

Work Plan Implementation
(General)

IPTP/83/GEN/4
SCS/GEN/83/47

INDO-PACIFIC TUNA DEVELOPMENT AND MANAGEMENT PROGRAMME
(INT/81/034)

This document forms part of publications of the Investigation on
Indian Ocean and Western Pacific Small Tuna Resources Project
(GCP/RAS/099/JPN) which is sponsored and funded
by the Government of Japan

IPTP/83/GEN/4
SCS/GEN/83/47

February 1983

REPORT OF THE WORKSHOP ON PHILIPPINE AND INDONESIAN
RESEARCH ACTIVITIES

Manila, Philippines
3 - 8 February 1983

INDO-PACIFIC TUNA DEVELOPMENT AND MANAGEMENT PROGRAMME

Colombo, Sri Lanka

February 1983

The Indo-Pacific Tuna Development and Management Programme seeks to assist the governments in the area in the preparation of long-term management and development of tuna and tuna-like species. Recognizing the need for intensive efforts in selected countries to generate the information to support this management and development in the Government of Japan, established a trust fund with FAO to enable directed Investigation on Indian Ocean and Western Pacific Small Tuna Resources. These investigations form a valuable part of the overall Indo-Pacific Tuna Programme (IPTP). This publication is made possible by Japan's support.

The Project supported by Japan is carried out under the general direction of the IPTP in close cooperation with FAO's regional fisheries projects. The initial work has concentrated in the Philippines and Indonesia in cooperation with the UNDP/FAO South China Sea Fisheries Development and Coordinating Programme (SCSP).

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1. WELCOME AND OPENING OF WORKSHOP

The workshop commenced at 0900h, Thursday, 3 February 1983 at the offices of the South China Sea Fisheries Development and Coordinating Programme, Manila, Philippines. The Chairman, Dr. Paul J. Hooker, welcomed the participants and proceeded to outline the historical background to the project. The Japanese Trust Fund (JTF) project (GCP/RAS/099/JPN) essentially evolved from a Norwegian funded project (GCP/RAS/099/NOR) which established and funded a tuna sampling programme in Indonesia and the Philippines in 1979. Work commenced on the JTF project in October 1981 with the appointment of Mr. Mitsuo Yesaki. After completion of more than one year work mainly in the Philippines, the focus of activity will shift to Indonesia with the recruitment of Dr. Tamotsu Yonemori.

The Chairman proposed that the objectives of this workshop be to examine the results, implications and recommendations of the recently completed work in the Philippines, review the current status of Indonesian activities and to device a work programme for 1983.

2. AGENDA ITEM 1 - DESCRIPTION OF FISHERIES

Mr. Reuben Ganaden described the development and expansion of tuna fisheries in the Philippines, stating that landings had risen from around 10,000 mt in 1971 to over 200,000 mt in 1981. He described the major gear types used, purse-seine, ringnet, handline, troll, longline and fish corral and the major species landed, yellowfin, skipjack, frigate, bullet, longtail and bigeye, although the latter two species were relatively insignificant. He outlined the distribution of major tuna fishing grounds, which were mainly located in Southern Mindanao. Some fishing activity had also recently commenced along the Zambales coast of Luzon and Batangas. There was virutally no Philippine fishing activity off the Pacific coast. Activity on all grounds was greatly influenced by monsoonal wind direction. Mr. Ganaden referred the group to publication 'A' (see Appendix III) for further details of catches by gear, area and species.

Since 1981-1982, there has been a gradual increase in the number of domestic tuna longline vessels operating in Philippine waters. These are mainly Taiwanese joint-venture operations utilizing 30 GRT vessels and operate with ice. Approximately, 50 vessels now operate in the Philippines. The catch rate is only 1 to 2 fish per day and are mainly bigeye tuna. All catch is air freighted to Japan for sashimi.

Many of the larger purse-seiners are associated with joint venture operations. The typical arrangement is for the foreign partners to supply the vessels and the Philippine partners to supply crew and operate the vessels.

Some Japanese and Taiwanese longline vessels operate in Pacific waters, outside Philippines 200 mile EEZ. Data supplied by Japan apparently suggests that catch rates off eastern Philippines are not very good.

