



LÄNSSTYRELSEN
VÄSTRA GÖTALANDS LÄN



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Cod, fishing regulations and biology

This describes how cod live and how to fish correctly

Cod have always been a central part of life on the Bohus coast. Historically, one of the most important catches here was cod. Since the 1970s, though, these catches have declined radically (Figure 1) and commercial cod fishing along the coast has all but vanished. When the cod seemed to be disappearing after 2000, intensive research was started. This has resulted in a better understanding of the unique character of coastal populations and has also led to the introduction of new regulations in an attempt to protect the existing cod population.

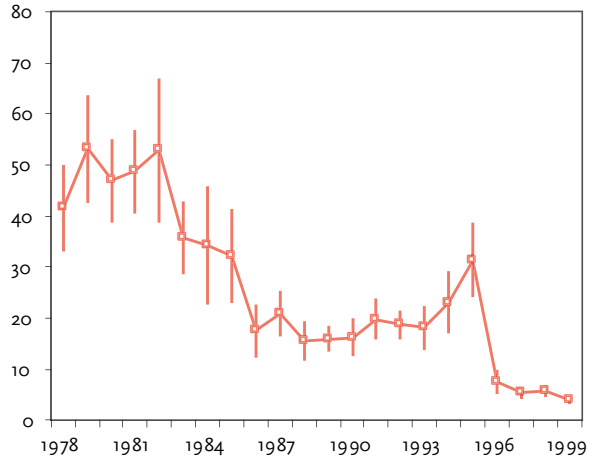


Figure 1. Annual average catches of landed cod (kg) per trawling hour from Swedish crayfish trawling in Skagerrak/Kattegat 1978-1999.

For cod and fishing to be here in the future, it is important that fishing is done in a way that protects the populations. We need relevant fishing regulations that are respected. Fishing regulations are drawn up to protect the most critical stages of the cod's life cycle and to regulate the amount of fishing to avoid reducing the population. There is much to be gained, both financially and ecologically, if cod populations recover since society has great benefits from healthy fish stocks.

This leaflet is aimed specifically at people who plan to fish for cod off the west coast, and more generally to those who want to learn more about cod and its biology.

What is cod?

Cod is a fish. The term fish refers to an aquatic vertebrate that almost always has gills, is cold-blooded and has a spine. The fish group has developed over an extremely long period of time, which is essential for understanding the variations between different families and species.

The cod family contains several species. The most common and well-known is probably the cod. Other common fish in the cod family are whiting, haddock, coalfish, ling and pollack.

The cod is a tough fish with a large ability to adapt to different environments. It lives in water with varying salinity, different temperatures and at different depths. In terms of behaviour, the cod is very flexible and can quickly change its environment when necessary. Cod have been registered as moving 700 m in depth in less than one hour, for example. There are large individual differences between fish; some stay in shallow water, others in deep water and some regularly change depth. Coastal cod, however, most often live near the bottom and prefer areas with varied vegetation.

Cod can grow to at least 180 cm and individuals caught have weighed over 50 kg.

Cod biology

Cod off the Bohus coast are sexually mature at a size of 35-60 cm and reproduce between December/January to April. Large cod lay eggs several times during the spawning season, which is an adaptation to increase the probability of at least some eggs hatching in the right environmental conditions.

Cod have a special breeding behaviour, during which males court females by performing small dancing movements, swimming upwards in small circles towards the surface. The

females select a mate and after several "dances" the roe and sperm are released and float freely in the water. Cod lay many small eggs, which is also an adaptation so that some eggs will find the right conditions regarding currents and so on. Egg development is influenced by water temperature,

