REPORT OF THE SECOND WPEA – INDONESIA TUNA DATA REVIEW WORKSHOP

15-18 November 2011
Kendari and Bitung, North Sulawesi, Indonesia

Western and Central Pacific Fisheries Commission
Pohnpei, Federated States of Micronesia
December 2011

Contents

1. INTRODUCTION

The Western and Central Pacific Fisheries Commission (WCPFC) has been involved in Philippines tuna fishery data collection through the Indonesia and Philippines Data Collection Project (IPDCP), which was developed at the Preparatory Conference for the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific (Anon. 2003) and adopted by the WCPFC in December 2005. The objectives of the IPDCP were

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.

The funding available under the IPDCP project was fully-utilized by 2009, but continuation of this important work in the Philippines (and Indonesia and Vietnam) has been subsequently included in 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 landed catch and size data collected from Port sampling is recognized to be fundamental to oceanic tuna stock assessment, both at the regional and national levels. Port Sampling was established in the Indonesian WCPFC Area (Bitung and Kendari) in April 2009, in particular, the workshop in January 2009 provided the data collection forms now used for port sampling in Indonesia. The first review workshop was conducted in November 2010 http://www.wcpfc.int/west-pacific-east-asia-oceanic-fisheries-management-project).

A visit by the WCPFC Representative (Mr Peter Williams) was made to Indonesia during the week 14-19 November, covering two days in Kendari and three days in Bitung to review the progress with the establishment of sampling in the ports of Bitung (North Sulawesi) and Kendari (South-east Sulawesi). This visit was the second major review of this type. The review was structured around the following activities, most of which were undertaken in two workshops in Kendari (15th November) and Bitung (17-18th November):

- Informal interviews with enumerators from each landing site (Bitung and Kendari)
- A review/audit of the 2011 data collected to date
- A review of the database system with the P4KSI Database Technician from
- Observation of landings from several sites and gear types in Bitung and Kendari
- Observation and evaluation of enumerators sampling the landed catch at sites in Bitung and Kendari

Convening the workshops allowed supervisory staff from the offices of *Pusat Penelitian Pengelolaan Perikanan dan Konservasi Sumberdaya Ikan*[1] (P4KSI) Jakarta and enumerators to present a progress report of activities and problems encountered in port sampling to date. It also provided the opportunity for the WCPFC representative to present an overview of data requirements, the results from the review of the port sampling and recommend appropriate training as a result of the review. The workshop also reviewed recommendations from the first workshop (November 2010) and produced new recommendations for improving data collection. Planning for new data collection initiatives in 2012 were also discussed, in particular, trial observer data collection and establishment of port sampling in another port with significant tuna landings.

The following sections provide a summary the presentations and discussions during the workshops held in both Kendari and Bitung.

2. INDONESIA PORT SAMPLING DATA REVIEW

The main focus of the workshop was the agenda item reviewing the Indonesian port sampling data collected in Bitung and Kendari. The following sections briefly cover the key points from each presentation and subsequent discussion, noting that more detailed information is available in each presentation (see APPENDIX 4 for a list of presentations).

2.1 Overview of the WPEA-OFP project in Indonesia

As an introduction to the workshops, Mr Fayakun Satria (P4KSI) provided an overview of the WPEA-OFP project in Indonesia highlighting the activities under the Annual Work Plan (AWP) for the second year of the project; readers are directed to the presentation for more detail. The main points of the presentation were:

- A brief historical overview of the establishment of the WPEA project
- The main activities under the WPEA project during 2011 were the continuation of port sampling in Bitung and Kendari, the workshops on port sampling and annual catch estimates and review of the port sampling database.
- Summarised data collected by enumerators were presented.

2.2 Status of sampling in Bitung and Kendari Landing sites

The enumerators were asked to report on activities over the past year, with specific reference to the following areas:, (a) summary of data collected, (b) problems faced and (c) changes in fleet and on-shore activities in the past year.

