

FISHERIES MANAGEMENT IN THE BARENTS SEA

by

Tore Jakobsen
Institute of Marine Research
P.O. Box 1870 Nordnes
N-5817 BERGEN, NORWAY

ABSTRACT

The fisheries in the Barents Sea are of very high importance to the region. Most of the fish stocks are shared by Norway and Russia and joint management decisions are taken by The Joint Norwegian-Russian Fisheries Commission. The delegations comprise representatives of the fishery administration and the fishing industry and biologists. The present management decision process in Norway and in the Commission is described and some explanations why the process has not been further developed are offered. Although the Commission has a long history with substantial progress in relations and co-operation, the management is still characterised by short-term decision-making. Biological advice is an important part of the decision process, whereas economic or socio-economic advice has not been requested or, if existing, has been largely ignored. Possible reasons for this are discussed. A joint symposium on management strategies this year could be a first step towards a management regime with a longer perspective. This should give better opportunities for other scientific advice than biological to be used in the management.

INTRODUCTION

The Barents Sea is a shelf area of 1.4 million km² with an average depth of 230 m (Figure 1). In this area the Atlantic current meets cold Arctic water. There are large inter-annual variations in water temperature and ice conditions, mainly caused by variations in the influx of Atlantic water. These variations have a strong effect on the marine resources in the area and generate large fluctuations in stock size and catches.

Fisheries management on joint stocks in the Barents Sea is carried out by the Joint Norwegian-Russian Fisheries Commission (hereafter referred to as the Commission) which was established in 1972.

The author has been a member of the Norwegian delegation to the Commission since 1992 and this paper is an attempt to sum up his experience from the management process, describing the historical development and discussing the background for the present status and what is needed to improve the process. This includes a description of the Norwegian preparatory process. Russian preparations are presumably similar, but are for obvious reasons not known by the author.

RESOURCES AND FISHERIES

The commercial fisheries in the Barents Sea on the average comprise nearly 1 million t of demersal fish, predominantly cod, highly variable catches of capelin ranging from zero to nearly 3 million t, and a shrimp fishery yielding 20,000 - 50,000 t. Historically, especially the cod has been of vital importance to the Barents region, the area bordering on the Barents Sea.

The main commercial fish species in the area are cod, capelin, haddock, saithe, Greenland halibut and redfish (*Sebastes marinus* and *S. mentella*), which all are managed based on ICES advice. The shrimp fishery has so far not been managed by TAC. Other commercial species include wolffish, lumpsucker and plaice. Polar cod and long rough dab are abundant, but have attracted little commercial interest. The Barents Sea is a nursery area for Norwegian spring spawning herring which is not exploited in the area, except for occasional catches of adult herring in coastal waters.

In the neighbouring White Sea there is a big harp seal population which migrates into the Barents Sea for feeding and in some years large numbers reach the Norwegian coast. The stock is estimated to nearly 2 million animals one year and older. The TAC for 1999 is set to 31,600 animals. There are coastal populations of a few thousand grey seals and common seals which both are exploited.

Minke whales are caught in the Barents Sea and in the Svalbard area, which account for 40 and 20 per cent, respectively, of the total Norwegian 1999 TAC of 735 animals.

Historically the fish resources in the area have been exploited by a number of nations with Norway, Russia, U.K. (England) and Germany as the most important. In the Norwegian fisheries a number of different gears are used, but most of the demersal catches are taken with trawls. Capelin is caught mainly with purse seines. Other countries fish nearly exclusively with trawls.

THE ECOSYSTEM AND MULTISPECIES CONSIDERATIONS

The ecosystem is adapted to the variable influx of Atlantic water to the Barents Sea and much of the fluctuations in the resources can be attributed to this phenomenon. In years with large influx the water temperature will increase and the area suitable for boreal species like cod and haddock is substantially extended, giving room for more recruits. Good recruitment for herring also appears to be dependent on this influx. The effect on capelin, preferring lower temperatures, is less clear. Figures 2 and 3 show historical stock size and catch of North-East Arctic cod and Barents Sea capelin, respectively, and the figures reflect some of the natural variations experienced in these stocks.

