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UPDATE ON WPEA PROJECT

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Secretariat, Indonesia, Philippines and Vietnam

I. BACKGROUND

Indonesia and Philippines Data Collection Project (IPDCP)

1. In early 2000, while annual catches of key tuna species in the Philippines and the Pacific Ocean waters of Indonesia were estimated in a range of 20-30% of the total catch of WCPO, little or no information was available for WCPO tuna stock assessment. The lack of accurate catch statistics, effort data, and species composition and size composition data for the Philippines and Indonesia has been highlighted at meetings of the Standing Committee on Tuna and Billfish for many years and responsible for much of the uncertainty in the MULTIFAN–CL stock assessments for bigeye and yellowfin tuna.

2. After years of effort, strong support has also been expressed by agencies of Indonesia and Philippines. Since then, the data collection project started to take a concrete form through several meetings, working with IOTC, CSIRO, ACIAR, and Japan-OFCF. Throughout the PrepCon period, the discussion evolved and fund raising was based on voluntary contributions from the PrepCon participating countries. The activities of the proposed project include, for each country,

a) a review of the tuna fisheries and the current monitoring systems;
b) the compilation of historical catch and effort data;
c) a workshop to formulate recommendations for the improvement of the monitoring system and to plan the sampling programmes;
d) the establishment of a port sampling programme;
e) the establishment of an observer programme;
f) the analysis of data collected and compiled during the project; and
g) a workshop to review the achievements of the project and to plan for future monitoring.

3. The budget for the activities at that time was about USD 184,000 for the Philippines and USD 229,000 for Indonesia, for a total cost of USD 413,000. This project was called IPDCP.

West Pacific East Asia Oceanic Fisheries Management Project (WPEA-OFM)

4. Funding support was the greatest issue for the continuity of the IPDCP project. The Secretariat

advised the third IPDCP Steering Committee that GEF had expressed interest in funding a project in Indonesia, Philippines and Vietnam. The objectives of the project were (i) to establish or improve the collection of tuna fishery data and (ii) to promote good governance with regard to the management of tuna fisheries. The Steering Committee recommended that the Executive Director continue to liaise with GEF, Indonesia, the Philippines and Vietnam to develop a data collection and governance project for those countries. The Committee recommended that, noting that GEF funding would not be available for another 18–24 months, CCMs continue to be invited to contribute to implement port sampling in Indonesia and Philippines, and that the Commission consider funding data collection in this area through its core budget.

5. Project Implementation Form, National Project Preparation Reports and Project Document were coordinated and prepared by the Secretariat, working with each country's focal point. The Secretariat was advised that its medium size project was accepted by the GEF in May 2009.

Improvements

6. Since the commencement of the data collection project starting in Philippines in 2005, there have been improvements in 2011 assessments of the WCPO tuna stocks by reducing uncertainty of input data and information. Especially, the WPEA-OFM project has greatly enhanced the quality of Indonesian and Philippine fishery data that are applied to regional tuna stock assessments conducted for the WCPFC. During the project period, the following improvements have been noted:

- More accurate estimates of total annual tuna catch by species
- More accurate estimates of species-specific catches by major fishing gear types
- The first size composition data from Indonesian tuna fisheries in more than two decades
- The establishment of operational-level data collection programmes (logsheets) for the industrial tuna fisheries
- The initiation of an observer programme in Philippines

These enhanced data were used for the first time in the skipjack, yellowfin and bigeye stock assessments conducted in 2011 by SPC. It is expected that similar progress in data collection will occur in Viet Nam, and that these data will also be incorporated into future regional stock assessments.

7. In addition, there have been significant improvements in the awareness of WCPFC requirements by the three countries through several consultancies, workshops, and capacity-building arrangements. At the end of 2012, a terminal evaluation was conducted for the WPEA-OFM project by a United Nations Development Programme (UNDP) designated independent evaluator. The rating of the achievement of the project's stated outcomes is extracted from the *Final Independent Evaluation Report (January 2013)* below:

> Using relevance, effectiveness, and efficiency as criteria, each of the seven outcomes established for the WPEA Project were rated on a scale given in the evaluation's terms of reference. The results of this rating are:
> ① Improved knowledge of oceanic fish stocks and related ecosystems: "highly satisfactory".
> ② Reduced uncertainty in stock assessments: "highly satisfactory".
> ③ National capacities in oceanic fishery monitoring and assessment strengthened: "highly satisfactory".
> ④ Participant countries contributing to management of shared migratory stocks: "highly satisfactory".

⑤ National laws, policies and institutions strengthened to implement applicable global and regional instruments: "highly satisfactory" for the Philippines, and "satisfactory" for Indonesia and Vietnam.
⑥ Key stakeholders participating in the project: "highly satisfactory".
⑦ National capacities in oceanic fisheries management strengthened: "highly satisfactory".

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA-SM)

8. UNDP and WCPFC Secretariat have been preparing a new full size project since 2011 and the following process details the development of this project since 2011.

Project Framework Document (PFD)

1) Project title: Reducing Pollution and Rebuilding Degraded Marine Resources in the East Asian Seas through Implementation of Intergovernmental Agreements and Catalyzed Investments
2) The UNDP started preparing a PFD from mid-2011, which was submitted to the Global Environment Facility (GEF) on 29 March 2012, and a revision submitted on 12 April 2012. The PFD was endorsed by the GEF Secretariat in June 2012.
3) List of projects under the project framework include:
    a) YS LME Project: Implementation of the Yellow Sea Large Marine Ecosystem Strategic Action Program for Adaptive Management (USD 7,562,430)
    b) WPEA: Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (USD 2,293,578)
    c) PEMSEA[1]: Scaling up the Implementation of the Sustainable Development Strategy for the Seas of East Asia (USD 10,143,992)
4) Participating countries: Cambodia, China, Indonesia, Lao PDR, Philippines, Thailand, Timor Leste, Vietnam

Project Identification Form (PIF) for the WPEA Project

1) Project title: Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA-SM)
    - Name of parent program: (PFD) Reducing Pollution and Rebuilding Degraded Marine Resources in the East Asian Seas through Implementation of Intergovernmental Agreements and Catalyzed Investments
2) UNDP and WCPFC started developing a new WPEA project PIF since from 2012 and the final PIF was submitted to GEF on 5 April 2013. The PIF was approved by the GEF Council on 1 May 2013.
3) Total project cost is USD 2,233,578, a 3-year full size project, with the three participating countries (Indonesia, Philippines, Vietnam).
4) PIF includes i) Indicative Project Framework, ii) Indicative co-financing, iii) Project Preparation Grant, iv) Project Justification, and v) Approval/Endorsement by GEF Focal Points of each country.

Project Document

1) Drs Tony Lewis and Anna Tengberg developed the Project Document with UNDP, WCPFC Secretariat and the three participating countries from mid-2013.

[1] PEMSEA: Partnerships in Environmental Management for the Seas of East Asia, Manila, Philippines (http://www.pemsea.org),

2) After several reviews and revisions, the Project Document was endorsed by the GEF Secretariat on 12 May 2014, the final version was submitted to the GEF Council on 17 September 2014, and received their approval on 30 September 2014.

Commencement of WPEA-SM

1) Project Appraisal Committee Meeting
   - The *Project Appraisal Committee*, met in Manila on 28 May 2014, agreed that all three project partner countries (Indonesia, Philippines and Vietnam) accepted WCPFC as the Project Implementing Partner. They also agreed that the Science Manager of the Commission should continue managing the WPEA Project.
2) A Project Cooperation Agreement between UNDP and WCPFC was made on 14 October 2014, and the WPEA-SM officially commenced on 28 October 2014.
3) The Project Inception Workshop was held in Da Nang, Vietnam, 4-5 November 2014, and the Inception Workshop Report was adopted as a legal document, which was submitted to the UNDP (**Attachment W12-A**)

II. SUMMARY OF KEY WPEA ACTIVITIES IN 2014-2015

9. One of the biggest risks identified for the proper implementation of this project was the comprehensive scope of work to reach the target comparing to the level of GEF grant. As a consequence, the Inception Workshop reviewed and modified targets in the Project Results Framework to develop a more realistic version of 2015 WPEA-SM Annual Work Plan and Budget, which was finalized and submitted to the UNDP on 2 March 2015. The title of each project activity and related budget for 2015 is in the **Attachment W12-B**.

10. The WPEA Project Manager submits project progress report (PPR) to UNDP on a quarterly basis. Details of project activities for the previous quarters in 2015 are summarized in the three PPRs, the 1st, 2nd and 3rd quarter PPR as shown in **Attachment W12-C, W12-D and W12-E**.

11. During the 4th quarter this year, four project activities have been implemented as follows:
   a) The three-country workshop on the stock assessment in the WPEA area, Hai Phong, Viet Nam, 3-6 November
   b) Viet Nam's annual total tuna catch estimates workshop, Da Nang, Viet Nam, 10-12 November
   c) UNDP-GEF/PEMSEA hosted East Asian Seas Congress, Da Nang, Viet Nam, 16-20 November
   d) The Third Indonesian harvest strategy workshop, Bali, Indonesia, 19-20 November

12. The purpose of the Three-country workshop for the WPEA stock assessment was to facilitate partner country understanding of data requirements, the stock structure of the Pacific tunas, modeling complexity, and to consider the feasibility of conducting an independent stock assessment in the WPEA area at national-level, based on which each country can manage their tuna resources and fisheries in their waters. Dr John Hampton was invited as a workshop resource person and UNDP-Philippines and SEAFDEC also attended the workshop. Details of presentations, discussions, and workshop recommendations are found in **Attachment W12-F**.

13. The outputs of the 4th Viet Nam annual tuna catch estimates workshop includes provisional catch estimates, workshop recommendations to be completed by next year workshop and workshop report. The 2014 provisional annual total tuna catch estimates of oceanic tunas at the workshop was about 86,000mt. This annual catch level will be confirmed by the government before officially submitted to WCPFC. The workshop recommendations are listed in **Attachment W12-G**.

Table. The 2014 provisional annual tuna catch estimates in Viet Nam (mt)

Gear	Bigeye	Yellowfin	Skipjack	Sum
Gillnet	1,641	173	32,789	34,603
Purse seine	3,832	4,229	28,585	36,646
Longline/Handline	2,648	12,003	-	14,650
Sum	8,121	16,404	61,374	85,899

14. The Partnerships in Environmental Management for the Seas of East Asia (PEMSEA) convenes East Asia Seas (EAS) Congress every three years. It includes various EAS related seminars and exhibitions. The WPEA and PEMSEA are required to collaborate together for the establishment of a regional governance mechanism in the EAS during their project period. The Viet Nam national tuna coordinator Dr Pham Viet Anh attended the EAS Congress and produced a brief trip report (**Attachment W12-H**).

15. Discussion on the development of a harvest strategy framework was initiated by the Directorate General for Capture Fisheries (DGCF) in Indonesia, and the first workshop was held in October 2014. The third Indonesian harvest strategy workshop reviewed various data and data requirements that will be used for the development of harvest strategy framework. The WPEA Project Manager proposed that a two-year work plan be developed with a target of developing a case study harvest strategy framework in the first year. The workshop reviewed a two-year draft schedule prepared by Dr Campbell Davies (CSIRO) and the reviewed draft schedule (**Attachment W12-I**) will be refined as needed in the future.

16. The second WPEA-SM Project Board (PB) meeting will be held in Bali, Indonesia, 11-12 December 2015. The PB will review the progress of 2015 project activities and review/endorse 2016 annual work plan. Provisional agenda for the PB is in **Attachment W12-J**. Because of domestic delays in endorsing the WPEA-SM project in Indonesia and Viet Nam, several activates will be commenced in early 2016.

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA SM Project)

PROJECT INCEPTION WORKSHOP AND FIRST PROJECT STEERING COMMITTEE MEETING
4-5 November 2014, Da Nang, Vietnam

INCEPTION WORKSHOP REPORT

05 November 2014

1. OPENING OF THE MEETING

1. The WPEA Project Manager (Dr SungKwon Soh) formally opened the WPEA-SM Inception Workshop at 08:30am on 04 November 2014, and was appointed as Chair. Participants were welcomed and introduced. Following some minor rescheduling of the Introduction Section, the provisional agenda (WPEA-2014/IW-01 Rev 1) was adopted (**Attachment A**). A list of participants is attached (**Attachment B**).

2. INTRODUCTION

2. UNDP Regional Technical Advisor (Dr. Jose Padilla) briefly reviewed the background of the project, noting that this is a 'Full Size Project (over USD 2 million)' and explained how this designation affected GEF processes. For WPEA-SM, WCPFC is directly engaged to implement the project on behalf of UNDP and the Countries, instead of operating through the UNOPS. The Inception Workshop runs back to back with the first annual Steering Committee Meeting. The project document has been signed by the national implementing partners for Indonesia, the Philippines and Vietnam. Indonesia as the final signatory signed the project document on 28 Oct 2014, which is the official date for the commencement of this project.

3. Dr Lewis presented background on the development of the project proposal from conception to date, and the principal factors affecting its final design. It was recognized that funding is less than anticipated and the partner countries should give consideration to prioritizing the scale and timing of activities to best meet their national needs. He highlighted two areas that should be further considered by this group: climate change and regional stock assessments. Synergies with existing and proposed projects should be sought to maximize outputs, avoiding duplication and some cost saving. PEMSEA's existing capacity in knowledge management may well be useful, given that this was an area which was found, by the terminal evaluation, to be wanting in the previous WPEA project.

3. LOGFRAME, BUDGET AND ANNUAL WORK PLAN

4. The Project Manager explained the key sections of the project document, including the project log-frames, annual work plans for each partner country, budget notes and project activities. UNDP

reminded the workshop that the maximum change that could be applied to budget was 10%, and any budget changes approved by the Project Steering Committee should include references to the precise UNDP budget codes. It was further noted that the PEMSEA Inception Workshop was scheduled for April 2015 and that a representative from WCPFC should attend the PEMSEA Steering Committee meeting in Da Nang scheduled for October 2015.

5. The Project Manager reviewed each of the following Components and Project Outcomes, detailing issues and proposed actions/activities for discussion amongst project countries, UNDP and the Project Technical Advisor, Dr Tony Lewis.

Component 1: Regional Governance for building regional and national adaptive capacity of Indonesia, Philippines and Vietnam in the management of highly migratory fish stocks

Outcome 1.1: Improved regional mechanisms for monitoring and assessment of highly migratory fish stocks and IUU fishing in the Pacific Ocean Warm Pool Large Marine Ecosystem (POWP LME) and the EAS LMEs

6. UNDP indicated that the total budget of USD 160,000 for the establishment of Joint WCPFC/PEMSEA Consultative Forum may be excessive. All that is required is a link to advise PEMSEA of WPEA developments. The issue will be put on hold until UNDP, WCPFC and PEMSEA have an opportunity to meet and discuss collaboration. Dr Lewis explained that this element of the Project Document was intended to raise the profile within the WCPFC of the three partner countries who take more than 30% of WCPFC tuna catch. Establishment of a sub-regional database (see later) might be associated with this initiative as well as other consultative activities

7. Indonesia raised a potential political complication. PEMSEA falls under the Ministry of Environment, not Fisheries, and so it would be difficult for Fisheries to interact directly with PEMSEA, an organisation which focuses on coastal issues. Vietnam reminded members that SEAFDEC had created a working group for tuna, which will meet for the first time in November 2014, although neritic tuna are now the main focus of SEAFDEC tuna activities

8. The Steering Committee agreed that WPEA/WCPFC/UNDP will liaise with PEMSEA and SEAFDEC as soon as mutually convenient, to agree an optimal level of cooperation.

Outcome 1.2: Enhanced capacity of technical staff, policy and decision makers in Indonesia, Philippines and Vietnam to integrate climate change impacts on highly migratory stocks into management regimes.

9. Responding to an expression of uncertainty regarding the anticipated outcomes, Dr Lewis explained that existing models could be reviewed, and SPC may contribute to an initial information workshop using the Spatial ecosystem and Population dynamics model (SEAPODYM), with the only cost to participants being for travel. It was noted that there was existing climate change architecture within countries, i.e. organisations and projects etc.

10. The workshop was advised that Dr Patrick Lehodey, the lead researcher on SEAPODYM, would be attending the SPC Pre-Stock Assessment Workshop in Noumea in April 2015. WPEA country participants of the Tuna Data Workshop may stay on for a few extra days if Drs Lehodey and Simon Nicol (SPC) might be persuaded to hold a small meeting/workshop. Dr Lewis indicated that the SEAPODYM model is already being applied sub-regionally, and Dr Nicol would be prepared to attend a three country workshop to present and demonstrate SEAPODYM, as noted above. Dr Lewis further suggested that the CLS Argos project should be contacted to see if they would attend .the same workshop,

as they are currently supporting projects in Indonesia and Vietnam. It was noted however that climate change modelling is not currently sufficiently advanced to directly inform stock assessments, but is used primarily to indicate potential risks and uncertainty associated with those stock assessments, especially with longer term projections.

11. The Steering Committee agreed that to comply with the project document the following activities will be conducted:

- **SEAPODYM – an existing model for the Pacific could be extended to include the WPEA area.**
- **Climate Change considerations may need to be included in the country's National Tuna Management Plan (NTMP).**
- **SPC should be invited to contribute to a sub-regional training workshop on climate change impacts on oceanic tuna fisheries.**
- **WCPFC will update and confirm availability of SEAPODYM specialist availability to meet with WPEA participants in Noumea around the time of the SPC Tuna Data Workshop, then to liaise with and assist country representative participation.**
- **WCPFC to contact existing regional CLS Argos (Patrick Lehodey) and determine if they are prepared to support the WPEA regional climate change workshop.**

Outcome 1.3: Climate change concerns mainstreamed into national fishery sector policy in Indonesia, Philippines and Vietnam.

12. In response to the leading question on how climate change is to be incorporated into national tuna management plans, Indonesia revealed that during the Tuna Conference in Bali from 19-21 November, the National Tuna Management Plan would be launched, and the Minister would expound upon the relationship between tuna fisheries and climate change.

13. Vietnam suggested that Outcome 1.2 should feed into 1.3. The National Assembly will in 2016, with the support of contracted experts, pass a revision of fishery law. The WPEA and other budgets may support this process. The Vietnamese NTMP is not yet approved, but it should be in place next year, once the current restructuring of the Ministry of Agriculture and Rural Development (MARD) is completed.

14. In the Philippines, fisheries adaptation to climate change already exists, and the current focus is on data collection. There exists a Climate Change Commission which fisheries report to; however if technical gaps are identified, external expertise may be requested under WPEA.

15. In summary, there isn't sufficient information available currently to develop climate change policy; however actions may be developed during the life of the project.

Component 2: Implementation of policy, institutional and fishery management reform

Outcome 2.1: Enhanced compliance of existing legal instruments at national, regional and international levels

16. In his presentation, the Project Manager identified a relatively small budget shortfall in the proposed Indonesian budget for the national tuna coordinators (NTC) which may be recovered by reallocation.

17. Indonesia made the point that changes in national legislation took so long to complete that there would always be a lag behind organisations such as WCPFC who were able to modify or create new regulations annually. Dr Lewis appreciated the point made, and indicated that if support was needed to accelerate changes in legislation, then funding would be available, but only if required and requested.

Outcome 2.2: Adoption of market-based approaches to sustainable harvest of tunas

18. Dr Lewis explained the importance of documenting supply chains in relation to traceability and other issues, and detailed some examples in the WPEA area. Data would likely exist with other agencies outside fisheries, for example veterinary, customs etc. Data to be collected would be at a high level to provide an overview on general flow of tuna chain processes and corroborate catch statistics and landings data.

19. The Philippines clarified an item in the logframe, confirming that there were ongoing workshops working towards MSC certification in Mindoro. This is currently supported by industry, but extra funding assistance would be needed, which might be provided under WPEA.

20. Indonesia would be better positioned to identify fisheries that would be suitable for MSC certification once the NTMP was adopted.

