



ANNUAL MEETING - JUNE 1968

Report of FAO's Department of Fisheries for ICNAF

Introduction

The details of FAO's work in marine resources, marine statistics resource management and other items are given in the Appendix to this report, but the following items have been picked out as likely to be of special interest to ICNAF.

Tuna Conservation (Section 1.3)

The International Convention for the Conservation of Atlantic Tuna, has been ratified by 2 countries, and instruments of adherence deposited by two others. A total of 7 ratifications or adhesions are required to bring the Convention into force.

Documentation (Section 2.1)

The North Atlantic Bibliography concerning publications of the ICNAF Research Bulletin, and ICNAF Special Publications, as well as ICES publications is in press.

Resources appraisal (Section 2.2)

- (b) A working party of experts in the biology and fisheries of tuna will take place in Miami in August. The party will examine the state of stocks of tuna in the Atlantic, including the bluefin in the North Atlantic.
- (c) A manual on acoustic methods of fish identification will be published later this year.
- (d iv) The area reviews of fishery resources made by the ICNAF have continued; the revised version of the report for the ICNAF area is presented to this meeting. Reports for adjacent areas that for the North-east Atlantic are in draft, and that for the North-east Atlantic are in draft.
- (d v) A number of papers concerned with various aspects of fishery management have been published, or are in press.

Meetings (Section 2.6)

Technical meetings, some in collaboration with other international organisations, have been held on Research craft fish behaviour in relation to fishing gear etc. Preparations for the Food and Agriculture Organisation symposium, which ICNAF is supporting, are going well.

Advisory Committee on marine resources research (ACMRR, Section 2.7)

This met in July 1968, and a number of its subsidiary committees have also met. A working group, in collaboration with ICNAF, on the fishery resources of the eastern central and south-eastern Atlantic met in Tenerife in April 1968. An important conclusion of this group



SUMMARY REPORT ON THE ACTIVITIES OF  
FAO DEPARTMENT OF FISHERIES IN MARINE RESOURCES  
RESEARCH AND MANAGEMENT (1968)

1. INTRODUCTION

This report summarizes activities of the FAO Department of Fisheries in different aspects of the current work program in the field of marine resources research and exploitation and is intended to provide relevant information on these subjects.

1.1 General Information

At the Fourteenth Session of the FAO Conference held in Rome from 4 to 23 November 1967 it was noted that the 1968-69 budget allocations did not provide for the rate of development over three successive biennia visualized for the Department of Fisheries at the time of its Thirteenth Session. It recognized that the allocations by the Director-General were probably as realistic as they could be within the budget ceiling approved for the Organization as a whole, even though they would entail a loss of momentum and inadequate coverage of some areas of work. It gave recognition to the valuable services to fishery science and technology being rendered by the ACMRR and expressed the wish that the Advisory Committee itself should meet annually, as well as maintain its working parties.

The Conference also noted that the Inter-governmental Oceanographic Commission (IOC) under UNESCO had recently decided to invite the co-operation of the Organization in support of certain meetings to be held during 1968/69, specifically meetings dealing with the marine resources of the Caribbean and Gulf of Mexico and of the Kuroshio current area, and recommended that all possible collaboration be extended within the means available.

The Conference endorsed the co-operation envisaged with the International Council for the Exploration of the Sea (ICES) in appraising the status of the resources off Northwest Africa. The planned continuation of collaboration with ILO on matters of vocational training and with ILO and the Intergovernmental Maritime Consultative Organization (IMCO) on safety of fishing operations was noted with satisfaction.

A suggestion was noted that consideration be given to the establishment of international consultative and co-ordinating arrangements for the investigation of marine resources in the Caribbean and the Gulf of Mexico areas.

The Conference called for more vigorous technical and organizational support of the regional fishery bodies.

Particular emphasis was given to the urgency of carrying out more research on marine water pollution and this would involve national and international action through international bodies.

1.2 Committee on Fisheries

The Committee on Fisheries (COFI) held its Third Session from 24 to 30 April 1968 at FAO Headquarters, Rome.

The Committee in considering the long-term problems of cooperation among international agencies concerned with the oceans, discussed proposals relating to operative paragraph 3 of the UN General Assembly Resolution 2172 (XXI), which were considered suitable as a basis for the discussion to be held in the General Assembly of the United Nations.

Various problems of rational utilization of fishery resources were discussed by the Committee including a draft convention on the conservation of the living resources of the Southeast Atlantic; the rational utilization of fishery resources in the Southwest Atlantic; and the International Convention for the Conservation of Atlantic Tunas. Other areas and stocks namely whales, tunas, trawl fisheries (especially those carried out by long-range fleets), and shrimps were also noted. In considering the Eastern Atlantic, the Committee noted a summary report of the recent session of the ACMRR/ICES Working Party on the Fishery Resources of the Eastern Central and Southeast Atlantic. The report covers the major demersal stocks of hake and the major pelagic stocks of the areas.

Arrangements for the forthcoming first sessions of the Indian Ocean Fishery Commission (16-21 September 1968) and the FAO Fishery Committee for the Eastern Central Atlantic were considered.

The work being undertaken by FAO under the Indicative World Plan (IWP) on marine resources evaluation was reported to the Committee.

In considering expert advice to FAO in the field of fisheries, the Committee decided to recommend to the FAO Council to take steps to have the statutes of the "Continuing Working Party on Fishery Statistics in the North Atlantic Area" (CWP) amended so that it would be composed of experts of whom FAO, ICNAF and ICES would each appoint up to four. Its title would henceforth be "Coordinating Working Party on Atlantic Fishery Statistics".

Various actions being taken with respect to marine pollution by the Department of Fisheries in association with UNESCO and IMCO and other inter-governmental as well as international organizations concerned with fisheries, marine science and maritime affairs were discussed.

The Committee reemphasized the importance of education and training at all levels in the field of fisheries and strongly supported the preparation being made by the Department of Fisheries for the First Session of its Sub-Committee on Fishery Education and Training.

