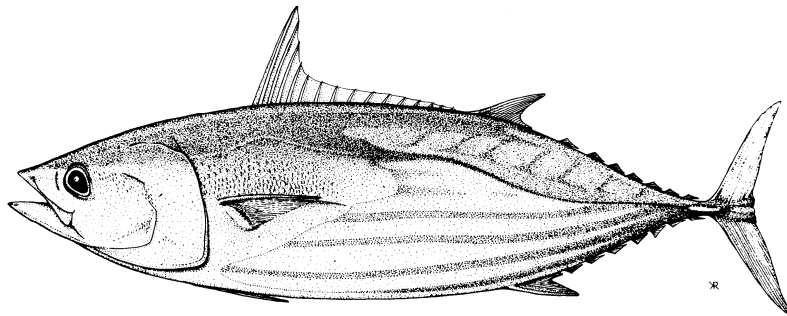




REPORT OF THE FIRST VIETNAM TUNA FISHERY
DATA COLLECTION WORKSHOP (VTFDC-1)

15-17 March 2010

Hai Phong, Viet Nam



Western and Central Pacific Fisheries Commission
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1. OPENING

For a number of years, the evolving tuna fisheries in Vietnam have been of interest to the Western and Central Pacific Fisheries Commission (WCPFC) given that the Vietnam tuna fisheries exploit the same tuna stocks as the other member countries of the WCPFC. The importance of the Vietnam tuna fisheries to the WCPFC and the involvement of Vietnam in the WCPFC process has been acknowledged with their inclusion in the a new project offered by the Global Environment Facility (GEF) - *West Pacific East Asia Oceanic Fisheries Management (WPEA OFM)* project, which began in 2010 (see <http://www.wcpfc.int/doc/2009/wpea-ofm-project-document>). The activities to be carried out under this project contribute towards the following objective:

“To strengthen national capacities and international cooperation on priority transboundary concerns relating to the conservation and management of highly migratory fish stocks in the west Pacific Ocean and east Asia (Indonesia, Philippines and Vietnam)”

The WPEA OFM project will cover, *inter alia*, the following key areas

- (i) strengthen national capacities in fishery monitoring and assessment,
- (ii) improve knowledge of oceanic fish stocks and reduce uncertainties in stock assessments,
- (iii) strengthen national capacities in oceanic fishery management, with participant countries contributing to the management of shared migratory fish stocks,
- (iv) strengthen national laws, policies and institutions, to implement applicable global and regional instruments.

The focus of this first Tuna Data Workshop was to review existing information and plan for the immediate implementation of data collection systems in the Vietnam tuna fisheries. The workshop was preceded with a study tour of 3-4 days travelling to the port and the fisheries offices of the three key provinces (Khanh Hoa, Phu Yen and Binh Dinh) where most of the tuna fishing fleets in Vietnam are based. The information obtained from the study tour contributed to other important information presented during the workshop.

Dr. Chu Tien Vinh, Director of DECAFIREP, provided an opening address which included an overview of the objectives of the workshop and the challenges that lie ahead for Vietnam in monitoring their tuna fisheries in the future.

This report contains a summary of presentations and discussions held during in VTFDC-1 workshop plenary, which was conducted over two and a half days (15-17 March 2010), including recommendations from the workshop.

2. APPOINTMENT OF CHAIRPERSONS AND RAPORTEURS

Dr Antony Lewis was appointed chairman. Mr Peter Williams and Mr Phan Viet Anh were appointed rapporteurs.

3. ADOPTION OF THE AGENDA

The agenda proposed for the workshop was adopted as presented in APPENDIX I and the list of the participants can be found in APPENDIX II. Due to time constraints, the workshop was shortened but successfully concluded before 12:00 on Wednesday 17th March 2010.

4. Overview of national and regional tuna fisheries and data requirements

4.1 Overview of WCPFC tuna fisheries

Dr. Lewis provided an overview of the WCPFC tuna fisheries, firstly explaining the area of competence of the Commission, covering the western and central Pacific Ocean, with the conservation and management measures to be applied throughout the range of the stocks, which include the South China Sea. The presentation covered the main tuna species of interest, the range of each of tuna stock, the historical catch by species and gear, and a brief summation of the stock status of the three main tuna species of interest to Vietnam. For skipjack tuna, the current assessments suggest that overfishing of the stock is not occurring ($F_{CURR} < F_{MSY}$) and it is not in an overfished state ($B_{CURR} > B_{MSY}$) and that the stock condition is healthy in most areas. For yellowfin tuna, the assessments suggest that the stock is close to overfished/MSY, but currently not in an overfished state. For yellowfin, the equatorial western Pacific has the highest exploitation rate, particularly the juvenile catch from associated sets. For bigeye tuna, the assessments suggest that overfishing is occurring and the stock is possibly in an overfished state. High exploitation of bigeye tuna occurs with both the catch of juveniles in associated purse-seine sets and the targeted-longline fishery in the eastern tropical waters of the WCPFC area. In order to address the concerns of the over-exploitation, several management measures have been introduced in recent years, for example, effort and catch limits for longline (bigeye), effort limits for purse seine, high seas closures (2010), FAD closures (2 months 2009, 3 months 2010), and the introduction of 100% observer coverage in the purse-seine fishery in 2010. A brief review of the recent tagging work undertaken by the SPC was also presented, highlighting the importance of tagging data in the stock assessments.

In the ensuing discussion, it was noted that skipjack are targeted by some gears in Vietnam and the observed abundance and national assessments of this species was in line with the regional assessment results.

4.2 Overview of Vietnam Tuna Fisheries

Mr. Nguyen Viet Nghia, Vietnam Research Institute of Marine Fisheries (RIMF) provided an overview of the Vietnam Tuna Fisheries. There are 28 provinces within fisheries management areas on the coast of Vietnam: NORTH - 9 provinces from Quang Ninh to Quang Binh; CENTRAL: 9 provinces, from Quang Tri to Ninh Thuan; SOUTHEAST: 8 provinces, from Binh Thuan to Bac Lieu; SOUTHWEST: 2 provinces Ca Mau and Kien Giang.

Both adult and “small” tuna are the target species for several gears comprising the offshore fisheries in Vietnam. The longline fishery in Vietnam is well-developed with about 2,444 fishing boats, mainly based in the central area. The target species for the longline gear is large yellowfin and bigeye tuna. The average catch of a 15-30 day fishing trip is 1,200 - 4,318 kg of bigeye tuna and yellowfin tuna, with a large by-catch species (e.g. billfish and sharks) also taken. Large tuna contributes about 35% of total longline catch (based on surveys) with a mean catch rate of around 7.77 kg/100 hooks. This fishery is highly seasonal with a peak season from November to May.

The Gillnet fishery is also well developed with large numbers of fishing boats, but not all target the oceanic tuna species. This fishery mainly operates in the central provinces and uses drifting (nylon) gill-nets. The gillnet fishery mainly takes scombrids (mostly tuna, including neritic species) which contribute about 70.6 % of total catch (based on surveys) with a mean catch rate of 8.5–35 kg/km based on surveys. This fishery is also highly seasonal.

The tuna purse-seine fishery has only recently developed in Vietnam. Biomass estimation of tunas using VPA assessments suggest that skipjack comprise about 53% of the total biomass of all species, with bigeye and yellowfin tuna accounting for 3.9%.

There are an estimated 104,000 fishing vessels registered in the 28 provinces, but not all of these vessels catch tuna with a large component comprising the trawl and other gears, and the gillnet and purse seine vessels that don't target oceanic tuna.

