RIU-T1-70-002

INTERNATIONAL FISHERY BODIES OF THE NORTH ATLANTIC

BY

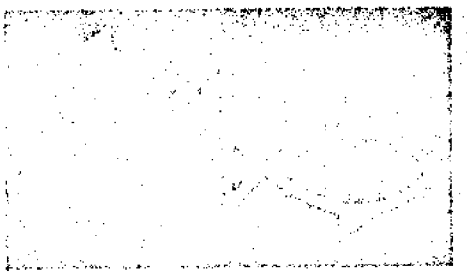
C. E. LUCAS

International Fishery Bodies Of The North Atlantic

by

C. E. LUCAS

Marine Laboratory
Department of Agriculture and Fisheries for Scotland
Aberdeen, Scotland



Law of the Sea Institute
University of Rhode Island
Occasional Paper No. 5
April 1970

THE OCCASIONAL PAPERS are distributed by the Institute as a means of stimulating the flow of ideas and facilitating responsible debate. The Papers, which are selected for their substantive and innovative contribution to the discussions on the sea, may be highly informal in presentation. Their selection in no way precludes the possibility that they, or revised versions, will be published in formal journals and publications at a later date. Subscribers are invited to respond to the papers and to submit comments which may then be selected for distribution. The ideas expressed here are the author's and do not represent policy positions taken by the Law of the Sea Institute

THE LAW OF THE SEA INSTITUTE is dedicated to the stimulation and exchange of information and ideas relating to the international use and control of the marine environment. In meeting these goals, the Institute holds conferences and workshops, distributes papers, and provides bibliographic and other services for scholars. The Institute takes no position on issues but seeks to bring together all important points of view and interests that are relevant to the formulation of marine issues.

The Law of the Sea Institute - University of Rhode Island, Kingston, R. I. 02881

The objective of the Working Party[1] is to suggest ways in which the work of the Food and Agriculture Organization Fisheries Councils and Commissions might be made more effective, with special consideration of the needs of the Indo-Pacific region and the ways in which FAO support might be provided.

Apart from the recently established Tuna Commission there are (in 1966) in the North Atlantic region three bodies for consideration and comparison. These are, in order of establishment, the International Council for the Exploration of the Sea (1902), the International Commission for Northwest Atlantic Fisheries (1949) and the Permanent Commission of the 1946 Fisheries Convention (1954), recently replaced by the Northeast Atlantic Fisheries Commission (1963).

Before considering the ways in which the fishery bodies of the North Atlantic operate, it is convenient to have in mind the essential features of the Indo-Pacific Fisheries Council, which was established in 1948 under Article XIV of the FAO constitution. Its range of competence is simply described (FAO Committee on Fisheries, 1966), as concerning the living aquatic resources of the marine waters of the Indo-Pacific region and the inland waters of the member countries. Its functions are advisory only and its objectives have been summarized (COFI, 1966) as "formulating the oceanographical, biological and other technical aspects of the problems of development and proper utilization of living aquatic resources; encouraging and coordinating research and application of improved methods in everyday practice; recommending to member countries national or co-operative research and development projects; undertaking co-operative research and development projects; assembling, publishing or otherwise disseminating relevant information; proposing or adopting measures to bring about the standardization of scientific equip-

[1] A paper drafted for the Working Party on FAO Regional Fisheries Bodies established by the Advisory Committee on Marine Resources Research to the Director General of FAO. This Working Party met in Rome across January 9-13, 1967, and the text of this paper is essentially as presented then, except for footnotes referring to subsequent changes.

ment, techniques and nomenclature; extending its good offices in assisting member countries to secure essential material and equipment; reporting on questions referred to it by member countries or by FAO; and reporting to FAO on its activities".

To facilitate these objectives the Council has an Executive Committee and two principal technical committees, one for hydrological and biological problems and the other for technological problems; the Council and any of these committees may set up appropriate Working Groups. Through this system the Council reports its advice to FAO and thence to governments. It is normally financed (and serviced) through FAO although member countries may also finance projects in cooperation (but have not yet done so); in addition to the funds of FAO, funds may also be available through the United Nations Special Fund and, for training, through the Expanded Programme of Technical Assistance (but these have not yet been drawn upon).

International Council for the Exploration of the Sea

It is not only because of its long history that it is appropriate to consider ICES first among the Atlantic bodies. There are respects in which its characteristics are the most similar to those of IPFC (and to various other FAO bodies), although in other respects it differs greatly. The principal of the similarities is that ICES is an advisory and not a regulating body; its objectives are somewhat similarly general, in being concerned with the study of the seas (and connected inland waters), and especially their living resources; its area is very loosely defined, as that of the Atlantic Ocean and adjacent seas, with special reference to the North Atlantic. One of its principal functions has always been the publication of the results of marine research (by no means entirely restricted to North Atlantic research), especially that planned within the Council and arising from co-operative efforts or studies.

From its conception in 1899 the Council has had in mind the vastness of the seas; the complex interrelationship of the physical and biological processes governing them and the resources they yield; the need for the rational exploitation of these resources; and the fact that only by international co-operation can the processes be understood, and the resources used in such a way as to remain at least as beneficial, as a common property, as they were when the inroads being made by man began to have a significant impact. Co-operative studies of the seas and their resources were therefore begun immediately, according to plans proposed by the national members of a number of standing committees.[2] While the number of member nations,[3] and committees, have increased, most of these countries are still members and most of the original committees still persist, although changes have been made from time to time to meet changing needs, and new changes are at present being considered.

It is noteworthy that, although membership of the Council has always been by governments, the constitution of the Council (as the first of the international marine research bodies, and indeed one of the earliest of the really active bodies in international scientific cooperation) was of a relatively informal kind by comparison with the Commissions and Councils formed during the last twenty years. In order to correct this feature and to make a number of other desirable changes, the Council is in the process of re-

---

[2]As in 1966 for Distant Northern Seas, Near Northern Seas, Baltic Belt Seas, Atlantic, Comparative Fishing, Gadoid, Herring, Sardine, Scombriform Fish, Salmon and Trout, Shellfish, Hydrographical, Plankton, Whaling and Statistical. Certain changes are, however, under consideration (see footnote 4).

