Norwegian fisheries management, our approach on discard of fish

It is important that the policy of sustainable marine resource management is based on certain key principles: sustainable harvesting, ecosystem approach, adequate regulations and an efficient control and enforcement scheme. These principles are undermined by discard of fish, which is one of the most serious threats to sustainable management.

Sustainable management of modern fisheries

The management of modern fisheries has a number of objectives. The most basic objective, upon which the others must be based, is to manage the fisheries in such a way that the fish resources can be sustained at a viable level both biologically and economically. In order to achieve a sustainable harvest, the Norwegian management of living marine resources is based on the best available scientific advice. The International Council for the Exploration of the Sea (ICES) plays a critical role in assembling and analysing information about the status of fish stocks and the provision of scientific advice on management measures.

ICES provide quota recommendations, which are used as the basis for quota negotiations between Norway and other states. During the negotiations, the parties agree upon management measures, including a Total Allowable Catch (TAC) for each fish stock for the coming year, and how the TAC should be distributed between the parties. In the light of the overall objective, it is important that the catches do not exceed the agreed quotas. The problem of discards, as well as IUU (illegal, unregulated and unreported) fishing, undermines the basis for the TAC.

It is our view that discarding is a waste of resources, and represents an obsolete and irresponsible resource management policy. Discards lead to unrecorded catches, which in turn lead to incorrect fisheries statistics and disrupt the basis for scientific assessments of stocks and scientific advice on management. Norway has accordingly established a set of regulations and other management measures in order to reduce the problem of discards, which will be presented in the following.

Discard ban, the background

Norway introduced a ban on discards in 1987. It is important to note that the discard ban is only part of a larger, comprehensive package of policies by which Norway tries, in a pragmatic way, if not to totally eliminate the discard problem, then at least to minimize it. When the discard ban was established, there was a special reason behind that decision. After seven consecutive weak year classes, the arctic cod stocks were in a very poor condition when finally, in 1983, a strong year class occurred. But a strong year class could be grossly reduced through excessive discarding. Steps had to be taken to avoid history repeating itself. The answer to the problem was the establishment of the programme of temporary closure of fishing grounds. Another problem was high grading. In a situation with large catch rates, the cod trawlers were inclined to keep only the biggest fish, discarding the smaller, but still legal-sized fish. What they were doing was perfectly legal under the existing laws and regulations at that time. Everybody, politicians, scientists, managers and fishermen, recognised that the practice of discarding huge quantities of cod was a waste of a valuable resource as well as morally wrong. The practice of throwing away valuable food also got headlines in the Norwegian media and attracted the attention of the public.

Even though the Minister of Fisheries was told that a discard ban would be difficult to control and enforce, he banned the practice on ethical grounds. This was a very important decision and the ban on the discarding of cod and haddock had an immediate effect on the trawler fleet's behaviour on the fishing banks. The very existence of the rule has proved beneficial in changing fishermen's attitudes and discouraging the practice of discarding.

Regulations aimed at the fishing activity

Norway's conservation and management philosophy rules that all regulations and corresponding enforcement should be directed towards fishing activities themselves as the starting point. Under Norwegian legislation, it is prohibited to fish "illegal" fish. The prohibition constitutes an obligation to fishermen to change fishing grounds wherever the fishing contravenes regulations. They are obliged to avoid placing themselves in an illegal position. For instance, if bycatch limits or the permitted intermixture of undersized fish are exceeded, the fishing cannot be continued on the same fishing ground. The Coast Guard will instruct the vessel to move to another fishing ground if an inspection reveals that the intermixture of undersized fish is too large. It should be noted that this does not represent a closure of areas. It is merely friendly advice to help the fishermen stay within the law. This measure has been applied in Norwegian waters in the Barents Sea, the Norwegian Sea as well as in the North Sea.