21. Dr Lewis pointed out that the Vietnamese handline and longline fisheries for yellowfin are under a FIP (Fisheries Improvement Plan) now, and this was heavily reliant on outputs from the previous WPEA project. Vietnam indicated that the FIP for tuna caught by longline and handline fisheries may be a candidate for MSC certification, noting that a supply chain study is underway. The WPEA project may contribute, perhaps via a joint venture workshop with the FIP process and include more participants and for supply chain and certification. Furthermore, in several provinces in Vietnam, there is a restructuring of production, processing, consumer and export chains which is closely related to this WPEA outcome.

22. Philippines suggested that prior research to inform the partner countries of the current status of tuna fishery supply chains and related issues should be a priority.

23. UNDP referred the workshop to a UNDP project on sustainable supply chains, which may also support this WPEA objective, and Indonesia indicated that they were already communicating with the relevant agencies in this project. It needed to be confirmed whether this project would include tuna fisheries.

24. The workshop was advised that for Vietnam information packaging is more important than data collection which is ongoing.

25. The Steering Committee agreed the following actions:

- **The hiring of a national consultant to collate all supply chain related issues and provide a country report/available data summary (Terms of Reference to be developed in line with the needs of each country].**
- **UNDP will provide the fishery focus for the global project on sustainable supply chains with a view to obtaining additional support to achieve these WPEA outcomes.**
- **It is recommended that prior research on supply chains/traceability etc. should be conducted, by a consultant within a budget of USD 2,000 per country. Individual ToRs for reports will be agreed with each project country.**

Outcome 2.3: Reduced uncertainty in stock assessment of POWP LME and EAS LMEs highly migratory fish stocks, and improved understanding of associated ecosystems and their biodiversity

26. UNDP noted that data collection is the most important component, and should be fully supported. Where additional funding might be required, this may be done via reallocation between different project components and/or future co-financing grants, noting that care should be taken since this could affect the budget codes

27. Vietnam concurred indicating that data collection is their priority activity. All three partner countries would support reallocation of their budgets to support data collection.

28. The Project Manager gave an overview of the WCPFC SPC stock assessment process and proposed a three country workshop with the following implications:

- Three country stock assessment scientists and data managers will have a meeting to consider the possibility of conducting a sub-regional stock assessment with any applicable model to EAS area only, and conduct a trial assessment;
- Invite SPC staff to a stock assessment training workshop for presentation on the results of sub-regional stock assessment (from 2014 onwards) after changes to MF-CL model structure, and try to develop a sub-regional stock assessment framework;
- A suggested process throughout the project period will be:
  a) Step 1: Consultation meeting among stock assessment scientists and conduct a trial sub-regional stock assessment;
  b) Step 2: Conduct a sub-regional stock assessment training workshop;
  c) Step 3: Develop a sub-regional stock assessment framework.

29. Dr Lewis offered guidance indicating that the stock assessment was just that, an assessment of the stock – through its range. Where relatively small areas within the range are assessed, variability and uncertainty increases, and such assessments may not be appropriate analyses on which to base reference points (RPs) or harvest control rules (HCRs). Other options to conduct assessments at a national level are less reliable than those across the range of the stock. Regarding the development of a sub-regional database to support the proposed Consultative Forum with e.g. SEAFDEC and PEMSEA, it will require extensive consultation and should initially be kept simple, e.g. for catch and effort data which is already collected, and an online database is probably ambitious – but ultimately the individual countries should decide how much and what type of data should be provided.

30. The issue of data sharing between the three partner countries was raised, querying the current policies which should be worked through before a joint stock assessment could be considered. Another early action would be for a national consultant to review what data are available and which models should be used in country. It was suggested that all stock assessment training could be combined into a single three-country workshop with international expert advice as required. There would likely be a need to define the type of data to be collected and shared, and ultimately the partner countries would want a web based system that could be accessed on line.

31. There followed discussion on the potential for SPC to conduct stock assessments in model region 7 in detail. The member countries were encouraged to request through their country delegates at WCPFC and SC meetings that SPC conduct stock assessments on EAS on their behalf.

32. In recognition that the fisheries in question are for highly migratory species (HMS), the question of distinguishing local catches from those outside of the WPEA region was raised. However it was pointed out that VMS and logbooks indicate where fishing has occurred, and there may be historical data by country, for example landed catches have been monitored for more than 10 years in the Philippines, where a stock assessment is currently being conducted for straddling stocks of small pelagics. In addition,

research vessels are conducting studies on larvae and spawning ground; hence there is a need to catalogue existing data by country before considering work on a sub-regional level.

33. The workshop noted that participants who had attended stock assessment workshops at SPC, found them useful to understand the WCPFC regional stock assessments, but the partner countries could not use MF-CL. It was noted that there will be other options which might be appropriate for the partner countries. The workshop also noted the wording in the logframe target: "Tuna management strengthened through applying scientific procedure using RPs and HCRs at national level once applied at regional level".

34. Regarding the biodiversity element in the logframe, outcomes can be addressed through increased information from observer programs and bycatch sampling, leading to reductions of bycatch and especially a range of conservation measures for endangered, threatened and protected (ETP) species.

35. The Steering Committee agreed the following actions:

- **Catalogue existing data by country before considering work on a sub-regional level stock assessment.**
- **Hold a meeting of sub-regional stock assessment scientists (and data manager) in year 1 to discuss available data, appropriate models and cooperation with the aim of conducting sub-regional stock assessments, and to finalise the details of preparing the sub-regional stock assessment training workshop.**

Outcome 2.4: Ecosystem Approach to Fisheries Management (EAFM) guiding sustainable harvest of the oceanic tuna stock and reduced by-catch of sea turtles, sharks and seabirds

36. Dr Lewis noted that without observer data collection (and bycatch sampling) this outcome isn't possible. Furthermore, bait used to catch tuna should be considered along with bycatch. The ecological risk assessment (ERA, also known as productivity and susceptibility analysis, PSA) is for bycatch only. The review of the NTMPs is included because there is reference in each of them to EAFM, and recommendations may be made for the NTMPs. PSA work to date indicates that there is generally a low risk for most bycatch species, but there may be a need to consider in greater detail threatened or endangered species where extensive CMMs are already in place at regional level. The information gathered could be reviewed at a workshop in year 2 and the outputs from that workshop could then be applied to policy and NTMPs in year 3.

37. In Vietnam, all data including bycatch is captured, which is sufficient for a risk assessment that could be conducted in year 1 or 2.

38. The Philippines suggested that the existing NTMP should be reviewed in the first year. EAFM WS planning and EAFM WS Policy would be in year 2 and then the risk assessment and EAFM application could be in year 3, although it may be useful earlier to inform planning for EAFM activities. UNDP supported this approach, but noted that there may be an issue in terms of funding to complete the outputs and recommended reviewing the output to be more realistic in light of available resources.

39. It was noted that the Vietnam handline fishery may have much of the information needed for an EAFM pilot study, and suggested that selecting several appropriate target fisheries would be a good option, a suggestion which UNDP supported.

40. It was recognised by the Philippines that there was a need to train planners and fishers in EAFM; and UNDP noted that after some training the project countries would be better placed to know what was required to deliver EAFM.

41. In response to Dr Lewis's query as to whether the application of an EAFM would be the responsibility of Ministry of Fisheries or Environment, in the Philippines there would be an overlap, whereas in Vietnam and Indonesia the responsibility would fall to the Fisheries.

Component 3 Knowledge sharing on highly migratory fish stocks

Outcome 3.1 Knowledge sharing on highly migratory fish stocks in the POWP and EAS LMEs.

42. UNDP drew the participants' attention to the International Waters Conference in 2015 in Da Nang; the project should support the attendance of one representative per country and from WCPFC. WCPFC should prepare experience notes for IW Learn.

43. UNDP suggested consideration should be given to having a dedicated project website for better visibility. An example of an appropriate page was given: www.pacific.iwrm.org, although for this relatively small project, the website may have smaller scope content.

44. Following the suggestion that the specialist knowledge manager would maintain the website, there was considerable discussion about that position and the other contracted post for a project management assistant given the limited budget available.

45. The recommended course of action to meet the WPEA knowledge management needs, is to explore the possibility of a contract with PEMSEA.

46. UNDP presented financial management (**Attachment C**) and M&E procedures of UNDP-GEF projects & Adaptive Management (**Attachment D**).

47. Following a brief discussion regarding future Steering Committee meetings, **the Steering Committee agreed an efficient and economical approach as follows:**

- **The Steering Committee meetings will be held for two days and be scheduled back to back with 3-country project workshops; it was further agreed that the next Steering Committee meeting would be held in November 2015 and will be hosted in the Philippines.**

48. The Project Manager presented the budget for year 1 and noted that detailed annual work plans and budget allocation will be finalized at consultation meetings during December 2014 and January 2015.

49. The Steering Committee endorsed the first year annual work plan and budget (Attachment E) along with the revised Project Results Framework (Attachment F).

50. WCPFC will hire the Finance Associate along with the WCPFC's recruitment policy and the TOR for the position will be prepared by the Project Manager and WCPFC. UNDP emphasized that earlier recruitment of the Associate will facilitate to the smooth commencement of the project.

51. Country representatives, UNDP and WCPFC were congratulated everyone on the fruitful outcomes of the meeting. The Inception Workshop and the first Steering Committee meeting were closed at 1600 hrs, Wednesday, 5 November 2014.

Attachment A

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA SM Project)

PROJECT INCEPTION WORKSHOP AND FIRST PROJECT STEERING COMMITTEE MEETING
4-5 November 2014, Da Nang, Vietnam

AGENDA

WPEA-2014/IW-01

4. OPENING OF THE MEETING

a) Introduction of participants
b) Adoption of agenda (indicative schedule: Attachment 1)

5. INTRODUCTION

a) Inception workshop goals, objectives and potential outcomes (Jose Padilla)

The purpose of the workshop will be briefly reviewed so that all participants can fully understand their roles, responsibilities and tasks within the project (See Attachment 2).

b) WPEA OFM and WPEA SM Projects: links between the two projects, key issues and targets arising in the new project (Tony Lewis)

Key features in the new project will be highlighted, including climate change issues, EAFM, and certification process. The scope of work and potential indicators and targets of these new topics will be briefly introduced.

c) Overview of project budget and budget transfer (Imee Manal)

UNDP will briefly introduce the total budget, breakdown by key category, mechanisms for transferring project funds, and UNDP's financial contribution to this project.

6. LOGFRAME, BUDGET AND ANNUAL WORK PLAN

a) Project activities and scope of work (SungKwon Soh, participating country)

Key activities in the new project will be introduced, and the level of budget will be reviewed to identify the scope of work for each project activity. This may stimulate a review and a potential revision of indicators and targets.

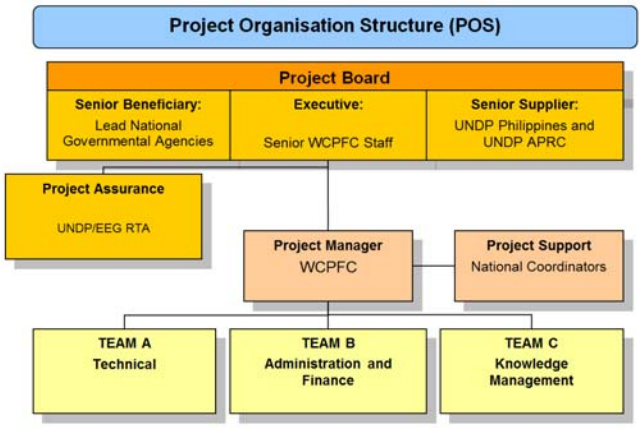
b) First year annual work plan and budget transfer (Imee Manal, Aaron Nighswander)

UNDP, WCPFC and participating countries will discuss the details of the project's activities, submission of proposals, and financial schedules for the first year. WCPFC prefers to receive payments on a six-month tranche basis. For example:

7. PROJECT MANAGEMENT

a) Project Board meeting

The meeting will clarify terms of reference, meetings and membership for the Project Board meeting. It will also review the project organization structure, roles of UNDP-Manila and RCU-Bangkok staff vis à vis the project team (RCU = regional coordination unit).



b) Staff recruitment (Knowledge management specialist, Finance Associate)

Two support staff will be recruited. Clarify details for their work location, selection process, budget details, scope of work including their travels, etc.

c) Reporting requirements, monitoring and evaluation process and budget allocation, and financial reporting procedures and annual audit (Kwanruen Seub-Am)

The meeting will identify reporting requirements for the project throughout the period, mid-term and final evaluation process, audit process, and related budget allocated (Attachment 3).

d) Contact points (GEF, UNDP, WCPFC, Country)

The meeting will develop a list of contacts for this project.

8. OTHER MATTERS

Attachment 1

INDICATIVE SCHEDULE

Time	Agenda	Remarks
	Day 1	
0830-0930	1. Opening of the meeting 2. Introduction	
0930-1730	3. Logframe, budget and annual work plan	
2000-2100	Strategic meeting	
	Day 2	
0830-1230	3. Logframe, budget and annual work plan (continued)	
1330-1730	4. Project management 5. Close of the meeting	

Attachment 2

Purpose of Inception Workshop (cited from Project Document)

The Inception Workshop should address a number of key issues including:

a) Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP-Manila and RCU-Bangkok staff vis à vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.

b) Based on the project results framework and the GEF IW Tracking Tool if appropriate, finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.

c) Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.

d) Discuss financial reporting procedures and obligations, and arrangements for annual audit.

e) Plan and schedule Project Board meetings. Roles and responsibilities of all project organisation structures should be clarified and meetings planned. The first Project Board meeting should be held within the first 12 months following the inception workshop.

An Inception Workshop report is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.

Attachment 3

Type of M&E activity	Responsible Parties	Budget USD *Excluding project team staff time*	Time frame
Inception Workshop and Report	▪ Project Manager ▪ UNDP CO, UNDP GEF	Indicative cost: 22,700	Within first two months of project start up
Measurement of Means of Verification of project results.	▪ UNDP GEF RTA/Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members.	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on *output and implementation*	▪ Oversight by Project Manager ▪ Project team	To be determined as part of the Annual Work Plan's preparation.	Annually prior to ARR/PIR and to the definition of annual work plans
ARR/PIR	▪ Project manager and team ▪ UNDP CO ▪ UNDP RTA ▪ UNDP EEG	None	Annually
Periodic status/ progress reports	▪ Project manager and team	None	Quarterly
Mid-term Evaluation	▪ Project manager and team ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost: 35,000	At the mid-point of project implementation.
Final Evaluation	▪ Project manager and team, ▪ UNDP CO ▪ UNDP RCU ▪ External Consultants (i.e. evaluation team)	Indicative cost : 35,000	At least three months before the end of project implementation
Project Terminal Report	▪ Project manager and team ▪ UNDP CO ▪ local consultant	0	At least three months before the end of the project
Audit	▪ UNDP CO ▪ Project manager and team	Indicative cost per year: 3,000	Yearly
Visits to field sites	▪ UNDP CO ▪ UNDP RCU (as appropriate) ▪ Government representatives	For GEF supported projects, paid from IA fees and operational budget	Yearly
TOTAL indicative COST Excluding project team staff time and UNDP staff and travel expenses		US$ 101,700 (5% of total budget)	

Attachment B

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA SM Project)

PROJECT INCEPTION WORKSHOP AND FIRST PROJECT STEERING COMMITTEE MEETING
4-5 November 2014, Da Nang, Vietnam

LIST OF PARTICIPANTS

Indonesia	DGCF: Mr Saut Tampubolon DGCF: Ms Novia Tri Rahmawati, RCFMC: Director Dr Hari Eko Irianto, RCFMC: Dr Fayakun Satria	s.tampubolon@yahoo.com novia_dkp@yahoo.com harieko_irianto@yahoo.com fsatria70@gmail.com
Philippines	BFAR: Asst. Director Drusila Esther Bayate BFAR-NMFDC/Center Chief Alma Dickson NFRDI/BFAR: Dep. Director Noel Barut NFRDI/BFAR: Ms Elaine Garvilles NFRDI/BFAR: Ms Suzette Barcoma Region 12: Ms Laila Emperua	drusilaesther@yahoo.com alma_dickson@yahoo.com necbarut@gmail.com egarvilles@yahoo.com suzette_barcoma@yahoo.com bnette_nick@yahoo.com
Vietnam	DECAFIREP: Dep. Director Pham Ngoc Tuan FICen: Director Duong Long Tri ICD/D-Fish: Dep. Director Pham Trong Yen RIMP: Vice Director Nguyen Viet Nghia DECAFIREP: Mr Nguyen Tien Thang DECAFIREP: Mr Pham Hung	pnt_kg@yahoo.com.vn tridl@mard.gov.vn ptrongyen@yahoo.com nghia.rimf@gmail.com thangcomeon@gmail.com hungfam83@gmail.com
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Technical Coordinator	Dr Antony Lewis	al069175@bigpond.net.au
WCPFC	Dr SungKwon Soh Mr Aaron Nighswander Mr Anthony Beeching	SungKwon.Soh@wcpfc.int Aaron.Nighswander@wcpfc.int Anthony.Beeching@wcpfc.int

Attachment C

Financial Management
by Ms Imee Manal

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Financial Management

Financial Management

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1. Financial Management Processes
- Budgeting – AWP
- Cash Management
- Accounting

2. Internal Controls
3. FACE

Financial Management

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Budgeting:

- Identify inputs needed to carry out the project activities
- Project initiation – initial financial resources during start-up operations
- Regular project operation – execution of project activities
- PMO operations requirements – personnel and operating expenses

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Cash Management:

- Direct cash transfer - UNDP advances funds to the IP on a quarterly basis, and IP reports back the expenditures to UNDP
- Direct payment - IP carries out the procurement and requests UNDP to make the disbursement
- Reimbursement - UNDP pays the IP after it has made the disbursement
- Direct agency implementation - UNDP makes obligations and incurs expenditure in support of activities agreed in the AWP

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Accounting:

•Bank account:

- Following Paris Declaration on Aid Effectiveness, UNDP to deposit advances for the Government in central government bank accounts
- Opening a separate bank account is allowed as it usually lowers risk and provides easier monitoring but may add administrative burden on the IP
- The bank account opened by the IP should be under the project's name and to be used only for receiving advances from UNDP and for making payments of the project
- Signatories are IP Project Officers (minimum of two) –the same signatories to AWP – list to be provided to UNDP for internal control and audit purposes

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Accounting:

- Adequate accounting system that allows proper recording of financial transactions
- Adequate policies, procedures and manual to guide activities and ensure staff accountabilities
- IP maintains complete/updated accounting records, vouchers and supporting documents that may be accessible at anytime for spot check & audit purpose

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Accounting:

Article IX. Maintenance of Records

1. The IGO shall keep accurate and up-to-date records and documents in respect of all expenditures incurred with the funds made available by UNDP to ensure that all expenditures are in conformity with the provisions of the Project Work Plan and Project Budgets. For each disbursement, proper supporting documentation shall be maintained, including original invoices, bills, and receipts pertinent to the transaction. Any Income, as defined in Article I, paragraph

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Accounting:

- Accounting books and records maintained
  - Cash Books
    - Cash Disbursements Book
    - Cash Receipts Book
    - Journal Book
  - General Ledger
  - Cash Advance Subsidiary Ledgers
  - Inventory Ledgers
  - Disbursement Vouchers
  - Cash Receipt Vouchers
  - Journal Vouchers
  - Bank Reconciliation Statements/Reports

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Internal Control: Segregation of duties

Responsibilities performed by different units or persons:

–Authorization to execute transaction

–Recording of transaction

–Custody of assets involved in the transaction

–Functions for purchasing, receiving, recording, and paying for goods and services

–Bank reconciliations should be prepared by someone other than those who make or approve payments

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Internal Control: Bank/cash accounts

- Separate project bank account maintained
- Bank account has at least two authorized signatories
- Cash receipts kept in a safety deposit box w/in office premises & deposited to the bank ASAP or at the latest within the next banking day
- Bank reconciliation prepared monthly. Any unusual items should be appropriately reviewed and recorded in the books

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Internal Control: Payments

- Vouchers pre-numbered, reviewed and approved by responsible and authorized officers
- Vouchers adequately supported by original documents which are duly stamped "Paid"
- Cash advances liquidated within 15 working days after the completion of activity
- Expenditures authorized and w/in the AWP
- Chart of accounts properly used

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Internal Control: Internal and External audits

Article XI. Audit Requirements

1. The IGO shall submit to the UNDP Resident Representative in Philippines a certified annual financial statement on the status of funds advanced by UNDP. The Project will be audited at least once during its lifetime but may be audited annually, as will be reflected in the annual audit plan prepared by UNDP. The audit shall be carried out by the auditors of the IGO or by a qualified audit firm, which will produce an audit report and certify the financial statement.