The Committee further discussed the proposal for a World Fishery Congress but deferred making a definite recommendation.

The proposal for an International Decade of Ocean Exploration put forward by the United States was unanimously welcomed by the Committee.

### 1.3 Conservation of Atlantic Tunas

FAO convened a Conference of Plenipotentiaries on the Conservation of Atlantic Tunas in Rio de Janeiro, Brazil, in May 1966.

The Conference prepared a Convention which was open for signature at FAO Headquarters by any Member Government of the United Nations, or any Specialized Agencies. On deposit of the instruments of ratification, approval or adherence by seven governments, this Convention will come into force and an International Commission for the Conservation of Atlantic Tunas will then be established.

The Convention has so far been signed by Brazil, Japan, Republic of Korea, Spain, USA, Gabon, and the Dominican Republic. It has been ratified by the USA and Japan and instruments of adherence have been deposited by South Africa and Ghana.

### 1.4 Draft Convention of the Living Resources of the Southeast Atlantic

According to the recommendations of the Committee on Fisheries and the 48th Session of the FAO Council, a draft Convention on the Living Resources of the Southeast Atlantic has been prepared by the Department of Fisheries and Department of Public Relations and Legal Affairs. The draft Convention has recently been transmitted to certain nations known to be concerned with the fisheries of the Southeast Atlantic for comment. Based on the comments received a redraft of the convention will be prepared. The drafts and comments will be considered by a Conference of Plenipotentiaries to meet in 1969.

A review of the present knowledge of the stocks in the area, particularly hake, was undertaken in preparation for the March 1968 conference by a joint ACMRR/ICES Working Party on Fishery Resources of the Eastern Central and Southeast Atlantic. (See Section 2.7).

## 2. FISHERY RESOURCES AND EXPLOITATION DIVISION

### 2.1 General Documentation

#### (a) Current Bibliography for Aquatic Sciences and Fisheries

At present Volume 11 Section 1 is being printed and is expected to be ready for distribution sometime in April. It is hoped that from 1970 on, using the FAO computer facilities, the information now being stored on paper tape can be automatically retrieved.

#### (b) Marine Science Contents Tables

FAO FR Division continues to publish this monthly periodical.

At present, tables of contents relating to about 50 journals covering fisheries biology, oceanography, maritime meteorology and other disciplines in marine sciences are reproduced in this new periodical. Further advice on the improvement of the content and format is being sought from ACMRR and SCOR. It is hoped that the number of journals covered will be increased to about 100 titles during 1968. The journal is distributed through the medium of a special mailing list prepared for this purpose and has a world-wide coverage.

#### (c) International Marine Science

Publication of the quarterly newsletter International Marine Science, prepared jointly by the UNESCO Office of Oceanography and the FAO Department of Fisheries has continued. Volume VI Part 2 is at present in press.

#### (d) Index of Hydrobiological and Fisheries Institutions with Training Programs

An Index to the World Directory of Hydrobiological and Fisheries Institutions (R.W. Hiatt, 1963) was prepared in connection with a symposium on fisheries education, convened by the Indo-Pacific Fisheries Council in 1966. (FAO Fish.Circ., (23)).

The response to the questionnaire, sent out together with the index, was most encouraging. A revised version of the index will be published in the FAO Technical Paper series.

#### (e) A Guide to Marks used for Tunas and an Inventory of Tuna Marking Projects

A loose-leaf Guide (FAO Fish. Circ., (101)) contains information questionnaires distributed to those agencies conducting research on Lists of works of the FAO Expert Panel for the Facilitation of Tuna. Revision of the Guide will be published this year.

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drawn research, as well as those

investigating fish behaviour in relation to fishing techniques, were prepared in connection with the meetings on the respective subjects. (See Section 2.7 c) A preliminary list of workers in marine pollution research has also been prepared. The list will eventually be revised in the form of a contribution to the FAO World Conference on Marine Pollution and its effects on Fishery Resources which will be held in 1969.

(g) International Directory of Marine Scientists

Following recommendations of SCOR and ACMRR it has been agreed that future editions of the International Directory of Oceanographers (which was published by the U.S. National Academy of Sciences in 1964) will be published by UNESCO and FAO with the assistance of SCOR. Preparatory work is under way by the organizations concerned. It has been suggested that the new edition should be published by the end of 1968.

(h) Special Bibliographies

A partial bibliography on the bacterial diseases of fish during the years 1870 to 1965 compiled by Dr. D.A. Conroy is being printed in the FAO Fish.Tech.Pap. series and will be available for general distribution in 1968.

(i) North Atlantic Bibliography

The bibliography that FAO, ICES and ICNAF have agreed to prepare, to include references to papers printed in Journal du Conseil, Rapports et Procès-Verbaux des Réunions, ICES Co-operative Research Reports A and B, ICES unserialized Proceedings, ICNAF Research Bulletin and ICNAF Special Publication, is in press.

(j) Reference Booklets

Fishermen and the Weather, prepared by FAO with the assistance of WMO, was published in March and considered as an FAO contribution to the World Meteorological Day (23 March).

A second draft of a new booklet entitled Oceanography for Fishermen has now been completed. Copies of this version will have limited distribution to selected collaborating scientists and organizations, particularly UNESCO/IOC and SCOR, so that their comments may be noted. A revised version of the present draft will be published in the FAO Fish.Circ. series.

## 2.2 Aquatic Resources Appraisal and Management

(a) Synopses of Aquatic Forms of Economic Importance

During the last two years several species synopses on marine and inland water fishes were published and others are in advanced stages of preparation. Some existing synopses have been revised to include additional information and to improve the presentation of data.

Close collaboration has been maintained with the U.S. Bureau of Commercial Fisheries (USA), CSIRO, ICES, ICNAF, EIFAC, IPFC, GFCM, CARPAS, and with fisheries experts associated with CSK activities.