Cod. Photo: Lars Molander



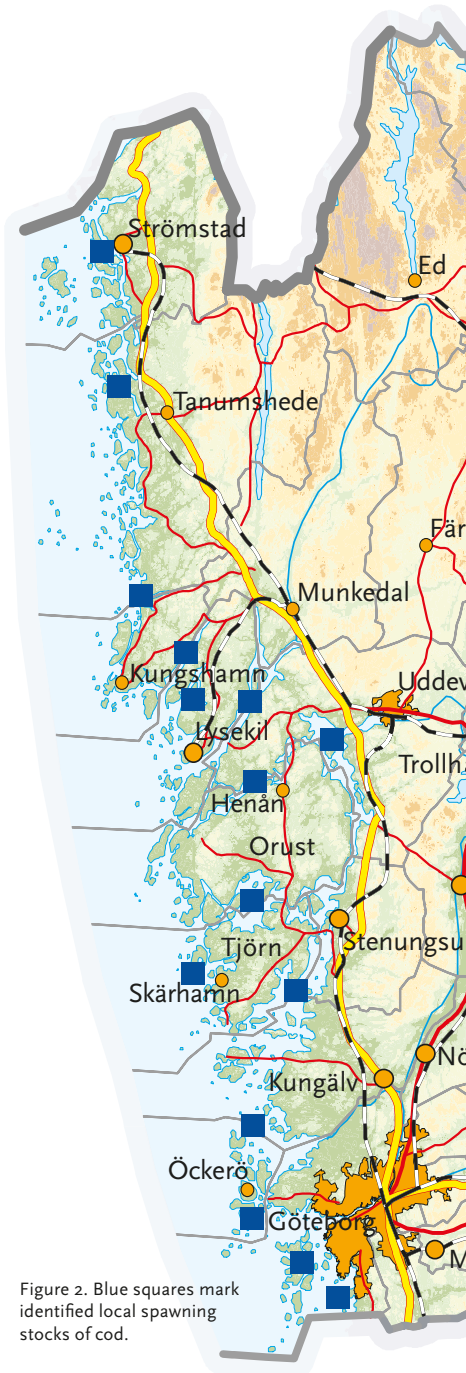


Figure 2. Blue squares mark identified local spawning stocks of cod.

which determines how quickly they mature. The eggs and later the larvae are then taken by water currents to different areas.

When the larvae have developed into small cod, they swim down to the bottom where they can find protection and grow. In this phase of life cod grow quickly and can reach 30-35 cm within two years in the Skagerrak/Kattegat and become sexually mature at 2-4 years of age. After reaching sexual maturity, cod spawn in principle every year.

Geographical division and choice of habitat

Cod are found in the Baltic Sea, Öresund, Kattegat and Skagerrak. Historically, cod has been regarded as one stock, i.e. all cod are identical. This meant that fishing, in so far as it has adapted, focused on a general stock and that local stocks have been more depleted than others. We now know that there are many different cod stocks that have adapted over time to local/regional habitats.

It is primarily coastal stocks that are now down to a critical level, while sea migratory cod are showing signs of recovery. In the Skagerrak coastal area, there are/have been a large number of different spawning stocks (Figure 2). These stocks are considered

to be stationary, which has made them very sensitive to intensive fishing.

In certain years there is also a large influx of juvenile cod from deep sea stocks in the Kattegat and the North Sea. These fish do not generally migrate again before they reach maturity, sometimes leading to the faulty conclusion that cod stocks have recovered and returned.

Along the Bohus coast local spawning stocks have been identified in Bottnafjorden, Bro/Åbyfjorden, Gullmarren and in waters around Orust and Tjörn.

Other cod species

Whiting

Whiting is found along the whole Swedish west coast as well as in Öresund and the western Baltic Sea. It lives above clay-sandy seabed at 5-70 m depth and can grow up to 70 cm long and weigh up to 3 kg.

Coalfish

Coalfish are frequently found along the whole Swedish west coast and sporadically in Öresund and the Baltic Sea. Coalfish are usually in shoals and live in whole water columns (from the surface to the seabed). They can be



Coalfish. Photo: Lars Molander

over one metre long and weigh over 20 kg. Young coalfish come from spawning stocks in the North Sea.