2. Notwithstanding the above, UNDP shall have the right, at its own expense, to audit or review such Project-related books and records as it may require and to have access to the books and record of the IGO, as necessary.

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Reporting and Monitoring:

2. Financial reporting will be quarterly:

(a) The IGO prepares a financial report and submits it to the UNDP Resident Representative no later than 10 days after the end of each quarter, in English.

(b) The purpose of the financial report is to request a quarterly advance of funds, to list the disbursements incurred on the Project by budgetary component on a quarterly basis, and to reconcile outstanding advances and foreign exchange loss or gain during the quarter.

(c) The financial report has been designed to reflect the transactions of a project on a cash basis. For this reason, unliquidated obligations or commitments should not be reported to UNDP, i.e., the reports should be prepared on a "cash basis", not on an accrual basis, and thus will include only disbursements made by the IGO and not commitments. However, the IGO shall provide an indication when submitting reports as to the level of unliquidated obligations or commitments, for budgetary purposes;

(d) The financial report contains information that forms the basis of a periodic financial review and its timely submission is a prerequisite to the continuing funding of the Project. Unless the Financial Report is received, the UNDP Resident Representative will not act upon requests for advances of funds from UNDP;

Financial Management

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Reporting and Monitoring:

Financial reports to be submitted:

- Funding Authorization and Certificate of Expenditure (FACE)
- Bank reconciliation
- Inventory report
- Audit report

FACE Form

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What is the FACE form?

- Request for funding authorization
- Reporting of expenditures
- Certification of expenditures

Funding Authorization and Certificate of Expenditures

UN Agency: _____

Date: DD/MM/YYYY

Country: _____
Programme Code & Title: _____
Project Code & Title: _____
Responsible Officer(s): _____
Implementing Partner: _____

Type of Request:
- ☐ Direct Cash Transfer (DCT)
- ☐ Reimbursement
- ☐ Direct Payment

Currency: _____

		REPORTING				REQUESTS / AUTHORIZATIONS		
Activity Description from AWP with Duration	Coding for UNDP, UNFPA and WFP	Authorised Amount MM-MM YYYY A	Actual Project Expenditure B	Expenditures accepted by Agency C	Balance D = A - C	New Request Period & Amount MM-MM YYYY E	Authorised Amount F	Outstanding Authorised Amount G = D + F
Total		0	0	0	0	0	0	0

CERTIFICATION

The undersigned authorized officer of the above-mentioned implementing institution hereby certifies that:

- ☐ The funding request shown above represents estimated expenditures as per AWP and itemized cost estimates attached.
- ☐ The actual expenditures for the period stated herein has been disbursed in accordance with the AWP and request with itemized cost estimates. The detailed accounting documents for these expenditures can be made available for examination, when required, for the period of five years from the date of the provision of funds.

Date Submitted: _____ Name: _____ Title: _____

NOTES: * Shaded areas to be completed by the UN Agency and non-shaded areas to be completed by the counterpart.

FOR AGENCY USE ONLY:

FOR ALL AGENCIES
Approved by:
Name: _____
Title: _____
Date: _____

FOR UNICEF USE ONLY			
Account Charges		Liquidation Information	
Cash Transfer Reference: *CRQ ref. no., Voucher ref. no.*		DCT Reference: *CRQ ref. no., Liquidation ref. no.*	
GL codes:		DCT Amount	0
Training	0	Less:	
Travel	0	Liquidation	
Meetings & Conferences	0	Amount	0
Other Cash Transfers	0		
Total	0	Balance	0

FOR UNFPA USE ONLY	
New Funding Release	
Activity 1	0
Activity 2	0
Total	0

1 - The FACE form will be used by government and NGO partners to request cash advances and to liquidate them. Requests are to be made on a quarterly basis

FACE forms

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Modalities:

- Direct Cash Transfer
- Reimbursement
- Direct Payments

Direct Cash Transfer

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Article VIII. Financial and Operational Arrangements

1. In accordance with the Project Budget, UNDP has allocated and will make available to the IGO funds up to the maximum amount of *$2,233,578.00.* The first installment of $168,400 will be advanced to the IGO within 30 working days following signature of the present Agreement. The second and subsequent instalments will be advanced to the IGO quarterly, when a financial report and other agreed-upon documentation, as referenced in Article X, below, for the activities completed have been submitted to and accepted by UNDP as showing satisfactory management and use of UNDP resources.

2. The IGO agrees to utilise the funds and any supplies and equipment provided by UNDP in strict accordance with the Project Document. The IGO shall notify UNDP about any expected variations on the occasion of the quarterly consultations set forth in Article IV, paragraph 3, above. Any variations on any one- line item that may be necessary for the proper and successful implementation of the Project shall be subject to prior consultations with and approval by UNDP.

Direct Cash Transfer

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- Request for funding is in accordance with the approved Annual Work Plans and accompanied by an itemized cost estimate per activity or a quarterly work and financial plan

- Transfer of funds are made to the IPs bank account or Project bank account

- Approval of new advance request is subject to 80% utilization of the previous advance and 100% utilization of all earlier advances includes copy of the bank reconciliation and bank statement showing the same figures in the FACE forms

Direct Cash Transfer

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- Interest earned from bank account must be included in the FACE and to be credited to the project as MISCELLANEOUS EXPENSE (account 74510)

- Expenditures to the Advances are reported on or before every 10th day of the month following the end of each quarter - with or without expenditures to report (April 10, July 10, Oct 10, Jan 10)

- IP may submit expenditure reports anytime especially if IP has substantial amount of expenditure to report

- UNDP records expenditures in UNDP system (ATLAS)

- Cash disbursed, but not utilized - may be reprogrammed

Reimbursement

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- Request for Reimbursement is in accordance with the approved Annual Work Plans and accompanied by an itemized cost estimate per activity or a quarterly work and financial plan

- Payment of funds advanced by the IPs are made to the IPs bank account

Direct Payments

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- Request for Direct payments is in accordance with the approved Annual Work Plans

- Payments are made to the Service Providers/Vendors directly

Direct Payments

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- **Attachments required:**
  - **Procurement - Summary of IP Procurement results; selection matrix; contracts; and invoices**
  - **IP issued contracts and agreements – Certification of Completion, Evaluation and Contract**
  - **Travel – Approved travel order, invitation and logistics Note**

Verification of FACE by UNDP

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- Request agrees w/ approved AWP
- Signed by authorized officers
- Check if opening balance agrees with the closing balance of previous FACE. Verify advance balance with UNDP system
- Accuracy of mathematical calculations
- Reasonableness of Planned Expenditures & Advance Request
- Correct use of ATLAS Account Code
- Consider Audit & Assessment reports if there are grounds to withhold or reduce funding
- FACE should be supported by the previous quarter FACE, bank reconciliation report and bank statement for validation of balances
- Complete support documents

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Thank you!

Attachment D

M&E procedures of UNDP-GEF projects & Adaptive Management
by Ms Kwanruen Seub-Am

United Nations Development Programme

GEF

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA)

M&E procedures of UNDP-GEF projects & Adaptive Management

Inception Workshop
4-5 Nov 2014
Danang, Vietnam
UNDP Bangkok Regional Hub

Objective of this session

- Understand the concept of Adaptive Management and GEF& UNDP M&E policies
- Know reporting requirement (what & when)
- Familiar with M&E tools and strategies

What is Adaptive Management ?

Adaptive Management is the ability of the project management to respond to unexpected challenges and opportunities in a flexible, positive, optimising manner.

Adaptive Management

- The Logframe is a flexible instrument which can be adapted to changing circumstances, provided the different levels of authority for approval are respected.
- Challenges are anticipated by early identification of risk.
- M&E provides feedback to project management regarding whether the project is reaching its objectives to allow for corrective action.

Adaptive Management

Modifications proposed requires different levels of approval

	Modifications to the FSP allowed	Proposed by	Approved by	May lead to
Major	**Goals, Objective, Outcomes**	Project Management, Executing Agency	GEF SEC	Revision of Pro Doc Additional GEF resources
	Outcomes	Project Management, Executing Agency	UNDP-GEF, reported to GEF SEC	Revision of Pro Doc
Minor	**Outputs, Activities, Inputs**	Project Management	UNDP CO and UNDP GEF RCU Steering Committee	Revision of work plan, Budget revision without increase in funds

GEF

Monitoring, Evaluation and Reporting

In the context of the GEF-UNDP project, tools for monitoring are:

- the logframe (Strategic Results Framework – SRF)
- the M&E plan included in theProDoc
- the reporting tools

LOGICAL FRAMEWORK MATRIX

This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD: **INDONESIA - Outcome 5:** Climate Change and Environment: Strengthened climate change mitigation and adaptation and environmental sustainability measures in targeted vulnerable provinces, sectors and communities **PHILIPPINES- Outcome 4:** Resilience Towards Disasters and Climate Change: Adaptive capacities of vulnerable communities and ecosystems will have been strengthened to be resilient toward threats, shocks, disasters, and climate change **VIETNAM – Focus Area One:** Inclusive, Equitable and Sustainable Growth						
Country Programme Outcome Indicators:						
Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one): **Outcome 2: Citizen expectations for voice, development, the rule of law and accountability are met by stronger systems of democratic governance**						
Applicable GEF Strategic Objective and Program: IW-2						
Applicable GEF Expected Outcomes: 2.1, 2.2, 2.3, 2.4						
Applicable GEF Outcome Indicators:						
	Expected Outcomes	**Indicator**	**Baseline**	**Targets End of Project**	**Source of verification**	**Risks and Assumptions**
Project Objective[1] To improve the management of highly migratory species in the entire West and Central Pacific (WCPF) Convention area by continuing to strengthen national capacities and international participation of Indonesia, Philippines and Vietnam in WCPF Commission activities		Status of harvesting of shared oceanic tuna stocks in the WCPF Convention area in the EAS vis-à-vis sustainability criteria set by the WCPF Convention Application of market-based approaches to sustainable harvesting of oceanic tunas	WCPF Convention and Commission and its adopted Conservation and Management Measures (CMMs) on e.g. IUU fishing, by-catch. Tuna supply chains not well documented, no oceanic tuna fisheries in the EAS certified and	Sustainable harvesting of oceanic tunas in the EAS, including: • Improved monitoring of oceanic tuna fisheries in the EAS and coverage increased by 40% • Reduction of catch of ETP species by 25% • Enhanced adaptive capacity to manage oceanic fisheries in the EAS under climate change conditions • Progress to possible certification of at least two oceanic tuna fisheries in the EAS, through FIPs	WCPFC reports and statistics	Changes in policy and decision makers, or other events beyond the control of the project, lead to changes in support for the project objective to improve the sustainable management of highly migratory species in the EAS

M & E Plan

Type of M&E activity	Responsible Parties	Budget US$ *Excluding project team staff time*	Time frame
Inception Workshop and Report	▪ Project Manager ▪ UNDP CO, UNDP GEF	Indicative cost: 22,700	Within first two months of project start up
Measurement of Means of Verification of project results.	▪ UNDP GEF RTA/Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members.	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on *output and implementation*	▪ Oversight by Project Manager ▪ Project team	To be determined as part of the Annual Work Plan's preparation.	Annually prior to ARR/PIR and to the definition of annual work plans
ARR/PIR	▪ Project manager and team ▪ UNDP CO ▪ UNDP RTA ▪ UNDP EEG	None	Annually

UNDP-GEF reporting requirements in the project cycle

UNDP-GEF Project Cycle

Project Approval

DOA and ProDoc Sig

Inception Workshop

Project Midterm

Project Closure

UNDP-GEF Project Cycle

with Reporting Requirements

TTs
ESSP

Project Approval

DOA and ProDoc Sig

Inception Workshop

Ongoing monitoring
PIRs, AWP, ERBM

MTR
TTs

Project Midterm

Ongoing monitoring

Project Closure

Terminal Evaluation, TTs

Inception Report

- Due 3 months after Government signature of project document
- Allows updating the project with relations to changes occurred in the physical and political environment
- Allows precision of indicators, targets, sources of verifications, activities, outputs

Quarterly Operational Reports (QOR)

- Monitor details of performance and management
- Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform (ERBM).
- Needs to be linked to annual reporting

Project Implementation Review (PIR)

All FSPs and MSPs must complete a PIR annually for each year of implementation

- The **1st PIR** is due after one year of implementation

  → *In 2015, projects with ProDoc sig date of 30 June 2014 or before must prepare a 2015 PIR*

- The **terminal PIR** serves as the final project report (usually done before TE)
- PIRs represent key input to the MTR and TE processes!

What to be report/evaluated in PIR

1. Progress: ratings. Encourage GEF OFP to rate progress as well
- Toward development objective (DO) = objective + outcome level, cumulative
- Implementation progress (IP) = outputs + inputs, process + delivery , annual

2. Risk: critical risk in ATLAS + progress ratings = GEF risk system (high, moderate, low)

3. Evaluation: how the project address recommendations of MTR and TE, co-financing received

4. Partnerships: lessons learned working with indigenous communities, NGOs, private Sector, Small Grants Programme

5. Gender: how being addressed in project implementation

From the Perspective of Project Team, UNDP Country Office, Government, & Other Partners

- Allows for a **time of reflection** on
  - Accomplishments
  - Challenges
  - Opportunities
  - Risks
  - Strategy and Assumptions
- Facilitates **direct communication** with partners
- Enables the **sharing of information** and ideas
- Reveals **strengths & weakness** in implementation; and areas for growth

MIDTERM REVIEWS

- UNDP-GEF MTR Guidance finalized in June 2014
- Addresses both UNDP & GEF requirements
- Applies to all projects going forward

Highlights of new MTR Guidance

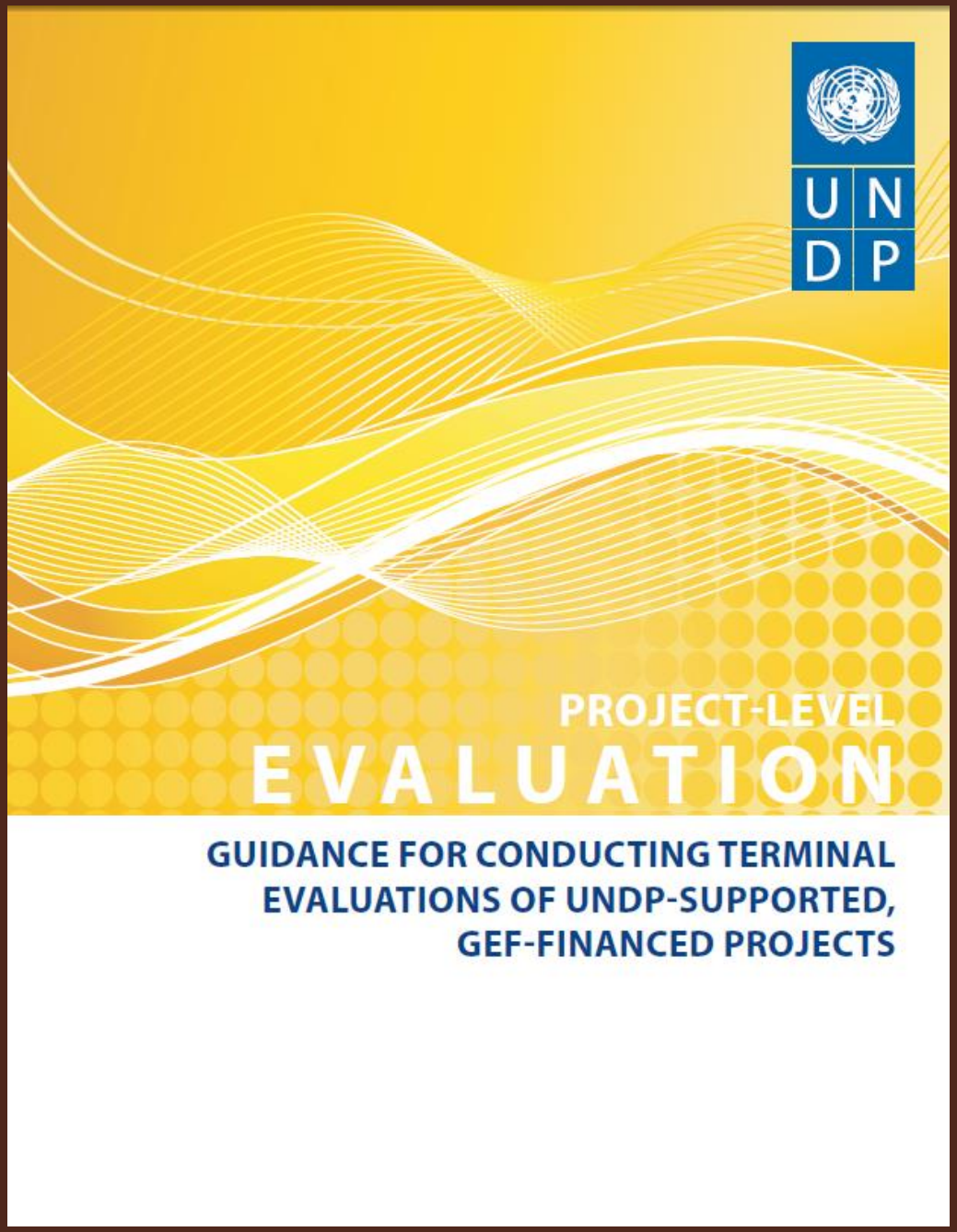
- Primarily a **monitoring tool** designed to identify challenges and outline **corrective actions** to ensure that a project is on track
  - As a monitoring tool, MTRs are submitted to the GEFSec; not the UNDP IEO or the GEF IEO

- **Mandatory** for all GEF-financed **full-sized projects** (FSPs)

- **Not mandatory** for **medium-sized projects** (MSPs)
  - strongly recommended; should be undertaken when an MSP is not performing well and could benefit from an independent review
  - can be undertaken according to this guidance by external independent consultants or by UNDP staff at the discretion of the UNDP-GEF PTA
  - all MSPs that elect to undertake a MTR, the midterm TT should be completed and submitted with the final MTR report

- MTR process should be initiated after the completion of the 2nd APR/PIR, regardless of the length of the project
  - i.e. no later than October of the year the 2nd PIR is submitted

Terminal Evaluations of UNDP-supported GEF-financed Projects



The TE Process

Basics

- All projects must undertake a TE
- Cost of TE charged to the project budget
- Look for evaluators 3 – 4 months before start of TE process
- TE **must** be undertaken during the period 6 months before and 6 months after operational closure; ideally 3 months *before* operational closure
- TE report MUST be translated into English or will not be accepted by GEF!