A synopsis of Biological Data on West African Croakers (genus: Pseudotolithus)

has been published. With the increasing importance of anchovies in world fisheries it is intended to publish several synopses on engraulids. A manuscript on the anchoveta, Cetengraulis mysticetus, has been received. It is expected that Species Synopses on Engraulis ringens, E. mordax, Stolephorus pseudoheterologus and S. purpureus will be completed during 1968. Several species synopses on shrimp and prawn have been received in connection with the FAO World Scientific Conference on the Biology and Culture of Shrimps and Prawns.

(b) FAO Expert Panel for the Facilitation of Tuna Research.

The members of the Panel and of its working groups continued their activities on various aspects of tuna research, in particular tuna taxonomy, standardization of tuna length measurements and tabulation, identification of tuna eggs, larvae and juveniles, and tagging programs. Preparations are being made for a meeting of a small group of experts in Miami in August 1968 to consider the present state of knowledge of the exploited stocks of tuna. The group is expected to prepare a report on the Atlantic stocks of tuna (especially yellowfin and bluefin) which could be used later as a basic document for the discussions in the Commission to be established under the Atlantic Tuna Convention. In view of the recent formation of the Indian Ocean Fisheries Commission, the work of the group will also include advice on the tuna stocks in the Indian Ocean. The Third Session of the Expert Panel is scheduled for the second half of 1969.

(c) Acoustic Fish Detection Methods

The ACMRR Working Party on Direct and Speedier Estimation of Fish Abundance has completed the preparation of a training manual on acoustic fish detection methods which will be used for courses to be held on this subject, the first of which will be the one organized by ICES to be held in Norway in spring 1969. The manual will be published as an FAO Fisheries Technical Paper during the present year and will be made available to research workers throughout the world.

Intercalibration tests will be carried out as part of the research programs of the UNDP/SF projects covering the survey and development of pelagic fish resources in West Africa. FAO is the executing agency for these projects. (See Section 2.9)

(d) Evaluation of Marine Fisheries Resources

(i) The Fish Stock Evaluation Branch has continued to promote and, where appropriate, participate in the assessment of fisheries resources and the effects of fishing, with the aim of obtaining estimates of size of stocks, sustainable yields, and the effects of fishery regulation measures. A report has been published on the population dynamics of the Peruvian anchovy.

(ii) Work to establish the FAO Fisheries Data Centre is progressing. Some fisheries data from IIOE and all data from GTS have already been submitted for storage. FAO is also acting as the centre of submission on sperm whale stocks outside the areas of the North Pacific.



On the basis of returns of questionnaires, a register is being prepared of biological sampling of fish catches. For the present this is concerned only with recording the existing data.

- (iii) FAO has now accepted the responsibility for continuing assessments of sperm whale stocks on behalf of the IWC and to this end an expert working group arranged by FAO will meet in Rome in March 1968. Responsibility for study of the Antarctic baleen whale stocks has continued.

A serious situation is developing in the North Pacific where stocks of several species of whales have been seriously depleted. Two IWC Working Groups are studying the problems connected with all species of whales in the North Pacific, and of sperm whales generally. FAO is closely co-operating with these activities and will be taking an active part in the sperm whale analysis.

- (iv) Indicative World Plan

A major project in the current FAO Program of Work is the preparation of an Indicative World Plan (IWP) under which an attempt will be made to predict and set targets for food production by the years 1975 and 1985.

Existing information about the living marine resources of all types will be summarized for this purpose. To assist the Fishery Resources and Exploitation Division in this task a small informal working group of experts was established. These experts were selected for their knowledge of resource information about various ocean regions and for their interest in this type of methodology of appraisal. The Group has also been selected in such a way that its members, some of whom have detailed knowledge of certain areas and types of resources, supplement FAO staff. First drafts of the detailed surveys of several of the major sea areas and of molluscs and crustaceans have been prepared.

- (v) Studies have continued on general problems of fishery management. These include the preparation of papers for presentation at scientific meetings, publication in scientific and semi-popular journals, and attendance at meetings directly concerned with management problems (including the first meeting of the ICNAF standing committee on regulatory measures).

Recent relevant publications by FR include:

The concept of the maximum sustainable yield, and fishery management. FAO Fish.Tech.Pap. No. 70;

Emerging patterns of international fisheries development. Prd. Gulf and Canb. Fish. Institute (in press);

The management of Antarctic whaling resources.  
J. Cons. int. Explor. Mer 31(3);

The management of fishery resources. FAO World Food Problems No. 7. Also (in slightly different form) in Advances in Marine Biology No. 7;

The ocean reservoir. Science Journal May 1968;

The concept of the marginal yield from exploited fish stocks. J. Cons. int. Explor. Mer (in press).

## 2. Fishery Oceanography and Environment Research

### (a) Relations between fish stocks and upwelling areas

The IWP Working Group on Marine Resources Appraisal recognized the need to develop methods of estimating potential yields from primary production data. Following a related recommendation approved by ACMRR at its Fourth Session, FAO has invited Dr. D. Cushing (Fishery Laboratory, Lowestoft, U.K.) to prepare a review on some aspects of the process of enrichment of surface layers and its effect on fish stock distribution and abundance. This paper is intended to be used as a contribution to the volume that it was suggested should be published by FAO and UNESCO/IOC as a preparatory stage for a possible seminar to be organized jointly by these organizations on the same subject.

### (b) Mediterranean Sea Synopsis

This project has been frozen for the time being, pending reorganization of GFCM activities and the outcome of the proposed Co-operative Investigation of the Mediterranean (CIM) to be undertaken by IOC in co-operation with ICSEM and GFCM.

