

International Fishery Management: Post 200-Mile Limits

This Section examines the records of the international fisheries commissions in their new roles, after extensions of coastal state jurisdiction, in conservation of transboundary and high seas fish stocks. The accounts are necessarily unbalanced as the Northwest Atlantic Fisheries Organization was custodian of an area in which there were fisheries of great traditional importance, the management of which proved to be highly controversial in the post-extension period. In contrast the Northeast Atlantic Fisheries Commission was little used and its role in Northeast Atlantic fishery management was thus negligible. The latter organization is dealt with first.

The New Northeast Atlantic Fisheries Commission (NEAFC)

In 1976 it was clear that extensions of fishery jurisdiction were about to place virtually all of the important Northeast Atlantic fisheries under the direct control of coastal nations. Nonetheless, a continuing need for international cooperation in fishery management was recognized among NEAFC members. The 1958 Northeast Atlantic Fisheries Convention was not a suitable vehicle for this in its original form but a working group was established by NEAFC to consider the future for international management of convention area fisheries. A number of NEAFC meetings in 1976 and 1977 resulted in a draft for a new convention being put before a Diplomatic Conference in 1978, but this conference ended in failure. The stumbling block was refusal by eastern European states to accept the EU, as distinct from its member nations, as a party to a new convention. This was a political issue of a general nature rather than one related to fisheries *per se*. However, two years later a change of attitudes allowed agreement to be reached and the "Convention on Future Multilateral Cooperation in the North-East Atlantic Fisheries (North-East Atlantic Fisheries Convention)" was opened for signature in November 1980. The Convention came into force on 17 March 1982, on receipt of the necessary seven ratifications. The UK became the Depository Government for this Convention, as it was for that of 1958. The Convention established the North-East Atlantic Fisheries Commission – the new NEAFC, with headquarters, as for the old NEAFC, in London, UK.

The Convention listed eligible signatories, eliminating the need to specify criteria for membership. By the first annual meeting of the Commission in November 1982 there were seven members: Den-

mark (on behalf of Faroe Islands), EU, German Democratic Republic (GDR), Iceland, Norway, Sweden and the USSR. Portugal joined in 1983 and Bulgaria, Poland and Spain in 1984. Denmark became the representative of Greenland as well as Faroe Islands with Greenland's withdrawal from the EU in 1985. A decline in membership occurred, numerically, when Spain and Portugal joined the EU in 1986. Similarly, the GDR ceased to be a separate member when unification with FRG in 1990 brought it into the EU. The USSR was replaced by the Russian Federation after 1991. All these members were on the initial list of eligible signatories but other states could join if approved by three-quarters of the Contracting Parties.

Authority, Organization and Scope. The objectives of NEAFC are to promote the conservation and optimum utilization of the living resources of the Northeast Atlantic, and to encourage international cooperation and consultation with respect to these resources. The Convention Area is identical to that of the old NEAFC (Fig. 2) and the Convention applies to all fisheries resources within this area except marine mammals, and sedentary, highly migratory and anadromous species. The Convention Area is not divided into Regions, in contrast to the provisions of the 1958 Convention, and thus there was no need to provide for a geographically based committee structure as was the case for the old NEAFC.

The Commission can adopt recommendations for regulation of fishing in areas beyond coastal state jurisdictions. Recommendations become binding after a certain period unless objections are received. If three or more Contracting Parties object then the measure is not binding on remaining members, unless some of these agree among themselves to be bound by it. When adopting recommendations for its regulatory area the Commission is required to seek consistency with the regulatory actions of Contracting Parties within their exclusive fishing zones, when there is an interrelationship between the stocks involved. The most obvious interrelationship is when the stocks involved are transboundary in their distribution. However, the Convention includes cases of species interactions as well.

The Commission can also adopt recommendations and give advice on fisheries within national jurisdiction if requested to do so by a coastal state. In this case recommendations require a positive vote by the coastal state. Also, the coastal state is

the only Contracting Party which can subsequently object. If it does so, the recommendation is not binding on any party.

The regulatory measures which the Commission can recommend for adoption are essentially the same as those available to the old NEAFC:

- regulation of fishing gear including the mesh size of nets,
- regulation of the size limits of fish which can be retained on board vessels, or landed or exposed or offered for sale,
- establishment of closed seasons and of closed areas,
- improvement and increase of marine resources, e.g. artificial propagation and transplantation,
- regulation of total catch and its allocation to Contracting Parties, and
- regulation of total fishing effort and its allocation to Contracting Parties.

The Commission may recommend (on the same basis as other recommendations) fishery control measures to ensure that the provisions of the Convention are respected and any regulatory agreements are enforced. However, it is up to the Contracting Parties to implement and enforce regulations which have become binding. The Convention requires that Contracting Parties take the measures necessary, including imposition of sanctions for infractions, to control its own fleet.

The Convention establishes ICES as the scientific advisory body to the Commission. An annual financial contribution is made to ICES to defray the costs of providing the Commission with the advice it requires to accomplish its work.