Closure of areas

Over recent years the focus of control and enforcement has gradually been extended from concentrating on technicalities like mesh size and attachments to nets, to also include more general solutions aimed at promoting a biologically sound fishing pattern. This extended focus is consistent with the general conservation and management philosophy just mentioned. Closed areas are basically grouped into three categories, namely trawler-free zones, flexible areas and areas with a too high portion of undersized fish. However, there also exist strict regulations aimed at protecting juveniles and local fish stocks in the coastal area.

Trawler-free zones are permanently closed areas. They were established mainly for biological reasons and to avoid gear conflicts. Flexible areas are fishing grounds where gear conflicts frequently occur, and gear conflicts are to be prevented by means of enforcement.

The surveillance programme in the Barents Sea

In addition to the establishment of permanently closed areas, in the late 1980s, Norway introduced a surveillance programme in the Barents Sea. This is a programme for closing and opening of areas on a real-time basis to avoid the catching of undersized fish and intermixture of unwanted species. The most important species in the Barents Sea are covered by the programme. Commercial fishing vessels are hired to investigate the fishing grounds, with specially assigned inspectors on board. Specific criteria for closure are laid down. When investigations reveal that the criteria are fulfilled, a proposal for closure will be submitted from a regional office located in Tromsø to the Directorate of Fisheries in Bergen, where the decision is taken. Information on where to investigate is received from scientists, from the Coast Guard and from the fishing fleet. Closed areas are re-examined after a period to see if there is still a basis for keeping them closed.

The concept of opening and closure of areas has been developed in close co-operation with Russia. The programme is an extremely important instrument for achieving rational exploitation patterns in the Norwegian fisheries. It is likely that the recovery of the cod and haddock stocks in the Barents Sea, which were both in a very poor state some years ago, is due to this programme of temporary closure of areas.

From a conservation perspective, there are no negative side effects related to the method of closing areas with undersized fish. There is full agreement between Russia and Norway about the suitability and usefulness of this approach. Moreover, this regulation is also highly recognised and respected by the fishermen, with whom it has gained a high degree of legitimacy. This is because, by closing areas full of small fish, the regulation prevents behaviour which is contrary to their professional code of conduct as fishermen; fishermen generally consider that catching fish below an accepted minimum size is unprofessional and morally wrong.

Although the method of closing areas has proved successful in the Barents Sea, this does not mean it will automatically be usable in other waters. However, countries managing fisheries in other waters may well find it worth investigating.

Development of selective gear
The focus in Norway on the discard problem over the years, and especially the regulations introduced to cope with the problem, have had a beneficial influence on the research and development of more selective gear. The temporary closure of fishing grounds driving the introduction of grid technology both in shrimp and cod trawls is a very good example of this spin-off effect.

Other measures to reduce incentives to discard
In getting fishermen to end the practice of discarding, the Norwegian authorities' approach has been one of carrot and stick. In parallel with the prohibition against discarding, there is a compensation scheme for fishermen who land fish caught unintentionally in contravention of the regulations. In Norway, the general rule is that the economic value of the fish caught in contravention of the regulations is forfeited to the state. As such, where vessel quotas or bycatch limits are exceeded, the fishermen may regard it as better to discard the illegal fish rather than landing it. As an attempt to counter such behaviour and to support the loyal fishermen, there is a compensation scheme. Fishermen retain 20% of the forfeited sum of money if it is established that the illegal catch was taken unintentionally. However, this policy only applies for the whitefish sector.

In the pelagic fisheries, there are various measures to avoid overshooting of quotas. Overshooting is mainly caused by the fishery operation itself. This may be due to problems with estimating the last catch or bycatch in other fisheries.

The main measure for avoiding overshooting in pelagic fisheries is the so-called under-regulation of the different group quotas. This means that the sum of the vessel quotas is lower than the overall group quota decided on. The difference is estimated on the basis of earlier overfishing at vessel level.

In addition to the general measures for the regulation of the different fisheries to avoid overfishing, Norway also have available a set of rules for sanctions against the individual fisherman or vessel, both for overfishing and illegal fishing.