The management issues to deal with include the open access to the fisheries which is leading to continuous increase of fishing capacity and the over-exploitation of fisheries resources in some areas. With these issues continuing to be a problem, it was suggested there is an urgent need to strengthen the fisheries research for managements, improve responsible fishing technology and practices, implement resources protection, manage fishing capacity and re-structure the national fisheries statistic system. It was noted that these management issues fell in line with the issues to be dealt with through the WPEA objectives for tuna fisheries in Vietnam, that stock assessment of the oceanic tuna must be done on a regional level, and that Vietnam should therefore be participating in the WCPFC process.

It was noted that the distribution of tuna catch in the South China Sea by Vietnamese fleets is influenced to some extent by oceanographic factors ;this should also be taken into account in any future assessments.

4.3 WCPFC Data requirements

Mr. Williams provided a presentation on the WCPFC requirements for scientific data, briefly covering the reasons why data collection for highly-migratory species is usually coordinated at the regional level since the primary research and management must be conducted at the regional level. To ensure the regional stocks of tuna are monitored to ensure sustainable exploitation in the future, member countries of the WCPFC agreed to a set of data-reporting obligations (refer to <http://www.wcpfc.int/doc/data-01/scientific-data-be-provided-commission-revised-wcpfc4-wcpfc6>). This presentation provided a description of each type of scientific data to be provided to the WCPFC by members and cooperating non-members (Annual catch estimates, aggregate catch/effort data, operational catch/effort data and size data). The presentation also covered the requirement by each members and cooperating non-members to prepare and provide an annual report to the WCPFC, which comprises a Part 1 on Information on Fisheries, Research and Statistics, which is tabled at the annual WCPFC Scientific Committee in August, and a Part 2 on Management and Compliance issues, which is tabled at the WCPFC Technical and Compliance Committee in October

In the ensuing discussion, it was noted that the provision of annual catch estimates for the Vietnam tuna fisheries was the most important first step for involvement with the WCPFC. However, preparation of estimates before the April 30th 2010 deadline would not be possible this year, but the workshop agreed on a recommendation to provide estimates to the WCPFC before the 30th April 2011 deadline.

4.4 Data Requirements for Tuna Stock Assessment

Mr. Paul van Zwieten provided a presentation on the data requirements for tuna stock assessments. The data needs for oceanic tuna stock assessments are high, but no different from other highly migratory species where stocks occur in multinational waters. The fisheries impacts on stocks can be assessed at different levels of data requirements, which provide the opportunity to gradually build up fisheries information systems. Full assessments, and therefore more comprehensive data collection systems, should be considered for high-risk fisheries; the data needs for trade and industry are also an important consideration.

The main reasons for conducting fisheries stock assessments relate to the need for long-term sustainable exploitation (optimising catches, while ensuring long-term sustainability). Stock assessments for highly migratory species are required since different entities/fisheries are involved, so assessing the total pressure on the stock, as well as each fishery's selectivity, is important to ensure the overall sustainability of each fishery and their stakeholders. The basic fishery-dependent data required for stock assessment include catch-per-unit effort (CPUE), effort, size-frequency data. Other fishery-independent data are also important, such as tagging data, and biological characteristics - Spawning (recruitment, maturity stages, areas), growth, natural mortality. The establishment of data collection systems requires organization and ongoing management to ensure

complete and quality data are available for the assessments. Statistical two-stage sampling systems are implemented to collect length data and estimates of catch and effort where the effort required for total enumeration is beyond available data collection resources. Total enumeration can be possible through a logsheet system, for example.

Different assessment tools available to cover the spectrum from data-poor to data-rich situations, that is different types of assessments are used depending on the levels of data and information availability; Ecological Risk Assessments (ERA) and property-based assessments are two examples. The data needs and organisational requirements for conducting tuna stock assessments are high in all oceans throughout the world. The work requires international co-operation to harmonise/standardize methods for data collection which must also satisfy national requirements, such as needs related to trade and the local assessments of fisheries. Using a risk assessment approach, it was suggested that Vietnam start full data collection for the small fleet of high-risk large-tuna vessels, while assessing the risks for the large-fleet of smaller tuna vessels. Also, Vietnam should consider collecting data and relevant information related to trade needs (e.g. MSC labelling) in co-operation with factories and fishers.

It was noted that fisheries data are lacking in Vietnam so the Ecological Risk Assessment (ERA) / Productivity and Susceptibility Analysis (PSA) approach could be considered as a start for some species in a data-poor situation. However, no matter what assessment methodology is used, it was clear that the poorer the data, the more unreliable the assessment results are likely to be and therefore a more precautionary approach should be taken when subsequently determining and implementing management measures. A systematic approach is therefore required to consider which fisheries/species are the highest priority for comprehensive stock assessments so that efforts can be focused in implementing a satisfactory data collection system.

4.5 *Vietnam tuna fishery data requirements*

Mr. Duong Long Tri provided a presentation on the data requirements for the Vietnam tuna fisheries. The Vietnamese fisheries sector has grown rapidly and is now an important economic sector of the country. Tuna fisheries have developed quickly, mainly in central provinces of Bình Định, Phú Yên and Khánh Hoà. In 2009, total fisheries production (marine capture and aquaculture) was 4.85 million MT, with an export value was US\$ 4.25 billion (marine catch was over 2 million MT). The Vietnamese tuna catch in recent years has been estimated to be about 40,000 MT/year, of which, oceanic tuna catch (large YFT/BET from the longline fishery) was over 10,000 MT/year.

The main gears used for catching oceanic tuna (skipjack, yellowfin and bigeye) are longline, purse seine and gillnet, although purse seine and gillnet mainly catch smaller pelagic species. The current data collection methods include the provision of information for monthly administration reports, sample surveys in order to re-evaluate data for annual report, census of Agriculture, Rural area and Fisheries (every 5 years). The main constraints with respect to data collection are poor data quality and lack of timeliness in provision, insufficient data collected, limited utilization of existing data and the statistical data do not meet requirement of tuna fisheries management in terms of both of management measures and resources protection.

The main components involved in data collection in the future will involve the staff of sub-DECAFIREP and the DECAFIREP, working facilities and budget, support from WCPFC and WPEA Project; the principal methods of collecting data will be logbooks, sample survey at port/landing sites and an observer program.

It was noted that there are potentially data collected from tuna fisheries in agencies other than DECAFIREP and RIMF, for example, the General department of statistics, universities and fishing companies. In regards to the preparation of annual catch estimates, DECAFIREP had responsibility for collecting and processing the fishery data, with the assistance of Center for Fisheries Informatics and Statistic and the Sub-DECAFIREPs. The rescue of historical fishery data for WCPFC stock assessments was suggested but the level of work required and the ultimate usefulness of the data produced was not known.

In summary, it was suggested that it was important to document the respective roles of all organizations involved in collecting data from the Vietnamese tuna fisheries and that an inventory of historic data be produced which would then enable decisions to be made on whether a data rescue project could be launched.

