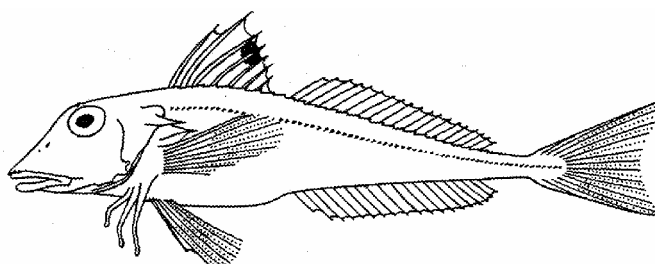


**Grey gurnard***Eutrigla gurnardus*
Family TriglididaeMax size: 45 cm
Max age: 9 years

Introduction

Taxonomy: Grey gurnard *Eutrigla gurnardus* (Linnaeus, 1758) (Order: Scorpaeniformes; Family: Triglididae) is one of five species of gurnard that have been reported from the North Sea. Two of these species have only been reported occasionally and must be considered vagrants.

common names			
<i>Danish</i>	Grå knurhane	<i>Icelandic</i>	Urrari
<i>Dutch</i>	Grauwe poon	<i>Latvian</i>	Pelēkais jūrasgailis
<i>English</i>	Grey gurnard	<i>Norwegian</i>	Knurr
<i>Estonian</i>	Hall merikukk	<i>Polish</i>	Kurek szary
<i>Faeroese</i>	Knurhani	<i>Portuguese</i>	Cabra morena
<i>Finnish</i>	Kyhmykurnusimppu	<i>Russian</i>	Морской петух
<i>French</i>	Grondin gris	<i>Spanish</i>	Borracho / Perlón
<i>German</i>	Grauer Knurrhahn	<i>Swedish</i>	Knot

General: Grey gurnard is by far the most common gurnard in the North Sea, and one of the main demersal species. It is caught as a by-catch in demersal fisheries, and is of limited commercial importance. The species occurs in dense aggregations to the northwest of the Dogger Bank, where schools may be found semipelagically off the bottom. During summer, grey gurnard is more widespread. Juveniles feed on a variety of small crustaceans, the diet of older specimens mainly consists of larger crustaceans and small fish. Spawning takes place in spring and summer.

Minimum Landing Size: None.

Distribution

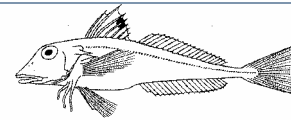
Biogeographical information: Grey gurnard may be considered a Lusitanian-Boreal species that is widespread in the Eastern Atlantic, occurring from Iceland, Norway, the southern Baltic, via the North Sea to southern Morocco and Madeira. The species is also found in the Mediterranean and Black Seas.

Spatial distribution in North Sea: Grey gurnard occurs throughout the ICES-FishMap area. During winter, grey gurnards are concentrated to the northwest of the Dogger Bank at depths of 50-100 m, while densities are low in areas off the Danish coast, and in the German Bight and eastern part of the Southern Bight (Fig. 1).



Grey gurnard

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Family Triglidae



The distribution pattern changes substantially in the spring, when the whole area south of 56°N becomes densely populated and the high concentrations in the central North Sea disappear until the next winter (Fig. 2). Many gurnards were also caught in the northernmost part of the area throughout the year.

The near absence of grey gurnard in the southern North Sea during winter and the marked shift in the centre of distribution between winter and summer suggests a preference for higher water temperatures [1,2].

