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REPORT ON THE EXPERT CONSULTATION ON
ESTABLISHING AND MAINTAINING A REGIONAL DATA BASE FOR TUNA
FISHERIES IN THE PACIFIC AND INDIAN OCEANS

Tokyo, Japan
13 - 14 March 1984

INDO-PACIFIC TUNA DEVELOPMENT AND MANAGEMENT PROGRAMME
COLOMBO, SRI LANKA

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REPORT

of the

INDO-PACIFIC TUNA PROGRAMME EXPERT CONSULTATION

on

ESTABLISHING AND MAINTAINING A REGIONAL DATA BASE FOR TUNA FISHERIES IN THE PACIFIC AND INDIAN OCEANS

13 - 14 March 1984

Tokyo, Japan

1. SUMMARY

The expert consultation was held to consider the problems of establishing and maintaining a tuna fisheries data base for the Indo-Pacific region. Experts were invited from the major tuna fishing countries as well as international organizations dealing with tuna in the Indo-Pacific.

The discussion revealed that several of the major distant-water tuna fishing nations faced some difficulties in providing detailed data on the operation of their fleets in the absence of a formal mechanism for making management decisions. However, there was a willingness on the part of most countries to supply summarized data that could be useful in identifying major trends or changes in the fishing over broad areas.

The IPTP was encouraged to continue its partially completed work on an historical regional data summary and to collect such current data as might be available. The IPTP was also encouraged to work toward the establishment of a more permanent mechanism for accomplishing the scientific support work necessary for management and development decisions. No definitive suggestions for the institutional form of this mechanism were suggested, however. The structure of the scientific support mechanism was likely to be closely related to the evolution of a formal mechanism or mechanisms for tuna management in the Indo-Pacific area.

2. GENERAL

2.1 Background to the Consultation

The Indo-Pacific Tuna Development and Management Programme (IPTP) was established by the FAO in response to recommendations by the Indo-Pacific Fisheries Commission (IPFC) and the Indian Ocean Fisheries Commission (IOFC). Core project support is provided by the United Nations Development Programme (UNDP). The primary objective of this support is to develop an information base through collection of historical and current tuna fisheries statistical data as a basis for development and management of tuna fisheries. An important corollary objective is to assist in making arrangements for the establishment and effective use of the project's tuna fishery information system on a self-sustaining, long-term basis after the completion of the UNDP/FAO project.

For several years the need for coordination and implementation of tuna fishery development, particularly of surface fisheries, as well as management and investigation activities in the Indian and Pacific Oceans was discussed by both the IPFC and IOFC. At the sixth joint meeting of the IOFC and IPFC Tuna Management Committees held in Perth, Australia, in February 1980, it was recommended that funding be sought to initiate this broad coordination and implementation programme with the establishment of a central data base on Indo-Pacific tuna fisheries. The recommendation was made in the light of the rapid development in tuna harvesting in the Western Pacific and jurisdictional changes arising from the new regime of the sea along with the increased responsibilities of coastal states for fishery management.

As the project collected the available historical data and established the contacts for an on-going international data collection system, it became apparent that the widespread extension of economic zones that occurred in the latter half of the 1970's had had a negative effect on the ability and willingness of the major tuna fishing nations* to provide data on the operations of their fleets. The reasons for this are straightforward. Many of the countries extending their zones had little information on the tuna resources included and no easy way to evaluate them other than through data available from the major fleets. Needless to say, such information is valuable, if not essential, in negotiating access rights and license fees to best advantage. However, the relatively capital intensive, major tuna fishing fleets which would supply the data also seek the most advantageous terms of access and licensing arrangements. In several cases national industries have considered that providing data on an international level was not in their best interests. Cooperation of industry is, of course, necessary for national data collection. In summary, tuna fisheries operational data - in particular detailed catch and effort data of the type usually desired for stock assessment - have had strategic and tactical commercial value that outweighed advantages to be gained from international sharing of data for stock assessment purposes. The result has been that the major tuna fishing nations have declined to provide recent (e.g. within past 3 years), detailed (e.g. catch and effort by 1° or 5° squares) data to the IPTP on a unilateral basis.

An ad hoc meeting to discuss the situation was held in Rome on 17 October 1983 involving a number of representatives of countries concerned who were attending the FAO Conference on Fisheries. At that meeting, representatives of most countries participating expressed their desire that all countries present would attempt to provide data on catch by species for 5° x 5° square areas as well as data on total number of vessels operating by FAO area. As a follow-up to this expression of intent to attempt to provide data, the IPTP organized the subject expert consultation to explore in greater detail the data required for tuna assessments and fisheries analyses, as well as the data that could be made available to IPTP from the various national data sets.

* In 1980, the tuna fleets of six countries, including Indonesia, Japan, Korea, Philippines and the U.S.A., captured about 80% of the tuna taken from the Indian and Pacific Oceans.

The consultation was held in Tokyo, Japan, to minimize travel and to allow full participation by Japanese experts. While Japan did not host the consultation, the Fisheries Agency provided valuable assistance to the IPTP in organizing local arrangements.

2.2 Agenda

A preliminary agenda was distributed to the participants prior to the consultation. The agenda was revised at the beginning of the consultation to include a discussion of the purpose of regional tuna data collection and a review of the events leading to the establishment of the IPTP. The revised agenda is presented in Appendix I.

2.3 Participants

The potential participating countries in the IPTP included all of the members of the IPFC and IOFC as well as non-member countries in the Pacific and Indian Ocean eligible to receive UNDP assistance. For the subject of the consultation, it was neither possible nor desirable to invite a large number of experts from many different countries. Experts were invited on the basis of:

1. Being the IPTP liaison officer from a major tuna fishing country, or;
2. Being from an international organization concerned with the collection of tuna data in the Indo-Pacific area.