Mr. Ganaden referred to report 'B' for details of catch disposition. He explained that there was no price differential between tuna sizes and that in the local market, prices are essentially controlled by supply and demand. It was also significant that the prices paid for small tunas in local markets were similar to prices paid for other small pelagics, such as round scad, bigeye scad, etc.

Local canning companies regularly complain of insufficient supplies of raw materials from the domestic tuna fishery and many have imported frozen tuna from overseas to augment local supplies. Six hundred tonnes of frozen tuna were imported for canning purposes in 1982.

Most agreed that in general, the official published statistics on tuna were acceptable for the Philippines, although species breakdown had been poor in the past and still required attention outside Mindanao. It was difficult to obtain reliable catch or catch/effort data concerning the larger purse-seine vessel operations as they generally operate in conjunction with carrier vessels and are loathe to release information concerning their operation.

Mr. Uktolseja described the tuna fisheries of Indonesia. Based on a ten-year average, some 16% of the total catch has been derived from Indian Ocean Fisheries (Area 57) and 84% from other areas of Indonesia (Area 71). The total catch in 1979 was 127,000 mt.

Approximately 160 purse-seine vessels (5 GRT) operate from Aceh in Western Sumatra using nets approximately 800 to 1,200 m in length x 60 to 80 m depth. The catch consists of 80% Auxis species and 10% skipjack. Average daily catches are 300 kg.

Along the Indian Ocean coast of Sumatra, approximately 250 vessels (10 - 15 GRT) fish for tuna using troll lines. Sixty percent of the catch is skipjack.

Tunas are captured using gillnets and round haul nets in West Java. A total of 200 vessels operate in this area. Gillnet vessels are small (1.5 to 3 GRT) but motorized with 45 HP motor. The round haul net vessels are larger (3 to 6 GRT) and are powered with outboard motor. Gillnet mesh size is 4.5 inches. Average daily catches are 64 kg. Eighty percent of the gillnet catch is skipjack, whereas 80% of the round haul net catch is Auxis sp. The latter operation targets on Auxis as they obtain a better price.

In Eastern Java, many of the Bali Strait sardine purse-seiners are now catching tunas off Java. They use a two boat seine net. Some gillnet vessels also operate. Small trollers fish around Bali, but their numbers are dropping as a result of competition from the gillnet vessels.

A substantial longline tuna fishery operates from Bali using 100 to 300 GRT vessels.

In Eastern Indonesia (east of latitude 120°) practically all tunas are caught with pole and line. Some vessels previously trawling for shrimp are now being modified to pole and line for tuna. In North Sulawesi, 40 pole and line vessels operate (30 GRT), 30 of which belong to State Enterprise fisheries. Two, 200 GRT vessels also operate. At Ternate, 20 small scale pole and line vessels operate. Thirty five vessels operate from Ambon, 20 of which belong to the State Enterprise Fisheries.

Between 50 and 100 tuna longline vessels also operate in the Banda Sea Area, belonging to joint-venture (Japanese) companies. A further 29 companies have applied for licences. Newer operations are based on deep longlines and target on bigeye tuna. Older operations used surface longline and catch mainly yellowfin.

One large purse-seiner is operating from Ternate.

Japan says that 235 longline vessels, 1 pole and line vessel, and 13 purse-seiners operated within Indonesian EEZ (Pacific Ocean) in 1979. The total catch was 22,000 mt.

Fifteen thousand three hundred mt of skipjack was exported in 1981 and 2,383 mt of 'large' tunas. Of the latter, 60% was yellowfin, 20% bigeye, 8% albacore and 3% southern bluefin.

In 1982, 35,000 mt of tuna were landed by State Enterprises fisheries.

3. AGENDA ITEM 2 - DESCRIPTION OF DATA COLLECTION AND PRESENTATION SYSTEM

Mr. Ganaden described the development of the present BFAR sampling scheme in the Philippines. The system commenced in November 1979. Four sites are sampled in Mindanao plus Navotas market in Manila. Samples are taken every other day, for all months of the year. All gears are sampled. He also described the sampling system that is used by BFAR to collect landing statistics for all Philippine fisheries and discussed how the two programmes overlapped.