Regulatory Actions. The new Convention made no provision to carry forward the regulations which had come into effect under the old one, and the new Commission decided also that these regulations were not suitable under the changed circumstances. Thus, the new Commission began with a clean slate.

None of the primary species used in this study have stocks which are distributed largely outside national jurisdictions and hence which could be called, for convenience, NEAFC regulatory area stocks. The most important stocks for which NEAFC carries what could be considered the weight of responsibility are blue whiting and oceanic redfish. However, these too are shared with national jurisdictions and, to date, attempts to reach agreements on catch controls have been unsuccessful. In the 1980s, exploitation levels on these stocks were

viewed as moderate and this did not encourage urgency in establishing restrictions on catch. However, exploitation of oceanic redfish, in particular, has increased in the 1990s.

The Commission took an interest in the management of Norwegian spring spawning herring, which had an oceanic migration pattern prior to stock collapse about 1970. Subsequent to collapse, the stock remained restricted to Norwegian waters (see Norway section), and the Commission's interest translated into no more than annual appeals to Norway to continue following ICES advice on stock conservation. This situation changed drastically in the 1990s, however, when stock recovery resulted in a resumption of its oceanic migrations. Large catches were taken in 1994 and 1995 in international waters in the Norwegian Sea to the west of the Norwegian zone (see Fig. 38) by a multinational fleet operating without any agreed overall TAC and sharing arrangements. Other resource management issues involving fishing in international waters, such as for cod in the Barents Sea loophole and mackerel in the Norwegian Sea loophole, could also be perceived as coming under the purview of NEAFC. However, management agencies have preferred to pursue bilateral and multilateral accommodations outside of NEAFC.

The Commission's activities in relation to technical measures resulted in regulation of mesh sizes used in fishing for capelin and blue whiting in the regulatory area. Standardization of logbooks was also pursued. Thus, overall, the Commission has not had a significant role to play in management of Northeast Atlantic resources, at least to this juncture.

Northwest Atlantic Fisheries Organization (NAFO)

The announcements in 1976 by Canada and USA of their intentions to extend fisheries jurisdiction to 200 miles in 1977 stimulated an immediate response by the member nations of ICNAF to adapt to the new order. At its meeting of December 1976, ICNAF adopted a resolution recommending fast action to develop new institutional arrangements for cooperation in Northwest Atlantic fishery management. As an interim solution, amendments were made to the ICNAF Convention which excluded waters within national fishing limits and provided for coastal states to receive scientific advice from STACRES of ICNAF if they wanted it. Although these amendments never came into effect the organization functioned as if they had. Canada immediately followed up the ICNAF actions with invitations to attend a conference in Ottawa preparatory to establishment of a new convention for Northwest Atlantic fisheries. This was held in March 1977 and

followed by a second preparatory conference in June and a final diplomatic conference in October. This did not resolve all issues but a further "informal meeting of experts" in May 1978 cleared the way for the Convention on Future Multilateral Cooperation in the Northwest Atlantic Fisheries to be opened for signature on 24 October 1978. Canada became the Depository Government for the Convention. The Convention came into force on 1 January 1979, having by that time received adherence by more than the required six signatories.

The inaugural meeting of the Northwest Atlantic Fisheries Organization (NAFO) created under the Convention was held in March 1979 and by the beginning of 1980, when ICNAF was dissolved and NAFO took over its full responsibilities, there were 13 members – Bulgaria, Canada, Cuba, Denmark (on behalf of Faroe Islands), EU, GDR, Iceland, Japan, Norway, Poland, Portugal, Romania and USSR. Spain although a longstanding and important participant in the Northwest Atlantic fishery, did not join until August, 1983. When Greenland left the EU at the end of 1984, Denmark became the representative of Greenland, as well as Faroe Islands, in NAFO (thus the number of members of NAFO did not change). With the accession of Spain and Portugal to the EU, these countries withdrew from NAFO at the end of 1986. The GDR withdrew from NAFO at the end of 1990 as a result of reunification with FRG, and hence also became part of the EU. However, membership of the organization was returned to 14 with accession of Estonia, Latvia and Lithuania in 1992 following the breakup of the USSR. The Russian Federation (Russia) continued the membership of the former USSR, also from 1992. The Republic of Korea (South Korea) joined NAFO at the end of 1993, as did the USA at the end of 1995 and France, on behalf of St. Pierre and Miquelon, in August 1996. The headquarters of the organization is in Dartmouth, Nova Scotia, Canada, as was that of ICNAF.

Authority, Organization and Scope. The objective of the NAFO Convention is to contribute through consultation and cooperation to the optimum utilization, rational management and conservation of the fishery resources of the Convention Area. The Convention Area defined is equivalent to ICNAF's Statistical Area, i.e. it encompasses ICNAF's Subareas 1–5 and also its Statistical Areas 0 and 6 (see Fig. 1). The Convention applies to all fishery resources in this area except cetacean stocks managed by the International Whaling Commission, salmon, tunas and marlins, and sedentary species. That part of the Convention Area which lies outside coastal state fishery jurisdictions is referred

to as the Regulatory Area, i.e. the area within which NAFO has the authority to adopt regulatory measures for the fisheries. Most of the continental shelf in the Convention Area lies within the 200 mile zones of coastal states, but Flemish Cap and the southern and eastern edges of Grand Bank lie outside 200 miles and are hence in the Regulatory Area (Fig. 55). Although these are quite small geographical areas they support important fisheries and provide the sole focus of NAFO regulatory attention. The remainder of the Regulatory Area, although extensive, encompasses oceanic waters in which no fisheries which lie within the NAFO mandate have developed to date.