5. Landings data collection

5.1 *Review of existing landings data collection programs of Phu Yen.*

Mr. Thong provided a presentation on the existing landing data collection program in Phu Yen Province by the Sub-DECAFIREP. Legal documents and policy frameworks requiring landings data collection were first established in 2005 (Instruction no. 08/2005/CT-BTS on 25/8/2005 of Ministry of Fisheries), followed by documents implementing fisheries data statistical program in 2006 (Document no. 1805/BTS-KTBNL and 08/KT&BVNLTS) and another in 2008 (Document no. 313/UBND-KT&XD). In April 2008, the Sub-DECAFIREP scheduled the implementation of the fisheries data statistical program with the basis coming from these legal/policy documents. The fisheries taking oceanic tuna in the Phu Yen province are longline, purse-seine and drift gillnet gears. For the longline fishery, the target species are yellowfin and bigeye tuna. Phu Yen has 519 active longline vessels (total capacity=50.653 CV) which land their catch at Tuy Hòa and Tuy An. The drift gillnet fishery targets skipjack tuna, bullet tuna, and small pelagics. There are 649 active gillnet vessels (total capacity 15.810 CV) which land their catch at Tuy Hòa, Tuy An and Dong Hoa district (Phu Tho 1, 2 and 3). The purse-seine fishery also targets skipjack tuna, bullet tuna, and small pelagics. There are 251 active purse-seine vessels (total capacity 15.356 CV) which land their catch at Tuy An and Dong Hoa district (Phu Tho 1, 2 and 3).

Plans for implementing nation-wide landings data collection have been proposed since 2008 but has yet to be implemented on a large-scale due to insufficient funding, although in 2009, the DECAFIREP implemented a landing data collection program for oceanic tuna species in Tuy Hoa and Tuy An. The sampling protocol is based on questionnaires, with enumerators collecting information on fishing activities, with, on average, 20 interviews per month. The information collected is used in the following formula to determine estimated catch and effort. The formula for fishing yields calculation (based on FAO definitions) is $SL = CPUE * A * BAC * F$, where SL= Landing of a particular fisheries; CPUE=the mean of fishing yield per day per tuna fishing vessel (unit: kg/vessel/day); A=total number of days that vessels fish (vessel activity, calculated by total day of a month in solar calendar – total number of day that vessels rested) ; F=Total number of fishing vessels, and BAC= vessels operation coefficient, which is the probability of a particular vessel fishing on a particular day).

It was noted that the longline fisheries are mainly based out of Tuy Hoa city and An Ninh village and many fishing boats land their catch at the same time so data collection should be efficient. Longline trip duration is long (20-45 days) so the interview process should be easy. However, data collection for the gillnet and purse seine fisheries is not so straightforward. On the negative side, it is apparent that owners/captains usually provide incorrect information and fishing effort varies because many vessels change their fishing gear, so the sample survey may not be representative when scaled up.

It was noted that the number of ‘active’ vessels is important in the process of estimating catch and effort, and the sub-DECAFIREP follow-up with individual vessels to check if they have been active or not in the fishing season.

5.2 *Review of existing landings data collection programs of Binh Dinh*

Mr. Lam provided a presentation on landings data collection in Binh Dinh province. Historically (i.e. since before 1990), fishing in the central provinces, including Binh Dinh, used drift gillnet to target small tuna (*Auxis thazard*, *Auxis rochei*, etc.). From 1994 to 1996, the longline fishery was developed in Vietnam by government fishing industries and by foreign fishing companies. Since 2000, a purse-seine fishery targeting

small pelagic fish has also been developed in Binh Dinh province. In Binh Dinh, as in the other central provinces), the peak fishing season is November to May, which corresponds to the north-east monsoon season. Fishing during this period occurs in the north of Hoang Sa islands and the middle of Hoang Sa and Truong Sa islands and offshore areas of Khanh Hoa and Da Nang province. In the low season (southwest monsoon), fishing is restricted to the offshore areas between Binh Dinh and Khanh Hoa and in the south of Truong Sa islands.

The longline fishery takes an estimated 1.3–1.5 t. / trip (25 days at sea), with a total annual catch of 3,500–4,500 t. / year landed in the Binh Dinh. The purse seine fishery mainly takes small pelagic tuna fishes, but some amounts of the oceanic tuna species – unfortunately, there are not much available data for this fishery to provide the extent of the oceanic tuna catch.

With respect to the market, tuna price depends on fish quality and is evaluated and categorized into two types: (i) “Good quality/fresh”, with price at landing sites fluctuating from 60,000–95,000 VND/kg, up to 110,000 VND/kg. (ii) “Lower quality/frozen”, with prices varying from 45,000–50,000 VND /kg. The latter category covers the frozen tuna, which are also used for canning or for domestic consumption.

Total tuna biomass was estimated to be 44,853 tons (total tuna production reached 11,000 tons in 2005 and valued at 850 billion VND) and therefore the tuna stocks were considered under-exploited). Due to the important role of tuna fisheries, especially of oceanic tuna fisheries, the Vietnamese fisheries sector selected oceanic tuna species as a priority objective with respect to development.

A number of challenges are to be addressed in the Binh Dinh tuna fisheries, for example, the fishing technology is limited, catches therefore have fluctuated and the fishing season is short. Tuna price is highly variable and marketing tuna products is difficult. The fishing vessels in Vietnam are small, lack the necessary safety equipment and adequate onboard cold storage, which in turn makes the trips short and a reduction in the possibility of achieving more efficient/economical benefits. Improvements in handling and storage of the catch represent the main areas where improvements can be gained in the returns from catch.

The legal documents and policy frameworks for the establishment of data collection has been described in Section 5.1 for the Phu Yen province. The sampling methodology for landings data collection planned for use in Binh Dinh in the past is the same as briefly described for Phu Yen (see Section 5.1). The landing data collection program for tuna fisheries has not been developed and implemented to the degree necessary to provide useful information.

5.3 *Review of existing landings data collection programs of Khanh Hoa*

Mr. Thuong provided a presentation on the landings data collection in Khanh Hoa province. There are over 10,000 fishing vessels registered in Khanh Hoa with a total capacity of 338,250 CV, but only 758 vessels with a capacity over 90CV, comprising mostly vessels using the drift gillnet, longline and purse-seine gears. For gillnet, they target skipjack, bonito tunas, eastern-little tunas and the bullet tunas. The total number of gillnet vessels are 828 and total capacity 65,761cv with an average trip duration of 30 days; landing sites are Vinh Luong port, Hon Ro port and Da Bac port. The longline vessels comprise 105 vessels (18,347 cv) and target yellowfin tuna; trip length is 30 days and landing sites and Hon Ro fishing port and Da Bac fishing port. The purse-seine fishery targets skipjack, frigate and bullet tunas, scads, Japanese jack mackerel and squids. There are 20 purse-seine vessels (3,260 cv total capacity) with a trip length of 7 days and landing sites at Vinh Luong, Hon Ro and Da Bac. It was noted that purse-seine gear was used prior to 2000 in the night, using lights to attract fish. After 2000, the purse-seine fishery started to operate in the same manner as elsewhere, fishing on schools of tuna associated with natural floating logs and anchored FADs.

The legal documents and policy frameworks for the establishment of data collection has been described in Section 5.1 for the Phu Yen province. The sampling methodology for landings data collection used in Khanh Hoa to date is the same as briefly described for Phu Yen (see Section 5.1). The opportunities and challenges

faced with implementing data collection in Khanh Hoa province are similar to those mentioned from Phu Yen (Section 5.1) and Binh Dinh (Section 5.2).