[3]Federal Republic of Germany, Belgium, Denmark, Spain, Finland, France, United Kingdom, Ireland, Iceland, Italy, Norway, Netherlands, Poland, Portugal, Sweden, Union of Soviet Socialist Republics, to which Canada was added in 1967.

establishment under a revised constitution, with a new committee structure,[4] although in most essentials its work will continue in ways similar to those of the past. Financing continues to be primarily by the annual contributions of member governments, which normally pay the ad hoc expenses of their representatives at statutory and most other meetings as well as the costs of their participation in joint investigation. More occasionally the expenses incurred in a special meeting, or some investigation of very common interest, may be paid by the Council; very occasionally a subvention may be sought from another body (such as United Nations Educational, Scientific and Cultural Organization) for assistance in furthering some project of interest over a wide field, for example in publishing the results of some special investigation.

As distinct from (a) the officially appointed delegates (two from each member country) and (b) national "experts" accompanying them to the statutory meetings, the basic components of the Council have been the standing ("subject" and "area") committees, each normally comprising two representatives, usually "experts" (who may incidentally be delegates) from each country. These review previous work in their appointed fields and prepare programs when joint action is being planned, for submission to the Consultative Committee composed of the chairmen of each of the standing committees. The Consultative Committee is a coordinating scientific body for transmitting to the Council of Delegates, through the Bureau (of President and six Vice-Presidents) the accepted (or possibly modified) proposals of the committees, together with estimates of their costs to the Council. In addition there is a Finance Committee and an Editorial Committee, each reporting to the Bureau. A special feature of the work of each committee, however, is the time provided in the program for its

[4]The present structure comprises committees for Gear and Behaviour, Hydrography, Statistics, Fisheries Improvement, Demersal Fish (Northern), Demersal Fish (Southern), Pelagic Fish (Northern), Pelagic Fish (Southern), Shellfish and Benthos, Plankton, Anadromous and Catadromous Fish, Marine Mammals.

consideration of "contributions" which, while relevant to its subject (and occasionally also that of another committee) do not necessarily stem from any joint program immediately in mind. Experience proves that this traditional feature, which is possibly peculiar to ICES in the international marine field, is as valuable today as ever, in enabling members to keep in touch with the broader details of the work of others in their general field and to comment on and relate their own experience to the work of others, which may sometimes be of a much more basic nature. Indeed, it is characteristic of the Council's activities, which may in part be related to this feature of the program that meetings are regularly attended by workers in the more basic aspects of marine research as well as those whose work is directed more to practical problems. Thus it is that a number of academic marine workers are drawn into ICES programs who have never attended (and sometimes never heard of) meetings of NEAFC, ICNAF, or other regulatory fishery bodies.

Thus, in accordance with both its original and its revised constitution, ICES is concerned with understanding the seas and their various processes, both basic and applied, although in accordance with its objective of the rational exploitation of the seas the emphasis has always been on application of the knowledge, and especially with the commercial fisheries in view. So it is that during its relatively long history, ICES has contributed considerably to the foundations of marine science on the one hand, while on the other hand much of its work has been deliberately directed to understanding the effects of fishing on the commercial fish stocks and in estimating the effects of fishery regulatory measures. Examples of the more basic work are the early quarterly surveys of the hydrography and plankton of the North Sea and adjacent waters, the long-term studies of variations in flow and related characteristics through the entrance to the Baltic Sea and through the Faroe-Shetland Channel, the basic studies of the CO_2 system in salt waters and the processes involved in primary and secondary production. Among recent examples

are the ICES contributions to the International Geophysical Year and the Council's special survey of the Iceland Faroe Ridge. Of both basic and applied value were the arrangement made for the provision in Copenhagen of "standard" seawater for calibration purposes, and studies of the comparative efficiency of plankton nets, both early activities which are reflected in the present concern of ICES with calibrating and standardizing marine research techniques of several kinds (often in collaboration with other international bodies such as the Food and Agriculture Organization, the International Commission for Northwest Atlantic Fisheries, the Scientific Committee on Ocean Research and the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization).

Examples of work directed to the overfishing problem are numerous, and in earlier years resulted directly or indirectly in governments concerned reaching agreement nationally or internationally onsone or another measure designed to rationalize fish and shellfish fisheries, first in the Baltic and more recently over much wider areas (see below). Indeed, the work of ICES members in this field during the thirties provided much of the evidence and the stimulus which led to the establishment of the Permanent Commission of the 1946 Convention, with the result that a special relationship was established between the two bodies which has been strengthened under the constitution of NEAFC which replaced the PC in 1962.[5] (It may not be unreasonable to suggest that, even from the beginning, the work of the Council also had some influence upon the establishment and activities of ICNAF: see also below.)

It is perhaps this side of the work of ICES which is especially relevant to the task of this FAO Working Party, demanding special consideration of ICES activities during the last twenty years, although the added value of its

[5]The Council is invited to be represented at Commission meetings both by its General Secretary and the Chairman of the Council's Liaison Committee (see below).

prosecution within the background of other, and often more basic, marine investigations should not be forgotten.

Quite apart from the requirement in the constitutions of the PC and NEAFC, that the scientific advice of ICES should be taken into consideration, there is necessarily a fairly close relationship between their activities which arises from the largely (but not quite)[6] common national membership of the two bodies, with the result the national delegations to each comprise many administrators and experts in common. There would inevitably have been a good deal of cross fertilization, but this has steadily become more and more specific, and perhaps particularly on the part of the Council. An important instance arose when the Council was reactivated in 1946, and immediately planned as a major objective an assessment of the state of the fish stocks of commercial interest in the Northeast Atlantic following six years of reduced fishing during the war. A collaborative effort to produce routine and biological statistics quickly showed how all the important stocks had recovered from earlier depletion, and indeed how quickly this recovery was in some instances lost and dangerous levels approached once more. While these results were immediately relevant to the objects of the Commission (unfortunately not initiated until 1954), they were especially important in stimulating the Council to further investigations. The benefits of the wartime standstill (and their subsequent dissipation) were perhaps most evident in the North Sea and therefore the particular concern of its (then) Southern and Northern North Sea Committees. Discussions reasonably led to special attention being paid to "comparative fishing" in its various aspects (vessels, effort, mesh and net size, population dynamics, etc.) and to the establishment, first, of a Comparative Fishing subcommittee and then a full standing committee for that purpose. This undoubtedly stimulated work in several national laboratories which resulted in due course in a substantial body of knowledge about the effects of fishing

