

ANNUAL MEETING - JUNE 1955Report on the United Nations International Technical Conference
on the Conservation of the Living Resources of the SeaRome, 18 April - 10 May, 1955

by the Executive Secretary

By invitation, 31 January 1955, the General Assembly, United Nations, asked ICNAF to send an observer to its Technical Conference on the Conservation of the Living Resources of the Sea.

By letter of 21 February, the Commission's Chairman, Dr. Stewart Bates, asked me to attend that Conference as an observer for ICNAF, and to prepare for the Conference a paper describing the related problems of the North Atlantic, the objectives of the Commission and its progress today.

On the 1 March, I forwarded the said paper to the Secretary of the Conference. The paper is attached to this report as appendix.

On the 15 April, I left for Rome, where I attended the Conference from 18 April to 7 May. The Conference should have finished on that day but it carried on for still some days. Owing to the preparations for the ICNAF Annual Meeting, I, however, did not judge it right for me to stay away longer.

A little more than 40 countries were represented at the Conference, among these all countries being members of ICNAF. This being so, this is not intended to be a general report on the Conference but sooner a single out of items from it of special interest to ICNAF.

Directors and secretaries from the various international fisheries commissions took part in the Conference as observers.

The main scope of the Conference was the preparing of a report to serve as a guide for the International Law Commission of U.N. in its establishing of rules for international conservation of the resources of the sea. Consequently the considerations of the Conference concerned more the legal than the biological aspects.

As a basis for the considerations, the already existing international conventions were reviewed and discussed. It was found that most of the more important fishing areas of the world were covered by international conventions. Gaps existed, however, e.g. around South Africa.

It was regarded as a drawback with these conventions that they were binding only for member countries, but not for non-member countries already fishing or starting to fish in their areas. Most of the conventions - among those that of ICNAF - had provided for voluntary adherence by such countries.

A problem paid much attention to was if the "coastal state" should have special rights in connection with the establishment of conservation measures in international waters off its coasts. The view was expressed that the coastal state, for the nourishment of its people, had a special interest in the stocks of those areas, and that it was the one who had the best opportunity for studying them. Therefore special rights ought to be accorded it. Other states combated this view, stating that countries carrying out

substantial fisheries were just as much or even more interested in the conservation of the stocks and that they further would be well able to carry out necessary research work. No special rights should therefore be accorded the coastal states. A vote taken showed 18 for special rights to coastal states, 17 against and 8 abstaining. The countries voting "for" were mainly those whose fisheries were carried out off their own coasts; those voting "against" were those carrying out larger fisheries in international waters off the coasts of other states.

The Conference further dealt with problems concerned with co-operation in researches and in the collection of statistical information, and the view was expressed that more international conventions were needed to ensure full coverage of such investigations. In regulating fisheries, the stocks concerned should be considered in their entirety and not only just that part of the stock living in the area of the planned regulation. As it was pointed out by the present writer, this, in cases, would call for an increased co-operation between the various international commissions; means for facilitating and ensuring such co-operation would have to be found.

Countries might, in cases, differ in opinions as to the scientific and technical basis for regulations and consequently as to the content of the forthcoming regulations. It was suggested that difficulties arising from such disagreements could be met through the establishment of an impartial panel chosen for the special case by the countries concerned. - It could be considered if not a standing panel would be a better solution.

The Conference decided that it was not competent to deal with the question of the extent of territorial waters or with the jurisdiction of the coastal state over fisheries or the legal status of the superjacent waters of the continental shelf.

The conclusions of the Conference have not yet been circulated in their final form. This report should therefore only be regarded as a tentative one.

During the Conference I had extended conversations with the observers from the other international commissions concerning administrative, technical and scientific problems of mutual interest.

With various members of the staff of the FAO Fisheries Division, I had special conversations related to the work carried on by ICNAF, thus with Dr. Kesteven concerning the possible co-operation between FAO and ICNAF on the FAO plans for "a survey of aquatic resources" and with Mr. Gertenback concerning fisheries statistics.

I paid a visit to the Rome office of "Genepesca" - the Italian fishing company working in the ICNAF area - and considered with the General Manager the statistics related to the Italian fishery in our Area.

Together with Mr. Arnie Suomela, Washington, I - after consultation with other ICNAF commissioners present at the Conference - paid a visit to the Italian Ministero della Marine Mercantile, where we had a satisfactory conversation with the Head of that Department, Dr. Martino Rosaroll, concerning the Italian participation in the ICNAF work.