5.4 *An overview of Landings data collection in the WCPFO*

Mr. Williams provided an overview of landings data collection programmes elsewhere in the WCPFC area. Landings data are potentially the most efficient means of collecting catch data from a fishery. The target coverage is typically 100%, but this level may only be achieved for the larger commercial fleets and is acknowledged to be impractical for monitoring the large numbers of vessels from small-scale fleets which land their catch in many landing sites. Landings data are a fundamental base for the other types of data used by the WCPFC in tuna stock assessments. Landings data are used in the process to determine annual catch estimates in all fisheries and adjust the catch in weight on logsheets in the longline fishery (since the catch in weight recorded on the logsheet is a visual estimates and the catch in weight from landings is the actual, measured weight of the catch from the vessel trip) . Landings data provide an independent estimate of the trip catch, which can be used to verify and correct the logsheet data. Landings data can also in the cross-validation process of port sampling and observer data. Landings data are usually provided by the company managing the unloading process (for commercial fleets) or the fishing company; in some countries the port authority is responsible for collecting the landings data. Port samplers do not normally have the responsibility for recording the landings data, but are usually responsible for retrieving the completed landings forms from the companies/entities that collect the data.

In regards to establishing landings data collection, it was noted that legislation was normally needed to ensure the provision of landings data was an obligation, that fishing stakeholders providing these data are aware of the importance/usefulness of these data. Other requirements include the provision of clear instructions and training, and establishing contact points and a schedule for the provision of the data. In regards to landings data management, it is important to establish sound data quality control procedures, with regular reviews with the people collecting the data (feedback) to ensure the information is of the highest quality and that coverage is complete.

Typical problems faced with landings data collection in other countries include the lack of legislation to ensure landings data are collected, lack of awareness of the importance and obligations for collecting this information and the inability to obtain 100% coverage due to non-reporting, for example.

5.5 *Landings data collection implementation plan*

Mr. Anh provided a proposal for the implementation of landings data collection in Vietnam in the next three years. The tentative plan for each province is as follows. **Phu Yen:** Longline fisheries, purse seine in the ports of Tiên Châu (Tuy An), Phường 6, Tuy Hoa city, Phú Đông, Tuy Hòa city. **Binh Dinh:** Longline, purse seine in the ports of Quy Nhon and Tam Quan. **Khanh Hoa:** Longline, purse seine and gillnet in Hon Ro. It was suggested that due to the lack of information on the catch storage and unloading processes for the purse seine and gillnet vessels, landings data collection be focused on the longline fisheries in the short term using the data collection system used by the WCPFC, and operational information from the purse seine and gillnet fisheries be obtained as a matter of priority (see Appendix 3 recommendation). It was noted that the protocol and information collected on the WCPFC forms comply with the requirements of EU catch documentation regulations; in this respect, Vietnam wants to be acknowledged as a responsible fishing nation on the global scene. Ensuring that the information is provided is important, and stakeholder awareness, including training, will be an important task in the short term (see Appendix 3 recommendation).

6. Port Sampling data collection

6.1 *An overview of Port Sampling data collection in the WCPO*

Mr. Williams provided an overview of the standardized port sampling data collection system used in other countries in the WFPFC area. Port sampling offers a convenient, cost effective method to obtain considerable quantities of species and size composition data (lengths of individual fish) for stock assessment work but also is used in the determination of certain annual catch estimates (e.g. purse-seine bigeye catch). Port sampling data provide an independent verification of the data submitted by the fishing company (i.e. logsheets and unloadings data). However, unlike landings and logsheet data, only partial coverage of landings is required (target coverage for port sampling is 20% of randomly-selected unloadings, where possible). The protocol for port sampling in the longline fishery is for the entire tuna catch from a selected vessel landing must be sampled. For purse seine (and presumably the gillnet fishery in Vietnam), the protocol requires that a representative, unbiased sample is taken from a selected landing.

In regards to establishing port sampling data collection, similar requirements to landings data collection are required. Legislation was normally needed to ensure the port sampling data can be collected and fishing stakeholders informed of the work of the port sampler and are aware of the importance/usefulness of these data. Other requirements include the provision of clear instructions and training of port samplers, and establishing a schedule for the collection and provision of the data. The establishment of sound data quality control procedures, with regular reviews with port samplers (audit reviews) is required to provide feedback to ensure the information is of the highest quality.

Typical problems faced in port sampling data collection elsewhere include, obtaining cooperation to conduct sampling, problems in having access to unloaded catch, difficulties in obtaining a random sample (purse-seine), species and/or size sorting has occurred at sea before vessels return to port so a random sample can't be obtained, problems with measuring equipment, species identification problems and other competency problems with the port sampler. It was noted that continual training, feedback and awareness-raising were important to resolving these problems,

6.2 *Port Sampling implementation plan*

Based on the information presented, Mr. Anh provided a proposal for implementing Port Sampling in Vietnam in the short term. As with the proposal for landings data collection, port sampling would be implemented in selected landing sites in the three central provinces. Since the catch storage plan and unloading process for the purse seine and gillnet vessels was not yet clear, it was agreed to undertake sampling of longline vessels only in the coming 6 months until more information is available from the former fisheries. The longline port sampling form used elsewhere in the WCPFC Area (SPC/FFA regional standard) would be translated into Vietnamese and used as the form for collecting port sampling data in the longline fishery. A preliminary workshop to train port samplers was scheduled for April 2010, with the plan to start sampling immediately after the workshop since the longline fishing season finished in May each year. It was unclear at this stage whether one or two port sampling staff would be required per unloading and this could only be decided when trial sampling started. Species identification was identified as an important component of port sampler training, particularly the differentiation of small yellowfin and bigeye tuna; a recommendation for the provision of species identification guides to Vietnam was formulated as a result of this comment (see Appendix 3). In order to develop a suitable protocol for sampling the gillnet and purse seine vessels, it was recommended that detailed information on how the catch is stored on these vessels and subsequently unloaded should be obtained prior to the next workshop (see Appendix 3). Preliminary information suggests that, in the peak season, approximately 15 longline vessels land each day in Binh Dinh and Phu Yen ports and that 40 vessels land per day in Hon Ro port (Khanh Hoa province); this information will be used to determine sampling coverage.

A further recommendation proposed to hold a half-day workshop with the fishing industry stakeholders to, inter alia, present the objectives of the project (e.g. the need to undertake port sampling) and to seek their cooperation with the implementation of data collection.

7. Logbook data collection

7.1 Review of existing logsheet programs, forms and protocols in Vietnam.

Mr. Tuan provided a presentation on the existing logbook system in Vietnam. Vessels over 20hp have a legal responsibility for submitting logsheets on a quarterly basis to the relevant SUB-DECAFIREP office and DECAFIREP are responsible for implementing the programme. These logbooks are sent on to RIMF for entry into their databases system. The establishment of the logbook system was an initiative to ensure that Vietnam is seen to be compliant with catch reporting requirements which addressing potential IUU fishing issues, which is a requirement under the recently-established European Union's catch documentation scheme. In the future, it is expected that each provincial office will need to cover the costs of entering the logbook data. It was noted that the focus of the logbook program at this stage has been the longline fishery.

In the ensuing discussion, it was noted that enforcement of the logbook provision was lacking so far and more awareness and perhaps more incentive was needed to ensure logbooks were provided.

7.2 An overview of Logsheets data collection in the WCPFC

Mr. Williams provided a presentation on the regional standard logsheets used elsewhere in the WCPFC Convention Area and the data collection systems in place. The presentation covered the characteristics of logsheet data (compared to other types of data) and the data fields collected and the protocols/instructions. The typical problems in logsheet data collection included (i) the lack of legislation requiring the collection of information, (ii) no attempt to raise awareness with fishing companies/vessel captains in regards to the importance/obligations with respect to logsheet provision, (iii) obtaining 100% coverage (which is the target), (iv) general non-compliance (e.g. non- and under-reporting).