Pollack

Pollack are found along the entire Swedish west coast, from the surface down to 200 metres. Unlike cod, pollack are mainly pelagic i.e. they live in free water and not at the bottom. Pollack grow up to 130 cm and can weigh over 20 kg.

There is much to suggest that pollack, just like cod, consisted of a number of local stocks, but current stocks have been decimated in Skagerrak and Kattegat.

Haddock

Haddock are mainly found in Skagerrak, Kattegat and Öresund, and sporadically in the Baltic Sea. Haddock live on the seabed (at 10-200 metres' depth) and can be up to one metre long and weigh 20 kg.

Pollack. Photo: David Solstorm



Haddock. Photo: Johan Wagnström





Ling. Photo: Lars Molander

Ling

In Sweden, ling is found from Öresund to the north. Information about ling in Swedish waters is poor, but it is believed that stocks have declined due to intensive fishing. It is a seabed species that can grow up to 2 metres long and weigh over 50 kg. Ling usually live in deep water (100–400 metres).

As early as the 1860s, stocks were considered too small in the Kattegat and Skagerrak, so Bohus fishermen sailed great distances to the waters around Shetland.

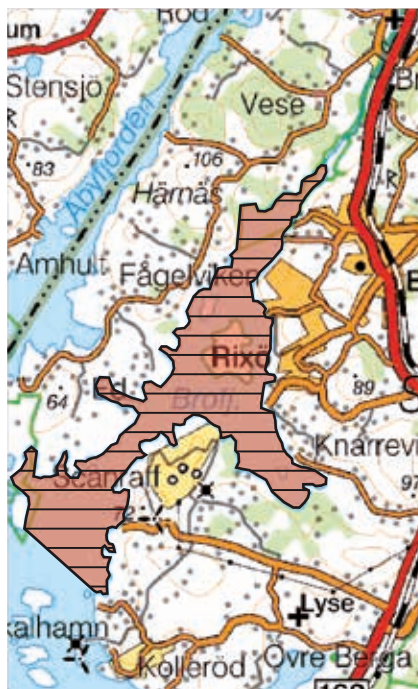
Fishing and regulations in general

Fishing is not included in public rights, and is always based on the concept that someone owns fishing rights. In the sea and the five large lakes,

fishing with hand tackle is free for everyone, though with limits and clear personal responsibility. Fishing regulations are intended to protect stocks to ensure that they have a sustainable status. This means that stocks must be retained for future generations and must be able to survive the fishing that is allowed.

There are a number of main principles incorporated in the fishing regulations. Particularly endangered species and/or sensitive stocks are regulated through restricted areas and forbidden areas. Closed seasons are to protect fish when they are particularly sensitive. Minimum dimensions are used above all to allow the fish to reproduce before they can be caught. Catch limits are established to ensure that the overall stock is not depleted.

In the conservation area around Brofjorden, a maximum of three fish are permitted per fisher out of the total catch of cod, haddock and pollack.



Areas with a net fishing ban deeper than 10 metres

For detailed information, refer to the Fishery Agency regulations (FIFS 2004:36 – Fiskeriverkets föreskrifter).

Fishing regulations for cod and related species

Fishing for cod species is currently regulated through authorised equipment, close seasons, restricted and protected areas, minimum size and numbers of catch.

In the sea, fishing with hand tackle is free for everyone. This means that Swedish and foreign nationals have the right to fish with hand tackle. Hand tackle refers to rods, jigs and similar moving tackle equipped with a line and a maximum of 10 hooks.

The minimum size for cod caught with hand tackle is 30 cm. For other fish in the cod family, there are no minimum dimensions when fishing with hand tackle.