Finally I took the opportunity, when meeting representatives to the Conference from the Russian Ministry of Fisheries, to ask for information as to the results of the Russian fishing expeditions to the ICNAF Area (Subarea 3) in the spring of 1954. They informed me that these expeditions were of an exploratory character only, and that no further Russian fishery in our Area was being considered.

CONSERVATION PROBLEMS IN THE NORTHWEST ATLANTIC
AND
RELATED ACTIVITY OF THE INTERNATIONAL COMMISSION FOR THE NORTHWEST
ATLANTIC FISHERIES (ICNAF)

by Erik M. Poulsen

I. INTRODUCTION

1. The problem of conservation rises in nearly all cases where an extensive fishery is carried on. Especially when a new, more effective, fishing method is introduced the demand, the cry, for conservation regulations, can be very strong - from the part of the already established, less effective, fishing industries.
2. Too often such demands have been met too willingly by the authorities, and it might well be that more regulations have been ineffective or even injurious, than effective and profitable.
3. An intense fishery need not be injurious to a fish population, that is, injurious to the returns from that resource over a series of years.
4. When a new fishery sets in on a virgin or little exploited population, the catches rise rapidly to a peak, maintain that peak for a very few years and then decline nearly as quickly as they rose until, gradually, the fishery establishes itself on a level somewhere between the original low landings and peak landings. Our concern is to manage the fishery so that this level is as high as possible.
5. During the way down from the peak, the demand for regulations arises: "A few years ago the catch was so high, now it is so low, the intense fishing, the 'over-fishing' has depleted the stock so that it yields less than it formerly did". This conception, however, is false. The population does not yield less - it may even yield more. The catch during the peak years was not the yield of those years but the withdrawal of a capital hoarded up in earlier years.
6. What we are concerned with, in the management of a fishery, is that the crop available for yearly harvesting be as high as possible. It is not the size, the weight of the population that matters, but the weight of the fish meat produced per annum.
7. In a dense population the fishes are slow-growing and old. They are using their food supply in milling around searching for food, in spawning migration, in producing roe and milt, adding very little to their individual weight - thus the yearly crop of fish for food is small. In such a population a thinning out by an intense fishery is a great benefit - from our point of view - causing the old, slow-growing individuals to be replaced by young, fast-growing individuals, who use their food in adding to their size and weight, thus increasing the yearly crop. Many examples of this are known, fully supported by evidence.
8. In the history of a fishery, it is dangerous to postpone conservation measures to a too late date, but it is just as dangerous, perhaps even more so, to introduce them too early. Conservation efforts must aim at controlling the population(s) in question at such a level of abundance that the individuals, in as short a time as possible, reach the optimum size, and then at fishing them as soon as possible, before natural mortality has claimed too large a part. By optimum size is understood, the size of the individual at the time when the year-class is of maximum weight. This definition may be qualified if there is a price differential based on cullings.

9. To achieve this a tremendous amount of research work is needed along the lines defined by M.B.Schaefer in his background paper "Types of Scientific Information Required for a Fishery Conservation Programme and Types of Conservation Measures Applicable in a Conservation Programme". The problem of determining the period of individual life when fishing should start, of fixing the most profitable state of density or rather of thinning out, and of defining the right regulation measures is a vast one. These problems are further complicated by the fact that the regulation of the fishery of a certain species also acts upon the other species in the same habitat and through these reacts on the former species.

II. THE AIMS OF CONSERVATION

10. The two main aims of fish conservation are: (a) to secure to mankind a continued supply of fish sufficiently large to meet the demand, and (b) to maintain a paying fishing industry. In many cases these two aims can be achieved through the same measures of conservation. In some cases, however, and perhaps in more cases than is generally realized, this is not so. A conservation measure may cause a lesser quantity to be caught, making, through improved quality, the fishing industry pay better, but resulting in a decrease in the amount of food made available for man.

11. Thus, in considering conservation, we must decide in each case which of the two aims should be given priority.

12. With the steadily increasing need for food, obviously point (a) - the supply - is to be given priority. We are concerned with the problem of producing more food from the sea and at a price low enough to make it available to those who need it the most. However, no fishery - without support - can be carried out over a long period if it does not yield a profit for the fishing industry. Therefore point (b) must be considered not only for its own sake, but also for the sake of achieving (a) the supply needed.

