

for example in the Baltic Sea, Norway have been better to check the Russians in the Barents Sea, and mackerel fisheries in Scotland also have better control, says Henrik Sparholt, who also suggest that research simply has improved, and adds that the dialogue between fishermen and scientists in recent years have been better.

- Some suggest that the implementation of Fmsy has helped, says Henrik Sparholt, who also explains that others see MSC as a possible cause. Furthermore, Henrik Sparholt believes that it is a contributing factor, that

fishermen today are better educated and better to plan their activities on a long-term scale.

- Which explanation is the right one is not to say, but it's probably a combination, and there are probably more than the ones above, says Henrik Sparholt who does not give much credit to the theory that it is nature itself that has created the positive trend in fishing mortality.

- Why all species and ecosystems at once? It sounds unlikely, says Henrik Sparholt.

Trends in mortality rates shall be used constructively

Recent year's significant decrease in fishing mortality provides the basis for more meaningful long-term management plans and a more constructive use of fish stocks.

Danish Fishermen's Association was pleased to note that the latest data from the International Council of ICES show a clear trend towards a significantly lower mortality for all species types during the last five years.

- That is what we have been saying for the last three to four years. Now it has also been verified scientifically from ICES, that what we have said is true, says biologist in the Danish Fishermen's Association Michael Andersen. He reckons that it is the decline in fishing effort that now can be seen reflected in the development of the fishing mortality.

- It is obvious that when the effort on all species is reduced to protect one species - cod - then this will result in a significant reduc-

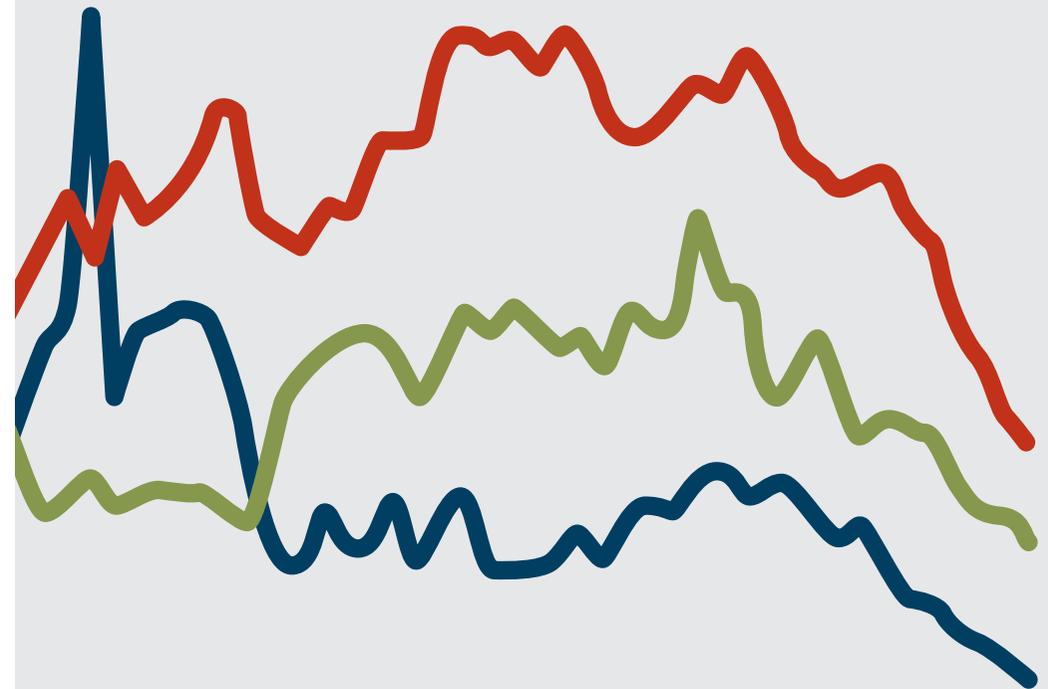
tion in the exploitation of many other species that are common, says Michael Andersen. He also observes that development in recent years has been so positive, that the objectives of the so-called Fmsy, expressing the fishing mortality that gives the maximum sustainable yield, is about to be reached.

- This provides the basis for the establishment of new long-term management plans, which also have more focus on the interaction between species. I do agree that some stocks may become so large that they will end up destroying their own food resources. This is why some species needs to be fished a little harder, says Michael Andersen, who appeals that the positive trends will now allow for management that is characterized by longer-term plans, not short-term panic solutions.

