



REPORT OF THE PHILIPPINES TUNA FISHERY DATA COLLECTION WORKSHOP

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1. Opening

The Philippines Tuna Fishery Data Collection Workshop was held at the headquarters of the Bureau of Fisheries and Aquatic Resources in Quezon City, Metro Manila, from 20 to 21 October 2004. The workshop was attended by 46 participants from six Philippines government agencies, industry, the Secretariat of the Pacific Community and other agencies (see Appendix III).

The workshop was part of the Indonesia and Philippines Data Collection Project, which has been developed by the Preparatory Conference for the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific (Anon. 2003). The objectives of the IPDCP are (1) to collect and compile data that can be used to reduce the uncertainty of the assessments of tuna stocks in the Western and Central Pacific Ocean and (2) to improve the monitoring of tuna fisheries in the Philippines and Indonesia so that both countries will be able to fulfill their future obligations in regard to the provision of fisheries data to the Commission.

Prior to the workshop, from 8 to 31 July 2004, a review of the tuna fisheries and the current statistical system in the Philippines was conducted as part of the IPDCP by Dr Antony Lewis. The objectives of the workshop were to consider recommendations from the review and to plan for the increased coverage of surveys and port sampling that will commence following the workshop.

Funding for the IPDCP — including the review conducted by Dr Lewis, the workshop, and the increased coverage of surveys and port sampling — has been provided by the Australian Centre for International Agricultural Research, Chinese Taipei and the United States of America.

Atty Reuben Ganaden, Assistant Director of the Bureau of Fisheries and Aquatic Resources, welcomed the participants.

2. Appointment of chairperson and rapporteurs

Mr Ganaden was appointed chairman. Mr Timothy Lawson and Mr Peter Williams were appointed rapporteurs.

3. Adoption of the agenda

The agenda presented in Appendix I was adopted.

4. Indonesia and Philippines Data Collection Project

Mr Lawson presented background information concerning the Indonesia and Philippines Data Collection Project. It has long been recognised at international meetings of tuna fisheries scientists in the region (such as the Standing Committee on Tuna and Billfish and the PrepCon Scientific Coordinating Group) that the lack of accurate catch statistics, effort data, and species composition and size composition data for the Philippines and the Pacific Ocean waters of Indonesia has been responsible for much of the uncertainty in the stock assessments for bigeye and yellowfin in the Western and Central Pacific Ocean.

A proposal for monitoring the catches of highly migratory species in the Philippines and the Pacific Ocean waters of Indonesia (Anon. 2003) was presented at PrepCon VI (Bali, April 2004). For each

of the Philippines and Indonesia, there are two main components: (1) a review of the tuna fisheries and the current statistical system and (2) survey and sampling programmes.

The Australian Centre for International Agricultural Research has funded the review for the Philippines, which was conducted by Dr Lewis in July 2004, and is expected to also fund a similar review for Indonesia in 2005. The budget for surveys, port sampling and related activities, for two years in both countries, is USD 292,000. So far, Chinese Taipei and the United States have contributed USD 20,000 and USD 60,000 respectively. The currently available funds were allocated to activities in the Philippines by the Indonesia and Philippines Data Collection Steering Committee (Anon. 2004) that was formed at PrepCon VI for that purpose (and to review the status of project activities and future developments in regard to project funding).

The report of Dr Lewis' review and the present workshop will be considered at the seventh (and final) session of the Preparatory Conference, which will be held in Pohnpei, Federated States of Micronesia from 6 to 7 December 2004. It is expected that the Commission will formally adopt the Indonesia and Philippines Data Collection Project at its first meeting, which will be held in Pohnpei following PrepCon VII, from 9 to 10 December 2004. It is hoped that announcements of additional funding for the IPDCP will be made at the first meeting of the Commission by one or more of the other potential donors (the European Union, France, Japan, Korea and New Zealand).

5. Obligations for the provision of data to the Western and Central Pacific Fisheries Commission

Mr Lawson presented background information on the obligations of members of the Western and Central Pacific Fisheries Commission to provide tuna fisheries data. One of the early tasks of the Commission will be to adopt a resolution concerning the provision of data. The types of data to be provided are expected to be similar to those currently compiled by the SPC Oceanic Fisheries Programme. The three main types of data are: (1) estimates of annual catches, by gear type and species; (2) operational (i.e. logsheet) catch and effort data; and (3) size composition data. Other types of data may also be required. The Commission will develop a policy concerning standards of data quality. The following points concerning the provision of data to the Commission are relevant to the Philippines:

Annual catch estimates

- Estimates of total catches, by gear type, must be based on verifiable data. For example, survey data must be verified with either logsheet catch data or commercial data (such as stevedoring, cannery or market receipts).
- Estimates of the catch by species (based on survey data or landings data) should be corrected with port sampling data.
- Estimates of annual catches should be broken by geographic area, e.g., Philippines EEZ, Indonesia EEZ, Papua New Guinea EEZ and the high seas.
- For countries with archipelagic waters, such as the Philippines, the Commission will also require annual catch estimates for (a) archipelagic and (b) non-archipelagic waters.

Operational catch and effort data

- The catch rates derived from operational catch and effort data are indicative of fish stock abundance; hence, these data are essential for stock assessment. These data cover individual fishing operations, such as a longline or purse-seine set, and include the following data items:
 - the name of the fishing vessel;
 - the date and time of the fishing operation;
 - the position (latitude and longitude) of operation;
 - effort data (e.g., number of longline hooks set);
 - the catch per operation, by species; and
 - other data, such school type for purse-seine.

Size composition data

- Size composition data — i.e., the lengths or weights of individual fish — are indicative of the age composition of the stock; hence, these data are extremely useful for stock assessment.
- Size composition data can also be provided summarised into length or weight frequencies (i.e., the number of fish per size interval).
- Size composition data are usually collected by port samplers or onboard observers, but they can also be taken from packing lists for tuna that are exported by airfreight.

Other types of data that may be required by the Commission

- Unloadings data (to verify survey data and operational catch and effort data).
- Port sampling data (to estimate the species composition, in addition to the size composition).
- Observer data (to estimate the species composition, particularly for non-target species, in addition to the size composition).
- Vessel attributes (such as vessel length, gross tonnage, engine power, etc.) and gear attributes (such as presence of electronic aids for locating fish, net dimensions, etc.).

Data Quality Standards:

- The Commission will develop data quality guidelines to ensure that accurate and reliable data are provided by members. The guidelines will include procedures for verifying catch estimates, as well as minimum levels of coverage required for operational catch and effort data, species composition data, size composition data and observer data.
- Statistical procedures will be developed to evaluate the quality of data provided to the Commission.

Discussion

During the discussion following the presentation, it was noted that data quality standards will eventually be established by the Commission and that these will be based on past experience with data collection in tuna fisheries in the Western and Central Pacific Ocean and guidelines that have

been developed by other fishery commissions. In particular, the thirteen member agencies of the Coordinating Working Party on Fishery Statistics are in the process of working together to develop general guidelines concerning fisheries data quality.

The current statistical systems in Indonesia and the Philippines are different from the other countries in the WCPO, due to the diverse gear types employed, the wider range of species caught, the large number of vessels and landing points, and the magnitude of the catch. The data quality standards developed by the Commission may therefore be different for Indonesia and the Philippines in certain aspects, compared to the other countries, but the basic elements, such as the need for the verification of data, will remain the same.

There have been joint Indonesian and Philippines tuna fishery data collection projects in the past. The South China Sea project was undertaken during the late 1970s and was the precursor to the FAO/UNDP Indo-Pacific Tuna Programme, which provided assistance in tuna fishery for data collection in these countries until the early 1990s. Data from the Philippines, going back to 1980, that were collected by these programmes and are held by SPC are tabled in Williams (2002)¹.