The following issues were raised by enumerators in **Kendari**:

- There was one instance when the catch from a pole-and-line carrier was sorted on-board, so the PPS Kendari enumerators did not sample this catch;
- Most of the catch unloaded at Sodohoa come from vessels that use two types of fishing methodologies during the trip. These vessels use kites and troll/shallow handlines to target small tuna (mainly skipjack) at the surface during the day and very deep-set handlines to target large tuna at night. This

[1] Indonesia Research Centre for Fishery Management and Conservation of Fishery Resources

has certain ramifications for how to deal with the data collected from these vessels (see Recommendations);
- Some troll vessels take on the excess catch from purse seine and pole-and-line vessels; these vessels should not be sampled;
- There was some discussion on the sampling of purse seine carriers unloading large amounts over 1-3 days, with the workshop recommending that the protocol from last year's meeting be adhered to with a minimum of 375 fish to be sampled.
- The workshop noted that there are catches of large YFT landed in nearby Butan which are not sampled. It was agreed that it would be very useful for enumerators to obtain more information on this and other sites where significant volumes of tuna are unloaded; obtaining information on where the catch is destined (i.e. market) would also be very useful.
- The inconsistencies in the fishing area codes were noted and the workshop agreed to come up with a common fishing grid system (see Recommendations).

In summary, there have been clear improvements in the data collection in Kendari with the important problems identified last year now resolved. In particular, the enumerators are more confident in identifying small BET from small YFT. There were very few bigeye tuna viewed during the visits to Sodohoa and PPS Kendari and the best means of identification for the bigeye tuna (45-50cm) observed appeared to be viewing the fork in the tail when comparing to the yellowfin given the quality of the fish being unloaded, it meant it was difficult to compare the banding patterns on the body of the fish. The few bigeye tuna observed from the HL/TR unloading was an expected outcome since the mode of fishing (i.e. generally day/shallow).

The following issues were raised by enumerators in **Bitung**:

- Large yellowfin unloaded from the Sinar carriers should be accounted for in the landings data recording.
- It was reported that some longline vessels had moved from BMU to Aneka Loka to offload their catch, but a subsequent meeting at the latter site clarified the situation and they are still using the BMU wharf which is covered by enumerators;
- There was some discussion on how enumerators might make best use of the data they enter into EXCEL. It was suggested that the enumerators should not need to enter the data and instead rely on P4KSI Jakarta data entry staff. Once the data are entered into the main database, then P4KSI can send summaries of the data to each of the enumerators.
- Additional reports in the P4KSI database were suggested (see Recommendations).
- Large-fish handline unloadings at PPS Bitung started at 03:00 and this was a potential problem, since enumerators were often not informed they would take place. The workshop noted that not all 03:00 unloadings need to be monitored and a (reasonable) selection of landings at this time should only be covered (particularly if there are landings at other hours in the day). It was also noted that the "Pengawas" (Surveillance) had the schedule of landings and enumerators should therefore keep in contact with them to plan their sampling.
- Enumerators sampling large fish (LL and HL) noted that the 170 cm calipers were a problem (too large and getting in the way). The workshop agreed that if these calipers were a problem and the length of the fish could not be obtained, then at the very least, the weight of the individual fish should be recorded. P4KSI suggested they would investigate a new design of the 170cm caliper to be less of a hindrance to the unloading operation.
- The workshop suggested a new protocol for recording the weight of headless fish in the longline unloading. The length would not be taken, and the weight (to the nearest decimal place) would be recorded, with the code "(HD)" to indicate this is the headless weight. The database system would

need to be updated to support the new field (processing code) and an estimate of whole weight provided in the database system.
- There were 16 tag recoveries provided since August 2011.

In summary, there have been noted improvements in the data collection in Bitung, for example, the improved procedures at Sinar for access to the fish, the use of calipers and more landing site information. An update on information provided last year (during the first workshop) has confirmed our previous understanding on the key landing sites. A table containing statistics of average landed catch/vessels by gear and landing site was produced by the Bitung enumerators for future reference after the workshop. It was noted that Bitung differs from Kendari in that the Bitung enumerators are employed on an interim basis since they will normally continue to pursue their studies or find other types of work. This high turnover of staff could be a potential problem and ensuring there is continuous training and supervision is therefore more important in Bitung than in Kendari. Enumerators indicated that they were comfortable identifying juvenile YFT/BET and continually monitored the possible presence of on-board sorting.

