

# **REPORT OF THE THIRD WPEA – PHILIPPINES NSAP TUNA DATA REVIEW WORKSHOP**

14-15 May 2012  
Sydney Hotel Meeting Room  
General Santos City, Mindanao, Philippines



Western and Central Pacific Fisheries Commission  
Pohnpei, Federated States of Micronesia  
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## 1. INTRODUCTION

The Western and Central Pacific Fisheries Commission (WCPFC) has been involved in supporting tuna fishery data collection in the Philippines since 2006, initially through the Indonesia and Philippines Data Collection Project (IPDCP) and more recently through the **West Pacific East Asia Oceanic Fisheries Management (WPEA OFM)** project (funded by the Global Environment Facility - GEF), which began in 2010 (see <http://www.wcpfc.int/doc/2009/wpea-ofm-project-document>). The activities to be carried out under the WPEA 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 Philippines domestic fisheries are widespread, diverse and numerous, and the logistics for undertaking data collection to obtain representative indications for use in WCPFC scientific work presents a challenging task. The catch, effort and size data collected at landing centers collected in the Philippines through the BFAR National Stock Assessment Project (NSAP) provide fundamental information for tuna stock assessments and therefore, ensuring the appropriate quality and coverage of these data through the annual tuna data review workshop is a key activity of the WPEA OFM project.

The breakdown of species catch estimates by gear type for the Philippines domestic fisheries has been one of the most significant gaps in the provision of data to the WCPFC, and the annual tuna data review workshop also serves to produce tuna catch estimates that are subsequently used in the annual Philippines tuna catch estimates workshop.

The opening address by the Director of BFAR Region 12 Mr. Ambutong PAUTONG who welcomed participants to General Santos City (GSC), the tuna capital of the Philippines. He noted that having the meeting in GSC was appropriate as it is largest landing point for tuna in the Philippines, hosts the main processing plants and is the focal point for the export of up to 60% of tuna products from the Philippines. In recent years, more and more tuna landed in other regions (e.g. Palawan and Mindoro) are sent to GSC for processing before export. GSC is also hosting another important meeting this week to discuss, develop and eventually establish regulations related to the access by Philippine vessels to the high-seas pocket under WCPFC jurisdiction. He wished participants a productive week's discussions.

Dr Soh provided an opening address on behalf of the WCPFC. He noted that as a member of the WCPFC, the Philippines has certain obligations with respect to the collection and provision of data which are used to ensure the sustainable exploitation of the shared regional stock of highly migratory tunas. The WCPFC, through the IPDCP and more recently the WPEA OFM projects, have been working with the Philippines now for many years and in that time there have made significant progress in developing and enhancing data collection

systems for domestic tuna fisheries, in particular, landings data and port sampling data through the BFAR National Stock Assessment Project (NSAP).

He noted that we are now in the final year of the WPEA project, and given the achievements so far and likely favourable review of the activities undertaken, there are already indications of a possibly expanded GEF project to be developed and funded, possibly commencing during 2013. This workshop is very important in producing regional estimates and species composition data as input into the Annual Catch Estimates workshop and for the review of the NSAP data, which are an invaluable input into the WCPFC stock assessments.

## 2. REVIEW OF PROGRESS ON RECOMMENDATIONS FROM THE FIRST WORKSHOP

The Workshop briefly reviewed each of the recommendations from the Second Workshop and noted the current status, in particular, which recommendations would be covered by specific agenda items in this third workshop. **APPENDIX 3** provides a summary of the current status of progress on dealing with the recommendations from the Second Workshop. Two newsworthy items were reported under this agenda item:

- BFAR is planning to increase the budget to expand the NSAP sampling by 2013 but will depend on the to additional money that will be downloaded to the bureau, which cannot disclosed until June 1 and June 2. There are plans to conduct tuna tagging in the Sulu Sea in conjunction with WWF and PEW, but no details are yet available;
- The tuna genetics study is continuing with some interesting findings which will be written up over the coming year or so.

## 3. NSAP PORT SAMPLING DATA REVIEW

The main focus of these workshops is to (i) review NSAP port sampling data collected in each region and (ii) compile data to use in the annual catch estimates review workshop to be conducted in the following week. 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 7** for a list of presentations).

### 2.1 WCPFC Requirements for data

The WCPFC representative (Mr. Williams) provided an introductory presentation on the WCPFC requirements for scientific data and current issues with Philippines tuna data, covering the following areas:

- Why collect data ?
- Data-reporting obligations to the WCPFC
- Philippines submissions of data to WCFPC
- Why NSAP Data are so important ...
- Current issues with Philippines tuna data ...
- Workshop structure and expected outcomes

The purpose of this introductory session was to inform participants of their role and the importance in providing (the NSAP) data to the WCPFC and how the workshop would proceed to review their data.

The presentation noted that NSAP data collection has provided a significant contribution to resolving problems in Philippines catch estimates in recent years, including

- Provision of reliable Species composition by gear for annual catch estimates
- Highlighting the different characteristics between purse seine and baby purse seine operations and catch
- Highlighting the different characteristics between large-fish HL and hook-and-line
- Providing validation of catch volumes for municipal gears (e.g. hook-and-line)

The annual catch estimates by region produced from this workshop had improved over the past two years, but there was still considerable work to do. In response to a question, it was noted that the NSAP data are used in the regional stock assessments and that last year, for the first time, a separation of the Philippines purse seine and ringnet fisheries based on area was included in the assessments.

## 2.2 *Tuna Catch Estimates by Species and Gear Type in each NSAP Region*

Recent (2011) data collected from the NSAP in each region data were presented. Presentations from each region were structured in a similar manner and covered the following key areas :

- Main tuna fishing grounds and landing centers
- Seasonality in fishery
- Estimated number of vessels
- Estimated catch by species from NSAP and non-NSAP landing sites in the region
- Disposal of tuna catch (% breakdown)
- Problems in estimates or collecting data

A list of presentations is contained in **APPENDIX 7** and a list of the tuna catch estimates for each Gear/Region was compiled from the presentations and further discussion (see Section 2.4 and **APPENDIX 8**). The following are some of the interesting points noted in these presentations:

- There were reports that the landings of large yellowfin taken by handline vessels in several regions were being sent to General Santos City plants for processing before onward export. The main reason was that the price demanded for this product was much higher in General Santos City, which was struggling to find produce, so good incentive to have the fish sent there. The workshop noted the potential problems that could create if considering processing plant receipts in producing estimates and the possibility of double counting if the place of origin was not accounted for.
- For Region 1, it was noted that the BAS estimate in Arosan, Bolinao for bigeye tuna was too high but was used as a substitute since there was no NSAP sampling there. Further investigation is required for this site to determine the actual landings by Gear and Species. The Tuna Drift longline fishery in this region is not typical of the larger industrial longline fisheries and catch small tunas with a species composition different from the typical longline fishery (i.e. much more skipjack). Albacore are often landed in this region at a certain time of the year which is to be expected. It was noted that ringnet landings in Salomague, Cagayan were not accounted for and were subsequently added to the estimates for non-NSAP landing sites for this region.
- For Region 2, it was noted that Bluefin tuna are often caught but these catches are anecdotal at this stage with no samples encountered in NSAP sampling as yet. The East coast of this region is rugged with no viable landing sites, but foreign longline vessels are clearly visible at night from the shores. It was noted that the catches from these vessels are covered in the data provided by these (foreign) countries to the WCPFC.

- For Region 3, it was noted that the purse seine vessels operating in the northern areas tend to catch the oceanic tunas while the purse seine vessels in the southern areas (e.g. Subic) tend to catch more small pelagic. There were also reports on one ringnet vessels in Baler (East Coast) which has fished historically but recent activity needs confirmation.
- For Region 4B, the workshop noted that the BAS estimates presented were far too large and that catches for handline had dropped considerable since the closure of the Citra Mina processing plant in Puerto Princessa City. Summarized information from catch documentation certifications were available for Region 4 – Mindoro large Yellowfin tuna landings which suggested, after accounting for the proportion of the catch that are suitable for export, that the catch in this area was in the order of about 2,000-2,500 t.
- For Region 5, it was noted that Albacore again formed a significant part of the catch in the 4<sup>th</sup> quarter, mainly catches in Lagonoy Gulf (it accounted for 23% of the hook-and-line catch in 2011). There are only four enumerators in Lagonoy Gulf area and it is not possible for them to cover several other landing sites where significant quantities of tuna are apparently being unloaded. The ball-park estimates of tuna landing elsewhere is covered under Non-NSAP Landing sites in the presentation and these estimates are based on information from the key informants in these areas. It was recommended that BFAR/WCPFC provide funds to conduct Focus Group Discussions (FGD) in each region to get information on tuna landings in areas not covered by NSAP.
- For Region 6, some of the handline vessels catch large yellowfin but this was not separated from the hook-and-line gear when the data are collected (although the database system does this automatically now). There are some potentially important tuna landings at non-NSAP landing sites for vessels fishing in the west Philippines and that there seasonal landings of tuna in GSC
- For Region 7, there were reports of about twenty handline vessels fishing for large tunas and their catches going to GSC processing plants. These vessels fish in East Surigao and the Sulu Sea and operations are expanding.
- For Region 8, it was noted that the BAS Municipal estimates were very high and while the handline fishery was expanding, the BAS estimates were considered too high. A more in-depth review of Region 8 is covered under section 2.3 of this report.
- For Region 11, the east coast landing sites are not monitored and there are potentially important tuna landings sites. Gears catching tunas are mainly ringnet with about 95t/month at its peak and handline/hook-and-line at around 70t/month at its peak. There are sometimes albacore taken in Davao Gulf handline fishery. It was noted that some GSC processing plants are buying tuna from the foreign longline fleet landing in Davao.
- For Region ARMM, the NSAP landing sites appear to cover the majority of vessels landing tuna even though the NSAP sites are only a small proportion of all landing sites in this region (NSAP Sampling covers an estimated 50% of tuna landings in ARMM).
- For Region CARAGA, estimates for non-NSAP sites were provided, in particular Dinagat Island which was acknowledged to have tuna landings. Thunnus tonggol (Longtail tuna are an important catch for some landing sites in this region (presumably sites servicing vessels fishing in coastal areas and the Bohol Sea).

