbers caught were lower, and the depth range narrower (Fig. 2). These data suggest that the 1992 year-class was very numerous, and it had a wider depth distribution than the other two. However, no hauls were made shallower than 100 m, so the shoreward limit of the distribution in 1992 was not determined.

In October 1992 the temperature in the area was generally higher than the October average for the years 1919–1992. The difference was not large, however, hence unusually high temperature can hardly explain the unusual distribution of 0-group Norway pout (Fig. 3).

Several hypotheses could be made:

1. It is normal that eggs or larvae drift into the littoral zone, and unusual ecological or hydrographical condition made it possible for the juveniles to survive there in 1992.
2. Larvae of Norway pout drifted into the littoral zone in 1992 due to special current conditions.
3. Extremely high 0-group density in typical nursery areas forced the juveniles to migrate into sub-optimal areas.

Table 1. Stations where Norway pout were caught in beach seine in September 1992.

Station number	Sampling site	Area	Catch of Norway pout number	length range (cm)
1	Okse	Torvefjorden	260	6–10
2	Oftenes	Torvefjorden	9	5–8
31	Jakteviga	Høvåg	3	7–9
32	Near Jakteviga	Høvåg	1	7
94	Håholmen 2	Sandnesfjorden	14	7–10
95	Åmland 1	Sandnesfjorden	3	7–9
96	Åmland 2	Sandnesfjorden	16	7–10
235	Brevik 2	Vrengen-Tjøme	1	9
236	Årøysundet 1	Vrengen-Tjøme	1	9
252	Bogebukta 2	Holmestrand	1	8
343	Hellesvikstangen	Hvaler	3	8–10

Table 2. Description of stations where Norway pout were caught in beach seine in September 1992.

Station number	Exposure	Fjord depth (m)	Sill depth (m)	Distance to sill (km)
1		62	29	2
2	protected	62	29	2
31	protected	skerries		
32	protected	skerries		
94	semi exposed	64	24	5
95	protected	64	24	3
96	protected	64	24	3.3
235	moderately exposed	skerries		
236		skerries		
252	semi exposed	77	none	
343	protected	skerries		

It has not been possible to find evidence for the first hypothesis. The third one is favoured by the fact that 0-group Norway pout was also found deeper than usual in 1992. However, it seems unlikely that they should migrate into shallow fjords, far from their normal distribution area. The observations on temperature and salinity give no evidence of extensive upwelling, but there are several periods of increasing salinity in 19 m depth, suggesting minor upwellings (Fig. 4). It seems most likely that an upwelling or shoreward drift of water during the period of egg and larval drift explain the littoral occurrence of Norway pout. However, no final conclusions can be drawn.

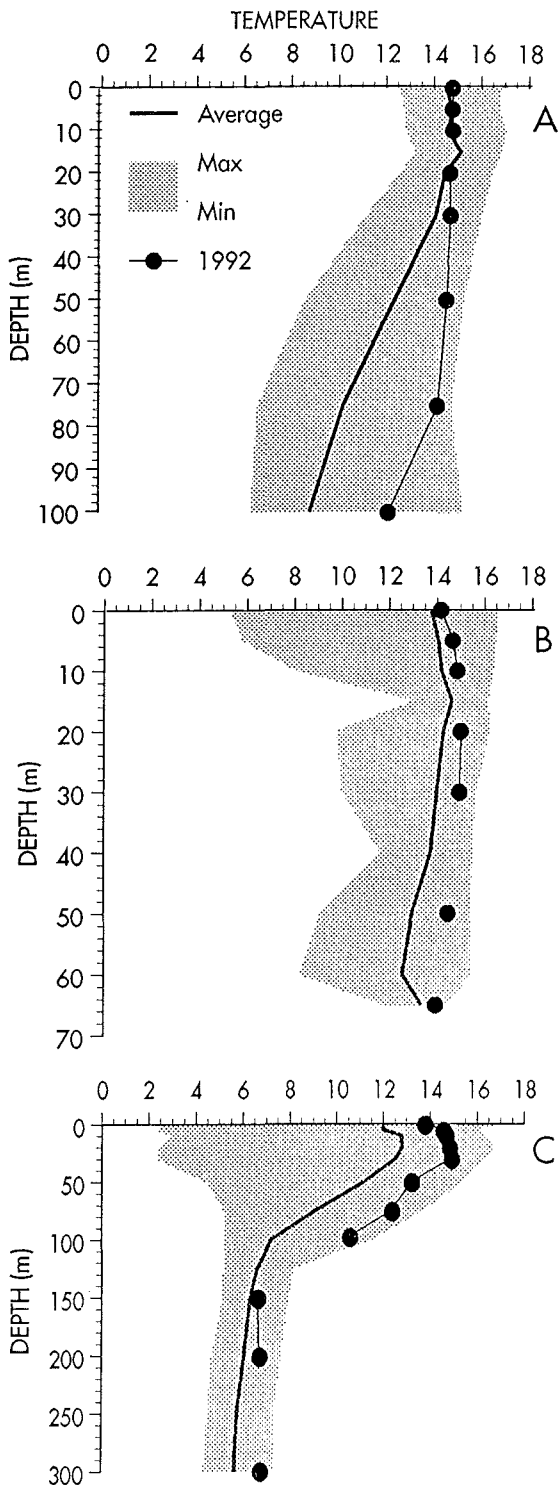


Fig. 3. Temperature at selected stations at the Norwegian Skagerrak coast during October 1992 compared with the October average for all years (1919–1992). A. Kristiansand area, Stns 1 and 2. B. Risør area, Stns 94 and 95. C. Hvaler, Stn 343.

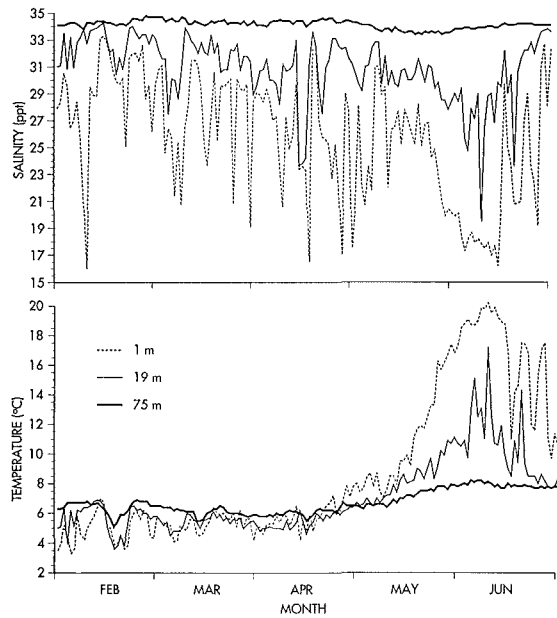


Fig. 4. Daily observations of temperature and salinity at Flødevigen near Arendal during February till June 1992. Temperatures in °C and salinity in ppt.

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Accepted 20 September 1993.