2.3 Overview of WCPFC tuna fisheries and requirements for data

The WCPFC representative, Mr Williams, provided an introductory presentation on the WCPFC requirements for scientific data, covering the following areas:

- Brief overview of WCPO fisheries by gear type
- Summary of tuna stocks status
- Why we collect data from tuna fisheries including reasons why data collection, research and management must be conducted at the regional level
- The WCPFC member country data-reporting obligations (refer to http://www.wcpfc.int/doc/data-01/scientific-data-be-provided-commission-revised-wcpfc4-wcpfc6)
- Current data collection in Indonesia (WCPFC Area), including example summaries of data
- Future prospects ?

The purpose of this introductory session was to inform participants of their role and the importance in collecting and providing scientific data to the WCPFC, but also how these data can be important to Indonesia. It was noted that the importance of the data collected by P4KSI enumerators to the WCPFC covers the following main areas:

- Provides essential tuna species composition data for determining annual catch estimates by GEAR,
- Provides essential TUNA SIZE DATA for the regional stock assessments,

In the coming years, it was noted that the WPEA-OFM would serve to assist improvements in the coverage and quality of tuna data collection in Indonesia. WCFPC members have a common goals in regards to the maximize catches while conserving tuna stocks (sustainable exploitation). Some important factors affecting the tuna fishery in the future include the need for food security and economic welfare (at the national level), and the increasing scrutiny by the external markets with more demands on demonstrating responsible fishing practices. In this respect, it was noted that the WPEA countries need a better understanding/knowledge of their important tuna resources, through appropriate Data Collection Systems, and appropriate Data Management Systems.

3. REVIEW OF PROGRESS ON RECOMMENDATIONS FROM THE FIRST WORKSHOP

The Workshop briefly reviewed each of the recommendations from the First Workshop and noted the current status, in particular, which recommendations would be covered by specific agenda items in this second workshop. **APPENDIX 3** provides a summary of the current status of progress on dealing with the recommendations from the First Workshop.

4. FUTURE DATA COLLECTION INITIATIVES

4.1 Extending Port sampling to other ports

The workshop discussed the intention to extend sampling to a third port in 2012. The original plan to extend sampling to Sorong in 2012 was discussed further outside the meeting and it appears that contrary to previous understanding, there are very few tuna landed (small-scale vessels only) and it is more important for demersal species and shrimps. In regards to potential sites to extend for port sampling, Ternate seemed to be the better candidate with around 25 t of large YFT from handline vessels unloaded per month, so Ternate was tentatively selected by the workshop as the next port for monitoring, with a plan to train two enumerators in the first instance. Other ports to consider in the future include Gorontalo, Sorong and Larantuka Is.

4.2 Trial observer trips

The workshop considered the plan to conduct observer trips out of Bitung in 2012 and decided to proceed as planned (see Recommendations). It was noted that careful thought would be required prior to proceeding with the observer trials in 2012 with respect to the long term plan for an observer programme and the expected working relationship between P4KSI and DGCF in running a viable observer programme.

In regards to training, it was suggested that the training workshop should be structured more like a "train-the-trainer" workshop so that permanent staff will be provided with the capabilities and resources to train enumerators to conduct observer work, bearing in mind that the turnover of enumerators is high since they tend to move on to studies or other work.

5. PRELIMINARY REVIEW OF DATA COLLECTED IN 2011

The data collected by Enumerators and entered into the databases covering 2011 activities to date were audited in the fringes of the workshop and a confidential report produced for P4KSI to review and action, and a presentation prepared to provide feedback to the enumerators. In general, the species composition and length frequency data by gear and species is representative to what we would expect, expect for the following issues which were highlighted under this action item:

- For species composition data, the high BET % for the Troll/Handline gears reported from one landing site has now been rectified.
- The low YFT % reported for some PS landing sites may be the declared landings from vessels (less reliable) and not species composition from sampling, so further investigation is required.
- For the size composition data, there was some evidence of rounding at 10 cm intervals, although the most significant problem was some evidence of data repetition or fabrication from one site, although this appears to have been resolved with a change in staff.

The P4KSI supervisors and the enumerators would be provided with details of audit results for their background and any subsequent action, and the complete 2011 data would be reviewed again in April 2012. The purpose of the audit was to ensure that enumerators are aware of problems where they exist in an attempt to resolve them as soon as possible through changes in procedures/protocols and/or further training, where relevant.