A comparison of the fields from the current Vietnam longline logbooks and the regional WCPFC area logsheets had been undertaken (see Appendix 6) and the new proposed logsheets did not differ too much from the existing forms. In regards to the implementation of logbooks in Vietnam, the following points were noted:

- What is the target coverage for each gear type (catching tuna) ?
- Should all gears (catching tuna) be covered with a logbook programme ?
- Who collects the logbooks ?
- What will the strategy for implementation be ?
- What are the potential problems in each Province ?

7.3 Logbook implementation plan

Based on the information presented, Mr. Anh provided a proposal for logbook implementation in Vietnam. The format of the SPC/FFA regional logsheet data collection form, used by most WCPFC member countries, would be translated into Vietnamese and trialed in the Vietnam longline fishery as an initial implementation.

8. Observer data collection

8.1 Review of existing observer programs in Vietnam.

Ms. Thuý provided a presentation of the World Wildlife Fund (WWF) involvement in observer activities with the Vietnamese longline fleet in recent years. The main work of the observer programme to date has been related to the implementation of circle hooks into the longline fishery to mitigate the take of turtles and the subsequent evaluation of this initiative. The introduction of circle hooks was seen as a demonstration that Vietnam is a responsible fishing country in the eyes of the international community which would hopefully ensure commercial trade continued in the future. While marine turtle mitigation was the primary objective of the work of WWF, data on the catch of all species were collected by observers and are potentially available.

At this stage, observers are active on longline vessels only, but it was acknowledged that covering the purse seine and gillnet fisheries was also important, but required more funding and relevant legislation for the observers to be accepted onboard and for the mitigation of turtles takes to be recognized. Securing sustainable funding is the main problem for ensuring the continuation and expansion of observer activities in the future. Scientists and students had been used as observers, and there could be consideration of ex-fishers in the future; given concerns on their literacy levels, there is a need to be careful with their recruitment. In this respect, it was noted that there needs to be a budget for training courses – the WCPFC do not cover the costs of running national observer programmes, although they are well placed to support observer programmes with capacity building (training). There is an expectation that the observer programme will be transferred to the government in the coming years.

8.2 *An overview of observer activities in the WCPO*

Mr. Williams provided a presentation on the observer activities elsewhere in the Western and Central Pacific Ocean (WCPO). Observers have been active in the WCPO since the 1980s, mainly collecting scientific data but recently they also cover more compliance-related work. There are currently three regional observer programmes and (at least) 14 national observer programmes in the WCPFC Convention Area. Given the detail of information collected, observers must undertake comprehensive training courses (3-weeks full-time) and achieve a level of 75% in their final exams. Training covers all aspects of the work expected of observers (data collection, safety at sea, electronics, species identification, etc.).

Observer management is very important and a network of observer programmes has been established with regular Regional Observer Coordinator Workshops convened that serve to both inform and coordinate the work throughout the region. Observer data management is also a fundamental activity that ensures the data collected by the observer gets to the users (the scientists) in an appropriate format, and as the best quality possible. Observer data management is often underestimated and requires much more resources than for the other types of data. Typical uses of observer data include (i) estimation of the surface fishery bigeye catch, (ii) target species size data for tuna stock assessments, (iii) key information on fishing operations/strategies, (iv) key information for assessments of some non-target commercial species (e.g. blue shark, striped marlin, swordfish) and (v) key information on species of special interest (e.g. marine turtles).

8.3 *Discussion on Observer implementation plan*

It was noted that objectives of the domestic Vietnam fisheries in regards to observer data differ from the current objectives at regional level, since the Vietnamese trips would not normally be considered as Regional Observer Programme (ROP) trips, which has certain obligations to the WCPFC. Regional experts at this workshop suggested a simplistic approach should be taken by Vietnam in implementing a national observer programme, since funding was an issue, but also to ensure available resources are focused to the important work on other data types in the first instance. A suitable recommendation to progress work in this area was formulated (see Appendix 3).

9. **Tuna fisheries data management**

9.1 *Review of existing fisheries database systems.*

Mr. Thong provided a presentation on the current system developed and used by the DECAFIREP, developed in Visual Studio 2005. An important feature of this system is the ability to use it remotely which is a benefit in supporting data entry and retrieval with remote provincial (Sub-DECAFIREP) offices. The system supports the entry of logbook data (previous logbook format) and landings data; a module to support the entry of port sampling data is planned for the future.

The future strategy for data entry has yet to be determined, with decisions on whether to have data entered at the provincial (SUB-DECAFIREP) level or at the centralized DECAFIREP yet to be made. Confidentiality of

the data is also important and the interests of fishers need to be taken into account. A Vessel Monitoring System (VMS), sponsored by the Vietnamese government, was planned for 2011; this type of data would provide a useful form of verification, and a basis for determining coverage of the logbook data.

Mr. Williams provided a presentation on the TUFMAN (Tuna Fisheries Database Management) System used by most of the Pacific Island fisheries departments. The SPC began developing TUFMAN in 2003 in anticipation of assisting countries with their data-related obligations to WCPFC, but also in recognition of satisfying their national requirements with respect to the collection, management and dissemination of tuna fishery data.

The philosophy of TUFMAN ensures that countries obtain quality processed data through specific modules and reports that facilitate the data quality control and identification of gaps in the provision of tuna fishery data. TUFMAN facilitates the management, integration and organisation of tuna fisheries data through a unique linking process, making it easier to cross-check one type of data with another. TUFMAN provides ready-to-use and appropriate reports for users of the data. TUFMAN not only facilitates the data reporting obligations to the WCPFC, but ensures that fisheries departments and other users of the data will be able to make more informed decisions since they will have access to quality data. The TUFMAN system supports the following main data types: licensing, logsheet, port sampling, unloadings, observer. The TUFMAN system also has a comprehensive reporting and mapping sub-system.

9.2 *Discussion on tuna database system implementation plan*

At this stage, a decision on what database system to use and the strategy of data entry was thought to be premature but would be considered by DECAFIREP in the coming months, based on getting the best quality data in a timely manner, but also with consideration of cost-effectiveness and simplicity.

10. **Estimates of annual tuna catch by gear**

The workshop acknowledged the importance of producing estimates of annual tuna catch by gear as a fundamental task. Unfortunately, there was insufficient information currently available to produce reliable estimates, but an attempt to produce estimates was nonetheless undertaken by the Chair and put forward to the workshop for comment/consideration. Participants in the workshop with some experience of the fishery (mainly at the Provincial level), provided comments that resulted in minor adjustments to the provisional estimates and the resultant tables can be found in Appendix 7, noting that a more comprehensive exercise needs to be undertaken when further information is provided. One area that could result in high variances in estimating catch is the targeting practices of purse seine and gillnet vessels, which can use small-mesh nets, to target small pelagics and anchovy, or large-mesh nets to target tuna.

A recommendation to focus work on the important task of producing annual catch estimates was proposed (see Appendix 3). The workshop also noted that there are other potential data to ground truth annual catch estimates, for example, export data.