### 2.3 *A study on determining the Hook-and-line catch estimates in Region 8*

A presentation on a recent study that looked to improve the hook-and-line catch estimates in Region 8 by BFAR/NFRDI (Ms Elaine Garvilles). This study was undertaken in response to a recommendation from the 4<sup>th</sup> Philippines Annual catch estimates which highlighted the unreliable estimates from the hook-and-line fishery and that efforts should be directed to key areas where BAS municipal fisheries catches are very high. A draft paper has been produced and will be finalized in the next month or so. The key outcomes of the study were :

- In Region 8, Municipal fishers move out of municipal waters (18km from shore) to catch oceanic tunas (e.g. yellowfin, skipjack). They sometimes travel 8 – 20 nautical miles or more from their base to reach their fishing grounds. These are also the areas where payaos are located and usually owned by commercial fishing operators;
- NSAP data in four (4) key tuna landing areas in Region 8 particularly in Eastern Samar, noted less than 1% of bigeye tuna, 46% yellowfin tuna, 40% skipjack and 15% other species for 2011 with a total of 1,110.45 t.;
- When accounting for both the NSAP and the non-NSAP landing sites (i.e. all landing sites) through the detailed work of this study, the catch estimate was in the range 1,658 - 3,000 t. which is significantly lower than the BAS municipal fisheries estimate for Region 8 (16, 903 t.);
- It was noted that BAS cannot cover the necessary sampling of Region 8 (and other regions) due to the lack of funding, so non-probability sampling is the method used and therefore can result in considerable bias.
- BAS estimates should consider the seasonality of hook-and-line fishery in their estimation process for the municipal sector. This study identified periods when there are no catch or unloading for 1–3 months, sometimes 6 months, in some tuna landing areas, and this may not have been accounted for in the BAS estimation process.
- It is suggested to update the BAS frame survey to ensure it identifies the landing areas that have significant catches or unloading of oceanic tunas because this study observed that not all municipal sites have significant oceanic tuna unloadings.

The workshop noted the usefulness of this type of study for providing more reliable estimates and recommended that similar studies be considered for other regions with significant hook-and-line fisheries where the current NSAP estimates greatly differ from the BAS Municipal tuna catch estimates.

#### 2.4 *Review of the consolidated NSAP data*

A comprehensive description of the consolidated region's data compiled by the central NFRDI/BFAR office in Manila was provided (Ms Garvilles). The presentation looked in detail at the catch and size composition by GEAR and species for each region and provided a very useful comparison between of the catch composition and volume, and differences in size composition amongst all regions.

The WCPFC representative acknowledged the usefulness of the information presented by the regional offices, but in particular, the BFAR/NFRDI presentation which consolidated all of the regions data and formed the basis for the estimates compiled for each GEAR (see [APPENDIX 8](#)).

#### 2.5 *Review of NSAP Tuna size data*

A presentation providing a review of the NSAP size data by region was provided by the WCPFC Representative (Mr. Williams). This presentation was structured to provide a basic review of the quality and coverage of the 2011 NSAP data in order to identify any potential inconsistencies/problems in the data. The presentation covered the following areas :

- Review of coverage of samples against the target National NSAP Tuna Samples by GEAR and SPECIES
- Species and Size composition by REGION and GEAR
  - Large-fish Handline
  - Small-fish Hook-and-line

- Purse seine
- Ringnet

An excerpt of the review is contained in **Appendix 9**.

The review noted some specific issues in certain regions to resolve in the future and these areas were included in one of the recommendations from the workshop (see APPENDIX 4). The review highlighted the following:

- The significant problem noted in the General Santos City Handline size data last year appears to have been resolved soon after the workshop last year. Future workshops will continue to monitor these data in the future. The GSC Handline size data for the period 3<sup>rd</sup> Quarter 2009 – 2<sup>nd</sup> Quarter 2011 have been excluded from past and future stock assessment work.
- There were unusually high bigeye tuna species composition reported in the following areas that need review and resolution over the coming year:
  - Region 3 purse seine, ringnet and hook-and-line
  - Region CARAGA ringnet
- Region 11 has only reported yellowfin in their data for the ringnet gear.
- BFAR/NFRDI to investigate how Region 5 can sample the purse seine landings (not covered by NSAP) in the future.

It was noted that the WCPFC/SPC updated the NSAP database to facilitate the distinction in the data between (i) the “baby” purse seine and “large” purse seine vessels, and (ii) large-fish handline and (ii) “small-fish” hook-and-line, based on the criteria that have been established over the past year. This means that regional offices do not need to make the distinction at the data collection level now that the NSAP Database reports cater for this separation.

There was some discussion on the preparation and provision of data for this workshop and the following was noted:

- There should be no distinction between WPEA and NSAP landing sites. WPEA funds have been provided to augment the number of NSAP landing sites (for tuna landings) but the data collection and compilation should continue as if they were NSAP sites;
- In regards to the preparation of data for future workshops, it was suggested that Regional offices should submit their NSAP data to the Manila NFRDI office as soon as possible for processing and then NFRDI can then send back the processing data back to the regional office so they can prepare their reports, etc. in time for the workshop and any other reporting they are required to do. This would hopefully make it much easier to compile the information necessary for the NSAP Data Review Workshops and any other reporting the regional office was required to do.

### **3. OTHER MATTERS**

The workshop briefly reviewed the status of the NSAP database system. There had been some progress on addressing the outstanding work, but unfortunately, SPC Database developers do not have the time available to undertake the redevelopment of certain parts of the NSAP Database System and so it was recommended that BFAR/NFRDI and WCPFC consider seeking funds for a consultant to undertake this work under the guidance of SPC database development staff. In the meantime, WCPFC/SPC will endeavour to update the NSAP database system to cover the requirements for WCPFC and requests from BFAR/NFRDI and Regional BFAR offices. Work completed on the NSAP database over the past year included:



- Automated allocation of the correct gear type for Hook-and-line and large-fish Handline to vessel trips in the database, based on size of fish sampled.
- Support for the separation of Ringnet, baby purse seine and large purse seine in the NSAP data and reports
- Support for extracting reports on catch and length frequency by broad area (i.e. Philippine EEZ or outside Philippine EEZ)

The WCPFC representative also noted that progress on adapting the existing 'audit' resource material to suite the Philippines situation had not been undertaken over the past year but every effort would be made to do this work over the coming year and the available material would be presented at next year's workshop.

#### **4. CATCH ESTIMATES DERIVED FROM NSAP AND NON-NSAP SITES**

The workshop participants reviewed the consolidated catch estimates for each GEAR, broken down by REGION and SPECIES, but with most of the time spent considering the estimates of tuna catch by gear for landing centers in each region that were not covered by NSAP. Estimates for non-NSAP landing sites had improved since the last workshop but there remained improvement in many areas. The study for Region 8 was acknowledged to be one way to get better estimates and the workshop recommended that this type of study should be expanded to other key fisheries/regions.

Participants noted that better estimates could be obtained by increasing the coverage of NSAP monitoring, or consideration for monitoring new key landing sites for tuna. Tuna catch estimates for each region and gear for the non-NSAP sites were compiled from discussions and are contained in **APPENDIX 8**, which also contain the estimates for the NSAP-monitored landing sites and comments on estimates, where necessary.

#### **5. RECOMMENDATIONS AND WORKSHOP CLOSE**

The workshop participants reviewed and agreed on a list of seven recommendations based on discussions made during the two days (see **APPENDIX 4**). All participants agreed to action the recommendations relevant to their organisation/region over the coming year.

The most important recommendations related to securing funding to expand the NSAP, including conducting the directed studies similar to that undertaken for Region 8 in recent months. Ensuring that NSAP continues as a long-term, permanent activity is important since it provides fundamental scientific data not available elsewhere, and a major part of the Philippines annual data submission obligation as a member of the WCPFC.

The WCPFC are committed to holding this type of workshop on an annual basis in the next few years (even in the absence of WPEA funding) to review the data collected by the NSAP and identify priority areas for improved coverage and data quality. It was acknowledged that the NSAP data do not produce annual catch estimates. However, NSAP data provide key information for determining the annual catch estimates for the Philippines-domestic fleets by gear, which is the objective of the subsequent workshop conducted in the same week. The importance of the NSAP data to producing annual catch estimates meant that a workshop to review NSAP data will be required on an annual basis over the short term, so the next workshop should therefore be scheduled for May 2013.

Dr Soh (WCPFC) and Mr Barut (BFAR/NFRDI) provided brief closing remarks, thanking the regional participants for their attendance, highlighting the importance of the NSAP 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**

### **THIRD WPEA – NSAP Tuna Data Review Workshop**

Sydney Hotel Meeting Room, General Santos City  
Mindanao, Philippines  
14 - 15 May 2012

- 1. Registration**
- 2. Welcome Message**
- 3. Introduction of Participants**
- 4. Rationale for the Workshop**
- 5. Review of recommendations from Second WPEA-NSAP Tuna data review workshop**
- 6. NSAP Port Sampling Data Review**
  - 6.1. WCPFC Requirements for data
  - 6.2. Tuna Catch Estimates by Species and Gear Type for each NSAP region
  - 6.3. Study of the hook-and-line fishery in Region 8
  - 6.4. Review of consolidated NSAP Regional data
  - 6.5. Review of NSAP Tuna Size and species composition data – Data Audit
- 7. Review of Catch Estimates derived from NSAP and non-NSAP sites**
- 8. Recommendations**
- 9. Workshop Close**