6. RECOMMENDATIONS AND WORKSHOP CLOSE

The workshop participants reviewed and agreed on a list of eleven recommendations based on discussions made during the three days (see **APPENDIX 5**). All participants agreed to action the recommendations relevant to their work over the coming year.

The WCPFC/WPEA are committed to holding this type of workshop on an annual basis in the short term to review the data collected by the P4KSI enumerators and identify priority areas for improved coverage and data quality. P4KSI data provide key information for determining the species composition of the catch which is used by DGCF to determine annual catch estimates for the Indonesian-domestic fleets by gear, which is the subject of another workshop conducted in March each year.

The representatives from P4KSI provided brief closing remarks, thanking the regional participants for their attendance, highlighting the importance of the Indonesian data to the WCPFC and the productive discussions made during the workshop. The meeting was closed with a round of applause and numerous photos.

APPENDIX 1 – AGENDA

SECOND WPEA – INDONESIA PORT SAMPLING TUNA DATA REVIEW WORKSHOP

Bitung and Kendari, North Sulawesi, Indonesia
15, 17-18 November 2011

1. Opening and participant introductions
2. Overview of the WPEA Project in Indonesia (P4KSI)
3. Status of sampling in Landing sites in BITUNG and KENDARI (Enumerators)
    a. Summary of data collected
    b. Problems faced
    c. Changes in fleet and on-shore activities in past year
    d. Other information...
4. Latest developments in WCPFC Tuna Fisheries (WCPFC/SPC)
5. Review of progress on recommendations from the 1st WPEA-Indo Port sampling WS (WCPFC/SPC)
6. Future data collection initiatives
    a. Extension of Port Sampling activities to other areas
    b. Potential Observer trips in 2012
7. Preliminary review of data collected in 2011 – results of data audit (WCPFC/SPC)
8. Recommendations from the Workshop
9. Next workshop
10. Close

APPENDIX 2 – LIST OF PARTICIPANTS

***Pusat Penelitian Pengelolaan Perikanan dan Konservasi Sumberdaya Ikan*[2] (P4KSI) Staff**

- Fayakun Satria
- Mahisihara
- Bayu
- Perbudi
- Arie Wibowo

BITUNG Enumerators

- Mistun, ST.
- Salman, M.Si
- Siti Mujayanah, A.Md
- M. Jaenal Sukri, A.Md
- Herry Idrawan Gusti, A.Md
- Andre M. Sahea
- Suprianto, A.Md
- Amrul M. Asmin, A.Md
- Musthaqim Massora, A.Md
- Farid Irawan, A.Md
- Hamilton Kakambang, A.Md
- Warid Basith, A.Md

KENDARI ENUMERATORS

- Wahyu Krisdiya
- Katirin
- M. Munawar SE
- Muh Hasyim Tahir
- Budi S
- Iswadi
- Irwan TahirKemal Hidayat T.

WCPFC/SPC

- Peter Williams

[2] Indonesia Research Centre for Fishery Management and Conservation of Fishery Resources

APPENDIX 3 – Progress on Recommendations of First WPEA – Indonesia Data Workshop

FIRST INDONESIAN/WCPFC PORT SAMPLING DATA REVIEW WORKSHOP

25 November 2010

RECOMMENDATIONS

PROGRESS as at November 2011

1. The workshop noted that calipers were the best device to measure fish and the use of measuring tapes discouraged. Two sets of Calipers are in use in Bitung already. Measuring boards can also be used in situations where the vessel captains and receivers of fish (buyers, processing plants) do not object to handling the fish. The workshop recommended that **P4KSI** arrange to have calipers made as a matter of urgency since this is affecting the quality of the data collected. It was recommended that at least one caliper be made available for each landing site monitored by enumerators. For landing sites covering surface fisheries, calipers with lengths 70 cm and 100 cm should be available and for landing sites covering handline and longline gears, calipers with lengths 150 cm or preferably 170 cm should be available.

   Done. The new calipers are working well.