By-catches
The problem of by-catches is a complex one and perhaps the most challenging to deal with. Various fisheries may need different solutions and the permitted percentages of by-catch vary between fisheries. Norway attempts to set aside the quantities required to allow for by-catches before determining the quantities for direct fisheries. For North Sea cod, the first priority is to cover unavoidable by-catch in other fisheries. The necessary quantity to cover unavoidable by-catch is calculated annually and is set aside before the fishery is opened.

Effort regulations

Licences

Access limitation in the form of licences has been a widely used tool for a long time, in fact since early in the twentieth century. The law on trawling, which dates back to 1951, prohibits all use of trawls without a licence issued by the fisheries authorities. Since then the licence has been transformed from a kind of general rights document into several sub-categories where each sub-category grants the right to trawl for identified species only.

However, the most encompassing reform to licence regulation was the introduction of vessel quotas for the coastal fleet in the fishery for Northeast Arctic cod, in the late 1980s. The cod stock was at a serious state and the TAC was set to 340 000 tons in 1989, down from 630 000 tons the previous year. In 1989, the coastal fishery was closed after only three and a half months. Because of this, an individual vessel quota system was established in the costal fleet. This represented exclusive rights to fish distributed to a limited number of fishermen based on tradition. More than 3000 vessels were excluded from the vessel quota arrangement. This caused upheaval in fishing communities and provoked public debate on fisheries management. However, if this particular vessel quota regulation were to make sense in terms of economic output, the number of participants had to be restricted.

Today all fisheries of importance require every vessel to hold a licence that allows it to participate in the fishery. Limitations on access to fisheries are critical to management as well as to the economics of the fleet.

Registration requirements

Other measures of access limitation are certain registration requirements set out in the annual regulation for each fishery. The most common requirements relate to the vessel and/or the owner/master of the vessel. The annual regulation requires the vessel to be listed in the official register of fishing vessels, and similarly require the master of the vessel to be officially registered as a fisherman. These mandatory registrations are introduced in order to reserve fishing rights for professional fishermen and thereby reduce effort.

Quotas connected to individual vessels
Other important elements in this regard are quotas linked to individual vessels. There are three types of quotas which are integral to the Norwegian regulatory system. The Norwegian national quotas are allocated to different groups of vessels; these quotas are then allocated to each vessel, either by individual vessel quotas (IQVs) or by maximum quotas. With IVQs, the group quota is shared amongst the participating vessels with a fixed and "guaranteed" portion. Using the system of maximum quota an upper limit is set to the annual catch. As the sum of the allocated maximum quotas is higher than the group quota, the participating vessels of the group have no "guarantee" that they will be allowed to fish the quota before the total group quota is taken, and the fishery is stopped.

Vessel quotas and maximum quotas give a fixed maximum quantity of a certain species, and this quantity must not be exceeded by any vessel participating in the fishery for that species.

Control and enforcement
The fisheries regulations are enforced both at sea, when the fish is landed and when it is exported. At sea, the Coast Guard is responsible for inspecting fishing vessels and checking their catch against their log books. Both Norwegian and foreign fishing vessels are subject to stringent controls in all Norwegian waters. Vessels over 24 metres are required to carry satellite transponders that make it possible to track their activity 24 hours a day all year round. The activities of the Coast Guard are generally considered vital for the functioning of the management regime as a whole.

The Directorate of Fisheries also inspects activities on the fishing grounds. When catches are landed, the landing data are checked against the fishing rights of the vessel. This task is performed by the fish sales organisations and the Directorate of Fisheries. The Directorate also performs physical inspections of landings.

Conclusions
The combination of effort limitation and the regulation of catches has proven to be effective in preventing overfishing of quotas. However, success is also due to the existence of prudent technical regulations in combination with a discard ban, as well as certain area regulations. The main object is to promote an exploitation pattern where recruits and undersized fish are spared, and where unwanted by-catch can be minimized. All in all, this seems to secure a fishery conducted in accordance with a reasonable exploitation pattern.