The senior body within the organization is the General Council which has the functions of supervising and coordinating the administration of the organization, and coordinating its external relations. There is a Fisheries Commission charged with providing for the management and conservation of the fishery resources of the Regulatory Area. Whereas all Contracting Parties to the NAFO Convention are members of the General Council, membership of the Fisheries Commission is restricted to those who either currently fish in the Regulatory Area or who provide satisfactory evidence of their intention to do so in the current or following year. There is also

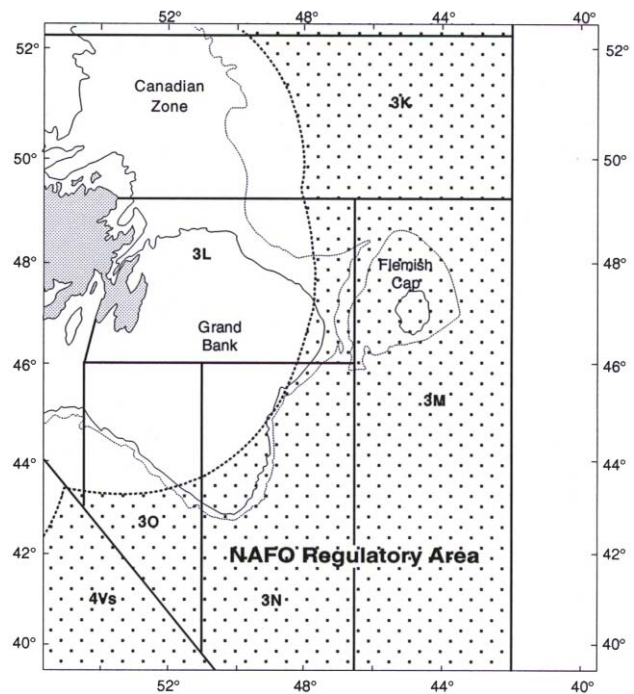


Fig. 55. The NAFO Regulatory Area in the vicinity of Grand Bank and Flemish Cap. (Depth contours are 200 m – solid line, 1 000 m – fine dashed line.)

a Scientific Council responsible for providing advice to the Fisheries Commission, and to coastal states on their request, and for promotion of scientific research, and maintenance of statistics, on the fisheries of the Convention Area. All members of the organization belong to the Scientific Council.

The Fisheries Commission adopts proposals for action by the domestic authorities of Commission members. Once a Commission proposal is transmitted to Contracting Parties, Commission members have 60 days to object before the proposal becomes binding. If an objection is received, other members have further periods for objection. If less than half of the members object, the proposal becomes binding at the end of these periods for those who have not objected. If more than half the members have objected then the remainder are not bound by the regulation unless they themselves decide to be.

Members of NAFO, although responsible for control of their own fleets, are required by the Convention to ensure that their obligations under the Convention are met, in particular by imposition of adequate sanctions for violations. The Convention also allows for adoption of international measures of control and enforcement, and specifically, carried over the ICNAF Scheme of Joint International Enforcement.

The organization faced two serious challenges to its authority, which fell to the General Council to resolve. The first was non-member fishing. The 1982 United Nations Convention on the Law of the Sea makes quite clear the right of all states to fish on the high seas and, as well, their obligations to cooperate in the conservation and management of living resources through regional fisheries organizations. Although the 1982 Convention did not enter into force until the end of 1994, and hence did not present a legal constraint on state behaviour until that time (and then only to those who had acceded to it), it at least reflected the predominant international view of acceptable and responsible behaviour in relation to high seas fishing. The NAFO view was that non-members developing a fishing interest in the Regulatory Area were to be encouraged to join NAFO, the legally established regional management institution, and share equitably the responsibilities and benefits of resource management, a position consistent with the Law of the Sea text.

The organization was immediately faced with a non-member fishing problem when Spain refused to sign the NAFO Convention despite having a substantial fishery presence in the Regulatory Area. The underlying issue was that the large reductions in TACs, particularly those of cod, imposed in the last years of ICNAF had a particularly severe effect on

the catch allocations of Spain. The large Spanish fleet was almost solely dependent on cod and was composed primarily of vessels designed for salt cod production which were not readily adaptable to alternative uses. Although NAFO members were successful in encouraging Spanish accession to the Convention in 1983, this alleviated the problem of non-member fishing only temporarily. As early as 1978 Canadian surveillance had reported vessels of Spanish origin fishing under the flags of various Central and South American states. The use of flags of convenience increased and non-member fisheries were initiated by the Republic of Korea and the USA, particularly after 1985. (Some Korean vessels also used flags of convenience.) By 1990, according to Canadian surveillance, more than 40 non-member vessels were taking about 35% of the catch from the Regulatory Area. Non-member fishing clearly had reached a scale which threatened to remove any possibility of NAFO controlling resource exploitation in the area.