On these criteria, experts were invited from:

Indonesia
 Japan
 Korea
 Philippines
 United States of America
 Forum Fisheries Agency (FFA)
 Inter-American Tropical Tuna Commission (IATTC)
 South Pacific Commission Tuna and Billfish Programme

All invited experts were able to participate except those from Indonesia who were unable to travel due to last-minute problems. A list of participants is attached as Appendix II.

3. DISCUSSION

3.1 Regional Tuna Data Collection

3.1.1 Purpose of Regional Tuna Data Collection

The consultation began, as suggested by some of the participants, with a general discussion on the purpose of regional tuna data collection. The reasoning was that, if the proposed utilization of the data was identified, the data to be collected would be automatically fixed.

Two reasons for regional tuna data collection were suggested:

1. To provide advice to all of the constituent governments on the status of the shared tuna stocks and the fishery on those stocks; and
2. To provide information to national governments on activities in their coastal zones.

The first reason related to information, e.g. tuna stock assessments, that would be useful in the multilateral management of tuna stocks of international concern. The second related to information of use in making national decisions regarding activities in exclusive economic zones (EEZs), e.g. negotiating access agreements. The point was made that management, per se, is reserved to national governments and that international organizations have no binding control over national governments. The first reason was considered to be the most appropriate for an international organization to be involved in regional tuna data collection.

The question was then raised as to how to use this information, e.g. stock assessments. The view was expressed that, in the absence of an institutional mechanism for making management decisions, there did not seem to be any compelling reason to undertake regional data collection to provide information for such decisions. A number of disincentives for individual countries to provide data were cited. These included the concern on the part of distant water fishing nations that releasing statistics to an international organization may result in later difficulties in negotiating access rights to the EEZs of coastal countries. This was related to the fear that the statistics released would be utilized arbitrarily by scientists in other countries. Maintaining the required confidentiality with respect to harvesting and/or processing enterprises was also cited as a problem.

Several participants expressed the very strong opinion that regional data collection and dissemination must be linked to a regional institutional structure for managing and developing the tuna fisheries. The point was made that nations could not be expected to contribute data to support a decision-making process in which they had no role and which, judging from past experience, could use the data to support decisions working to their disadvantage. The opinion was expressed that no single existing organization could manage tuna fisheries in the Pacific and Indian Oceans, and that perhaps what was needed was a new management body incorporating the scientific support responsibilities. This line of reasoning held that a scientific support mechanism (e.g. an organization like the International Council for the Exploration of the Seas) would not work unless a management body or bodies also exist.

However, it was conceded that a single regional science organization, not dealing with management per se but providing conservation-oriented information, could be more efficient than a number of such organizations attached to each of a number of regional management bodies. To be effective, this organization would need to be given the responsibility for collecting data, with the legal authority to protect confidentiality as well as to compel reporting. No specific structure for such an organization or its link to management bodies, was suggested although the opinion was expressed that a compromise between the approaches exemplified by IATTC and the International Commission for the Conservation of Atlantic Tunas (ICCAT) was likely to be most effective.

The discussion revealed that there are two levels of information that could be provided to constituent governments from a regional tuna data base and these levels required different levels of detail in the data. Sophisticated stock assessments (i.e. beyond simple production models) desirable as a basis for management actions, for example, would require relatively detailed catch and effort as well as size data. However, general trends in catch and participation rates in the fishery, which would alert countries to changes in the fishery and the possible need for further investigations, could be derived from data containing relatively little detail. The point was reiterated by several participants that, unless an institutional structure for making regional management and development decisions exists, there would be no point in supplying the detailed information required for such decisions, and that the detailed data to generate that level of information was not going to be forthcoming.

3.1.2 Existing Organizational Arrangements

At the time of the consultation, there was no formal institutional arrangement for the management of tuna fisheries in the Western Pacific or Indian Ocean. The Inter-American Tropical Tuna Commission (IATTC) served this function for a part of the Eastern Pacific. The South Pacific Forum states, including Australia and New Zealand, created the South Pacific Forum Fisheries Agency as the institution for co-ordinating national fisheries policies in the region. In the absence of substantive evidence of the need for any restriction of tuna fishing effort within the region (or in adjacent regions) to increase national benefits, countries of the region have not felt the need for a broadly based "management organisation" to protect their national interests. These countries have supported, through the Forum Fisheries Agency and the South Pacific Commission, programmes to develop the information required to evaluate the need for the restriction of fishing effort to enhance national benefits. The SPC Tuna and Billfish Programme provides scientific information to its constituent governments on tuna resources in the SPC region. The IPTP was started to establish a data base on tuna fisheries in the Pacific and Indian Oceans and had no management role. The IATTC, SPC Tuna and Billfish Programme and IPTP are all involved in collecting data for various regional areas, although the latter two lack any formal authority to compel data submissions.

There was some discussion as to whether IPFC, IOFC or some combination of the two could serve as the institutional mechanism for tuna management. The general opinion was that IPFC and IOFC were not suitable mechanisms as they (a) did not have the authority and, even if they did, (b) were not appropriately structured in terms of membership, not including many concerned Pacific island countries while containing a number of other countries that had no direct interest in tuna fisheries.

3.1.3 Data for Tuna Stock Assessment

A review of the recent history of events in the tuna fisheries and the current state of affairs with respect to the ability and willingness of the major distant-water fishing nations to supply detailed data indicated that the IPTP was not likely to receive the data required for sophisticated tuna stock assessments. However, the IPTP could usefully compile a data base adequate for describing general trends in catch and participation. These data could be used by the international community at large to identify changes in the fishery and needs for more detailed investigations or other actions. Again, an alternate view was presented that an institutional structure to deal with management and the required support work on assessments should be established first and then data requirements specified and met as part of the assessment process.

3.1.4 Data Required to Identify Trends or Changes in the Tuna Fisheries Requiring Further Investigation

Given the indication that detailed statistics were not likely to be available from all sources, the consultation concentrated on the data that would be desirable - and likely obtainable - for identifying trends and/or changes in the tuna fisheries. Data elements were discussed as listed under item 4 of the revised agenda.