Highlights of new MTR Guidance

	Midterm Review	Terminal Evaluation
Mandatory for…	Full-sized projects	All projects except for expedited Enabling Activities (EAs), for which TEs are optional
Focus	• Assessment of **progress** towards results • Monitoring of **implementation** and **adaptive management** to improve outcomes • Early identification of **risks to sustainability** • Emphasis on **supportive recommendations**	• Verification and assessment of implementation and **results** • Identification of project's successes in order to create **replicability** • Action needed for consolidation and **sustainability of results** • Emphasis on **lessons learned** • Improve design of other projects
Timeframe	MTR report must be **submitted with the 3rd PIR**	Carried out during the **period 6 months before & 6 months after** project operational closure
Values & Emphasis	Independent: emphasis on a participatory and collaborative approach; opens opportunities for discussion and change in project, as needed	Independent: an assessment of results; emphasis on the accountability and learning functions of evaluation

Highlights of new MTR Guidance

	Midterm Review	Terminal Evaluation
Ratings required on these categories	• Progress Towards Results (by Outcomes) • Project Implementation & Adaptive Management • Long-term Sustainability	• Monitoring and Evaluation • Implementing Agency (IA) & EA Execution • Outcomes • Sustainability • Impact • Overall Project Results
Budget	$30,000 - $40,000	$30,000 - $50,000
Mgmt Response	Yes	Yes
UNDP Evaluation Plans	Not mandatory to include in evaluation plan	Mandatory to include in evaluation plan
Quality Reviewed	No	Yes, by UNDP IEO for GEF IEO
Publically available?	Not mandatory to post to the ERC	Mandatory to post to the ERC

Summary of Reporting

M&E procedures and reporting requirements	When	By whom
Inception Report	The first 2-3 months	Project Team (preparation), UNDP CO (revision) UNDP RTA (revision)
Quarterly Operational Report	Quarterly	Project Team (preparation)
APR/PIR	Annually	Project team with inputs from UNDP COs and RTAs
MTE (if applicable)	After the completion of the 2nd APR/PIR	External evaluators
Final Evaluation	Six months before/after the project is operationally closed.	External evaluators

Thank you

Attachment E

BUDGET SUMMARY FOR YEAR 1

Total Year 1 Budget (November 2014 - October 2015)

	Budget code	Budget (USD)
Component 1	71200	20,000
	71300	35700
	72100	152540
Component 2	71300	62,000
	72100	349,202
Component 3	72100	16000
	71600	8000
Total budget for year 1		643,442
1st Transhe transferred in Nov 2014		168,000

ANNUAL WORK PLAN (2015)

Indonesia

Outcome	Activity	Budget
1.1	Logbook awareness WS in Bitung (1day) to improve the logbook coverage rate	4,150
	MCS workshop in Bitung and Kendari to address IUU	14,300
	Participation in WCPFC/PEMSEA Consultative Forum (to be confirmed)	10,000
	Capacity building in country's science (support to SC meeting participation)	5,000
	National tuna coordinators	12,000
	Conduct catch estimates WS	6,490
	Workshop: Capacity Building on MCS	6,000
1.2	Hire National CC specialist and task him/her to identify all projects in Indonesia that cover CC issues, list of agencies, and contacts to collaborate with WPEA or to avoid any duplication. Prepare issues and problems related with WPEA CC activities.	2,500
	Hire an international consultant to compile all relevant information related with the impacts of climate change on HMS and to draft general guidelines on adoptive management and monitoring of HMS (e.g., Ongoing activity on fish mapping using satellite technology such as SST and eventually make this available to fishing vessels) (to be confirmed)	10,000
	Convene a regional CC workshop to review the consultancy report, finalize the general guidelines, and a training course for capacity building to interpret climate change impacts on oceanic fisheries (collaborate with Department of Science and Technology): the outputs from the consultants and this WS will be: "Trial prediction of climate change impacts on oceanic fisheries developed (from Logframe target)" National climate change specialists (NCCS) will assist this WS coordination (USD 1.5K/year/person) BN#3	16,000
2.1	1) Hire a consultant to update gap analysis between the existing Indonesian fishery regulations and the newly adopted WCPFC CMMs (USD 1500) 2) Convene a workshop to facilitate the adoption reflection of gap analysis (USD 2000)	3,500
	1) Convene awareness workshops for stakeholders (including workshops in	In-kind

	provinces) to disseminate the results of WCPFC annual meetings and national actions according to the results – DGCF continues to report the outcome of the WCPFC meetings and develop Fishery Circular to impose WCPFC requirements to their fishermen. - National actions may include legislation of relevant results of WCPFC meetings into government policy, regulations or laws if needed; 2) Update *Technical Guidance of RFMO CMMs and Resolutions* and distribute the handbook to stakeholders	
2.2	A needs research on the overview and review of historic projects and on-going projects on certification issues. Need to develop a general report format and TOR for consultancy - three country can apply this format	2,000
	Hire one consultant for the development of supply chain characterized for selected tuna fisheries	8,000
	Hire one consultant to develop Indonesia Tuna Eco-Labelling	5,000
	Convene a workshop to review the supply chain analysis and Indonesia Tuna Eco-labeling prepared by consultants for the improvement of fisheries governance based on inducement from the market. The workshop will provide policy recommendations for the governance In year 2, a WS will be convened to train assessors (government staff who assesses the fishing company on requirements) and industries on Indonesia Tuan Eco-labeling	4,660
	Support of national certification/database development: Consultancy (USD 5,000) and Workshop (USD 5,000)	10,000
2.3	Hire a consultant to 1) review a WCPFC harvest strategy in the Convention Area; 2) present a draft harvest strategy for the archipelagic tuna fisheries at a WS; 3) integrate the results into NTMP (USD 2,500) and convene a WS to finalize the harvest strategy for archipelagic tuna fisheries (USD 4,000)	6,500
	Convene a three country WS to consider an approach to sub-regional stock assessment, including data requirements and model selection	4,000
	Conduct Data Review WS	4,540
	Expansion of port sampling coverage: - government will support data collection from artisanal fisheries - the existing enumerators will collect bycatch data - annual budget for port sampling data collection (USD 65,580) - data entry (USD 200/month), field supervision (USD 250/month), database manager (USD 150/month), data analyst (USD 100/month).	73,980
2.4	No activities in year 1	
3.1	Establish the database, collect data and build capacity	4,000
	IW Learn activities supported in Philippines and regionally Participation of PHL in IW Learn USD 4,000/2015 and 2017 each)	4,000

Philippines

Outcome	Activity	Budget
1.1	Convene a national forum with stakeholders for better monitoring of tuna fisheries and tuna resources, including removal of IUU fishing (tuna association, district, provinces, fisheries manager, research institute) and prepare WCPFC/PEMSEA Consultative Forum	2,000
	Participate in the Sub-regional Consultative Forum; disseminate the outputs of the Consultative Forum to relevant stakeholders; and implement any adopted	10,000

	actions within the country	
	4. Capacity building in country's science (support to SC meeting participation)	5,000
	Catch estimation WS	7,500
	National tuna coordinators	7,800
1.2	Hire National CC specialist and task him/her to identify all projects in Indonesia that cover CC issues, list of agencies, and contacts to collaborate with WPEA or to avoid any duplication. Prepare issues and problems related with WPEA CC activities.	2,500
	Hire a consultant to compile all relevant information related with the impacts of climate change on HMS and to draft general guidelines on adoptive management and monitoring of HMS (e.g., Ongoing activity on fish mapping using satellite technology such as SST and eventually make this available to fishing vessels);	10,000
	Convene a regional CC workshop to review the consultancy report, finalize the general guidelines, and a training course for capacity building to interpret climate change impacts on oceanic fisheries (collaborate with Department of Science and Technology): the outputs from the consultants and this WS will be: "Trial prediction of climate change impacts on oceanic fisheries developed (from Logframe target)" National climate change specialists (NCCS) will assist this WS coordination (USD 1.5K/year/person) BN#3	16,000
2.1	Update *Operational Guide for Filipino Fishermen* and distribute the handbook to stakeholders, including bycatch	2,000
	Review and refine FAD management plan (Analysis of available FAD data for Philippines waters and HSP, Review of existing FAD Management Plan, Report with recommendations for revisions)	8,000
2.2	A needs research on the overview and review of historic projects and on-going projects on certification issues. Need to develop a general report format and TOR for consultancy - three country can apply this format	2,000
	BFAR including Dept of Trade and Industry is developing supply chains of the Philippines for 2013 and 2014. Hire a consultant (market specialist) to assist the finalization of supply chain analysis of tuna fisheries to be incorporated into legislation.	8,000
	Convene a workshop to review the supply chain analysis prepared by BFAR/DTI (or consultant) for the improvement of fisheries governance based on inducement from the market. The workshop will provide policy recommendations for the governance	20,000
	Support of national certification/database development: Consultancy (USD 5K) and Workshop (USD 5K)	10,000
	Data collection for the update of supply chains and implementation of market-based fisheries management (Refer to text in the Budget Note 19: Following review of supply chains and traceability by national and international consultants, establish data collection and annual reporting systems; Data collection by provincial/regional staff with operational support)	6,222
2.3	Convene a three country WS to consider an approach to sub-regional stock assessment, including data requirements and model selection	4,000
	Data review WS	7,500
	Conduct data-related activities, including port sampling, training of enumerators, field trip for the supervision of port sampling and data collection, etc. Enumerator's training budget of USD 30,000 (BN#26). The remaining budget in this activity may be reallocated to any data-related activities,	64,000

	including observer data collection in EEZs during non-FAD closure period. Bycatch budget of USD 4,000 added here from BN#25	
	Collaborate with RPOA-IUU to address IUU in the EAS LMEs and POWP LMEs (including implementation of and capacity building in CDS, elogbook, etc.)	2,000
2.4	Review of NTMP - Consultancy and workshop	5,000
3.1	Establish the database, collect data and build capacity (Enhancement of the existing database systems (NSAP, TUFMAN, TUBS) including capacity building relating to the improvement of the existing database systems and documentation of data gaps)	4,000
	IW Learn activities supported in Philippines and regionally. Participation of PHL in IW Learn (USD 4,000/2015 and 2017 each)	4,000

VIETNAM

Outcome	Activities	Budget
1.1	Participate in the regional Joint Consultative Forum	4,950
	Convene a workshop to disseminate the Forum outputs to all relevant stakeholders, and implement any actions adopted by the Forum	4,150
	Support delegates of Vietnam to participate in the WCPFC SC meetings	5,000
	Implement logbook program for tuna fisheries at 9 provinces	15,000
	National tuna coordinators	8,400
	Convene catch estimation workshop	7,500
	Hire consultant to reconstruct total catch of tuna fisheries before 2000 by gears and species and revisit the construction of historical catch and effort data after 2000 (results of this consultancy task will be presented in the catch estimation WS and port sampling data review mentioned in Activity 3 of output 2.3.1)	1,000
1.2	Hire National CC specialist and task him/her to identify all projects in Indonesia that cover CC issues, list of agencies, and contacts to collaborate with WPEA or to avoid any duplication. Prepare issues and problems related with WPEA CC activities.	2,500
	A consultancy task to investigate impacts of climate change and fishing on marine ecosystem including development of adaptive management guidelines on management and monitoring of highly migratory species and assist with development of climate change policy	4,500
	Convene a (training) workshop to train national personnel (including national consultants), and to finalize the general guidelines on adaptive management and monitoring of HMS to address climate change impacts	5,000
	Hire consultants (DECAFIREP will develop the TOR for the consultancy) to compile all aspects related with climate change concerns (including scientific aspects, development scenario of climate change on tuna fisheries management policy development and experience from fishing community) and provide the consultancy report (including recommendations on policy reform and revision of national tuna management plan) to DECAFIREP	3,000
2.1	1. Support meetings of tuna working group exsisting under MARD (called national task force)	1,000
	Investigation and introduction on Resolutions, CMMs and other legal documents of WCPFC to relevant stakeholders by email or website; conduct completion and submission of WCPFC Annual Report Part 1 and Part 2 in due course	2,000

	Participation of Tuna Data workshop at SPC	5,000
	Introduction and review of CMMs and relevant legal documents of WCPFC and dissemination to local stakeholders and policy makers (to be continued in the first phase) – this is the responsibility of meeting participants by reporting to their Minister.	In-kind
2.2	A needs research on the overview and review of historic projects and on-going projects on certification issues Need to develop a general report format and TOR for consultancy - three country can apply this format	2,000
	Hire a consultant (market specialist) to review the existing supply chain research plan of DECAFIREP, and to assist the completion of DECAFIREP's tuna supply chain analysis, including traceability study and catch certification linking with post/harvest activity (this includes any incidental costs such as travel cost)	8,000
	Convene an awareness workshop to review the supply chain analysis developed by DECAFIREP	15,000
2.3	Convene a three country WS to consider an approach to sub-regional stock assessment, including data requirements and model selection	4,000
	Hire consultant(s) to identify and develop categories for the development of criteria for monitoring and stock assessment and associated ecosystems for review and approval by an expert group (RIMF and DECAFIREP)	2,000
	Implement port sampling data collection for tuna fisheries at 9 provinces, including collection of landing data; collection of bycatch species: current expenditure is double the allocated budget; includes data entry (USD 400/month)	88,800
	Supervision field trip - Conduct routine visits to provinces to monitor and evaluate data collection activities	5,000
	Convene port sampling review workshop	7,500
2.4	Implement a trial observer programme to collect catch/effort, biological data and bycatch information on-board	10,000
3.1	Update/Maintain the existing project website, country website, and liking with other agencies, etc.	2,000
	Participation in the regional knowledge platform	6,000

Revised PROJECT RESULTS FRAMEWORK provided by the Inception Workshop

PROJECT RESULTS FRAMEWORK

This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD:
INDONESIA - Outcome 5: Climate Change and Environment: Strengthened climate change mitigation and adaptation and environmental sustainability measures in targeted vulnerable provinces, sectors and communities
PHILIPPINES- Outcome 4: Resilience Towards Disasters and Climate Change: Adaptive capacities of vulnerable communities and ecosystems will have been strengthened to be resilient toward threats, shocks, disasters, and climate change
VIETNAM – Focus Area One: Inclusive, Equitable and Sustainable Growth

Country Programme Outcome Indicators:

Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one):
Outcome 2: Citizen expectations for voice, development, the rule of law and accountability are met by stronger systems of democratic governance

Applicable GEF Strategic Objective and Program: IW-2

Applicable GEF Expected Outcomes: 2.1, 2.2, 2.3, 2.4

Applicable GEF Outcome Indicators:

	Expected Outcomes	Indicator	Baseline	Targets End of Project	Source of verification	Risks and Assumptions
Project Objective[1] To improve the management of highly migratory species in the entire West and Central Pacific (WCPF) Convention		Status of harvesting of shared oceanic tuna stocks in the WCPF Convention area in the EAS vis-à-vis sustainability criteria set by the WCPF Convention Application of market-based approaches to sustainable harvesting of oceanic tunas	WCPF Convention and its adopted Conservation and Management Measures (CMMs) on e.g. IUU fishing, by-catch. Current coverage in average of the three countries fishery monitoring is around 15%. Little compliance with bycatch reduction requirement No reflection of climate change in the current management	Sustainable harvesting of oceanic tunas in the EAS, including: Improved monitoring of oceanic tuna fisheries in the EAS and coverage increased to 40% Reduction of catch of ETP species by 25% Enhanced adaptive capacity to manage oceanic fisheries in the EAS under	WCPFC reports and statistics	Changes in policy and decision makers, or other events beyond the control of the project, lead to changes in support for the project objective to improve the sustainable management of highly migratory species in the EAS

[1] *Objective (Atlas output) monitored quarterly ERBM and annually in APR/PIR*

area by continuing to strengthen national capacities and international participation of Indonesia, Philippines and Vietnam in WCPF Commission activities			framework Tuna supply chains not well documented, no oceanic tuna fisheries in the EAS certified	climate change conditions through revision of management framework Progress to possible certification of at least two oceanic tuna fisheries in the EAS, through FIPs		
Component 1:[2] Regional governance for building regional and national adaptive capacity of Indonesia, Philippines and Vietnam in the management of highly migratory stocks	1.1 Improved regional mechanisms for monitoring and assessment of highly migratory fish stocks and Illegal, Unreported and Unregulated (IUU) fishing in the POWP LME and the EAS LMEs	**Regional** (WCPF Convention area): Status of participation in WCPFC activities (CMMs, compliance monitoring, MCS etc.) and membership (CCM) **Sub-regional** (Indonesia, Philippines, Vietnam): Establishment of WCPFC/PEMSEA Consultative Forum (CF) to coordinate monitoring of oceanic tuna stocks across EAS LMEs in association with PEMSEA ,WCPFC and others	**Regional:** Close to full participation by Indonesia and Philippines as members; Vietnam not compliant in some aspects and CNM status **Sub-regional:** Three countries work cooperatively within WPEA project but no coordinating mechanism which includes all fishing entities in SCS and other LMEs	**Regional:** All three countries ~~fully compliant~~ comply with WCPFC requirements, and ~~all~~ relevant CMMs. Improved monitoring of oceanic tuna fisheries in the EAS and coverage increased to 40% **Sub-regional:** Countries once a year share information which contributes to development of harvest policy for oceanic tunas across the relevant LMEs and within the WCPFC framework; project coordinates with the EAS Program through the PEMSEA Resource Facility	**Regional:** Annual forum meetings with extensive public reporting. Annual statistical reports and technical reports showing improved coverage and data quality. Signed agreement between WCPFC and PEMSEA	Political support for regional coordination activity, and participation by all parties and fishing entities. Membership acceptable to WCPFC (Vietnam)

[2] *All outcomes monitored annually in the APR/PIR.*

		National (common) Formation of task force to prepare and package information for CF Comprehensive national databases for all aspects of oceanic tuna fisheries, including logsheet data, port sampling data, vessel register, MCS data, and bycatch. Comprehensive VMS, IUU monitoring and catch certification system in place for each country	**Indonesia:** National logbook monitoring system gradually being established under PSDKP MMAF, mainly starting to cover large vessels (>30GT) and not fully integrated with fisheries data. Species composition by gear by species currently available under port sampling programme covering only FMAs 716 (Bitung), 717 (Sorong) 714 (Kendari); Limited data from surveys by research vessel. Statistical data for AW fisheries are available, but biological data and scientific database to verify currently is not available (FMAs 713, 714, 715). VMS and catch certification scheme under development and limited application to deter IUU. No mechanism in place for regional knowledge sharing on oceanic tuna though CF **Philippines:** Current monitoring coverage for small and medium scale tuna	**Indonesia:** Logbook coverage of all commercial gears and fleets improved up to 50% for fishing vessels >30 GT ~~(>50%)~~; Coverage of artisanal fleet landings improved up to 50%; catch of retained and by-catch species well documented. Dependent and independent data available (port sampling, observer, logbook, surveys); Scientific database for archipelagic fish resources developed and implemented; extend port sampling to cover AW FMAs up to 25% VMS and catch certification system in place to address IUU. National task force in place for packing of information for CF **Philippines:** Monitoring coverage for small and medium scale tuna fisheries improved by 30%.	Reports from CF VMS compliance, IUU and catch certification reporting Database holdings listed Reports of task forces in each country with information packaged for CF	Resources including trained manpower, available to implement monitoring systems and establish databases

			fisheries is less than 10% (development of prototype for small scale fisheries). Current monitoring by VMS limited to PS/RN Phil-flag vessels operating in WCPO HSP1 and other countries' EEZs; limited application of VMS in Phil waters to address IUU. Delays in manual submission of logsheets resulting in proposing an elogbook system to facilitate timely submission. No mechanism in place for regional knowledge sharing on oceanic tuna **Vietnam:** Monitoring systems established in three central provinces (Binh Dinh, Phu Yen & Khanh Hoa) under WPEA in compliance with WCPFC requirements, but not covering for all gears and all other provinces. Current coverage of monitoring landing data is around 35% No bycatch data are currently documented No integrated database system established No mechanism in place for	VMS monitoring and/or other technologies applied to selected tuna fishers operating in the Phil national waters and WCP CA to reduce IUU elogbook developed and pilot tested ready for implementation and adoption by stakeholders. National task force in place for packing of information for CF **Vietnam:** Monitoring systems expanded to 6 other provinces; increased coverage and quality of logsheet data for all tuna fishing fleets. Landing data coverage of tuna fishing fleets significantly improved up to 70%. Catch of retained and by-catch species well documented. Integrated database established within National Fisheries Statistics system, including data entry,		

			regional knowledge sharing on oceanic tuna. VMS scheme being implemented but not yet integrated with fisheries data. VMS, IUU and catch certification scheme not in place - under development and initial implementation.	verification and database maintenance. National task force in place for packing of information for CF VMS scheme being developed for selected fisheries to apply for catch certification scheme and to reduce IUU		
	1.2 Enhanced capacity of technical staff, policy and decision makers in Indonesia, Philippines and Vietnam, to integrate climate change impacts on highly migratory stocks into management regimes	Prediction of climate change impacts on oceanic fisheries and development of adaptive management strategies Capacity building to interpret climate change impacts on oceanic fisheries and to develop adaptive management strategies and incorporate these into management regimes	**Sub-regional:** Some information available on impacts on POWP LME but model outputs not yet extended to EAS and integrated with existing data	**Sub-regional**: Trial prediction of c~~C~~limate change impacts on EAS and western part of POWP LME ~~predicted~~ and appropriate adaptive management strategies developed	**Sub-regional:** Workshop outputs and climate change stakeholder meeting reports Consultancy reports Reports and attendance of training and capacity building courses	Expertise, appropriate climate change models and associated data available to predict impacts, as well as national/regional capacity to undertake necessary ongoing research and monitoring
			Indonesia: Though National Climate Change Council established in 2008 (Presidential decree no 46/2008), climate change impacts on oceanic fisheries and its ecosystems not studied and current analytical capacity in this area is very limited.	**Indonesia:** Task force established to study climate change impacts on oceanic fishery sector; results of preliminary research/modelling on oceanic fisheries ~~(SKJ)~~ available; adaptive management strategies to mitigate impacts of climate change developed.	Reports with relevant data to support modelling activities and development of indicators of change and adaptation success.	