The General Council established a Standing Committee on Fishing Activities of Non-Contracting Parties (STACFAC) and, as a result of Committee proposals, NAFO built on previous diplomatic efforts by member governments and the Executive Secretary by making further appeals to non-member governments that had vessels fishing under their flag in the NAFO Area. A decision by the Korean government to withdraw Korean-licensed vessels from the NAFO Area in 1993, and to join NAFO, was a notable success for the diplomatic representations of member governments, particularly Canada, and of NAFO. Little could be achieved regarding flags of convenience, however, as vessels de-registered by one state as a result of NAFO pleas easily found other states ready to provide the registry they required. There was, in fact, little scope for NAFO to deal effectively with the problem. In May 1994 the Canadian government passed amendments to its domestic legislation which empowered Canadian authorities to unilaterally enforce NAFO regulations for transboundary stocks in international waters. This resulted in immediate withdrawal of non-member vessels which were fishing transboundary resources on the Grand Bank, although the retreat was no further than to Flemish Cap to fish stocks which are fully outside of Canadian jurisdiction. However, hope for a fuller and longer term solution lies with implementation of the United Nations agreement on Straddling and Highly Migratory Fish Stocks, opened for signature in December 1995.

The General Council was faced, secondly, with an internal crisis which was an equal or even more serious challenge to its authority. Coincident with accession of Spain and Portugal to the EU, the EU

disputed the Fisheries Commission view of "optimum utilization" (see below) and, beginning with TAC and allocation proposals for 1986, systematically objected to most Fisheries Commission decisions. The EU established much higher allocations for NAFO regulated stocks, through its own domestic regulations, than those proposed for it by the Fisheries Commission. The General Council recognized that this blanket use of the objection procedure was emasculating the organization but proved impotent in dealing with the issue. A Canada–EU fisheries agreement, reached at the end of 1992, included a commitment by the EU to respect all NAFO decisions. This brought at least a respite from this particularly debilitating confrontation.

The scope of the organization's authority to regulate fisheries in the Regulatory Area, the responsibility of the Fisheries Commission, is not constrained by any definition of optimum utilization, or any list of acceptable regulatory measures, embodied in the Convention. It is, however, obliged by the Convention to seek consistency with regulatory measures taken by a coastal state, where there are biological relationships between stocks fished in coastal state and Regulatory Area waters. In practical terms this constraint has applied to stocks for which exploitable concentrations occur on both sides of the Canadian 200 mile limit on Grand Bank. Flemish Cap stocks of cod, redfish and American plaice are recognized as lying entirely within the Regulatory Area. Informal consultations between Canada and ICNAF members in 1978 established a list of seven stocks of shared interest – Grand Bank cod (Div. 3NO), eastern Grand Bank redfish (Div. 3LN), Grand Bank American plaice (Div. 3LNO), yellowtail flounder (Div. 3LNO) and witch flounder (Div. 3NO), Grand Bank capelin (then Div. 3LNO) and *Illex* squid (Subareas 3 and 4). The Fisheries Commission of NAFO inherited this list when it took up its responsibilities in 1980. This list of overlapping stocks was modified in 1982 when Canada proposed, and the Fisheries Commission agreed, to separate the management of capelin on the northern Grand Bank (Div. 3L) from those on the southern Grand Bank (Div. 3NO), as accumulated scientific evidence indicated that these were different stocks. Capelin on the southern Grand Bank continued to be recognized as a shared stock but the northern Grand Bank capelin was accepted as Canadian.

The most serious dispute about the list of shared stocks occurred in 1985 when the EU challenged Canadian authority to manage autonomously the Labrador–East Newfoundland cod (Div. 2J3KL), Greenland halibut (SA2 + Div. 3KL), roundnose grenadier (SA2+3) and northern Grand Bank (Div. 3L) capelin, and proposed that all be considered

overlapping (shared) stocks. Earlier in 1985, EU vessels had found concentrations of cod in Div. 3L outside the Canadian zone and caught substantial amounts, evidence that cod of the Labrador–East Newfoundland management unit had a trans-boundary distribution. The Scientific Council was asked for advice on the distribution of these resources and its report indicated that a small proportion of all these stocks occurred in the Regulatory Area. Canada opposed any change in the list, but nonetheless recognized a practical threat to its interests in Labrador–East Newfoundland cod, the most important stock in the Canadian zone, and the only one of the four for which there was a significant catch, at that time, in the Regulatory Area. Canada argued that the proportion of cod from the Labrador–East Newfoundland management unit that occurred in international waters was so small (estimated at 3–5%) as not to warrant designation of Labrador–East Newfoundland cod as an international stock. Also, the stock was already fully exploited in the Canadian zone. Canada therefore proposed a moratorium on cod fishing in the Regulatory Area portion of Div. 3L for 1986. This was agreed to by the Commission but the EU objected and unilaterally established an EU allocation of Div. 3L cod under domestic regulation. This situation persisted until 1992 when, after Canada had announced a moratorium on all fishing for Labrador–East Newfoundland cod in the Canadian zone in 1992 and 1993 (subsequently extended indefinitely) in recognition of its greatly reduced abundance, the EU agreed with the Fisheries Commission proposal for a moratorium in the Regulatory Area part of Div. 3L for 1993. This agreement came at a time when Canada and the EU were finalizing a bilateral fisheries agreement which provided for EU access to a portion of the Labrador–East Newfoundland cod catch after the moratorium ended and to any surplus catches from other Canadian stocks. While this provided for control of catches from this cod stock, the development of substantial new fisheries in the Regulatory Area by the EU from 1990, particularly for Greenland halibut but with substantial incidental catches of grenadiers, reopened the jurisdictional question for these species.