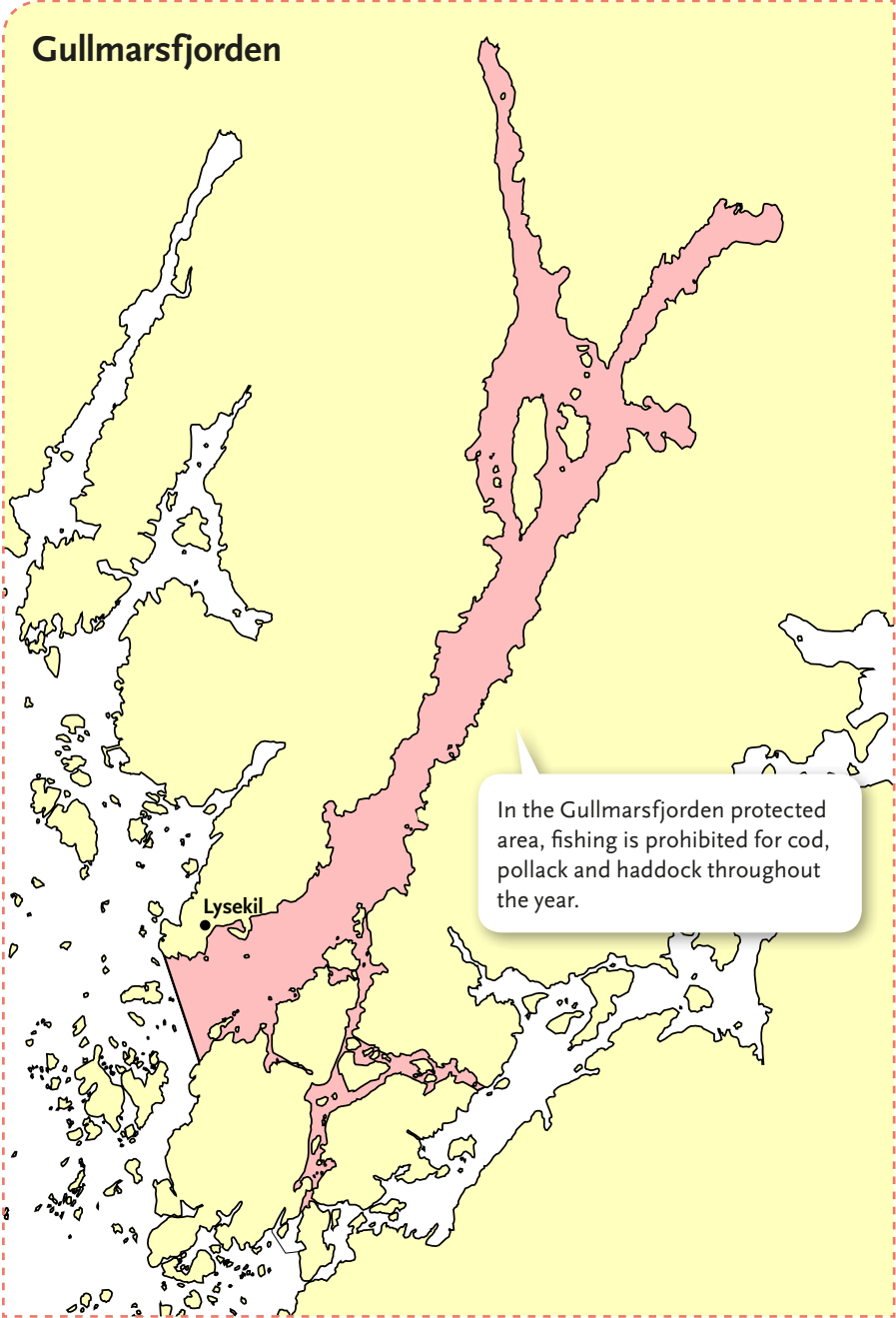
During the period from 1 October to 31 March, it is prohibited to fish in all restricted areas (see leaflet Sea Fishing regulations).

During the period from 1 January to 31 March, it is prohibited to fish for cod, pollack or haddock inside the trawling limit.

In the Gullmarsfjorden protected area, fishing is prohibited for cod, pollack and haddock throughout the year.