2. The workshop noted the initial feedback provided from data audit process, which involved a review of the data collected during 2010 and interviews with enumerators from each sampling site. **WCPFC/SPC** will write up the results of the data audit and make this report available to **P4SKI and the Enumerators** for subsequent action. **P4KSI** will be responsible for updating the data collection protocols to reflect the changes in procedures as a result of the data audit. The main issues identified in the data audit which will need resolution are as follows :

   a. Calipers should be used by Enumerators wherever possible (see RECOMMENDATION 1.)

      Done

   b. The longline data collection protocol should be used by **Enumerators** sampling in NUTRINDO. The longline vessel name should be recorded (instead of the truck) by the enumerator in NUTRINDO. The sampling site (NUTRINDO) and the actual site where the vessel landed the catch to the trucks should also be recorded on the data collection form for sampling in NUTRINDO. **P4KSI Data Manager** will add a new field to cater for the actual landing site in these cases.

      The database system has been modified, but the form has yet to be modified.

   c. The "days" effort from the purse seine carrier vessels sampled at SINAR represent the days at sea for the carriers and not the effort by catcher vessels. It is not possible to get effort of

catcher vessels so these data should be ignored by at this stage. A suitable flag in the database system should be considered by the **P4KSI Data Manager**.

The database system has been modified, but need to check that the form caters for this.

d. It was recommended that **P4KSI** modify the protocol at SINAR to select a 'basket' of fish used to transfer fish from the vessel holds to the bins, for those cases when the captains do not have any problems with the sampling. Baskets should be selected throughout the unloading process by **Enumerators** so that a total of around 300 fish are measured for each unloading. Fish that have distorted body shape or with broken tails should not be measured.

Done – this is now working well.

e. Enumerators at PPS Kendari and Sodohoa, as one group, should conduct at least two visits to each other's sites and review/discuss the potential bigeye tuna catch from the troll/handline vessels to ensure the correct species identification has been made, using all species identification resource material available.

Enumerators in Kendari are more confident with small YFT/BET species identification as demonstrated during port visit (November 2011).

f. When loins are unloaded, Enumerators should report them as the number of fish (by species) after interviewing the captain, or if this is not possible, then the number of boxes of loins, under the title "LOIN BOXES" (by species) in the other species column.

This is not an issue anymore since the company has ceased requiring vessels to process their catch at sea.

g. The sampling of large catches (20 tonnes) unloaded from purse seine vessels at PPS Kendari by Enumerators should consider sampling a maximum of 500 fish, which can be spread over the days of the unloading (i.e. if 3 days – 170 per day, if 2 days, then 250 per day). If there are many large PS vessel landings in the month, then reduce the number of vessel landings sampled.

Done. This protocol has worked successfully during the past year.

h. Enumerators should complete the forms with all information since missing information was found in the data audit in the following fields :
   i. Gear
   ii. Bigeye
   iii. Processed state
   iv. Fishing area

Pending audit of data. The workshop suggested establishing a common fishing area grid system (see 2nd workshop recommendations).

i. Enumerators should endeavour to record the catch of species other than tuna in the total landed catch whenever possible, but the workshop acknowledged that reporting tuna catch is the highest priority at this stage.

Done. Noting that observers are better placed to collect detailed bycatch information

j. Enumerators should record the individual fish Length and weight in the following manner : Length to whole cms , rounded down; Weight rounded to 1 decimal place.

Done

k. Enumerators may record the total tuna catch only on landings form when the landed catch by species is not available since species composition from sampling can be used and applied through the database system.

Done

3. **P4KSI** (with assistance from **WCPFC/SPC**, where required) should explore all avenues possible to ensure the all landings sites in Bitung and Kendari are covered by total landings data collection in the future (see Tables 1 and 2). In this respect, Enumerators should be directed to obtain total landing information from DINAS and other sources in the short term, and official requests should be made to those other landing sites for access to sample fish. When planning data collection at these sites, P4KSI should ensure that double-counting of landings data is not occurring.

   Some work in this area over the past year, with Enumerators more aware of the need to understand what happens outside of the landing sites that are monitored. This recommendation has been carried over to this workshop's set of recommendations.

4. **P4KSI** will use the WCPFC/WPEA Quarterly report template produced during the visit as a basis for the quarterly report for submission to the WCPFC. The **P4KSI Data Manager** will continue to develop new reports (required for the WCPFC/WPEA Quarterly report) that are not yet available.