Mr. Ganaden described the output from the sampling programme, how it is summarised and presented. It was pointed out that the present sampling programme was not designed to obtain catch per effort data, but to obtain a better understanding of the species composition of the catch by gear and location, plus the sizes of fish landed.

There was discussion covering the collection system used in the preparation of national landing statistics.

Mr. Uktolseja outlined the sampling programme in Indonesia. Major sites are Pelabuhan Ratu (W. Java), Prigi (E. Java), Sorong, Ternate, Ambon and Bitung. People were employed specifically to collect data on tunas at each site. The Indonesian programme is designed not only to collect data on the fish but also effort (catch/effort) data. They also regularly receive catch and effort data from the State Enterprise skipjack fishing companies. They propose to set up additional sampling sites at Kendari, Padang and Banda Aceh. In all they propose sampling 12 sites in 1983-1984.

No data is collected on gonad or stomach contents. They are presently training a person in electrophoresis technique for future blood analysis studies.

The published fish landing statistics for Indonesia are not considered too reliable.

4. AGENDA ITEM 3 - PRESENTATION OF DOCUMENTS

Mr. Yesaki and Dr. White introduced the publications that have been completed by JTF tuna project, noting that more publications are proposed. Two draft publications were also provided for discussion during the workshop. A list of these publications is attached.

5. AGENDA ITEM 4 - DATA ANALYSIS

Discussions essentially centred around the two draft reports presented by Dr. White and Mr. Yesaki. Many comments and advice were given concerning the presentation of data in these reports.

Major items arising from the discussions were the following; very little data was available for yellowfin tuna in Indonesia.

There was considerable discussion concerning the feeding habits of the large yellowfin tunas under payaos. It appeared that this fish could be consuming as many small tunas as was captured by the entire Philippine fishery. It was recommended that BFAR investigate further the movement and distribution of large yellowfin around the payaos.

There was discussion about the best way to obtain more reliable data on effort in the Philippine fisheries. The Philippine workers reiterated the problems of obtaining data from the companies.

Dr. Gulland recommended that the tuna working group rework the yield analysis using virtual population analysis techniques, rather than the Beverton and Holt model which had been used. The technique is dependent upon a good understanding of the distribution and movements within the Philippine tuna 'stock'. Dr. Gulland did a quick re-analysis of the yellowfin tuna data presented in Dr. White's report and as a result suggested that the optimum size of first capture was probably around 50 to 70 cm. He suggested further that the addition of more large purse-seine vessels into the Philippine fishery would probably not reduce the present catch, but would not significantly increase it either. There could be some reduction, however, in the landings of the larger handline-caught yellowfin.

It was recommended that this VPA analysis technique be applied, incorporating the catch data from the Western Pacific fisheries, the assumption being that at least some of these fish could belong to the Philippine stock.

Regarding skipjack tuna, Mr. Uktolseja reiterated the information he had given earlier on the distribution of skipjack tuna in Indonesia. The average weights of skipjack caught off Sumatra were 3 kg, off Sorong 3.3 kg, Ambon 2.8 kg and for the purse-seine vessel operating in the Pacific, 4.5 kg.

Mr. Yesaki described biological studies currently being conducted on skipjack in the Philippines. Stomach analysis and gonad studies have not been carried out as intensively on skipjack as for yellowfin. He stated that skipjack appear to mature between 48 and 58 cm. Spawning appear to peak around October/November. There does not appear to be a peak in May, as there is with yellowfin, but there most probably is a peak in February/March. In general, spawning appear more restricted to shorter periods than yellowfin which spawn intensively over a 4-month period.

In Indonesia, Mr. Uktolseja reported that few studies had been conducted on spawning, but from the data available, few mature fish are ever encountered. It is likely that studies will commence during 1983.

Little information is available for either country on the diet or feeding rates of skipjack. Most stomachs appear empty or contain digested material suggesting digestion is more rapid than in yellowfin.

Regarding tuna species other than skipjack or yellowfin, it was pointed out that the major species in this category were frigate and bullet tunas (Auxis). Mr. Yesaki considers frigate as a more 'oceanic' species than bullet tuna which in the Philippines at least appear to be more abundant in archipelagic waters. More than 50% of all tuna landings in the Philippines consist of these 'other' species. They attract the same force as small skipjack or yellowfin. None of these 'other' tunas are exported, all are sold on local fresh fish markets.