From a commercial perspective, cod, capelin and herring are the main components of the Barents Sea ecosystem. Capelin is the main source of food for cod and low abundance of capelin has a large negative impact on the cod stock, mainly by reducing growth and increasing cannibalism. On the other hand, a large cod stock will reduce the capelin stock. However, the herring may be the main cause of capelin collapse. Juvenile herring of strong year classes are distributed mainly in the southeastern part of the Barents Sea and have been observed to feed heavily on capelin larvae. Thus, a strong year class of herring may cause a temporary strong decline of the capelin stock and as a consequence also of the cod stock. It should be noted that even if the herring is very abundant it will not fully replace capelin as food for cod.

If the herring as indicated is a key factor in the fluctuations of the cod and capelin stocks, this clearly limits the potential effects of a multispecies or ecosystem management in the Barents Sea unless a fishery for young herring is considered, which seems a highly unlikely scenario.

THE PRESENT MANAGEMENT REGIME

The situation in the Barents Sea with regards to economical zones is rather complex (Figure 4). When the zones were introduced in 1977, most of the Barents Sea region was split between Norway (including the zone around the Svalbard treaty area) and Russia. According to the Svalbard treaty of 1920, Svalbard is under Norwegian jurisdiction, but the signatory states have equal opportunity for exploiting the natural resources in the area.

Norway and Russia have not reached a final agreement on the principles for sharing the area. While Russia claimed the sector principle, Norway claimed the mid-line. The result was the establishment of a temporary "grey zone" with shared jurisdiction. This process left a patch of international waters in the middle of the Barents Sea, in Norway commonly referred to as "the loophole" because some countries has used it to exploit the resources in the area (mainly cod) outside the TAC agreed by the Commission.

The Svalbard treaty represents a special situation. Norway has the jurisdiction and claims the right to set TACs for the region. Historical rights and distribution of catches have been considered and in practice the arrangement is that the Commission specifies the part of e.g. the cod TAC allocated to third countries which can be taken in the Svalbard zone.

For the stocks managed by TACs, Norway and Russia have agreed on a per cent sharing of the resource. For North-East Arctic cod and haddock the split is fifty-fifty. For capelin the split is sixty-forty in favour of Norway. Redfish (*S. mentella*) and Greenland halibut are fished predominantly in the Norwegian EZ and in the Svalbard zone. Both stocks have been heavily

exploited and there are strong restrictions on the fisheries. Historically, Russia has taken most of the catches, but annual catches (at present mainly by-catch) are subject to negotiations. North-East Arctic saithe and *S. marinus* occur mainly in the Norwegian EZ and are considered exclusive Norwegian stocks.

Other fish species are not managed through TACs and the Commission only agrees on by-catch levels for a few species in the respective zones. The shrimp has so far not been managed by TACs, but there is agreement in the Commission that ICES should be requested to include shrimp in its assessment framework.

The harp seal population in the White Sea has, at least in some years, had a large impact on the Barents Sea ecosystem. The TAC is agreed by the Commission based on ACFM advice. The whaling is the responsibility of IWC, but the impact of whales on the ecosystem is a concern for the Commission.

A particular area of conflict is the coastal cod. This cod spawns in fjords and coastal areas and usually does not migrate far from the coast. Growth and maturity patterns differ from the North-East Arctic cod. Most of the coastal cod occur in Norwegian waters and estimated catches have been kept out of the North-East Arctic cod assessment. However, the official catch statistics do not distinguish between the two cod types and all cod north of 62°N are treated as one management unit. Norway claims that the coastal cod in Norwegian waters is a Norwegian resource, but the current management practice splits also this resource fifty-fifty. Russia do not dispute that coastal forms exist, but claim that they genetically are not clearly separated from the North-East Arctic cod and therefore should be treated as belonging to the same stock.

STATUS OF THE BIOLOGICAL ADVICE

The advice from ICES, if not necessarily strictly followed, has always been the basis for the Commission. The two parties will consider the advice prior to the Commission meeting and decide on their respective priorities.

In Norway the procedure is to have a two-day meeting in the Ministry of Fisheries shortly after the ACFM advice in October/November has been received, and one week before the Commission meets. This national meeting deals with advice also for stocks outside the Barents Sea and is part of the preparation for all the quota negotiations Norway takes part in, but the focus is on the Barents Sea stocks.

