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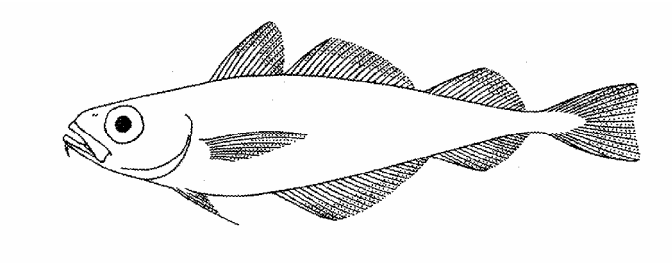
ICES-FishMap

Norway pout	*Trisopterus esmarki* Family Gadidae	Max size: 35 cm Max age: 4 years



Introduction

common names			
Danish	Spærling	*Icelandic*	Spærlingur
Dutch	Kever	*Latvian*	Esmarka menca
English	Norway pout	*Norwegian*	Øyepål
Estonian	Tursik	*Polish*	Okowiel
Faroese	Hvítingsbróðir	*Portuguese*	Faneca-noruega
Finnish	Harmaaturska	*Russian*	Тресочка Эсмарка
French	Tacaud norvégien	*Spanish*	Faneca noruega
German	Stintdorsch	*Swedish*	Vitlinglyra

General: Norway pout is a short-lived species that is distinguished from its congeners by having the lower jaw protruding slightly beyond the upper jaw and having a relatively short and thin barbel. Because of its high abundance and small size, it is caught for reduction to fishmeal and fish oil. It also serves as an important forage fish for many species.

Minimum Landing Size: None.

Distribution

Biogeographical distribution: Norway pout is a boreal species and more oceanic than its congeners, living in deeper waters along and beyond the shelf edge in the north-eastern Atlantic, from the Channel to Iceland and extending along the Norwegian coast into the south-western Barents Sea [1].

Norway pout has a benthopelagic life style, living in extensive shoals in the open sea, frequently in midwater off the bottom. In the North Sea, it is found mostly between 100 and 200 m deep [2], but also occurs frequently in depths of up to 450 m in the Norwegian Deeps, and in waters as shallow as 40 m in the Skagerrak. The bathymetric distribution in the Norwegian Deeps is progressively deeper with increasing age, and within an age-group, larger individuals are found deeper than smaller ones [3]. During summer, the pelagic 0-group (1.5-6.0 cm) [4] in particular have been observed to migrate vertically in the water column, being found close to the seabed during the daytime and spending the night in midwater [5].

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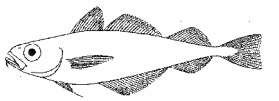

Spatial distribution in North Sea: The southern distribution border extends from north-east England, along the northern edge of the Dogger Bank, into the Skagerrak and Kattegat, but the main concentrations are found beyond the 100 m depth contour. The distribution of juveniles (<15cm) overlaps fully with the adults (≥15cm) (Fig. 1), although the former are relatively more abundant in shallower regions. No seasonal differences in distribution have been found.