Some logbook data have been made available from the Chinese Taipei longline vessels unloading in Davao, although there was some doubt with regards to the validity of the positional information. It was acknowledged that observers and VMS were the only way to verify positions reported on logsheets. The merits of using logsheets, observers and other forms of data collection to obtain finer-scale geographic information on catch and effort was discussed.

It was noted that the Commission may decide to allocate catch or effort quotas based in part on the historical time series of catches taken by each of the fishing nations. It will therefore be in the interest of the Philippines to provide a complete and accurate historical record of annual catches.

6. Review of the tuna fisheries

Dr Lewis presented a review of the tuna fisheries based on information that he compiled during his visit to the Philippines in July 2004 (Lewis 2004). The following information was presented. Catch estimates were provided by the Bureau of Agricultural Statistics (unless otherwise noted).

General

The Philippines EEZ covers 2.24 million km². The population is 80 million. There are 14 administrative regions plus NCR, with 57 provinces. The Philippines EEZ borders the Indonesian EEZ, the Chinese Taipei EEZ, and several EEZs in the South China Sea area. Maritime boundaries for the Philippines are largely in dispute.

There are two broad marine capture fishery classifications. Municipal fisheries include vessels less than or equal to 3 gross tons; are a vital contributor to food security; operate within 15 km of shore; and caught an estimated 857,000 tonnes of all species in 2002 and 922,000 tonnes in 2003. Commercial fisheries include vessels greater than 3 gross tons; market catches for fresh

1 P. Williams. 2002. Current status of data available from the Indonesian and Philippines domestic tuna fisheries. Working Paper SWG-8, Fifteenth Meeting of the Standing Committee on Tuna and Billfish, 22-27 July 2002, Honolulu, Hawaii, United States of America. Oceanic Fisheries Programme, Secretariat of the Pacific Community, Noumea, New Caledonia.

http://www.spc.int/OceanFish/Html/SCTB/SCTB15/swg_8.pdf

consumption, local processing or export; fish outside 15 km from shore, in the Philippines EEZ and beyond; and caught an estimated 1,042,000 tonnes of all species in 2002 and 1,110,000 tonnes in 2003.

The estimated total production from marine fisheries in the Philippines was 1.9 million tonnes in 2002 and 2.0 million tonnes in 2003.

Municipal fisheries

The municipal fisheries are multi-species and multi-gear. Production data are collected from hundreds of landing sites. Small pelagics and tunas are the most important components.

The 2002 catch of oceanic tunas was estimated to be 63,000 tonnes (including 37,000 tonnes of yellowfin and 26,000 tonnes of skipjack) and 70,000 tonnes of neritic tunas (frigate tuna, bullet tuna and eastern little tuna). The catch is mostly of small fish, caught in association with payaos, but some larger fish are caught by handline. Production is difficult to measure, but has probably been stable in recent years. Most of the catch is marketed locally for fresh consumption.

Commercial fisheries

Tunas are an important component of commercial production. The estimated catch of oceanic tunas in 2002 was 146,000 tonnes (15% of the total Philippines catch), while the estimated catch of neritic tunas was 126,000 tonnes.

Vessel types include large (greater than 250 gross tons) purse seiners, small seiners, ringnet vessels, handliners, trollers and gillnetters. Commercial vessels fish in the waters of the Philippines and 'overseas'. A small number of longliners operate in the Western Pacific (and also in the Atlantic and Indian Oceans). Foreign longliners unload in Davao.

The main production and landing region is southern Mindanao (General Santos and Zamboanga), which represents greater than 60% of official landings. Production is increasing, although possibly not fully documented (especially overseas catches).

Vessels are registered with the Maritime Industry Authority, inspected by the Coast Guard and licensed by the Bureau of Fisheries and Aquatic Resources. A moratorium on licensing and an inventory of fishing vessels was due to commence on 1 October 2004.

There is a large capacity for processing catches by the commercial sector, including canning, smoking and freezing fish.

Tuna fishery gear types

The fishing gears used to catch tuna in the Philippines can be categorised as follows:

- Hook and Line
 - large fish handline
 - small fish handline
 - trolling
- Longline
 - domestic (fresh/chilled)
 - distant water (frozen)

- Drift Gillnet
- Surround Nets
 - ring net
 - small purse seine
 - large purse seine
- Lift Nets
 - basnig
- Fish Corrals and Traps

Handline

The estimated catch by hook-and-line in 2002 is 70,000 tonnes (based on the breakdown by gear type for 1996, the most recent year for which this information is available).

‘Large fish’ handliners target large fish primarily during the day. ‘Small fish’ handliners target small fish at night in association with payaos. Handliners also fish in association with dolphins in the Moro Gulf.

Handliners are classified as municipal vessels, although some are greater than 3 gross tonnes. Government is currently proposing a new sector category for handliners that will be distinct from municipal and commercial fisheries.

Statistical coverage of the number of vessels is poor, with few vessels registered in the Commercial Vessel Registration system, although many are registered with the Maritime Industry Authority and the Coast Guard.

Most of the handline catch is landed in General Santos; an estimated 2,500 vessels may have landed 25,000 – 30,000 tonnes of mostly large fish. Handliners also land their catch in other ports throughout the Philippines.

The majority of the large fish caught by handliners are now believed to be taken outside Philippines waters. Trip length has gradually increased and vessels travel further from port.

Some handline-caught fish are exported fresh (sashimi), but most are now processed locally (tasteless smoke).

Geographic distribution of the handline catch:

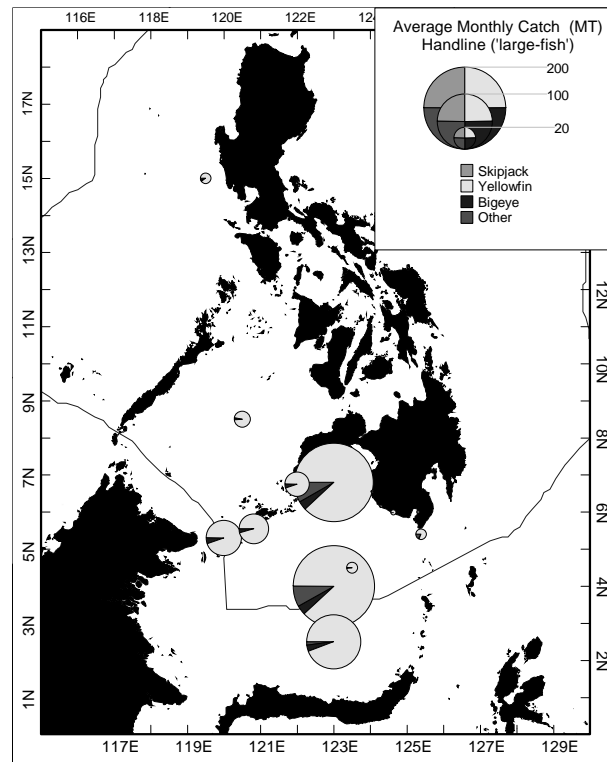


Figure 1. Average monthly catch distribution for the handline ('large-fish') fleets, 1997–2002