   Will continue as planned.

5. The workshop agreed to postpone extension of the sampling to other Indonesian ports until the protocols had been tested on all gears in Bitung and Kendari. The next workshop (2nd quarter 2011) would consider which port (e.g. Sorong, Ternate, Kupang, Ambon) would be considered for establishing port sampling in 2012. In order to make an informed decision on which port should be selected, **P4KSI** were tasked to prepare a summary of the total annual tuna catch by gear (for recent years) landed at these ports for review at the next workshop.

   A plan to initiate sampling in Sorong or Ternate during 2012 was discussed at this workshop. This recommendation has been modified and carried over.

6. The workshop agreed to consider conducting 4 observer trips on longline and purse seine vessels in 2012 (potentially using Bitung Enumerators), and that 2011 would be used for **P4KSI,** with assistance from **WCPFC/SPC,** to (i) organize the necessary resources (e.g. observer data forms), (ii) plan for training on observer data collection in 2012 and (iii) liaise with the companies to inform them of the pending observer work.

   A plan for observer activities during 2012 is summarized in the report of the second workshop. This recommendation has been modified and carried over.

7. The importance of the review workshops was acknowledged and **WCPFC/SPC and P4KSI** were requested to hold workshops on an annual basis. The next workshops were scheduled for 2nd quarter 2011 in Bitung and Kendari. **P4KSI** will organize half-day stakeholders meetings to be held in conjunction with the next Workshops in Bitung and Kendari.

   Done with this workshop. The half-day stakeholders meetings were not scheduled due to time constraints. This recommendation has been modified and carried over.

8. A request for a motorcycle was received from the PPS Kendari enumerators. **WCPFC** will review available funds (20 million IDR or ~USD 2,200) and advise whether the purchase of a motorcycle is possible.

   Not yet done. To be carried over to this workshop recommendations.

APPENDIX 4 – List of Presentations

1. MONITORING THE CATCHES OF HIGHLY MIGRATORY SPECIES IN PACIFIC WATERS OF INDONESIA (P4KSI)

2. Overview of WCPO tuna fisheries and Data collected from the East Indonesian tuna fisheries (WCPFC/SPC)

3. Preliminary Review of data collected in 2011 – results of the data audit (WCPFC/SPC)

APPENDIX 5 –Recommendations from Second WPEA – Indonesia Data Workshop

SECOND INDONESIAN/WCPFC PORT SAMPLING DATA REVIEW WORKSHOP

15, 17-18 November 2011

RECOMMENDATIONS

1. The workshop noted the difficulty in separating the catch of one vessel that uses two types of fishing methodology, for example, the shallow handline/troll gear during the day to target uvenile skipjack and yellowfin tuna and the deep handline gear at night to target large yellowfin. **P4KSI and WCPFC/SPC** were tasked to investigate how the data collected from these vessels should be stored in the database system to ensure the users of the data are informed of the different gears used.

2. The workshop recommended that **P4KSI** develop a map with grids to be used by all enumerators (Bitung, Kendari and Ternate) to identify the fishing areas, through interviews with the fishing vessel, which are then recorded on the data collection forms and stored in the database.

3. The workshop recommended that **P4KSI** endeavour to investigate any new sites landing significant quantities of tuna for potential future monitoring and report these to future workshops for consideration. Gorontalo was mentioned as one possible site to develop in the future.

4. The workshop recommended that the **WCPFC** review the remuneration provided to the Kendari enumerators so that they are aligned with the remuneration level of the Bitung enumerators.

5. The workshop recommended that **P4KSI** establish port sampling in Ternate or Sorong during 2012 with a one-week visit to train new enumerators, followed by another trip to review progress about 3-4 months later.

6. The workshop agreed to consider conducting at least 4 observer trips on longline and purse seine vessels based out of Bitung during 2012. **P4KSI** were tasked with the following:

    - Nominate the observers;
    - Determine appropriate addition to their salaries for each observer trip;
    - Liaise with the companies to inform them of the pending observer work

    WCPFC were requested to --

    - Provide the necessary resources (e.g. observer data forms and training material)
    - Consider a training course for potential observers

7. The workshop suggested that **P4KSI** update the document on Sampling Protocols to include the following new procedures:

a. How to record the measurements (weights) of headless fish unloaded from LONGLINE vessels
b. The limit of the number of fish to measure from large purse seine unloading
c. The inclusion of the vessel landing site where the trucks bound for Nutrindo are loaded with catch

The version number and date should be included each time the document is updated.

