

Factsheet: North Sea herring

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North Sea herring

In the Netherlands, the herring (*Clupea harengus*) has been the number-one selling fish species for many years. Herring fishery is one of the oldest existing fisheries in the Netherlands. In 2006, the Dutch herring fishery was brought under the eco label of the Marine Stewardship Council (MSC).

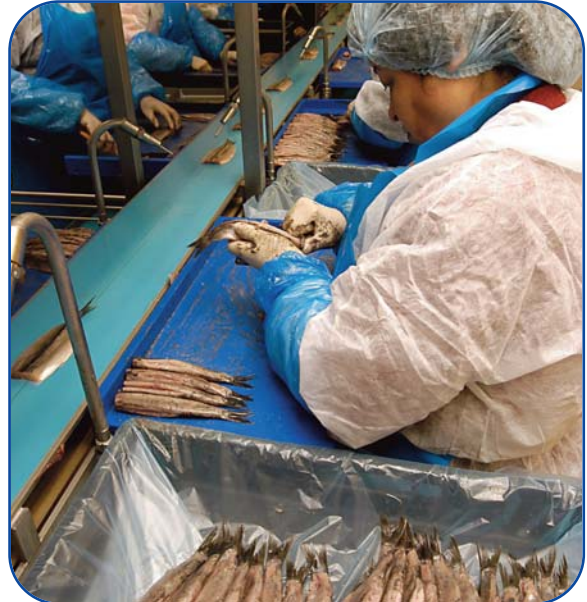
Herring (*Clupea harengus*) is a pelagic midwater species that is widespread throughout the Northern Atlantic Ocean - it occurs off the coast of Norway, around Iceland and Greenland, and off the east coast of the US and Canada. Herring (*Clupea harengus*) is a sleek, fairly small fish with one short fin on its deepblue back. Its bones are soft. Approximately one quarter of its body weight can consist of fat. Hundreds of thousands of herring live together in shoals and feed on plankton and the smallest of sea animals. North Sea herring can grow to be eight to ten years old. After two to three years, the herring is an adult fish and approximately twenty centimetres long. During the day the herring stays in deeper water, whilst at night the shoal rises to feed on plankton. Tiny copepods, no larger than a pin head, are also popular food. The herring uses its gill rakers to retain the food that flows into its open mouth with the seawater and flows out through its gills after it has been filtered.

The animal plankton the herring feeds on is rich in fat, which makes the herring also rich in fat, particularly in summer.

Each year, the herring goes through the same cycle. During the winter months it is thin and in spring the herring will start to grow due to the presence of plankton in the water. May, when the herring is fat enough, heralds the start of the annual season for matjes-herring fishing. This season usually lasts until July. This herring may be called Hollandse Nieuwe when it is rich in fat, and gutted, salted and filleted in the traditional Dutch way. In Belgium, Hollandse Nieuwe (matjes herring) is known as 'maatjes', whilst the Germans call it 'Matjes'.

Social debate

Nature organisations such as the WWF and the North Sea Foundation have put herring in the green column of their fish-purchase guide, the VISwijzer. The message is that it is 'an excellent choice', because the catch methods do not constitute a burden on nature or the environment. All North Sea herring fishery is certified under MSC-criteria by now.



The facts in brief:

- The strength of the year classes of the North Sea herring stock has not fluctuated less than a factor forty during the past 30 years. Although this variability may lead to sudden drops in the fish stock, and with poor management it may even lead to a complete collapse of the stock, it also means that herring stocks are resilient. During past decades, the North Sea herring stock recovered from very low levels. (See figure 1).
- The international fishery researchers (ICES) have said that the North Sea herring's current series of weaker average year classes is not caused by too high a fishing effort. The cause must be sought in one or several changes in the natural environment of the herring population. For example, there are indications of changes in the natural environment in the North Sea that influence the supply of suitable food for the larvae and early life stages of the herring. The exact cause of the weaker growth is not yet known.
- The most recent scientific information shows that the year class of 2006 –and 2007- and possibly also later year classes were considerably bigger than the biologists had estimated at first. Because of this the North Sea herring stock is substantially larger than thought until 2009.