Mr. Uktolseja warned that Auxis species are pooled with eastern little tunas in the published Indonesian statistics under the category of 'Euthynnus'.

PCARRD will commence a study at Batangas in 1983 to gain a better understanding of the ratio of frigate and bullet tunas landed at that site as well as some length frequency and other biological data. Mr. Uktolseja stated that Indonesia has some length frequency data for Auxis species in Indonesian waters, but had no information on growth, recruitment, migration, etc.

All participants agreed upon the importance of devoting more attention to distinguishing between frigate and bullet tuna and to distinguish between them and the other tunas which are often classified together with them in national statistics. In some place in the Philippines and probably in other countries as well, up to 50% of the so called 'frigate' may be young skipjack and/or yellowfin tunas. Longtail tuna (T. tonggol) are not reported separately in statistics, but are known to be a large percentage of the catches in some areas of Indonesia, where they are included into the 'Euthynnus' category in national statistics. Up to 50% of the Java Sea tuna catch is probably longtail tuna. Bigeye tuna are difficult to distinguish from yellowfin tuna when very small (less than 30 cm.) but are probably a very small percentage of the landings in both Indonesia and the Philippines. The longline fisheries appear to target on bigeye when possible as they command much higher prices in the Japanese sashimi markets than do yellowfin tuna. The Japanese Banda Sea longline fishery commenced around 1950, targeting principally on yellowfin tuna and more recently on bigeye.

In view of the proportion of frigate/bullet tunas in the total landings of most countries in the Region, Dr. Gulland pointed out the importance of obtaining more data on these species. Catches of these species may be increased perhaps at the expense of lesser catches of skipjack and yellowfin.

6. SUMMARY AND DISCUSSION

Dr. Hooker described the relationship between the UNDP Tuna Project (INT/81/034) and the Japanese Trust Fund Project (GCP/RAS/099/JPN). He stated that the two overlapped both in terms of the project areas and to different degrees in objectives. The UNDP project was intended to establish a regional tuna data base, but requires the more detailed input of the Japanese funded project for specific problem areas. The 1983 funds (\$200,000) are now available for the JTF project. These funds will be used to support Dr. White in Indonesia until approximately September 1983, Mr. Yesaki in the Philippines until 30 March 1983 and thereafter in Sri Lanka, and Dr. Yonemori, when recruited, in Indonesia for 12 months. Although the JTF project area is quite extensive, realistically it is only possible to concentrate staff efforts in one country at any time. Dr. Yonemori will work for one year in Indonesia after he is appointed. After Indonesia, the tuna group may work with the Indian Ocean countries with the S.W. Indian Ocean Project Team. Dr. Gulland reminded the group that it will be difficult to work in some of the countries effectively if their national fisheries data base is poor or non-existent.

7. FUTURE PROGRAMME

7.1 Philippines

The overall tuna base appear to be well established now in the Philippines, but must take into consideration the result of the JTF Project. It may be possible to take less samples than is the fact, particularly for length frequency analysis, without a reduction in information obtained.

It is recommended that more attention be devoted to obtaining good data on fishing effort, particularly for the purse-seine fishery.

7.2 Indonesia

It was considered that although the Indonesian tuna group was working actively, much more work was required. The major problem appeared to be coordination of the field data collection, due mainly to the problems of controlling field staff.

It was considered that both in Indonesia and the Philippines, more attention should be directed towards studies on feeding and spawning in the 'small' tunas. Dr. Hooker and Dr. Gulland agreed that the first priority in Indonesia is to establish a comprehensive data analysis system such as has now been done in the Philippines. This will be the main role of Dr. Yonemori.

Mr. Uktolseja mentioned that they have a budget of around \$60,000 for a tagging project which they must initiate prior to April 1983 or risk losing. Dr. Hooker was hesitant about embarking on a tuna tagging project as he could not see how one person could effectively carry out both this and the data analysis. He agreed that perhaps the person (Yonemori) could help design, if not implement a tagging study. Dr. Yonemori described the experiences of Japan in implementing small scale tagging projects using local facilities and equipment. Dr. Gulland asked for clarification from the Indonesian team of the tagging programme objectives. He raised the problem of tag recovery.