In the meeting members of delegations for the different negotiations take part. For the Commission this includes representatives of the Ministry, the Directorate of Fisheries which is responsible for the practical execution of the management, representatives of the fishing industry including the Norwegian Fishermen's association, a representative of the trade union for seamen (mainly for employees in the trawl fleet) and biologists. During the meeting the ACFM advice will be presented by the biologists. If the ACFM advice includes TAC options, a more firm advice than the one given by ACFM may be requested by the Ministry. The industry will present their view on the TAC and other management issues. The leader of the meeting who is a high-ranking official of the Ministry and usually the leader of the delegation to the Commission, will then bring the different views to the Minister of Fisheries who will decide on the mandate for the negotiations, e.g. what TAC is desirable and what range is acceptable.

The Norwegian delegation to the commission usually comprise about 15 members of which three are biologists. The Fishery Committee of the Russian Federation is responsible for the negotiations on the Russian side. The Russian delegation to the Commission has in the last years been much larger than the Norwegian, reflecting a wide range of interested parties on the Russian side. This includes representatives of the same groups as on the Norwegian side, but also representatives of local government in areas bordering on the Barents Sea. The number of biologists has varied, but is usually larger than on the Norwegian side.

The focus on biological advice during the meeting has been increasing in recent years which is reflected e.g. in allowing more time for presenting the advice. Presentation of the advice is usually the first major item on the agenda and the presentation is given by a biologist from the host nation. Biologists from the other party are then asked for comments before delegates are invited to ask questions and present their views. Although ACFM may think that their formulation of the advice is clear, this is not always how some members of the delegations conceive it and there might be need for clarification where also the biologists may have somewhat different views. However, normally there is little dispute among the scientists about the understanding of the advice.

Later in the meeting usually a smaller group (4-5 people from each party) meets outside the plenary to try to reach an agreement on the main issues before they are brought back to the main meeting. The increasing importance of the biological advice is reflected in the fact that in the most recent years biologists usually have been included in this meeting.

Although agreeing on the TACs is the main task of the Commission meeting, a number of other issues are discussed including management procedures, joint research programmes, by-catch rules, technical measures, etc. The biologists are chosen to best represent the required expertise. From the Norwegian side there are have been two from IMR, Bergen, covering most fisheries and gear technology, and one from NIFA, Tromsø, covering e.g. marine mammals, shrimp and coastal cod.

Most of the Russian scientists come from PINRO, Murmansk, but VNIRO, Moscow and SevPINRO, Arkhangelsk (seals) are also represented.

MANAGEMENT PRACTICE

In setting TACs, the Commission has usually had a short-term and single species approach. Multispecies interactions may be discussed, but in practical management the results have been restricted to some reduction in capelin TAC to secure food for the cod and the controversial fishery on juvenile capelin in summer/autumn carried out up to 1992 now seems history. Medium-term forecasts have been available and are discussed, but it is difficult to tell if they have any effect on the agreed TACs. The Commission has, however, so far not been presented with risk analyses, which would be particularly relevant for cod and haddock, but for various reasons have been difficult to produce.

The Commission nevertheless has a record showing a will to make severe cuts in the TACs when it is felt necessary, in particular the reduction of 73% in the cod TAC from 1988 to 1990 and the ban on capelin fishery in two periods. The Commission also has an impressive record of reaching agreement on the TACs in their first meeting.

The capelin management has, before a different approach was used in the recommendation for 1999, been based on the ACFM advice of leaving a minimum SSB of 500,000 t at spawning time, and the controversy has been mostly on the juvenile capelin fishery.

The main development in recent years is that the Commission has agreed on statements where MBAL and upper levels for fishing mortality has been defined in accordance with guidelines from ACFM and expressed as a management strategy. Thus, for cod it has been agreed that F_{med} (=0.46) and 500 000 t are limits for exploitation rate and SSB, respectively. However, facing reductions in the cod TAC, this has been redefined as a medium-term goal. The Commission is also concerned that management is carried out according to the precautionary approach, but may have some difficulty in accepting ACFM's definitions in all cases.

