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Summary Report on the Activities of FAO Fishery Resources
Division in the Field of Marine Resources Research
(Incorporating the Marine Resources Orientated Activities
of the Fishery Statistics and Economic Data Branch)

Prepared by

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1. GENERAL DEPARTMENTAL ACTIVITIES IN THE FIELD OF MARINE RESOURCES

1.1 FAO Conference, Rome, 8-27 November 1969

The Fifteenth Session of the FAO Conference was held in Rome from 8 to 27 November 1969, and was attended by 121 Member Nations. The Conference expressed full support for the activities of the Department of Fisheries and noted with regret that owing to budgetary problems, the rate of growth of the Department as endorsed by the Conference at its Thirteenth Session in 1965 has not been maintained and expressed the hope that the further planned enlargement in the subsequent biennium would bring the activities of the Department to the level originally planned.

Concern at man's misuse of his environment was a constantly recurring theme throughout the Conference. Delegates felt that over-exploitation of natural resources, pollution and erosion were occurring at an alarming rate and feared that growing numbers of the world's population might in future be able to meet their daily food needs only by following production methods detrimental to natural resources.

In other actions the Conference endorsed recommendations that will give high priority to world fishery developments in the coming biennium.

1.2 Committee on Fisheries

The Committee on Fisheries held its fifth session from 9-15 April 1970.

The Committee discussed the general plans for the Department of Fisheries activities in 1972-73. A major part of the work will be concerned with developing and managing natural resources, particularly within the following fields:

- (a) The assessment of potential of fish stocks in marine and inland waters
 - (b) The development of present type of fisheries on those stocks which are still under-exploited. In this connection, particular emphasis will be given to inland fisheries and fostering aquaculture which holds promise in many parts of Africa and Asia
 - (c) The rational management of stocks now heavily exploited
 - (d) The development of new fisheries on the smaller sized but abundant fish and other animals such as Antarctic Krill, and the exploitation of unconventional resources, e.g. raw materials for chemical products.
- In terms of inland fisheries, fish culture will be given added emphasis.

No major reorganisation of the Department was envisaged, following the establishment of the three-division structure (Resources, Industry and Economics) at the beginning of 1970, though within each division there might be some

changes (e.g. the setting up of service units) to permit greater flexibility. These proposals were endorsed by COFI, who emphasized the importance of resource evaluation and stock assessment; and aquaculture.

The progress of various regional fishery bodies set up within the framework of FAO, or with FAO assistance, was welcomed. Most of the areas concerned were still lacking in adequate regional statistics, along the lines of the bulletins of ICNAF and ICES, and FAO was urged to give support in providing these. Support was also needed in stock assessment studies. In both statistics and stock assessment assistance should include aid in carrying out current tasks, and also training to enable the work ultimately to be done entirely by the member countries concerned.

There was considerable discussion of the problems of fishery management, and the role that FAO should play in assisting the regional bodies (whose direct responsibility it was) in ensuring proper and timely management of the fish resources in each area. FAO could help by disseminating existing knowledge and theories which were mainly based on the rather stable demersal fisheries of temperate waters, and by developing comparable general theories for other fisheries (e.g. shrimp).

The activities of FAO concerned with the various resolutions of the UN General Assembly, relating to the oceans were reported. Among other matters the report drafted by FAO relating to resolution 2413 (XXIII) relating to the exploitation and conservation of living marine resources drew attention to the substantial activities of the several inter-governmental Fishery Commissions, outside the UN family (e.g. ICNAF, I-ATTC).

1.3 FAO Fishery Bodies

(a) The Tenth Session of the General Fisheries Council for the Mediterranean (GFCM) was held at FAO Headquarters, Rome from 8 to 13 December 1969.

A two-day GFCM Symposium on Mediterranean Depth Resources and their Exploitation took place immediately before the Tenth Session and the results and conclusions were brought before the delegates.

The Tenth Session was divided into seven plenary sessions and the meetings of the following six working parties on (1) Utilization and marketing of fish and fishery products, (2) Fishery statistics and biological sampling, (3) Fresh, brackish and hypersaline water fisheries, (4) Demersal resources appraisal and exploitation, (5) Mediterranean scombroid resources, and (6) Marine pollution in the Mediterranean and its effects on marine resources and fishing.