III. SPECIFIC POINTS ON THE PROVISIONAL AGENDA

A. Item 10b: The magnitude and geographical range of the populations constituting the resource

13. In considering this point, it must be borne in mind that in some cases the population constituting the resource, i.e. the population fished upon, is not identical with the population sustaining that fishery. It may well be that the fishing is carried out only in part of the area over which the resource, the species in question, is distributed. If we would try to judge the magnitude of such a resource through the statistics of the fishery, or through research work in the area "threatened", we would come to a completely wrong conception of its size and of its abilities to stand up to a fishery. A species fished in only part of its range will be able to endure in that area a much stronger fishery than a species fished over its whole range. This fact is, of course, most obvious; however it has been overlooked or not sufficiently considered. When contemplating the introduction of regulations for a fishery, the research work on the species in question must be carried out not only in the area where it is fished but in the whole area where the species is distributed, provided that it is connected with the fishing area.

B. Item 10d: Effects of intensity and kind of exploitation on the resource

14. It is obvious that the study of the effects of intensity and kind of exploitation must be based on the study of these two elements

themselves, that is of the statistical information that are and can be collected on them from the commercial fishery.

15. When the International Commission for the Northwest Atlantic Fisheries started work in 1951, it was recognized from the beginning that one of the principal aims of its work would be the compilation of reliable statistical data, as extensive and as refined as possible, from all the 10 member countries fishing in the area.

16. The main international fisheries in this area are fisheries for cod, haddock and redfish. The principal cod fisheries are carried out on the Grand Banks of Newfoundland and in the West Greenland waters. The haddock fishery is centred off the coasts of Nova Scotia and New England. The fishery for redfish - which is a fairly new one - mainly takes place on the Grand Banks, off Nova Scotia, in the Gulf of St. Lawrence and in New England waters. In the waters off the Southwest coast of Greenland, a fishery for redfish has started during the last two years.

17. The following ten nations, who are members of ICNAF, fish in the area: Canada, Denmark, France, Iceland, Italy, Norway, Portugal, Spain, United Kingdom and United States. During recent years, Germany has started fishing on the Grand Banks and in West Greenland waters, and Russia has carried out a little experimental fishing on the Grand Banks. The total landings of groundfish from the Area amounted in 1953 to 1,200,000 metric tons, round fresh.

18. As statistics on the commercial fishery are the primary basis for deciding whether regulations are needed, and, if so, what kinds of regulations are desirable, a short survey of the Commission's statistical requirements and of the use made of them is given below:

- (a) The area dealt with by the Commission is that part of the Northwest Atlantic which stretches north from Latitude 39°N and west from Longitude 42°W to the coasts of New England (USA), the Maritimes, Quebec, Newfoundland (Canada) and Greenland (Denmark). In order that the more or less independent populations can be dealt with separately, the area has for statistical purposes been divided into 23 subdivisions. In defining the borders of these subdivisions, stress was laid upon the using of natural borders, such as deep channels and known borders of distribution of stocks, to the effect that the subdivisions to some degree correspond to natural habitats of the various stocks of fishes.
- (b) Statistical data on landings and efforts from these subdivisions are collected by months.
- (c) Statistics for landings cover only the principal species of groundfish (the pelagic species play a small part in the international fisheries in the area).
- (d) Data on landings are collected according to commercial size categories in use by the industry. Definitions of such categories are reported annually.
- (e) Statistics of efforts comprise:
 - (i) number and tonnage of fishing vessels in use
 - (ii) manpower on the vessels
 - (iii) gear used
 - (iv) such data on the time factor as: days absent from port, days on fishing grounds, days fished and hours trawled, this latter for trawl fishing, with corresponding data for the various kinds of hook fishing.

(f) Based on landings and efforts, calculations of the yield per unit of effort are made with the aims of measuring the efficiency of the various fishing methods and of achieving measurements of abundance of fish and variations in abundance in time and space.

19. As the Commission has only worked for 3-4 years, not all of its statistical requirements as stated above are completely met by all countries. However, each year sees a marked improvement in the quantity and quality of the statistical data presented.

20. The statistics on landings are given in metric tons and round fresh after application of conversion factors. It is recognized that the conversion factors in use in this area, as in others, are not so accurate as could be wished. Extensive experiments on conversion factors recommended by the Commission are being carried out by the participating countries.

C. Item 12a: Problems in respect of which international conservation measures and procedures have been instituted in the North Atlantic

21. Here only the Northwest Atlantic is to be dealt with. In the waters off the New England coast, a certain decline in the yields of the haddock fishery was observed in the late forties. This in connection with the great waste of small haddock caught by the otter trawlers was of great concern to the fishing industries, the fisheries authorities, and the biologists.