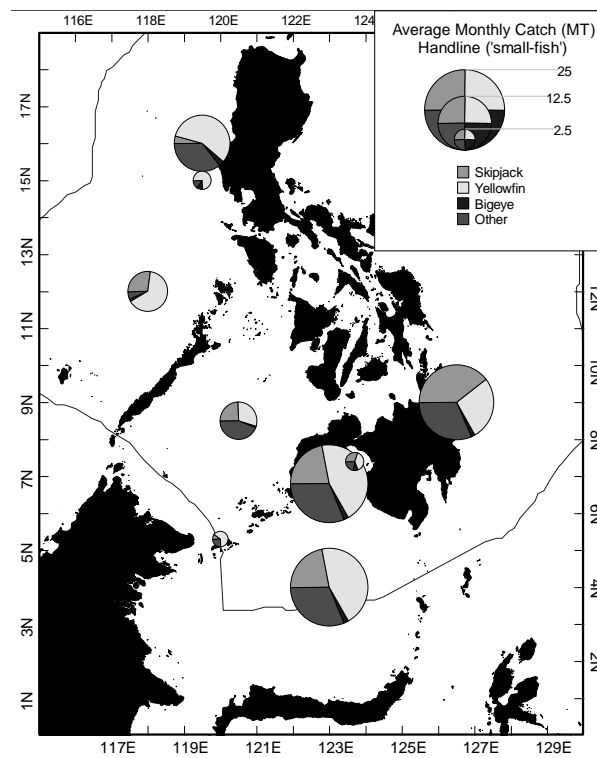


Figure 2. Average monthly catch distribution for the handline ('small-fish') fleets

The information currently available suggests that the estimated hook-and-line catch in 2002 consisted of 35,000 tonnes taken by ‘large fish’ handline, 30,000 tonnes by ‘small fish’ handline and 5,000 tonnes by trollers, for a total of 70,000 tonnes.

Longline

The domestic fishery is dominated by handline, but there are reportedly about 10–14 longliners, using milkfish as bait to catch about 2,000 tonnes per annum.

Distant-water longliners flagged in the Philippines have fished in the southern part of the Western and Central Pacific Ocean (and in the Atlantic and Indian Oceans) since 1998. There are up to 11 vessels catching about 4,500 tonnes per annum, although the catch may be declining. These vessels now target bigeye. Their catches are reported to ICCAT and IOTC.

Foreign longliners, primarily vessels of Chinese Taipei, unload their catches in Davao, since transshipment was authorised at this port in 1995. About 2,000 tonnes of tuna are exported by airfreight and about 3,000 tonnes are retained.

Surround nets

About 100 ringnet vessels catching about 400 tonnes per vessel may have taken 37,400 tonnes in 2002. These vessels fish small pelagics and tunas associated with payaos closer inshore. Catches are landed fresh for mostly local markets.

About 110 small (less than 250 gross tons) purse seiners (‘baby seiners’) catch about 800 tonnes per annum, for a total annual catch of about 90,000 tonnes. These vessels fish in the waters of the Philippines and Indonesia, in association with payaos. Catches are transported fresh by carriers to canneries and local markets.

A fleet of 52 large (greater than 250 gross tons) purse seiners (‘super seiners’), with about 250 service boats, caught approximately 200,000 tonnes in 2002. The average catch per vessel is about 3,800 tonnes. Virtually all fish are caught outside Philippine waters, mostly in association with payaos. Carriers transport most fish (frozen) to canneries in General Santos and Zamboanga, but also to canneries in Indonesia and Papua New Guinea.

Other gears

Drift gillnet vessels catch about 4,000 tonnes of oceanic tunas, primarily in the Sulu archipelago.

Bag net (basnig) was formerly an important tuna-fishing gear, but now targets small pelagics, with incidental catches of small tunas. No catch data are available for this gear type.

Unclassified gear types include beach seines, fish corrals and other catches not elsewhere included (e.g., basnig). The estimated unclassified catch in 2002 was about 9,400 tonnes.

Best estimate of the total catch

The total catch of oceanic tunas by Philippines-flagged vessels in 2002, both within and beyond the Philippines EEZ, has been estimated in the following table, by sector and gear type, from information provided by BAS, the Philippine Fisheries Development Authority, industry, the Secretariat of the Pacific Community and other sources. The total catch in 2002 is estimated to be 406,500 tonnes.

Table 1. Best estimates of the total catch, by Philippines-flagged vessels in 2002, by sector and gear type. The best estimates are compared to estimates published by the Bureau of Agricultural Statistics.

Catch /area GEAR	MUNICIPAL		COMMERCIAL		
	Philippines	Overseas	Philippines	Overseas included	Overseas not included
Large handline	17,500	17,500			
Small handline	30,000				
Troll	5,000				
Longline (domestic)			3,000		
Longline (distant water)					1,700
Ring net			18,500	18,500	
Small p/ seine			43,500	43,500	
Large purse seine			1,300		196,500
Unclassified	10,000				
TOTAL	62,500	17,500	66,300	62,000	
	80,000		128,300		198,200
BAS figures (2002)	63,300		146,400		assume not included

The best estimate for the municipal sector differs from estimates provided by BAS by +16,700 tonnes, with the large handline catch all included in the municipal sector, while the best estimate for the commercial sector (excluding overseas catches of large purse seiners) differs by –18,100 tonnes. The best estimate of the combined municipal and commercial catch therefore differs by only –1,400 tonnes.

The catch estimates published by BAS represent production within the waters of the Philippines; hence, these statistics do not cover the overseas catches of about 200,000 tonnes that are taken by large purse seiners.

Tuna landing centres

There are eight ports managed by PFDA. General Santos accounts for the largest amount of tuna. There are about 100 privately-managed landing centres, although these are not fully documented. Landings are also made directly to canneries in General Santos and Zamboanga. Landings to overseas ports and canneries include about 60,000 tonnes landed at Bitung, Indonesia and 30,000 tonnes at Madang, Papua New Guinea.

Processing

There are currently eight canneries (six in General Santos and two in Zamboanga) producing an annual pack of about 250,000 tonnes (10.5 million cases), most of which (90%) is exported. The source of fish is primarily Philippines purse seiners, while imports account for about 30,000 tonnes. The markets for export are primarily the United States of America and the European Union. The value of the exports is about USD 150 million.

Frozen smoked fish are processed at 12 plants (nine in General Santos), from 25,000 tonnes of tuna caught by handliners and longliners. The markets are also the United States of America and the European Union; and the value of exports is about USD 30–40 million.

Fresh tuna exports are now much reduced, but still amount to 100–200 tonnes per month in General Santos (2,000 tonnes per annum). Landings of fresh tuna by Chinese Taipei longliners in Davao are also exported; the value of these exports is about USD 6 million.

Discussion

During the discussion, it was noted that catches taken by foreign vessels in Philippines waters — primarily the Chinese Taipei longliners that unload in Davao — are included in estimates of domestic tuna production, but that the Commission will require that catches by domestic and foreign vessels be reported separately. The issue is further complicated because the reliability of information concerning the location of the catch that is provided by the Chinese Taipei longliners is questionable. In this regard, it was again noted that VMS and observers will be needed to verify the location of the catch. It was also noted that some domestic commercial vessels do not have GPS and so are currently unable to report the location of their catches to the accuracy that will be required by the Commission.

7. Current status of the Survey of Commercial and Municipal Fisheries

Mr Romeo Recide presented information concerning the current status of the Surveys of Commercial and Municipal Fisheries conducted by the Bureau of Agricultural Statistics.

Prior to 1988, the generation of fishery statistics was the responsibility of BFAR. In 1987, Executive Order 116 mandated BAS — formerly the Bureau of Agricultural Economics — to do the collection, compilation, analysis and dissemination of fishery statistics. Eleven staff were transferred from BFAR to BAS, but the BAS operating budget was not increased accordingly; hence, no funds were available to conduct the commercial and municipal surveys. In 1988, BAS started collecting fishery data through ‘probability’ and ‘non-probability’ surveys and the use of secondary sources. From 1990 to 1995, funds for conducting surveys were made available through the National Fishery Information System. Since that time, BFAR has provided BAS with funds for surveys, but the level of funding has been variable and has usually allowed only two months of sampling to take place annually. The BFAR funds are not usually provided until later in the year; hence, in recent years, the surveys have taken place only in the fourth quarter.