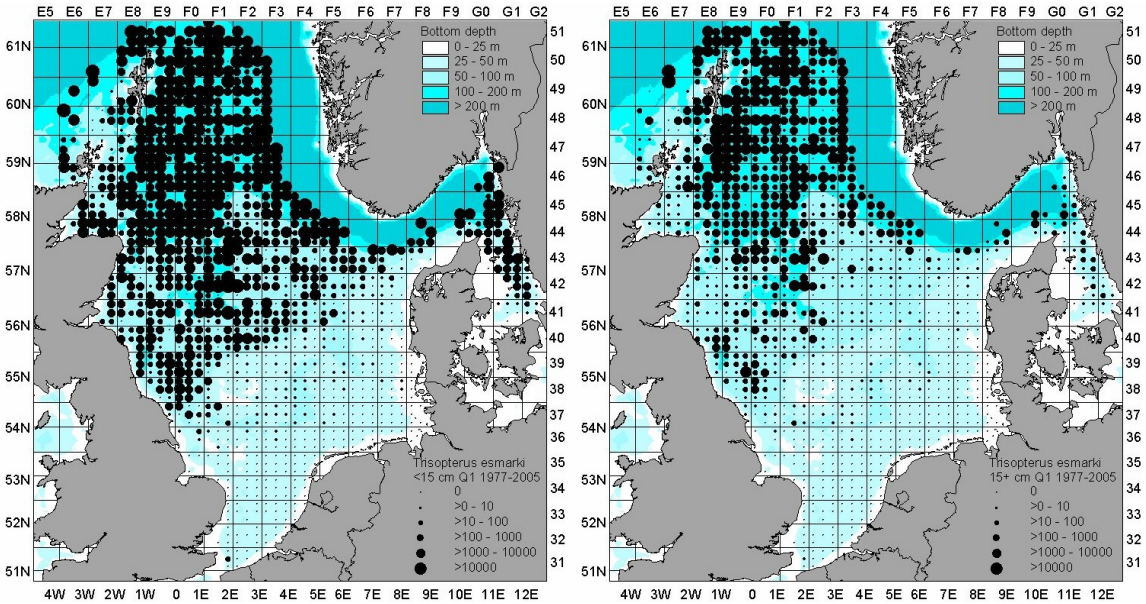

Figure 1. Average annual catch rate (number per hour fishing) for juvenile (<15cm, left) and adult (≥15cm, right) Norway pout in the quarter 1 IBTS survey, 1977–2005.

Life history

Age, growth rates: Norway pout is a small, short-lived species that seldom attains an age over four years. Females grow slightly faster than males (Fig. 2) [6].

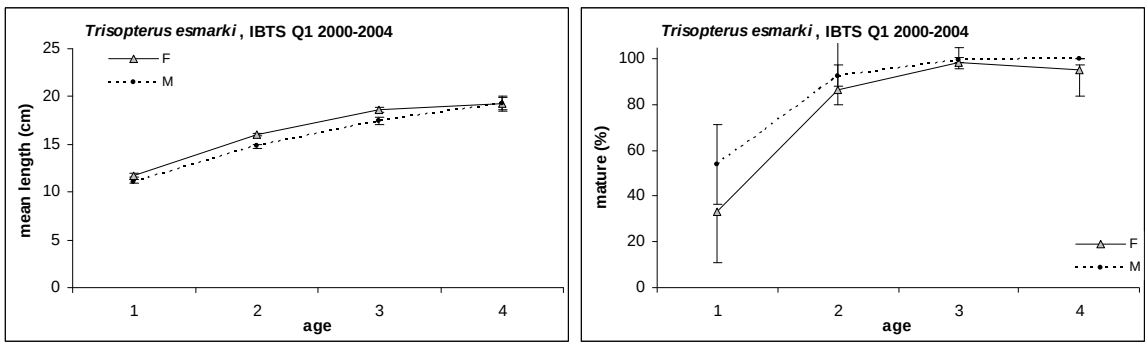

Figure 2. Mean length (left) and percentage mature (right) per age group in the North Sea and Skagerrak/Kattegat in February 2000-2004, based on IBTS-data.

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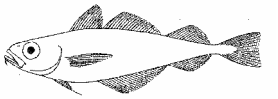


Reproduction: The majority of the fish spawn for the first time during their second year of life, but a variable proportion may do so when they are one year old [6]. Males reach maturity at an earlier age than females (Fig. 2). A female produces 420–980 eggs per gram body weight, equivalent to 21 000 eggs for a 30 g, two-year-old fish [6]. Spawning takes place in March to May over the shelf edge.

Migrations: There is no indication of discrete nursery grounds [7], because pelagic 0-group fish are found in the same area as the adults. However, some migration is likely to occur. Slight northerly spawning movements are suggested to exist to an area between Shetland and Norway [3], where large concentrations of larvae are found in spring [8].

The Skagerrak is colonized by 0-group fish that originate from spawning grounds along the Norwegian Deeps. Catches in the Skagerrak are dominated by younger fish, indicating that they leave the area when they start maturing [9].

Food habits: Pelagic 0-group feeds mainly on copepods and appendicularians [10]. The diet of larger specimens (10-20 cm) in a Norwegian fjord consisted of crustaceans such as mysids, natantids, copepods, euphausiids, and amphipods, and of small fish, mainly gobies [2,3]. Norway pout tend to feed more intensively at night [3].

Predation: Extensive stomach sampling programmes in 1981 and 1991 have shown that cod, whiting and saithe are major predators of Norway pout of age 1 and older. Mackerel is the main predator of 0-group Norway pout. Total mortality has been shown to have decreased over the recent two decades, consistent with a significant decrease in the stock sizes of these three main gadoid predators [2]. Norway pout is also an important prey for other demersal fishes and marine mammals.

Population structure

Length composition: The Norway pout population in the Skagerrak/Kattegat is mainly composed of 1-group fish, with a peak at a total length of 12 cm (Fig. 3). This same age group is also found in the North Sea, but a peak representing 2-year-old fish is also apparent.