THE BIOLOGICAL DOMINANCE IN THE ADVISORY PROCESS

A natural question in this context is why only biologists are represented among the scientists giving advice to the Commission. There are probably several reasons for this. Firstly, it is important to realise that the negotiations always have been dominated by short-term scenarios. In a short-term perspective both economic and socio-economic considerations would probably tend to oppose large reductions in the TAC because of investments made, market considerations and the social problems severe cuts are likely to create. Obviously the conclusions could change if it were evident that the cut was necessary to prevent a severe stock decline in the future. Medium-term management strategies would therefore be a more appropriate basis for applying these sciences in the advice.

Furthermore, the differences between the political systems in Norway and the former Soviet Union left little opportunity for joint economical considerations. In the fishery economy there used to be a fundamental difference. The Soviet Union used most of the fish for their internal market and had fixed prices. Thus, the quantity would have no effect on the prices and the inner market presumably was large enough to absorb all the fish they could get. Thus short-term economical considerations involving e.g. the effect of the TAC on fish prices would be of little interest to the Soviet Union.

With a more market oriented economy in Russia after the Soviet Union was dissolved, a better basis for meaningful joint economic considerations has been established. However, the Russian policy is still concerned with the inner market and the two main objectives of the Russian fishery management, stated in Russian law, is sustainability and provision of food to the Russian people. Any manager would favour sustainability, but there is conceptually a gap between aiming at an economically optimal fishery and aiming at a fishery providing food for the people. Thus, both in economics and socio-economics there still appear to be considerable differences between the two countries.

The lack of non-biological involvement may, however, also have other causes. On the Norwegian side there are conflicting interests in the fisheries, mainly linked to coastal fishermen and the trawl fleet. Coastal fishermen are generally more concerned with sustainability in the fisheries which not only gives them their income, but also secures the existence of their communities. The trawl fleet will of course also like to have a sustainable fishery, but may have alternative fisheries or means of income. Economic and socio-economic considerations will be therefore be different for the two groups and in terms of management

there may be conflicting interests. Both administrators and the industry probably feel that such issues, which involve political priorities, need to be resolved on the national level before they are introduced in TAC negotiations.

There may also be an element of traditional thinking involved. The management process has often been conceived as a struggle between the biological advice and the demands of the industry. The Commission has gradually moved towards a higher dependency of and respect for the biological advice, but there is still some way to go and in the most recent years, when the opportunity to bring in other sciences should have improved, there have been severe problems in the stock assessment of cod which probably have overshadowed other aspects. If the biological advice is unreliable, there would not seem to be much help in bringing in other advice.

Economists and socio-economists may feel that the biologists are concerned only with the biological issues and ignoring other important factors. This criticism may be relevant in some cases. However, one reason why biologists are not always keen advocates for bringing in other advice might be that they feel that they are still struggling to get acceptance for the biological advice which necessarily must be the basis also for economic and socio-economic advice.

Another source of conflict may be that economists and socio-economists often lack insight into the processes leading to a TAC and feel that if their arguments had been presented, things would have improved. This is perhaps a bit unrealistic. In Bergen the Directorate of Fisheries and IMR have put down a lot of work in trying to add an economic perspective to the management and it was a disappointment that this work was largely ignored when presented to the Norwegian delegation before the Commission meeting. The work dealt with optimum long-term fishing mortality, but the impression was that the industry was concerned mainly with the short-term aspects and felt that they had enough knowledge about economic and social consequences, without any scientific basis, to decide on which TAC they could accept for the next year.

In retrospect it is unfortunate that economists and socio-economists have not been more directly involved in the management process between Norway and Russia. This would not necessarily have changed the historical TACs, but it would have improved the communication with the other groups involved in the process and probably speeded up the progress in developing management strategies.

Although biologists may not have been pushing for it, it is not the biologists who decide if economic and socio-economic considerations should be brought more directly into the management process. However, if the Commission decides to adopt medium-term or long-term management strategies, the need for economical advice will be more evident. At the last Commission meeting it was agreed to have a Norwegian-Russian symposium in Bergen 16-17 June this year discussing long-term strategies for the Barents Sea fisheries. Managers and representatives of the industry were invited to give speeches and economic considerations were included in the scientific part. The symposium was apparently successful. However, there were also expressed views indicating that there could still be some time before the idea of long-term strategies is accepted by all groups involved in the Norwegian-Russian management process.