			Philippines: National climate change strategy developed, but impacts on oceanic fisheries and its ecosystems not yet studied and current capacity limited. **Vietnam:** Lack of trained/skilled personnel and no existing assessment of capacity needed to interpret climate change impacts on oceanic fisheries and to develop adaptive management strategies.	**Philippines:** Trial prediction of climate change impacts on oceanic fisheries developed; 4 or more skilled personnel trained to interpret climate change impacts on oceanic fisheries and to develop adaptive management strategies. **Vietnam:** Trial prediction of climate change impacts on oceanic fisheries developed; 4 or more technical staff, policy & decision makers to integrate climate change impacts on highly migratory stocks.		
	1.3 Climate change concerns mainstreamed into national fishery sector policy in Indonesia, Philippines and Vietnam	Incorporation of oceanic fisheries indicators and modelling outputs into overall national climate change strategy Policies/strategies/plans/program that integrate climate change into national fisheries policies and even legislation/regulations.	**Indonesia:** National policy formulation specific to oceanic fisheries under climate change is very limited, but some information available for adjacent POWP LME, as a suitable model/precedent. **Philippines:** No pool of experts to mainstream climate change concerns into national fisheries sector policy. No specific regulations on climate change related to fisheries management established. RA9729: Philippine Climate Change Act of 2009 has served as the basis for the creation of the Climate Change Commission. **Vietnam:** No inputs to national policy formulation on climate	**Indonesia:** Climate change adaptive management strategy for oceanic fisheries developed and incorporated in national cross-sectoral climate change strategy. **Philippines:** Policies/strategies/plans/programs that integrate climate change into national fisheries regulations approved and/or implemented. **Vietnam:** Climate change concerns articulated and integrated into the national	Inclusion of oceanic fisheries in national climate strategy, policy and legislation, as necessary	Necessary outputs available from 1.2 (adaptive management strategies) and political acceptance of any recommendations and guidelines

			change currently available for Vietnam, nor to oceanic fisheries.	fisheries policy		
Component 2: Implementation of policy, institutional and fishery management reform	2.1 Enhanced compliance of existing legal instruments at national, regional and international levels	Legal instruments fully compatible with WCPFC requirements, and compliance with WCPFC management requirements, including compliance with CMMs, ROP, RFV and application of reference points, and harvest control rules	**Regional:** No collaborative governance on tuna fisheries among the three countries and limited compliance with technical application of WCPFC requirements due to limited involvement in WCPFC's technical processes (SC and TCC)	**Regional: Sub-regional** collaborative governance on tuna fisheries established. Participation in WCPFC's technical processes enhanced through full participation in WCPFC technical meetings (SC, TCC and other technical WG meetings)	**Regional:** Compliance monitoring reports (CMRs) at TCC, annual reports to SC (Part 1) and TCC (Part 2) and participation in regular sessions of WCPFC.	Funding and personnel available to attend meetings;
			Indonesia: Some fisheries legislation under revision to accommodate all WCPFC requirements, framework for AW management through FMAs currently minimal but progressively being developed (7 FMAs); no RPs and HCRs considered yet as a scientific procedure. **Philippines:** Existing FAD management policy and other CMMs needs to be revisited for compliance, but Philippines currently compliant with most of the WCPFC CMMs. **Vietnam:** Limited compliance with CMMs or other management arrangements; no RPs and HCRs considered yet as a scientific procedure.	**Indonesia:** Tuna management strengthened through applying scientific procedure using Reference Points (RPs) and Harvest Control Rules (HCRs) at national level once applied at regional level; Archipelagic Water (AW) management regime established. **Philippines:** Compliance with CMMs of special concern to the Philippines primarily FADs committed. **Vietnam:** Incorporation of compatible measures into national legal frameworks and incorporation of relevant WCPFC requirements completed.	Legislation reviewed/revised, achieving compatibility with WCPFC requirements Trial r~~R~~eference points and HCRs developed once applied at regional level; and incorporated into national tuna management plans	Country status can be resolved and full membership in WCPFC achieved (~~Indonesia and~~ Vietnam)

				Full application of relevant CMMs; and ~~development~~ proposed~~of~~ reference points (RPs) and harvest control rules (HCRs) at national level.		
	2.2 Adoption of market-based approaches to sustainable harvest of tunas	Supply chain characterized for tuna fishery sector, including processing, and custody systems established for tuna fisheries Improvements to fisheries to meet sustainable fishery standards for selected fisheries ~~Number of p~~Private sector companies ~~that~~ cooperate in relevant project activities	**Indonesia:** Limited data available on supply chain, and monitoring and custody system not established for any fishery. Growing market demand for sustainable certification but limited eco-certification conducted ~~30 companies already cooperate in project activities~~ **Philippines:** Supply chain complex, information available but not compiled Growing market pressure for ecolabelling certification relating to sustainable fishing. Several pre-assessments initiated. 16 companies already cooperate with BFAR **Vietnam:** Incomplete data available on supply chain and	**Indonesia:** Supply chain characterized for selected tuna fisheries, monitoring systems established and information annually updated; custody system in place for selected fisheries. ~~Eco-certification achieved for selected tuna fisheries.~~ ~~Sustained participation of 30 companies and increase in number of companies by at least 5 as appropriate~~ **Philippines:** Supply chain fully documents and annually updated. Several tuna fisheries progressing towards full certification. Sustained participation of ~~16~~ fishing companies ~~and increase in number of companies by at least 5 as appropriate~~ **Vietnam**:	Reports with characterization of supply chains and information regularly updated and made available to CF ~~Reports documenting eco-certification for selected fisheries, with custody systems~~	Selected fisheries able to meet required standards

			chain of custody scheme not established for any fishery MCS pre-assessment of yellowfin/bigeye handline and longline fishery unfavourable and need for FIP identified. 9 companies already cooperate in project activities	Supply chain characterized for tuna fisheries, with emphasis on export-oriented fisheries, and monitoring system established; Chain of Custody in place for selected tuna fisheries. FIP process implemented for longline/handline fishery Sustained participation of ~~9~~ fishing companies ~~and increase of companies by at least 5 as appropriate~~		
	2.3 Reduced uncertainty in stock assessment of POWP LME and EAS LMEs highly migratory fish stocks, and improved understanding of associated ecosystems and their biodiversity	Integration of data from oceanic tuna fisheries in Indonesia, Philippines and Vietnam into regional assessments of target tuna species Sub-regional/national assessments for target species; regular national assessments of target species Documentation and risk assessment of retained species and by-catch, including ETP species, in all fisheries/gears	**Sub-regional:** Assessments not explicitly available on sub-regional scale because of data gaps and lack of assessment model spatial structure	**Sub-regional:** Preliminary ~~S~~sub-regional assessments undertaken with available data ~~available~~ and assessment model ~~restructured~~	**Sub-regional:** Sub-regional assessments reported as component of regional assessments	WCPFC science provider able to undertake sub-regional assessment within new model area Resources available to undertake all necessary activity Necessary data collected to undertake national stock assessment and scientists adequately trained Necessary data gathered to undertake risk assessments of selected species
			Indonesia: Some target species data available from WPEA-1 with coverage of FMA 716, 717 and 714 for assessment. National stock assessment board exists and plans for national assessment underway. Limited information on retained/by-catch species and no risk assessment study for tuna by-catch and ETP species **Philippines:** Limited understanding of ecosystem	**Indonesia:** Indonesian data included in regional and sub-regional assessments; National assessments for target species ~~completed~~ commenced and annually updated. Risk assessment of retained, by-catch and ETP spp. ~~undertaken~~commenced. ~~(National Commission for fish stock assessment)~~	Reports of assessment outcomes at regional and national level (Vietnam only) Updated FIPs with data incorporated to eventually meet requirements for ~~full~~ MSC ~~assessment~~. Reports with national stock assessments to guide	

			supporting the oceanic tuna fishery. Retained species and by-catch species for all gears incompletely characterized. **Vietnam:** Data collection on target species initiated under the WPEA project, but coverage incomplete for some fisheries; data not fully incorporated in regional assessments; Limited research on retained/by-catch species conducted but not regularly studied. Research surveys using two gears undertaken - no national stock assessment currently available but planned.	**Philippines:** Comprehensive observer, catch sampling undertaken and risk assessment available for by-catch and ETP species. **Vietnam:** • Annual total catch estimates produced and biological data collected for national and/or regional stock assessment of target tuna species; • Information for risk assessment collected of retained and by-catch species and preliminary assessments undertaken; • National level stock assessments of target tuna ~~undertaken~~commenced.	implementation of National Tuna Management Plan	
	2.4 Ecosystem Approach to Fisheries Management (EAFM) guiding sustainable harvest of the oceanic tuna stock and reduced by-catch of sea turtles, sharks and seabirds	Application plan of ecosystem modelling to EAS EEZs to complement those for POWP LME and EEZs Incorporation of EAFM principles in national tuna management plans Pilot scale application of EAFM for oceanic species at selected sites/fisheries Reduction of by-catch of endangered, threatened and protected (ETP) species, such as sea turtles,	**Sub-regional:** Ecosystem models available for POWP LME but not EAS	**Sub-regional:** Application of ecosystem models to EAS planned	**Sub-regional:** ~~Model outputs applied to~~ A sub-regional EAFM application plan ~~at national level~~	Funding and resources available to support sub-regional modelling Capacity building to support modelling activity and interpretation
			Indonesia: Limited data collected for the application of ecosystem modelling; Some commitment to EAFM exists through community-based activities. NTMP lacking EAFM components	**Indonesia:** Data collection to support application of ~~appropriate~~ ecosystem models. EAFM strategy ~~developed~~ commenced for trial implementation in one FMA.	Trial application of EAFM ~~applied~~ to selected tuna fisheries/sites Revised NTMPs with EAFM included	

		sharks and seabirds	Turtle by-catch studied and some mitigation measures underway; shark catch and seabird interactions not well documented; low level of compliance. **Philippines:** No study of EAFM for oceanic fisheries, legal basis uncertain. NTMP may lack EAFM compatibility Turtle by-catch studies and some mitigation measures underway; shark catch and seabird interactions poorly documented; low level of compliance. **Vietnam:** No EAFM application and legal basis uncertain No inclusion of EAFM in NTMP Few data on ETP species and no compliance on bycatch mitigation	EAFM conditions incorporated in revised NTMP Mitigation measures applied in selected fisheries; compliance with shark and sea turtle CMMs and NPOAs ~~committed~~. **Philippines:** Potential study area that applies EAFM for oceanic fisheries selected. NTMP revised to include EAFM. Mitigation measures applied; Compliance with shark CMMs committed, ~~Smart Gear~~ selective environment-friendly fishing gears developed. **Vietnam:** Plan for the ~~P~~pilot application of EAFM at one selected site/fishery Revised NTMP with EAFM included Compliance with ETP CMMs and NPOAs	Linkage to mitigation measures in adjacent areas; compliance with a range of CMMs in EAS	
Component 3 Knowledge	3.1 Regional knowledge platform	Monitoring and knowledge sharing between POPW LME and EAS LMEs for	Limited information shared via WCPFC mechanisms, meetings	Active website maintained in collaboration with PEMSEA, and	Website promotion with hits recorded;	Regional and national commitment to

sharing on highly migratory fish stocks	established on POWP LME and EAS LMEs shared tuna stocks and associated ecosystems	target and associated species and their management Commitment to information sharing at all levels amongst WPEA members and beyond Current provincial/FMA resource profiles updated and disseminated Participation in global knowledge sharing events	and WPEA website and limited outreach to stakeholders at national and sub-regional level No interagency cooperation mechanism such as CF established Limited participation in knowledge sharing events, including IWLearn.	commitment to preparation and dissemination of project publication, newsletters and other information products Consultative Forum activity reported. Increased participation in international and (sub-)regional knowledge sharing events (one per year), such as IWLearn and related activities and the PEMSEA's EAS Congress	feedback from stakeholders; project newsletter widely distributed. Presentations at international and (sub-)regional knowledge sharing events available on IWLearn and EAS websites	sharing of information on highly migratory stocks

Attachment W12-B

WPEA Project Annual Work Plan 2015

INDONESIA

Outcomes	Activity	period	Budget
1.1	1. Logbook awareness WS	Q1-Q4	3,820
	2. Capacity building of the country science – participating in the WCPFC SC	Q3	6,362
	3. National tuna coordinator's activities	Q1-Q4	12,000
	4. Annual tuna catch estimates workshop	Q2	20,010
1.2	5. Prior study on climate change and fisheries	Q1-Q4	2,500
1.2 and 2.2	6. Review workshop on consultancy outputs related with climate change, supply chain analysis, and sustainability/certification	Q4	18,940
2.1	7. Implementing national compliance review monitoring	Q1-Q4	6,000
2.2	8. Consultancy on supply chain analysis/traceability	Q1-Q4	2,500
	9. Consultancy on sustainability/certification	Q1-Q4	2,500
2.3	10. Research on harvest strategy	Q2-Q4	6,500
	11. Convene a review workshop on harvest strategy (reference points and harvest control rules)	Q4	2,500
	12. Data review workshop on port sampling	Q1-Q4	1,7490
	13. Sub-regional stock assessment workshop	Q4	7,000
	14. Data collection from port sampling	Q1-Q4	85,180
3.1	15. Database review and development	Q1-Q4	4,000
	16. IW Learn activities	Q1-Q4	4,000
GRAND TOTAL FOR YEAR 1			**201,302**

PHILIPPINES

Outcome	Activity	period	Budget
1.1	1. Capacity building in country's science	Q3	4,200
	2. Catch estimation workshop	Q2	3,310
	3. National Tuna Coordinator's activities	Q1-Q4	7,800
1.2	4. Prior study on climate change (consultancy)	Q2	5,000
2.1	5. Update *Operational Guide for Filipino Fishermen*	Q1	2,000
	6. WS on national reference points and harvest control rules	Q4	22,100
2.2	7. Prior study on certification and eco-labeling	Q2	2,000
	8. Consultancy on Philippine tuna supply chain analysis	Q2	2,000
	9. National workshop on three Consultancy Reports from pilot studies a) Consultancy on climate change; b) Consultancy on certification and eco-labeling; and c) Philippine tuna supply chain analysis	Q2	13,600
2.3	10. Sub-regional stock assessment workshop	Q4	7,000
	11. Data review workshop	Q2	19,830
	12. MCS and VMS programs established	Q1-Q4	47,380
	13. Port sampling and field supervision	Q1-Q4	43,818
	14. Training WS on E-logbook	Q3	5,500
2.4	15. WS on EAFM, RPs and HCRs	Q2-Q3	4,000

3.1	16. IW Learn / PEMSEA EAS CONGRESS	Q4	4,000
GRAND TOTAL FOR YEAR 1			**193,538**

VIETNAM

Outcome	Activity	period	Budget
1.1	1. Capacity building in science. Support participation of Vietnam to SC11	Q3	6,496
	2. National tuna coordinator's activities	Q1-Q4	8,400
	3. Data review and catch estimation workshop	Q2	29,660
	4. Reconstruction of catch histories prior to 2000	Q2	2,170
1.2	5. Prior study on climate change	Q3	2,351
2.1	6. Implementing national compliance review monitoring	Q1-Q4	2,400
	7. Consultancy on reference points and harvest control rules	Q4	2,500
	8. WS on consultancies for climate change and reference points	Q4	15,340
	9. Participation in tuna data WS at SPC	Q2	3,600
2.2	10. Consultancy – Tuna supply chain analysis/traceability	Q2	1,500
	11. Consultancy on sustainability/certification	Q2	2,500
2.3	12. WS on Market-based Sustainability Consultancies	Q4	15,600
	13. Sub-regional SA scientists' meeting	Q4	7,000
	14. Port sampling	Q1-Q4	94,010
3.1	15. website		
	16. Participation in the regional knowledge platform	Q1-Q4	6,000
GRAND TOTAL FOR YEAR 1			**199,527**

Attachment W12-C

Sustainable Management of WPEA Tunas

Project Progress Report

1st Quarter 2015

Award Basic Information

Award ID:	00077221
Project ID:	00088145
Award Title:	Regional: Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas
Business Unit:	PHL10
Project Title:	Regional: Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas
PIMS no.	4753
Implementing Partner (Executing Agency)	Western and Central Pacific Fisheries Commission (WCPFC)
Award Start Date & End Date	
Total Award Amount	$2,233,578

Project Progress

1. Since the official commencement of this project on 28 October 2014, the Inception Workshop was held in Da Nang, Vietnam, 4-5 November 2014. The workshop report was finalized and submitted to the UNDP.

2. One of the key activities in the WPEA project is tuna data collection and annual tuna catch estimation at each country from using port sampling data. For the data collection from port sampling, WPEA project hired port sampling enumerators and paid their salaries. Enumerator's salaries for November and December 2014 were covered by WCPFC budget first, and then the amount was requested to be reimbursed by GEF budget when GEF budget transferred from UNDP to WCPFC. Total amount for the 2014 port sampling is $24,201.87 ($7,844 for Indonesia, $3,157.87 for Philippines, and $13,200 for Vietnam).

3. There are some risk and issues to be resolved soon. Both Indonesia and Vietnam have not yet endorsed the WPEA Project internally, and accordingly, no official bank account has been established yet. This means that no activities have been conducted in these two countries so far this year. Especially, there was a reshuffling of the government structure in Vietnam recently, so even port sampling has not been conducted this year. However, Indonesia has been paying their enumerator's salary from their government budget and will be reimbursed from WCPFC once their official bank account is established.

4. Several activities have been prepared in the Philippines since early 2015, as shown in the table below. The following activities were planned and budget transferred to NFRDI official bank account. Some activities were planned to implement in Quarter 2 but budget transfer was required to prepare such activities.

Component	Expected Outcom	Philippine project activity	Activity period	Targets End of Project	Budget	Budget Code	Remarks

	es						
1	1.1	2. Preparation of Catch Estimation Workshop: budget transferred; workshop scheduled and meeting venue surveyed	Q2 (2015.05.21-26)	• Estimates of the Philippine annual total tuna catch produced • Workshop report produced	6,920	72100	
2	2.1	5. Publication of *Operational Guide for Filipino Fishermen*	Q1	Guide published and distributed to fishermen	2,000	72100	
	2.3	11. Tuna Data Review Workshop	Q2 (2015.05.21-26)	Combined with Activity No. 2	6,920	72100	
	2.3	12. Preparation of MCS activities					
		1) Expansion of Observer Data Collection	Q1-Q2	Data summary report produced; fishery observers employed	8,930.40	75700	
		2) Monitoring of observers; Debriefing WS	Q1-Q2 (workshop dates TBD)	Observer data achieved; Debriefing report and guidelines produced	6,104.40	75700	
		3) Observer Handbook and Species ID Guide published	Q1-Q2	Observer Handbook distributed; Species Identification Guide distributed	2,442.00	75700	
	2.3	13. Consultancy on the selection of port sampling sites	Q1-Q2	Consultancy progress report and final report produced	1,000	72100	
	2.3	13. Port Sampling, data compilation and fishery monitoring	Q1-Q2	Data collected from port sampling submitted; field trip report produced	19,410	72100	
PMU		Project Manager: Preparation and convening of the Inception Worksop; develop AWP and Budget; WCPFC-PEMSEA CF	Q1	Inception WS convened; Country's AWP and budget allocation submitted to UNDP; WCPFC-PEMSEA CF held	24,847.29		Travel cost from Oct. 2014 to March 2015

5. During the PEMSEA Inception Workshop, WCPFC and PEMSEA had a meeting in Manila, 25 March 2015, to prepare WCPFC-PEMSEA Consultative Forum and any collaboration between the two project partners. The meeting summary is in **Attachment A**, and two issues are highlighted below:

a) WPEA-PEMSEA Consultative Forum will be held in November at WPEA PSC meeting.
b) WPEA and PEMSEA will work together to recruit a Project Knowledge Management Associate (PKMA).