- Catch Estimates (reliability). Catch estimates should have a narrow enough confidence interval to be able to detect trends. Total catch per unit area, referring to all tunas (or, perhaps, the major species and an "other" category) should be as accurate as possible. The point was made that the precision of catch estimates was inversely related to the size of the reporting areas.
- Size of Reporting Area. The question of size of reporting area, as expected, received a good deal of discussion. The FAO statistical areas or, if possible, sub-areas such as those defined by IPTP in its draft Historical Data Summary (see Appendix III) were seen as adequate for identifying general trends but not for conducting detailed assessments or identifying interactions between gears or fisheries. Data for 5° x 5° squares were seen as adequate for assessment work for longline and possibly surface fisheries but they were deemed inadequate for more detailed interaction comparisons. Several of the experts pointed out that, due to the limitations of their national data collection

systems, the reliability of catch estimates (especially for the longline fisheries) would be reduced for areas smaller than the FAO statistical areas. An explanation of the rationale for defining IPTP subareas as in the draft data summary was requested and provided. The point was stressed that these subdivisions were created on the assumption that IPTP would have data for 5° x 5° square areas from which summaries by IPTP subareas could be generated: they were not designed as areas for reporting by the countries. Considering this along with the difficulties of obtaining detailed area data, the consensus was that the IPTP should concentrate on obtaining accurate estimates by country (EEZ jurisdiction) and by FAO area. The one exception to this was FAO area 71 which could be subdivided into eastern and western portions on a line running northward along longitude 140°E from the northern coast of Irian Jaya, Indonesia to latitude 5°N, thence westward along latitude 5°N to longitude 130°E and then northward along longitude 130°E to the northern boundary of FAO area 71. The possibility was raised that, under the circumstances, it was perhaps not as critical for IPTP to actually collect detailed data from the countries as to ensure that data were being collected for use as necessary in the future.

Gear Types. At the first level, number of active vessels by broad category of gear type (e.g. encircling net, entangling net, long-line, pole-and-line, trolling, etc.) should be identified. At a second level, number of active vessels by size and gear type should be sought.

Species Identification. Comments indicated that the IPTP should concentrate on collecting accurate data by species for the highly migratory, international market species of tuna that support fisheries in the oceanic regime: i.e. those species for which international cooperation would be required in management and development such as yellowfin, bigeye, albacore, northern and southern bluefin, and skipjack tunas. Data on other, generally smaller species of tuna supporting coastal fisheries were seen as second priority from the viewpoint of international concern, although probably more difficult to collect. "Seerfish" was not seen as a category deserving concentrated effort by the IPTP as the seerfishes tend to be taken in coastal fisheries and are of international concern only as "shared stocks" between bordering countries. The point was made that the problem of proper species identification occurs more frequently in tropical waters due to the species diversity and mixed-species catches and therefore requires more attention to achieve accurate estimates of species composition of the landings.

Size Composition. It was felt that the only way to get useful size composition data was by field sampling programmes. For first-cut assessments, size composition data were not felt to be essential. For more sophisticated age-structure-dependent analyses, market category size data were not seen as adequate. These analyses require more detailed sampling data.

- Effort. The difficulties involved in collecting data to derive a meaningful unit of effort were acknowledged. In general, effort data should be in units that are invariable among countries and/or fleets, e.g. in days fished for surface fisheries or number of hooks set for longline fisheries. It was recognized that such data do not always exist, especially for the coastal countries. The opinion was expressed that useful measures of effort could be derived for the distant-water fishing nations and that the major problem was in the coastal states. Although number of trips was considered inappropriate as a basic measure of effort, it was noted that, in the absence of anything better, number of trips, modified by a knowledge of trip length and average number of days fished per trip, could serve as a useful indicator of effort.
- Oceanographic and Meteorological Data. The comments indicated that the IPTP should not attempt to obtain oceanographic or meteorological data sets. The data sets themselves are bulky (extremely so in detailed form) and their utility appraised as sufficiently limited so that it was deemed better to obtain specific products as needed from the various national oceanographic and meteorological organizations.
- Other Data. The observer from INFOFISH described the data, primarily on prices, held and distributed by the INFOFISH project in Kuala Lumpur, Malaysia.

3.2 Tuna Data Sets Currently Maintained

3.2.1 International

Forum Fisheries Agencies (FFA)

The Forum Fisheries Agency maintains a variety of data sets associated with the tuna resources in the zones of its members and the surrounding region. Most of these data sets deal with economic and political factors associated with the fisheries, markets and utilisation of the resource. The data sets maintained by the FFA are analysed to provide information to member governments for developing strategies for optimum utilisation of the tuna resources under their sovereign control.

SPC tuna and Billfish Programme

The Programme was created as a service to countries in the SPC area and held quite a lot of data. There are two parts to the statistical programme: nationally-oriented activity and regional activity. At the national level, the Programme provides a service to member countries for things they could not easily do themselves, such as key-entry of data generated by their fisheries or data from joint ventures and vessels under license agreement. The Programme has also provided analyses of the status of national stocks. All data handled are restricted by confidentiality requirements strictly to countries that generated them and for use by Programme staff for scientific purposes. At the regional level, the programme has analysed existing data and generated new data to provide assessments of the migratory stocks. At the regional level, the Programme has an active interest in cooperating with neighbouring areas.

The Programme catch and effort data base is by $1^{\circ} \times 1^{\circ}$ squares. There are gaps in the data base for the high seas areas of the SPC area, as many of the vessels under license have reported data only for the EEZs of the licencing countries and not the adjacent high seas areas. Data generated by member country national fisheries and joint ventures refer to both the EEZs and high seas areas. Some of the member countries have been negotiating with distant-water fishing nations for data on their adjacent high seas areas and the Programme has approached some of the industry groups directly for these data. The Programme cannot release much of the data it holds because of the necessity to maintain confidentiality.