CONCLUSIONS

Management procedures vary around the world and in some areas there has been considerable progress in establishing long- or medium-term strategies. However, a system working well in one area and for one type of fisheries will not necessarily work in other cases. Culture, tradition, economy and the type of fishery will be different and will require different approaches. However, some common factors appear to be necessary to get a system properly working. Probably the most important is that there must be established trust between the parties involved. Managers, fishermen, industry and scientists must feel that they are working towards the same end and they must agree what this end should be. Furthermore, there must be political will to carry out the necessary controls. To get to this stage is usually a slow process, but the work in Norway and in the Commission has come a long way. The main challenge on the scientific side now is to develop management strategies that have a potential for being successful and promote the use of these to the managers and the other parties involved.

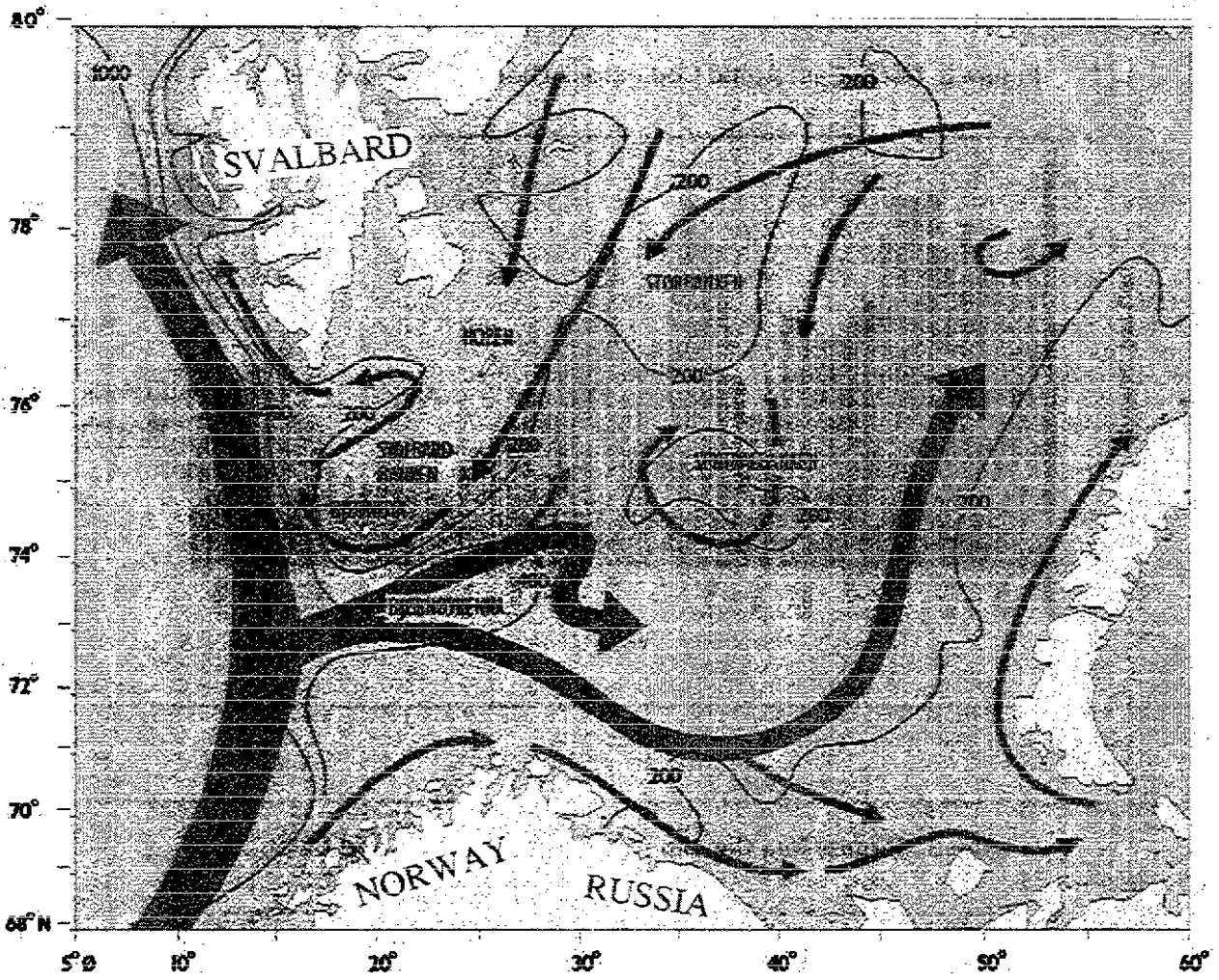


Figure 1. The Barents Sea

Figure 2. North-East Arctic Cod - Stock Biomass (3+) and Catch

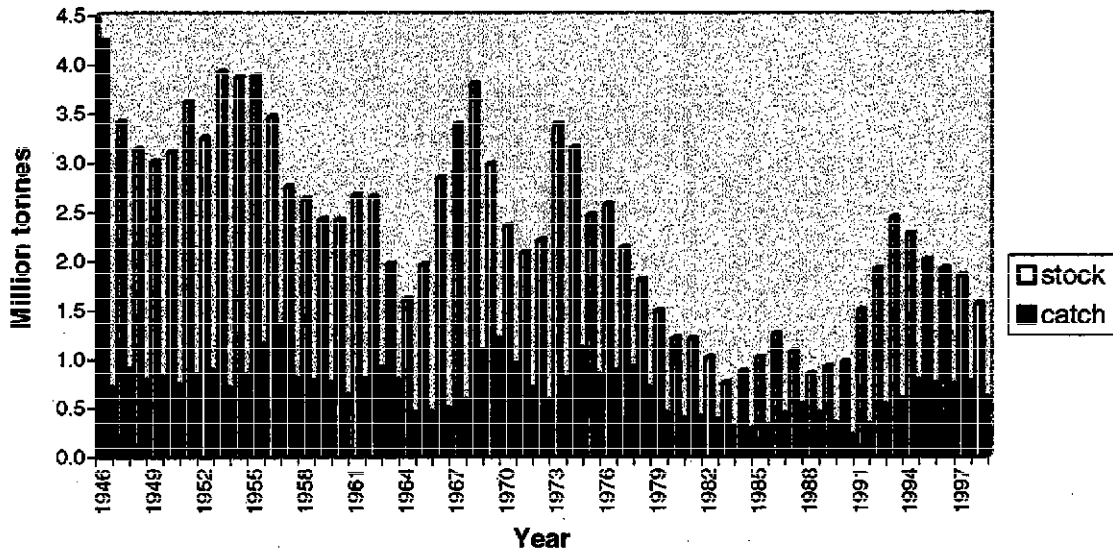
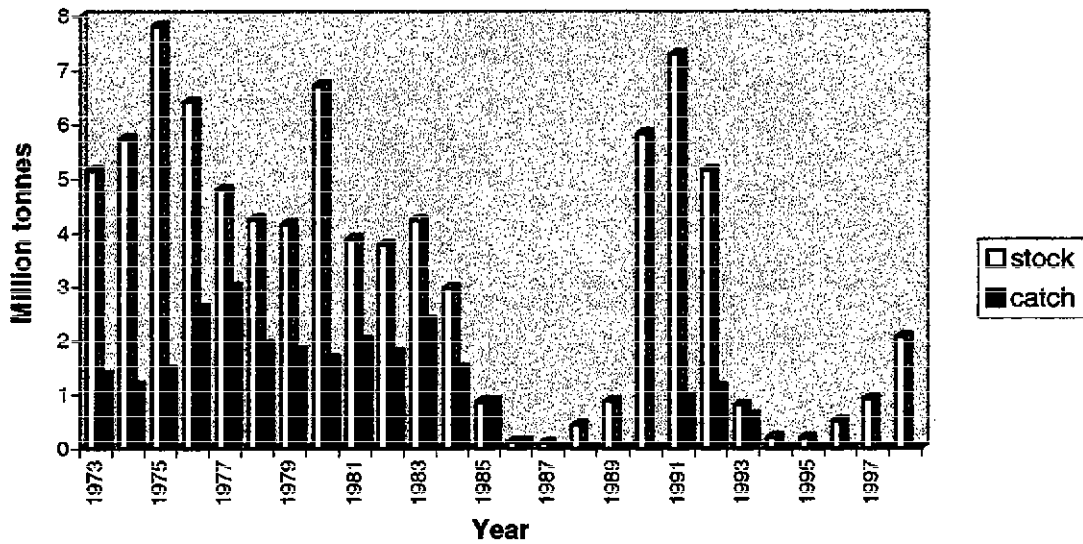