BAS collects and compiles data for (1) Commercial Fisheries, (2) Municipal Fisheries (Marine and Inland) and (3) Aquaculture.

Commercial fisheries

The Survey of Commercial Fisheries covers fishing operations that make use of boats of more than 3 gross tons. The objective is to estimate the volume and value of the catch, by species and quarter, at the national, regional and provincial levels.

‘Probability’ surveys are conducted every other day at fish landing centers, which are selected for sampling from a sampling frame of commercial fish landing centres by province. The sampling design is two-stage random sampling, with a first stage for landing centres and a second stage for fishing vessels. Landing centres are categorised into (a) ‘top producing’ centres, (b) major fish landing centres and (c) all other fish landing centres. All landing centres in the ‘top producing’ category are sampled, while those in the other two categories are randomly selected. The number of

commercial fish landing centres sampled from October to November 2003 was 144 (compared to 300 during 1990–1995, when the surveys were funded by NFIS).

The collection of data is done by Contractual Data Collectors, who use a structured questionnaire to interview the vessel operator or fisherman associated with the sampled vessel. Interviews are conducted during the peak unloading time, which lasts from two to four hours. About 80% of the cost of the surveys is for employing the CDCs.

The survey data are processed within Provincial Operation Centers using database systems developed by the BAS Central Office. The POCs have an average of 7–8 staff.

When funds are not available to employ CDCs to conduct surveys, ‘non-probability’ surveys are conducted. Key informants (such as fishing boat operators, fishermen or traders) are interviewed by POC staff on a quarterly basis. The informants are asked to give their evaluation regarding changes in unloading volumes at the landing centre compared to previous periods and their responses are recorded on a monitoring form. Thus, subjective information is collected in an objective manner.

Unloading volumes are also collected by POC staff on monitoring forms from fishing ports managed by PFDA, landing centres managed by Local Government Units and privately-managed landing centres.

For provinces for which ‘probability’ surveys have been conducted, catches are estimated from the survey data and other data on a monthly basis. For provinces for which ‘non-probability’ surveys have been conducted, catches are estimated on a quarterly basis by applying the average of the reported percentage changes to catch estimates for the same quarter in the previous year.

Municipal fisheries

The Survey of Marine Municipal Fisheries covers fishing operations by vessels of 3 gross tons or less or operations conducted without the use of vessel. ‘Probability’ surveys are conducted at landing centres that are randomly selected from a list of municipal landing centres by province. From October to November 2003, 358 landing centres in 64 provinces were sampled every other day, out of a total of 8,205 municipal landing centres. During this period, ‘non-probability’ surveys were conducted by POC staff in eight LGU and privately-managed municipal landing centres. The collection of data and the estimation of catches are done in the same manner as for commercial fisheries. When funds for ‘probability’ surveys are not available, ‘non-probability’ surveys are conducted at the eight main landing centres.

Data review and analysis

Data are reviewed in terms of levels and changes compared to previous data. The process starts at the provincial level, then the regional level. At the national level, the data are reviewed in regard to (a) level of the estimates; (b) the completeness of desired information and (c) the presence of additional information.

Data series

Catch estimates are maintained in a data series — Provincial estimates of fish production and value by region, by province and by major fishery sector : Commercial, Municipal and Aquaculture from 1980 to 2000.

Data dissemination

Fishery statistics are disseminated through the following documents:

- Quarterly performance reports – contains volume and value of fish production for the reference quarter.
- Quarterly statistical tables – output tables by fishing sector (commercial, municipal and aquaculture); contains data series by province, by region and other output tables upon request of users.
- Annual statistical handbook (Fisheries Statistics of the Philippines) – presents three-year (previously five-year) data series ; contains volume and value of production for all fisheries sectors.

Utilization

The Department of Agriculture, BFAR and other government agencies use BAS catch statistics in the formulation of policies and production programs for the fishery industry. Students, researchers and the private sectors are also users of more detailed information.

Constraints and limitations

Frames (i.e., the lists of landing centres) get outmoded quickly; the latest frame for Commercial and Municipal Fisheries Surveys was compiled in 2000.

Future Directions

Alternative methodologies for the Survey of Commercial and Municipal Fisheries (such as coordinating with fishing boat operators, fishing establishments and the Tuna Canneries Association of the Philippines) will be explored as possible sources of catch and unloadings data.

A nationwide update to the frames of landing centres is planned.

Discussion

During the discussion, it was noted that the catch of oceanic tuna has increasingly been taken outside Philippines waters — in Indonesian waters, Papua New Guinea, the high seas and elsewhere. While information on catches outside the Philippines may be available from some fishing companies, a logsheet system to collect operational catch and effort data on a systematic basis is required. In fact, the submission of logsheets is a condition of licensing, but the condition is not enforced. It was further noted that around 15 fishing companies are responsible for 50% of the catch and that three companies control about a thousand pump boats, so the introduction of logsheets may not be as difficult as anticipated. In the past, when catch data have been provided by industry, their reliability has been questionable. With recent developments related to the establishment of the Commission, industry is now much more cooperative.

It was noted that the BAS estimates of annual catches, in their present form, will not satisfy the Commission's criteria for the provision of data, when they are established. The annual catch estimates are currently separated by sector, with estimates for skipjack and 'tuna' (i.e., yellowfin, bigeye and marlins combined), but they must also be separated by gear type and by species. Operational (logsheet) catch and effort data will also be required, at least from commercial vessels.

It was also noted that the BAS survey data have not been used to their full potential. The survey data include information regarding fishing effort — the number of days fished per trip by commercial vessels and the number of hours fished per trip by municipal vessels — but neither effort nor catch rates are reported. The raw BAS survey data could also be used to estimate the variance of the annual catch estimates through sub-sampling.

The availability of historical BAS survey data was discussed and it would appear that the raw survey data are available for 2003 only. Apparently, the raw data may have been discarded after they were used to estimate catches. It was suggested that the raw survey data should be systematically entered on computer, with the computer files backed-up on a regular basis.

8. Current status of the National Stock Assessment Program

Mr Noel Barut presented information concerning the National Stock Assessment Program managed by the National Fisheries Research and Development Institute in collaboration with BFAR.

Objectives of NSAP

NSAP was designed to:

- assess the status of marine resources in support of fisheries management;
- assess the effects of management activities, e.g., the Fisheries Sector Program;
- strengthen the capability of regional offices in regard to resource assessment, management and development;
- generate reliable time-series of data for all fishing grounds of the country; and
- conduct studies on stock structure using length and weight measurements, and genetics.

The long-range objectives of NSAP are (1) to develop and institutionalise the capability of each administrative region in resource assessment and (2) to collect reliable data for the management and conservation of the country's marine resources in order to attain sustainable development and exploitation.

The short-range objectives of NSAP are (1) to determine the trend of the seasonal distribution, relative abundance, size and species composition of major marine resources in each fishing ground; (2) to provide estimates of population parameters of the major marine resources in each fishing ground; and (3) to complement BAS in the collection of fisheries statistics.

Scope of NSAP activities

NSAP activities consist of (1) the orientation and training of enumerators in regard to fish identification, sampling methods and data collection forms, and the identification of fishing grounds to be assessed; (2) the implementation of an inventory of fishing vessels, by gear type, and port sampling; and (3) data encoding, data analysis and the publication of technical reports.

NSAP activities are implemented in each of the administrative regions in the Philippines (Figure 3). The original and current numbers of landing sites sampled, enumerators and encoders are presented by region in Table 2. The number of landing sites sampled has declined from 355 in 1996 to 166 in 2004 due to funding constraints.