The Programme has planned to publish a summary of catch per unit effort data by $5^{\circ} \times 5^{\circ}$ square. A summary of catch by species, gear and $5^{\circ} \times 5^{\circ}$ square area would have been an underestimate if released based on the extant data holdings. However, the Programme was working to fill the gaps and planned to publish after filling the gaps or with appropriate caveats to note where gaps still exist.

Inter-American Tropical Tuna Commission (IATTC)

The IATTC staff has been collecting data since 1949. Data have been collected from logbooks on all tuna purse seine vessels (regardless of flag) fishing for tuna in the IATTC area. Data on tuna catches by pole and line, and longline vessels have also been collected. For purse seine vessels, the coverage rate has been between 70% and 90% of the catch. The IATTC maintains a vessel characteristics file for all tuna purse seine vessels fishing in the eastern Pacific. Data on purchases of tuna are obtained from processors in the eastern Pacific, Puerto Rico and Europe for cross-checking with log-book data. For tuna longline vessels, IATTC staff has copied log-books from some vessels operating in the eastern Pacific and summarized data have been obtained from Korea and Japan. In addition, a detailed observer data set from purse seiners has been maintained as an adjunct to the IATTC's porpoise responsibilities. All data are held under strict confidentiality with respect to individual operations.

3.2.2 National

Japan

In Japan, there are three institutions, mentioned below, to maintain the data sets concerning tuna and tuna-like species.

- (1) Statistics and Information Department (SID) - dealing with general statistics covering all fields in the fisheries statistics i.e. fisheries census, production, marketing and economics. FAO statistics are reported through SID.
- (2) Far Seas Fisheries Research Laboratory (FFRL) - responsible for data sets on tuna longline and purse seine fisheries.
- (3) Tohoku Regional Fisheries Research Laboratory (Tohoku RFRL) - responsible for data sets on pole and line fisheries.

Data sets for each fishery described briefly below.

1. Longline fishery statistics

Longline catch and effort data are collected with log-sheets through fishermen who are licenced to fish tunas with their fishing boats and are required to report their fishing information including catch and effort. The collected log-sheets are checked at the Far Seas Fisheries Research Laboratory in collaboration with the staff from the Statistics and Information Department (SID). Items in the data set include area, time, species, number of fish caught and number of hooks used. Data are compiled by a computer and stored on computer tapes. The coverage rates of data collected from fishermen are not always 100%.

Coverage of the large fishing boat class, especially over 300 gross tons, is usually 100%, while for the small fishing boat classes, especially less than 100 gross tons, the coverage has been almost 80% in recent years. Raising these data to the total was done by tonnage class until 1980 and by tonnage class and by prefecture after 1981. The raising factor is obtained by dividing the total number of trips obtained by SID, by the number of trips obtained by log-sheets. Catch and effort data are compiled and stored by 5° square and month.

Size composition statistics have been collected for many years. There are at present three data sources;

(1) Fishing vessels

Data are collected from fishing vessels on a voluntary basis.

(2) Landing sites

Data are collected at the Yaizu fish market by a staff member of the Far Seas Fisheries Reserach Laboratory stationed at the market. Data are also collected at fish markets by the four prefectural fisheries experimental stations. Besides these data, data are also available from the auction record at the Tokyo Fish Whole Sale Market.

Due to a change in the marketing system, it is now difficult to measure fish at the landing sites.

(3) Training vessels operated by fishery high schools.

About 30 training vessels are currently collecting data at the request of the Far Seas Fisheries Reserach Laboratory. These data seem to be of high accuracy compared to other data collected.

Collected data are compiled quarterly. As the data are not collected systematically, there are many fishing areas where the size data correspondent to catch and effort data are not available.

Compiled catch and effort data have been published annually for many years. However, since 1981 the publication has been stopped. At present, the data compiled are partially being released to ICCAT because their purposes of utilization of data are very clear and signed treaty agreements are in force. Data are being released to IATTC and the North Pacific Albacore Workshop; the latter for albacore data required in the joint study with the Far Seas Fisheries Research Laboratory.

2. Purse seine fishery statistics

General catch and effort data on tuna purse seining have been collected by SID and data compiled, for example, by vessel tonnage class and by species have been published.

In addition to this, catch and effort data on tuna purse seiners which operated in the Western Central Pacific Ocean have been collected by the Far Seas Fisheries Research Laboratory since 1968. Coverage rate of data collected has been increased during the past several years, and at present approaches 100%. A compilation system for these data has not yet been well established. A plan is about to be established for improving the compilation, probably in April 1984.

Size composition data are being collected on a voluntary basis from fishing vessels which operated in the Western Central Pacific Ocean. These data are insufficient for stock analyses. As yet, these data have not been processed.

There has been one intermediate publication on the purse seine fishery issued by the Far Seas Fisheries Research Laboratory.

3. Pole and line fishery statistics

Species composition of the catch by the pole and line fishery is 80% skipjack tuna and 20% albacore. Catch and effort data are collected with log sheets from fishermen. Coverage rate of the data collected is not always 100% and varies by size of fishing vessel: about 70% for fishing vessels less than 100 gross tons and 80% for fishing vessels over 100 gross tons. Recently the coverage has improved.

Tuna pole and line data include location, time, species, weight of fish, number of poles used and average weight of fish caught in a day. The data have been compiled monthly by 1° square till 1980 and by 5° square since 1981. No attempt has been made to raise the data to provide total estimates.

Size composition data are currently collected through three sources as follows:

- (1) By staff at Yaizu fish market
- (2) By prefectural fisheries experimental stations at landing sites.
- (3) By high school training vessels.

In addition to the above sources, data collection is occasionally performed at some major landing sites such as Shiogama fish market.

Catch and effort data have been compiled and published for many years. However, the publication of the data has been stopped since 1981. Size composition data have never been published.