It was suggested that the development of provincial fishery profiles was an essential task which would provide key information for planning the implementation of data collections systems and as a basis for providing more structured information from the Vietnamese tuna fisheries, in particular, annual catch estimates. A presentation of the RIMF fishery profile template was made by Mr Nghia and was accepted by the workshop with minor modifications, for example, the inclusion of a specific section on “*Annual catch estimates by gear and species*” with “*Trends in species composition and CPUE*”. This profile was an output of the ALMRV project, and the information collected during this project was acknowledged as essential to the future work in constructing historical annual catch estimates for the Vietnamese tuna fisheries. A suitable recommendation was formulated for future work in this important area (see Appendix 3). The workshop agreed that focus should initially be placed on the three central provinces but recognition that work should extend to other provinces in the future.

11. GEF WPEAOFM project – Vietnam Annual Work Plan (AWP) 2010

Dr Soh went through each activity listed in the WPEAOFM AWP for 2010 to determine where addition work may be required (and sourced from other areas), in particular, where the Netherlands government could assist in funding important work in 2010, not covered in the Annual Work Plan (AWP) for 2010. The outcome of this process was a revised AWP 2010 for Vietnam which is available at <http://cucktbvnlt.s.gov.vn/vn/default.aspx>.

12. Recommendations from the workshop

Based on discussions during the workshop, twelve (12) recommendations were developed and agreed by participants to guide the work required in the coming year (see APPENDIX 3). In drafting the recommendations for WPEA OFM data collection activities, the workshop recognized that the project needs to take steps during the course of the project to ensure its sustainability, to build capacity at all levels of planned activity, to disseminate information and outcomes from the project and maximize collaboration and cooperation with all relevant Government and industry agencies

13. CLOSE

The next review workshop was initially scheduled for June 2010, but later postponed to November 2010 due to a busy schedule in the coming months and the understanding that the insufficient data would be collected by June, and that November would be the start of the fishing season when review of data collection activities at the landing centers would be more appropriate. The next workshop will be held in one of the three central provinces.

Dr Lewis thanked the organizers of the workshop, in particular Mr Phan Viet Anh and the director (Dr Vinh) and staff of DECAFIREP. He also thanked the directors and staff of the three SUB-DECAFIREP provincial offices (Khaoh Hoa, Phu Yen, Binh Dinh) who hosted the field visits to ports of unloading during the previous week. Appreciation was extended to the WCPFC and the funding agency for the WPEA OFM project – GEF, and the other funding agencies involved in Vietnams tuna fisheries (WWF, NOAA and the Netherlands government). Dr. Soh also thanked the organizers of the workshop on behalf of the WCPFC. The meeting was closed with a round of applause.

APPENDIX I. VTFDC-1 Agenda



**West Pacific East Asia
Oceanic Fisheries Management**

**FIRST VIETNAM TUNA FISHERIES
DATA WORKSHOP**

15 – 17 March, 2010, Haiphong, Vietnam



AGENDA

DAY 1 (15 March, 2010)		
Times	Contents	Facilitators/Presentators
OPENING OF THE MEETING (08.00 – 09.40)		
08.00 – 08.30	Registration	DECAFIREP
08.30 – 08.40	- Introduction of participants	DECAFIREP
08.40 – 08.50	- Election of Chairman and Rapporteurs - Adoption of the Agenda	All participants
08.50 – 09.00	Opening address and objectives of the workshop (with reference to Inception WS last November).	Chu Tien Vinh, Director of DECAFIREP
COFFEBREAK (09.00 – 09.30)		
09.30 – 10.00	Overview of WCPFC tuna fisheries	Antony Lewis
10.00 – 10.30	Overview of Vietnam Tuna Fisheries	Nguyen Viet Nghia, RIMF
10.30 – 11.00	WCPFC data requirements (including uses of data)	Peter Williams
11.00 – 11.30	Vietnam data requirements	Duong Long Tri / NTC
	Data Requirements for Tuna Stock Assessment	Paul Van Zwieten
LUNCH (11.30 – 14.00)		
LANDINGS DATA COLLECTION		

14.00 – 14.10	Review of existing landings data collection programs of Phu Yen.	Sub-DECAFIREP
14.10 – 14.20	Review of existing landings data collection programs of Binh Dinh	Sub-DECAFIREP
14.20 – 14.30	Review of existing landings data collection programs of Khanh Hoa	Sub-DECAFIREP
14.30 – 15.00	Landing data collection in WCPFC (forms, protocols, existing data...)	Peter Williams
COFFEBREAK (15.00 – 15.30)		
15.30 – 15.45	Plan to start landing data collection program in 2010 and next years for project (consideration of legislation/compliance to be implemented; key landing ports and gears to cover; key stakeholders and staffing requirements; data management requirements; schedule for implementation)	DECAFIREP
15.45 – 16.30	Discussion on how to improve current landings data collection in order to meet the WCPFC requirements.	All participants
DAY 2 (16 March, 2010)		
PORT SAMPLING DATA COLLECTION		
08.00 – 08.30	Review of existing port sampling programs, forms and protocols in Vietnam	DECAFIREP
08.30 – 09.00	Port sampling data collection in WCPFC (forms, protocols, existing data...)	Peter Williams
09.00 – 09.15	Plan to start port sampling data collection program in 2010 and next years for project (key landing ports and gears to cover, staffing requirements, review of port sampling protocol, forms and coverage, data management requirements, schedule for implementation...)	DECAFIREP
COFFEBREAK (09.15 – 09.45)		
09.45 – 11.30	Discussion on how to improve port sampling data collection in Vietnam in order to meet the WCPFC requirements.	All participants
LUNCH (11.30 – 14.00)		
LOGSHEET PROGRAM		
14.00 – 14.30	Review of existing logsheet programs, forms and protocols in Vietnam	Pham Ngoc Tuan
14.30 – 15.00	Logbook data collection in WCPFC (forms, protocols, existing data...)	Peter Williams
COFFEBREAK (15.00 – 15.30)		

15.30 – 16.30	<p>Discussion on how to improve the logbook program implementation in order to meet the WCPFC requirements:</p> <ol style="list-style-type: none"> 1. Consideration of legislation/compliance to be implemented; 2. Gears to cover; 3. Review of logsheet data collection forms and protocols; 4. Data management and staffing requirements; 5. Schedule for implementation 	All participants
DAY 3 (17 March, 2010)		
OBSERVER PROGRAM		
08.30 – 09.00	Review of existing observer programs	WWF
09.00 – 09.30	Observer activities in the WCPO	Peter Williams
09.30 – 10.30	Discuss on how to establish a tuna fisheries observer program in Vietnam	All participants
COFFEBREAK (10.30 – 10.40)		
TUNA FISHERIES DATA MANAGING		
10.40 – 11.00	Review of existing fisheries database systems	Nguyen Ba Thong
11.00 – 11.30	Development and maintenance of the Vietnam tuna fishery database system	Peter Williams
WRAP-UP SESSION		
11.30 – 12.00	<ul style="list-style-type: none"> • Main recommendations from the workshop • Next meeting (venue and preliminary dates) 	All participants
12.00	Closing meeting	Chairperson

APPENDIX 2. List of Participants



**West Pacific East Asia
Oceanic Fisheries Management**

**FIRST VIETNAM TUNA FISHERIES
DATA WORKSHOP**



15 – 17 March, 2010, Haiphong, Vietnam

LIST OF PARTICIPANTS

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“THU THẬP SỐ LIỆU NGHỀ CÁ NGỪ Ở VIỆT NAM”

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Ả Hải Phòng, 15-17/3/201**

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APPENDIX 3. Recommendations from VTFDC-1

FIRST VIETNAM TUNA FISHERY DATA COLLECTION WORKSHOP (VTFDC-1)

Hai Phong, Vietnam
15–17 March 2010

RECOMMENDATIONS

In drafting the following recommendations for WPEA OFM data collection activities, the workshop recognized that the project needs to take steps during the course of the project to ensure its sustainability, to build capacity at all levels of planned activity, to disseminate information and outcomes from the project and maximize collaboration and cooperation with all relevant Government and industry agencies.