6. Project Manager is planning to visit three countries to facilitate internal endorsement of the project and committing project activities.

Attachment A

UNDP, PEMSEA and WCPFC Consultation Meeting

Manila, 25 March 2015

Under UNDP-GEF Program Framework Document for the East Asian Seas, both the PEMSEA and WPEA Projects are project partners and the WPEA Project Document requires collaboration with PEMSEA for building regional and national adaptive capacity of Indonesia, Philippines and Vietnam in the management of highly migratory stocks through establishing a WCPFC-WPEA/PEMSEA Consultative Forum. After the PEMSEA's Inception Workshop (*PEMSEA Project on the Scaling up of the SDS-SEA Implementation*), there was a consultation meeting among Regional Technical Advisor Dr Jose Padilla (UNDP Bangkok Regional Hub), PEMSEA Executive Director Mr Stephen Adrian Ross, and WPEA Project Manager Dr SungKwon Soh, and the following issues were discussed at Manila Diamond Hotel, Manila, 25 March 2015.

1. WCPFC-WPEA/PEMSEA Consultative Forum

a. PEMSEA will consider the possibility of designating the WCPFC-WPEA Project as PEMSEA's Project Partner. It was noted that the notation of "WCPFC-WPEA" will be suitable for the process of partnership and cooperation between the two project partners. (Mechanisms for including the YSLME-2 Project into the Forum will be assessed by PEMSEA to be able to report on the entire East Asian Seas Program.)

b. **For the Consultative Forum (CF), both project partners agreed to have a regular session at either PEMSEA's East Asian Seas Partnership Council (EAS PC) meeting or WPEA's Project Steering Committee (PSC) meeting, preferably at WPEA's PSC meeting.** Agenda for the CF may include cooperation and collaboration between project activities of the two project partners, including enhancement of regional knowledge platform.

2. Reporting requirements among WPEA, UNDP, GEF, and PEMSEA

a. WPEA will submit Quarterly Progress Report (about 3 pages, QPR), Annual Progress Report (APR, including National Report), Project Implementation Review (PIR, WPEA-SM Project, which was signed on 30 September 2014, will prepare the first PIR in 2016), and Mid-term and Final Evaluation Report.

b. **In order to identify any reporting needs between PEMSEA and WPEA Project, WPEA will provide its Project Document and Inception Workshop Report to PEMSEA Executive Director**.

3. WPEA Project allows hiring of two project staff, one locating in Pohnpei and the other in PEMSEA office in Manila. Duties and budget level for this recruitment in the WPEA Project Document are annexed below.

4) Project Knowledge Management Associate (PKMA) Background

The Project Knowledge Management Associate (PKMA), will be a locally recruited national selected based on an open competitive process. He/she will report to the Project Manager (PM) and assist the PM in developing reports and knowledge management products, and maintaining the website of the UNDP-GEF project. S/he will assess support requirements against project objectives and operating environment.

Duties and Responsibilities

- Prepare GEF quarterly project progress reports (QPRs), as well as any other reports requested by the Executing Agency and UNDP
- Assist in the preparation of meeting reports and records of discussion, including the Consultative Forum and the Project Board
- Prepare reports that compile lessons learned from the project and distribute a quarterly project e-newsletter with information on current activities and plans for future activities
- Maintain and continuously update the project website, incorporating all reports and products from the project and other material of relevance
- Participate fully in IW Learn activities, and maintain links with related projects.

Qualifications

- University degree in Information Management or Environmental Sciences or related fields;
- 3 years of experience in the area of knowledge management at medium and small scale
- Good computer skills in common word processing (MS Word), spreadsheet (MS Excel), and accounting software.
- Strong English language communication skills, both spoken and written.
- Experience in the development and maintenance of websites (preferable but not essential)

Knowledge management specialist	3 years	**45,000** (salary and some travel/DSA)	➢ Specialist appointed and based in PEMSEA, Manila ➢ Information dissemination of project knowledge products at all levels (see ToR) ➢ Preparation of Consultative Forum, meeting and workshop reports ➢ Develop WPEA website – talk with Pemsea; refer to IW Learn

a. WPEA and PEMSEA will further consider the process of hiring this staff. **WPEA will prepare practical TOR of the staff for WPEA Project. For the recruitment process, PEMSEA Executive Director will send a contract template (ask Administration Officer) for the staff's service agreement between WCPFC-WPEA and PEMSEA, including budget transfer method from WPEA to PEMSEA. Email communications will be copied to Dr Jose Padilla**.

b. PEMSEA commented that they will need to see the staff's TOR, including expected outputs annually. (Note that $15,000 per year would provide you with an estimated 100 workdays for a KM specialist) If $3,750 is allocated per year for travel and DSA, the annual workdays will be reduced to about 75 workdays.
    - PEMSEA asked: What is a reasonable annual budget for travel/DSA for the KM specialist?

c. WPEA Project will establish an independent project website which may be linked by PEMSEA website if available. The website may be managed by the PKMA. PEMSEA and WPEA will further consider the website development.

4. PEMSEA and WPEA may consider mutual collaboration in implementing EAFM and climate change related activities.

5. WPEA will attend IW Learn Conference tentatively scheduled in November 2015 (Sri Lanka) and EAS Congress in November (Vietnam) 2015.

Attachment W12-D

Sustainable Management of WPEA Tunas
Project Progress Report

2nd Quarter 2015

Submitted by the Project Manager SungKwon Soh

11 July 2015

Award Basic Information

Award ID:	00077221
Project ID:	00088145
Award Title:	Regional: Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas
Business Unit:	PHL10
Project Title:	Regional: Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas
PIMS no.	4753
Implementing Partner (Executing Agency)	Western and Central Pacific Fisheries Commission (WCPFC)
Award Start Date & End Date	
Total Award Amount	$2,233,578

Project Progress

1. In the second quarter, several activities have been planned and the following table below shows the plan and the status of the individual project activities by country. Some activities of the Indonesia and Vietnam have been delayed because of the delay of internal approval of the project.

Indonesia

2. Indonesia has approved the project and provided an official bank account on 19 July 2015. Since this date, project funds can be transferred to both DGCF and RCFMC, the two executing agencies in Indonesia. In the monitoring of the project activities in Indonesia, the following points are highlighted:

a) There are two national tuna coordinators (NTC) who are responsible for the execution of each project activity in Indonesia, one at DGCF and the other at RCFMC. NTC allowances will be provided to RCFMC staff but NTC allowances for the DGCF will be paid as honorarium to those who conduct each project activities.
b) RCFMC has been using its own budget for the payment of enumerator's salary since January 2015. As the new bank account was available, WPEA could reimburse such amount.
c) RCFMC agreed that activity numbers 10 and 11 related with harvest strategy (HS) will be merged and WPEA activities for HS will be collaborated with the Indonesian government's initiative in establishing harvest strategy framework through a series of workshops. CSIRO is heavily involved in the development of the HS, and WPEA (DGCF and RCFMC together) will work with CSIRO too.

3. Though the implementation of project activities were delayed, Indonesia conducted the following activities during the 2nd quarter:

a) Tuna catch data collection from port sampling continued since January 2015 and data were submitted to WCPFC and used at the ITFACE-6 WS.

b) As a joint activity, DGCF and RCFMC WPEA team participated in the second Indonesia's Harvest Strategy WS, 18-22 May 2015 and produced a work programme for harvest strategy case study for Indonesian tuna fisheries (WPP 713, 714, 715). To further collaborate with the government, NGOs and CSIRO, WPEA will partially support future organization of the harvest strategy workshop (**Attachment A**).

c) DGCF hosted the Sixth Indonesian (WCPFC Area) Tuna Fisheries Annual Catch Estimates (ITFACE) Workshop in Bogor, 24-26 June 2015. The WS produced 2014 provisional tuna catch estimates by species and by gear. A provisional Indonesian tuna catch estimate for year 2014 was 483,000 mt. A WS report and recommendations were produced for review by the participants (**Attachment B**).

Outcomes	Activity (IDN)	Period scheduled	Q1 and Q2	Q3 and Q4
1.1	1. (DGCF) Logbook awareness WS	Q1-Q4		Will be implemented
1.1	2. (DGCF) Capacity building of the country science	Q3	Preparatory actions taken in Q2	Will be implemented
1.1	3. (DGCF, RCFMC) National tuna coordinator	Q1-Q4	Implemented in Q1 and Q2	Continued
1.1	4. (DGCF) Annual Tuna Catch Estimates Workshop	Q2	Implemented in Q2	
1.2	5. Prior Study on Climate Change	Q1-Q4	Preparatory actions taken in Q2	Will be implemented
1.2 and 2.2	6. Review WS on CC, Supply Chain Analysis, and Sustainability/Certification	Q4	Preparatory actions taken in Q2	Will be implemented
2.1	7. (DGCF) Implementing national compliance review monitoring	Q1-Q4		Will be implemented
2.2	8. Consultancy - Supply chain analysis/traceability	Q1-Q4	Preparatory actions taken in Q2	Will be implemented
2.2	9. Consultancy on sustainability/certification	Q1-Q4	Preparatory actions taken in Q2	Will be implemented
2.3	10. Research on harvest strategy	Q2-Q4	Preparatory actions taken in Q2	Will be implemented
2.3	11. Convene a review WS on harvest strategy (RPs and HCRs)	Q4	Preparatory actions taken in Q2	Will be implemented
2.3	12. (RCFMC) Conduct data review WS	Q1-Q4		Will be implemented
2.3	13. (RCFMC) Sub-regional stock assessment workshop	Q4		Will be implemented
2.3	14. (RCFMC) Data collection from port sampling	Q1-Q4	Implemented in Q1 and Q2	
3.1	15. Database	Q1-Q4		Will be implemented
3.1	16. IW Learn activities	Q1-Q4		Will be implemented

Philippines

4. There have been no problems in implementing WPEA project in the Philippines, though some consultancies have been delayed because of insufficient domestic expertise or limited budget to hire international level experts. The project however tries to hire domestic experts as part of a capacity building, which includes prior studies in the areas of climate change, reference points and harvest control rules, certification and eco-labeling, and supply chain.

5. NFRDI noted that WS for reference points (RPs) and harvest control rules (HCRs) needs to be held in the first quarter of 2016 to meet their government schedule on this issue. So activities 6 and 15 will be delayed but preparatory work will continue during Q3 and Q4.

6. Several activities have been conducted in the second quarter, including:
   a) The sixth WPEA/NSAP Tuna Data Review WS, 21-22 May 2015. Draft report is in the **Attachment C.**
   b) The eighth Philippines/WCPFC Annual Tuna Fisheries Catch Estimates Review WS, 25-26 May 2015. WS recommendations were adopted for future work (**Attachment D**). The following table shows the estimated catches of oceanic tunas for 2014:

Workshop Outcome	
Domestically-based Fleets	2014 total tuna catch
Purse seine	78,153
Ringnet	45,502
Handline (large-fish)	31,444
Hook-and-line	15,356
Gillnet	3,031
Troll	6,125
Tuna LL	465
Others	280
TOTAL ESTIMATES	**180,356**

   c) Expansion of observer data collection: Deployed a total of 6 observers (2 observers in Infanta, 2 observers in Bicol and 2 observers in Surigao); Observers boarded in RingNet/Purse Seine Vessels every month.

d) Observer Handbook and Species ID Guide published: Operation Manuals and Species ID are currently in their final drafts for review prior to printing/publishing. Draft Species ID is attached **(Attachment E)**

e) Consultancy on the selection of proper port sampling sites: consultancy contract was made and proposal was presented at the May Review WS. Presentation is attached in **Attachment F**.

f) Data collection from port sampling: during Jan - June 2015, tuna catch data were collected from 22 landing sites and these data will be encoded in the NSAP Database System upon completion of 2014 data encoding. Port sampling, data encoding, field supervision and other activities are ongoing activities.

Philippines

Outcome	Activity (VNN)	period	Q1 and Q2	Q3 and Q4
1.1	1. Capacity building in country's science	Q3	Preparatory actions taken in Q2	Will be implemented
1.1	2. Catch estimation WS	Q2	Implemented in Q2	
1.1	3. NTC	Q1-Q4	Implemented in Q1 and Q2	Continued
1.2	4. Prior study on CC (consultancy)	Q2	Preparatory actions taken in Q2	Will be implemented
2.1	5. Update *Operational Guide for Filipino Fishermen*	Q1	Implemented in Q1	
2.1	6. WS on national RPs and HCRs	Q4	Preparatory actions taken in Q2	Preparatory actions continued Will be implemented in Q1, 2016
2.2	7. Prior study on certification and eco-labeling	Q2	Preparatory actions taken in Q2	Will be implemented
2.2	8. Consultancy on Philippine Tuna Supply Chain Analysis	Q2	Preparatory actions taken in Q2	Will be implemented
2.2	9. National workshop on three Consultancy Reports from pilot study	Q2	Preparatory actions taken in Q2	Will be implemented
2.3	10. Sub-regional stock assessment workshop	Q4		Will be implemented
2.3	11. Data review WS	Q2	Implemented in Q2	
2.3	12. MCS and VMS programs established	Q1-Q4	Implemented in Q2	Continued
2.3	13. Port sampling	Q1-Q4	Implemented in Q1 and Q2	Continued
2.3	14. Training WS on E-logbook	Q3		Will be implemented
2.4	15. Orientation on EAFM and WS on EAFM (combined with WS on RPs and HCRs)	Q2-Q3		Will be implemented WS will be held in Q1, 2016
3.1	16. IW Learn / PEMSEA EAS Congress	Q4		Will be implemented

Vietnam

7. There was a government reshuffling last November 2014 and the reshuffling will continue in some provinces. Former agency in central government (DECAFIREP) that implemented WPEA project demolished last December 2014. As a consequence, the WPEA official bank account was also closed. So no project fund could be transferred to Vietnam since December 2014. Because of this, most WPEA project activities were stopped.

8. All foreign projects with a certain size should be endorsed by the Prime Minister in Vietnam. As of the 1st July, the Minister of Planning and Investment sent a recommendation letter to the Prime Minister to propose implementing the WPEA project in Vietnam. Now Vietnam is waiting for the final decision by the Prime Minister. Once approved, then a new official bank account for this project will be opened, project funds will be transferred, and all activities will be commenced as planned.

9. The project manager visited Hanoi to facilitate the process of the Prime Minister's endorsement and immediate action plan once the project is approved. The NTC and the project manager traveled to provinces to encourage sub-DECAFIREP staff and enumerators to resume data collection from port sampling ASAP using WCPFC protocol. So far, very limited activities have been conducted in both central government and provinces. The project manager and the NTC consulted with other relevant staff, and prepared a preparatory work plan to facilitate the 2015 activities in the near future. A summary of project activities is noted in the table below.

Vietnam

Outcome	Activity (VNN)	period	Q1 and Q2	Q3 and Q4
1.1	1. Support participation of Vietnam to SC11	Q3	Preparatory actions taken in Q2	Will be implemented

	2. National tuna coordinator	Q1-Q4	Implemented in Q1 and Q2	Continued
1.1	3. Convene A Data Review and catch estimation workshop	Q2	Deferred to Q3	Will be implemented
1.1	4. Reconstruction of catch histories	Q2	Preparatory actions taken in Q2	Will be implemented
1.2	5. Prior study on CC	~~Q4~~ Q3	Preparatory actions taken in Q2	Will be implemented
2.1	6. Implementing national compliance review monitoring	Q1-Q4		Will be implemented
2.1	7. Consultancy on RPs and HCRs	Q4		Will be implemented
2.1	8. WS on Consultancies for CC and RPS	Q4		Will be implemented
2.1	9. Participation in Tuna Data WS at SPC	Q2	Implemented	
2.2	10. Consultancy – TUNA Supply chain analysis/traceability	Q2	Preparatory actions taken in Q2	Will be implemented
2.2	11. Consultancy on sustainability/certification	Q2	Preparatory actions taken in Q2	Will be implemented
2.2	12. WS on Market-based Sustainability Consultancies	Q4		Will be implemented
2.3	13. Sub-regional SA scientists' meeting	Q4		Will be implemented
	14. Port sampling	Q1-Q4	Partially implemented	Will be implemented
3.1	15. website			
3.1	16. Participation in the regional knowledge platform	Q1-Q4		Will be implemented

Attachment A

The Second Indonesian Harvest Strategy Workshop

18-22 May 2015, Bogor, Indonesia

Summary Report for the Reference Points, Harvest Strategies and the Precautionary approach in the management of Indonesian Tropical Tuna Fisheries

Background

1. Establish a common understanding within Ministry of Maritime Affairs and Fisheries (MMAF) and Indonesian tuna fishing industry of the role and purpose of reference points and harvest strategies in fisheries management and the steps and considerations required for their development.

- Increased understanding of reference points and their relationship with higher level objectives of fisheries management;
- Clarified relationship between reference points at RFMO (whole stock) and Indonesian domestic fisheries management (see below);
- Agreed to recommend Indonesia adopt tiered framework of reference points recommended by WCPFC SC;
- Noted it was important to approach this development in a practical and pragmatic manner that was appropriate to the particular Indonesian context and explicitly adaptive. That is, design and implement harvest strategies based on current understanding and available information and monitoring systems, with an explicit priority on identifying important uncertainties and addressing them in the 1st cycle of review and revision of the harvest strategy.

2. Review and consider alternative approaches to the development and implementation of harvest strategies, including, conceptual understanding of the fishery system, available time series data and information sources, methods of assessment and practical management measures that are appropriate to Indonesian fisheries management.

- Reviewed experience from CCSBT and Australia in development and implementation of RP and HS and the use of MSE to design and select HS that are most likely to meet objectives (reference points) and provide desired mix of trade-offs between social and economic benefits and conservation of the productivity of the stock(s) (see presentations and discussion)
- Agreed that it was important (for effectiveness of management and to meet Indonesia's international obligations) for RP and HS to be consistent (from both conceptual and process perspective) and compatible (from a fisheries management perspective) with those being considered (and/or adopted) in the WCPFC and IOTC. (Note issues identified in terms of connectivity, "complementary measures", consistency with objectives for Indonesia's domestic fisheries management and objectives for sustainable tuna production).
- Reviewed process and current status of RP and HS development in WCPFC and IOTC and recognized opportunities for support for capacity building and for advancing Indonesia's NPA for tuna resources.
- Agreed that 713, 714,715 (or some subset) were appropriate areas for a case study to develop HS, given their importance to Indonesia for continued development of their tuna fisheries and significance in the wider international tuna fisheries.

3. Identify preferred approach(es) and requirements for development and evaluation of potential harvest strategies, including, essential times series data and other information requirements, and; the actions required to make then available at the national level for the purposes of tuna harvest strategy implementation.

- Reviewed extensive range of government, NGO and industry data sources, monitoring programs and information available for tuna fisheries in 713, 714, and 715
- Agreed, in principle, that empirical (rather than model based) harvest strategies are more likely to be appropriate to the Indonesian context.
- Recognised the need for different categories of i) monitoring data and ii) information on the nature and dynamics of the fish stocks and fishing fleets.
    - Stock monitoring data: (To be completed):
        - Estimates of total removals (e.g. total catch, discards, use as bait etc)
        - The level of uncertainty in estimates of total catch
        - Estimates of total effort (and uncertainty)
        - Catch and effort data suitable for estimating CPUE for use as an index of relative abundance (by sector)
        - Size (length/weight) composition of the catch
        - Tagging data for estimating rate of fishing mortality, connectivity and growth (and potentially abundance and natural mortality)
        - Size/Age at maturity (for estimating impact of fishing on the reproductive component of the population
    - Fishery monitoring data (To be completed):
        - Fleet characteristics by sector (vessels size, operational range, target and bycatch etc)
        - Gear characteristics
        - Business/Employment profile
        - Market/value chain

4. Scope an action plan and implementation schedule to develop, evaluate and select potential harvest strategies for tuna fisheries management in areas 713, 714 and 715 of Indonesia, including a working paper for:

- Broader consideration and decision by MMAF;
- Seeking additional support and appropriate expertise for the HS development process; and
- Communication to the relevant tuna RFMOs.