Korea

In 1957 the exploratory fishing of tuna longliners in the Indian Ocean was the first step to the Korean deep sea fisheries. Longline fishing was expanded to the Pacific in 1962 and to the Atlantic Ocean in 1964. Afterwards, the bait boats began operations in 1973, and the purse seiners in 1978 in the Western Pacific areas. At the end of 1983, a total of 102 longliners, 5 bait boats and 11 purse seiners were operating in the Pacific, and 115 longliners in the Indian Ocean. In this regard Korea has maintained two kinds of data collecting systems.

Firstly, as a census system, the Korea Deep Sea Fisheries Association has collected catch by species data from fishing vessels operating through member companies once a week or by ten days intervals. This is done to provide quick estimates of total production each year. However the data are not recorded by small unit areas, but by the FAO's designation of major fishing areas.

Secondly, a sampling system has been carried out by the National Fisheries Research and Development Agency for the purpose of scientific studies. The agency has provided fishermen a set of formats to collect the basic data such as catch and effort statistics and biological data. All the data collected directly from fishing vessels are checked and reviewed in detail at the Agency in order to remove errors or biases in the raw data. The data are then sent to the National Computer Centre for electronic data processing.

The Agency has stored the longline catch and effort data by 5° x 5° area since 1966, and the bait boat catch and effort data by 1° x 1° area since 1980.

As a result of research activities, the statistical bulletin on Korean tuna longline fishery for the 1966 - 1970 period and the 1975 - 1979 period were published and disseminated to the institutes and international organizations concerned.

Recently the data for 1980 have been compiled and will be published soon.

In addition, Korea has some size composition data on longline bait boat and purse seine fisheries as follows:

- Longline fishery : 3 species since 1977
- yellowfin, bigeye, albacore

- . Bait boat fishery : 1 species since 1978
- skipjack
- . Purse seine fishery : 2 species since 1982
- skipjack, yellowfin.

Philippines

The Philippines Bureau of Fisheries and Aquatic Resources (BFAR) under the Ministry of Natural Resources (MNR) has been collecting fishery statistics and publishing the Fisheries Statistics of the Philippines yearly since 1952. This publication presents the diversified fishery data collected in Philippines.

These data are divided into marine, brackish and fresh water, and other allied data, i.e. exports, imports, etc. The marine catch statistics are divided into two categories:

- a) Production from commercial fishing vessels larger than 3 gross tons; and
- b) Production from municipal fisheries using fishing vessels of 3 gross tons or less.

Until 1976, the production from the commercial sector was estimated from the "Fish Caught Report" submitted by fishing vessel operators. Municipal fisheries sector landings, on the other hand, were estimated by surveying only 6 municipalities during 1951-1958. Until 1976, annual data were estimated by applying an annual inflation factor to the estimates based on the 1951-58 surveys.

The implementation of the newly designed survey which employs statistical sampling programs for both commercial and municipal fisheries sectors, was started in 1976. The new procedure provides estimates of production by gear, species and species groups, as well as associated fishing effort by fishing grounds and province. Presently, the following data sets are maintained:

1. Total catch of tunas by species/species groups and by sector (commercial and municipal) from 1976 to 1982. This includes four species of tunas, as well as billfishes and seerfishes.
2. Catch of tuna by species by province and region landed by commercial and municipal fishing vessels.
3. Catch of tunas by species and type of gear for commercial and municipal sectors.
4. Production of tunas by species, statistical fishing area and type of gear.

5. Number of commercial fishing vessels registered by type of gear and tonnage class.
6. Summary of commercial fishing vessels by horsepower and type of gear.
7. Catch of commercial fisheries by species and month.
8. Catch and fishing effort for municipal fishery by type of gear and fishing area, 1976 - 1982.
9. Catch and fishing effort for commercial fishery by type of gear, fishing area, tonnage class and month, 1980 - 1982.
10. Size frequency of yellowfin, bigeye, skipjack, eastern little, frigate and bullet tuna from the 5 landing centers in the tuna sampling program, 4 from Mindanao and one in Luzon.

Collection of Data

- a) Commercial fisheries sector - (fishing vessels over 3 gross tons).

The survey covers 59 major fish landing centers selected from a total of 201 landing centers from all regions (13) in the country. These major landing centers are places where most of the fishing vessels land their catch and where major wholesale markets are situated. Of the 59 major landing centers, 48 are surveyed every other day and the rest are surveyed daily.

Data from all minor fish landing centers are taken from the monthly fish caught reports submitted by fishing operators.

- b) Municipal fisheries sector-(fishing vessels of 3 tons gross or less).

This survey covers about 1,700 sample landing centers in the country selected at random from a total of 5,491 landing centers.

The coastline of a province is divided into one or more zones and a zone includes at least 15 landing centers which are geographically arranged. A total of 9 days in a month is devoted to the collection of municipal fisheries data.

- c) Tuna research project (5 landing centers).

Sampling is done every other day for purse seine and ring net vessels, and every four days for handline boats. Data collected include species composition, size frequency samples, catch and effort and area of fishing. The effort unit is days at sea. Fishing is usually done on FAD's (fish aggregating devices) within the Philippines territorial waters.

United States of America

Introduction. In the United States of America the primary responsibility for fisheries data collection rests with the states and territories. The most common statistics collected are the magnitude and value of the landings. At the national level the National Marine Fisheries Service (NMFS) also requires fish processors to submit annual data. Since these data are confidential, they are aggregated before being made public. The NMFS assembles these statistics from the states and the processor reports to prepare the annual Fisheries Statistics of the United States, and these same statistics are submitted to FAO for its yearbook of fishery statistics.

When data are collected at the individual vessel or business level, the data are confidential by federal and most state laws. Hence, they are made public only in aggregated form. Nonconfidential aggregated data are generally made available to the NMFS, and where data share and confidentiality agreements exist between a state and the NMFS, confidential data are also made available specifically for research purposes. To meet treaty obligations, the NMFS collects certain fishery statistics, e.g., tuna statistics in the Atlantic Ocean. As the need dictates, the NMFS also collects data by direct field or market sampling and through agreements with foreign governments.