**APPENDIX 2 – LIST OF PARTICIPANTS**

<b>Name</b>	<b>Designation</b>	<b>Agency/Company</b>
ROSARIO S. GAERLAN	NSAP Project Leader	BFAR Region 1
FRANCIS GREG BUCCAT	NSAP Asst. Project Leader	BFAR Region 1
ANGEL ENCARNACION	OIC, PMED	BFAR Region 2
RONALD BATHAN	NSAP Project Leader	BFAR Region 3
JENELYN Y. VALLEJO	NSAP Asst. Project Leader	BFAR Region 3
MYRNA B. CANDELARIO	NSAP Project Leader	BFAR Region 4B
JEANETTE A. JARDIN	NSAP Data Encoder	BFAR Region 4B
VIRGINIA OLAÑO	NSAP Project Leader	BFAR Region 5
EDDIE LIBARDO JR.	NSAP Data Encoder	BFAR Region 5
MAY R. GUANCO	NSAP Project Leader	BFAR Region 6
SHERYLL MESA	NSAP Asst. Project Leader	BFAR Region 6
LEA A. TUMABIENE	NSAP Project Leader	BFAR Region 8
ELMER BAUTISTA	NSAP ENCODER	BFAR Region 8
JOSE A. VILLANUEVA	Chief, FRMD / NSAP Project Leader	BFAR Region 11
FRANCIS JAVE CANILLO	NSAP Data Encoder	BFAR Region 11
MIYONG J. BIACA	NSAP Data Encoder	BFAR Region 12, GSC
GENEVIVE P. BACARON	NSAP Enumerator	BFAR Region 12, GSC
MA. ZILLAH BACONGCO	NSAP Enumerator	BFAR Region 12, GSC
JANET A. TEMPLONUEVO	NSAP Enumerator	BFAR Region 12, GSC
SAMMY SUMAGAYSAY	NSAP	BFAR Region 12, GSC
SANDRA A. HAMSI	NSAP	BFAR Region 12, GSC
JOYCE M. BACLAYO	NSAP Enumerator	BFAR – CARAGA
MACMOD MAMALANGKAP	NSAP Project Leader	BFAR - ARMM
SAMMY AYUB	NSAP Data Encoder	BFAR - ARMM
USOP MOKAMAD	NSAP Asst. Project Leader	BFAR - ARMM
ROLANDO CAÑETE	BFAR Staff	BFAR –ARMM
PETER WILLIAMS	Database Manager	WCPFC / SPC
Dr. SUNGKWON SOH	Science Manager	WCPFC
NOEL C. BARUT	Deputy Director, NSAP National Coordinator	NFRDI
AMBUTONG PAUTONG	Director	BFAR Region 12
Dr. JONATHAN DICKSON	Chief- CFTD	BFAR – Central Office
Dr. ALMA DICKSON	Head, NMRDC	BFAR - NMFDC
RAFAEL RAMISCAL	NMFDC	BFAR - NMFDC
ELAINE G. GARVILLES	Aquaculturist I	NFRDI
DESIDERIO AYANAN JR.	Research Assistant	NFRDI
SUZETTE BARCOMA	Aquaculturist I	NFRDI
EUNICE GASMIN	Project Staff, SCS-SFMP	NFRDI, QC
MARLO DEMO-OS	Technical Staff	BFAR - NMFDC
ZALDY PEREZ	Support Staff	BFAR - NMFDC

## APPENDIX 3 – REVIEW OF PROGRESS ON RECOMMENDATIONS FROM SECOND WORKSHOP

1. Recognising that NSAP data are critical to producing Philippines annual catch estimates by GEAR and SPECIES, and as input to the WCPFC stock assessments (according to the reporting obligations of WCPFC member countries), the WCPFC representative urged BFAR to investigate avenues to ensure the long-term, permanent funding for NSAP sampling. The minimum target level of sampling data to be collected is listed in [APPENDIX 5](#).

**CURRENT STATUS:** BFAR/NFRDI prepared a proposal for BFAR funding consideration next year on Tuna Data Collection and Assessment.

2. The Workshop recommended that **BFAR/NFRDI** and **WCPFC** consider seeking funds for a database development consultancy to redevelop certain aspects of the NSAP database. **WCPFC/SPC** will endeavour to update the NSAP database system to cover the requirements for WCPFC and requests from BFAR/NFRDI and Regional BFAR offices:
  - a. Support the separation of “baby” purse seine, large purse-seine in the catch/effort and length data
  - b. Facilitate the separation of small-fish hook-and-line and large-fish handline in the catch/effort and length
  - c. Implement the data entry of weight data and produce relevant reports summarising weight data
  - d. Enhance the FISAT reports to cater for the extraction of length frequency data for more than one GEAR

**CURRENT STATUS:** Some work was covered in the last year (e.g. item b.) but there remain several areas still to cover. All outstanding requests for enhancement of the NSAP database will be reviewed in detail in AGENDA ITEM 8 – Review of NSAP Database and will be carried over to the next workshop, as required.

3. The workshop recommended that BFAR/NFRDI, with assistance from WCPFC/SPC, produce a map showing fishing grounds that will help enumerators get precise information from the fishing vessels they sample.

**CURRENT STATUS:** A map has been produced by BFAR and distributed to regional offices; this map will be included as an APPENDIX in the report of this workshop (3<sup>rd</sup> NSAP Data Review workshop).

4. The First Workshop identified important tuna landing centers not currently covered by NSAP that should be considered for establishing NSAP sampling and this Second Workshop refined this list. The most important were considered to be :
  - a. Monitoring potential large-fish Handline landings in Mindoro
  - b. The landing sites in Region 5 outside of current NSAP sites were highlighted as the most important.

The list of potential landing centers by region is provided in [APPENDIX 11](#). **Regional BFAR offices** will continue to obtain estimated total tuna (SKJ/YFT/BET) landings for those non-NSAP sites to use as justification for expanded sampling to these landing centers. **BFAR/NFRDI** will review the list of potential new NSAP sites (based on priority as tuna landing centers), in conjunction with available funding, to determine where sampling should be established.

**CURRENT STATUS:** Progress on these items will be reviewed in the discussion following the presentations from each Region during this workshop. Port sampling monitoring was planned for the Mindoro area this year and

qualified persons to do the work were identified. Port sampling monitoring in Region 5 was started in 2011 but due to unfavorable circumstances, monitoring activities halted since June 2011.

5. The **WCPFC/SPC** and **BFAR/NFRDI** will distribute the tables for annual catch estimates by GEAR and REGION to each region one month prior to the 2012 NSAP Data review workshop so **Regional BFAR offices** can prepare the tuna species estimates for the non-NSAP landing sites in their region (the tables are provided in [ANNEX B](#)).

**CURRENT STATUS:** The template of tables was distributed via email to BFAR region participants (16 April 2012) as part of the draft agenda for this workshop. See Annex B below.

6. **BFAR/NFRDI and respective BFAR Regional offices** (with assistance from **WCPFC/SPC**) will investigate potential issues identified in the NSAP data for 2010. In particular, **BFAR Regional Office 12** and **BFAR/NFRDI** will investigate and rectify the problems identified in the General Santos City (GSC) HANDLINE size data collected during 2010. (see [ANNEX B](#) below for a list of potential issues).

**CURRENT STATUS:** The NSAP Data audit for 2011 data will revisit these issues (see AGENDA ITEMS 6 and 7). Sampling has improved after the May Review WS last year.

7. The First Workshop acknowledged the usefulness of the fishery data audit process (e.g. workbooks) as a tool for improving the quality of fishery data. The Second Workshop recommended that the **WCPFC/SPC** revise the current version of the Port Sampling Audit Workbook to cover the Philippines NSAP situation and for **BFAR/NFRDI** to subsequently test the revised workbook and further revise as required. The status of the revised NSAP Port Sampling Audit Workbook would be reviewed at the 2011 NSAP data review workshop.

**CURRENT STATUS:** No progress in this area over the past year – suggest that this recommendation is carried over.

#### ANNEX A. Potential issues identified in the NSAP data during SECOND WPEA - NSAP Review workshop

1. The purse seine fishery in the Philippines includes those vessels that target small pelagics (with smaller mesh size) and those vessels that target tuna. There may be a further division in those vessels targeting tuna between those that are small and restricted to the EEZ and those larger vessels that fish beyond Philippine waters (in the high seas and in PNG waters under access agreements). It was noted that some purse-seine vessels in the Philippines change their target species from small pelagics to tunas (skipjack in December – March) on a seasonal basis.

Noted last year and will be reviewed during the discussions on each region's data collection during this workshop.

2. A large % of bigeye tuna (9%) was reported in Region 3 for 2009 in the ringnet fishery according to the NSAP data. Further information is required.

A review was conducted during the past year. Initial review of 2011 data in Region 3, showed the same problem but only in Calibungan and Subic Fishport landing sites. Further discussion is required during this workshop with a recommendation.

3. In region 6, the main fishing port is the only landing site covered by NSAP but it is acknowledged that there are many ringnet vessels landing elsewhere.

Region 6 covers other fishports, but Iloilo Fishport is the only fishport with significant tuna landings (reference to last year's WS). However, Buruanga Fishport is another port with noted considerable amounts of oceanic tuna unloadings and is being covered by NSAP in 2011.

4. There were relatively high catches of Albacore tuna from the handline fishery in Lagonoy Gulf (Region 5) in Sept-November 2009. Seasonal catches of Albacore tuna have been taken in this area and season in other years, but not to the extent as experienced in 2009. Possible explanations for this were proposed – the first El Nino in a number of years and/or a series of typhoons at that time causing abnormal oceanographic conditions (upwellings). Small albacore landings from the handline and longline fisheries were also reported in Regions 11 and 12.

Noted. Interesting to review what happened during 2011.

5. There was relatively high bigeye species composition (28%) reported from the Hook-and-line fishery in Region 8 during the period Sep-Dec 2009. Further information is required.

Noted. Also, refer to the Region 8 catch estimates and species composition for 2011 as presented by BFAR/NFRDI.

6. Reports of Pacific bluefin caught in Region 2 but have yet to be sampled by NSAP enumerators.

Noted. Further update required from Region 2.

7. There is increasing interest in the export of Handline-caught tunas to the European market. Region 8 is one such area and also Region 4a (Mindoro), which is not currently covered by NSAP. HACCP has changed accordingly in the Philippines in the past few years and Catch Documentation has been implemented. (more details required).

Catch documentation needs to be in place for Mindoro, implementation was delayed due to constraints with WWF partners. Catch documentation in R12 is ongoing and we are getting data. Not aware of catch documentation or catch certification in Region 8.