Agreement on the list of shared stocks was, of course, only a precursor to achievement of "consistency" in regulatory measures between NAFO's Regulatory Area and the Canadian zone. The ICNAF Commission had accepted a revision of its exploitation strategy from F_{max} to $F_{0.1}$ in 1976 (see ICNAF Section) and, in 1977–79, the scientific advice on TAC levels provided by STACRES to the Commission for groundfish stocks used $F_{0.1}$, or equivalent, as the general reference point. Annual requests for advice originated from the Canadian government. These Canadian requests included not

only stocks which lay entirely within the Canadian zone and those which overlapped the 200 mile boundary but also Flemish Cap stocks. When the NAFO Scientific Council and Fisheries Commission took over advisory and management responsibilities from ICNAF in 1980, the ICNAF practice continued, and thus NAFO accepted $F_{0.1}$, *de facto*, as its general management strategy. This met the requirement for consistency in exploitation strategy with that in the adjacent Canadian zone.

The above approach was seriously challenged by the EU from 1985. The EU viewed past practice as Canada imposing its national management strategy on the international fisheries of the Regulatory Area. The EU preferred F_{max} as a management approach to meet the socio-economic needs of its fleet. With regard to TACs for 1986 and subsequent years the EU systematically objected to those for which the Scientific Council did not provide options from which to choose and to those for which the Fisheries Commission had not selected the F_{max} option when the EU considered it feasible to do so.

The Fisheries Commission, in 1985, initiated its own requests for advice from the Scientific Council for management of Regulatory Area and overlapping stocks in 1987, and subsequent years, at the instigation of the EU. These annual requests had "the concurrence of the Coastal State" and hence were joint requests by the Fisheries Commission and Canada to the Scientific Council. The requests asked for TAC options at exploitation rates corresponding to the then current level of F , $F_{0.1}$ and F_{max} . Although the Scientific Council strived to meet these requests, data deficiencies prevented elaboration of options for many of the stocks, i.e. recommendations could be made on precautionary catch levels only, thus providing the EU with continued grounds for objection. In any case, the EU faced implacable opposition from Canada to any move away from an $F_{0.1}$ strategy, particularly for overlapping stocks, thus preventing the Fisheries Commission from adopting TACs at the F_{max} level and providing further grounds for EU objection to virtually all Fishery Commission TAC and allocation proposals.

The sharp EU dissent with NAFO's $F_{0.1}$ management strategy for groundfish coincided with accession of Spain and Portugal to the EU. These accessions presented the EU with the difficult task of accommodating a very large expansion in the EU fleet, and provided motivation for its actions. By the early-1990s, the discrepancy between NAFO allocations and unilateral allocations for the EU had narrowed but nonetheless were still important in 1992. No progress was made in devising agreement on an appropriate NAFO management strategy with

regard to groundfish exploitation over the period 1985 to 1992 and this disagreement contributed significantly to NAFO's loss of control over resource exploitation during this period. In the 1992 Canada-EU fisheries agreement referred to above, the parties agreed to support adoption by NAFO of regulations in conformity with Article XI of the Convention; that requiring that the Fisheries Commission "seek to ensure consistency" with coastal state measures for overlapping stocks. Coincidentally, the debate on strategy moved from the merits of $F_{0.1}$ and F_{max} to the need to maximize protection of collapsing stocks. There was agreement on that, and no directed fisheries for transboundary stocks of cod, American plaice, yellowtail and witch flounder on the Grand Banks were allowed in 1994 and subsequent years. This has deferred the question of the appropriate exploitation strategy for these stocks when they recover to more productive levels.