As part of his assignment at FAO Headquarters, Dr. Z. Popovici has prepared, originally for internal use in the organization and as a basis for the planning of GFCM activities in the area, a draft review of Mediterranean fishery resources and various environmental aspects. It is FAO's intention to make this draft available to other interested organizations and, if agreed, its various sections could be revised by specialists with a view to preparing a working document for the joint IOC/ICSEM/GFCM International Group for Scientific Co-ordination of CIM. For the same purpose a Fishery Resources Review of the Mediterranean and the Black Sea was circulated at the Ninth Session of the GFCM (Split, December 1967) and has been distributed among experts for comment. This study will also serve as the basis for the IWP study of the area (See 2.2 (d) iv).

### (c) Fisheries Section of IIOE Atlas

Dr. G. Kesteven (FAO, Mexico) and Dr. F.A. Talbot (Australian National Museum) are planning the Fisheries section of the IIOE Atlas and action required to implement this project.

### (d) The Report of the ACMRR Working Party on Fishermen's Charts and Utilization of Synoptic Data

This has been issued as FAO Fish.Rep., (4) Suppl. 2 and distributed to IOC, WMO and other institutions and experts concerned.

FAO has been co-operating with WMO in defining fishery requirements under the World Weather Watch and forms of promoting increasing input in the WMO system of data from oceanic areas collected by fishing vessels.

#### 2.4 Education and Training - Resources

(a) During October/November 1967 Mr. R. Ruppia, FAO Consultant, visited Kenya, Tanzania, Uganda, Malawi and Zambia, to formulate, in consultation with the governments concerned, a proposal for a Regional Fisheries Training Project for East Africa to be set up under UNDP. With respect to West Africa, Prof. J. Frankiel, another FAO Consultant, held consultations with the authorities in French-speaking countries in Africa, including the Ivory Coast, Senegal, Congo (Brazzaville), Gabon, Cameroun, Dahomey and Togo, with a view to making regional arrangements for fishery training on the basis of existing national training institutions on the Ivory Coast and Senegal.

(b) In co-operation with CSIRO (Australia), FAO will publish French and Spanish versions of the pamphlet "Careers in Marine Science" compiled by members of the Australian Marine Science Association and originally published in English.

(c) FAO/USSR Group Fellowship Study Tour on Fish Behaviour in Relation to Fishing Gear (USSR 23 September to 18 October 1967)

Fourteen representatives from eight countries with developing fisheries participated in an FAO/TA Group Fellowship Study Tour on Fish Behaviour. The Study Tour opened at the All-Union Research Institute of Marine Fisheries and Oceanography (VNIRO) in Moscow. An 11-day seminar was then held at the Georgian Scientific Research Institute of VNIRO at Batumi. During the seminar and the Study Tour, lectures on the subject of the tour were given by 15 USSR fishery scientists and 3 provided by FAO from the UK, USA and Japan.

After the USSR Study Tour, most of the participants attended the FAO Conference on Fish Behaviour in Relation to Fishing Techniques and Tactics in Bergen, Norway. The Norwegian Agency for Development Aid provided Fellowships for their attendance at the Conference.

(d) An FAO UNDP(TA) USSR Sea-Going Seminar on Marine Resources Research was organized in June 1967. Marine research workers from developing countries of the Middle East, Europe and Africa were participants in the Cruise, during which they were trained in modern techniques in fishery and environmental research. The training program included applied research by the trainees themselves, which involved the collection, analysis and evaluation of data.

(e) An advanced second FAO UNDP(TA)/USSR sea-going seminar on marine resources research in the Mediterranean (Adriatic, Algeria/Tunisian coast, Italy) is being contemplated for summer 1968. The seminar will be organized to train about 18 marine research workers from developing countries of the Middle East, Europe and Africa.

The USSR authorities have agreed to offer facilities, lecturers and the R/V Akademik Knipovich for the purpose. The program of work will include research activities recommended by the GFCM Ninth Session. (See Section 2.5(a)). A visit and lectures at the FAO Headquarters, Rome, by staff of the Organization are planned at the end of the sea-going part of the program.

(f) Training Center on Methods of Fish Stock Assessment, Denmark - 1968

A Training Center on Methods of Fish Stock Assessment is scheduled to be held in Denmark during five weeks in August/September 1968. The Center will be funded from the Danish Special Contribution and instructors provided by the Danish Government and FAO. Participants should actually be concerned with catch analysis and other research on marine stocks for purposes of assessment, and will be selected from English-speaking FAO member countries concerned with marine fisheries or fisheries in large inland lakes and seas bordered by more than one country (with the exception of IPFC member countries, for which a similar training center has already been held in 1964). There are places for 25 participants, and in addition it is expected that some scientists from ICES member countries will participate at these countries' own expense.

(g) An FAO UNDP(SF) training center on fish marking and analysis of data from marking experiments in the West Africa region is being contemplated for autumn 1969. The course will be organized to train about 20 fishery biologists from the countries participating in the Special Fund Survey and Development of Pelagic Fish Resources. Work has already started on the planning of the shore-facilities for the course.

## 2.5 Activities of FAO Councils and Commissions

### (a) General Fisheries Council for the Mediterranean

The General Fisheries Council for the Mediterranean reorganized its working methods, and drafted a work program for the coming two-year period, at Split, Yugoslavia, from 4 to 9 December 1967.

FAO appealed for closer co-operation in solving the region's fisheries questions. Problems requiring immediate attention included the Council's own program and work methods, regional co-operation, and collaboration with other Mediterranean marine and fishery bodies to promote common aims and to eliminate duplication. In particular, GFCM will explore the possibility of participation in the International Commission for the Scientific Exploration of the Mediterranean Sea (ICSEM) symposium International Day of Plankton Indicators in October 1968. The GFCM supported the official program of the Intergovernmental Oceanographic Commission (IOC) called Co-operative Investigations in the Mediterranean, to be undertaken jointly by IOC, ICSEM and GFCM.

FAO also urged Council members to avail themselves of United Nations Development Program assistance to finance fishery projects and noted that governments must take the initiative themselves to obtain such aid.