Dr. Yonemori had prepared a brief outline of the major points to a pilot tagging programme and distributed it to the workshop members for discussion (see Appendix IV). Points arising from the discussion were:

- The tagging exercise will be restricted to eastern Indonesia, most likely at Sorong.

A minimum of 1,000 fish should be tagged. Indonesia already has 2,000 to 2,500 SPC tags in stock

All fish for tagging should be captured by pole and line, not purse-seine. Vessels of 30, 100 and 300 GRT are available at Sorong, but the 30 GRT vessels will be tried first.

Dr. Yonemori will supply two tagging cradles from Japan. Additional crades can be manufactured in Indonesia.

Both skipjack and yellowfin should be tagged, with the emphasis on skipjack.

The best season for tagging is the latter half of the year.

It will be necessary to train a person in tagging technique.

Television may be used to advertise the programme. T-shirts could be considered as rewards for returning tags. Indonesia will need to design and print promotional material.

Initially data could be analyzed by hand. Around 5% of the tags may be expected to be recovered.

The general concensus was that the Indonesian team should proceed with their own pilot programme immediately. Dr. Yonemori will assist where possible with the programme design and will further assist the design of a second, larger scale project, based on the initial trial results.

Mr. Uktolseja stated that one of the major problems with the tuna programme in Indonesia was the lack of funds to pay for field data collection. He asked if FAO could assist by providing some funds for field staff salary and overtime. Dr. Hooker replied that funds were not available in the budget for use for this purpose, particularly as FAO would only be working in Indonesia for 12 months on the project.

Dr. Tan informed the group that PCARRD was planning to become involved with data analysis and stated that if BFAR could not find someone to do the tuna data analysis, then PCARRD would request that FAO allow them to conduct the analysis on the HP-85 computer. BFAR responded that they did plan to carry out analysis in the future. Dr. Tan also asked if FAO would be available in the future for further assistance. Dr. Hooker replied that they would always be made available for specific short-term tasks involving the tuna work in the Philippines.

Dr. Hooker reminded the group that 24 m/m are available in the JTF project in 1983. Dr. Yonemori will use 12 m/m in Indonesia, leaving 12 m/m for use elsewhere. These latter m/m will be controlled by Dr. Hooker.

Dr. Hooker summarized the relationship once again between the JTF and the UNDP tuna project.

The meeting closed on Tuesday, February 8th 1983.

Appendix I

A G E N D A

3 February

- 9:00 a.m. Welcome and opening of Workshop P.J. Hooker
1. Description of fisheries
- 1.1 Philippines R. Ganaden
- 1.2 Indonesia J. Uktolseja
- 1:00 p.m. 2. Description of data collection and presentation systems
- 2.1 Philippines R. Ganaden
- 2.2 Indonesia J. Uktolseja

4 February

- 9:00 a.m. 3. Presentation of documents
- 3.1 Philippines T. White/M. Yesaki
- 3.2 Indonesia J. Uktolseja
- 1:00 p.m. 4. Data analysis T. White/M. Yesaki
- 4.1 Yellowfin
- 4.1.1 Geographical distribution by size
- 4.1.2 Maturity
- 4.1.3 Growth
- 4.1.4 Recruitment
- 4.1.5 Feeding
- 4.1.6 Catch/effort
- 4.1.7 Mortality/Emigration
- 4.1.8 Yield calculations

7 February

- 9:00 a.m. 4.2 Skipjack
- 4.2.1 Geographical distribution
- 4.2.2 Maturity
- 4.2.3 Growth
- 4.2.4 Recruitment
- 4.2.5 Feeding
- 4.2.6 Catch/effort
- 4.2.7 Mortality/Emigration
- 4.2.8 Yield calculations

4.3 Other tunas

- 4.3.1 Geographical distribution
- 4.3.2 Maturity
- 4.3.3 Growth
- 4.3.4 Recruitment
- 4.3.5 Feeding
- 4.3.6 Catch/effort
- 4.3.7 Mortality/Emigration
- 4.3.8 Yield calculations