The NAFO management strategy for capelin, the only commercially exploited pelagic species in the Regulatory Area, differed from that for groundfish. Under ICNAF, capelin TACs were precautionary and were fixed at arbitrary levels for the period 1976-78. For 1979, STACRES of ICNAF adopted an arbitrary exploitation rate for capelin of 10% because recruitment at that time was low and STACRES thought exploitation rate should be kept low to protect the spawning stock biomass. However, in the case of the capelin which spawned on the southern Grand Bank the spawning stock was so low that complete closure of Div. 3NO to capelin fishing was advised. These proposals were accepted by the ICNAF Commission in its last year of operation and hence were inherited by NAFO. However, when southern Grand Bank capelin recovered enough to allow a small commercial fishery in 1987 the NAFO Scientific Council adopted the even more conservative strategy of a 5% exploitation rate. No projections of spawning stock size to the fishery year were possible, so the Scientific Council used the stock biomass observed in acoustic surveys, averaged over several years, as a basis for calculating TAC levels corresponding to the target exploitation rate. The 5% rate was maintained for the 1988 fishery but the Scientific Council reverted to 10% for the 1989 fishery as it became more confident of stock recovery. The Fishery Commission accepted the Scientific Council proposed exploitation rate strategy although not all members were satisfied with it and the Scientific Council was asked to reconsider the 10% in relation to the NAFO objective of optimum utilization, and in particular to consider adoption of a minimum spawning biomass target. The Scientific Council re-affirmed in 1991 the importance of retaining a conservative exploitation rate strategy. Although recruitment was at that point

better than when the 10% exploitation rate was originally adopted, it was recommended that this target be retained for other reasons, in particular because capelin is an important prey for cod and also to compensate for the high level of imprecision in estimates of spawning stock size. This did not satisfy the Fisheries Commission because it again asked the Scientific Council to evaluate a minimum spawning biomass strategy and, in addition, a 20% exploitation rate. This debate was effectively deferred by a Scientific Council recommendation for fishery closure in 1993 and acceptance of this by the Fisheries Commission, but indicates that there remains some uncertainty in NAFO on the appropriate management strategy for capelin.

Consistency in technical measures between the Regulatory Area and Canadian zone proved as difficult to maintain as consistency in exploitation level strategy, but this was very much a secondary issue. Inconsistency arose in 1982 when Canada dispensed with differentials based on netting material, and proposals that the Commission follow suit were rejected.

The Scientific Council is a coordinating body and, as was the case with ICNAF, all actual data collection and research is conducted by the domestic agencies of Contracting Parties. However, the Scientific Council identified many deficiencies in the statistical and research support provided by Contracting Parties and the Council members apparently carried insufficient authority with their home governments to correct the situation. As a result, a number of attempts were made, through the Fisheries Commission, to extend NAFO's authority in the scientific area. The first initiative was for a scientific observer program on commercial vessels fishing in the Regulatory Area. Proposed by Canada in 1979, and adopted by the Commission, the scheme was implemented in 1980. However, the implementation was through bilateral agreements, extensive coverage was not achieved (maximum of 218 observer days in 1980), and the scheme faded away in the late-1980s. A NAFO Annual Scientific Program, under which Contracting Parties would be bound to conduct the required scientific work, was proposed in the late-1980s but came to no more than members being urged to meet their commitments. In 1992, establishment of a special NAFO scientific research fund was proposed, studied, but not implemented. Thus, NAFO has been unable to extend its authority over scientific data collection and research beyond that of ICNAF.

Regulatory Actions. The TAC and Contracting Party allocation scheme of ICNAF was carried over to NAFO as the preferred method of controlling exploitation level. Trawl regulations of ICNAF were

also inherited by NAFO, but none of the ICNAF minimum fish size restrictions or its area/season closures applied to the NAFO Regulatory Area. The Subarea 3 trawl regulations applied to cod, haddock, pollock, white hake, redfish and five species of flatfish, although redfish in Div. 3NOP were exempted. The minimum mesh size was 130 mm manila equivalent with a differential of 120 mm for hemp, polyamide and polyester netting and of 110 mm for seine nets. Canada dispensed with differentials in domestic regulation in 1982 but the Fisheries Commission saw no need for change at that time. However, from 1989, increasing evidence that significant quantities of small American plaice and yellowtail flounder were being caught, followed by similar reports of the capture of small cod, produced a change in view. In 1992, regulations were put into effect restricting the size of fish which could be retained on board to 41 cm fork length and above for cod and 25 cm total length and above for American plaice and yellowtail flounder. In addition, a minimum size for Greenland halibut of 30 cm was adopted at the September 1995 Annual Meeting. Also in 1992, mesh size regulations were revised to include all groundfish species and differentials were dispensed with, the latter taking effect 1 June 1994 (with an exception until January 1997 that nets constructed of the polyamides caprolan, dederon and kapron could continue to be of 120 mm mesh size, i.e. materials used by states which were former republics of the USSR). Furthermore, from 1994 the Grand Bank was established as a large-mesh-only zone, preventing the development of a shrimp fishery there. A shrimp fishery had already developed on Flemish Cap in 1993 and, in that area, use of a separator grate in the trawl codend was made mandatory in order to reduce finfish by-catches, particularly of redfish.

Surveillance and Compliance. The NAFO Convention specifically required that the ICNAF scheme of joint international enforcement be maintained in force and makes provision for new measures of control and enforcement within the Regulatory Area to ensure the application of the Convention and implementation of measures in force under it. The Convention also requires Contracting Parties to take such action as is necessary to make effective the provisions of the Convention, including the imposition of adequate sanctions for violations. The NAFO Fisheries Commission approved a NAFO Scheme of Joint International Enforcement in 1981 which was a rewording of the ICNAF scheme to take account of the change in circumstances but was without change in substance.