5. Tentative work programme for harvest strategy case study for Indonesian tuna fisheries (WPP 713, 714, 715)is annexed below:

Work programme for harvest strategy case study for Indonesian tuna fisheries (WPP 713, 714, 715)

Scoping and preparatory analysis for workshop

1) Establish Technical Working Group (TWG) and Harvest Strategy Steering Committee
    a) Completion date: 29 May
    b) Responsibility: DGCF (SC), RCFMC (TWG)

2) Meeting for the Collation of existing data (Advice from CSIRO on collation of data for HS use)
    - (DGCF) Data series from as presented in workshop – Responsibility: Yayan
    - (RCFMC) Biological and other information on population biology and fisheries from regional institute/ agencies/ universities/ NGOs – Responsibility: Lilis
    - (Associations) Buyer/industry data – Responsibility: Wildon and Yayan

    a) Completion date: 3 August

b) Responsibility: as above

3) Pre-workshop for data anlaysis (18-20 August, DGCF)
   - ➢ CSIRO expert attend for advice on data analysis (WPEA support the expert's travel cost + time)
   a) Completion date: 15 August
   b) Responsibility: TWG, Expert, SC

4) Analysis of existing data for input to HS development (according to guidelines made from Pre-WS)
   - ➢ Exploratory analysis for identifying and scoping case studies, see below (catch, effort and biological data)
   - ➢ Specific analysis for designing of monitoring system for HS data series
   - ➢ Characterizing the uncertainty in data and information input.
     Advice from CSIRO for:
     - Scoping of potential modeling approaches
     - Interpretation: Population dynamics, fisheries economics (supply chain and market/fisheries profile), and HS development
     - Summarize relevant HS literatures (Input for WS)

   a) Completion date: 15 August
   b) Responsibility: HS expert, TWG, SC

Technical Workshop

3-day WS in conjunction with RCFMC' s stock assessment training WS (23-28 August) (late September 2015 contingency)

(RCFMC will host this WS)

WS convened by TWG (hosted by RCFMC) and assisted by CSIRO HS expert (WEPA support CSIRO expert's meeting time and preparation time)
- ➢ Reviewing analysis of available data
- ➢ Identifying data gaps and/or additional data sets
- ➢ Confirm case study (utilizing data from Kendari/Sodohoa, Sorong, Majene, Bitung and Ternate) – develop one HS
- ➢ Explore alternative forms of HS – input/output
- ➢ Form of model/platform for analysis
- ➢ Discussion and design for information management
- ➢ Develop detailed work programme

a) Completion date: 28 August
b) Responsibility: TWG, HS expert, SC, NGO

Intersessional analysis

TWG with advice and input from CSIRO HS expert
- ➢ Additional analysis and data collation (TWG)
- ➢ Preliminary model development (CSIRO, TWG)
- ➢ Draft stakeholder engagement strategy (SC)

a) Completion date: 16 October
b) Responsibility: as above

WS Preparation (HS SC and TWG Meeting, teleconference)

- ➢ Review analysis and model development
- ➢ Finalize detailed agenda for November WS

a) Completion date: 20 October
b) Responsibility: SC, NGO

HS Stakeholder WS

- ➢ Introduce and overview of HS work program
- ➢ Demonstration of the case study

a) Completion date: 18 November
b) Responsibility: SC, TWG, HS expert, NGO

HS Technical WS (DGCF will host this WS)

- ➢ Review intersessional work
- ➢ Demonstration of case study
- ➢ Scope activities for 2016 and 2017

a) Completion date: 19-20 November, Bali

b) Responsibility: TWG, HS expert, SC

NOTE

1) Bold indicated priority
2) HS SC: Saut, Fayakun, Retno, Ibes, Wudianto, HS expert (Campbell)
3) TWG: Duto, Lilis, Bayu, Anas, Dicky, NGO, Industry, Association, HS expert (Dale?)

Attachment B

Sixth Indonesian (WCPFC Area) Annual Catch Estimates Workshop

24-26 June 2015
Hotel Salak, The Heritage, Bogor, Indonesia

RECOMMENDATIONS

Draft

1. The workshop recommended **DGCF** and **WCPFC** consider a PRELIMINARY DATA PREPARATION WORKSHOP in the future which would focus on ONE GEAR (per year) and involve all relevant stakeholders (including **DGCF**, **P4KSI/RCFMC** , **Industry**, **NGOs**, **WCPFC)**. This workshop would provide a mechanism for consolidating all potential data (for that GEAR) to be used as input into the main annual catch estimates workshop (that would not involve the Industry and NGOs at this stage). The workshop specifically recommended that …
    a. **DGCF** and **WCPFC** prepare (i) an agenda and (ii) the precise data provision requirements from each stakeholder to the preliminary workshop at least 4 months prior to the workshop so it can be distributed well in advance.
    b. **DGCF, P4KSI/RCFMC** and **WCPFC** consider how to produce clear guidelines and a systematic set of procedures for how to consolidate and use the data provided in this workshop which might require input from a statistical expert.
    c. The first preliminary data preparation workshop in 2016 should focus on the LONGLINE gear.

   It was noted that future data preparation workshops could consider, for example, the breakdown of the purse seine fishery data into smaller more logical components (e.g. catch from large industrial-type vessels versus the *pajeko)*.

2. In order to get a better understanding of the tuna species catch by gear and area, **DGCF** and **P4KSI/RCFMC** provide the following summaries for future workshops in respective working papers:
    a. LANDED CATCH by GEAR, FMA and LANDING POINT for the oceanic tuna SPECIES by GEAR (longline, pole-and-line, purse seine, Handline gears) according to the table below.

   Table x. LANDINGS of Oceanic tuna species by GEAR, FMA and Landing site for Year 2014 (Source Data compiled by DGCF)

GEAR	FMA	Landing site	Tuna Species Catch						
			SKJ MT	SKJ %	YFT MT	YFT %	BET MT	BET %	TOTAL
LL	FMA 716	NUTRINDO	0	0%	1,203	90%	201	10%	1,403
LL	FMA 716	BMU	0	0%	876	85%	123	5%	1,000
...	...	...	...		...		...		...

3. The workshop again noted the benefits to the work in producing annual catch estimates of additional independent information compiled and presented by the **Directorate of Surveillance** (VMS and port entry/exit data) and the **Directorate of Fisheries Resources Management (Sub-directorate Evaluation of Fisheries Resources)** (logbook data) and strongly recommended their participation at future workshops. These agencies were requested to prepare and present the following information for future workshops:
    i. **Directorate of Surveillance** (for VMS and port entry/exit data) should present
        a. a summary of the VMS days-at-sea broken down by GEAR and Area (FMAs 713/714/715 and FMAs 716/717)
        b. an indication of VMS data COVERAGE by GEAR and FMA Area
        c. These summaries should concentrate on longline, purse seine and pole-and-line vessels, where possible

ii. **Directorate of Fisheries Resources Management (Sub-directorate Evaluation of Fisheries Resources)** (logbook data)

a. The number of completed logbooks by GEAR and Area (FMAs 713/714/715 and FMAs 716/717)
b. A summary of catch for the key species, effort (number of trips and number of days) and species composition by GEAR and Area (FMAs 713/714/715 and FMAs 716/717), according to the completed logbooks
c. These summaries should concentrate on longline, purse seine and pole-and-line vessels, where possible.

4. In order to satisfy the reporting obligations of the WCPFC, the workshop recommended that **DGCF** extend the breakdown of species composition by AREA and GEAR for the 2014 estimates to cover the relevant WCPFC key species (by August 2015), and that this be continued in future years. At this stage, the breakdown should cover each BILLFISH species, ALBACORE TUNA and the neritic tuna species (as a group), with consideration of the KEY SHARK SPECIES later. The table below outlines the requirements. This table covers two objectives: (i) extends the species list to cover all key species of the WCPFC, and (ii) shows the relative proportion of oceanic tuna species to the total catch for each gear.

Species / Species Group	2014 SPECIES COMPOSITION by WEIGHT -- FMA's 713/714/715						
	LONGLINE	PURSE SEINE	POLE-AND-LINE	HANDLINE	TROLL	GILLNET	OTHERS
Skipjack Tuna							
Yellowfin Tuna							
Bigeye Tuna							
Albacore Tuna							
Striped Marlin							
Blue Marlin							
Black Marlin							
Swordfish							
Sailfish							
Neritic tuna							
Others							
Total	100%	100%	100%	100%	100%	100%	100%

5. **DGCF** and **P4KSI/RCFMC,** in collaboration with **WCPFC**, work towards obtaining more information from the GILLNET fishery, in particular, reviewing port sampling to determine the reliable species composition of oceanic tuna taken by this gear and through communication with the provincial offices and other stakeholders involved in this fishery.

6. WCFPC requested that **DGCF** compile and submit Aggregate catch/effort data (in the specified format and for the WCPFC Area only) from the available 2014 logbook data to ensure they satisfy the WCPFC Scientific Data Submission obligation before mid-July 2015 (which will then be reported to the 11th WCPFC Scientific Committee and the 11th WCPFC Technical and Compliance Committee).

7. **WCPFC** requested the **DGCF** to produce an English version of the Fisheries data and estimates validation process that DGCF currently holds in Bahasa-Indonesia version only.

Attachment C

REPORT OF THE SIXTH WPEA – PHILIPPINES NSAP TUNA DATA REVIEW WORKSHOP

21 - 22 May 2015
Iloilo, Visayas, Philippines

Contents

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 covers, *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.
(v) this second WPEA Phase differs from Phase 1 in several respects:
    a. it is falls under a larger programme, and is one of 5 regional projects, and,
    b. it now includes consideration of the impact of climate change on tuna fisheries
    c. a greater focus on EAFM and fisheries certification,

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 OFP 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.

2. REVIEW OF PROGRESS ON RECOMMENDATIONS FROM THE FIFTH WORKSHOP

The Workshop briefly reviewed each of the recommendations from the fifth workshop and noted the current status/update, in particular, which recommendations would be covered by specific agenda items in this sixth workshop.

Peter Williams presented the recommendations from the previous workshop; there were no comments on the status of the recommendations and the workshop noted that there are some recommendations now completed, some recommendations to be discussed further and some recommendations to be carried over.

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.

3.1 WCPFC Requirements for data

An introductory presentation on the WCPFC requirements for scientific data and current issues with Philippines tuna data was presented, 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)

It was noted that, although there is still room for improvement, the main outputs of this data workshop improve year on year, are considered in the following Catch Estimates Workshop. The latter workshop in turn provides information to the WCPFC via the National Part 1 report, supporting the modelling of stock assessments for tuna in the West and Central Pacific Ocean.

3.2 Tuna Catch Estimates by Species and Gear Type in each NSAP Region

Recent (2014) 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 5** and a list of the tuna catch estimates for each Gear/Region was compiled from the presentations and further discussion. The following points of interest were noted from these presentations:

BFAR – NSAP 1

- 5 fishing grounds region 1
- It was recognized that there:
  - is a need to conduct rapid assessments for Non-NSAP landing sites.
  - are still coastal barangays not monitored by NSAP.
  - are no catch estimates for Non-NSAP
  - is a need to conduct a total Boat and Gear Inventory
- The workshop asked if it was possible to estimate any increase or decrease in boats gears since previous boat gear estimates. However in response it was advised that there are no boat gear estimates available.
- It seems some barangays are not sampled; there is a focus on the major sites. However estimates for what were previously non-NSAP sites, are close to findings now that they are included as NSAP sites.

BFAR – NSAP 2

- Three main fishing grounds were detailed in the presentation.
- It was noted that there was a possibility that tuna caught off the coasts of Cagayan, Batanes, and Isabela are being unloaded outside Region 2 or even outside of the Philippines.
- Tuna unloaded during non-sampling days are not recorded.
- Tuna landing sites in this region are now fully covered by NSAP due to the expansion in coverage.
- Estimates for what were previously non-NSAP sites are close to those estimates produced now that they are NSAP sites.
- Tuna CPUE in this region is higher in the summer months

BFAR – NSAP 3

- Zambales:
  - Purse seine [commercial] landings showed a decrease in the first quarter in 2014 over 2013, though for the remaining months 2014 catches were higher.
  - Ring-net [commercial] landings were lower overall in 2014 compared to 2013.
  - For purse seine and ring net the principle catch is skipjack followed by yellowfin, whereas for hand-line [municipal] the catch is dominated by yellowfin then skipjack.
  - Interestingly, for multiple hand-line [municipal], in 2013 yellowfin was dominant followed by skipjack, but in 2014 the dominance was reversed.
- Aurora:
  - Line gears major catch was yellowfin
  - Skipjack then yellowfin dominated the purse seine fishery
  - Ringnets and gillnets caught a high proportion of 'other species', of the name species skipjack was dominant.

BFAR – NSAP 4a – Lamon Bay

- 2014 was the first year that NSAP data collection has been implemented under the expansion of the NSAP, but only 7 months of data were collected and expect a full year for 2015.
- Raised estimates were provided.
- There is a clear distinction between landing sites which support vessels catching oceanic tunas and those catching only the neritic species and this needs to be taken into account with respect to sampling coverage and the estimation of the oceanic tuna species.

BFAR – NSAP 4b - MIMAROPA

- Region 4b has 16 fishing grounds

- The previous 15 NSAP sites have extended with an additional 43 NSAP sites giving a total of 58 sites.
- The main tuna catching gears in 2014 are large-fish HL, HL with light and MHL
- A large increase in tuna landings was noted for 2014 over 2013
- It is known that there are some non-sampled tuna landing sites in Romblon.
- The current status is that NSAP is now covering 90% of tuna landing sites in Palawan and 60% in Mindoro.
- There was some confusion regarding the designation/definition of multi-hand line [MHL]. For the purposes of the WCPFC estimation process, the MHL and other hook-and-line gears catching small tunas are grouped into the category "small-fish" hook and line.

BFAR – NSAP 5

- Unraised estimates were presented for Region 5 but the raising was undertaken during the workshop. The estimates for the non-NSAP sites were provided.
- As in previous years, the seasonal peak in the catch of ALB (February) was noted in the large-fish handline fishery.
- The following issues were identified for Region 5:
  - Indifferent attitude of fishers, most of whom declined to be interviewed
  - Exact effort (# of boats, hauls, hours) was not determined for catches taken in the Pacific Ocean.
  - Fishers did not use a permanent fish broker, the catch is brought to the household or the market.
  - Many tuna fishing vessels are unregistered.
  - Color coding is not used for tuna fishing vessels

BFAR – NSAP 6

- Data is stratified by commercial vs municipal fishers
- 41 of 81 sites are sampled, with a fishery that includes 14 gear types
- There is a need to sample 5 new tuna sites in:
  - Tinigbas, Pucio & Union, Libertad, Antique - Culipapa & Bacuyangan, Hinoba-an
- It was thought that the increase in HL landings for 2014 compared to 2013, was due to more minor sites providing additional hand line data. The fishery has evolved and increased in recent years too, hence this wasn't thought to be a reporting artefact.
- The clear increase in catch for 2014 compared to previous years was due to better coverage of landing sites due to the expansion of the NSAP. It was suggested that there may need to be some consideration of revising estimates for previous years to consider landings of large-fish HL that were not previously covered.
- Noting that in the peak season 75% of the large-fish HL catch goes to General Santos, it may be that those receipts could be used to reconcile the catch estimates from Region 6 for large-fish Handline.

BFAR – NSAP 8

- Data collection was disrupted during 2014 due to the typhoon, but estimates were provided to the workshop. At this stage, there has been about 5 t. of tuna landings from the NSAP landing sites in 2015 and complete estimates will be provided at the 2016 workshop.

BFAR – NSAP 11

- Two fishing areas, Davao Gulf and the Philippine Sea.
- Closed season for commercial fisheries in Davao Gulf – July and August
- Ringnet and handline are the dominant gears [59.87% and 30.67% respectively] in terms of catch
- Research is currently being conducted on eggs and larvae distribution and abundance
- Data is stratified into major vs minor landing sites [more than or less than 100 boat units], and by commercial and municipal.

- There was a query regarding how annual estimates were calculated, i.e. was the monthly average raised to give annual data. There was some discussion about the validity of such an approach if there was seasonality in the fishery. The tables will be revisited and amended as appropriate. This needs to be discussed further and unraised data may be applied in the review of consolidated data [Appendix 7].
- The workshop was reminded that data gathered from 2004 to 2006 was used to determine the july/august closure in the Davao Gulf.
- It was noted that there were much higher estimates than in previous years in the presentation due to the new stratified estimation process. Was this due to an increased number of boats? Are all the units 100% active all the time? Albacore catches for example appeared to be very high. Revised estimates were provided under agenda item 7 and a recommendation on the review of the estimation process was formulated.

BFAR – NSAP 12

- There is an estimated 47% increase in tuna landings since 2013, to 121,971 mt in 2014, mainly due to higher levels of effort and catch from the HSP fishery.
- The following issues were identified:
  - Catch estimates (species and gear type) are limited to monitored sites only.
  - Difficulty was experienced in estimating tuna catches from the Moro Gulf since some of the boats fishing here also land in Region 9
  - A total boat and gear inventory is lacking

BFAR - CARAGA

- The two main fishing grounds in terms of overall volume of tuna landings are the Surigao Sea and the Philippine Sea [48% and 43% respectively]
- The NSAP expansion is now covering 80% of tuna landing sites.
- The greatest proportion [61%] of landed catch in 2014 was skipjack, followed by yellowfin [24%]
- The size range of landed fish was notably different in the Surigao Sea and the Philippine Sea
- The following issues were raised:
  - Some Caraga commercial vessels are landing outside of the region where prices are higher e.g. Davao and Gensan.
  - It is sometimes difficult to distinguish species caught and associated gears where the catch and gears are mixed.
  - There are currently insufficient numbers of enumerators to cover the remaining non-NSAP sites.

BFAR - ARMM

- Skipjack [73%] represented the principle landed catch.
- There were many non-NSAP sites in the region ARMM but most of those sites are small and low priority in regards to potential tuna landing sites. The NSAP sites have been selected as they are the major tuna landing sites (and therefore cover the majority of tuna landings).
- There was a question on the misidentification of bigeye tuna and this was noted as an area for further work.
- Two issues were raised:
  - It is difficult to retain NSAP enumerators, who tend to look for better jobs
  - The relatively high turn-over of NSAP enumerators increases the possibility of misidentification of species; this is especially true when distinguishing between small yellowfin and bigeye.

General Comment

The expansion of NSAP sites in 2014 has made a positive difference to reported catch estimates; and in general the new data corroborates the estimates for what were previously non-NSAP sites. Exceptionally Region 6 showed a great increase in hand-line catches of yellowfin following the NSAP expansion, which shows just one of the benefits of expanded sampling to identify gaps that were not previously covered. In conclusion, the workshop acknowledged the value of the expansion of the NSAP sampling to both remove the uncertainty and confirm where possible in the estimates for the non-NSAP sites, and also improve previous notions of what was happening in the non-NSAP sites.

3.3 Review of the consolidated NSAP data and NSAP Tuna size 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 detailed 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 (**APPENDIX 7**).

3.4 Preliminary Audit of NSAP Data by Region and Gear

The preliminary audit was prepared and presented by SPC (Peter Williams). It reviewed and identified any potential inconsistencies and problems in the data provided, the national NSAP tuna samples by GEAR and SPECIES including target coverage; species and size composition by REGION and GEAR; recommendations and future work. In addition this year CPUE time series by gears by quarter were also presented

The main comments, suggestions and recommendations discussed were as follows:

- May be possible to reduce variance in the CPUE by gear graphs by sorting gears at greater detail e.g. separate those that are targeting different spp/groups.
- Is it worth pursuing CPUE at the national level by gear type to compare by regional CPUE for example to better identify trends over time?
- Following a query from the workshop, it was clarified that data entry "outstanding" did not mean it was very good, rather it meant that the data was missing for whatever reason.
- In relation to the increasing use of payaos, the workshop asked if gear changes may be correlated with changes in CPUE. This is considered to be a comprehensive dedicated study outside the scope of this group. BFAR is especially concerned about the potential negative effect of payaos.
- **Recommendation:** It was suggested that CPUE could be presented by region, noting that for a comparative study, it would be important for the Regions to agree stratifications – e.g. gear, municipal vs commercial sectors etc. e.g. hook and line are mixed then. It was agreed that it would be very useful if differences in CPUE were identified and characterized at a regional level. The workshop agreed that the provisions of CPUE data should be encouraged but not obligatory, given that some regions did not currently have the capacity to deliver this analysis at present.
- It was reported that payaos are increasing being deployed without associated management plans and information on catch is not readily available because fishermen have a incentive to deny fishing on payaos [they are required to pay a percentage of the value of the catch from payaos as part of the program to maintain the payaos].