8 February
9:00 a.m.

- | | | |
|-----------|---------------------------------------|------------------------------|
| 5. | Identification of important questions | P.J. Hooker
(Chair group) |
| 6. | Actions needed to answer questions | Discussion |
| 7. | Project work programme | |
| 7.1 | Data collection | Discussion |
| 7.2 | Data reports | Discussion |
| 7.3 | Data analysis and interpretation | Discussion |
| 1:00 p.m. | Summary and closing of workshop | P.J. Hooker |

LIST OF PARTICIPANTS

A. FOOD AND AGRICULTURE ORGANIZATION (FAO)

Indo-Pacific Tuna Development and Management Programme (IPTP)

1. Dr. Paul J. Hooker
Programme Leader
Colombo, Sri Lanka

Indo-Pacific Tuna Development and Management Programme/South
China Sea Fisheries Development and Coordinating Programme
(IPTP/SCSP)

2. Dr. Trevor F. White
Fishery Biologist/Statistician/Programmer
Jakarta, Indonesia
3. Mr. Mitsuo Yesaki
Fishery Biologist
Manila, Philippines

Fisheries Resources and Environment Division

4. Dr. John A. Gulland
Chief, Marine Resources Service
Rome, Italy

B. INDONESIA

Marine Fisheries Research Institute (BPPL)

5. Mr. Jacobus Uktolseja
Sr. Tuna Biologist
6. Mr. Sedana Merta
Tuna Biologist

C. JAPAN

Far Seas Fisheries Research Laboratory

7. Dr. Tamotsu Yonemori
Chief
Pelagic Resources Division

D. PHILIPPINES

Bureau of Fisheries and Aquatic Resources (BFAR)

8. Atty. Reuben A. Ganaden
Senior Tuna Biologist
Fisheries Research Division

9. Mr. Said Mohammad Ali
Tuna Biologist
Fisheries Research Division

10. Mr. Noel Barut
Tuna Biologist
Fisheries Research Division

11. Ms. Lourdes Bautista*
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International Center for Living Aquatic Resources Management (ICLARM)

12. Dr. Daniel Pauly*
Associate Scientist

University of the Philippines

13. Dr. Virginia Aprieto*
Professor
College of Fisheries

Philippine Council for Agricultural Resources Research and Development (PCARRD)

14. Dr. Elvira O. Tan*
Director
Fisheries Research Division

* Observer

LIST OF PAPERS DISTRIBUTED

Indo-Pacific Tuna Development and Management Programme (IPTP)
Working Papers

- | | | |
|----|--|--|
| A. | IPTP/82/WP/2
SCS/80/WP/111 | Tuna Fishing Gears of the Philippines
by Arsenio S. de Jesus |
| B. | IPTP/82/WP/3
SCS/82/WP/3 | The Status of Tuna Fisheries in Indonesia
and the Philippines
by Trevor F. White and Mitsuo Yesaki |
| C. | IPTP/82/WP/4
SCS/82/WP/113 | Illustrated Key to Small and/or Immature
Species of Tuna and Bonitos of the South-
east Asian Region
by Mitsuo Yesaki |
| D. | D R A F T | Observations on the Biology of Yellowfin
(<u>Thunnus albacares</u>) and skipjack (<u>Katsuwonus</u>
<u>pelamis</u>) tunas in Philippine waters
by Mitsuo Yesaki |
| E. | IPTP/82/WP/5
SCS/82/WP/114
(D R A F T) | The Philippine Tuna Fishery and Aspects of
the Population Dynamics of Tunas in
Philippine Waters
by Trevor F. White |

Appendix IV

INDONESIAN TUNA TAGGING PROJECT CONSIDERATIONS - DR. T. YONEMORI

1. Characteristics of Philippine-Indonesian waters:
 - a) Nursery ground. Recruitment base of tunas
 - b) Unclassified stocks (Indian Ocean stock?)
(Pacific stock?)
(Independent self-sustaining stock?)
2. Objective of tagging (what is the most important/urgent subject?)
 - a) Migration pattern and stock identification?
 - b) Growth?
 - c) Mortality?
 - d) ?
3. Operational problems
 - a) Species. What species has the first priority?
 - b) Area and time. Any suggestions from previous study
 - c) Type of tag or tetracycline? (Dart type?)
(Anchor type?)
(Any other newly devised?)
 - d) Vessel and gears
 - Pole and line?
 - Purse-seine or ringnet?
 - e) Tagging cradle
 - f) Tagger
 - g) Advertisement (Poster/announcement - Indo-Pacific wide)
 - h) Rewards to tag finders
 - i) Applicator
- 4 Data processing system