Canada was the only active participant in the Joint Enforcement Scheme of ICNAF in the Grand Bank – Flemish Cap area, carrying out regular air

and surface vessel surveillance and boardings for inspection purposes. At the beginning of NAFO, Canada proposed some equitable sharing of the enforcement burden. In response, the USSR put an inspection vessel in the Regulatory Area in 1980 and subsequent years. Other Contracting Parties agreed in principle but failed to establish a continuing inspection presence in the Area.

Aircraft overflights, combined with at-sea boardings, provided Canadian surveillance authorities with sufficient information to detect gross violations of catch allocations on a fleet basis. Immediately after extension of jurisdiction in 1977, Canadian surveillance detected a dramatic increase in fishing activity adjacent to the Canadian zone in Div. 3M. In the last years of ICNAF, 1977–79, surveillance provided strong evidence of overfishing of ICNAF catch allocations, particularly by Spain and Portugal. Canadian surveillance also detected the first Spanish vessels fishing under Central American flags of convenience from 1978. Spain did not join NAFO immediately and thus, in 1980–83, was not bound by NAFO catch restrictions, but Spain did indicate that it would abide by most other NAFO regulations. However, Canadian surveillance continued to record Spanish fishing practices which were contrary to NAFO requirements such as under-recording of catches (by more than half) and utilization of small mesh trawls, and also established that there was a continued lack of control of Portuguese fleet catches, which greatly exceeded NAFO allocations in a number of cases.

Accession of Spain and Portugal to the EU in 1986 brought the EU into the longstanding and escalating dispute between Canada and Spain. The EU immediately took up with the Fisheries Commission the charges made by Spain against Canada, the primary of which were that the disproportionate attention given to the Spanish fleet by Canadian surveillance amounted to harassment, and that Canada was abusing the provisions of the Joint Enforcement Scheme. The EU proposed in 1986 that the Fisheries Commission replace its Joint Enforcement Scheme by one which was impartial, objective and effective and, to provide incentive, announced its withdrawal from the existing scheme by July 1987. The Commission responded positively and a revised scheme, renamed the Scheme of Joint International Inspection (rather than Enforcement), came into effect in mid-1988. The new scheme added some notification procedures, restricted to some degree the information inspectors could gather, and required inspections, as far as possible, to reflect the ratio of fishing activity of fleets, but it was not fundamentally different from the previous scheme. This process nonetheless contributed to an improvement in Regulatory Area surveillance. The EU withdrawal

from the joint scheme in mid-1987 was accompanied by a commitment to have in place a corresponding unilateral scheme. European Union inspectors conducted inspections from two commercial vessels for the balance of 1987 and the EU had an inspection vessel deployed in the Regulatory Area prior to joining the new NAFO scheme in mid-1988. Thereafter deployment of EU inspection vessels in support of the scheme became routine.

The Fisheries Commission was presented with evidence at its September 1990 meeting which made perfectly clear that its regulatory efforts were largely futile as a result of uncontrolled fishing. The chairman of the Scientific Council gave estimates of catches of Flemish Cap cod of 40 000 tons per year in 1988–90, years in which the TAC had been set at zero with agreement of all Commission members. The increased surveillance by Canada, EU and USSR, joined by a Faroese inspection vessel in 1989, left no grounds for doubt as to the existence and scale of the organization's problems. The Commission set about to improve the Inspection Scheme and a number of measures were implemented at the beginning of 1992. A hail system, whereby vessels reported entering and leaving management zones, was perhaps of most immediate importance. However, a pilot NAFO Observer Scheme was also agreed upon for the period January 1993–June 1994 to "monitor a vessel's compliance with NAFO Conservation and Enforcement measures". This Observer Scheme was initially weak, as it was not tied in with the Inspection Scheme, there was no requirement to collect scientific data, and Contracting Parties were to have their own observers on their own vessels and they alone were to receive observer reports. Furthermore, only Contracting Parties expecting to fish in the Regulatory Area for more than 300 days in 1993 were obliged to have observer coverage, and then only at a 10% level. The pilot scheme was extended through 1995, however, and for 1996 there was agreement for 100% coverage, observer reporting of infringements to a NAFO inspection vessel within 24 hours, and availability of observer reports to all parties within 30 days of completion of assignment. Proposals for implementation of an electronic vessel tracking system remain under study.

The failure of NAFO to establish control over exploitation of Regulatory Area stocks has three elements – non-member fishing, unilateral establishment of allocations by Contracting Parties, and illegal over-running of allocations and disregard for other regulations by Contracting Parties. The NAFO surveillance and enforcement measures, can address directly only the last issue of regulatory violations by Contracting Parties. Whether the present round of improvements makes the scheme

sufficiently strong to result in deterrence, rather than simply detection, of illegal behaviour remains to be seen, although adoption of a strong observer program is particularly encouraging. However, the other issues require diplomatic solutions and the will to solve the problem on the part of the Contracting Parties.