- Also now it is concluded that the fishing effort (measured in mortality of fish or F) is considerably below the value the multi annual management plan aims for. This is also the reason that the TAC has been increased with 22 % in 2011 and the expectation is therefore more than justified that the TAC will increase further in 2012 and later years, which is favorable for the fishing industry, as the quota for 2010 were at a historically low level.

- Since May 2006, herring fishery has been carried out by members of the European Pelagic Freezer-trawler Association (PFA) under the sustainability certificate from the Marine Stewardship Council (MSC). The European Pelagic Freezer-trawler Association (PFA) unites the Dutch fishery companies that practise herring fishery. With this certification this fishery was one of the first major European fisheries to be MSC certified.

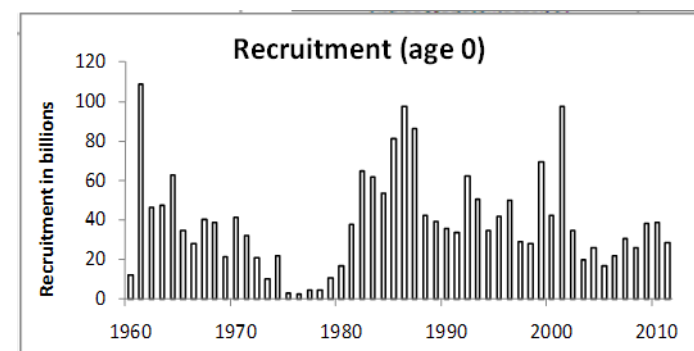
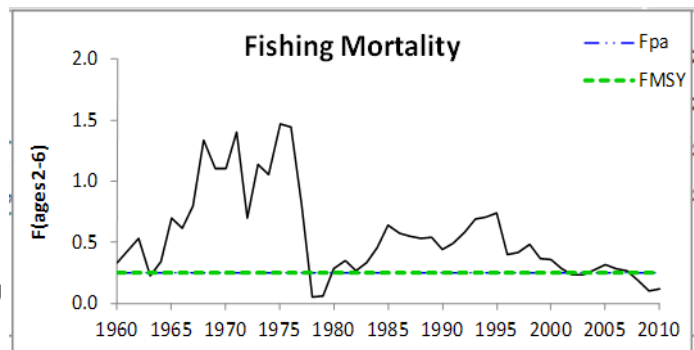
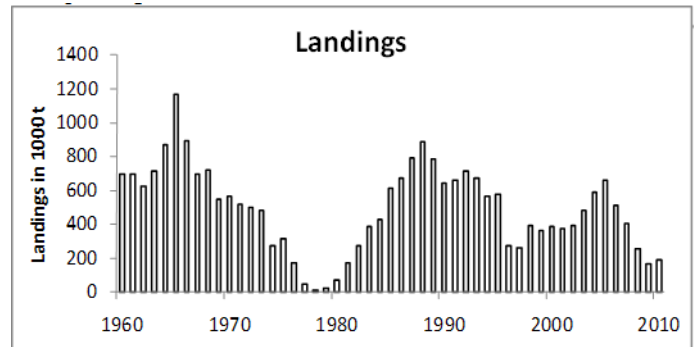
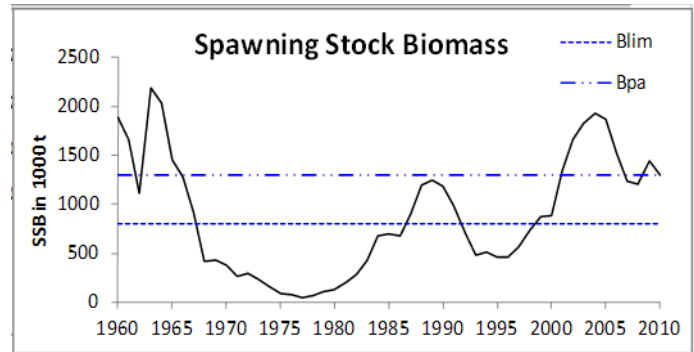
In May 2011 this fishery has been re-evaluated (re-certification must take place every five years) and again the PFA received the MSC-certificate for its herring fishery.