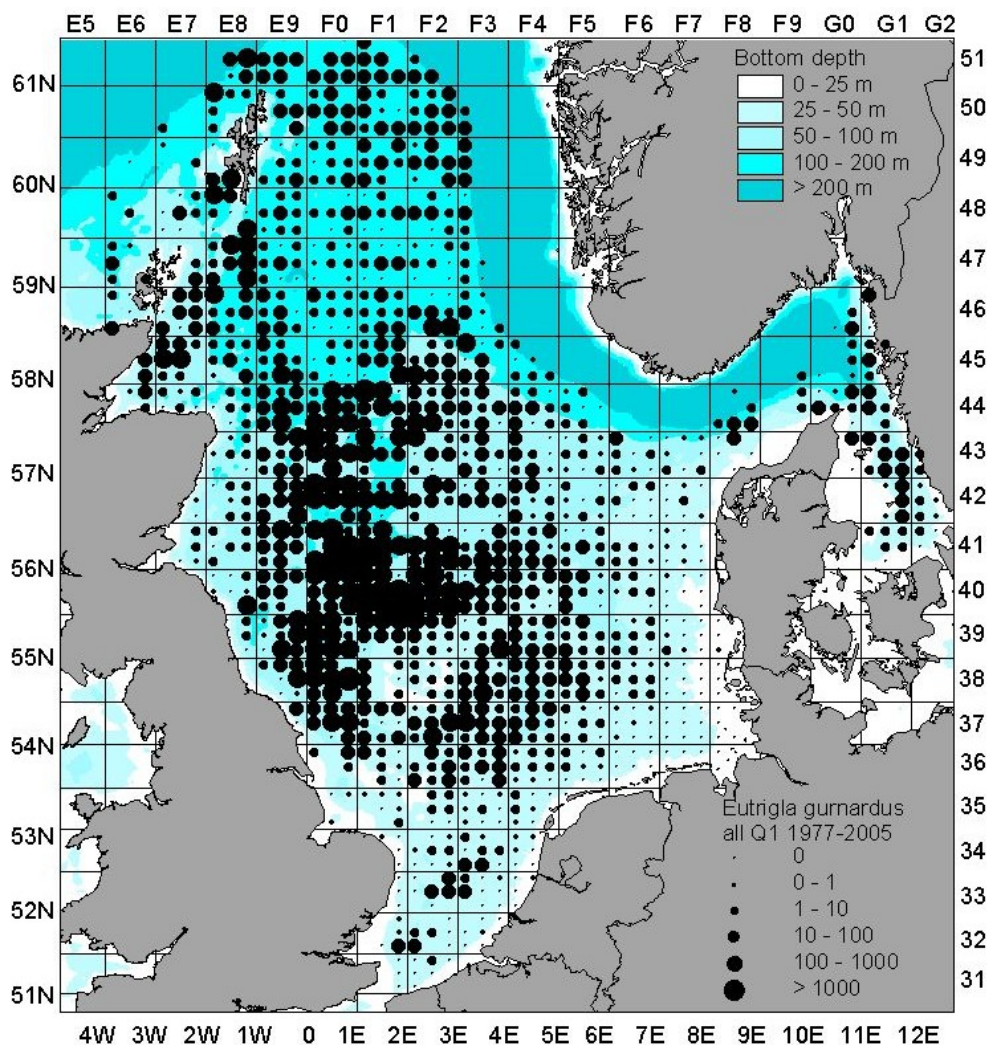


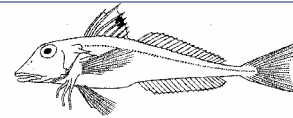
Figure 1. Average annual catch (number per fishing hour for all length classes combined) for *E. gurnardus* in the quarter 1 IBTS survey, 1977-2005.

During winter, grey gurnard occasionally form dense aggregations just above the bottom (or even in midwater, especially during night time) which may result in extremely large catches. At least five winter hauls in rectangle 41F0 contained more than a thousand individuals and one haul in 1986 contained over eight thousand fish. Within one survey, these large hauls may account for 70 percent or more of the total catch of the species. Bottom temperatures in high-density areas usually range from 8 to 13°C [3].



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Patterns in distribution of the small and large fish are similar in space and time [4].