Publications of the
INDO-PACIFIC TUNA DEVELOPMENT AND MANAGEMENT PROGRAMME
(INT/81/034)

Working Papers

- | | |
|-------------------------------|--|
| IPTP/82/WP1
SCS/80/WP/90 | Skillman, R.A. Tuna fishery statistics for the Indian Ocean and the Indo-Pacific. Colombo, Indo-Pacific Tuna Development and Management Programme, 1982. 86 p. |
| IPTP/82/WP/2
SCS/82/WP/111 | de Jesus, A.S. Tuna fishing gears of the Philippines. Colombo, Indo-Pacific Tuna Development and Management Programme, 1982. 47 p. |
| IPTP/82/WP/3
SCS/82/WP/112 | White, T.F. and M. Yesaki. The status of tuna in Indonesia and the Philippines. Colombo, Indo-Pacific Tuna Development and Management Programme, 1982. |
| IPTP/82/WP/4
SCS/82/WP/113 | Yesaki, M. Illustrated key to small and/or immature species of tuna and bonitos of the Southeast Asian region. Colombo, Indo-Pacific Tuna Development and Management Programme, 1982. 16 p. |
| IPTP/82/WP/5
SCS/82/WP/114 | White, T.F. The Philippine tuna fishery and aspects of the population dynamics of tunas in Philippine waters. Colombo, Indo-Pacific Tuna Development and Management Programme, 1982 (for printing) |
| IPTP/83/WP/6
SCS/83/WP/118 | Yesaki, M. The pelagic fisheries of the Philippines. Colombo, Indo-Pacific Tuna Development and Management Programme, 1983. 15 p. |
| IPTP/83/WP/7
SCS/83/WP/119 | Yesaki, M. Observations on the biology of yellowfin (<u>Thunnus albacares</u>) and skipjack (<u>Katsuwonus pelamis</u>) tunas in Philippine waters. Colombo, Indo-Pacific Tuna Development and Management Programme, 1983 (for printing) |

Note: Copies of these papers can be obtained by writing to the
Project Director, Colombo, Sri Lanka

IPTP publications

General Reports

- | | |
|--------------------------------|--|
| IPTP/82/GEN/1
SCS/GEN/79/24 | Report of the consultation meeting on management of tuna resources of the Indian and Pacific Oceans. Manila, Philippines, 26-29 June 1979. Colombo, Indo-Pacific Tuna Development and Management Programme, 1982 155 p. |
| IPTP/82/GEN/2
SCS/GEN/82/32 | A selected bibliography on tuna fisheries in the South China Sea region. Colombo, Indo-Pacific Tuna Development and Management Programme, 1982. 24 p. |
| IPTP/82/GEN/3
SCS/GEN/82/46 | Report of the consultation meeting of the joint Indonesian/Philippine Tuna Working Group. Manila, Philippines, 21-23 October, 1981. Manila, South China Sea Fisheries Development and Coordinating Programme or Colombo, Indo-Pacific Tuna Development and Management Programme, 1982. 64 p. |
| IPTP/83/GEN/4
SCS/GEN/83/47 | Report of the workshop on Philippine and Indonesian research activities. Manila, Philippines. Colombo, Indo-Pacific Tuna Development and Management Programme 1983 |

IPTP publications

IPTP Manual No. 1	Manual for the collection of historical
SCS Manual No. 2	data on tuna and tuna-like species in
	the Indo-Pacific Region Tuna Development
	and Management Programme, 1982.

IPTP publications

Periodic Progress Report

IPTP/PR/82/1 Hooker, P.J. Project progress report of the
Interregional Tuna Development and Management
Programme, 1 January - 30 June 1982. v.p.

IPTP/PR/82/2 _____ Project progress report of the
Interregional Tuna Development and Management
Programme. 1 July - 30 December 1982.

PUBLICATIONS OF THE SOUTH CHINA SEA FISHERIES DEVELOPMENT AND COORDINATING PROGRAMME

WORKING PAPERS

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