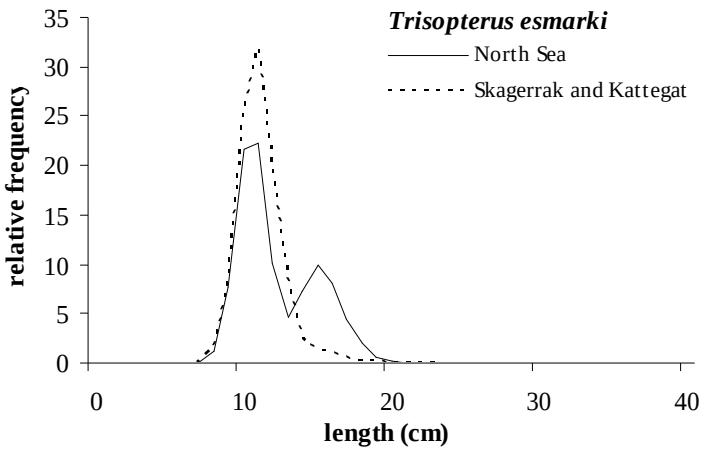
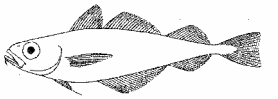


Figure 3. Relative length-frequency of Norway pout in the North Sea and Skagerrak/Kattegat, based on IBTS Q1 data, 1977–2005.

Norway pout	*Trisopterus esmarki* Family Gadidae	

Changes in abundance: Based on the catch rate during the IBTS Q1 survey in the North Sea and the Skagerrak/Kattegat throughout the period 1975-2005, there is no consistent long-term trend in the relative abundance. However, the catches of age 1 recruits during the IBTS quarter 1 survey in 2003–2005 were by far the lowest since 1975 [11].

Stock structure: Norway pout in the North Sea and Skagerrak/Kattegat area are assessed as one unit stock. An unknown proportion of the stock may occur in deeper waters than is covered by the surveys.

Exploitation

Main metiers targeting the stock: Norway pout is of no importance for human consumption because of its small size, but it is a target species for the industrial fisheries of northern European countries, especially Denmark and Norway. Because dense schools are usually found within a few metres of the seabed, the industrial Norway pout fishery is to a large extent carried out with bottom trawls.

Landings: Annual landings rose from almost nil in the 1960s to over 750 000 t in the mid-1970s, decreased again to a little more than 100 000 t in the late 1980s, and have fluctuated around this level until a severe decline in recent years [12].

Status of the stock: Based on the most recent estimates of the spawning stock biomass (SSB), ICES classifies the stock as suffering from reduced reproductive capacity, since this biomass was close to the minimum acceptable limit (B_{lim}) of 90 000 t at the beginning of 2006. Long-term average fishing mortality is only approximately 50% of the total mortality and exploitation may not be the main cause of the decline in biomass, particularly because fishing mortality has decreased below the long-term average since the mid-1990s. Recruitment has been below average in the period 2000-2004, with a record low in 2003-2004 (Fig. 4).

Protection and management: Explicit management objectives for Norway pout have not been defined, but in order to ensure sustainable fisheries, the EU and Norway have implemented a precautionary approach. Technical measures such as the closed Norway pout box (Box I), minimum mesh size regulations for the fishery, and by-catch regulations to protect other fish species have been used in the management of this fishery. It is also recognized that it is important to ensure that the stock remains at a sufficiently high level to provide food for a variety of predator species. In 2005 the fishery was closed, but the TAC for 2006 was 95 000 t [12].

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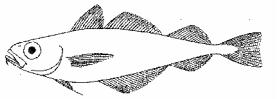


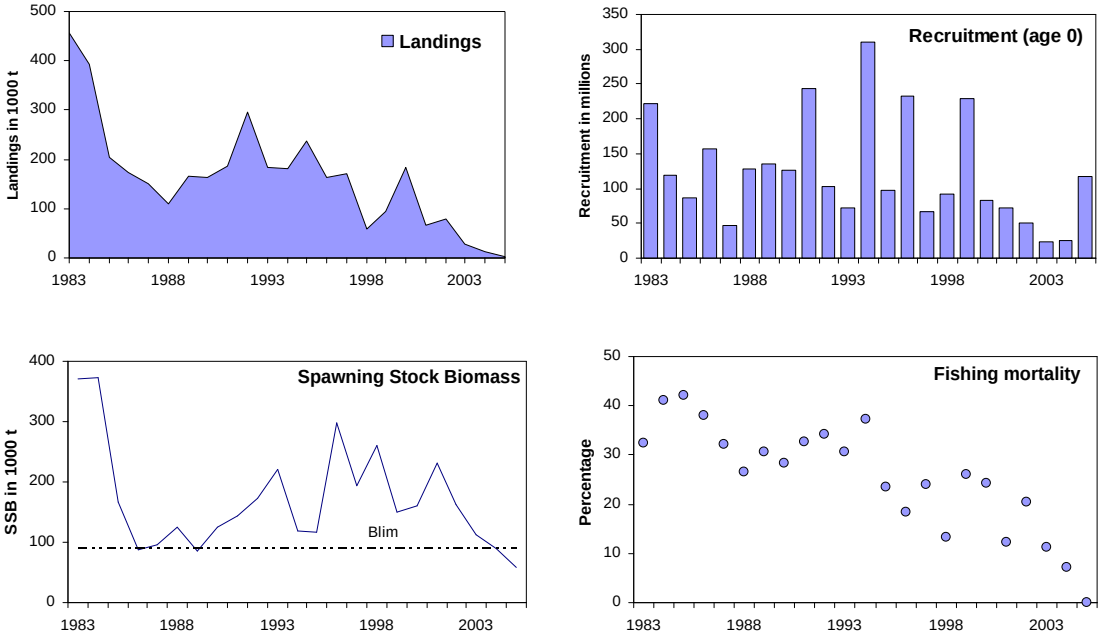
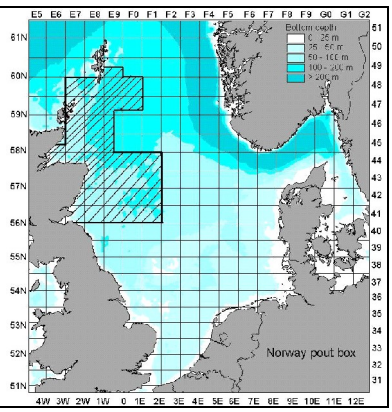