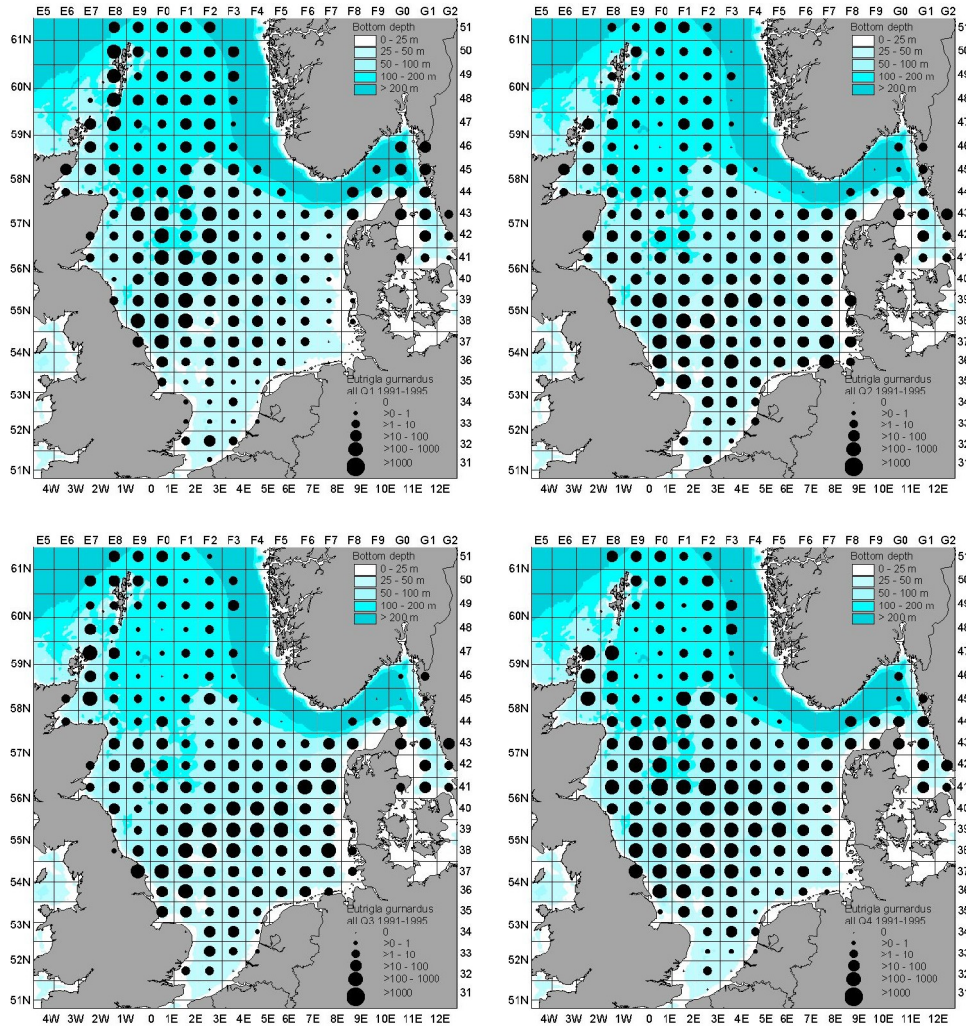


Figure 2. Quarterly distribution of *E. gurnardus* (number per fishing hour, all length classes combined) based on the quarterly IBTS surveys, 1991-1995.

Spawning occurs in spring and summer and, perhaps, in autumn [5], and may also explain the observed seasonal movements [6]. For instance, the German Bight is invaded from April onwards by fish that apparently spawn there. Emigration to northern, deeper waters commences in September and by November only a few young specimens are left [1].

Life history

Habitat characteristics: Most common on sandy bottoms, but also on mud, shell and rocky bottoms [7]. Notwithstanding their obvious adaptations to a demersal way of life divers have observed gurnards swimming well off the bottom using their large pectoral fins as gliders. The distribution of grey gurnard overlaps with the one of tub gurnard *Trigla lucerna* in the southern North Sea, and of red gurnard *Aspitrigla cuculus* in the north-western and south-western North Sea



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Age, growth rates, longevity, length-weight relationship: The maximum size reported by different authors ranges from 45 [7] to 50 cm [8]. In the North Sea, specimens > 45 cm are rarely caught.

Average length of 1-year-olds was 13-14 cm and of 2-year-olds 19-20 cm in samples collected during the first quarter of 1977-78 (Fig. 3). Highest age reported was nine years. The average length of 8-year-old fish has been estimated at 35 cm [9] and 32 cm [10]. Females grow faster and live longer than males [9]. This is supported by a survey in May 1992, where all specimens larger than 32 cm were females [5].

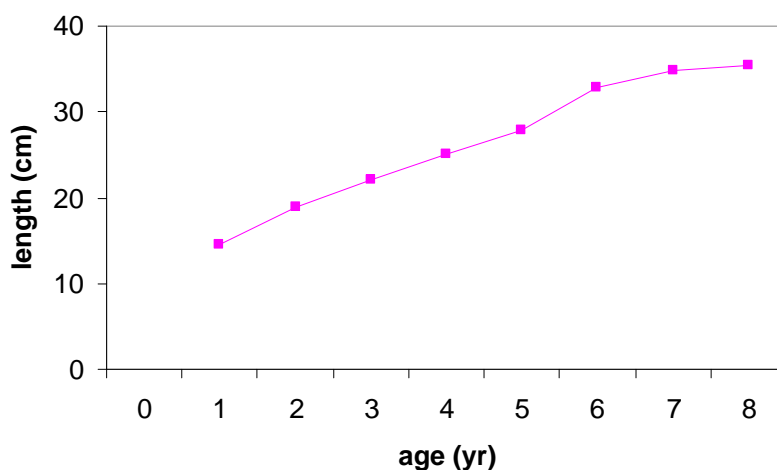


Figure 3. Mean length (cm) per age group in February – March 1977 [9]

Available von Bertalanffy growth parameters are given in the text table below:

Area		L_{∞} (cm)	K (yr-1)	t0 (yr)	Reference
Brittany	males	34.4	0.85	0.14	11
Brittany	females	38.0	0.77	0.16	11

Sound

Gurnards can make audible sounds by special muscles attached to the swim-bladder. These sounds are believed to help keeping contact in schools, especially during spawning time [1]. Some of the common names for gurnards refer to the sounds they can produce.

