Fish stocks at biologically safe levels

North Sea EcoQO
Maintain the spawning stock biomass above precautionary reference points for commercial fish stocks where those were agreed by the competent authority for fisheries management. Spawning stock biomass (SSB) is the part of the biomass of the defined commercial fish stocks that takes part in the reproduction process. This is an important indicator of the biological health of these stocks.

What is the problem?
Overfishing

What is the Ecological Quality Objective (EcoQO)?

Fisheries have a major impact on the North Sea ecosystem, both directly by affecting targeted fish stocks and indirectly through affecting the food web. The EcoQO seeks to maintain safe levels of fish species by management of fisheries based on the precautionary principle.

The objective is to achieve safe levels of defined commercial fish stocks. This means ensuring that the SSB of these fish stocks is kept above the agreed precautionary limits used in fisheries management, so that we can be reasonably confident that the point at which there is a serious risk of stock collapse (the sustainable limit) is never reached. Precautionary limits have been set for 13 North Sea fish stocks (out of 15). There are also some stocks with restricted distribution in the Skagerrak and Kattegat (7 stocks) and the Eastern Channel (2 stocks). Several commercially important pelagic stocks straddle more than one Region (e.g. hake, blue whiting and mackerel) and are assessed at wider geographic scales than the North Sea. The harvesting strategies for all fish stocks should result in a high probability of maintaining them above the agreed limit in the long term. The safest way to achieve this is to keep the fishing mortality (the proportion of the population removed annually by fishing) below the levels that would in the long run result in a SSB below the agreed precautionary limit.

The EcoQO is based on the system of evaluations of the status of commercial fish stocks used in practical fisheries management. Many commercial fish populations in the North Sea are regularly monitored by North Sea countries and assessed annually by ICES as a basis for advice to fisheries managers. By using this information, the EcoQO contributes to the integration of fisheries and environmental issues as part of the application of the ecosystem approach to management.

Has the EcoQO been met?

The status of SSB in relation to the EcoQO for the stocks for which reference points have been defined is shown opposite for the period 1998 to 2009. Evaluations of fishing mortality are also shown. Since 1998, there has been an improvement in the status of several fish stocks in OSPAR Region II, including plaice and hake, which have both been the subject of recovery plans under the EU Common Fisheries Policy.

However, the status of cod stocks throughout the North Sea continues to be of concern, as both SSB and fishing mortality are still on the wrong side of the limits for sustainability. In 2009, SSB for North Sea herring was below the precautionary limit, although fishing pressure has been reduced. Excessive fishing pressure on mackerel (combined stock) increases the risk of SSB moving below the precautionary limit. The North Sea mackerel stock for EU waters, which is assessed within a combined stock covering western European waters, has been considered to be depleted since the 1970s. Herring and mackerel populations play a major role in the structure and function of the North Sea ecosystem. The North Sea and Eastern Channel stock of whiting is among the further eleven stocks in Region II whose status is uncertain either due to a lack of defined reference points or to inadequate data.

How does this affect the quality status?

Commercial fish species are important components of marine ecosystems because they are the most important part of the biomass which provides intermediate links in the food chain, between zooplankton and marine mammals and birds. Several commercial fish species have large populations in the North Sea (e.g. herring and mackerel) and are considered to have major roles in the structuring and functioning of the North Sea ecosystem and food web.

Photo: © Paul Naylor

What happens next?

This EcoQO reflects the desired quality status of North Sea fish stocks as important components of the North Sea ecosystem. More data are needed to set precautionary limits for all commercially fished stocks. Management measures could include the regulation of the fishing effort, the catch levels and the establishment of protected areas. Since OSPAR recognises that questions of fisheries management are more appropriately regulated by competent fisheries management authorities, OSPAR will urge these authorities to take appropriate measures for those stocks that fail to meet the objective. EU Member States and Norway should work together under the EU Common Fisheries Policy to achieve any fisheries-related objectives under the EU Marine Strategy Framework Directive.

Species	Stock	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Cod	North Sea, Eastern Channel, Skagerrak	!	!	!	!	!	!	!	!	!	△	!	!
Cod	Kattegat	!	!	!	!	!	!	!	?	?	?	?	?
Haddock	North Sea, Eastern Channel, Skagerrak	△	△	!	△	✔	✔	✔	✔	✔	✔	✔	✔
Saithe	North Sea, Skagerrak, west of Scotland	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Hake	Northern stock	△	△	△	✔	✔	△	△	✔	✔	✔	✔	✔
Plaice	North Sea	!	△	✔	△	△	△	△	✔	✔	✔	✔	✔
Plaice	Skagerrak, Kattegat	△	△	△	✔	△	△	△	?	?	?	?	?
Plaice	Eastern Channel	!	!	!	!	!	△	△	?	?	?	?	?
Sole	North Sea	△	△	△	△	△	△	△	△	△	✔	△	✔
Sole	Eastern Channel	△	△	△	✔	✔	✔	✔	✔	✔	✔	△	△
Herring	North Sea, Eastern Channel, Skagerrak	!	△	△	△	△	△	△	△	△	△	△	✔
Mackerel	Combined (Western, Southern, North Sea)	!	!	!	!	!	!	!	!	△	!	△	△
Norway pout	North Sea and Skagerrak	✔	✔	✔	✔	✔	✔	!	!	?	?	?	?
Blue whiting	Portugal to Norway	△	△	!	△	△	!	!	!	!	△	△	✔

Spawning stock biomass		Fishing mortality		
$<B_{lim}$	Reduced reproductive capacity	!	$>F_{lim}$	Harvested unsustainably
$>B_{lim}$ and $<B_{pa}$	Risk of reduced reproductive capacity	△	$<F_{lim}$ and $>F_{pa}$	At risk of being harvested unsustainably
$>B_{pa}$	Full reproductive capacity	✔	$<F_{pa}$	Harvested sustainably
	No assessment	?		No assessment