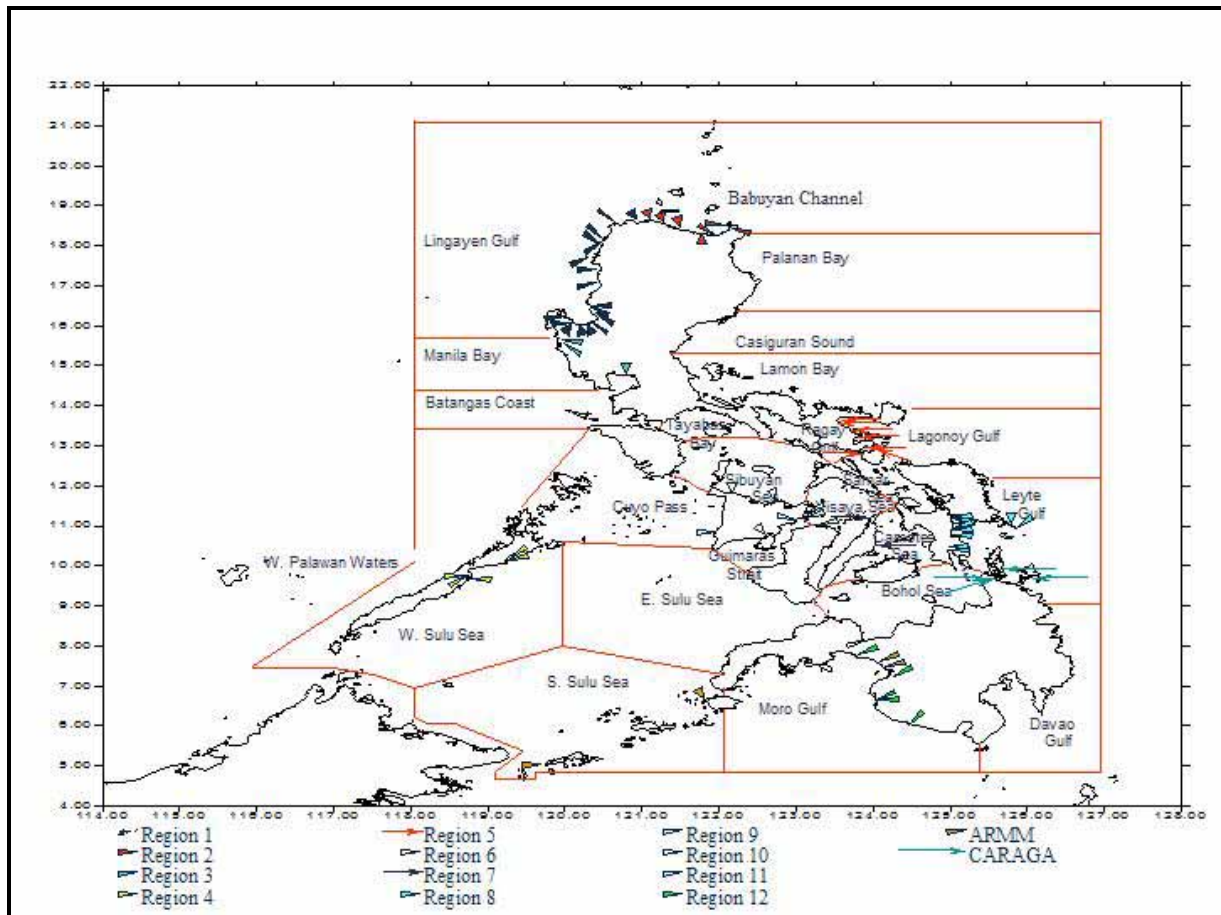


Figure 3. Administrative regions in the Philippines

Table 2. Original and current numbers of landing sites, enumerators and encoders in the National Stock Assessment Program

Region	Original			Existing		
	Landing Sites	Enumerator	Encoder	Landing Sites	Enumerator	Encoder
I	22	22	2	22	22	2
II	20	18	2	19	12	1
III	7	10	2	6	9	2
IV A/B	34	15	2	3/6	6/6	2/1
V	7	14	2	7	13	2
VI	9	17	3	10	15	3
VII	10	17	2	8	17	3
VIII	10	13	2	10	8	1+1proc
IX	7	14	2	13	21	2
X	14	12	1	14	12	1
XI	15	20	2	21	21	2
XII	5	10	3	11	16	1+2proc
ARMM	9	17	2	10	14	1
CARAGA	6	15	1	6	12	1

NSAP database and website

The NSAP database is designed to store data on the server at the NFRDI central office in Quezon City and the workstations in the NSAP regional offices. The data encoded on the workstations within each region can be synchronized to the server in the central office: using a simple modem and a telephone landline, the workstations connect to the server, and vice versa, through the WinNT Remote Access System. At present, only about half of the regional offices are connected to the server.

The NSAP Information Technology Group at the NFRDI central office is developing a website – <http://www.nsap.com> – with program information and regional fisheries profiles.

Discussion

During the discussion, the issue of funding for NSAP was raised. Permanent funding of PHP 30 million (USD 532,000) per annum is evenly distributed to each of 15 regions, i.e. PHP 2 million (USD 35,500) per region. However, it would appear that some of these funds are being used for other purposes in certain regions or are not released in full to the regional offices.

The program was reviewed favourably in 2003 after six years of operation and will continue. Detailed stock assessments have been conducted for several species, although not tuna. Future work may be directed to the collection and analysis of biological data.

The target level of coverage for NSAP sampling is 10% of the catch. Sampling takes place during two out of every three days. At General Santos, for example, handline catches are sampled for 10 days per month, while all other gear types combined are sampled for 10 days per month. The target levels of coverage are not being reached in certain regions; hence, the need for additional funding.

It was noted that the delay in the processing of NSAP data is such that the NSAP data are not being used on a regular basis by BAS for the estimation of production, which takes place on a quarterly basis. It was suggested that the BAS estimates should be revised using the NSAP data, when they become available, but it would appear that there is increasing resistance from some users of the BAS production estimates to the estimates being changed after their initial dissemination. In this regard, it was further noted that revisions of catch estimates based on the availability of new data was an essential practice in fisheries statistics.

9. Availability of historical and current catch and effort data from industry

Mr Dexter Teng of TSP Marine Industries commented that the best estimates of catches of tuna (Table 1) were reasonable.

Mr Reggie Cabana indicated that Frabelle Fishing Corp would be willing to provide historical catch and effort data covering large purse seiners and that such data may be available back to the late 1990s. Ms Dela Merced also indicated that RBL Fishing may be able to provide catch and effort data for large purse seiners from the late 1990s onwards.

It was noted that some BAS catch estimates were significantly below export statistics and that, in addition to customs data, information on product flows obtained from industry, particularly processors, could also be used to verify catch estimates.

10. Review of the current statistical system

Dr Lewis presented the recommendations from his review of the current tuna fisheries statistical system. Recommendations concerning general issues were followed by those concerning BAS and NSAP in particular. The issues and recommendations are summarised below. Further information is presented in Lewis (2004).

General issues

1. *Estimation and reporting of catches taken both inside and outside the Philippines EEZ*

The current system does not monitor catches of Philippines-flagged purse seiners taken outside the Philippines EEZ. Also, estimates of catches by 'large-fish' handliners, small purse seiners and ringnetters that are taken outside the Philippines EEZ are monitored, but not reported separately from those taken inside the EEZ. The Commission will require catch estimates for all Philippines vessels, reported separately for both inside and outside the Philippines EEZ. Therefore, it is **recommended** that the data collection system be modified to compile and report separate statistics for catches inside and outside the Philippine EEZ, including the large purse seiners that are not currently monitored outside the Philippines EEZ.