#### Annex B. Tuna Estimates by Gear and Species from NSAP & Non-NSAP areas

NSAP + estimates for areas not covered by NSAP for 2011							
Gear Type	Source of estimate	SKJ	YFT	BET	ALB	TOTAL	Comments
	NSAP						
	<i>non-NSAP landing sites estimate</i>						
	NSAP						
	<i>non-NSAP landing sites estimate</i>						
	NSAP						
	<i>non-NSAP landing sites estimate</i>						
	NSAP						
	<i>non-NSAP landing sites estimate</i>						
	NSAP						
	<i>non-NSAP landing sites estimate</i>						
	NSAP						
	<i>Private landing wharfs</i>						
	....						

## APPENDIX 4 – RECOMMENDATIONS FROM THIRD WPEA/NSAP Tuna Data Review Workshop

### RECOMMENDATIONS

1. The Workshop recommended that **BFAR/NFRDI** and **WCPFC** consider seeking funds for a database development consultancy<sup>1</sup> to redevelop certain aspects of the NSAP database. **WCPFC/SPC** will endeavour to update the NSAP database system to cover the requirements for WCPFC and requests from BFAR/NFRDI and Regional BFAR offices, including:
  - a. Support the separation of “baby” purse seine, large purse-seine in the catch/effort and length data
  - b. Implement the data entry of weight data and produce relevant reports summarising weight data
  - c. Enhance the FISAT reports to cater for the extraction of RAISED length frequency data for ALL GEARS combined
  - d. Enhance the length frequency reports to extract by Fishing Ground
  - e. Include the total trip catch in the list of sampled vessel trips in the data entry screen.
2. Important tuna landing centers not currently covered by NSAP were identified by the workshop and the most important was considered to be monitoring the large-fish Handline landings in Mindoro. **BFAR/NFRDI** will review the list of potential new NSAP sites (based on priority as tuna landing centers), in conjunction with available funding, to determine where sampling should be expanded. **Regional BFAR offices** will continue to update estimates of total tuna (SKJ/YFT/BET) landings for those non-NSAP sites to use as justification for expanded sampling to these landing centers.
3. The workshop noted useful outcomes from the study on Region 8 that reviewed the non-NSAP landing sites to obtain more information on the extent of oceanic tuna catches in non-NSAP sites. The workshop therefore recommended that **BFAR/NFRDI** and **Regional BFAR offices** strongly consider seeking the necessary budget to conduct similar studies in other regions where the BAS estimates are very different from the NSAP estimates. In this respect, the approach by Region 5 in conducting annual Focal Group Discussions (FGD) with key informants was acknowledged as an important part of this process and should be encouraged in all regions.
4. Some of the regional presentations used the template (see [ANNEX B in APPENDIX 3](#)) for completing annual catch estimates for NSAP and non-NSAP landing sites which made it easier to compile the main output for this workshop. **BFAR/NFRDI** will distribute the tables for annual catch estimates by GEAR and REGION to each region one month prior to the next NSAP Data review workshop so **Regional BFAR offices** can prepare the tuna species estimates (for NSAP and non-NSAP sites) using this template and include in their future presentations (the template is provided in [ANNEX B in APPENDIX 3](#)).
5. **BFAR/NFRDI and respective BFAR Regional offices** (with assistance from **WCPFC/SPC**) will investigate potential issues identified in the NSAP data for 2011 (see [Sections 2.2 and 2.5 of this report](#)).
6. The Workshop again acknowledged the usefulness of the fishery data audit process (e.g. workbooks) as a tool for improving the quality of fishery data and recommended that the **WCPFC/SPC** revise the current version of the Port Sampling Audit Workbook to cover the Philippines NSAP situation and for **BFAR/NFRDI** to subsequently test the revised workbook and further revise as required. The status of the revised NSAP Port Sampling Audit Workbook would be reviewed at the next NSAP data review workshop.
7. The next workshop should consider a specific agenda item to deal with the problems raised by regional offices in conducting the NSAP sampling and compiling the information.
8. The workshop noted that there are anecdotal information on ringnet operations in Region 6: Negros province particularly in areas of Hinobaan and Himamaylan that needs to be validated.

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<sup>1</sup> SPC may be able to do the work required, if there is time available, otherwise a consultancy will need to include familiarisation with the system which will take time and therefore the amount of budget cannot be estimated at this time.



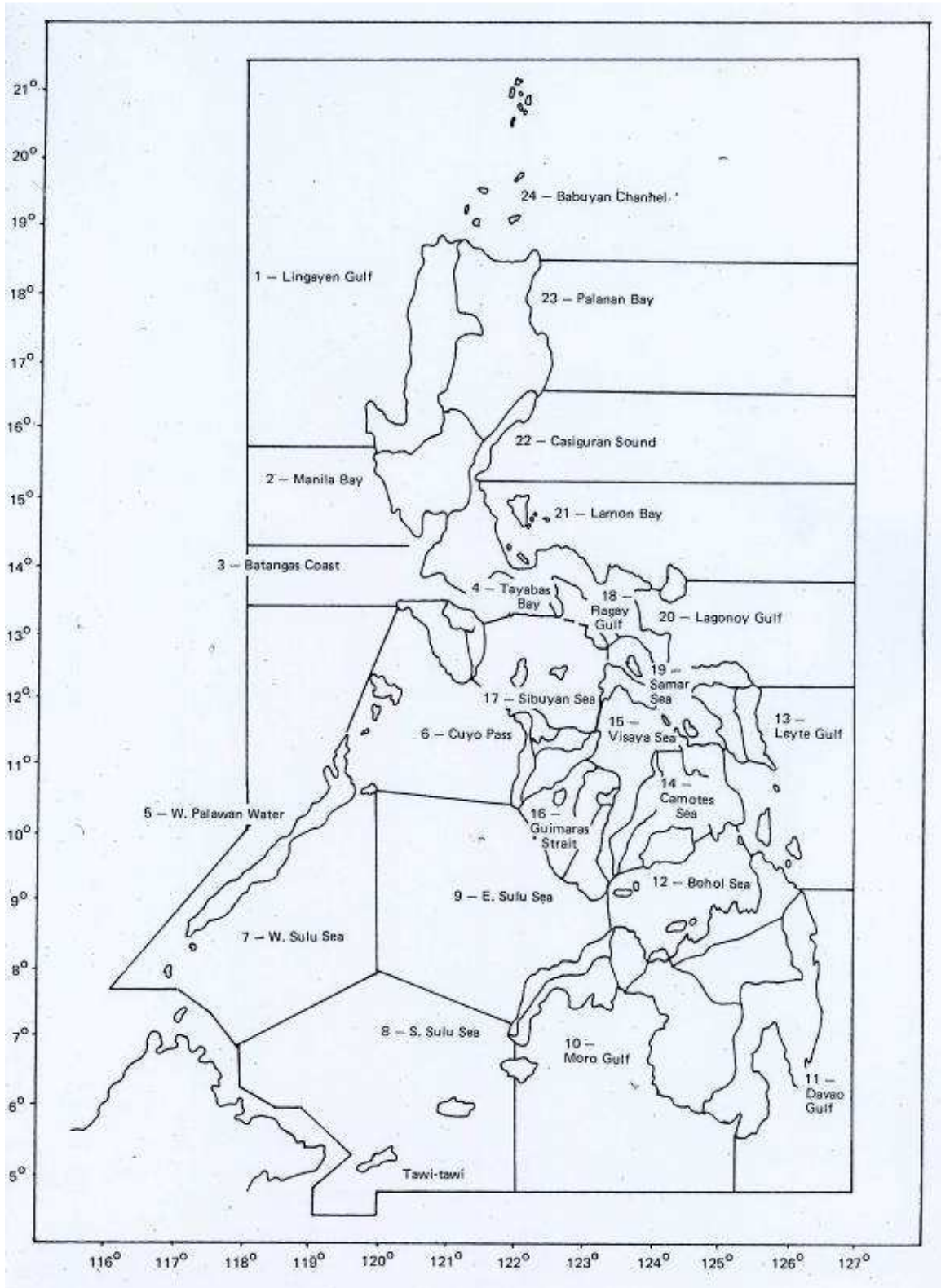
## APPENDIX 5 – Target estimates for national tuna size and species composition sampling

GEAR	Number of fish to sample			
	TOTAL TUNA	SKIPJACK	YELLOWFIN	BIGEYE
<b>Large-fish Handline</b>	26,000	0	24,000	2,000
<b>Small-fish Hook-and-line</b>	38,000	12,000	24,000	2,000
<b>Ringnet</b>	16,500	12,000	4,000	500
<b>Purse seine</b>	26,000	18,000	7,000	1,000
<b>Each of the other Gears</b>	14,000	6,000	6,000	2,000

### Notes

These target estimates should ideally represent the minimum level of sampling required for regional stock assessments. They should be considered as a guide to setting sampling target levels at the NSAP Region level and they will be continually reviewed and enhanced in the future, particularly with respect to available resources.