(b) The Working Party on Stock Assessment for the Indian Ocean, recommended to be set up by IOFC to advise on the state of stocks of tuna and shrimp was held in Rome from 30 September to 3 October 1969.

The group concluded that tuna and shrimp were heavily exploited and that it was essential that the amount of fishing should not exceed the present level. Possible measures to prevent over-fishing included restricting the number of vessels, particularly (1) longline vessels fishing for tuna in the Indian Ocean and (2) shrimp vessels fishing off the Iranian coasts.

Two Committees from nations recommended by IOFC at its last meeting (one for shrimp and one for tuna) will be set up to consider the report of the Working Party on Stock Assessment and propose appropriate action. A report of the meeting has been published as FAO Fisheries Report No. 82 (FI/R82).

(c) The First Session of the FAO Fishery Committee for the Eastern Central Atlantic (CECAF) was held in Accra, Ghana from 24 to 29 March 1969. Some of the operative items on the agenda for the Session were: identification and discussion of management requirements, recommendations for future resources, research, statistics, international assistance for CECAF fishery research and development programs. A Working Group to evaluate the stocks in the area and their state of exploitation was set up. This Group will essentially continue the work of the ACMRR/ICES Group on the stocks of the eastern central Atlantic. The proposal for an internationally coordinated investigation of the waters and fishery resources between Gibraltar and Dakar was supported by CECAF. A report of the First Session has been published as FAO Fisheries Reports No.69 (FI/R69).

1.4 Non-FAO Fishery Bodies

(a) International Convention for the Conservation of Atlantic Tunas came into force on 21 March 1969 and up-to-date it has been ratified or adhered to by 8 countries. The Convention established the International Commission for the Conservation of Atlantic Tunas which held its first session in FAO headquarters, Rome from 1 to 6 December 1969.

The Commission adopted its Rules of Procedure and Financial Regulations; it set at US\$170,000 its budget for 1970/71; it agreed that its seat would be located at Madrid. The Commission decided to establish four Panels in addition to a Standing Committee on Finance and Administration and Standing Committee on Research and Statistics. It also made recommendations to its member countries regarding the collection of improved catch and effort statistics on Atlantic tunas, research activities, and cooperative tuna-tagging programs.

ICCAT considered that it should eventually enter into a formal relationship agreement with FAO and authorized its Chairman to request FAO's assistance on a reimbursable basis to help him carry out certain administrative duties until the appointment of a permanent Executive Secretary.

(b) The Conference of Plenipotentiaries on the Conservation of the Living Resources of the Southeast Atlantic was held in FAO Headquarters, Rome, from 14 to 23 October 1969.

The purpose of the Conference was to adopt the text of a Convention providing for the establishment, outside the framework of FAO, of an International Commission for the Southeast Atlantic Fisheries to coordinate and undertake studies and make recommendations for conserving fish and other living resources in the area.

Discussions at the Conference centred on the Convention Area itself, the establishment of a Scientific Advisory Council and of Regional Committees and Stock Committees to assist the Commission. Functions of the Commission with respect to both the possible limitations of the total catch by species or region and the allocation of any such total catch among the member states concerned, was another item for discussion. The criteria for determining contributions of member states to the Commission's budget and the requirements for the entry into force of the Convention were also subjects under consideration.

2. THE FISHERY RESOURCES DIVISION

2.1 Marine Resources

(a) FAO Advisory Committee on Marine Resources Research (ACMRR). A report of the Fifth Session of ACMRR at FAO Headquarters in Rome from 8 to 13 July 1968 was included in the previous report by the FAO Department of Fisheries to the ACC Sub-Committee meeting in February 1969. Follow-up action on the recommendations from that Session is arranged through the various Working Parties of ACMRR.

As a result of the activities of the Working Party on Direct and Speedier Estimation of Fish Abundance (which was disbanded at the Fifth Session of ACMRR), a Manual on the Use of Acoustic Instruments in Fish Detection and Fish Abundance Estimation was prepared and published (FRs/T83).