Figure 3. Barents Sea Capelin - Stock Biomass (1+) and Catch



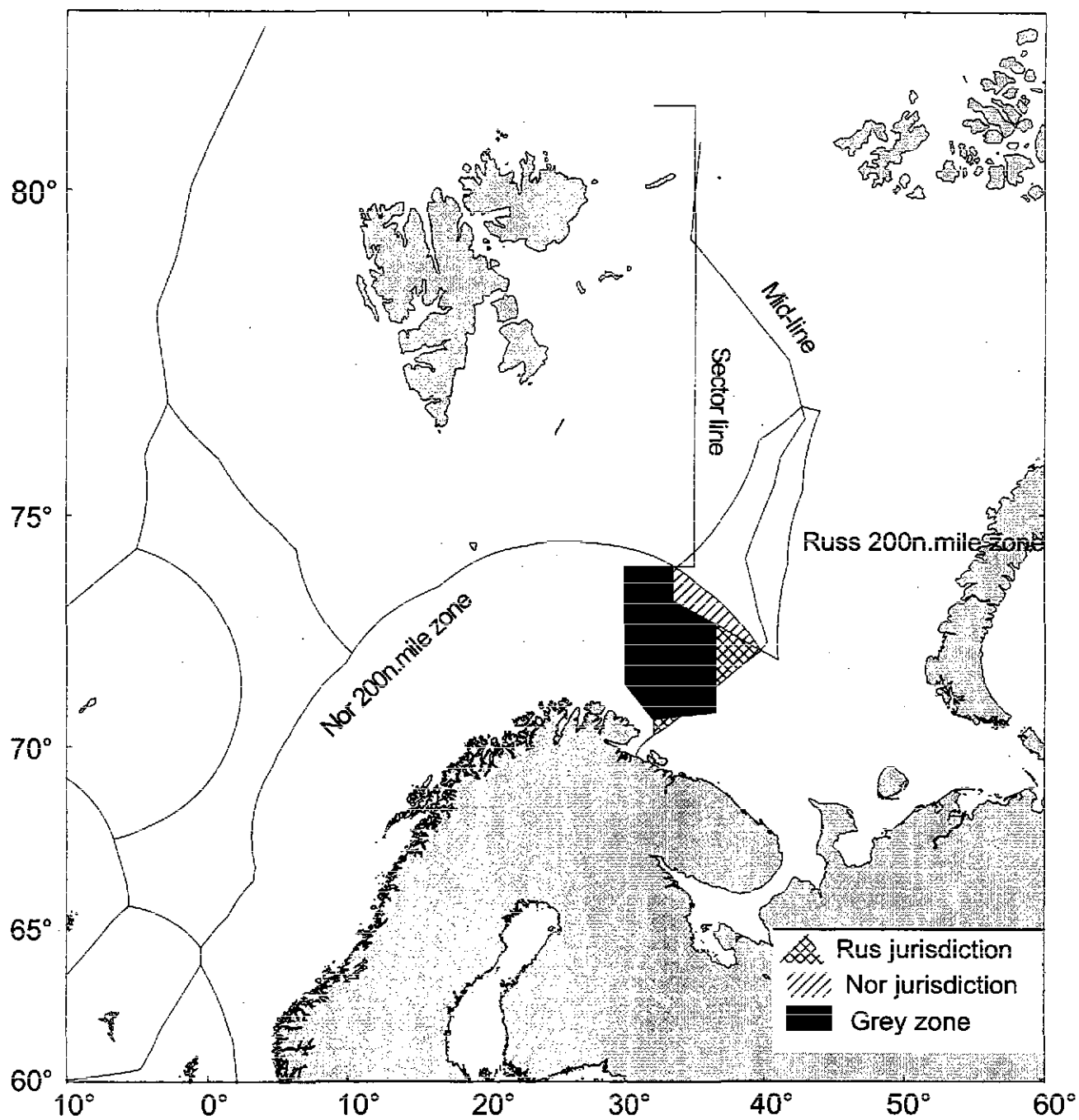


Figure 4. Economical Zones in the Barents Sea area