**APPENDIX 6 – Maps of Fishing Grounds and Fishery Management Units to be used by NSAP Enumerators**



## Appendix B

## STATISTICAL FISHING AREAS AND MARINE FISHING GROUNDS

Statistical Fishing Areas	Marine Fishing Grounds	Location
1. – LINGAYEN GULF	Bangui Bay	Ilocos Norte
	Dasol Bay	Pangasinan
	Ilocos Coast	La Union/Ilocos Norte/Ilocos Sur
	Lingayen Gulf	Pangasinan
	Pasaleng Bay	Ilocos Norte
2. – MANILA BAY	Subic Bay	Zambales
	Manila Bay	Bataan/Metro Manila/Cavite
	Zambales Coast	Zambales
3. – BATANGAS COAST	Balayan Bay	Batangas
	Batangas Bay	Batangas
	Batangas Coast	Batangas
	Verde Is. Passage	Batangas/Or. Mindoro
4. – TAYABAS BAY	Mogpog Pass	Quezon/Marinduque
	Tayabas Bay	Quezon
5. – WEST PALAWAN WATER	Bacuit Bay	Palawan
	Balabac Strait	Palawan
	Imuruan Bay	Palawan
	Malampaya Sound	Palawan
6. – CUYO PASS	Coron Bay	Palawan
	Cuyo Pass	Palawan/Antique
	Dumaran Channel	Palawan
	Linapacan Strait	Palawan
	Mindoro Strait	Palawan/Occ. Mindoro
	Taytay Bay	Palawan
7. – WEST SULU SEA	Green Island Bay	Palawan
	Honda Bay	Palawan
	Island Bay	Palawan
	San Antonio Bay	Palawan
	West Sulu Sea	Palawan
8. – SOUTH SULU SEA	Basilan Strait	Basilan/Zamboanga del Sur
	Tawi-Tawi Bay	Tawi-Tawi
	South Sulu Sea	Zamboanga del Sur/Sulu/Tawi-Tawi
9. – EAST SULU SEA	Coronado Bay	Zamboanga del Norte
	Dapitan Bay	Zamboanga del Norte
	Dipolog Bay	Zamboanga del Norte
	East Sulu Sea	Zamboanga del Norte/Negros
	Sibuco Bay	Zamboanga del Norte
	Siocon Bay	Zamboanga del Norte
10. – MORO GULF	Sindangan Bay	Zamboanga del Norte
	Dumaguilas Bay	Zamboanga del Sur
	Illana Bay	Lanao del Sur/Maguindanao
	Linao Bay	Maguindanao
	Maligay Bay	Zamboanga del Sur
	Moro Gulf	Zamboanga del Sur/Maguindanao/ Sultan Kudarat
	Pagadian Bay	Zamboanga del Sur
	Sarangani Bay	Southern Cotabato
	Sibuguey Bay	Zamboanga del Sur

**Appendix B**  
**STATISTICAL FISHING AREAS AND MARINE FISHING GROUNDS**

Statistical Fishing Areas	Marine Fishing Grounds	Location
11. – DAVAO GULF	Baculin Bay	Davao Or.
	Bislig Bay	Surigao del Sur
	Cateel Bay	Davao Or.
	Davao Gulf	Davao del Sur/Davao del Norte/Davao Or.
	Lanuza Bay	Surigao del Sur
	Liang Bay	Surigao del Sur
	Mayo Bay	Davao Or.
	Pujada Bay	Davao Or.
12. – BOHOL SEA	Butuan Bay	Agusan del Norte
	Gingoog Bay	Misamis Or.
	Guindulman Bay	Bohol
	Iligan Bay	Misamis Occ./Lanao del Norte
	Murcielagos Bay	Misamis Or.
	Panguil Bay	Misamis Occ./Lanao del Norte
	Sogod Bay	Southern Leyte
13. – LEYTE GULF	Cabalian Bay	Southern Leyte
	Dinagat Sound	Surigao del Norte
	Gamay Bay	Eastern Samar
	Leyte Gulf	Leyte Is./Samar Is.
	Matarinao Bay	Eastern Samar
	Oras Bay	Eastern Samar
	San Pedro Bay	Leyte/Western Samar
	Surigao Strait	Surigao del Norte/Southern Leyte
14. – CAMOTES SEA	Camotes Sea	Cebu/Leyte/Bohol
	Cebu Strait	Cebu/Bohol
	Maribojoc Bay	Bohol
	Ormoc Bay	Leyte
15. – VISAYAN SEA	Asid Gulf	Masbate
	Asuncion Pass	Negros Occ.
	Tañon Strait	Cebu/Negros Is.
	Visayan Sea	Panay/Negros/Cebu/Masbate Is.
16. – GUIMARAS STRAIT	Aguisan Bay	Negros Occ.
	Banate Bay	Iloilo
	Guimaras Strait	Iloilo/Guimaras/Negros Occ.
	Iloilo Strait	Iloilo/Guimaras Is.
	Panay Gulf	Iloilo/Negros Occ.
17. – SIBUYAN SEA	Jintotolo Channel	Capiz/Masbate
	Nin Bay	Masbate
	Pilar Bay	Capiz
	Romblon Pass	Romblon
	Sapian Bay	Capiz
	Sibuyan Sea	Aklan/Masbate/Romblon
	Tablas Strait	Mindoro Or./Tablas Is.
18. – RAGAY GULF	Burias Pass	Camarines Sur/Burias Is.
	Ragay Gulf	Camarines Sur/Quezon
19. – SAMAR SEA	Biliran Strait	Leyte/Biliran Is.
	Carigara Bay	Leyte
	Maqueda Bay	Western Samar
	Samar Sea	Masbate/Samar/Leyte Is.
	Sorsogon Bay	Sorsogon
	Ticao Pass	Sorsogon/Ticao Is.
20. – LAGONOY GULF	Albay Gulf	Albay
	Cabugay Bay	Catanduanes
	Lagonoy Gulf	Albay/Camarines Sur/Catanduanes
	San Bernardino Strait	Northern Samar/Sorsogon

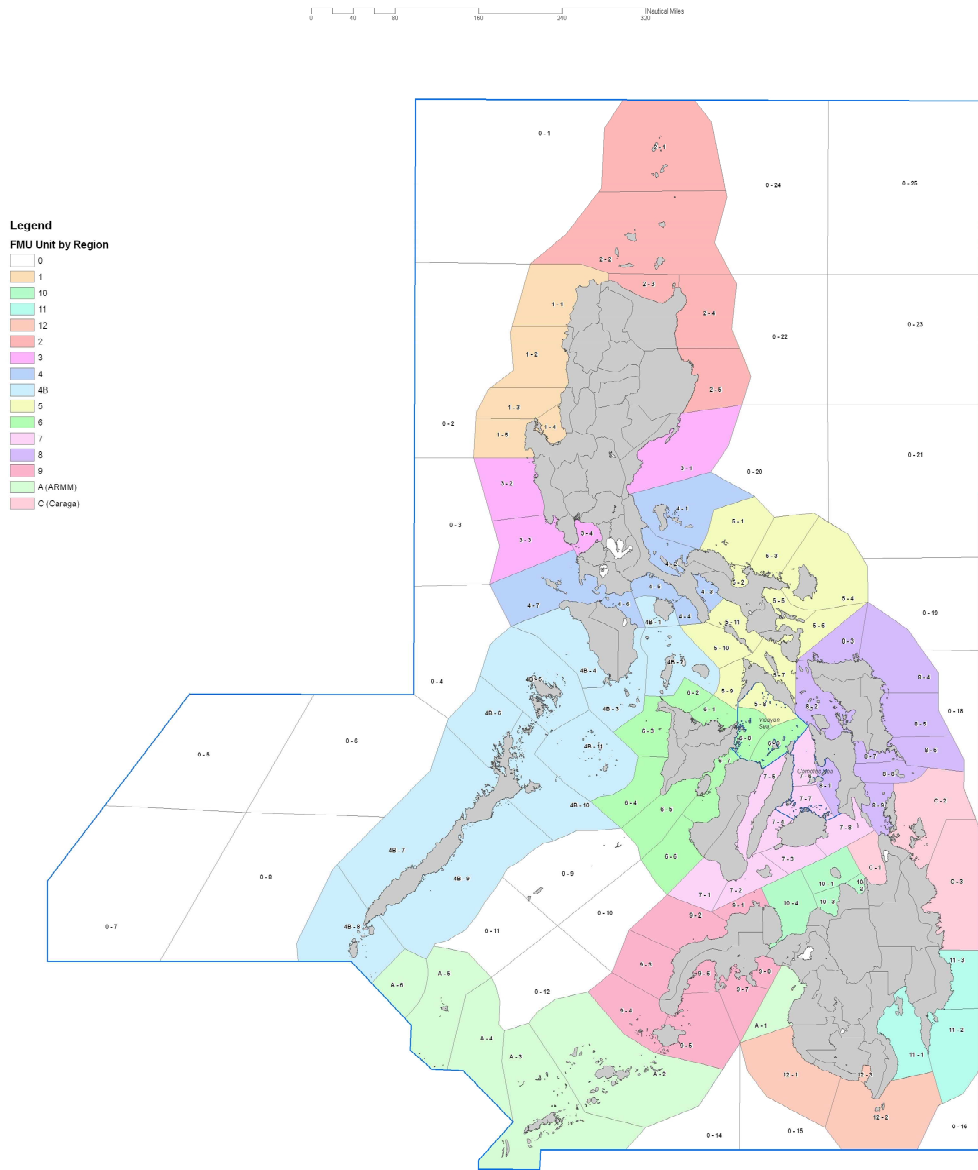
## Appendix B

## STATISTICAL FISHING AREAS AND MARINE FISHING GROUNDS

Statistical Fishing Areas	Marine Fishing Grounds	Location
21. – LAMON BAY	Alabat Sound Lamon Bay Maqueda Channel Polillo Strait San Miguel Bay	Quezon Quezon/Camarines Norte Camarines Sur/Catanduanes Quezon/Polillo Is. Camarines Sur
22. – CASIGURAN SOUND	Baler Bay Casiguran Sound Dapitan Bay Dingalan Bay	Aurora Aurora Aurora Aurora
23. – PALANAN BAY	Divilican Bay Palanan Bay	Isabela Isabela
24. – BABUYAN CHANNEL	Babuyan Channel Balintang Channel	Cagayan/Babuyan Is. Batanes/Babuyan Is.