Working parties were established to study the question of statistics and biological sampling: fresh, brackish and hypersaline water fisheries; tunas and demersal species fishing; and utilization, processing and marketing of fish and fishery species.

The session was attended by the representatives of thirteen Member Nations of the Council (including Algeria which became the 17th member of the Council immediately after the close of the meeting) and by observers from nine international organizations.

(b) Southwest Atlantic Fisheries Advisory Commission (CARPAS)

The Fourth Session of the Commission will be held in Rio de Janeiro during 11 to 15 November 1968, and it will be preceded by a symposium on Shrimp Resources and Related Species in the area of the Commission.

A third session of the CARPAS Working Party on Fishery Statistics and Biological Sampling was held in Rio de Janeiro from 3 to 7 June 1968.

A proposal for a revision of the CARPAS statutes to permit membership by all member nations and privileged members of FAO carrying out research on fishing in the area is under consideration by the FAO governing bodies concerned.

(c) Indo-Pacific Fisheries Council

(See Section 2.6(d))

(d) Indian Ocean Fishery Commission

The FAO Council during its 48th Session in June 1967 adopted a Resolution establishing the Indian Ocean Fishery Commission and approved its statutes.

Twenty two countries have so far become members of the Commission.

The first Session of the Commission is scheduled for 16 to 21 September 1968 at FAO Headquarters, Rome.

(e) FAO Fishery Committee for the Eastern Central Atlantic

The 48th Session of the Council, according to the recommendations of COFI, authorized the establishment of the FAO Fishery Committee for the Eastern Central Atlantic with membership to be selected from FAO Member Nations and Associate Members in Africa whose territory borders the Atlantic Ocean from Cape Spartel to the mouth of the Congo River and such other Member Nations and Associate Members fishing or carrying out research in the sea area concerned or having some other interest in the fisheries thereof, whose contribution to the work of the Committee is deemed essential.

The statutes of the Committee were promulgated by the Director-General of FAO in September 1967 and distributed in November 1967, together with the letter of invitation to Members.

Of the twenty-six countries invited, sixteen have already requested membership. The first session of the Committee is scheduled for the first semester of 1969.

## 2.6 Meetings

- (a) UNESCO/FAO/OAU Symposium on Oceanography and Fishery Resources of the Tropical Atlantic. Abidjan, Ivory Coast, 20 - 28 October 1966

The volume of the Proceedings containing the General Report and Abstracts of Scientific Papers presented at the Symposium has been published by FAO (September 1968). The volume containing the full text of the scientific papers is being published by UNESCO.

- (b) Second FAO Technical Conference on Research Craft (Seattle, U.S.A.)

The Conference, originally planned for September 1967, was postponed and is now taking place in Seattle, from 18 to 24 May 1968. The agenda includes items on space requirements for laboratories, accommodation and power, and the reflection of these requirements on the design and management of research vessels commissioned for oceanographical and biological work, exploratory and experimental fishing, training vessels, etc. New types of vessels such as catamarans and submersibles will also be considered.

- (c) FAO Conference on Fish Behaviour in Relation to Fishing Techniques and Tactics

The first FAO Conference on Fish Behaviour in Relation to Fishing Techniques and Tactics brought together fishery biologists and engineers engaged in various fields of research, to its sessions in Bergen, Norway from 19 to 27 October 1967.

Following a considerable amount of discussion on the subject of underwater research facilities, the Conference recommended that a working party be formed, comprised of fishery scientists and divers experienced in submersibles and diving technology, to promote techniques and procedures for constructing this new type of undersea equipment in order to measure behavioural and physiological responses in the natural environment.

The Conference stressed the importance of investigating the behaviour of fish schools, since the schools are the primary objective of commercial fisheries, and the formation of a small working party of experts in the schooling behaviour of fish, possibly convened aboard ship, to evaluate and study fish schooling in the natural environment.

Another topic that received much attention and discussion was the reaction of fish to sound stimuli, and the Conference suggested that further research in this field was needed.

- (d) Fifth Session of the European Inland Fisheries Advisory Commission

The Session of the Commission is being held at FAO Headquarters in Rome from 20 to 24 May 1968. The twenty one Member Countries are discussing problems of international cooperation in the field of inland fishery biology and management and water pollution. Some of the discussions during the Session will center around salmonoid fishes and a "Bibliography on Nutritional Requirements of Salmonoid Fishes" has been prepared for the Session. A synopsis of biological data on salmon is being organized in cooperation with the International Council for the Exploration of the Sea and ICNAF.

- (e) Symposium on the Living Resources of the African Atlantic Continental Shelf, the Stocks of Such Resources and their Fisheries between the Straits of Gibraltar and Cap Verde - organized under the auspices of ICES, with the support of FAO, with the aim of reviewing the state of stocks and future research needs in the area. The Symposium will be held in Santa Cruz de Tenerife, Canary Islands, from 25 to 29 March 1968.
- (f) Other FAO Meetings
  - (i) FAO will organize a World Scientific and Technical Conference on Marine Pollution and its Effects on Fishery Resources, to be held in Rome during the second half of 1969. An ACMRR Working Party will assist in preparing the scientific program and plans for the Conference. The participation of other interested organizations is expected.
  - (ii) International Symposium on Marine Food Chains - will be held at the University of Aarhus (Denmark) from 23 - 27 July 1968, under the auspices of ICES with the support of FAO, ICNAF and UNESCO. The Symposium is regarded as a contribution to the objectives of IBP. Arrangements are proceeding well.
  - (iii) FAO is considering the organization in the near future of a Symposium on Improvement of Marine Resources, and IBP has been invited to act as co-sponsor.
  - (iv) At the third session of CARPAS, it was recommended that FAO organize a World Scientific Conference on Hake, possibly during the next biennium, but no decision has yet been taken. Other alternative proposals are: Anchovies, Oysters, and Mussels.