2. *Collection of operational catch and effort data on logsheets*

The collection of operational catch and effort data on logsheets should greatly improve the availability of data covering the commercial sector. Furthermore, operational catch and effort data will be a requirement of the Commission. It is therefore **recommended** that a system for the collection of operational catch and effort data on logsheets be implemented, beginning with large purse seiners and then extending to other commercial vessels.

3. *Publication of annual tuna statistics*

An annual report on tuna fisheries in the Philippines, including information such as (a) the number of vessels active, by sector, gear type and size class, and (b) estimates of annual catches, by sector, gear type, geographic area (each EEZ and the high seas) and species, will be of interest to all stakeholders. This information will also be required by the Commission. It is therefore **recommended** that vessel numbers, catch statistics and other information be compiled and reported, both on the Internet and in hardcopy, on an annual basis.

4. *National Tuna Coordinator*

The current statistical system could be improved through better coordination among the various agencies and industry. It is therefore **recommended** that a National Tuna Coordinator be appointed with the following duties: (a) coordinate the flow of NSAP data from the regional offices to NFRDI; (b) coordinate the exchange of tuna fishery statistics among BAS, BFAR, NFRDI, PFDA, NSO, MARINA and industry; (c) coordinate the implementation of a logsheet system for the collection of operational catch and effort data from commercial vessels (see recommendation #2); (d) prepare and publish an annual report on tuna fisheries (see recommendation #3); (e) liaise with the Western and Central Pacific Fisheries Commission regarding matters related to tuna fisheries data and research; and (f) other duties as required.

5. *Historical time-series of catch statistics*

Historical catch statistics that are not included in current annual catch estimates, such as catch statistics for large purse seiners operating outside the Philippines EEZ, may be available from

various sources, such as industry and SPC. It is therefore **recommended** that historical catch statistics be compiled, for the period from the early 1990s onwards.

6. *Tuna fishing vessel inventory*

Information on the numbers of tuna fishing vessels licensed, the numbers of vessels actively fishing, and basic vessel and gear attributes (such as overall length, gross tonnage and gear type) are required on a timely basis. It is therefore **recommended** that a tuna fishing vessel inventory be developed and updated on an annual basis.

7. *Data verification procedures*

The current statistical system does not incorporate procedures for the verification of data. The verification of data is an essential component in any statistical system and will be required by the Commission. It is therefore **recommended** that procedures be developed for the verification of commercial and municipal survey data, unloadings data, operational catch and effort data, and other types of data as appropriate.

8. *Handline data*

The anticipated establishment of a new sector category for handline offers a good opportunity for improving handline catch statistics. It is therefore **recommended** that handline catch statistics be reviewed and effort expended to improve handline catch statistics, following the establishment of a sector category for handline.

Issues concerning the Bureau of Agricultural Statistics

9. *Long-term funding for commercial and municipal surveys*

The availability of government funding for the commercial and municipal surveys is unpredictable and, when available, the level of funding is insufficient for reliably estimating annual catches of tuna. In particular, the current levels of funding do not allow for catches to be reliably estimated by gear type. Catch estimates based on the ‘non-probability’ surveys, which are conducted when funding for the ‘probability’ surveys is not available, are not considered reliable and will not be consistent with the data standards that will be established by the Commission. The Indonesia and Philippines Data Collection Project of the Commission will assist the Philippines with funding of the commercial and municipal surveys of tuna landing centres; however, this funding will be available for only a limited duration. It is therefore **recommended** that a high priority be given to securing long-term funding for the commercial and municipal surveys of tuna landing centres.

10. *Survey frame*

The municipal and commercial surveys depend on the accuracy of the list of landing sites in the survey frame; however, the frame has not been updated since 2000. It is therefore **recommended** that funding be secured and the survey frame of landing centres be updated as soon as possible.

11. *Quarterly consultations with BFAR*

BAS currently holds quarterly consultations with BFAR in several, but not all regions, as part of the process of reviewing data and estimating tuna production. It is **recommended** that quarterly consultations between BAS and BFAR be formalised and extended to all regions.

12. Species composition

Bigeye and marlins are not separated from yellowfin in the current estimates of annual tuna production reported by BAS; instead, yellowfin, bigeye and marlins are reported together as ‘tuna’. It will be of interest to stakeholders to report yellowfin, bigeye and marlins separately, and this will be a requirement of the Commission. It is therefore **recommended** that the commercial and municipal surveys be modified to collect data on catches of yellowfin, bigeye and marlins separately, and that BAS estimate and report catches of yellowfin, bigeye and marlins separately.

13. Compilation of data from other sources

The estimates of annual catches by BAS are based primarily on survey data collected by BAS and landings data provided by PFDA, with some input of NSAP data from NFRDI. However, catch data may be available from other sources, such as private fishing ports, canneries and fishing companies, and export statistics are available from NSO. It is therefore **recommended** that BAS compile catch, unloading and export data from private fishing ports, canneries, fishing companies and NSO, and incorporate these data into the data review and estimation procedures.

14. Revision of regional catch statistics

The administrative regions in the Philippines (Figure 3) were restructured in 2002. It is **recommended** that BAS revise the time series of tuna catch statistics to reflect the restructured administrative regions.

Issues concerning the National Stock Assessment Program

15. NSAP to continue as a high priority activity

The species composition data, length data and unloadings collected by the NSAP are essential for the assessment of tuna stocks in the Western and Central Pacific Ocean. It is therefore **recommended** that NSAP be continued as a high priority activity, bearing in mind that regional priorities need to be reassessed periodically.

16. NSAP data inventory

NSAP data from some regions have not been forwarded to the NFRDI in Manila and may be in danger of being lost. It is therefore **recommended** that (a) the NSAP data inventory system be further developed to monitor the flow of data; (b) all NSAP data be forwarded from the regional BFAR offices to NFRDI on a regular basis; and (c) that data that have not yet been forwarded to NFRDI (e.g., Region XII data for 2002–2004) be rescued and forwarded to NFRDI as soon as possible.

17. Computer hardware and software, and training

Not all regional BFAR offices are equipped with adequate computer hardware and software for the processing and use of NSAP data, and not all regional staff have been adequately trained in this regard. It is therefore **recommended** that computer hardware and software be provided or updated, where necessary, and that regional staff be trained in their use.

Data Collection forms

Mr Williams presented a review of BAS and NSAP data collection forms (Williams 2004). In introducing these reviews, he noted that the Standing Committee on Tuna and Billfish established

minimum standards for catch and effort logsheets in 1998 and subsequently conducted reviews of the logsheets used in the WCPO. In acknowledging the importance of the Philippines tuna fishery, SCTB recommended at its sixteenth meeting in July 2003 that the tuna fishery data collection forms used in the Philippines should also be reviewed. It was noted that the forms used in the Philippines are used to collect information from multi-gear, multi-species fisheries, and not just tuna fisheries.

BAS data collection forms

In order to obtain the most accurate estimates of total monthly catch by landing centre and gear, BAS should consider obtaining the total unloaded catch and the total number of vessels unloading, by gear, for days when sampling is not undertaken. This can be obtained through other sources (e.g., PFDA) that are responsible for collecting total unloadings for each day.

Consider collecting more effort information on the COMM/MUN Form 1, or simply use the BAS Form SCM 1 at government and private fishing ports.

NSAP data collection forms

The forms should include a field to record whether the weights of fish refer to whole weights or processed weights.

NSAP port samplers are instructed to use certain units of length (millimeters or centimeters) depending on the species of the fish. The forms should include a field to record the unit of the length measurements.

In order to obtain the most accurate estimates of total monthly catch by landing centre and gear type, the NSAP programme should consider collecting the total number of vessels unloading and total unloadings, by gear type, for days when sampling is not undertaken. For some ports, this information is already being collected by other agencies (e.g., PFDA).