FAO collaborated with ICES in the organization of an Acoustic Training Course which was held in Svolvær/Lofoten, Norway, from 2 to 15 March 1969. A technical report on the results of this course was published as FAO Fisheries Reports (FRm/R78 (En)).

The ACMRR Working Party on Methodology and Charting of Fisheries Resources met at FAO Headquarters in Rome from 19 to 22 August 1969 with Dr D.L. Alverson (USA) as the Convenor. The discussions of this group were mainly concerned with their task to prepare a manual on the methodology of surveying and charting of fisheries resources. It is expected that the Working Party will have a second meeting in early 1970 to review the draft of such a manual.

The ACMRR Working Party on Fish Egg and Larvae Surveys was established in 1968, and in June 1969, a small group of members and consultants met in Kiel (Germany) under the chairmanship of the Convenor, Professor G. Hempel, and drafted a first report on the value and methodology of surveys for fish eggs and larvae. The report has been distributed to all the members of the Working Party, and was used as a background document for discussions during the first session of the Working Party which took place at the Mediterranean Marine

Sorting Centre in Salamambo-Tunis, Tunisia, from 22 to 27 October 1969.

The small steering group set up by ACMRR to assist in further considerations of matters concerning especially the implementation of UN Resolution 2172 and its relations with IOC, and consisting of the Chairman of ACMRR and the two Vice-Chairmen, met in Paris from 28 to 30 August 1969.

As a result of a recommendation at the Fifth Session of the ACMRR, several experts formed a Consultative Group to review present experience and knowledge concerning the use of submersibles and underwater habitats in fisheries and related marine biological research. The Group's main task was the appraisal of the present and future potential role of these submersibles as research tools in fisheries and related oceanographic research.

It was decided that the use of submersibles should be viewed as developments in and extensions of the now well established "man in the sea" direct observation and work techniques employed in recent years by divers in shallow waters. The Group considered the following matters and agreed to incorporate their findings in a comprehensive report for submission to the next ACMRR meetings:- (1) the type of project in fisheries and related marine biological and oceanographic research most relevant for study by "man in the sea" techniques, using submersibles and/or underwater habitats, (2) main features of the equipment and method required for research projects in (1), (3) assessment of the suitability and limitations of equipment and facilities already in use or under construction in meeting the requirements in (2), including description of the main features of existing equipment, (4) survey of the use of submersibles and underwater habitats made to date and results obtained, and (5) assessment of the potentialities and merits of direct observation techniques using submersibles and underwater habitats for projects in (1), including comparison with other indirect methods of investigation.

Various further activities under the auspices of ACMRR are mentioned in other sections of this report.

(b) FAO Panel of Experts 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 in the Atlantic and adjacent seas, as well as in the Pacific and Indian Oceans.

The Third Session of the Panel was held from 7 to 10 October 1969 in Cadiz, Spain. The meeting was attended by 11 senior scientists specialized in the field of tuna research and appointed by the Director-General in their personal capacity to advise on the improvement of tuna investigations in all parts of the world.

Problems under special consideration included questions of standardization of tuna length measurements and tabulations, sub-population identification by morphometric studies, serological and bio-chemical investigations and tagging, the collection and identification of tuna eggs, larvae and juveniles and aspects of tuna stock assessment and management.

The Report of the meeting has been published as FAO Fisheries Report, No.80 (FI/R80).

(c) 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 for size of stocks, sustainable yields, and the effects of fishery regulation measures. Working Parties have been established for West Africa, Southwest Atlantic, and Indian Ocean.

(ii) The Fishery Data Centre, which was established in 1969, became operational by the appointment of a biologist with experience in the use of computers for storing, retrieving and processing fishery data.

A survey is being conducted of the data base management systems and computer facilities both within FAO and in Rome that could be used for biological and fisheries data. A program has been drafted to develop a data retrieval system for the biological and exploratory fishery data collected by the FAO field projects. Exploratory fishing data collected in Southeast Asia are being prepared for development and testing of the system.

(iii) Indicative World Plan. The appraisal of the fishery resources of the oceans has been a major element of the fishery aspects of the IWP. Progress in this has been reported previously. It is hoped that the complete study of the resources will be published in the FAO Fisheries Technical Paper series in early summer 1970.