Examples of specific types of data sets relating to tuna fishing that the NMFS maintains in its data libraries are described below by ocean.

Atlantic Ocean. The Oceanic Fisheries Resources Division of the Southwest Fisheries Center (SWFC) maintains the following tuna data sets.

International Commission for the Conservation of Atlantic Tunas (ICCAT) Landing Statistics. These official tuna landing statistics are submitted by the member countries. These statistics include those submitted by the U.S.A. coastal states and include mostly landings data for commercial fisheries, but some data on recreational fishing (e.g., bluefin tuna) and size composition measurements are also available.

Trip Statistics. These are data on landings of U.S.A. vessels (primarily purse seiners). At the vessel or cannery level, these statistics are confidential.

Length-Frequency Samples. These data are collected by SWFC staff from transshipment landings in Puerto Rico for catches originating in the Atlantic. The Inter-American Tropical Tuna Commission (IATTC) under contract to the NMFS collects similar data from U.S.A. vessels fishing in the Atlantic. The data are not confidential.

Logbook Statistics. Logbook data are collected from U.S.A. vessels by the IATTC under contract to NMFS. At the vessel level these statistics are confidential.

Vessel Characteristics. The data are collected from U.S.A. vessels participating in the Atlantic fishery by IATTC under contract to NMFS.

Eastern Tropical Pacific Ocean. The IATTC collects logbooks from vessels participating in the fishery, including those from U.S.A. flag vessels. They also collect size composition and other information at port sampling stations in various coastal states in the region. The NMFS may gain access to these data with the submittal of specific and narrowly defined research proposals.

Eastern North Pacific Ocean. Data are collected by a number of entities in this area. As mentioned earlier, the states have the primary responsibility of collecting fisheries data, and they do so in this area. For tuna, the States of California, Oregon, and Washington are cooperatively collecting data on the surface albacore fishery. The Pacific Marine Fishery Commission coordinates port sampling under an agreement with these states and the NMFS. These data (landings, vessel participation, catch-and-effort, size composition) are available through the Pacific Fishery Information Network. Data share and confidentiality agreements between the NMFS and the respective states obligate the NMFS to maintain the confidentiality of the statistics in the network as defined by the respective state laws.

Central and Western Pacific. Again, a number of agencies are collecting statistics in this region. These are described below.

Local Statistics. The U.S.A. island governments in the region are collecting landings and some fishing effort data for the fisheries in their areas. These data are available through the Western Pacific Fishery Information Network (a cooperative NMFS-island government project). Data share and confidentiality agreements between the NMFS and each of the member 'states' obligate the NMFS to follow the confidentiality laws of the respective 'state'.

Honolulu Laboratory SWFC, NMFS. Tuna data are obtained from a number of sources described below.

American Samoa tuna base. Under a contract with the American Samoa Office of Marine Resources (Government of American Samoa) logbooks from the tuna longline vessels, and size composition data from the longline and purse seine landings are collected. At the vessel and cannery level these statistics are confidential.

Guam transshipment port. A contract is in effect with the Government of Guam to collect landings and transshipment data. At the vessel level these data are confidential.

Cannery reports. Monthly cannery landings, transshipments, and processing data are received from the canneries in American Samoa and Hawaii. These data are confidential and must be aggregated before release.

Published data sets. Computerized data sets consisting of the published data from the tuna longline and pole-and-line fisheries of Japan, South Korea, and Taiwan are maintained.

3.3. Tuna Data Sets Available to IPTP

FFA

The vessel register data set held by FFA could possibly be made available to the IPTP depending on a decision to that effect by the member countries of FFA.

SPC Tuna and Billfish Programme

The Programme cannot release its complete data set as it would violate the confidentiality agreements under which the data are obtained and held. However, the member countries have agreed to the production of a regional data summary on 1° x 1° squares (without flag identification). By the end of 1984, it was felt that data from the summarized regional data base should be available to IPTP at least in the detail already agreed to by the member countries. The problem of data gaps as described in section 3.2.1 was noted and the caution provided that any caveats on incomplete data would have to be maintained in further use of the data.

IATTC

Data from the IATTC data set could be made available to IPTP at any reasonable level of sophistication that still maintained the confidentiality of the data sources.

Japan

Japan could make available data on tuna catch and effort by FAO area with the exception that data for FAO area 71 could be subdivided into two areas as described in section 3.1.4.

Korea

Data could possibly be made available by IPTP sub-area in the future although data limitations did not permit this categorization for historical data. In any case data could be made available by FAO area.

Philippines

All tuna data available to the Philippines Bureau of Fisheries and Aquatic Resources could be made available to IPTP.

U.S.A.

Available historical data sets as published by other countries or NMFS could be made available and could save on key-entry. The U.S.A. could make available log-book data collected by NMFS for American Samoa and the Trust Territories, appropriately summarized to maintain confidentiality. With respect to U.S.A. fleet tuna purse seine data for the western Pacific, a recent meeting between U.S. Government officials and the tuna industry representatives revealed the position of industry to be that the value of data to industry outweighed the advantages of providing access to the data to the U.S. Government. That is, U.S.A. tuna purse seine data for the western Pacific would not be available. The caveat was added that the subject was still being pursued with industry but that, in general, the U.S. Government would need a treaty organization type of mechanism to compel submission of data.

4. CONCLUSIONS AND RECOMMENDATIONS

The consultation of experts was not asked to arrive at any formal conclusions. However, the consultation did lead to several inferences. One was that, given the situation with respect to exploitation of tunas and jurisdictional claims coupled with the absence of a formal mechanism for managing tunas in which all concerned parties had a voice, there would not be sufficient cooperation from the major tuna fishing countries to enable the establishment of a detailed data base for the Indo-Pacific tuna fisheries. Notwithstanding this, the inference emerged that a regional data base, containing rather less detail, could perhaps be compiled that would be adequate to identify major trends or changes in the Indo-Pacific tuna fisheries. The primary usefulness of this data base would be to alert the concerned countries to these trends or changes in order that they might have the opportunity to take further action, either collectively or individually, as they deemed necessary.