(g) FAO Conference on Fishing Ports and Port Markets

The first such Conference will be held in Bremen, Germany from 23 to 28 September 1968 and will stress the importance of fishing harbors and port markets to the overall development of the world's fisheries. Problems in both ~~developing~~ developing and advanced fishing nations will be studied by senior government and private industry administrators, engineers, economists, vessel operators, fish processors and merchants. Agenda items include feasibility studies and physical planning; design, construction and maintenance of facilities; handling and marketing facilities, and administration and financing. A tour of two modern German fishing harbors is also scheduled.

2.7 FAO Advisory Committee on Marine Resources Research (ACMRR)

- (a) The Fifth Session of ACMRR will be held in Rome, from 8 to 13 July 1968. The preceding week has been reserved for meetings of ACMRR subsidiary bodies, if necessary. The Committee noted with satisfaction that the President of IOC has sent a letter to the Chairman of ACMRR expressing appreciation of the valuable participation of the Committee in IOC work.

- (b) Joint ACMRR/SCOR/WMO(AC) Working Party on the Implementation of the U.N. Resolution on the Resources of the Sea

Following a recommendation approved at the fourth session of ACMRR, and subsequent consultations with ICSU and SCOR, a joint working party nominated by the two bodies was established, and later joined by the WMO Advisory Committee, for the purpose of advising IOC and the executive heads of FAO and WMO on the scientific aspects of the implementation of the U.N. Resolution and to consider some related questions. The joint Working Party held its first session at Helio Cabala (Marino, Italy), and at FAO Headquarters, Rome, from 17 to 21 July 1967. A report, under the title "International Ocean Affairs" has been published and circulated, and has been used, since then, as one of the basic documents for the discussion of the U.N. Resolution and action required for its implementation by the organizations concerned.

(c) A joint ACMRR/ICES Working Party on Fishery Resources of the Eastern Central and Southeast Atlantic has been established and will hold its first session in Santa Cruz de Tenerife, Canary Islands, from 28 March to 4 April 1968. The joint Working Party is expected to get together to analyze available data on demersal and pelagic resources in the area, to advise on conservation measures required for rational exploitation, and to advise on future research requirements. It is expected that this review will provide background information for planning the activities of the recently established FAO Fishery Committee for the Eastern Central Atlantic (FCECA), and for the Conference of Plenipotentiaries to be convened in Rome, probably during the first half of 1969, to consider the signature of a Convention providing for a fishery body for the Southeast Atlantic.

(d) The report of the ACMRR Working Party on Fishermen's Charts and Utilization of Synoptic Data has been published and made available to IOC and WMO for consideration by their subsidiary bodies concerned. The Working Party has been disbanded.

(e) The report of the ACMRR Working Party on Direct and Speedier Estimation of Fish Abundance was published, and a selected group of members are revising the draft for a Manual on Acoustic Methods of Fish Detection and assisting in the planning of the ICES group in charge of the preparation of the ICES Course on Acoustic Methods (Bergen, 1969).

(f) The ACMRR has decided to establish three other Working Parties:

- (i) Working Party on Exploratory Fishing and Charting of Resources;
- (ii) Working Party on Fish Eggs and Larva Surveys;
- (iii) Working Party on Marine Pollution and its Effects on Fishery Resources;

and consultations are proceeding on their membership. Some preparatory work has been done and background material prepared through FAO consultants (Mr. D. Alverson, U.S.A.; Prof. G. Hempel, F.R.G.; Prof. E. Fjyn, Norway).

The Working Party on Marine Pollution and its Effects on Fishery Resources is expected, among other duties, to assist FAO in preparing the scientific program and plans for a world conference programmed to take place in Rome in 1969. The terms of reference, composition and future of this Working Party will be revised in the light of the outcome of the discussions on the proposals for a joint Expert Group on Marine Pollution being worked out at present by FAO, IMCO, UNESCO and which other Agencies concerned (especially WHO and IAEA) may decide to support.



## 2.9 United Nations Development Program

### (a) Field Programs

By the end of 1967 the FAO Department of Fisheries had 49 fisheries experts under the United Nations Development Program - Technical Assistance (UNDP(TA)) - working in all parts of the world. Eight of these experts were Marine Fishery Biologists or Fishery Oceanographers (see sections 2.9(b) and (c) below).

Under the UNDP/Special Fund (UNDP/SF) Scheme the Department of Fisheries is at present responsible for the planning and execution of 35 projects (23 operational and 12 approved but not yet operational) of which there are 15 in Africa, 9 in Central and Latin America, 10 in Asia and 1 in Europe. The total cost for these projects amounts to about 91 million dollars, of which about 37 million dollars are provided by the Special Fund, the rest under Government counterpart contributions. The total cost for those projects concerning marine resources research amounts to about 18½ million dollars. In Section 2.8(c) a brief outline is given of projects including some research on marine resources and environment; those marked with an asterisk entail a substantial element of marine resources research.

### (b) Technical Assistance Program (UNDP/TA)

Brazil - Assessment of the shrimp resources of the waters of Brazil was completed in December 1967.

British Honduras - The Fishery Biologist who had been advising and assisting the Government on biological investigations of marine fisheries resources with particular reference to spiny lobster completed his assignment in January 1968.

Burma - Fishery Biologist to advise and assist the Government in research and development of the marine fisheries resources.

Cuba - Fishery Biologist to work in the field of fish stock assessment, and Shellfish Biologist to work on oyster culture, spiny lobster and shrimp biology.

Federation of South Arabia (Aden) - The Turtle Biologist investigating the stocks of commercial turtles in the Gulf of Aden and northwestern Indian Ocean, mainly the Green Turtle (Chelonia mydas) completed his assignment in June 1967.

Kenya - Fishery Biologist to assist in the development of Kenya's deep sea and off-shore fishing by investigating the nature and composition of fish resources off the coast of Kenya.