[6]Only Italy and Finland, in ICES, do not belong to NEAFC.

which might otherwise not have been available by the time (ca. 1955) when the Commission urgently needed it. In particular it resulted in a substantially accepted body of knowledge as the result of free discussion in the CFC and other relevant committees. Very much remained (and still remains) to be done, but the opportunities to discuss and assess the work of individual laboratories in the largely non-political atmosphere of the Council, to determine what next needed to be done, and to plan cooperative work with that object, ahead of the political or administrative demand for it, proved both invaluable and stimulating.

While important, because its work was often directed to obvious or anticipated (and later specifically formulated) needs of the Commission, it should not be thought that it was only through the work of the CFC that the Council was able to assist the Commission or to anticipate its needs. Several of the biological and area committees were regularly concerned with matters of immediate or potential interest to the Commission, perhaps especially the Distant Northern Seas (arctic and sub-arctic fisheries), the Near Northern Seas (North Sea and adjacent fisheries) and the Herring Committee, for obvious reasons, and it is useful to note examples of how these committees conducted their work. The Herring Committee provides several instances in point, of which that concerning the consequences of a new "industrial" fishery for young herring developing in the North Sea is useful. This fishery developed rapidly from ca. 1950, and had its implications for the traditional adult herring fisheries which the committee properly considered and investigated. In particular, this led to consideration of the order of the effects which the young herring fishery would have on the adult fisheries of the North Sea. Special tagging experiments were planned, under the auspices of the Council, in which all the countries concerned took part, and a special Working Group was established to assess the results and report on them after a two-year investigation. The contemporary decline of the Southern North Sea fishery, and real

concern for other herring fisheries led to the establishment of various other herring working parties to assess, as far as information permitted, the state of the stocks (and the effects of fishing on them) in the southern, central and northern North Seas and in the "Atlanto-Scandian" area. Some of these investigations are still proceeding and while many of the facts are clear, others are not; but again, when the Commission was led to ask for advice on some of these matters such information as was available had been largely if not entirely assembled and reviewed, and it was possible (instead of having to initiate investigations as has often been necessary elsewhere) to present at least interim reports immediately or even sometimes to anticipate the request.

Indeed, in much of its work the Council (or laboratories of member countries) was anticipating the needs of the Commission. It was, for example, inevitable that both the Gadoid Committee and the Distant Northern Seas Committee should be concerned with the state of the cod and haddock stocks in the arctic fisheries, and indeed should draw attention to the effects of increasing fishing on them. Again, the North Sea and later the Near Northern Seas Committee were inevitably concerned with the developing sole and whiting fisheries, and receiving reports on them, so that when the Commission specifically called for information on aspects of these fisheries, again a body of "accepted" knowledge was available and the ground laid for any special investigations required. In particular, groups of experienced scientists were already becoming accustomed to working together and relying on each member contributing his (or his laboratory's) share towards any conjoint work which might be initiated. What was slowly being evolved, also, was a process of investigation or assessment by Working Groups, comprised not so much by national representation only (although national representation was often necessary) but especially by recognized "experts", whatever their nationality, which has proved invaluable within and outside the Council's region of operation.

Meanwhile, the Council had evolved a new organ, its Liaison Committee, for transmitting information to the Commission and for considering and investigating problems posed by the Commission. This was established in 1957 and, in its institution, may have solved a problem for the Commission, as to whether or not it should establish its own standing scientific advisory committee; so far this has proved unnecessary.[7] The Council's Liaison Committee is closely linked with the Consultative Committee and sits under its Chairman. It comprises the chairmen of those ICES standing committees concerned with problems most likely to be of interest to the Commission; it has a specially appointed part-time Secretary[8] and it can recommend the co-option of scientists (the "co-opted members") specially qualified to assist it in assessing available information, for example in population dynamics.

In the first place the Liaison Committee submitted reports to the Commission on information presented at Council meetings which promised to be relevant to the Commission's deliberations. This continues, and the material has normally been processed by first the Secretary and co-opted members reviewing the work of each committee and reporting, on relevant material only, to the main committee. The committee then considered that report, abstracted it, and commented on it as required in preparing its own report for the Commission, with most if not all of the co-opted members' report as an Annex; occasionally there have been included other annexes as supporting evidence. Since 1957 these reports have been considered annually by the Commission as an early item in their agenda, but recently the Liaison Committee reports have been concerned

[7]Only once, in 1955, has the Commission set up a truly scientific committee on its own account, the well known "Ad Hoc" Committee, of national representatives, which was dissolved in 1956. Although based on national membership the group of scientists had worked together in ICES, and its report (published in J. du Conseil, Vol. XXIII, No. 1) on "The effect of mesh sizes and size limits" doubtless in turn influenced subsequent ICES programs.

[8]Now a full-time official of the Council has this task among his responsibilities.

more and more with questions put specifically to the Council and its Committee by the Commission, with a further evolution of the reporting process. In the ordinary way, this has involved placing the specified problem before the appropriate standing committee at the next ICES meeting, but as urgency has increased it has sometimes been necessary to remit the problem direct to either the co-opted members or a specially appointed Working Party of specialists, so that work can begin before the Council meets (in October) and reports be prepared for the consideration of the LC before it meets again (February-March), and then submitted to the next meeting of the Commission (in May). Two consequential steps have been (a) the decision of the Commission to pay the expenses (through ICES) for a special meeting of the Committee, and for its Chairman to attend the Commission's annual meetings, and (b) the decision of the Council to publish the LC reports annually as parts of a special series of Cooperative Research Reports. In addition to paying the expenses of the LC Chairman, the Commission also makes a subvention to the Council towards the special expenses incurred on its behalf.