NSAP database

The following suggestions regarding the NSAP database were also made.

For some gear types, there have been up to three different measures of effort recorded by the NSAP sampler. The database system should therefore allow for up to three different measures of effort to be stored for each unloading. However, it was also suggested that, in the future, effort data should be collected in a standard unit of effort for each gear type.

The units of fish lengths in the database need to be reviewed to ensure that they are consistent.

The location of the catch should be recorded for the sampled vessels. In this regard, a system of geographic grids has been proposed and will be reviewed in the coming year.

A data inventory should be implemented to ensure the coordination of the processing of NSAP data. A basic version of a data inventory already exists; however, it does not refer to data collected but not yet processed.

Procedures for the regular transfer of processed data between the regional offices and the central office should be implemented.

A list of ports at which tuna are unloaded should be compiled to determine the coverage of the NSAP data.

The spelling of the names of the fishing grounds should be standardised in the NSAP database.

Discussion

During the discussion following the presentations, the following issues were raised:

Catch and effort logsheets

There was a consensus that a catch and effort logsheet system is essential and should be implemented as soon as possible. About 80% of the catch by Philippines-flagged vessels are taken by about 300 large and small purse seiners and ringnetters; hence, good coverage could be obtained by implementing a logsheet system for these vessels.

Logsheets developed by the SPC/FFA Tuna Fishery Data Collection Committee are currently being used by Philippines purse seiners operating in Papua New Guinea, and these logsheets could also be used by the other Philippines seiners and ringnetters. The DCC logsheets are available on the website of the SPC Oceanic Fisheries Programme:

<http://www.spc.int/OceanFish/Html/Statistics/Forms/index.htm>

Fishing vessels are already required to submit logsheets for licensing, but a Fisheries Administrative Order may be necessary to implement the logsheet system.

National Tuna Coordinator

It was suggested that the National Tuna Coordinator should be the head of one of the agencies concerned with tuna statistics and the participants agreed that Mr Barut of NFRDI would be an excellent choice. Mr Barut agreed to take on this role.

It was also agreed that an Assistant National Tuna Coordinator should be employed under the IPDCP to represent the National Tuna Coordinator and carry out the duties listed in Recommendation #4.

IUU fishing

Most of the catches unloaded by the Chinese Taipei longliners in Davao are probably taken in the Philippines EEZ and should be considered IUU fishing since the location of the catches are not reported. Some vessels fishing in the Philippines EEZ unload their catch in the ports of other countries, such as Bitung (Indonesia) and elsewhere, and should also be considered IUU fishing since the catches are not reported to the Philippines or other governments. It was noted that a National Workshop on IUU Fishing had been held and that a recommendation from the workshop was to create a national task force to formulate a National Plan of Action on IUU fishing. Regional cooperation will be essential to monitor unreported catches and combat illegal fishing.

PFDA unloading data

It was noted that PFDA compiles statistics on the number of vessels unloading and total unloadings and that this information is extremely useful for estimating catches in the various fishing grounds. However, many of the vessels unloading in PFDA ports are carriers and therefore information on the name of the fishing vessel, the gear type and the dates and the locations of the catches are not currently available for these unloadings. On the other hand, the carrier vessels record some of this information for commercial purposes. It was therefore suggested that PFDA implement a data collection form for carriers to record information on the name of the fishing vessel, the gear type and the dates and the locations of the catches.

Collection of total number of vessels and total unloadings on days not sampled

It was recognised that the collection of the total number of vessels and total unloadings on days that are not surveyed or sampled is desirable for raising the NSAP sampling data to represent the total catch by gear type and species. However, in ports where this information is not already being collected, the availability of funds to employ staff to do so will be a limiting factor.

Action Plan

An action plan based on the recommendations above and incorporating the issues raised during the discussion is presented in Appendix IV.

11. Design and implementation of IPDCP activities in the Philippines

The participants considered the IPDCP activities for the Philippines presented in Anon. (2003), taking into account the discussions during the workshop. A small working group met to consider modifications to the project's activities and budget. The participants agreed to the working group's recommendation that the funds for data collection be equally divided between the BAS commercial and municipal surveys of tuna landing centres and the NSAP sampling at tuna fishery ports, and that the cost of an Assistant National Tuna Coordinator, based at NFRDI, also be covered, including salary, operating and publication expenses. The revised budget is presented in Appendix V.

The project duration is two years; however, funding is currently available for the first year only. In this regard, the potential donors were strongly encouraged to support the project and provide funding for the second year of data collection.

The participants recognised the importance of implementing the project by 1 January 2005, since the intention is to use the data to estimate tuna catches for the Philippines during the 2005 calendar year. In this regard, it was noted that it will not be possible for BAS or NFRDI to employ enumerators until the funds have been received; it is therefore important that the funds be transferred to BAS and NRDFI by the end of 2004.

12. Other matters

There were no other matters.

13. Closing

The participants thanked the Chairman for a job well done, BFAR for hosting the workshop, and NFRDI and SPC for organising it. Appreciation was also expressed for the support of the donors — the Australian Centre for International Agricultural Research, Chinese Taipei and the United States of America. The meeting was closed with a vigorous round of applause.

APPENDIX I. AGENDA

1. Opening
2. Appointment of chairperson and rapporteurs
3. Adoption of the agenda
4. Indonesia and Philippines Data Collection Project
5. Obligations for the provision of data to the Western and Central Pacific Fisheries Commission
6. Review of the tuna fisheries
7. Current status of the Survey of Commercial and Municipal Fisheries
8. Current status of the National Stock Assessment Program
9. Availability of historical and current catch and effort data from industry
10. Review of the current statistical system
11. Design and implementation of IPDCP activities in the Philippines
12. Other matters
13. Closing

APPENDIX II. WORKING PAPERS

Anon. 2003. Proposal for Monitoring the Catches of Highly Migratory Species in the Philippines and the Pacific Ocean Waters of Indonesia. Prepared for the Preparatory Conference for the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific. Oceanic Fisheries Programme, Secretariat of the Pacific Community, Noumea, New Caledonia.

Anon. 2004. Report of the First Meeting of the Indonesia and Philippines Data Collection Steering Committee, 21 April 2004, Bali, Indonesia. WCPFC/PrepCon/38, Annex IV. Preparatory Conference for the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific.

Lewis, A. 2004 (draft). Review of Tuna Fisheries and the Tuna Fishery Statistical System in the Philippines. Oceanic Fisheries Programme, Secretariat of the Pacific Community, Noumea, New Caledonia.

Williams, P. 2004. Preliminary review of data collection forms used in the Philippines tuna fishery. Working Paper SWG-7. Seventeenth Meeting of the Standing Committee on Tuna and Billfish, 9-18 August 2004, Majuro, Marshall Islands. Oceanic Fisheries Programme, Secretariat of the Pacific Community, Noumea, New Caledonia.