2.2 Fishery Oceanography and Environment

(a) FAO has been cooperating 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.

(b) Preparation for the FAO Technical Conference on Marine Pollution and its Effects on Living Resources and Fishing. The close collaboration of FAO with other international organizations in the field of marine pollution reported at the Fourth Session of COFI, continued and was further extended. The main instrument for detailed scientific and technical advice in the field of marine pollution is the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) which was originally co-sponsored by IMCO, FAO, UNESCO and WMO. Two other international agencies, the IAEA and the WHO joined recently the group of co-sponsors and GESAMP will in future provide advice to IOC in this field.

Detailed preparations are in course for the FAO Technical Conference on Marine Pollution and its Effects on Living Resources and Fishing, to be held from 9 to 18 December 1970 at FAO Headquarters, and an extensive participation of specialists from all parts of the world is expected. One of the special sessions of the Conference is a Seminar on Methods of Detection, Measurements and Monitoring of Marine Pollutants; UNESCO, IAEA and SCOR have been invited to join FAO in supporting this Seminar. It is expected to provide the background needed for the implementation of the proposed world-wide marine pollution monitoring system, as envisaged in the report of the Joint ACMRR/SCOR/WMO(AGOR) Working Party on the Scientific Aspects of International Ocean Research (Ponza 1969).

2.3 Documentation

(a) Current Bibliography for Aquatic Sciences and Fisheries. At present Volume 12 has been printed and Volumes 13 and 14 are in press. It is hoped that the tests to computer-produce the Bibliography will be completed during the present year and an automatic information retrieval service will be provided by the aquatic scientists.

(b) Marine Science Contents Tables. FAO FIR Division continues to publish this monthly periodical.

At present, tables of contents relating to about 60 journals covering fisheries biology, oceanography, maritime meteorology and other disciplines in marine sciences are being reproduced. Further advice on the improvement of the content and format will continue to be sought from ACMRR and SCOR. It is hoped that the number of journals covered will gradually be increased to about 100 titles during 1970. The journal is distributed through the medium of a special mailing list prepared for this purpose and has a world-wide coverage. Starting from January 1970, the journal will be a joint FAO/UNESCO publication.

(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 VII part 2 has been distributed.

(d) 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 continued to be maintained with the U.S. Bureau of Commercial Fisheries, CSIRO, ICES, ICNAF, EIFAC, IPFC, GFCM, CARPAS, and with fisheries experts associated with CSK activities.

Synopses of biological data on the Pacific mackerel, chum salmon and Atlantic menhaden were prepared and published by the Bureau of Commercial Fisheries of the USA Fish and Wildlife Service. With the increasing importance of anchovies in the world fisheries it is intended that a series of synopses will be prepared to cover the Engraulids, and the first synopses of the series on the anchoveta *Catengraulis mysticetus* has already been published and distributed. As a follow-up of an ICES recommendation, synopses of biological data on smelt *Osmerus eperlanus* has also been published and distributed. Several species synopses on shrimps and prawns have also been received in connection with the FAO World Conference On the Biology and Culture of Shrimps and Prawns. These are being included in Volume 4 of the Proceedings of this meeting and will be published during 1970. A further synopsis on the tiger prawn *Penaeus esculentus* has been prepared and published by the Division of Fishery and Oceanography of the CSIRO, Australia.

(e) A list of workers in marine pollution research is being prepared as a contribution to the FAO Technical Conference on Marine Pollution and its Effects on Living Resources and Fishing which will be held in Rome from 9 to 18 December 1970.

(f) In the FAO Fisheries Technical Paper Series a further paper dealing with the Fisheries Management and the Limitation of Fishing has been published as FAO Fish.Tech.Rep., (92).

2.4 Collaboration with other agencies and industry

The recommendations approved at the Fifth Session of the Commission for Maritime Meteorology of the WMO and the CMM Working Group on Weather Forecasts for Shipping and Fishing were distributed widely. The requirements of fishing for synoptic information, forecasts and anomaly computations of sea surface temperatures, thermocline depths, etc., included in the table of products to be provided by the forthcoming World Weather Watch were compiled in a paper to be presented to the forthcoming COFI meeting through which it will be distributed to the Member Nations of FAO for implementation.