The publications of the Council, although largely well known, deserve special mention. Apart from the early and discontinued Publications de Circonstance, for many years they comprised the Rapports et Proces Verbaux, the Journal du Conseil, the Bulletins Hydrographiques (recently discontinued) and Statistiques and the Annales Biologiques. The last three need no special comment, except that for many years they comprised the only reasonably comprehensive series of international hydrographical, biological and fishery statistical data in the world. The Journal has regularly (except for the two wars) been published three or four times a year as a series of relatively short research contributions, often but not always arising from communications made at Council meetings and mainly relating to the main area of investigations. The Rapports again need no explanation, except in so far as their 'special'

issues have for many years been used to disseminate the results of the Council's periodical Special Meetings, which have frequently been concerned with matters of very wide interest, so that they have drawn visitors, and contributions, from a wide area (e.g., those on herring, shellfish, measurements of fish abundance and on primary and secondary productivity).

In addition, several new publications series have been added since the last war, especially the Statistical News Letters and the Cooperative Research Reports. Both, although very much the concern of the Council, have been produced to meet the special needs of the Commission - the first in response to a specific request for more and more detailed statistical data, and the latter as a medium for publishing the reports of specially appointed Working Groups (Series A), such as those on the Sole and on Mesh Assessments, and more recently (Series B) the reports of the Liaison Committee, which may also include as Annexes small but relevant contributions which have not been substantial enough for publication elsewhere.

Special reference should be made to the statistical publications. As the Bulletins Statistiques they are well known and expanding rapidly, their value being greatly improved by the institution of the related Statistical News Letters. Both in their strength and their weaknesses they doubtless influenced the composition and format of the somewhat similar series evolved by ICNAF (NEAFC have no such publications). More important is the close relationship which has developed between ICES, ICNAF and FAO[9] in respect of various aspects of statistics collection and dissemination, resulting in the establishment of a Joint Continuing Working Party on statistical matters which has proposed improvements and economies in the collection and assembly of statistics by all three bodies - working largely in cooperation and with jointly designed statistics reporting forms - which have been accepted by them. Here, both re-

[9]Arising from the Joint Expert Meeting on Fishery Statistics in the North Atlantic area, held in 1959.

gional bodies would doubtless wish to pay a tribute to the unflagging enthusiasm and helpfulness of the FAO staff members particularly concerned. This is but one aspect of the relationship (largely informal) which has developed over the years between the three bodies (each normally extends invitations for representatives of the others to attend relevant meetings): for example, in an arrangement whereby FAO Fisheries Department is preparing and assisting with the publication of indexes of the Council's Journal and Rapports et Proces Verbaux and the various ICNAF publications, and in the arrangements between ICES and ICNAF for exchange of reports of standing committees engaged in work of common interest, and in the occasional joint participation in activities such as standardization of sampling methods, etc.

Northeast Atlantic Fisheries Commission (Originally the Permanent Commission)

Several aspects of the work and proceedings of NEAFC have already been touched upon, in its special relationship with ICES, e.g. the indirect influence of work in ICES on its establishment and its reliance on ICES for scientific advice. It is essentially a governmental regulatory body, with a membership of two delegates from each of the member countries, together with such experts as they wish to attend. In principle, members undertake to implement recommendations adopted by not less than two-thirds of the delegations present and voting, except that a country may object within a specified period and is thus under no obligation while, if three or more countries object, all are relieved.

NEAFC has no scientific committee and indeed only two standing committees; other committees are established ad hoc to some specific purpose. Its officers are a President, two Vice-Presidents and one part-time Secretary. The Commission is wholly financed by member governments. (Perhaps largely owing to the existence of ICES, its affairs are conducted as or more cheaply than those of any comparable body.)

The permanent Commission arose out of the Fisheries Convention of 1946 designed to take joint action in respect of overfishing problems in the North-east Atlantic (over a precisely defined area, divided into sub-areas, which is contiguous with that of ICNAF). But for Italy and Finland its membership is identical with that of ICES.[10] Its particular remit concerned (or was interpreted as solely concerning) the regulation of meshes of fishing nets and the size limits of fish. Such mesh regulations and size limits were indeed prescribed in the Convention and still form the basis of regulation in the area, allowing for small changes in each since the Commission was established in 1954 (the delay of six years arose mainly from delays in ratification of the 1946 convention). The particular weakness in the original constitution (or in its interpretation) proved to be the inhibition from taking into consideration any other means of fishery regulation, which was administratively inflexible and, of course, scientifically demonstrable as inadequate, so that arrangements were made in due course for drawing up a new and more flexible convention.

Meanwhile, two major practical problems were encountered, (a) concerning fisheries for species which could only be caught with meshes smaller than those prescribed and (b) concerning mesh "differentials". For each of these various modifications of the original regulations were introduced (in the light of advice from ICES) without fully solving either problem.

(a) The 1946 Convention had prescribed minimum mesh sizes for the capture of fish species by trawl and seine, in respect of two main areas of the Commission's region; minimum fish sizes are prescribed for some of these. These fish were in general the larger species of commercial interests, and it was recognized from the beginning that exceptions had to be made for the capture of a number of smaller fish and especially shellfish of other species (the Article 6 species) which would largely if not wholly escape through such minimum meshes. It was recognized then that some clash of interest would be inevitable,

[10] See footnote 6.

but the clash increased greatly with the rise of extensive and valuable fisheries specifically for some of those species, and also for other "smaller" fish destined to be used for "industrial" (meal and oil) purposes, some of which were being conducted over the same grounds as had hitherto only been fished for the larger fish species. While comprehensive advice was provided by ICES concerning the facts of biology, distribution (size and area), mesh release factors, etc., there have remained certain problems which are probably inevitable in regions of extensive and "mixed" fisheries, with nations variously interested in fish of several different kinds, of broadly comparable value; they can perhaps only be "solved" by processes of give and take which recognize to some extent the differential values which different fishermen may place on the various marine resources. These and other problems also illustrate how rapidly the nature of a fishery may change from that envisaged at the time of drafting a convention, for which, in the light of experience, the maximum flexibility and anticipation seems to be required if discussion (quite apart from regulation) is to be adequate. It may be fair to say that the familiarity acquired by the scientists (and administrators of member nations in working together regularly in the committees and working parties of ICES, with a minimum of political concern, often made easier these and other discussions in a regulatory forum where the economic interests of different groups of fishermen were inevitably in mind.