With respect to the work of the IPTP, the long-run activities would depend heavily on the evolution of an institutional structure for tuna management and development in the Indo-Pacific, and the provisions made for accomplishing the necessary scientific support work including data collection. In the short run (i.e. through 1985) the IPTP could be most productive by: finishing the data summary currently in draft, establishing a system for compiling the non-detailed summary data that might be available, and working to support the establishment of a continuing mechanism to provide the scientific support necessary for management and development decisions.

R E V I S E D A G E N D A

INDO-PACIFIC TUNA PROGRAMME WORKSHOP EXPERT CONSULTATION
ON
ESTABLISHING AND MAINTAINING A REGIONAL DATA BASE FOR
TUNA FISHERIES IN THE PACIFIC AND INDIAN OCEANS.

March 13 - 14, 1984

Tokyo, Japan

- 1 Welcome and introduction
- 2 Consideration of agenda
- 3 Review of IPFC/IOFC recommendations leading to establishment of UNDP/FAO Project for IPTP
- 4 Types of data that need to be compiled on a regional basis to support management and development decisions.
 - 4.1 Types of decisions
 - 4.2 Information desired
 - 4.3 Review of existing regional data base programmes
 - 4.3.1 IPTP
 - 4.3.2 IATTC
 - 4.3.3 SPC Tuna and Billfish Programme
 - 4.3.4 FFA
 - 4.4 Optimal and minimal data sets required in terms of detail (quantity) and quality.

2.

- 4.4.1 Catch estimates (reliability)
- 4.4.2 Size of reporting areas
- 4.4.3 Gear types
- 4.4.4 Species identification
- 4.4.5 Size composition
- 4.4.6 Effort
- 4.4.7 Catch per unit effort series
- 4.4.8 Oceanographic and meteorological data
- 4.4.9 Other data

5. Description of national data sets maintained by the participants' countries including collection methods and the terms and conditions under which the data are held (e.g. national confidentiality requirements)

- 5.1 Indonesia
- 5.2 Japan
- 5.3 Korea
- 5.4 Philippines
- 5.5 United States

6. Identification of national/international data sets that could be made available on a regional basis and the terms under which the data could be provided.

6.1 Catch

- 6.1.1 Size of reporting areas
- 6.1.2 Gear types
- 6.1.3 Species identification
- 6.1.4 Size composition

6.2 Effort

6.3 Catch per unit effort series

6.4 Oceanographic and meteorological data

6.5 Other data

7. Mechanism for establishing and maintaining one or several regional data bases.

7.1 Recommendation for establishing and maintaining Indo-Pacific tuna data base

7.2 Discussion of and recommendation for priority activities of IPTP

7.2.1 Short run (1984-85)

7.2.2 Long term (1985 and beyond)

8. Discussion of Western Pacific/Indian Ocean Tuna Assessment Workshop proposed by FAO, Headquarters for August 1984.

8.1 Objectives

8.2 Participation

8.3 Timing

8.4 Venue

8.5 Data and facilities required/available

8.6 Recommendations

9. Summary and closing of workshop

LIST OF PARTICIPANTS

INDO-PACIFIC TUNA PROGRAMME EXPERT CONSULTATION

ON

ESTABLISHING AND MAINTAINING A REGIONAL DATA BASE
FOR TUNA FISHERIES IN THE PACIFIC AND INDIAN OCEANS

March 13 - 14, 1984

Tokyo, Japan.