Resource Trends. As an organization, NAFO accepted a management strategy of fishing at $F_{0.1}$ as an adequate definition of its objective of optimum resource utilization. This provided for consistency with the Canadian management regime for transboundary stocks, thus meeting Convention obligations. However, the organization faced a number of serious regulatory control problems, and catches for groundfish stocks generally exceeded the levels advised by the Scientific Council as corresponding to an $F_{0.1}$ strategy. These problems would seem to preclude any possibility of management success. Nonetheless, for Grand Bank cod, NAFO appeared to be successful in the early-1980s in maintaining a moderate exploitation level, thus bringing about some stock recovery (Fig. 56). Fishing mortality in 1979–88 averaged about $F_{0.1}$, well below the 1967–76 level of more than twice F_{max} , according to available estimates. However, after the mid-1980s the stock trend reversed, fishing mortality increased and there were reports of an increased dependence on small fish. Transboundary flatfish stocks, the next most important groundfish stocks on Grand Bank, showed similar trends. There are so few data for Flemish Cap stocks that trends cannot be described but there can be no doubt that cod was extremely heavily exploited throughout the NAFO period. The general similarity in trends between the Grand Bank groundfish stocks and those entirely within the adjacent Canadian zone suggests that there was an underlying environmental influence, the adverse effects of which reduced recruitment in the period from the mid-1980s and which in turn reversed the improvements in stock status that occurred after the mid-1970s. However, for all groundfish stocks that are fished in the NAFO Regulatory Area, inadequate data on the level and composition of catches make the estimates of the effects of fishing on these stocks particularly uncertain.

For the only NAFO pelagic stock, capelin, the exploitation rate target was established by the Scientific Council at an arbitrary rate of 10%, although for most of the NAFO period, the recommended exploitation rate was actually zero because of the low stock size (Fig. 57). This conservative approach reflected the importance of capelin as a forage fish for other species but also the high level of uncertainty in prognosis of potential yields. On those occasions when a fishery was permitted,

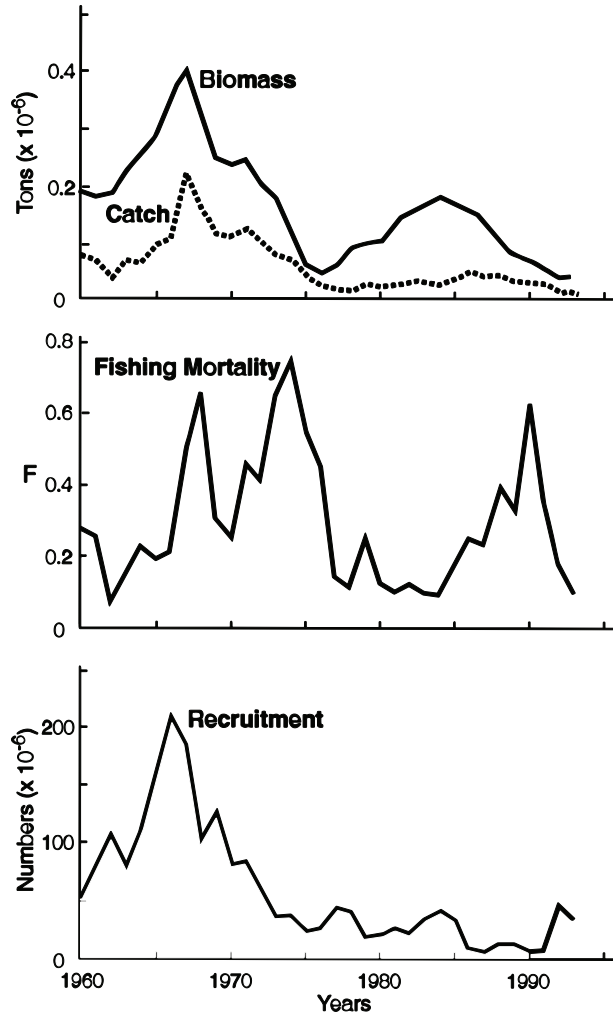


Fig. 56. NAFO cod: trends in stock parameters.

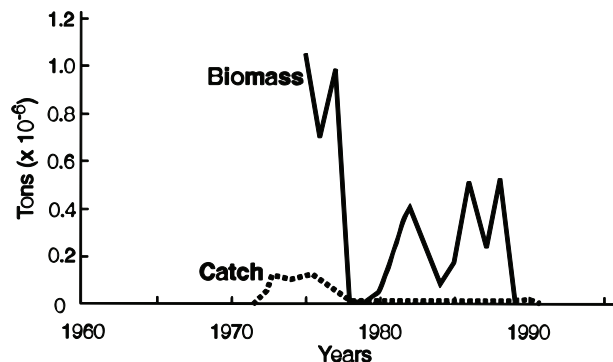


Fig. 57. NAFO capelin: catches and stock biomass.

the exploitation rate appears to have been well below 10%. Thus, in this case the fishery was prosecuted in a manner consistent with the organization's strategy.