(b) Another and persistent problem facing both the old and the new commission has concerned the equivalents in terms of manila of the sizes of trawl meshes made of other materials or in the netting of other types of gear. This problem was met at the Commission's first meeting when evidence was introduced (following an earlier communication to ICES) that the meshes of seine nets were more selective than trawl nets, with associated evidence that those of light trawls were more selective than those of standard trawls. The evidence was

accepted and corresponding (but approximate) exceptions made in the regulations. It has been characteristic of the procedure of the Commission that in this and all subsequent instances scientific evidence has only been accepted (though not necessarily acted upon, or acted upon precisely) if it has first been considered and accepted in a meeting of the Council or, more recently, of its Liaison Committee. Here, however, is an instance in which the information stemming from the Council, however correct (and in this instance their "answers" have necessarily been very approximate), has been in no sense final or offered a final "solution". Before long the Liaison Committee found it necessary to report on the differentials appropriate to polyamide fibres (as well as cotton, hemp, etc.), and then polyester and polyethylene; polypropylenes and others followed, with different structures and mixtures, as others will still follow, so that arbitrary decisions needed and will need to be made. The scientific evidence, however, obtained by national and international tests, under specified and recorded conditions, provides the basis on which such decisions can be made as fairly as possible; and here the Commission is able to assist the Liaison Committee by calling upon member nations to undertake experiments and supply the necessary evidence, as it is also calling for evidence (of the actual mesh sizes in use and the associated use of "chafer" codend covers) from fishermen of member countries for yet another vital investigation - that of the immediate effects of fishing on the stock.

Under the new NEAFC Convention, in addition to various minor changes (and taking into account the essentials of the regulations of the earlier convention), the whole area has been increased and subdivided into three sub-areas, each with a Committee of nations principally interested. The principal advances made, however, were to extend the Commission's remit to include the consideration of measures other than mesh size and size limits of fish. These include fishing gear and appliances, closed seasons and areas, the improvement

and increase of marine resources and (subject to special condition) the control of catches and fishing effort. While the first options may prove useful, the last two were vital to any truly rational exploitation of a fish stock. Thus it is that, partly on the initiative of ICES committees and partly on the request of the Commission, ICES has instituted a series of stock assessments and assessments of the state and likely development of some of the major fisheries thought to be under heavy fishing pressure. Here the routine and supplementary statistics previously compiled by ICES proved invaluable (though they are still being improved), as were the various contributions to fishing and population theory introduced and discussed at the Council meetings, and the results of various experiments (in sampling, mesh selection, etc.) made and reported nationally and under conjoint arrangements. Several stock assessments have now been made (all subject to revision as the fisheries and experience develop), which have been processed and reported annually under the supervision of the Liaison Committee and duly reported to the Commission; others have been initiated. While some have produced uncertain or debatable results, others have shown that the fisheries in question are not yet subject to undue strain, while in yet others the stocks will not only provide no better yield under increased fishing but (under any conditions of minimum mesh or fish size) would yield as much or significantly more at a greatly reduced fishing pressure, and for a much reduced cost per unit of fishing.

It is assessments such as the last (which none have any reason to doubt) which are being earnestly and urgently considered by the Commission at present. Quite apart from the special and somewhat restricting conditions which under the Constitution govern the consideration of such matters, which are being overcome, such problems obviously introduce into the debate considerations of national interest - and the interests of different groups of fishermen within a member nation - in quite an acute form; all complicated by smaller but no

less important problems, such as have been outlined above, and further complicated by broad economic problems such as to where any "excess" effort might reasonably be directed (as distinct from destroying it) which have not been eased by the results of comparable assessments made for the neighboring ICNAF area (see p. 25 below).

In the face of such problems (as also those of international inspection of regulation enforcement, on which NEAFC is making real progress) ICES as such can offer little help except in terms of overincreasing data, improved methods, etc. It is perhaps useful, however, to stress the means of achieving these: by the international consideration of nationally acquired evidence, and by international experiment and assessment, all undertaken by scientists (chairmen, standing committees, co-opted members, working parties, ad hoc committees, etc.) selected as much or more for their recognized competence than for their nationality or interests. Further, although the term "advice" is often used, the information provided is more in the form of facts (and inferences reasonably to be deduced from facts), as to present and likely future conditions, than in the form of positive advice as to what the Commission should do: occasionally "advice" is provided, as to what may be expected to follow if action should be taken along one or another line. The debate and decision is for the Commission (although it is realized that within their own Government Departments scientists may in fact be more positive, when required, than this).

International Commission for Northwest Atlantic Fisheries

This Commission was set up in 1949, with the object of maintaining all fishery resources in the area (contiguous with that of NEAFC) at a level permitting the maximum sustainable yield. So far, special attention has been paid to gadoid fish, redfish and flat fishes, with increasing attention to some

shellfish species and, recently, an extension of the Convention to cover seal resources. On the basis of scientific investigation the Commission may take measures concerning open and closed seasons, spawning and nursery areas, fish size limits, prescriptions of fishing gear (including mesh sizes), and over-all catch limits; there is no specific reference to fishing effort control.

A special problem in recent years has arisen from the procedure laid down as regards the adoption of proposals for joint action, which (unlike NEAFC) are not effective until four months after they have been accepted by all the countries concerned in the sub-area Panel (see below) in question; thus any country may object or make reservations, which reservations themselves must be acceptable to all the countries concerned. A major attempt is at present being made to overcome this problem, which had led to a serious accumulation of proposals, and amendments and reservations to proposals which had not been fully accepted.