- Dutch herring fishery is mainly carried out by freezer trawlers that sort and freeze the fish immediately after the catch for subsequent sale and/or processing. Only two North Sea cutters still practise herring fishery.

- As pelagic fish like herring swim in shoals of the same species, the fishery is very targeted, which means it is possible to fish virtually without undesirable bycatch. The bycatch of cetaceans in pelagic trawler fishery, such as herring fishery, is virtually nil.

- For the Netherlands, the herring in the southern and northern North Sea is far and away the most important. Dutch trawlers are allowed to fish the herring stock northwest and southwest of Scotland, and the so-called Atlanto herring to a limited extent.

Figure 1: Stock summary for North Sea Herring



Explanation

Biomass (= stock of grown herring, also known as spawning stock): here the black line is important, which should be above the precautionary level (= small dotted line). The latest insights (not yet visible in this figure) show that in 2011 the spawning stock with 1,7 mln ton is well above the the precautionary level of 1,3 mln ton.

Catches (= quantity of landed herring): It is visible that landings have decreased considerably since 2005, which is in line with the reductions of the allowed catches and shows that the way up has been found again in 2010.



Mean F (average mortality of fish): the calculated mortality of herring caused by fishing. Apart from that there is the natural mortality of herring (not shown in this figure). Mortality of adult herring (F 2-6 year old herring) should be on or under the little dotted line, which is the case now. At this moment (2011) this fishing mortality has decreased even further and is now about 50 % of the fishing mortality the management plan aims for. This indicates that the stock is under exploited.

Recruitment (yearly growth of young herring) (expressed in million herrings): This shows a mixed picture, with a slightly lower recruitment since 2001. After three years the herring is fully grown and ends up in the catch. A lower recruitment consequently leads to lower catch after three years. Biologists scaled up their earlier opinions last year and this year: the year classes 2006 and 2007 (and possibly later ones as well) are considerably higher than was thought at first. In retrospect this insight therefore leads to the conclusion that the stock has been underestimated the last few years and as a result of that the TACs have been fixed too low.

The latest opinions (not yet visible in this figure) show that the 2006 year class was 225 % higher than thought so far. The bar for 2006 should therefore be much higher than shown in this figure.

Management measures

The two challenges in the management of herring fishery are the high catch capacity of the modern fleets and the natural fluctuations of the stock, which has consequences for the manner in which the stock should be managed. The most important management measures for North Sea herring fishery are as follows:

- A management plan, adopted by the EU and Norway, based on a bandwidth for fishery mortality. This is applied to the fishery for adult herring for human consumption and to the fishery for juvenile herring for fish-feed production.
- This management plan also includes target levels for the size of the spawning stock that serve as triggers for supplementary measures. During the past five years, these triggers have worked well and the TACs for human consumption and fish feed were cut significantly. As management responded well to the changing stock levels, the MSC has managed to maintain its certification for the PFA. Unfortunately the real cause of the falling growth of this stock is still totally unclear, although the biologists state that fishery is not the cause.
- The main instrument that fishery can employ to control the fishing effort on herring is the annual TACs for the various fishery fleets that fish for North Sea herring. For example, halving that TAC in 1996 prevented a possible collapse of the North Sea stock. Since then the management plan has been renewed, the spawning stock rose to historically high levels, dropped again, and since 2006 the TAC has been cut significantly as a result (See figure 2). From 2011 the TAC rises again because of a positive adjustment of the scientific insights regarding volume of the stock and the annual growth.