1. Provisional annual tuna catch estimates

The provision of annual catch estimates is a fundamental reporting obligation for members, cooperating non-members and participating countries and territories (CCMs) of the WCPFC. The workshop identified information that might be used to compile annual tuna catch estimates in Viet Nam. The workshop recommended that provisional historical annual oceanic tuna¹ catch estimates for the Vietnam longline, purse seine and gillnet fisheries be determined by DECAFIREP and submitted by the WPEA Project National Tuna Coordinator (NTC) to the WCPFC Secretariat prior to April 30 2011.

2. Data inventory

The workshop noted that considerable data have been collected from the Vietnam tuna fisheries over past decades which could be potentially useful for tuna stock assessments and in planning sampling programmes. In order to evaluate the need for establishing a historical data rescue project, the workshop recommended that the development of an inventory of available catch/effort and biological data for Vietnam oceanic tuna fisheries be coordinated by the DECAFIREP, and the inventory provided to the WCPFC Secretariat by the WPEA Project NTC prior to July 2010 for consideration at the WPEA Project Steering Committee during the 6th Scientific Committee. The key elements of the inventory will be (i) source of data, (ii) type of data, (iii) temporal and spatial resolution, (iv) time periods covered, (v) availability and (vi) media (e.g. electronic, hard-copy). This work would consider available oceanic tuna fishery data from all provinces.

3. On-board storage and landing procedure

The manner in which the large-mesh purse-seine and gillnet vessels may store their tuna catch on-board (e.g. sorting by size and species group) and subsequently unload is critical to determining the port sampling protocol for these vessels. The Workshop therefore recommended that DECAFIREP investigate the practices for on-board storage of the large-mesh purse-seine and gillnet catches, instances of on-board sorting and how these vessels unload their catch and prepare a progress report for presentation at the next Tuna Data Collection Review Workshop, scheduled for June 2010.

¹ skipjack, yellowfin and bigeye tuna

4. Estimation of coverage rate and annual catch

To facilitate the determination of target coverage for port sampling and landings data collection, and the estimation of annual tuna catch, the Workshop recommended that DECAFIREP produce the following information :

- (i) Oceanic tuna fishery profiles for each of the three Central provinces (Khanh Hoa, Phu Yen and Binh Dinh according to a template to be developed by RIMF with the cooperation of WCPFC, drawing on previous profiles developed during the ALMRV Project (by end of 2010),
- (ii) A register of active vessels targeting oceanic tuna (longline, large-mesh purse-seine and gillnet vessels) for each of the three central Provinces) (for June 2010)
- (iii) Summary of the extent and patterns of activity (number of trips) of multi-gear vessels, and investigation of the extent of reliance on carrier vessels by gear (by June 2010), and
- (iv) Tabulation of the monthly frequency of landings by port and gear (for the longline, large-mesh purse-seine and large-mesh gillnet vessels only) (by June 2010).

5. Data collection forms and protocols

DECAFIREP will produce a revised proposal detailing the data collection forms, protocols, implementation strategies (including training of enumerators, enumerator supervisors and stakeholder awareness), based on the comments made during the Workshop and distribute to workshop participants prior to April 15th 2010. The purpose of the revised proposal is to facilitate organization of workshops and training activities.

6. Meeting for awareness-raising and seeking cooperation with stakeholders in the industry

Acknowledging the importance of stakeholder awareness, DECAFIREP will support a half day meeting for each port to inform stakeholders (i.e. tuna fishing associations, fishing vessel captains, buyers, processors, etc.) of the objectives of the project and seek their cooperation coinciding with the next visit to the three central Provinces to conduct enumerator training (planned for April 2010).

7. Species identification guides

The WCPFC/SPC will provide translated versions of the species ID manuals (electronic-file version) for enumerators and stakeholders before the April 2010 enumerator training workshops. It was also recognized that RIMF is well placed to provide technical assistance/resource material related to species identification on an ongoing basis.

8. Logbook data collection system

The workshop noted the importance of recent initiatives in establishing a logbook data collection system in Vietnam, in particular the increased incentives for logbook reporting in response to measures introduced by EU to address IUU fishing. The workshop noted that the current logbooks for gears targeting oceanic tunas (longline, large-mesh purse seine and gillnet) do not completely satisfy the WCPFC requirements for operational catch/effort logsheet data, but that the changes required to the logbooks are relatively minor. DECAFIREP will consider changes to the current longline logbook in the first instance.

9. Sources of information for Landings data

DECAFIREP and provincial officers (Sub-DECAFIREP) will investigate potential sources of information collected by port authorities, buyers, processors and other stakeholders involved in the unloading process in order to design the landings data collection system.

10. Vietnam tuna fisheries Observer Programme

The workshop recommends that a pilot observer programme will be established during the course of the WPEA project. Strategic planning will commence in June 2010 with the identification of training needs, gears to be covered, target level of coverage, manpower needs, financial resources and extensive industry consultation.

11. Tuna tagging

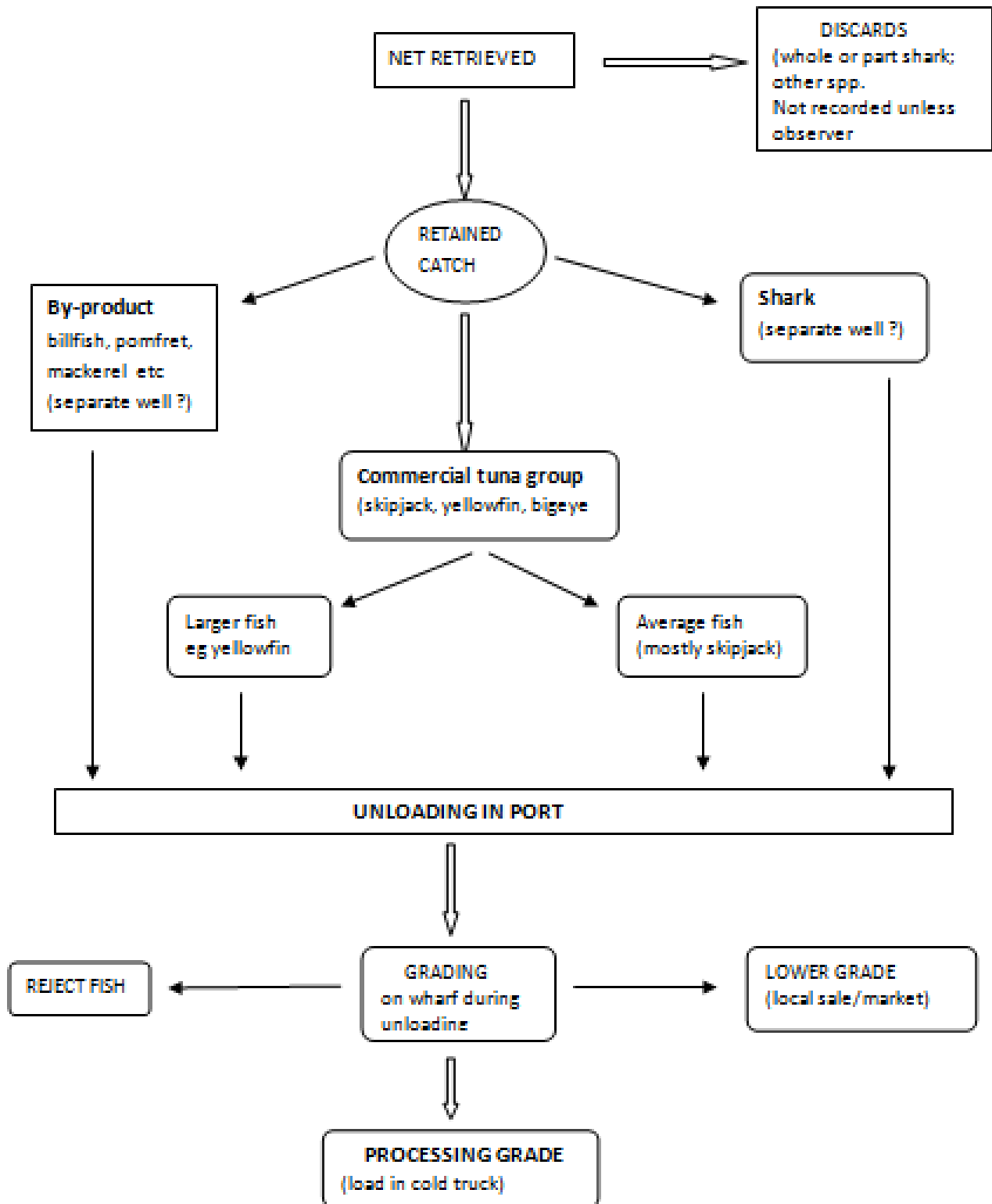
The workshop highlighted the need to raise awareness of the Pacific Tuna Tagging Project (PTTP) in Vietnam and encouraged the return of tags at the Provincial level.