The constitution of ICNAF differed further from that of the Permanent Commission in two main respects (a) in prescribing five sub-areas of the whole region for each of which there is a Panel of representatives of the member states concerned with substantial fishing in that area (with a Scientific Advisory Committee) and (b) in prescribing, in addition to a Standing Finance and Administration Committee, a Standing Committee on Research and Statistics, which from time to time has established ad hoc sub-committees some of which (e.g. Steering and Publications, Statistics, Gear and Selectivity, Environmental and Assessments) have been maintained since their origin. The Commission also has a full-time Executive Secretary and Assistant (concerned primarily with statistics) together with a small office staff; otherwise, it has no scientific staff and all research programs are undertaken by member countries under the co-ordination of the R & S Committee. Thus, ICNAF to some extent

provides a composite of the functions of ICES and NEAFC but without some of the flexibility provided by the former, especially in attracting a wide range of scientific contributions at its meetings, which are also seldom attended by representatives (as such) of basic or academic marine laboratories. The immediate operational expenses of the Commission are financed by the member governments; research programs and many supplementary meetings are financed directly by the participating governments.

While there are thus many similarities, in effect, between the resources research operations of ICNAF and of the ICES/NEAFC complex (perhaps partly owing to their common membership by several nations, and certainly to their common interest in several of the same fish species), there is at least one important difference. Although the Consultative Committee of ICES is a co-ordinating and guiding body it is not primarily an initiating body. Except in so far as the closely related Liaison Committee is necessarily sometimes an initiating body (and it derives its authority from the CC), in principle (and usually in practice) initiation, program planning etc., comes from below through the standing committees. IN ICNAF this is reversed; action is initiated in the R & S Committee and tasks and program forming, etc., delegated to one or another of the ad hoc committees. Viewed simply in terms of the work of an objective regulatory commission this may well seem most suitable, and there are respects in which the functioning of ICNAF has sometimes seemed to be more streamlined than that of ICES/NEAFC. On the other hand, the facility in ICES to draw on a greater pool of generally relevant marine research, and to attract academic representatives to its meetings, to participate in discussions of a much wider range of topics (many of which have subsequently become relevant to the Commission's immediate problems) has had, and promises to retain, advan-

tages which the ICNAF system cannot easily provide (even though indirectly the Commission takes advantage of them).[11]

ICNAF has four main series of publications: (a) its Annual Proceedings (and Red Books), (b) its statistical publications, (c) its occasional Special Publications, and (d) most recently its Fisheries Bulletin, and it may be useful in relation to these, to consider instances of the ICNAF procedure, especially in the scientific field.

The Annual Proceedings is essentially a report on the year's work in the ICNAF office, together with the President's brief Report on the previous statutory meeting, which gives full details of any regulations or amendments which may have been proposed. Occasionally, especially in the earlier years, these were supplemented with other information arising from the proceedings, such as national annual reports and programs, research contributions of special interest, etc., which now are included, together with the report of R & S and its subcommittees in the Annual Redbook of ICNAF. While the Redbook is not an official publication in the usual sense (its format is cheaper and its circulation limited), it has been found invaluable to supply each scientist concerned with a complete copy of the proceedings of the R & S meeting and of selected meeting documents and national research reports, as well as to have copies available for officials of associated bodies such as FAO and ICES.

One distinguishing characteristic of ICNAF is that, having been set up by the Commission, the remit of its R & S Committee has tended to be linked more closely to the Commission's proceedings than happens on the other side of the Atlantic (although this must be paralleled in many other Commissions). Thus, its early work was very much concerned with the Commission's urgent need for a coordinated system of statistics such as, though its needs were as

[11]The pros and cons of these two systems may well be worth study and it is perhaps significant that Canada now proposes to join ICES and that the United States (a member until World War I) may well follow her example.

urgent, NEAFC did not need to initiate. Thus a statistics subcommittee came into being, and has continued, and is likely to continue. While some member countries had a well-established fishery statistical system, others had not, and thus the Executive Secretary and the Committee had first to acquire basic catch data for the region, then organize it for the Commission's purposes, and then develop associated statistics regarding vessels and tonnage, gear, fishing effort, etc. Meanwhile, despite the comparative paucity of data in the early years, work in the local laboratories provided evidence to justify modest minimum mesh regulations for some of the areas, in most of which the rate of fishing was found to be still in the developing stage. The available evidence, much of which pointed to heavy discarding of smaller cod and haddock, was reviewed by the R & S Committee and the Commission was advised accordingly. The study of fish of special commercial interest (cod, haddock, halibut and redfish) was encouraged by the appointment of ad hoc subcommittees, and another temporary committee was established to further the study of the local hydrography in relation to the fisheries; this had been relatively neglected since the more academic work of the 1920's and at first was not easy to revive, despite the production of a useful review of the available evidence.

The various modes of development of international schemes of fisheries research are of considerable interest, and depend very much on local conditions, the immediate interests of the Commissions and, perhaps above all, on the influence exerted by a relatively few laboratories and the more prominent scientists within them. Despite the particular mode of operation in ICNAF, whereby initiation primarily stemmed from above, in research there is an absolute limit to the extent to which this can be adequate and successful. Very much still depends on the scientist's ability, his appreciation of the situation, and especially of what will be needed, sooner or later. As the laboratories of only two countries were situated within the area (Canada and the U.S.) their influence and that of their Directors was most important. As all the other

countries concerned were members of ICES, it was inevitable that that Council's knowledge and experience should be drawn upon. On the other hand, the delegates and experts of these European countries doubtless found it refreshing to be working with fisheries problems which were still evolving and had not been "with them" unsolved for many years, and to be able to experience other methods of working. The fact that (particularly the early) meetings were usually held within North America had an unusual consequence - possibly exerting an effect - in that more often than not (for economy) the group of (up to three) national delegates included one or more practising scientists, and occasionally a delegation would be led by a scientist. (By contrast it is much less usual for a practising scientist to be a delegate or to speak at a meeting of NEAFC.)