22. At the first Annual Meeting of ICNAF (1951), the problem and proposals for regulations were presented. After further studies an international regulation introducing a 4-1/2 inch mesh for otter trawls was introduced in the summer of 1953 for the area off the New England coast. The 4-1/2 inch mesh is as measured stretched, wet, and after use.

23. The introduction of the conservation measures was based on the following observations: 1/

- (a) A general decline of catches from a peak, reached around 1930, to a rather low, stable level over the years.
- (b) A decline in index of abundance during the late forties. (The index is in thousands of pounds landed per day's trawling by a standard trawler.)
- (c) A decrease in individual size for the years after 1947. It was, however, recognized that this decrease could be due to a dominance of rich young year-classes.

24. From these observations, it was considered as evident that the haddock fishery of the area had come to a stage where the degree of fishing was determined mainly by the abundance of fish. The problem was not that of rehabilitating a depleted stock but rather of increasing the production of a productive population by proper management of the fishery.

25. Extensive studies of distribution, migrations, growth differences and racial characters showed that the post-larval population of haddock within the area did not to any appreciable degree intermingle

1/ Herbert W. Graham: Mesh Regulation to Increase the Yield of the Georges Bank Haddock Fishery. Second Annual Report (1951-52) of the International Commission for the Northwest Atlantic Fisheries. 1952.

with stocks of haddock in adjacent areas. This fact ensured that the fishing industry that had to suffer the regulations would be the one to benefit from them.

26. Other studies were concerned with the existing fishing practices. It was found that the mesh then used (2-7/8 inches) had its 50 per cent selection point at 25 cm., further that the fishery discarded all haddock below 27 cm. The amount of haddock annually discarded in the area was estimated at around 7 million kgs.

27. Through these studies and by studies of growth-rate and mortality rates, the question of optimum age of first capture was approached. The most difficult problem was to determine the natural mortality - this is a problem in all stocks and not yet satisfactorily solved. Total mortality was calculated to be 45 per cent and natural mortality was, based on experience, estimated to be 15 per cent at its highest.

28. Fishing experiments showed that in order to avoid discarding of appreciable quantities of undersized haddock, a mesh securing a 50 per cent selection at 40 cm. was needed, and it was found that a 4-1/2 inch mesh would be the one to recommend. In 1953 this mesh size was, as already mentioned, introduced internationally for the area concerned.

29. The Commission found it desirable to study the effects of the regulation very closely, partly to gain some general experience on conservation procedures and partly to find out if the mesh size introduced was the one to secure over the years the highest possible level of catches. Therefore the Commission recommended a plan for researches to that effect. These researches have been carried out since 1953 and are still in progress. They are based on a comparison of catches from trawlers using the new regulation mesh size with other trawlers licensed to use the old small mesh size. They have up to now yielded the following results: 1/

30. The quantity of discarded fish (below around 30 cm.) was reduced to a negligible amount. The landings of haddock between that size and 40 cm. was somewhat reduced. This latter loss was however compensated by greater numbers of larger fish caught. This latter loss was however compensated by greater numbers of larger fish caught. It must be borne in mind that the benefit in this early period only arises from the bigger catches of larger fish which are a result of the increased efficiency of the larger mesh. To this shall be added in coming years the benefit arising from the returns from the large quantities of smaller haddock saved and gradually entering the fishery.

31. A most obvious indication of the advantages to the fishing industry of the regulation is that many fishermen in the neighbouring Nova Scotian area have voluntarily introduced the same mesh size.

D. Item 12b: International conservation problems requiring solution in the Northwest Atlantic

1. The cod

32. During recent years a decrease in the yield of the cod fishery in Nova Scotian waters, especially in the amount of larger cod, has

1/ Herbert W. Graham: United States Research in Convention Area During 1953. International Commission for the Northwest Atlantic Fisheries Annual Proceedings, Volume 4, 1954.

been observed. It has therefore been found advisable by the fishing industry as well as by the fishery research people to introduce conservation measures in that region for the cod as well as for the haddock. Regulations are now being considered for these two species. The problems in this area are more involved than in the New England region, as a greater variety of fishing methods are in use by a greater number of countries.

33. The fact that fishing vessels frequently pass from the Nova Scotian area to the Newfoundland Banks means that it will possibly be necessary to include this latter area, one of the most important areas for international cod fishing in the world, in the conservation procedure. This vast problem is now being studied by the countries concerned according to planning carried out by ICNAF, and it will be one of the main problems dealt with in the coming meeting(s) of this organization.