Pakistan - Marine Fishery Biologist to initiate a research program in marine fishery biology aimed at an estimation of deep water fishery resources of Pakistan and to explore practical aspects of deep sea fishing.

Sierra Leone - The Fishery Biologist investigating the magnitude and availability of fish stocks in the coastal waters, in particular those of bonga (Ethmalosa fimbriata) completed his assignment in August 1967.

Syria - The Fisheries Biologist who had been making a brief survey of the sea fisheries with a view to formulating a long-term marine resources research program completed his assignment in February 1967.

(c) Special Fund Projects (UNDP/SF)

(1) Projects in operation

Argentina - Fisheries Development Project (exploratory and experimental fishing, biological and environmental studies, industrial feasibility studies, development services). Two Fishery Biologists. Mar del Plata. Duration 5 years from 15 June 1966.

Brazil - Fisheries Research and Development Project (assistance in strengthening the Brazilian fisheries administration, training of key personnel). Rio de Janeiro. Duration 2 years from 3 January 1967

Caribbean Region - Regional Fisheries Development Project (research and training in the field of fisheries - exploratory fishing, market research and demonstrations). Headquarters at Bridgetown, Barbados. Participating states and territories include Barbados, Guyana, French Guiana, Guadelupe, Martinique, Jamaica, Leeward Islands, Netherlands Antilles, Surinam, Trinidad and Tobago, Grenada, St. Lucia and St. Vincent, Dominican Republic and Puerto Rico. Duration 4 years from 27 August 1965.

Central America - Fishery Development Project (survey of fishery resources of the Central American isthmus, development of production and consumption of fish and fish products). Three Fishery Biologists. Participating countries: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama. Headquarters in San Salvador. Duration 6 years from 28 November 1966.

Chile - Fisheries Development Institute (research and development programs in the fields of fisheries oceanography, marine resources research, economics and fish processing). Three Fishery Biologists, 1 Fishery Oceanographer. Santiago. Duration 5 years from 13 November 1963.

Colombia - Marine Fisheries Development Project (advisory services for marine fisheries development, marine resources research, training of fishery biologists and fishermen, experimental fishing). Three Fishery Biologists. Bogota. Duration 4 years from 5 January 1968

Congo (Brazzaville) - Survey and Development of Pelagic Fish Resources (studies on distribution and biology and pelagic coastal fish, in particular Sardinella, stock assessments, experimental fishing training. Work to be co-ordinated with similar activities in Senegal, Sierra Leone, Ivory Coast and Ghana). Four Fishery Biologists, 1 Fishery Oceanographer. Pointe-Noire. Duration 4 years from 30 October 1967. Subcontracted to ORSTOM.

Federation of South Arabia - Fishery Development in the Gulf of Aden (survey of fishery resources). Two Fishery Biologists. Aden. Duration 3 years from July 1966 (Suspended).

Ghana - Fishery Research Unit (marine resources research, mainly on Sardinella and other pelagic fish, improvements in fishing techniques). Seven Fishery Biologists. Accra. Duration 5 years from 18 October 1966.

India - Central Institute of Fisheries Education (for training of fisheries officers at district level). One Fishery Biologist (assignment completed). Bombay. Duration 3 years from 1 September 1964 - extended until 31 August 1968.

India - Pre-Investment Survey of Fishing Harbours (economic and technical studies to identify priority sites for fishing harbours; preliminary construction plans). New Delhi. Duration 5 years from 20 October 1967.

Ivory Coast - Survey and Development of Pelagic Fish Resources (similar work as in Congo (Brazzaville), supplemented by a Regional Fisheries Survey by means of a charter vessel to operate between Senegal and Congo River). Two Fishery Biologists. Abidjan. Duration 4 years from 6 October 1967.

Korea - Deep-Sea Fisheries Centre (training of qualified skippers and engineers). Pusan. Duration 5 years from 1 December 1964.

Nigeria - Fisheries Survey in the Western and Mid-Western regions, especially fish stock survey and exploratory experimental fishing. One Fishery Biologist. Lagos. Duration 4 years from 23 May 1963 - extended until 31 May 1968.

Pakistan - Survey for Development of Fisheries in East Pakistan (fish location, abundance, fishing methods, development of fishing industry and marketing). Two Fishery Biologists. Dacca. Duration 5 years from 23 January 1967.

Peru - Fishery Research and Development Project (additional assistance to the Institute del Mar del Peru for further study of anchovy stocks and survey of other fishery resources, experimental fishing, economic studies and advice). Two Fishery Biologists and Consultants in population dynamics. Callao. Duration 4 years from 17 July 1967.

Philippines - Deep-Sea Fishing Development (exploratory and experimental fishing and training program in deep-sea fishing operations, fish processing and marketing, to advise on technical and economical planning). One Fishery Biologist. Manila. Duration 5 years from 18 May 1965.

Senegal - Survey and Development of Pelagic Fish Resources (similar work as in Congo (Brazzaville) supplemented by a Regional Fisheries Survey (see Ivory Coast)). Two Fishery Biologists. Dakar. Duration 5 years from 9 May 1968.

Sierra Leone - Survey and Development of Pelagic Fish Resources (similar work as in Congo (Brazzaville), supplemented by a Regional Fisheries Survey (see Ivory Coast)). One Fishery Biologist. Freetown. Duration 5 years from 27 November 1967.

Venezuela - Fishery Research and Development Project (evaluation of marine resources, especially coastal pelagic fish stocks, exploratory and experimental fishing, consultant services in processing technology, marketing and infrastructure). Four Fishery Biologists. Caracas/Cumana. Duration 5 years from 20 December 1967.

Viet Nam - Off-shore Fishery Development Project (exploratory and experimental fishing in off-shore waters, training of fishermen). Saigon. Duration 4 years from 19 March 1968.

(ii) Projects approved but not yet operational

Madagascar - Fishery Development Project (development of fishing industry by training personnel, undertaking trial and demonstration fishing, marketing studies). One Fishery Biologist. Tananarive. Duration 4 years.