As progress was made, the need was felt increasingly for more time than was available during plenary meetings for both reviewing available evidence and planning future programs, so that the R & S Committee began first to meet a day or two in advance of the Plenary, then a few days and finally for a full week before - this meeting corresponding partly to the (approximately) mid-year meetings of ICES in relation to the PC, and partly to the special meetings of the LC a month or so before the Commission meeting. Now most, but not all, of the business of the R & S Committee and its subcommittees is done during the ten days prior to the ICNAF Plenary, and a brief report presented on its first day; any special questions from the Commission (and remaining business) are considered during the Plenary week. Even so, the time or the timing has been inadequate, and advantage has recently been taken to hold meetings on special topics occasionally during or just in advance of the ICES meeting. In such ways the two bodies have been able to cooperate more closely in recent years and not merely because of the common national membership, as several of the European countries interested in fishing on both sides of the ocean

send largely or entirely different delegations to the corresponding meetings. This cooperation can only have been, and obviously has been, of advantage to both bodies.

A valuable feature of the ICNAF work has been the series of "special" meetings (resulting in its series of "Special Publications") to devote more intensive study to some common problem than could possibly be given within a general meeting. Examples have been on "Biological Fishery Surveys" in Biarritz (1956), on "Selectivity of Fishing Gear, etc." in Lisbon (1957) (partly in conjunction with the CFC of ICES), on "Fish Marking" in Woods Hole (1961) and on "Redfish" in Copenhagen (with ICES) in 1959. The urge to standardize and improve methodology has been prominent in these, and scientists who normally attend only the ICES meeting have been glad to attend them; from time to time they have drawn scientists from other fishery regions with great advantage. Another, and the largest, was held in 1964 at FAO in Rome, with the formal co-sponsorship of ICES, on "Environmental research in the North Atlantic area".[12] This was in fact one part of a major research effort, beginning in the late fifties with a series of fish stock assessments and terminating (for the moment) with an intensive "environmental" survey of waters extending from Iceland to Newfoundland (by eight nations and ten vessels) during the spring of 1963.[13]

Each of these has been a major effort, and it is fair to say that few of those concerned felt, when each project was first considered, that the task could be undertaken with the available resources. While discussed first in subcommittee, each was in fact supervised and planned by a succession of working groups, reporting in due course to the Assessments or the Environmental

[12]Results published in 1965 as ICNAF Special Publication No. 6.

[13]Results published in 1968 as Special Publication No. 7.

subcommittees. Thus, for the assessments of the fish stocks, groups of "national" scientists first assembled the data (catches, stock composition, fishing effort, etc.) from their fishing fleets, and the assembled groups of data were then reviewed and reported upon by a group of scientists selected solely for their expertise in stock assessment.[14] As in the ICES/NEAFC system, the information was then forwarded through the R & S Committee to the Plenary in a form which indicated, as far as possible, the present state of the stocks of each area, the likely effects of regulation under various minimum mesh sizes, etc. and, lastly, the likely developments under various intensities of fishing. Although incomplete, the results were obtained only just in time. Fishing has been rapidly intensifying in most instances, and as a whole the stocks of conventional fish were reaching, if not passing, their points of maximal sustainable yield. Taken in conjunction with the comparable (and sometimes more extreme) information being provided by ICES for NEAFC (of which ICNAF has continually been informed), and bearing in mind the common major interest in certain species such as cod and haddock, this information has given the Commission considerable food for thought. Fortunately, common interests such as these are tending to bring the two Commissions into even closer relationship, and arrangements have been made for ICNAF countries which are not member countries of NEAFC to send observers to NEAFC meetings of special interest to them.

It need not be stressed that the increasing interest of ICNAF in environmental matters is by no means academic; most of the ICNAF fisheries are situated over narrow banks on the edge of great ocean deeps, under the influence (direct or indirect) of major current systems, while the northern fisheries may well be subject to environmental extremes. Even small environmental changes may directly affect stock conditons, while there is good reason to

[14]Including a member of the fisheries staff of FAO.

believe that the presence or absence of worthwhile catches in the northern waters may depend on relatively small changes in water movements resulting in temperature increases or decreases. Quite apart from these points, however, environmental influences necessarily effect the accuracy of assessments, or at least the deductions drawn from them. All concerned, therefore, appreciated the need for an environmental program, and the R & S Committee set up a working group to consider and make recommendations on what should first be undertaken. Subsequently the R & S Committee and the Commission approved proposals for (a) a symposium which should aim to summarize what was known of some likely environmental influences in the area (see above), and (b) a conjoint survey which would seek to obtain more detailed information in one section of the area than was already available and provide some more direct idea of environmental influence. Working groups (or their equivalent) were appointed for each, useful results obtained (and probably even more valuable lessons learned).

Perhaps the most important result of all those exercises was the demonstration of how, by carefully planned cooperation, results can be obtained internationally which are quite impossible on a national basis.

General

This is, of course, no new discovery as far as marine research is concerned, although ICES was the first organization to exploit the possibilities extensively, except for some smaller scale cooperative investigations which preceded its function, and doubtless stimulated it. And at this point it seems worthwhile stressing the value of the more informal kinds of cooperation -- both within and outside formal fishery bodies - which range from cooperative work between individuals to slightly more formal projects between laboratories, either within the same countries or in different countries, of which many examples occur within the North Atlantic group of countries. Such smaller

scale, and more local, cooperation could be very valuable among countries formally linked in a fisheries body extending over a vast area, such as those in IPFC. The basis of cooperaton is community of interest - and appreciation of that interest - and this may not be so easily appreciated over a vast area as between neighboring countries whose interests are mainly focused on a local sea area or group of fisheries.

This raises the question of what characteristics are the essentials of effective regional units and (excluding for the moment political considerations) there is an ecological case for saying that they are (or are a combination of) the fish stocks, the current systems which encompass them (usually there are several stocks of commercial interest within the same system), and the regions these occupy. Recognizing that the major waters of the world are continuous, and largely a common property, it remains that they can be subdivided into more or less natural (and often largely political) regions. The North Atlantic Ocean, with its major current system, can be seen as one of these, and the ICNAF/NEAFC complex covers a large proportion of this, with ICES extending over most of the same area and beyond it in the east. There is indeed a natural community of interest here which seems noteworthy and which provides a basis for cooperation between the three bodies concerned. It is perhaps also worth noting that while Tuna are not principal objects of commercial interest for most of the countries concerned, and therefore not of research, all three have indicated their desire to assist in any way they can with the work of the new Atlantic Tuna Commission now coming into being under the auspices of FAO. Perhaps this desire will be reciprocated in due course.