- This gives rise to a more constructive use of stocks, says Michael Andersen.

Fishing pressure has plummeted

A very positive trend in fishing pressure in recent years gives cause to rethink the management of fish stocks



Fishing pressure on fish stocks in the Northeast Atlantic area have fallen dramatically in recent years. This is seen in the latest assessments from the International Council for the Exploration of the Sea. Behind the figures lies the jubilant fact, that the very clear positive trend in fishing mortality can be seen for more than just one species group. The pelagic stocks, including species like mackerel and herring, have been stable with a reasonable fishing mortality since they were rebuilt from the stock collapses in the 70s. The development has been somewhat different, until recently, for the demersal species, such as cod and haddock, or the benthic species, such as plaice and sole.

- The demersal and benthic species show roughly the same pattern. Over the last half century, until about five years ago, fishing mortality rates for the two species groups increased steadily. But then something dramatically positive happens to the fishing pressure on those fish stocks. Within the last 3 to 7 years something has succeeded, because it is a clear trend we have now, and the North Atlantic area is very large, says Henrik Sparholt from ICES. He points out, that the same downward trend is seen in the pelagic species, although it's not strictly necessary, as the pelagic species on average have not been overexploited in the last few decades. The latest development is so positive, that the objectives of meeting the so-called Fmsy target, which is the fishing mortality that gives the maximum sustainable yield, is about to be reached.

- The pelagic species are on average exploited below the target, and the other groups are closing in. The Fmsy targets for the stocks in the demersal and the benthic group are higher than the target for the pelagic species. The demersal group, with the highest present mortality rate, also has the highest Fmsy, and it is not the goal to get

them all down to the lowest group, explains Henrik Sparholt.

New situation

The clear trend towards a lower mortality rate, that begins to be close to the objectives, can have the consequence, that management and advice about fish stocks perhaps should be reconsidered.

- It's a surprising development, we have seen the last five years, and it is a new scenario we are facing. Until now, all effort has been invested in trying to reduce fishing pressure, because it was the only thing that could improve the situation here and now. Now we may have to rethink, because we will be facing some problems we have not had before, says Henrik Sparholt. As an example, he mentions that some stocks can become so large that they deplete their food source and eventually start to eat their own kind.

- We have to think about what the next step should be. It may be that more should be caught of some species. It is a new situation, says Henrik Sparholt, welcoming, that 30 years of research with multispecies models that can be brought to use.

Half as large fish pressure

Henrik Sparholt stresses, however, that the results are presented as averages, and that there are still stocks which are in trouble. As examples, he mentions cod in the Kattegat and West of Scotland.

- Some stocks are still in a bad state, but the trend in fishing mortality is very positive, and it is surprising that it happened in such a short time, says Henrik Sparholt who believes that fishing pressure has been too high, but that it is now going the right way.

- Fishermen catch roughly the same quantities now with half as much fishing pressure, as they did 10 to 20 years ago, when fishing pressure was twice as high. So you could say

that stocks are built up to double size, explains Henrik Sparholt. Although the trends of the three species types are similar, there are differences in the actual level of fishing mortality. Fishing pressure is higher on the demersal species than it is on benthic and pelagic species. One reason is that demersal species are easier to catch than the benthic, where plaice and sole for example are buried in the sand on the seabed. Pelagic species such as herring and mackerel swim in shoals and can be traced and caught with modern technological equipment. In spite of this, pelagic species have the lowest fishing mortality rates, which have been stable for many years until they also dropped approximately five years ago.

- This was caused by management measures. When the stock collapsed in the 70s management almost had to start from scratch, and this was done with a reasonable number of fishing vessels. The story has been different for the other species types, but tech-

nological advances have led to a revolution in the number of fishermen which has been reduced drastically. The reduced number of fishermen has just not been reflected in the pressure on the fish stocks, because the technology has been even stronger with better tools, better techniques and larger engines, says Henrik Sparholt.

Many causes

The reason for the positive trend in fishing mortality in recent years is not straightforward. Henrik Sparholt and other experts in the field, could not find a clear reason for the positive development, which is also fairly new information to ICES.

- I have heard many explanations, and it is still quite new to us. Some say that it is because of tradable quotas. Other mentions long term management plans, says Henrik Sparholt, who also mentions fewer days at sea and better control.

- It is clear that there has been better control,

Fishing mortality