### Fishery Management Unit Map with 50 Nautical Mile Offset from Shore



**APPENDIX 7 – LIST OF PRESENTATIONS**

1. WCPFC data requirements and current issues with the Philippines catch data	WCPFC/SPC (Peter Williams)
2. NFRDI – Overview of NSAP data collected in 2010	BFAR/NFRDI (Elaine Garvilles)
3. Region 1 – Luzon	<i>REGION 1 (Francis Buccat)</i>
4. Region 2 – Batanes/Cagayan	<i>REGION 2 (ANGEL ENCARNACION)</i>
5. Region 3 – Zambales	<i>REGION 3 (Ronald Bathan)</i>
6. Region 4b – Palawan	<i>REGION 4 (Myrna Candelario)</i>
7. Region 5 – Bicol	<i>REGION 5 (Virgiña Olaño)</i>
8. Region 6 – Visayas	<i>REGION 6 (Sheryll Mesa)</i>
9. Region 8 – Samar	<i>REGION 8 (Elmer Bautista)</i>
10. Region 11– Davao	<i>REGION 11 (Jose Villaneuve)</i>
11. Region ARMM	<i>REGION ARMM (Macmod Mmalangkap)</i>
12. Region CARAGA	<i>REGION CARAGA (JOYCE M. BACLAYO)</i>
13. Study of hook-and-line catch estimates in Region 8	BFAR/NFRDI (Elaine Garvilles)
14. Preliminary review of NSAP data by Region and Gear	WCPFC/SPC (Peter Williams)
15. Catch estimates derived from NSAP and non-NSAP sites	WCPFC/SPC (Peter Williams)

## APPENDIX 8 – 2011 Tuna Catch Estimates from NSAP sites and non-NSAP sites

PURSE SEINE - 2011						
NSAP + estimates for areas not covered by NSAP						
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
1	NSAP	722.724	600.037	31.734	1,354.495	
	<i>non-NSAP landing sites estimate</i>				1,000.000	Estimates needed from Salomague fish port
3	NSAP	4,896.536	3,860.510	1,308.291	10,065.337	Potential misidentification issue with YFT/BET;
	<i>non-NSAP landing sites estimate</i>	0.000	0.000	0.000	0.000	
4	<i>non-NSAP landing sites estimate</i>				0.000	No purse seine
5	NSAP	24.273	3.343	0.000	27.617	
	<i>non-NSAP landing sites estimate</i>				600.000	
6	NSAP	42.760	10.050	0.000	52.810	Use 2010 as a provisional estimate
	<i>non-NSAP landing sites estimate</i>				0.000	No purse seine landings elsewhere
8	<i>non-NSAP landing sites estimate</i>				0.000	No purse seine
11	<i>non-NSAP landing sites estimate</i>				0.000	No purse seine
12	NSAP	6,212.093	1,645.030	145.283	8,002.406	
	<i>Private landing wharfs</i>				30,000.000	Cannery receipts
	<i>non-NSAP landing sites estimate</i>					
ARMM	NSAP	0.000	0.000	0.000	0.000	
	<i>non-NSAP landing sites estimate</i>				0.000	
		11,898.386	6,118.971	1,485.308	51,102.664	
	NSAP	78%	21%	2%		
		39,669.878	10,505.020	927.767	51,102.664	
	<b>2010</b>	32,733.673	8,170.079	494.612	41,398.364	
		79%	20%	1%		
	<b>2009</b>	23,556.240	4,002.492	502.397	28,061.129	
		84%	14%	2%		



RINGNET - 2011						
NSAP + estimates for areas not covered by NSAP						
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
1	NSAP	91.780	0.000	0.000	91.780	
	<i>non-NSAP landing sites estimate</i>	0.000	0.000	0.000	0.000	Estimates needed from Salomague fish port
3	NSAP	0.000	0.000	0.000	0.000	No ringnet vessels
	<i>non-NSAP landing sites estimate</i>					
4	<i>non-NSAP landing sites estimate</i>				1,000.000	Region 4A (6 vessels)
5	NSAP	93.096	1.153	0.000	94.249	
	<i>non-NSAP landing sites estimate</i>				250.000	
6	NSAP	36.660	7.000	0.000	43.660	
	<i>non-NSAP landing sites estimate</i>					No oceanic tuna catch from ringnet vessels in this region - probably negi
8	NSAP					
	<i>non-NSAP landing sites estimate</i>	216.816	25.213	20.290	262.319	determined from expected proportion by gear type; Eastern Samar only; carried over from 2010.
9	<i>non-NSAP landing sites estimate</i>				1,000.000	Region 9 (6-10 vessels)
11	NSAP	377.000	64.000	0.000	441.000	
	<i>non-NSAP landing sites estimate</i>				1,000.000	Time series in Davao Gulf raised based on 5 NSAP landing sites covering RN; but more realistic estimate is 1,000 t.
12	NSAP	9,905.400	2,595.196	264.454	12,765.050	
	<i>Private landing wharfs</i>				10,000.000	Significant catches landed in private wharves ...
	....					
CARAGA	NSAP	206.089	138.933	155.323	500.345	High BET % !!
	<i>non-NSAP landing sites estimate</i>	0.981	0.158	0.000	1.139	No oceanic tuna catch from ringnet vessels in this region - probably negi
ARMM	NSAP	468.680	2.410	1.090	472.180	
	<i>non-NSAP landing sites estimate</i>				0.000	
		11,396.502	2,834.063	441.157	27,921.722	
	NSAP	78%	20%	2%		
		21,666.647	5,676.620	578.454	27,921.722	
	<b>2010</b>	<b>20,338.385</b>	<b>6,106.474</b>	<b>344.243</b>	<b>26,789.102</b>	
		76%	23%	1%		
	<b>2009</b>	<b>18,153.250</b>	<b>4,466.536</b>	<b>176.702</b>	<b>22,796.489</b>	
		80%	20%	1%		

## HANDLINE (large-fish) - 2011

NSAP + estimates for areas not covered by NSAP						
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
1	NSAP	1.212	123.000	3.221	127.432	Estimated from length data after allocation of HK+HL --> (included in hook-and-line)
	<i>non-NSAP landing sites estimate</i>					
3	NSAP	2.866	291.000	7.619	301.486	Estimated from length data after allocation of HK+HL --> carried over from 2010
	<i>non-NSAP landing sites estimate</i>	13.000	6.000	0.000	19.000	
4	NSAP	4.462	453.000	11.861	469.323	Estimated from length data after allocation of HK+HL --> Provided from Catch certification system (1,550 t. From exports on the basis that exports are 70% of total catch).
	<i>non-NSAP landing sites estimate</i>				2,214.286	
5	NSAP	16.000	54.000	0.000	70.000	minimal - carried over from 2010 (included in hook-and-line)
	<i>non-NSAP landing sites estimate</i>				1,006.000	
6	NSAP	1.133	115.000	3.011	119.144	Estimated from length data after allocation of HK+HL --> no large-fish target HANDLINE
	<i>non-NSAP landing sites estimate</i>				0.000	
8	NSAP	0.699	71.000	1.859	73.558	
	<i>non-NSAP landing sites estimate</i>	0.000	0.000	0.000	0.000	
11	NSAP	4.157	422.000	11.050	437.206	fuel price problems - land in r11 trucked to gsc
	<i>non-NSAP landing sites estimate</i>				5.000	
12	NSAP	0.000	5,902.207	119.615	6,021.822	
	<i>Private landing wharfs</i>				0.000	
	....					
ARMM	<i>non-NSAP landing sites estimate</i>					
		43.529	7,437.207	158.236	10,864.258	
		1%	97%	2%		
		61.908	10,577.304	225.045	10,864.258	
	<b>2010</b>	<b>136.770</b>	<b>13,884.963</b>	<b>363.560</b>	<b>14,385.294</b>	
		1%	97%	3%		
	<b>2009</b>	<b>102.229</b>	<b>7,767.669</b>	<b>329.602</b>	<b>8,199.500</b>	
		1%	95%	4%		

## HOOK-AND-LINE (incl. MHL) - 2011

NSAP + estimates for areas not covered by NSAP						
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
1	NSAP	41	72	12	125	Estimated from length data after allocation of HK+HL --> HK
	<i>non-NSAP landing sites estimate</i>	27	53	0	80	based on vessel inventory in 2010 - raised
3	NSAP	712	1,317	41	2,070	<b>High BET % ???</b>
	<i>non-NSAP landing sites estimate</i>				2	Potential misidentification issue with YFT/BET in SUBIC
4	NSAP				800	Separated from HANDLINE; to review
	<i>non-NSAP landing sites estimate</i>				1,000	rough estimate
5	NSAP	11	240	1	252	
	<i>non-NSAP landing sites estimate</i>				0	rough estimate since H&L is the major gear used throughout
6	NSAP	317	554	90	961	Estimated from length data after allocation of HK+HL --> HK
	<i>non-NSAP landing sites estimate</i>				150	rough estimate but no base information available - probably hi
8	NSAP	929	1,625	0	2,554	Estimated from BFAR/NFRDI Study (1,600 - 3,100 t.)
	<i>non-NSAP landing sites estimate</i>	108	15	6	129	Eastern Samar only
9	<i>non-NSAP landing sites estimate</i>				1,000	
10	NSAP					
	<i>non-NSAP landing sites estimate</i>					
11	NSAP	8	432	0	440	
	<i>non-NSAP landing sites estimate</i>				1,000	Dominant gear; estimate based on NSAP
12	<i>non-NSAP landing sites estimate</i>				0	Municipal
	<i>non-NSAP landing sites estimate</i>					
	....					
ARMM	NSAP	0	5	0	5	
	<i>non-NSAP landing sites estimate</i>				0.600	
CARAGA	NSAP				4,060	<b>High BET % ???</b>
	<i>non-NSAP landing sites estimate</i>	30	34	26	90	
		2,183.366	4,347.144	175.122	14,718.232	
		33%	65%	3%		
		4,792.283	9,541.573	384.375	14,718.232	
	<b>2010</b>	<b>1,763.557</b>	<b>3,085.271</b>	<b>501.351</b>	<b>5,350.179</b>	
		33%	58%	9%		
	<b>2009</b>	<b>1,519.075</b>	<b>2,744.071</b>	<b>186.144</b>	<b>4,449.290</b>	
		34%	62%	4%		

## DRIFT GILLNET - 2011

NSAP + estimates for areas not covered by NSAP						
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
1	NSAP	17.860	3.750	0.000	21.610	
	<i>non-NSAP landing sites estimate</i>	<i>45.900</i>	<i>25.873</i>	<i>0.000</i>	<i>71.773</i>	based on boat inventory - raised
3	NSAP				<i>3.000</i>	Subic
4	<i>non-NSAP landing sites estimate</i>					No drift gillnet
5	NSAP	10.850	92.900	0.000	103.750	
	<i>non-NSAP landing sites estimate</i>				<i>80.000</i>	
6	NSAP	279.950	10.444	0.448	290.842	
	<i>non-NSAP landing sites estimate</i>				<i>150.000</i>	Estimated production - all species (50 units) incl non oceanic tuna s
8	<i>non-NSAP landing sites estimate</i>				<i>0.000</i>	None
11	<i>non-NSAP landing sites estimate</i>				<i>1.000</i>	Not covered by NSAP - estimated catch
12	<i>non-NSAP landing sites estimate</i>				<i>0.000</i>	Not likely to catch oceanic species
ARMM	NSAP	104.500	6.570	0.350	111.420	
	<i>non-NSAP landing sites estimate</i>				<i>4.000</i>	Estimate
CARAGA	NSAP	0.000	0.000	0.000	0.000	
	<i>non-NSAP landing sites estimate</i>	<i>1.000</i>	<i>0.000</i>	<i>0.000</i>	<i>1.000</i>	Estimate
		460.060	139.537	0.798	838.395	
		77%	23%	0%		
		642.430	194.850	1.115	838.395	
	<b>2010</b>	<b>354.166</b>	<b>81.679</b>	<b>0.890</b>	<b>436.734</b>	
		81%	19%	0%		
	<b>2009</b>	<b>248.844</b>	<b>98.120</b>	<b>8.889</b>	<b>355.853</b>	
		70%	28%	2%		