- The introduction of a separate TAC for the bycatch of herring in the sprat fishery, which is used for the fishmeal industry, with the objective of reducing mortality amongst young herring, has also proven successful.
- For herring there is no minimum size for landed fish, which is the case for many other fish species. This instrument is only useful for fishery methods, where mesh width is an effective method to select the various fish species. However, this does not apply to herring, as this fish swims in tight shoals and other fish are hardly caught at all.

Figure 2:

| Year | ICES Advice | Agreed TAC |
|------|------------------|------------------|
| 1987 | 610 | 600 |
| 1988 | 515 | 530 |
| 1989 | 514 | 514 |
| 1990 | 403 | 415 |
| 1991 | 423 | 420 |
| 1992 | 406 | 430 |
| 1993 | 340 ¹ | 430 |
| 1994 | 346 ¹ | 440 |
| 1995 | 429 ¹ | 440 |
| 1996 | 156 ¹ | 156 ³ |
| 1997 | 159 ¹ | 159 |
| 1998 | 254 ¹ | 254 |
| 1999 | 265 ¹ | 265 |
| 2000 | 265 ¹ | 265 |
| 2001 | See scenarios | 265 |
| 2002 | See scenarios | 265 |
| 2003 | See scenarios | 400 |
| 2004 | See scenarios | 460 |
| 2005 | See scenarios | 535 |
| 2006 | See scenarios | 455 |
| 2007 | See scenarios | 341 |
| 2008 | See scenarios | 201 |
| 2009 | See scenarios | 171 |
| 2010 | See scenarios | 164 |
| 2011 | See scenarios | 200 |

- Weight in '000 mt.

- ICES (International Council for the Exploration of the Seas): does scientific research and formulates advices for fishery management

- TAC: Total Allowable Catch

Trade and processing

In the Dutch fishery on North Sea herring the herring in most cases is sorted and frozen on board directly after the catch. This herring is not suited for the production of matjes herring. In the fishery for matjes herring the fresh herring is gutted, salted and frozen after landing. Only on two Dutch trawlers this process of producing matjes herring is handled at sea. The freezing of herring is a legal obligation in order to render harmless the herring worm (a parasite hazardous for man), which can be present in the fish.

The herring frozen at sea is sold to -almost always European- processing companies, or is exported for direct consumption. The latter export is generally focused on third countries.



Herring is processed in three types of companies - producers/traders of salted herring, pickled herring, and herring and mackerel smoking companies. Then there are the suppliers of raw materials for the production companies. Matjes herring is processed and traded by these specialised companies, but also by the domestic fish wholesalers.

For resources the herring processing industry mainly depends on the development of the herring fisheries in the North Sea and the Skagerrak. The Dutch industry processes no more than 10 to 15% of the international herring supply from this area.

Calculated by wholesale value, more than half of the production value is destined for the domestic Dutch market. The most important companies in the sector supply both domestic and foreign purchasers. The export products are mainly supplied to wholesalers and importers, whilst fish wholesalers and fish retailers are the main domestic purchasers.

A 'starting date' for the sale of matjes herring is set every year. The determination of this date requires great precision because the catch of matjes herring can only take place during a short period of time. The start of the herring season in the Netherlands and in Germany involves a lot of festivities.

Of the total allowable catch of North Sea herring of 200.000 tonnes (2011) 30.000 tonnes are processed into Hollandse Nieuwe. This amounts to a total of 200 million herrings. 50% of this amount is exported to Germany, 42,5 % stays in the Netherlands and 7,5% is exported to Belgium. The remaining quantity North Sea herring (170.000 tonnes) is not Hollandse Nieuwe, but is often processed in to rollmop, smoked herring or is frozen whole on board and exported.

Matjes herring is mostly exported to Germany and Belgium. The remaining herring and herring products find their way to many other countries in and outside Europe.

Would you like to know more?

If you would like to know more about herring and/or the measures taken by the Dutch fishery sector, please visit www.pvis.nl where you will find more information.

References

1. ACOM (2010)
2. HAWG (2011)



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