

The ecosystem approach to sustainable fisheries

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The ecosystem approach to management of fisheries is so far more words than practical actions. It is surprising how few of these words are “species interactions”. It seems that one could implement the ecosystem approach without addressing and quantifying how different species influence one another. For the industry, however, this is the essence of the ecosystem approach to management. Norway is blessed with an ecosystem in which the interactions are strong and obvious and tractable: the Barents Sea. Implementing an ecosystem approach to management in the Barents Sea in which species interactions are quantified and taken into account would provide an interesting case study worldwide.

The interaction between species in the Barents Sea is of significance to the industry and other stakeholders. A large herring stock leads to a lower and more strongly fluctuating capelin stock. An increase in the cod stock leads to a decrease in the capelin stock. A small capelin stock leads to more cannibalism and slower growth of the cod stock.

These interactions can immediately be translated to effects on the economy of various parts of the fishing industry. A large herring stock is good for the pelagic industry, but bad for capelin fishers and bad for the cod stock. A large cod stock is good for the trawling industry and coastal fishermen but bad for those getting their livelihood from catching capelin and processing it for human consumption, or for those processing capelin to meal and oil for the aquaculture industry.

Yet herring, capelin and cod are managed largely on a single species basis without taking into account the significance of one species for the other species. We are, however, underway towards a multispecies perspective on management in that consumption of capelin by cod is accounted for in the management of capelin. This approach and the methodology underlying it can be extended to include larger parts of the ecosystem.

To me, and I presume also to the industry, an ecosystem approach to managing fish stocks must involve a thought about whether we manage these species in the best way, when we consider the interactions between them.

However, doing so – and it is quite feasible for the Barents Sea - will bring to the table conflicts of interests within the industry, and shifting the current practice in one direction will imply shifting economic benefits from one part of the industry to another. Some will lose, even if we can achieve a greater total good.

Therefore, an essential part of implementing such an approach should involve stakeholders in discussions around new multispecies harvesting rules. If not, a societal consensus would be hard to reach. However, this is a scientific discipline in itself, and I feel Norway could benefit largely by learning from and co-operating with other countries.

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Good management practice stands and falls with good information from the fishery. We need to know how much is caught, and from which age groups in order to arrive at a perception of the stock as correct as possible. In order to obtain better and continuous samples from the fishing fleet, 17 high seas and 21 coastal fishing vessels are currently contracted by the Institute, and referred to as the Norwegian Reference Fleet. Crew members are trained to conduct self-sampling. The Reference Fleet has proved itself to be a useful data collection platform for many purposes and contributes also to better trust and understanding between fishermen and scientists.

The ecosystem approach to management is more than taking account of interactions between a few of the most commercially important species and involving stakeholders. Norway got last year a new act relating to the management of all wild living marine resources (the Marine Resources Act), aiming to ensure sustainable and economically profitable management and to promote employment and settlement in coastal communities. Comprehensive management plans are in place for Norwegian waters in the Barents Sea and the Norwegian Sea, and under development for Norwegian waters in the North Sea.

Protecting vulnerable species and areas is an essential part of the ecosystem approach. Norway uses 4 categories of protected areas: trawler-free zones, areas with a high portion of undersized fish, areas aimed at protecting local fish stocks and lobster in the coastal zone and areas for protecting coral reefs.

All plans and dreams of a better management of the fish in the sea end up in nothing unless the plans can be followed. The largest threat comes from the too widespread practice of discarding fish, either in order to obtain higher prices by throwing away small fish or because of overfishing vessel quotas. Norway introduced a ban on discard in 1987 in order to preserve the 1983 year class of Northeast arctic cod – which then was the hope for avoiding a near extinction of the stock. Now all the fish shall be landed. This is difficult to achieve in practice and complex regulations and control measures are in place.

During the last decade there have been a substantial black market for cod and haddock from the Barents Sea, which caused problems in the management of these stocks. This seems now to be a lesser problem due to vigorous counter measures, among which at sea- and port controls may be the most important.

Tourist fishing has become an increasingly important part of the Norwegian travel industry, and may together with the national recreational fishery account for a significant portion of the fishing mortality of local fish stocks. Cod dominates the catches in Northern Norway, while saithe and mackerel are the most common species caught in the tourist fishery in Western and Southern Norway. The Institute has conducted a three-year study to estimate yearly catch and effort taken by boat anglers associated with 400 registered tourist fishing businesses all along the Norwegian coast. Still, uncertainties connected to the amount and composition of recreational catches pose a severe problem in the management of the coastal stocks.

Catches in excess of the quotas, either from discards, illegal fishery or unregistered recreational fishery are a problem not only because they may threaten the stocks directly, but also because they

make it difficult to get a proper assessment of the stocks – they lead to a wrong perception of stock size and thereby to a weak fundament for an effective regulation and protection of the stocks. As many stocks are shared stocks, countering malpractice in the fishery must also be an international co-operation without which all dreams of a proper management fall apart.