12. Project Information dissemination

The workshop encouraged the dissemination of information from the project to the general public (particularly at the provincial level) using various media, dedicated web pages and through community-based communication, and make available all information in Vietnamese.

APPENDIX 4. Flowchart of potential fish handling on gillnet vessels

GILLNET



APPENDIX 5. Template for the Provincial tuna fisheries profile**TUNA FISHERIES PROFILE****Executive summary****1. Introduction****2. Natural, resource and tuna fisheries status**

2.1. Natural conditions

2.2. Status of resources

2.3. Tuna fisheries status

2.3.1. Tuna fishing fleets

2.3.2. Fishing activities

2.3.3. Tuna fishing grounds

2.3.4. Annual catch estimates by gear and species

2.3.5. Trends in species composition and CPUE

2.3.6. Price fluctuation

2.4. Tuna fisheries logistics and utilizations

2.4.1. Infrastructures and logistics

2.4.2. Utilization

2.5. Tuna fleet economic-efficiency

2.5.1. Cost for fishing

2.5.2. Benefit

3. Social-economic characteristics**4. Tuna fisheries management status**

4.1. Institutional frameworks

4.2. Legal frameworks for tuna fisheries development and management

4.3. Overall remarks for tuna fisheries management

5. Conclusions**References****Appendixes**

APPENDIX 6. Review of Vietnamese logsheets against WCPFC requirements

Review of Vietnamese logsheets against the WCPFC requirements for Operational logsheet catch/effort data

(see www.wcpfc.int/statprov)

LOGSHEET TRIP HEADER	Vietnam forms			Notes
	LL	PS	GN	
Name of the vessel	YES	YES	YES	
Country of registration	[NO]	[NO]	[NO]	This field not provided on the logsheet, but is available on the Vietnam Vessel register.
Registration number	[NO]	[NO]	[NO]	This field not provided on the logsheet, but is available on the Vietnam Vessel register.
International radio call sign	[NO]	[NO]	[NO]	This field not provided on the logsheet, but is available on the Vietnam Vessel register.
Port of departure	NO	NO	NO	
Date of departure	YES	YES	YES	
Port of unloading	NO	NO	NO	
Date of arrival in port of unloading	YES	YES	YES	
Mesh size	N/A	NO	NO	Not required for the WCPFC but important for species target in PS and GN
Net length and depth	N/A	NO	NO	Not required for the WCPFC but important for PS and GN
Target species	NO	NO	NO	Not required for the WCPFC but useful for all gear types to determined what is being targeted...

LOGSHEET SET and DAILY DETAILS	Vietnam forms			Notes
	LL	PS	GN	
Activity	NO	NO	NO	Activity codes relevant to each gear type is a strong requirement
Date of start of set or Date if no fishing on that day	YES	YES	YES	
Time of start of set	YES	YES	YES	
Position of start of set	YES	YES	YES	Position should be to nearest thousandths of minute (PS) and nearest minute (LL)
Number of hooks per set	NO	N/A	N/A	This field is recorded at the TRIP level, but may change from set to set.
Number of branch lines between floats	NO	N/A	N/A	
School association	N/A	NO	N/A	Species school association by set is required for purse seine
Number of fish caught per set	NO	N/A	N/A	Number of fish caught per species per set is a strong requirement for LONGLINE
Total weight or average weight of fish caught per set, by species	YES	YES	YES	The species have not been indicated on the form but there is provision to enter the species. <u>It would be better to indicate the species required for each gear type on the form. (List of species for each gear to be provided)</u>
<p>Species to be covered</p> <p>Longline : Yellowfin and Bigeye tuna, Blue Marlin, Black Marlin, Swordfish [Striped Marlin]</p> <p>Purse seine and Gillnet [large-mesh] : Skipjack, Yellowfin and Bigeye tuna (Frigate/Bullet tuna, other neritic tuna species)</p>				

APPENDIX 7. Provisional annual catch estimates for the Central Provinces

PROVISIONAL ANNUAL CATCH ESTIMATE FOR CENTRAL PROVINCES, BASED ON VESSEL NUMBERS AND PRODUCTION DATA

Province	Longline	Purse seine	Gillnet	TOTAL
Phu Yen	4,500 (519 vessels)	5,000 ² (220)	6,000 ³ (200)	15,500
Binh Dinh	3,430 (704)	7,500 ³ (40-60)	1,200 ⁶ (60)	12,130
Khan Hoa	2,000 ¹ (105)	600 ⁴ (20)	5,000 ⁷ (828)	7,600
	9,930 (1327)	13,100 (300)	12,200 (1088)	35,230

- 1 Assume 6t per year, based on per-vessel catch in other provinces (6 trips X 1 tonne/trip)
670 vessels in Tuan study include inshore vessels < 20hp; catch estimate from En
- 2 Assume 40t per year average oceanic tunas, with only half of vessels fishing for tuna
- 3 Assume 30t per year average oceanic tunas; est. of 10,000t small tunas per year (p/s and gillnet)
with 60% SJ
- 4 Assume 30t per year average oceanic tunas
- 5 Assume 200 oceanic vessels fishing for oceanic tuna with est catch 6000t
- 6 Assume 20 t oceanic tunas /yr, with most vessels fishing for tuna
- 7 Assume 25t/yr with 25% of vessels fishing for tuna

Province	Longline	Purse seine	Gillnet	TOTAL
Ba Ria Vung Tau	2,000 (large vessels)	3,000 (skipjack)		5,000
North Central (Da Nang, Quang Nam, Quang Ngai)	All gears (longline, p/seine, gillnet)			6,000
South Central (Ninh Thuan, Binh Thuan)	All gears (longline, p/seine, gillnet)			3,000
				14,000
TOTAL VIETNAM				49,230