<http://filaman.uni-kiel.de/physiology/FishSoundsSummary.cfm?autoctr=58> .

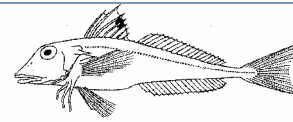
Reproduction: Sexual maturity is said to be attained at between two and three years of age [7,12], but data from the North Sea from the first half of May 1992 show that specimens from about 15 cm onwards can be mature, males at a somewhat smaller length than females [4] This indicates that maturity may even be reached between one and two years old.

Studies in the Baie de Douarnenez (Brittany) have shown that the length at which 50% of males and females were mature were 29.4 and 31.2 cm, respectively [12]. These values seem very high compared to the North Sea.



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The spawning period is from April to August [7]. Off the English northeast coast eggs are found from May to August [13]. The pelagic eggs are 1.3–1.5 mm in diameter, and the larvae hatch at a length of 3–4 mm [5].

Migrations: The distribution maps indicate a marked seasonal northwest-southeast migration pattern that is rather unusual. The population is concentrated in the central western North Sea during winter and spreads into the southeastern part during spring to spawn. In the Kattegat and the northern North Sea, such shifts appear to be absent. The withdrawal from the colder coastal waters may reflect the southerly origin of the species.

Food habits: The lower three rays of the pectoral fins of gurnards are separate and well supplied with sense organs. They are used to ‘walk’ over the substratum and to locate prey buried in the sea bed [7]. Small crustaceans, such as the brown shrimp *Crangon crangon* and small crabs are major food items in terms of weight for small (< 25 cm) individuals, while stomach contents of larger specimens are dominated by a variety of fish species [14]. The fish component of the diet largely consists of juveniles (0- and 1-group) of commercially exploited species such as cod, whiting, sandeel and sole. Off Jutland, grey gurnard appeared to be a major predator on pelagic 0-group cod during June–July [14]. Specimens in Loch Etive (west coast of Scotland) were found to feed almost exclusively on mysids, euphausiids, and decapod crustaceans [15]. Due to their piscivorous behaviour, grey gurnard appears to play an important role in the ecosystem.

Predation: So far, a major predator of gurnards has not been identified.

Population structure

Age and length composition: The winter catches in the North Sea are dominated by larger specimens with a maximum at 19–22 cm. In Skagerrak-Kattegat the length frequency distribution has two clear peaks at 11–12 cm and at 16–18 cm, while larger fish are clearly absent (Fig. 4). Reliable data on the age composition are absent.

The length distributions are remarkably similar from year to year and do not indicate a clear year-class signal: small individuals are never very abundant. The absence of small fish in the North Sea suggests that the IBTS survey does not adequately cover the nursery grounds. It is possible that juveniles concentrate on rough bottoms, which have usually to be avoided to minimise damage to the fishing gear, or that they remain pelagic.

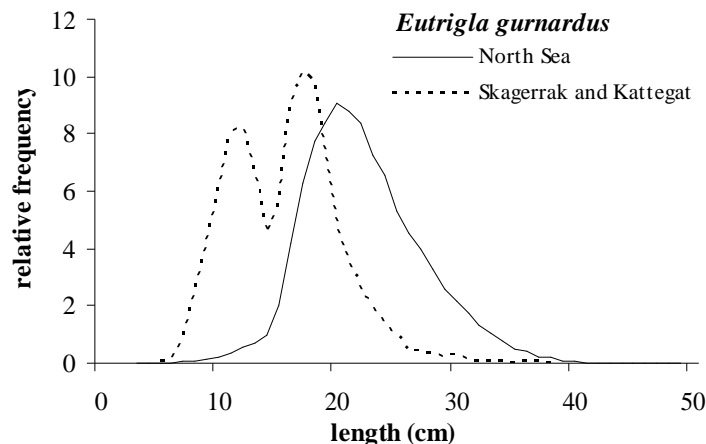
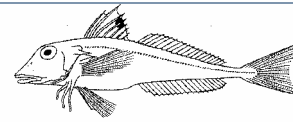


Figure 4. Length frequency distribution of *E. gurnardus* based on the quarter 1 IBTS, 1985–2005.