In the eight fjords protection area, fishing is prohibited for cod, haddock

Gullmarsfjorden



In the Gullmarsfjorden protected area, fishing is prohibited for cod, pollack and haddock throughout the year.

and pollack throughout the year (Figure 3). It is permitted to fish for other species using hand tackle in the red area. In the blue area it is permitted to fish for other species from land on Orust and from the mainland during the period from 1 April to 30 September.

Releasing fish

Remember that the catches released must also survive. All unnecessary handling of catch to be released is thus illegal. This includes delays due to photography and weighing. Treat fish with care:

- Minimise the time that the fish is in the air. If possible, remove the hook in the water
- Avoid unnecessary long playing
- Do not handle the fish with dry hands
- Avoid unnecessary catching of forbidden fish and stop fishing and change your location if you catch many prohibited fish in one location.

Supervision of fishing

Control and supervision of fishing is carried out by several authorities. The County Administrative Board supervises fishing through a number of appointed fisheries officers, who in particular control coastal recreational fishing. The coastguard focuses mainly on commercial marine fishing,

while the Swedish Agency for Marine and Water Management exercises administrative and physical landing control of commercial fishing. The Marine Police have a general policing role and intervene in the case of suspected offences.

Breach of fishing regulations

Breaches of fishing regulations are dealt with through public prosecution and can result in a fine or imprisonment. Fishing equipment may be seized and confiscated. If you see any infringements of the regulations in force, contact one of the authorities in the contact box to the right.

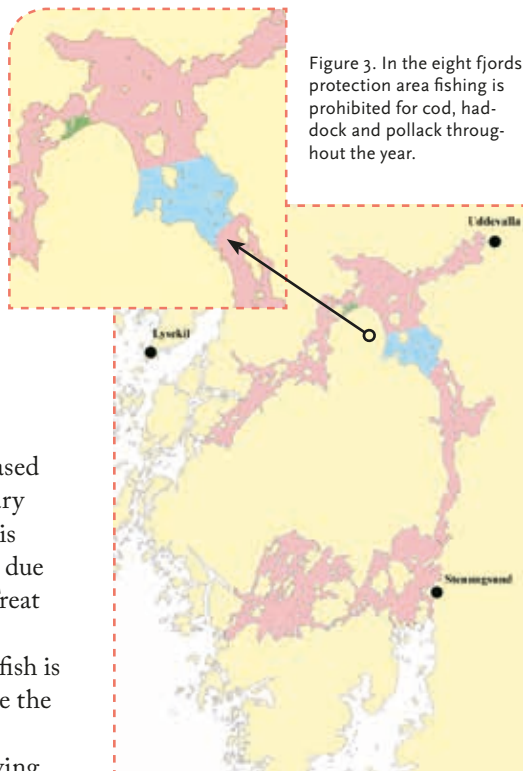


Figure 3. In the eight fjords protection area fishing is prohibited for cod, haddock and pollack throughout the year.

We hope that this folder has been useful for your understanding of cod and related species and why there are fishing regulations. For more information on current fishing regulations, refer to the websites of the County Administrative Board for Västra Götaland county, the Swedish Agency for Marine and Water Management or www.svenskafiskeregler.se.

www.lansstyrelsen.se/vastragotaland

www.havochvatten.se

www.svenskafiskeregler.se

All information is correct at the time of going to press. Remember that fishing regulations are continually changing, so keep up to date with the latest changes. In legal cases, the original printed edition of the relevant legislation applies. Every fisher is obliged to find out what regulations apply to the fishing area in question.

This leaflet has been produced by the County Administrative Board for Västra Götaland county in collaboration with the Swedish University of Agricultural Sciences and the Swedish Agency for Marine and Water Management.

For further information please contact one of the following authorities:

Länsstyrelsen (County Administrative Board)

010-224 40 00

www.lansstyrelsen.se/vastragotaland

Polisen (Police)

114 14

Havs- och Vattenmyndigheten (Swedish Agency for Marine and Water Management)

010-698 60 00

www.havochvatten.se

Kustbevakningen (Coast Guard)

031-727 91 00

www.kbv.se



Photo: David Solstorm



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