Indeed, just as few individual nations have sufficient resources to "go it alone" in marine and fisheries research, and all can gain greatly by collaboration, so neighboring regional bodies have much to gain by collaboration,

as these three are showing. Further, while each can and does still retain its individuality, they also have shown the great value for them of association with a world organization (FAO), which can further interrelationships between regional bodies, serve at times as a central point and focus, and possibly act as a coordinating center as and when required. ICES in particular, and to some extent ICNAF are also able to collaborate with the more basically oriented ICC/UNESCO complex.

While all this is very true, especially in relation to the size and scope of the problems (the seas stretching over two-thirds of the earth's surface, fish which migrate over 2,000 miles and more, the complex interaction of processes which range from the extra-oceanic through the physical and chemical interactions within the seas to the ill-understood internal processes - millieu interne - of the organisms themselves), it is equally true that the rate of progress, within the same context, is lamentably slow, even within these organizations of generally well-developed countries. This fact raises the question of their general efficiency.

There are several reasons why ICES might be regarded as coming nearer to its objectives than the other two bodies. For one thing it has been in existence for over sixty years. Discounting the last fact, however, considerable progress has still been made, and not only within the Council but also by the stimulating effect its existence as a forum has had upon the activities of the laboratories of member countries (which in turn, rightly, have stimulated the Council as a corporate body). There are, however, real limitations to its capacities, both in terms of income and of authority.

For example, in 1966, its income totaled some £40,000 of which some £25,000 is spent on staff and administration and £10,000 on publication, leaving little for supporting conjoint work (an increase of 25% in income is being requested from governments). The whole is very much less than the budgets of many if not most of the member laboratories. (It is relevant that the contributions of the three major supporting countries represent at present little more in purchasing terms than the corresponding contributions before the 1914-18 war). On the other hand, it might reasonably be said that, however desirable more support may be, the essential thing is the collaboration brought about by the Council, its recommendations regarding priorities, and its planning and reporting of conjoint work, which could reasonably be financed by those collaborating, according to their resources. With perhaps one exception, and acknowledging that sometimes its procedures are pedestrian, probably its structure and methods are as adequate to such a task as any in existance today. The exception is, of course, an important one, that the Council has no authority to instruct or direct what work shall be done, nor how it should be done; it can only recommend, and inspire. While this real limitation may even set limits, from time to time, to what is recommended, the fact is that the rate of progress must, as in so many other bodies, depend on the collective will of the member countries to devote their energies in the common interest, in the assurance that each will benefit in the not so long run.

Doubtless the establishment of the Permanent Commission (now the North-East Atlantic Fisheries Commission), in response to dangers made clear by ICES, have strengthened that will (even though the financial contributions might not support the view), and it is appropriate therefore to consider how satisfactorily the Commission is coming to achieve its objectives. Distinct progress has been made in the more far-seeing objectives of NEAFC as compared with the PC, for example, and especially in the more flexible remit as to legitimate

objects of discussion, and therefore of regulation.[15] Again, the procedures as such, though detailed criticisms might be made, seem adequate (or at least are not demonstrably inadequate) to the task. The Working Group, however, will doubtless wish to consider whether the NEAFC arrangement for obtaining scientific advice is as efficient, or better, than the more direct method adopted by ICNAF, in so far as either is relevant to the problems of the FAO Commissions.

Once again, the important question is whether the spirit in which the new Convention was signed proves adequate to the problems which are arising, in the scientific demonstration that fishing intensity can reach such a level that as much, or more, fish might be obtained at a much lower level of fishing, with all the complications indicated.

Here it is worth noting that the scientists have suggested (as they have in ICNAF) that joint discussions might be organized with advantage between the administrators, the scientists and practical economists; and this has been considered, and rejected, at least for the moment. By some at least it is felt that the more strictly economic aspects of such problems (as distinct from the elementary economics in terms of catch and cost per unit of fishing already taken into consideration) are more usefully discussed at the national than the international level and, in the present state of fishery regulation, this may well be so.

As already indicated, ICNAF at present suffers undoubtedly from the limitations originally imposed on securing governmental approval for regulatory action, but it is possible that these are being overcome. Otherwise its procedures have proved reasonably efficient in comparison with others experienced, although attention has been drawn (p. 19) to one or two important

[15] With more progress since 1966.

limitations of the "internal" arrangements for securing scientific advice in this instance.

Once again, as in the instance of NEAFC, there can be little doubt that the important factor (and this will have wide application) is the will of the member countries to attain the objectives of the Convention; i.e., to recognize from the beginning the advantages (and disadvantages) of setting out to achieve (in this instance) something close to the maximum sustainable yield, and to face up to the requirements (i.e., catch or effort limitations) if and when the circumstances and scientific advice point to them. Clues as to the strength of the will are various and do not all point in the same direction. It is, however, interesting that in ICNAF the desire to take economic matters into account has, after much discussion, gone a little further, and this in conjunction with FAO. Indirectly, the meetings now being arranged between scientists and economists should also be of interest to NEAFC.

One point, however, that of finance, is again a little discouraging, and in respect of ICES, NEAFC, and ICNAF a detached observer might be surprised at how small a sum national Treasuries consider appropriate for tackling internationally such large problems (concerning such valuable resources which, so often, are either inadequately exploited or exploited at far greater cost than is necessary), and how difficult it may be to secure even small increases.[16] The average "subscription" to NEAFC, for example, is (in 1966) £300, to ICES £2,200, and to ICNAF $2,000, all three combined being less than one member may spend on one major research cruise of a month's duration.[17]

[16] That this is not a peculiarity of Treasuries is shown by the following quotation from the Editorial in "Nature" of August 6, p. 553: "Ironically, however, the food manufacturing industry is one of the largest, with a turnover of something like $5,000 million a year. Why is its cooperative research laboratory able to raise only a derisory fraction of this sum by subscription from food manufacturers? And how can the Association hold its head high when some individual member companies spend ten times as much in a year on their own food manufacturing research?"

[17] These sums have recently been increased somewhat.