2. The redfish

34. The fishery for redfish has grown during recent years to considerable importance for the whole area, from the New England region to the Grand Banks of Newfoundland. There are indications that the stock of redfish within this area cannot support a fishery like the present one. During the last three years the landings from the older fishing grounds off the New England and Maritimes' coasts have decreased, amounting in 1953 to less than half of the landings in 1951. In the same years the landings from the Newfoundland area have increased, owing to a spreading of the fishing fleet. This search by the fishing fleet for new fishing grounds is a true indication of an insufficiently paying fishery on the old grounds.

35. In their search for new fishing grounds, the fishing industry has made good use of experimental searching for redfish populations carried out by the Newfoundland Fisheries Research Station. Further researches on redfish are planned by ICNAF and are under way in the participating countries.

36. The new redfish fishery off the Southwest coast of Greenland has called for special plannings of researches. As the fishery here is based on a virgin stock, the information gained by these researches is expected to be of special interest. There are not, in the whole North Atlantic, many virgin stocks left for study or exploitation.

3. The halibut

37. Halibut is fished from the coast of West Greenland down to New England. There is no doubt that in the New England and Nova Scotian waters this species has suffered much in abundance through a too intensive fishery already in the latter half of the 19th Century. The returns of the fishery in these areas are now small and the fishery is only of slight value. However, considering that this area has earlier fostered a large stock of this valuable fish, the possibility exists that a proper management of the fishery could restore the stock.

38. If conservation has to be introduced for halibut, we are faced not with conserving an existent stock - as is the case with haddock and cod, but with the more difficult problem of rebuilding an utterly depleted stock.

39. In West Greenland waters the halibut has also suffered from a too strong fishery. The problem of conservation of this stock is now being considered. The measure to be taken will probably be the introduction of an international size limit.

IV. CONCLUDING REMARKS

40. It has often been discussed how we are to know for certain that a stock (or stocks) in a certain area is being depleted or over-fished, and much effort has been directed to defining "depletion", "over-fishing", etc. When we remember that the aims of conservation are to supply the fish needed to cover the demand and to insure the continued existence of a paying fishing industry, the behaviour of that same fishing industry can answer the question.
41. When fishing vessels in the area are turning their efforts to other less valuable species, when they spread themselves over the area and beyond it, when they lie rusting in the ports, then we know that the stocks are depleted, are over-fished. It is the duty of research organizations concerned to find out at an earlier period, that depletion or over-fishing is threatening. To do this, we have two ways:
- (a) The complete study of the biology of the stocks and of their changes in abundance and in growth rate, the study of the causes of these changes - are they natural, or caused by the fishery.
 - (b) A close study of the statistical information, the data, which we get and can get from the fishing industry. Annual variations in landings and in efforts must be studied simultaneously. The composition of the landings by species, by size categories and by age must be taken into account.
42. Both (a) and (b) call for continuous researches. The problems we are concerned with will never be solved once and forever. As long as a fishery goes on, the conditions for the stock are changing. The well known long-term climatic changes will also alter the picture from one decade to another.
43. When planning our research work on conservation, we must be clear that it is a perpetual work we are approaching. The regulations introduced will never be final. They are apt to be changed from time to time or even to be abolished. A standing vigilance of the stocks, of the fishing efforts and of the regulations themselves must be kept.
44. When stocks are about to be depleted, the fishing fleets move around in search of new stocks to be exploited. To the same extent as new stocks are being fished, the strain on the old ones is lessened. The shifting of the fishing fleets thus helps the conservation efforts. Therefore the search of the fishing fleets must be supported. Researches must be carried out for new species or for new populations to be exploited. This work, the providing of maps showing the fish resources, the fishery possibilities of the seas, should go hand in hand with conservation. This work too will never be "finished", as the picture will change when exploitations of new stocks are started.
45. With the mobility of the modern fishing vessels, no stock of fish, however self-contained or discrete, can be regarded as a unity. The exploitation of a new stock of redfish can well influence the haddock stock of the southern Grand Banks by reducing the fishing pressure on the latter stock.
46. It might even be that the exploitation of, say, a hake stock in the Southern Pacific might lessen the strain on the plaice stock of the Southern North Sea. Thus will the exploration for and exploitation of new stocks aid the conservation of the old.
47. The question of conservation and of the management of fishing is a world-wide question and must be grasped and studied as such.