Mauritius - Fishery Development Project (development of fishing industry through demonstration fishing and marketing studies). Duration 3 years.

Mexico - Fishery Research and Development Project (advisory services for fisheries development, resources surveys off Baja California, lower mainland Pacific coast and Gulf of Mexico coast, shrimp research, experimental fishing, fish processing). Three Fishery Biologists; One Fishery Oceanographer. Duration 5 years.

Poland - Establishment of a Research Centre for High Seas Fisheries (investigations in the field of fisheries oceanography, biology, fishing and processing, and training of research officers, supervising technicians in distant water fishing). Possibly Gdynia. Duration 4 years.

Singapore - Fisheries Training and Research Centre (mainly training of fishing technicians). One Fishery Biologist. Singapore. Duration 5 years.

Somalia - Fishery Survey Project (marine resources surveys). One Fishery Biologist (tuna). Mogadiscio. Duration 2 years.

A number of other projects are being considered.

3. ACTIVITIES IN THE FIELD OF FISHERY STATISTICS

1. General

The Fishery Statistics and Economic Data Branch now consists of two Sections:

- (a) Current Statistics and Economic Data Section
- (b) Statistical Services Section

It is proposed to add a third Section (Economic Data Section) in January 1969.

The main fields of activities of this Branch at present can be described under the following headings:

- 2. The development, establishment and promotion of standard concepts, definitions, classifications and methodology in the field of fishery statistics for use at the international, regional, sea-area and national levels
  - 2.1 These activities include the issue of Fisheries Circulars dealing with fishery statistical standards, which would be used for rendering advice to national Governments, to regional sea-area bodies, and for use by the FAO Secretariat in preparing statistical tabulations published in Fisheries Circulars.
  - 2.2 Particular attention is being paid to the computerization of the Yearbook of Fishery Statistics dealing with "Catches and landings", and with related Bulletins of Fishery Statistics and Fisheries Circulars closely connected with this work and the projects concerned with the classification and codification of species, countries, fishing areas, fishing fleet, etc.
- 3. Collection of tabular data, their processing and preparation for issue in FAO fishery statistical publications and other documents of FAO and other international and regional agencies, according to internationally and regionally accepted standard definitions, concepts, classifications and methods
  - 3.1 Nominal catches, landings, fishing fleets, fishermen, etc.

In addition to a large number of Fisheries Circulars containing tabular material on various subjects, the principal publications published since the last meeting of ICNAF are:

Yearbook of Fishery Statistics, Vol. 22, "Catches and landings, 1966"

Bulletin of Fishery Statistics, No. 14, "Fishing fleet statistics, 1966"

A further Yearbook, Vol. 24, "Catches and landings, 1967", will be published in October 1968, together with a further Bulletin on "Fishing fleet statistics".

3.2 Disposition, production of fishery commodities, imports and exports, consumption prices, etc.

In addition to the preparation of various Fisheries Circulars, the principal publication in this field since the last ICNAF meeting has been:

Yearbook of Fishery Statistics, Vol. 23, "Fishery commodities, 1966"  
A further Yearbook, "Fishery commodities, 1967" will be published in December 1968.

4. The rendering of advice to national focal points for fishery statistics, using appropriately modified standard concepts, definitions, classifications, and in particular, standard methods to improve the coverage and quality of national fishery statistical systems meeting (1) nationally-determined needs and (2) related needs established through regional, sea-area and international consultations and agreements

4.1 Field Staff

Special Fund:

One Fishery Statistics Expert with the Lake Chad project beginning in May 1967

One Fishery Statistics Expert with the East Pakistan project beginning in June 1967

Technical Assistance:

One Advisor on Fishery Statistics in Kenya, beginning in January 1968

One Fishery Statistician for the CARPAS area (Argentina, Brazil and Uruguay), beginning in November 1967.

One Advisor on Fishery Statistics in the Philippines, since May 1966

One Regional Fishery Statistician for Asia and the Far East, stationed in Bangkok since 1965.

5. The Promotion and coordination of the statistical programs of various regional and sea-area fishery bodies by means of (a) integrated programs for publications covering statistical tabulations and (b) through advice on international standard concepts, definitions, classifications and methodology

5.1 Meetings

(a) CWP - The Continuing Working Party on Fishery Statistics in the North Atlantic Area. The Fifth Session of this Working Party was held in Aberdeen, Scotland, 10-15 April 1967. The report of this Session was issued as FAO Fisheries Reports No. 45. The Working Party dealt mainly with further refinements and development of the Joint Inter-Agency FAO/ICES/ICNAF Statistical Program for Catch/Effort Statistics according to fishing areas, species, gear and size classes of fishing craft in the Northwest and Northeast Atlantic. The FAO Committee on Fisheries, during its Third Session, Rome, 24-30 April 1968, decided to recommend to the FAO Council to change the title to "Coordinating Working Party on Atlantic Fishery Statistics" and to continue to provide the secretarial services to this CWP which will continue to function on an inter-agency basis with FAO, the International Council for the Exploration of the Sea (ICES), and the International Commission for the North Atlantic Fisheries (ICNAF). It is also proposed that the meetings which will be held annually will deal with the North Atlantic every second year and with the South and Central Atlantic in alternate years. It is proposed to hold the 6th Session of the CWP in November 1968, possibly in Reykjavik.

(b) GFCM - The Ninth Session of the GFCM held in Split, 4-9 December 1967, resolved on the setting up of the GFCM Working Party on Fishery Statistics and Biological Sampling. The program of the Working Party, details of which are available in the report of the Ninth Session, is directed towards the standardization of fishery statistical concepts and reporting methods throughout the area.

(c) CARPAS - The Third Session of the CARPAS Working Group on Statistics is to take place in Rio de Janeiro during 3-7 June 1968. The English version of the report of the First and Second Sessions has been issued as FAO Fisheries Circular No. 162.