Figure 4: Time series of landings ('000 t), recruitment (millions of 0-group fish), spawning stock size ('000 t) and fishing mortality (percentage per year of ages 1 and 2) for Norway pout in the North Sea, Skagerrak and Kattegat [12].

Box I: The Norway Pout box

The Norway pout box was introduced in 1986 covering 95,000 km^2. It was designed to protect juvenile stocks of haddock and whiting from industrial fishing for Norway pout, since massive exploitation of the latter with small mesh nets inevitably produces a by-catch of young whitefish such as haddock and whiting.

Currently, industrial fishing for Norway Pout is not allowed in the area.



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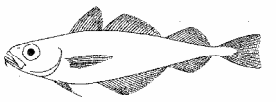
	Norway pout	*Trisopterus esmarki* Family Gadidae	

References

1. Svetnovidov, A.N. 1986. Gadidae. *In:* Whitehead, P.J.P., Bauchot, M.L., Hureau, J.C., Nielsen, J., Tortonese, E. (eds.). Fishes of the North-eastern Atlantic amd the Mediterranean. UNESCO, United Kingdom. 1473 pp.
2. Sparholt, H. Larsen, L.I., Nielsen, J.R. 2002. Verification of multispecies interactions in the North Sea by trawl survey data on Norway pout (*Trisopterus esmarkii*). ICES Journal of Marine Science, 59:1270-1275.
3. Albert, O.A. 1994. Biology and ecology of Norway pout (*Trisopterus esmarki* Nilsson, 1855) in the Norwegian Deep. ICES Journal of Marine Science 51: 45-61.
4. Heessen, H.J.L., Hislop, J.R.G., Koeller, P.A., Parnell, W.G. 1982. The results of the International 0-Group Gadoid Survey in the North Sea, 1982. ICES CM 1982/G:52. 4 pp.
5. Baily, R.S. 1975. Observations on diel behaviour patterns of North Sea gadoids in the pelagic phase. Journal of the Marine Biological Association of the United Kingdom 55: 133-142.
6. Raitt, D.F.S. 1968. The population dynamics of the Norway pout in the North Sea. Marine Research 5: 1-24.
7. Daan, N., Bromley, P.J., Hislop, J.R.G., Nielsen, N.A. 1990. Ecology of North Sea fish. Netherlands Journal of Sea Research 26(2-4): 343-386.
8. Raitt, D.F.S., and Mason, J. 1968. The distribution of Norway pout in the North Sea and adjacent waters. Marine Research 1968(4): 1-19.
9. Poulsen, E.M., 1968. Norway pout: stock movements in the Skagerrak and the north-eastern North Sea. Rapport et Procès-Verbaux des Réunions du Conseil International pour l Exploration de la Mer 158: 80-85.
10. Robb, A.P., Hislop, J.R.G. 1980. The food of *Galeus melastomus*, *Gadiculus argenteus thori*, *Trisopterus esmarkii*, *Rhinonemus cimbrius*, and *Glyptocephalus cynoglossus* (Pisces) caught during the day with shrimp trawl in a West-Norwegian fjord. Sarsia 66: 109-127.
11. ICES 2005. Report of the International Bottom Trawl Survey Working Group (IBTSWG), 29 March 1 April 2005, Hamburg, Germany. ICES CM 2005/D_05. 123 pp.
12. ICES 2006. http://www.ices.dk/committe/acfm/comwork/report/2006/oct/nop-nsea.pdf