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Sex ratio: Males and females occur in similar numbers [12].

Changes in abundance: Since the late 1980s catches during the quarter 1 IBTS have at least doubled, with a record high in 1999 (Fig. 5). Catches from Scottish research vessels in the northern and central North Sea in the period 1922-1971 were rather stable and no clear trends were observed, apart from some evidence of a decrease in abundance off the Scottish east coast in the years 1922-1939 [16].

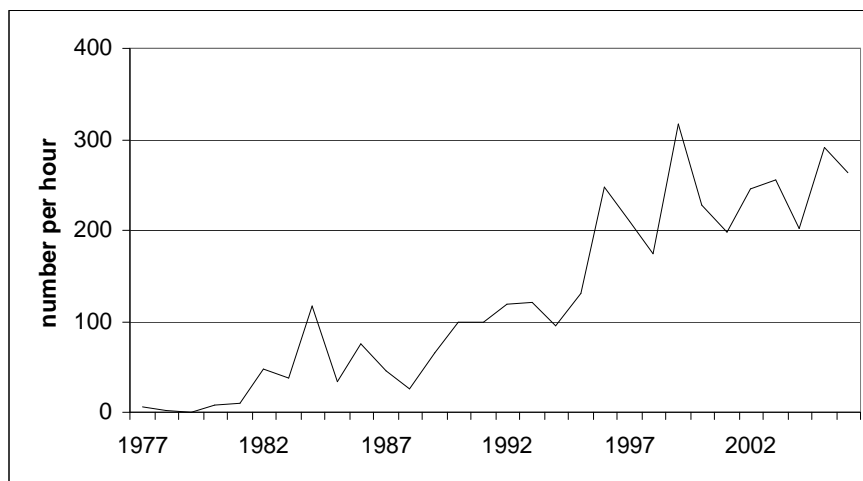


Figure 5. Average catch rate (number per hour for all length classes combined) of *E. gurnardus* in the North Sea (excl. Skagerrak and Kattegat), based on quarter 1 IBTS, 1977-2006.

Exploitation in the North Sea

Main métiers targeting the stock: Historically, targeted fisheries have been largely absent, but grey gurnard is taken as by-catch in demersal fisheries for flatfish or roundfish. However, the market is limited and the larger part of the catch appears to be discarded. In recent years, industrial fisheries appear to have processed relatively large quantities for fish meal and oil.

Landings: Since the early 1900s ICES has collected landings data for “all gurnards combined”. Until recently, the reported landings are supposed to have mainly consisted of grey gurnard, but owing to the low commercial value the landings may not have reflected the actual catches. Because the more valuable tub gurnard has become more common during the past decennia, their contribution to the reported landings has probably increased. North Sea landings decreased gradually before World War II. After an initial post-war peak of 4 000 t, annual landings stayed well below 2 000 t until the early 1980s, when annual catches increased to around 40 000 t. No complete data are available for later years. The sudden increase in the 1980s has been related to a targeted industrial fishery.

Spawning Stock Biomass and fishing mortality: Not known.

Stock status: The status of the stock is unknown, but survey catches show a marked increase between the late 1980s and the late 1990s.

Protection and management: No management measures are in place.



Grey gurnard

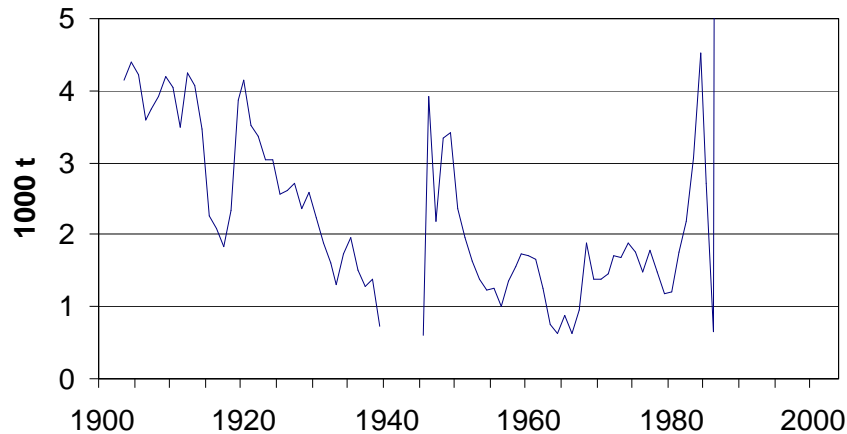
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Figure 6. Landings of “gurnards” (all species combined) in the North Sea as reported to ICES.

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