3. FISHERY TRAINING AND EDUCATION

(a) A training Centre on Methods of Fish Stock Assessment will be held in Denmark from 24 August through 26 September 1970. Its object is to provide training in modern methods of assessing the fishery resources as a basis for fishery development and management. Besides lectures, practical exercises and discussions, there will be visits to various fishing ports in the area.

(b) A Sea-going Group Fellowship Study Tour on Fishery Biology and Oceanography in the Caribbean, organized by FAO in collaboration with the USSR Government under the UN Development Program took place in June/July 1969. The next and Fourth FAO/USSR Sea-going Study Tour will be carried out off the Northwest coast of Africa on board the "Academic Knipovich" from early July through mid-August 1970.

4. THE FISHERY STATISTICS AND ECONOMIC DATA BRANCH

4.1 Inter-Agency Collaboration on Fishery Statistics in the Atlantic

The Coordinating Working Party on Atlantic Fishery Statistics (CWP), formerly known as the Continuous Working Party on Fishery Statistics in the North Atlantic Area, is the principal inter-agency instrument for coordinating and ensuring close collaboration in the collection, editing, processing and publication of fishery statistics in the Atlantic. The original agencies supporting a mutually coordinated program through the CWP are FAO, ICES and ICNAF. At its First Session held in Rome, December 1969, ICCAT also decided to have representation on the CWP, and it is to be expected that other bodies, for example, the proposed ICSEAF, may also wish to participate in this program. Other agencies which have been represented at the recent meetings of the CWP are the OECD, the Council of Europe, and the Statistical Office of the European Communities.

The Sixth Session of the CWP took place in Copenhagen, and its report has been distributed to interested parties (Fisheries Report No.70). It has been decided to postpone the Seventh Session of this Working Party until after the ICES Special Meeting on Measurement of Fishing Effort, to be held in September 1970, and the Secretariat is now preparing the documentation for this meeting.

The activities of the CWP in the field of fishing effort statistics are being coordinated with the work program of the OECD, as well as with the Working Group to study the Characteristics of Fishing Vessels in terms of their Effect on Fishing Effort Measurements, organized by ICES, to meet in June 1970.

As a follow-up to Resolution 2 adopted by the Conference of Plenipotentiaries, a meeting on the conservation of the living resources of the Southeast Atlantic is to be held in September 1970. A meeting of an Expert Group on Statistics and Stocks of the Southeast Atlantic Fisheries will also be convened at about the same time. Particular attention will be given, not only to stock assessment, but also to the development of a statistical program for this Area, which might eventually be adopted by the new Commission at its First Session.

During the First Session of ICCAT, it was agreed that the Secretary of the CWP would design draft statistical forms, as well as notes for their completion, for use in the ICCAT area. It is planned to have these ready for review by the ICCAT Council in November 1970. It was stressed that these forms and notes should be based on the statistical program already operating in the North Atlantic.

4.2 Fishery statistics in other fishing regions

(a) GFCM - The Ninth Session of the GFCM, held in Split, 4 to 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.

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

(c) IOFC - The First Session of the Indian Ocean Fisheries Commission (IOFC) took place in Rome from 16 to 21 September 1968. The IOFC recommended the establishment with IPFC of a joint working party on fishery statistics in the Indian Ocean and the Western Pacific. It is proposed that this body would be somewhat similar to the CWP, and would undertake similar tasks. The First Session was held in Bangkok from 1 to 5 December 1969, and a report is now being processed.

4.3 Collaboration with Non-Fishery Statistical Bodies

It is hoped to extend collaboration with international and regional non-fishery agencies concerned in various ways with fishery statistical information, especially the UN Statistical Commission and Statistical Offices, the Customs Cooperation Council, the OECD, the Statistical Office of the European Communities, the Inter-American Statistical Institute, the International Statistical Institute, and the Regional Conference of African, Asian and European Statisticians.

4.4 Development of Fishery Statistical Standards

The Branch is devoting further effort to improving the collection, processing and publication of fishery statistical data, including participation in a feasibility study on the application of electronic data processing systems. Particular attention is being given to the international coding of fish species and fishing areas.