TROLL - 2011						
NSAP + estimates for areas not covered by NSAP						
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
1	NSAP	35.327	25.499	0.000	60.826	
	<i>non-NSAP landing sites estimate</i>	<i>3.022</i>	<i>4.160</i>	<i>0.000</i>	<i>7.182</i>	Raised - based on vessel inventory
3	<i>non-NSAP landing sites estimate</i>				0.000	No known troll activity
4	<i>non-NSAP landing sites estimate</i>				<i>0.000</i>	No known troll activity
5	NSAP					
	<i>non-NSAP landing sites estimate</i>					No known troll activity
6	<i>non-NSAP landing sites estimate</i>				<i>0.000</i>	No known troll activity
8	NSAP	76.990	120.935	0.000	197.925	
	<i>non-NSAP landing sites estimate</i>					No known troll activity; would be covered under hook-and-line
11	NSAP	0.000	11.281	0.000	11.281	
	<i>non-NSAP landing sites estimate</i>				<i>3.000</i>	Estimate based on NSAP sites and considering other sites; fuel price problems.
12	<i>non-NSAP landing sites estimate</i>				<i>0.000</i>	No known troll activity
	<i>Private landing wharfs</i>				<i>0.000</i>	
	....					
ARMM	<i>non-NSAP landing sites estimate</i>					No known troll activity
CARAGA	NSAP	151.660	142.240	0.000	293.900	
	<i>non-NSAP landing sites estimate</i>	<i>3.000</i>	<i>1.500</i>	<i>0.000</i>	<i>4.500</i>	Estimate based on NSAP sites and considering other sites; fuel price problems.
		269.999	305.615	0.000	578.613	
		47%	53%	0%		
		271.406	307.208	0.000	578.613	
	<b>2010</b>	<b>154.493</b>	<b>174.956</b>	<b>2.974</b>	<b>332.423</b>	
		46%	53%	1%		
	<b>2009</b>	<b>224.861</b>	<b>96.445</b>	<b>5.726</b>	<b>327.032</b>	
		69%	29%	2%		

TUNA DRIFT LONGLINE - 2011						
NSAP + estimates for areas not covered by NSAP						
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
1	NSAP	222.590	217.090	0.000	439.680	
	<i>non-NSAP landing sites estimate</i>	<i>12.720</i>	<i>1.200</i>	<i>0.000</i>	<i>13.920</i>	Raised - based on vessel inventory
3	<i>non-NSAP landing sites estimate</i>				<i>0.000</i>	No TDLL
4	<i>non-NSAP landing sites estimate</i>					No TDLL
5	<i>non-NSAP landing sites estimate</i>					No TDLL
6	<i>non-NSAP landing sites estimate</i>				<i>0.000</i>	based on 120 units using size no 18 (J) hook
8	<i>non-NSAP landing sites estimate</i>					No TDLL
11	<i>non-NSAP landing sites estimate</i>				<i>1.000</i>	based on 3 units
12	<i>non-NSAP landing sites estimate</i>				<i>0.000</i>	Yes - but no data - < 1 t.
ARMM	<i>non-NSAP landing sites estimate</i>				<i>0.000</i>	
CARAGA	NSAP	0.000	0.000	0.000	0.000	
		<i>235.310</i>	<i>218.290</i>	<i>0.000</i>	<i>454.600</i>	
		52%	48%	0%		
		235.829	218.771	0.000	454.600	
	<b>2010</b>	<b>29.647</b>	<b>11.303</b>	<b>0.000</b>	<b>40.949</b>	
		72%	28%	0%		
	<b>2009</b>	<b>153.990</b>	<b>143.930</b>	<b>0.000</b>	<b>297.920</b>	
		52%	48%	0%		

## APPENDIX 9 – Review of NSAP species composition and size data by region (major tuna gears only)

National NSAP tuna samples by GEAR and SPECIES

### “Large-fish” HANDLINE

GEAR	YEAR	SKIPJACK	YELLOWFIN	BIGEYE	TOTAL TUNA
H	1997	72	8,312	362	8,746
H	1998	330	13,020	412	13,762
H	1999	18	4,284	76	4,378
H	2000	5	18,004	593	18,602
H	2001	4	17,625	376	18,005
H	2002	1	6,280	141	6,422
H	2003	0	9,457	384	9,841
H	2004	0	13,519	230	13,749
H	2005	64	14,902	747	15,713
H	2006	53	17,288	452	17,793
H	2007	165	21,238	446	21,849
H	2008	101	19,865	559	20,525
H	2009	248	17,074	1,144	18,466
H	2010	128	59,629	2,088	61,845
<b>H</b>	<b>2011</b>	<b>211</b>	<b>36,198</b>	<b>676</b>	<b>37,085</b>

26,000

National NSAP tuna samples by GEAR and SPECIES

### PURSE SEINE

GEAR	YEAR	SKIPJACK	YELLOWFIN	BIGEYE	TOTAL TUNA
S	1997	8,699	6,379	737	15,815
S	1998	4,591	2,872	550	8,013
S	1999	4,483	2,536	636	7,655
S	2000	7,922	3,789	939	12,650
S	2001	9,510	3,785	480	13,775
S	2002	4,508	2,406	44	6,958
S	2003	5,050	1,189	124	6,363
S	2004	5,070	1,200	63	6,333
S	2005	19,318	10,456	4,635	34,409
S	2006	22,263	9,436	3,694	35,393
S	2007	17,291	9,038	2,469	28,798
S	2008	18,860	4,439	381	23,680
S	2009	13,486	3,180	448	17,114
S	2010	18,077	7,507	1,218	26,802
<b>S</b>	<b>2011</b>	<b>11,135</b>	<b>5,519</b>	<b>1,064</b>	<b>17,718</b>

26,000

National NSAP tuna samples by GEAR and SPECIES

## RINGNET

GEAR	YEAR	SKIPJACK	YELLOWFIN	BIGEYE	TOTAL TUNA
R	1997	5,515	2,507	160	8,182
R	1998	8,680	3,650	222	12,552
R	1999	2,317	608	10	2,935
R	2000	6,751	1,476	216	8,443
R	2001	9,926	2,157	213	12,296
R	2002	7,800	1,300	30	9,130
R	2003	6,763	3,134	63	9,960
R	2004	880	132	10	1,022
R	2005	4,205	1,017	66	5,288
R	2006	3,672	468	11	4,151
R	2007	4,867	1,208	122	6,197
R	2008	4,266	724	47	5,037
R	2009	2,070	293	35	2,398
R	2010	11,261	4,095	315	15,671
<b>R</b>	<b>2011</b>	<b>13,163</b>	<b>2,763</b>	<b>279</b>	<b>16,205</b>

16,500



National NSAP tuna samples by GEAR and SPECIES

## "small-fish" HOOK-AND-LINE

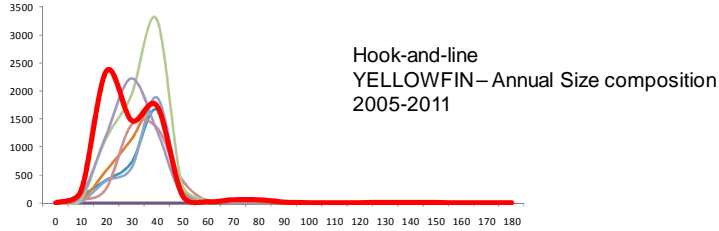
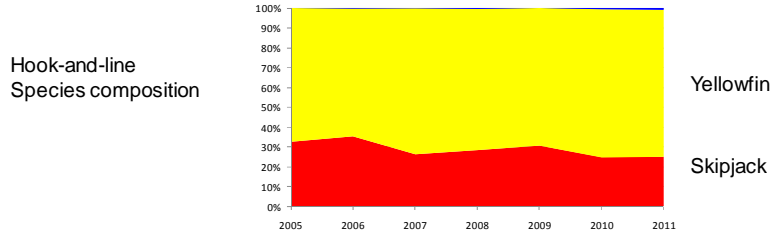
GEAR	YEAR	SKIPJACK	YELLOWFIN	BIGEYE	TOTAL TUNA
K	1997	6,490	9,944	419	16,853
K	1998	3,601	3,989	292	7,882
K	1999	787	1,639	156	2,582
K	2000	2,650	5,220	426	8,296
K	2001	1,825	3,667	363	5,855
K	2002	1,209	2,295	16	3,520
K	2003	889	2,041	419	3,349
K	2004	111	179	2	292
K	2005	5,404	8,177	33	13,614
K	2006	5,632	8,217	82	13,931
K	2007	4,651	6,782	30	11,463
K	2008	4,230	7,010	54	11,294
K	2009	10,429	10,496	116	21,041
K	2010	11,969	16,415	1,821	30,205
<b>K</b>	<b>2011</b>	<b>16,518</b>	<b>21,152</b>	<b>1,857</b>	<b>39,527</b>