8. The next workshops are scheduled for late 2012 in Bitung and Kendari. **P4KSI** will endeavour to organize half-day stakeholders meetings to be held in conjunction with the next Workshops in Bitung and Kendari.

9. The workshop recommended that the **Bitung Enumerators** complete the template of landing site statistics for Bitung and then send it to **P4KSI** for inclusion in the workshop report.

10. The workshop recommended that **P4KSI** develop the following new database system reports:
    a. Weight frequency graphs (as per length frequency graphs)
    b. Species composition from sampling data only
    c. Annual sampling coverage report

11. The following requests for funds were proposed. The **WCPFC** will review available funds and advise whether these requests can be satisfied.
    a. A motorcycle for the PPS Kendari enumerators
    b. Rent for a home-base for the Bitung enumerators

APPENDIX 6 – Current status of landings activity at sites in Bitung.

APPENDIX 7 – Selected photos from landing site visits, Kendari and Bitung

SODOHOA LANDING SITE – KENDARI

Photo 1. Typical tuna species/size mix in the Handline catch landed in Kendari. Most of the catch (by number) is skipjack, taken by "shallow" handline gear, utilising hand-made kites, during the day-time around rumpons (anchored FADs). The large yellowfin are taken at night from the same vessels with 'deep-set' handline gear targeting depths of 150-180 metres. This represents the catch from a trip of about 1 week.

Photo 2. Sodohoa (Kendari) Enumerators measuring and recording the catch of an entire basket of fish directly unloaded from the handline carrier vessel before species and size sorting. Note the separate area with plastic sheet, etc. set by the enumerators to sample the catch.

Photo 3. Office room ("Sodohoa Tuna Monitoring Station") provided to Sodohoa Enumerators at the Fishing port.

BMB WHARF – BITUNG

Photos 4 and 5. Unloading from the storage wells of a purse seine carrier at BMB wharf in Bitung. The small brail is lowered into the holds and the (unsorted) catch is scooped up and poured into plastic baskets on the deck. Catch unloaded from the carrier vessels was typically around 150t.

Photo 6. A typical basket of tuna unloaded from the purse seine carrier at BMB wharf. The enumerators select 20-30 baskets randomly throughout the unloading (directly from the storage holds) for sampling before they are passed on to the sorting tables (see below). Note the yellowfin tuna in this basket.

Photo 7. Basket of tuna unloaded from the purse seine carrier at BMB wharf ready for species and size sorting (on the tables in the background).

Photo 8. Juvenile Yellowfin (and bigeye) tuna, after sorting at BMB wharf.

P4KSI MONITORING OFFICE - BITUNG

Photo 9. Office room provided to Bitung Enumerators at the Fishing port.

PT SINAR PUREFOODS WHARF – BITUNG

Photos 10 and 11. Unloading from the storage wells of a purse seine carrier at Sinar Purefoods wharf in Bitung; note the difference to unloading at BMB wharf. The plastic basket is lowered into the holds, filled with tuna and then lifted out by four crew, then transferred on a slide to be placed in large ~3 t. Stainless steel bins (see below); some sorting by size and species (including removing bycatch) occurs at or after the fish are placed in the steel bins. The enumerators select baskets at random (20-30 per unloading) before the fish are stored. Unloading occurs from wells fore and aft of the vessel at the same time, but still takes 2-3 days to unload about 150-200 t.

Photo 12. A typical basket of fish from the Sinar Purefoods unloading. This basket had more yellowfin than most of the others observed on this day.

Photo 13. A stainless steel bin set aside for the mahi mahi bycatch unloaded from the vessel.

Photos 13, 14 and 15. Stainless steel bin with tuna that are fork-lifted directly to the processing 100-200 metres away, at the base of the wharf. Note that there does not appear to be as much species sorting at this stage compared to BMB wharf. In any event, the Enumerators have access to the fish well before any sorting.