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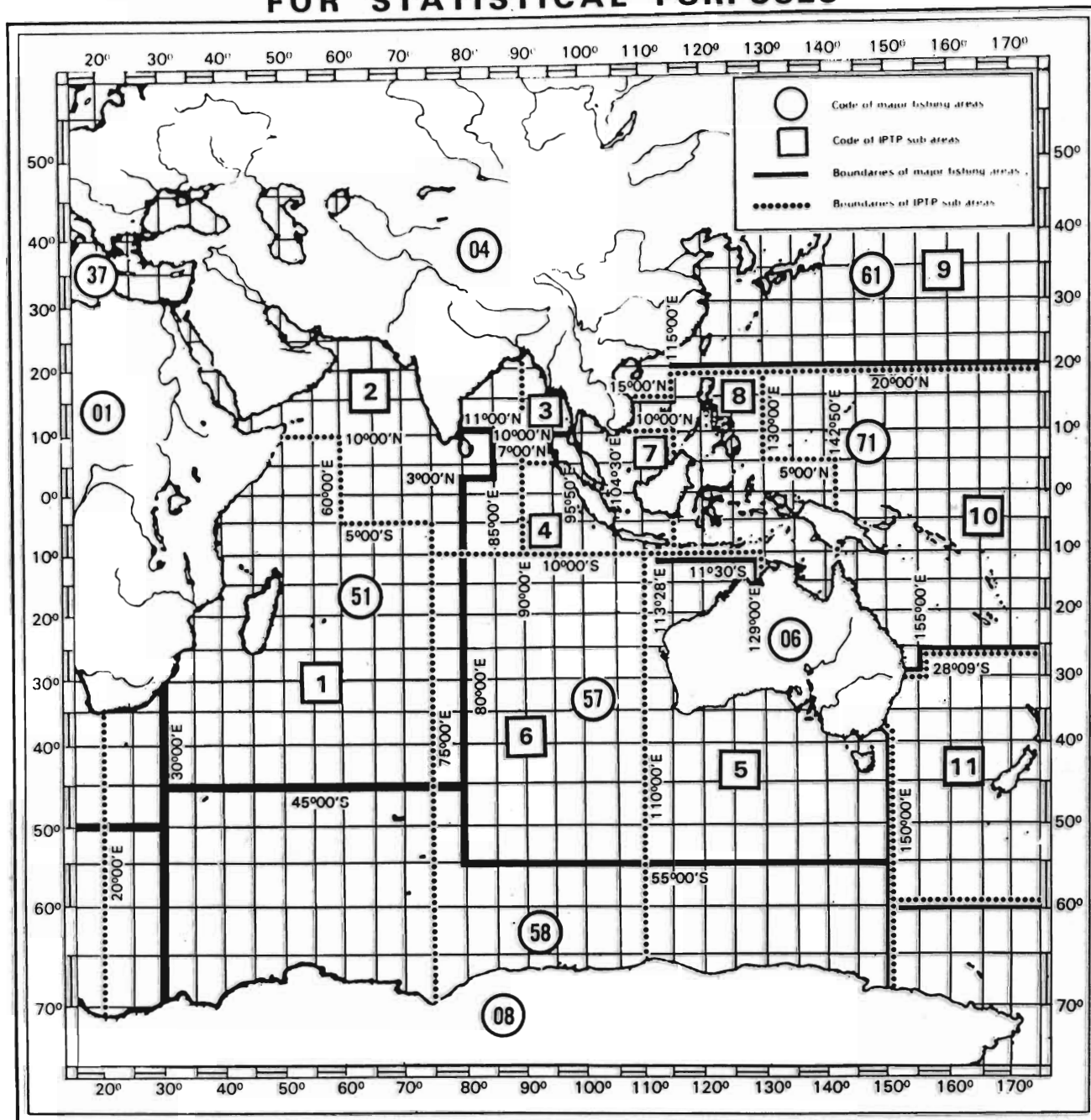
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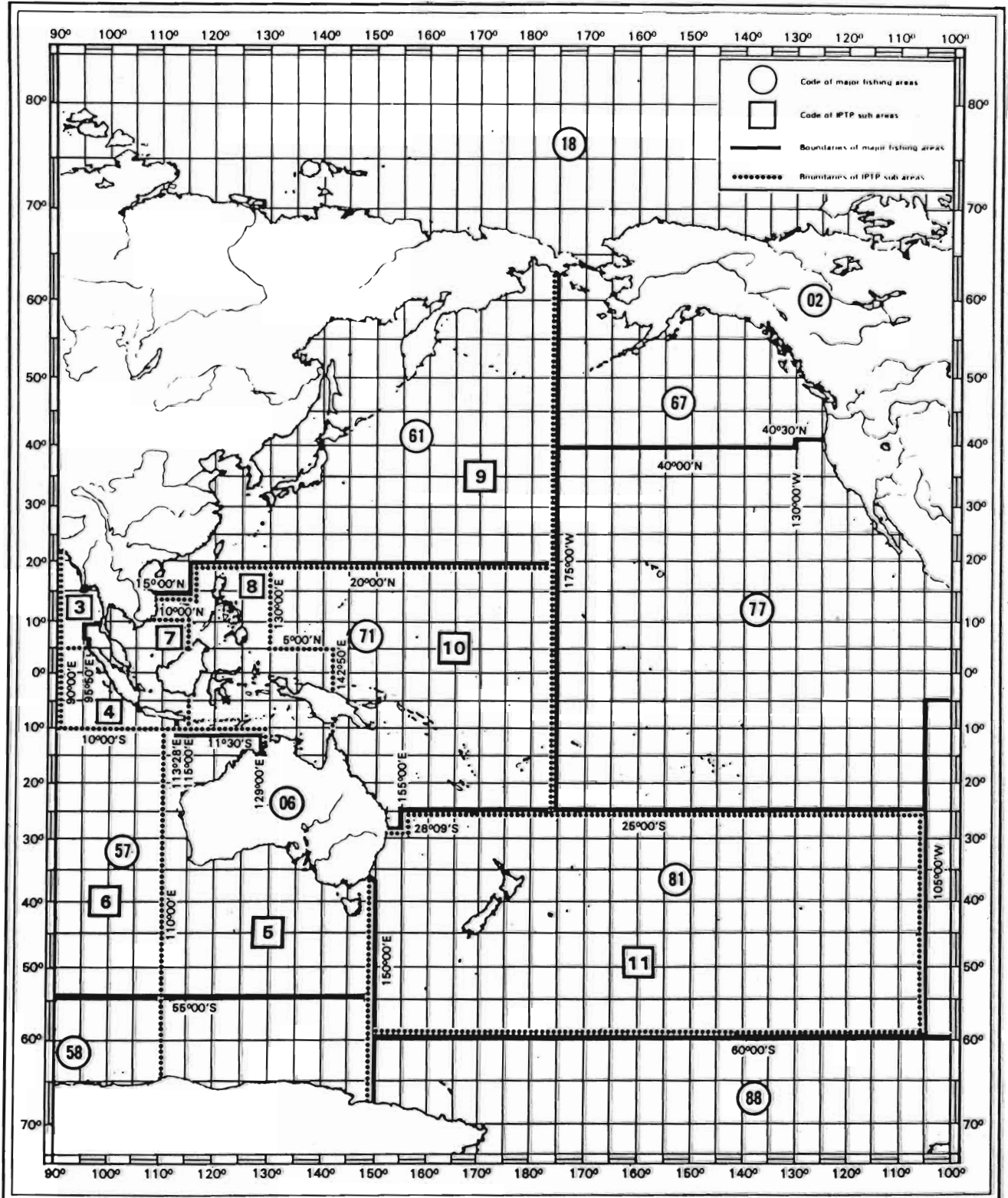
1.

FAO MAJOR FISHING AREAS AND IPTP SUB-AREAS FOR STATISTICAL PURPOSES



INDIAN OCEAN

FAO MAJOR FISHING AREAS AND IPTP SUB-AREAS FOR STATISTICAL PURPOSES



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