38,000

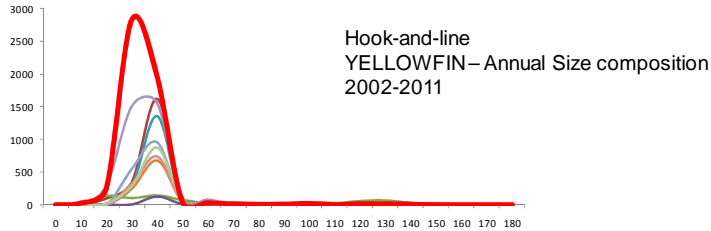
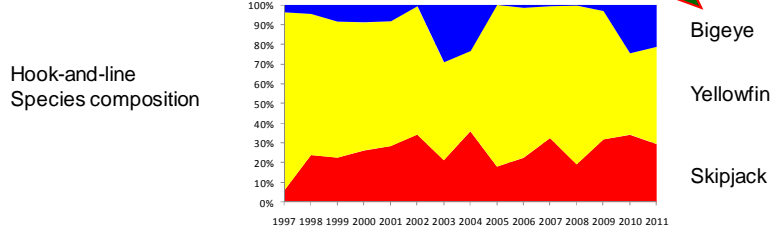




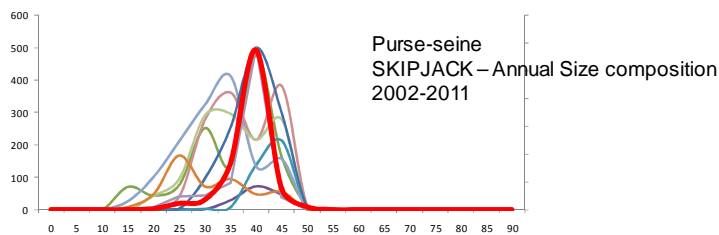
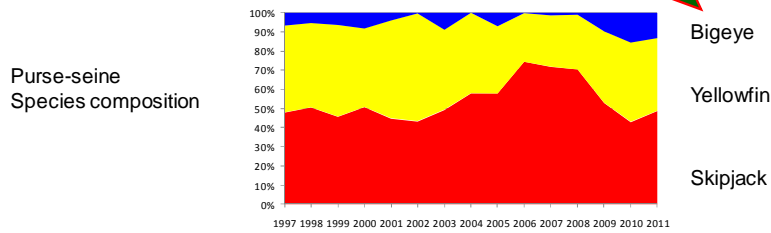
### REGION 1 - LINGAYEN GULF



### REGION 3 - ZAMBALES

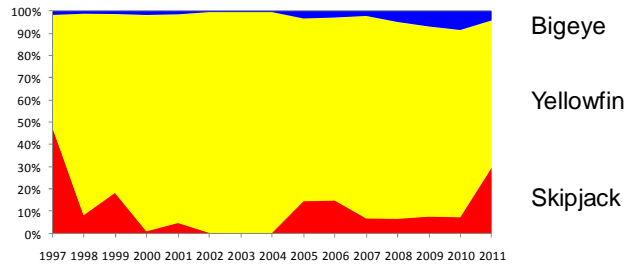


### REGION 3 - ZAMBALES

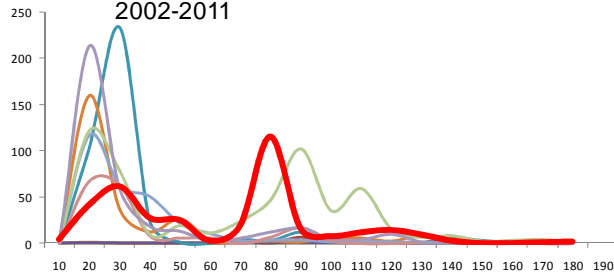


## REGION 4 – HONDA BAY

Hook-and-line  
Species composition



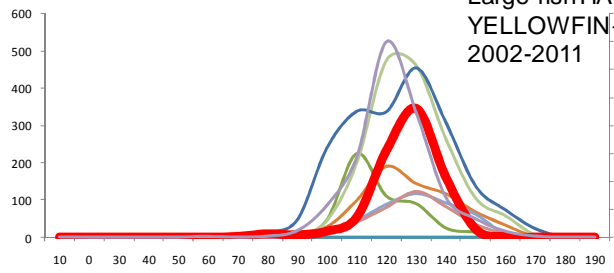
Hook-and-line  
YELLOWFIN – Annual Size composition  
2002-2011



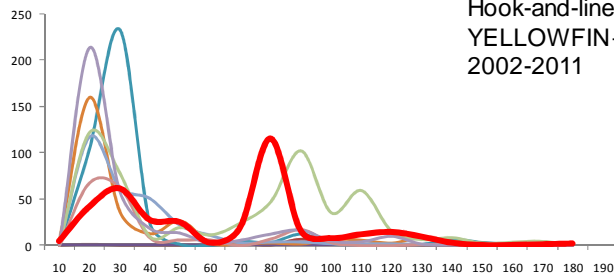
**Mixture of  
Large-fish Handline and  
Small-fish hook-and-line  
Now separated**

## REGION 4 – HONDA BAY

Large-fish HANDLINE  
YELLOWFIN – Annual Size composition  
2002-2011

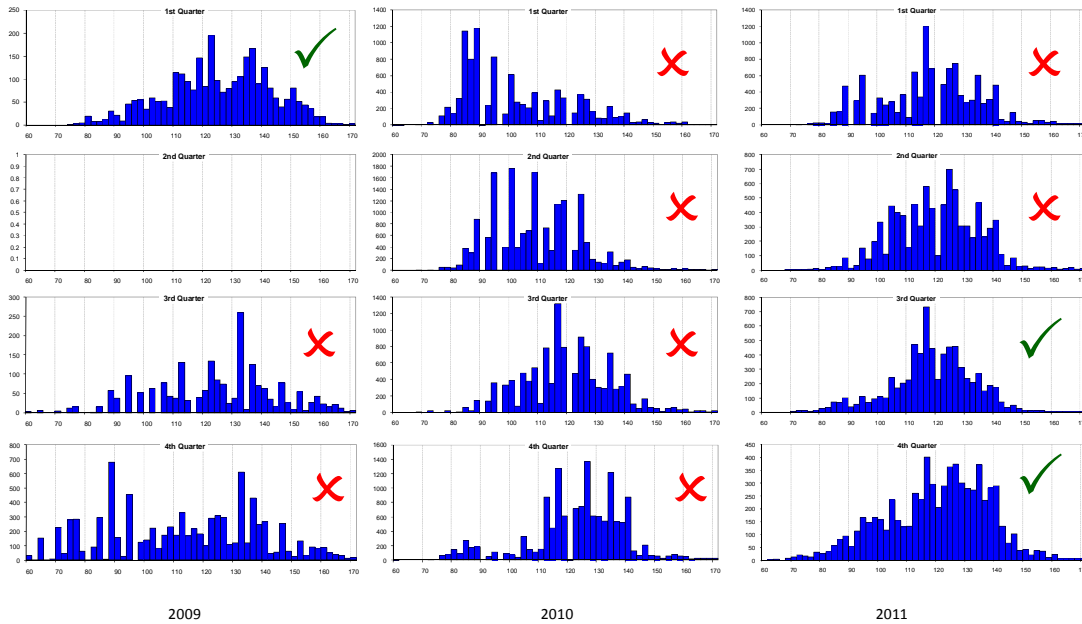
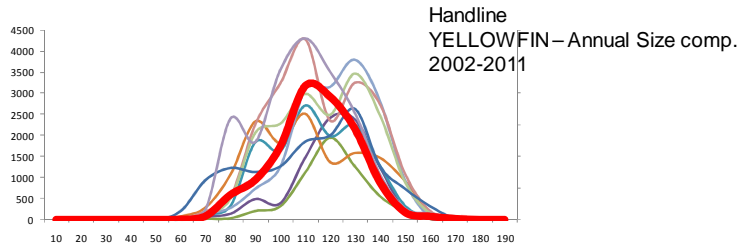
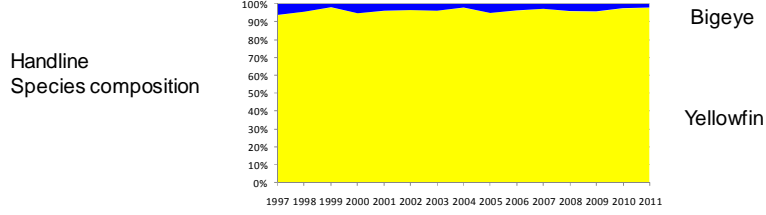


Hook-and-line  
YELLOWFIN – Annual Size composition  
2002-2011



**Mixture of  
Large-fish Handline and  
Small-fish hook-and-line  
Now separated**

# REGION 12 – GENERAL SANTOS CITY



2009

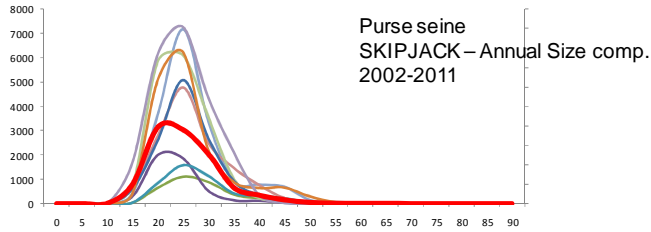
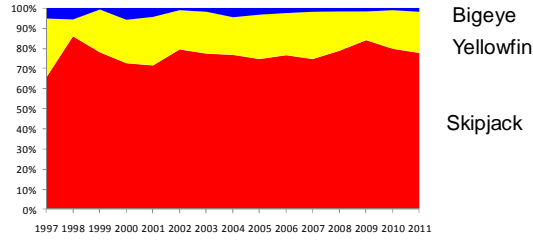
2010

2011

Quarterly length frequency samples of Yellowfin caught by Handline vessels in Region 12, for selected Years

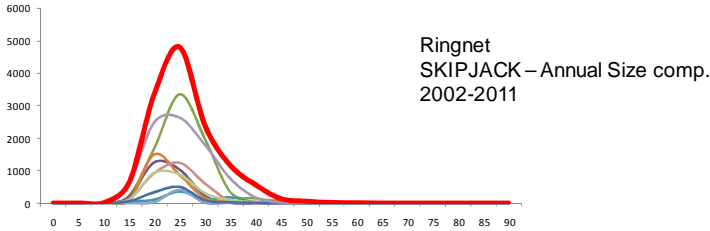
### REGION 12 – GENERAL SANTOS CITY

Purse seine  
Species composition



### REGION 12 – GENERAL SANTOS CITY

Ringnet  
Species composition



### REGION ARMM

Ringnet  
Species composition