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APPENDIX IV. ACTION PLAN FOR IMPROVEMENTS TO THE CURRENT TUNA FISHERIES STATISTICAL SYSTEM IN THE PHILIPPINES

Recommended Action	Activity	Responsible Agency	Time Frame
1. Compile separate statistics for oceanic tuna catches inside and outside Philippines waters	Obtain data from private landing sites not currently covered. Obtain landings data from canneries, by source. Obtain catch data from logsheet coverage, esp purse seine.	BAS, with BFAR support	Initiate new sampling in January 2005. Compile 2004 statistics in first half 2005 for publication of 2004 tuna stats (see below).
2. Implement catch and effort logsheet system	Prepare logsheets and instructions. Distribute to large purse seine vessels. Send existing PNG logsheet data to BFAR.	BFAR and Assistant National Tuna Coordinator. SPC.	NTIC approval, November 2004. Preparation and distribution of forms by Assistant National Tuna Coordinator, January 2005
3. Compile and report annual tuna statistics	Compile annual oceanic tuna statistics, including vessel numbers and catch estimates, by sector, gear type, area (inside and outside EEZ) and species.	BFAR, BAS and Assistant National Tuna Coordinator	Compile provisional 2004 statistics by mid-2005 for presentation of report at WCPFC Scientific Committee meeting in August 2005
4. National Tuna Coordinator and Assistant	Appoint NFRDI Director as National Tuna Coordinator. Recruit Assistant National Tuna Coordinator.	BFAR and NFRDI	NTIC approval November 2004 Recruit the Assistant National Tuna Coordinator on receipt of IPDCP funds (December 2004?)
5. Historical time series of tuna catch statistics	Compile tuna catch statistics from the early 1990s onwards	BFAR, MARINA and industry	Commence on approval from NTIC, November 2004
6. Tuna fishing vessel inventory	Compile data on vessel numbers, by region, sector and gear type	BFAR, BAS and MARINA	Start November 2004
7. Data verification procedures	Develop procedures for the verification of survey data, unloadings data and logsheet data	BAS, NFRDI and Assistant National Tuna Coordinator, in collaboration with SPC	Mid-2005

8. Review handline data	Compile historical catch data. Implement logsheets for new handline sector category	BAS, BFAR and Assistant National Tuna Coordinator	Following establishment of new handline category (early 2005?)
9. Seek long-term funding for BAS surveys	Seek long-term funding for BAS surveys to fulfil data-related obligations to the WCPFC	BAS and National Tuna Coordinator	Develop and implement strategy following first meeting of the WCPFC in December 2004
10. Update survey frame	Revise list of commercial and municipal landing centres, identifying major tuna landings sites	BAS	2005, funding permitting
11. Species composition	Modify BAS survey procedures so enumerators separate yellowfin, bigeye and marlins Apply NSAP species composition data to BAS surveys where same sites sampled	BAS and NFRDI	Commence with surveys funded by IPDCP (January 2005)
13. Compilation of data from other sources	Compile catch and unloadings data from PFDA, private ports, canneries, fishing companies and NSO	BAS and Assistant National Tuna Coordinator, in collaboration with PFDA, private ports, industry and NSO	Commence early 2005
14. Revise regional catch statistics	Revise catch statistics to reflect the restructured administrative regions	BAS	Mid-2005, for inclusion in annual tuna fishery report (see #3)
15. NSAP to continue as a high priority	NSAP funding and operation to continue	NFRDI	Ongoing
16. Develop NSAP data inventory	NSAP data inventory to be further developed; NSAP data to be forwarded to NFRDI on a regular basis; NSAP data to be rescued where necessary	BFAR regional offices and NFRDI	As soon as possible
17. Provide computer hardware and software, and training	Computer hardware and software to be provided or updated, where necessary, and regional staff trained in their use	NFRDI	As soon as possible

APPENDIX V. REVISED BUDGET FOR IPDCP ACTIVITIES IN THE PHILIPPINES

ACTIVITY	YEAR 1		YEAR 2		TOTAL	
	PHP	USD	PHP	USD	PHP	USD
NATIONAL STOCK ASSESSMENT PROGRAM						
Enumerators x 108 man-months @ PHP 7,500 per month	810,000	14,374	810,000	14,374	1,620,000	28,749
Encoders x 24 man-months @ PHP 7500 per month	180,000	3,194	180,000	3,194	360,000	6,389
Computers x 2 and printer	160,000	2,839	0	0	160,000	2,839
Supplies and materials	350,000	6,211	350,000	6,211	700,000	12,422
NSAP Sub-Total	1,500,000	26,618	1,340,000	23,779	2,840,000	50,399
BAS COMMERCIAL AND MUNICIPAL SURVEYS						
Contractual Data Collectors x 180 man-months @ 2,500 per month	450,000	7,986	450,000	7,986	900,000	15,972
Contractual Data Processors x 18 man-months @ 8,500 per month	153,000	2,715	153,000	2,715	306,000	5,430
Database development	50,000	887	50,000	887	100,000	1,775
Report preparation and printing	150,000	2,662	150,000	2,662	300,000	5,324
Computers x 3 and printers	240,000	4,259	0	0	240,000	4,259
Supplies and materials	400,000	7,098	400,000	7,098	800,000	14,197
Other services, including taxes and notarial fees	57,000	1,012	57,000	1,012	114,000	2,023
BAS Sub-Total	1,500,000	26,619	1,260,000	22,360	2,760,000	48,980
ASSISTANT NATIONAL TUNA COORDINATOR						
Assistant Coordinator @ PHP 15,000 per month	180,000	3,194	180,000	3,194	360,000	6,389
Operating expenses	100,000	1,775	100,000	1,775	200,000	3,549
Publication expenses	80,000	1,420	80,000	1,420	160,000	2,839
Assistant Coordinator Sub-Total	360,000	6,389	360,000	6,389	720,000	12,777
TRAVEL						
Planning meeting: SPC x 1 x 7 days	133,269	2,365	0	0	133,269	2,365
Port sampler data quality review: SPC x 1 x 20 days	0	0	247,017	4,384	247,017	4,384
Programming support for database systems: SPC x 1 x 10 days	192,800	3,421	192,800	3,421	385,600	6,843
Review meeting: SPC x 1 x 7 days	0	0	133,269	2,365	133,269	2,365
SUB-TOTAL	326,069	5,786	573,086	10,170	899,155	15,957
PLANNING AND REVIEW MEETINGS						
Planning meeting	36,234	643	0	0	36,234	643
Review meeting	0	0	40,000	710	40,000	710
SUB-TOTAL	36,234	643	40,000	710	76,234	1,353
TOTAL	3,722,303	66,055	3,573,086	63,408	7,295,389	129,466
Contingencies (including exchange rate fluctuations) @ 10%	0	0	357,309	6,341	357,309	6,341
GRAND TOTAL	3,722,303	66,055	3,930,395	69,749	7,652,697	135,807

APPENDIX VI. ACRONYMS

ACIAR	Australian Centre for International Agricultural Research
ARMM	Autonomous Region of Muslim Mindanao
BAS	Bureau of Agricultural Statistics
BFAR	Bureau of Fisheries and Aquatic Resources
CDC	Contractual Data Collector
CFVGL	Certificate of Fishing Vessel and Gear Licence
CFVR	Commercial Vessel Registration
DCC	SPC/FFA Tuna Fishery Data Collection Committee
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organization of the United Nations
FFA	Forum Fisheries Agency
GPS	Global Positioning System
ICCAT	International Commission for the Conservation of Atlantic Tuna
IOTC	Indian Ocean Tuna Commission
IPDCP	Indonesia and Philippines Data Collection Project
IUU	Illegal, Unregulated and Unreported
LGU	Local Government Unit
MARINA	Maritime Industry Authority
NCR	National Capital Region
NFIS	National Fishery Information System
NFRDI	National Fisheries and Research Development Institute
NSAP	National Stock Assessment Program
NSO	National Statistics Office
NTIC	National Tuna Industry Council
PFDA	Philippines Fisheries Development Authority
PHP	Philippines peso
POC	Provincial Operation Center
PrepCon	Preparatory Conference for the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific
SCTB	Standing Committee on Tuna and Fisheries
SPC	Secretariat of the Pacific Community
UNDP	United Nations Development Programme
USD	United States dollar
VMS	Vessel monitoring system
WCPFC	Western and Central Pacific Fisheries Commission
WCPO	Western and Central Pacific Ocean