4. PROGRESS ON A CONSULTANCY ON CRITERIA FOR OPTIMUM SITE SELECTION

Consultants presented on the status of a project "Consultancy to Criteria for Selection of Optimum Sample Size and Individual Landing Sites for Port Sampling and Data Collection to Improve the Accuracy of Total Annual Tuna Catch Estimates of the Philippines." [**APPENDIX 8**].

Whilst acknowledging that the current large number of NPAS sites is considered to be extremely valuable, the presentation detailed the project objectives which were to identify a minimum number of sites to provide acceptable data without sacrificing accuracy. The methodology was described and the workshop was advised of progress to date. The workshop was advised that the selection of sites will not be based on PSA-BAS alone, but PSA-BAS data will be

considered. The basis of the study will depend on NSAP data. Currently the main selection criterion identified is the amount of tuna catch landed.

5. 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 workshop recommended that a study to review the NSAP Sampling Procedure and Extrapolation of Catch Estimation to Non-NSAP Area in the Philippine Tuna Fisheries will be implemented in some regions to further improve tuna catch estimates in non-NSAP areas.

Participants noted that better estimates could be obtained for 2014 due to expansion of NSAP monitoring, particularly in 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.

6. REVIEW OF CONSOLIDATED WPEA – NSAP ESTIMATES

The workshop reviewed the 2014 consolidated tuna catch estimates from NSAP sites and non-NSAP sites [APPENDIX 6].

It was noted that where no catch was included in the table – this may actually reflect that there was no data however there was catch. It was agreed that it would be more accurate to provide a guestimate of catch where data is lacking, that would be more accurate and useful than the current 'no catch' value.

7. RECOMMENDATIONS AND WORKSHOP CLOSE

The workshop participants reviewed and agreed on a list of 4 main recommendations based on discussions made during the two days (**APPENDIX 3**). All participants agreed to action the recommendations relevant to their organisation/region over the coming year.

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 2016.

APPENDIX 1 – AGENDA

6th WPEA – NSAP Tuna Data Review Workshop

Amigos Hotel, Iloilo City
21 - 22 May 2015

1. Registration

2. Welcome Message

3. Introduction of Participants

4. Rationale of the Workshop

5. Review Progress on recommendations from 5th Workshop (May 2014)

6. NSAP Port Sampling Data Review

a. Brief review of WCPFC Data Requirements
b. Presentation of NSAP Data by Region
   i. Brief regional presentation
   ii. Summary of 2014 tuna catch data
   iii. For BFAR-NSAP Regional Offices that have the following fishing methods:
      - HANDLINE with LIGHT
      - FLOATING-HANDLINE
      - Other variations of this fishing method (*please specify*)
c. Presentation of Consolidated NSAP Regional Data – summary (BFAR/NFRDI)
d. NSAP Tuna Size Data Review (BFAR/NFRDI Manila and WCPFC/SPC)
   i. Size data by REGION and GEAR
      - Large-fish Handline
      - Small-fish Handline
      - Large Purse seine
      - Ringnet/small Purse seine
      - Other gears

7. Progress on the Consultancy on Criteria for Optimum Site Selection

8. Review of Consolidated WPEA - NSAP Estimates

9. Recommendations / Workshop Close

APPENDIX 2 – LIST OF PARTICIPANTS (Data and Catch Estimate WS)

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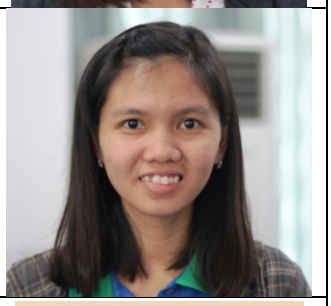
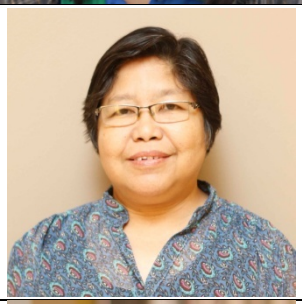
	RACHELLE MENDOZA Designation: NSAP Data Analyst Office Address: Diosdado Macapagal Gov't Center, Maimpis, City of San Fernando, Pampanga eMail Address: lola_chell@yahoo.com Telephone no./Fax no.: 045 455 0824/455 0823 Mobile no.: 0932 510 2550	
BFAR Region IVA	MARIBETH H. RAMOS Designation: ACCII/Project Leader Office Address: BFAR Reg. 4A, 2nd Flr. ICC Bldg., NIA Compound ,Edsa, Quezon City eMail Address: nsap4a@yahoo.com / mhramos59@yahoo.com Telephone no./Fax no.: 02 925 3209 Mobile no.: 0917 373 8881	
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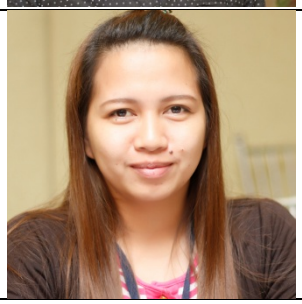
	JEANETTE JARDIN Designation: NSAP Data Analyst Office Address: 3rd Flr. Old City Hall, Puerto Princesa City, Palawan eMail Address: jardinjeanette@yahoo.com Telephone no./Fax no.: 048 433 7417 Mobile no.: 0909 931 0864	

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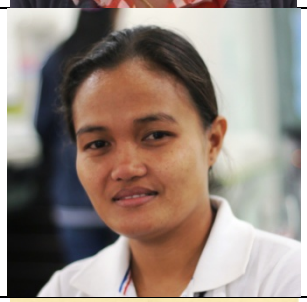
	AIREEN AZURIN Designation: NSAP Enumerator Office Address: BFAR RO5 eMail Address: ajuaquera@yahoo.com Telephone no./Fax no. Mobile no.: 0918 502 8827	
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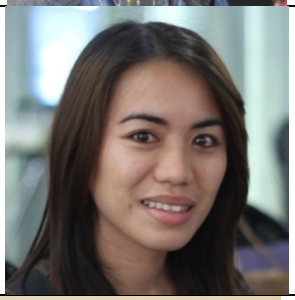
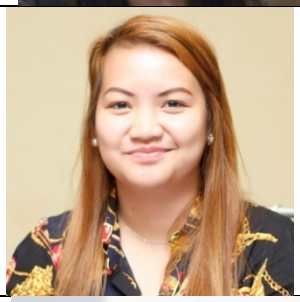
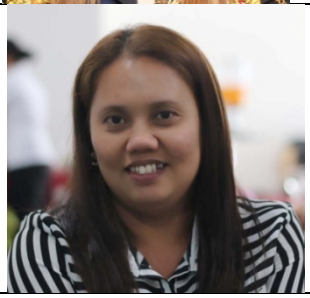
	FRANCIS JAVE CANILLO Designation: NSAP Data Analyst Office Address: R. Magsaysay Ave., Davao City eMail Address: francisjavec@y.com / francisjavec@y.com Telephone no./Fax no.: 082 227 9838 Mobile no.: 0919 330 6307	
	Name: ROSE ANTONETH F. LOQUERE Designation: NSAP Data Analyst Office Address: R. Magsaysay Ave., Davao City eMail Address: roseloquere@gmail.com Telephone no./Fax no.: 082 227 9838 Mobile no.: 0920 772 7925	
BFAR Region XII	LAILA L. EMPERUA Designation: NSAP Project Leader Office Address: Regional Gov't Center, Carpenter Hill, Koronadal City eMail Address: bnette_nick@yahoo.com Telephone no./Fax no. 083 228 1889 Mobile no.: 0939 924 5475	

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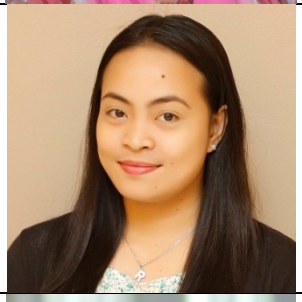
	ROSE MARIE R. PECHON Designation: NSAP Data Analyst Office Address: Regional Gov't Center, Carpenter Hill, Koronadal City eMail Address: rose.pechon@yahoo.com.ph Telephone no./Fax no.: 082 227 9838 Mobile no.: 0948 940 3569	
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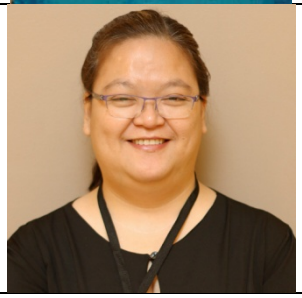
CONSULTANT	GENELYN MA. SARTE Designation: WPEA Consultant Office Address: School of Statistics, UP Diliman, Diliman Quezon City eMail Address: gensarte@gmail.com Telephone no./Fax no.: 02 928 0881 Mobile no.:	

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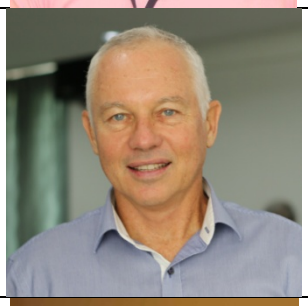
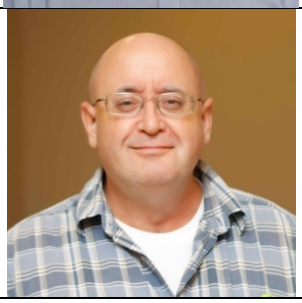
SPC	PETER WILLAMS Designation: Principal Fisheries Scientist (Data) Office Address: Ansevata, Noumea, New Caledonia eMail Address: peterw@spc.int Telephone no./Fax no.: 687 262000 Mobile no.:	
WCPFC	TONY BEECHING Designation: WCPFC Asst. Science Manager Office Address: Pohnpei, Federated States of Micronesia eMail Address: tony.beeching@wcpfc.int Telephone no./Fax no.: 691-320-1992 Mobile no.:	
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APPENDIX 3 – FIFTH WPEA/NSAP Tuna Data Review Workshop RECOMMENDATIONS

RECOMMENDATIONS

20-21 May 2015
Iloilo City, Philippines

1. The estimates derived from the NSAP landing sites have a good level of certainty while the estimates from the non-NSAP landing sites are mostly uncertain. The workshop discussed and recommended the following indicators should be used in the presentation of NSAP estimates by REGION and GEAR in the future:

1	Estimates from NSAP data
2	No NSAP data/coverage – Estimated from RAPID ASSESSMENT
3	No NSAP data/coverage – Estimated from gear/Vessel INVENTORY
4	No NSAP data/coverage – Estimated from other methods
5	No NSAP data/coverage– Evidence of catch for this gear, but no data or method to estimate catch

2. The workshop recommended regional offices include a section in their presentations next year to outline the methodology (with an example) of how they estimate the catch by GEAR and SPECIES for the non-NSAP sites. The next workshop will have a specific agenda item to review the methodologies to estimate catch for non-NSAP sites with the objective of deciding on a standard approach to be used by all regions thereafter.

3. The workshop noted that there was still some Regional NSAP data for tuna fisheries yet to be provided to **BFAR/NFRDI**. **Regional BFAR-NSAP offices** agreed to provide scanned copies of monthly NSAP raw data every 1st or 2nd week of the following month to ensure that NSAP tuna fisheries data (other than the WPEA data) are provided and entered in the NSAP Database system at NFRDI.

4. In regards to preparing and presenting CPUE graphs in the future, the workshop recommended that

a. Future regional presentations continue to include slides on NSAP catch history (e.g. last 5 years data by gear and by species) and CPUE (or effort) trends per month along with catch trends;
b. Regional offices were encouraged to attempt to produce CPUE graphs that considered further breakdown within the GEAR TYPE, such as distinguishing between SET TYPE (free-school versus FAD for PS and RN), distinguishing between targeting (tuna or small pelagics, for example) and distinguishing between types of hook-and-line; it was noted that this work is not mandatory;
c. WCPFC/SPC expand on the consolidated national-level gear/species CPUE graphs presented this year to consider the factors mentioned in the point (b.) above and include graphs that compare each region's CPUE by GEAR/SPECIES.

5. The workshop recommended that BFAR/NFRDI consider developing the terms of reference for a study on the use, effectiveness and management of FADs in Philippine waters.

APPENDIX 4 – Target estimates for national tuna size and species composition sampling

Number of fish to sample

GEAR	TOTAL TUNA	SKIPJACK	YELLOWFIN	BIGEYE
Large-fish Handline	26,000	0	24,000	2,000
Small-fish Hook-and-line	38,000	12,000	24,000	2,000
Ringnet	16,500	12,000	4,000	500
Purse seine	26,000	18,000	7,000	1,000
Each of the other Gears	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 5 – LIST OF PRESENTATIONS

1. WCPFC data requirements and current issues with the Philippines catch data	Prepared and presented by SPC (Peter Williams)
2. Region 1 – Luzon	*REGION 1*
3. Region 2 – Batanes/Cagayan	*REGION 2*
4. Region 3 – Zambales	*REGION 3*
5. Region 4a – Lamon bay	*REGION 4a*
6. Region 4b - MIMAROPA	*REGION 4b*
7. Region 5 – Bicol	*REGION 5*
8. Region 6 – Visayas	*REGION 6*
9. Region 11– Davao	*REGION 11*
10. Region 12 - Gensan	*REGION 12*
11. Region CARAGA	*REGION CARAGA*
12. Region ARMM	*REGION ARMM*
13. Review of the consolidated NSAP Data for 2013	BFAR/NFRDI (Elaine Garvilles)
14. Preliminary AUDIT of NSAP data by Region and Gear	Prepared and Presented by SPC (Peter Williams) and BFAR/NFRDI (Elaine Garvilles)
15. Catch estimates derived from NSAP and non-NSAP sites	BFAR/NFRDI (Elaine Garvilles)

APPENDIX 6 – 2014 Tuna Catch Estimates from NSAP sites and non-NSAP sites

Region	Source of estimate	SKJ	YFT	BET		TOTAL	Comments
PURSE SEINE - 2014							
NSAP + estimates for areas not covered by NSAP							
Region	Source of estimate	SKJ	YFT	BET	ALB	TOTAL	Comments
1	NSAP	346.81	402.97			749.78	
	Salomague fish port					*0.00*	
	non-NSAP landing sites estimate						
3	NSAP	3,121.35	1,860.33	110.35		5,092.03	
	non-NSAP landing sites estimate					*0.00*	
4A	NSAP					0.00	
	non-NSAP landing sites estimate					*69.40*	
4B	NSAP	9.84					
	non-NSAP landing sites estimate						
5	NSAP	71.96	161.50	19.15	-	252.61	
	non-NSAP landing sites estimate				-	0.00	
6	NSAP	2,429.19	959.49	123.98		3,512.66	
	non-NSAP landing sites estimate					*0.00*	
8	*non-NSAP landing sites estimate*					*0.00*	
11	NSAP					0.00	
12	NSAP	32,352.70	7,822	656.47		40,831.43	
	Private landing wharfs	*10,039.84*	*2,427.44*	*203.72*		12,671.00	
	non-NSAP landing sites estimate						
ARMM	NSAP					0.00	
	non-NSAP landing sites estimate					*0.00*	
CARAGA	NSAP					0.00	
	non-NSAP landing sites estimate					*0.00*	
		48,371.70	*13,633.99*	*1,113.67*	*0.00*	*63,178.91*	
	NSAP	79%	19%	2%			
	2014	50,059.68	12,103.47	1,015.76		63,178.91	
	2013	**35,678**	**7,596**	**487**		**43,761**	
		82%	17%	1%			
	2012	40,912	10,936	1,319		53,166	
		77%	21%	2%			
	2011	39,670	10,505	928		51,103	
		78%	21%	2%			
	2010	32,734	8,170	495		41,398	
		79%	20%	1%			
	2009	23,556	4,002	502		28,061	
		84%	14%	2%			
	GSC	42,392.54	10,249.70	860.19		53,502.43	
	outside GSC	7,667.14	1,853.77	155.57		9,676.48	

Region	Source of estimate	SKJ	YFT	BET	ALB	TOTAL	Comments
RINGNET - 2014							
NSAP + estimates for areas not covered by NSAP							
Region	Source of estimate	SKJ	YFT	BET	ALB	TOTAL	Comments
1	NSAP	338.870	108.026			446.897	Ringnet and baby ringnet
	non-NSAP landing sites estimate					0.000	
2	NSAP	493.790	157.000		62.260	650.790	
	non-NSAP landing sites estimate					0.000	
3	NSAP	1,143.120	672.080	131.590		1,946.790	
	non-NSAP landing sites estimate					0.000	
4A	NSAP	557.331	446.100	31.955		1,035.386	
	non-NSAP landing sites estimate					0.000	
4-MIMAROPA	NSAP	82.680	33.330	4.400		120.410	
	non-NSAP landing sites estimate	80.740				80.740	
5	NSAP	133.611	58.633	12.442	0.020	204.687	
	non-NSAP landing sites estimate					0.000	
6	NSAP	1,048.640	209.070	3.850		1,261.560	
	non-NSAP landing sites estimate					0.000	
8	NSAP					0.000	
	non-NSAP landing sites estimate	*3,457.434*	*1,233.570*	*741.840*		5,432.844	
9	*non-NSAP landing sites estimate*					0.000	
11	NSAP	370.000	105.800	0.000		475.800	
	non-NSAP landing sites estimate	*1,420.180*	*1,039.550*	*0.000*	*0.000*	2,459.730	
12	NSAP	22,557	4,238	297		27,092.000	
	non-NSAP landing sites estimate					0.000	
	Private landing wharfs	*8,398.511*	*1,577.909*	*0.000*		10,087.000	
CARAGA	NSAP	280.700	32.130	34.800		347.630	
	non-NSAP landing sites estimate					0.000	
ARMM	NSAP	578.350	3.630	0.000	0.270	582.250	
	non-NSAP landing sites estimate	*3,342.860*	*20.980*		*1.560*	3,363.840	
		44,283.818	*9,935.808*	*1,257.877*		*45,501.353*	
	NSAP	83%	16%	1%			
		37,885	**7,118**	**499**		**45,501**	
	2013	**30,714**	**6,829**	**449**		**37,991**	
		81%	18%	1%			
	2012	**23,255**	**5,590**	**655**		**29,500**	
		79%	19%	2%			
	2011	**21,667**	**5,677**	**578**		**27,922**	
		78%	20%	2%			
	2010	**20,338**	**6,106**	**344**		**26,789**	
		76%	23%	1%			
	2009	**18,153**	**4,467**	**177**		**22,796**	
		80%	20%	1%			
		6,929.253	1,301.865	201.815			
		30,956	5,816	297			
Complete, Independent estimates							
Region	Source of estimate	SKJ	YFT	BET		TOTAL	Comments
12	Cannery receipts	12,175	2,857			15,032	

Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
HANDLINE (large-fish) - 2014						
NSAP + estimates for areas not covered by NSAP						
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
1	NSAP	108.908	156.867	0.459	266.234	
	non-NSAP landing sites estimate	*0.000*	*0.000*	*0.000*	*0.000*	
2	NSAP	0.000	0.000	0.000	0.000	
	non-NSAP landing sites estimate					(included in hook-and-line)
3	NSAP	*82.370*	192.170	*11.340*	285.880	
	non-NSAP landing sites estimate				*0.000*	
4B	NSAP	97.550	2,423.010	1.160	2,521.720	HL separated from HK using National NSAP database
	non-NSAP landing sites estimate	*0.410*		*0.180*	*0.000*	
5	NSAP	80.3	319.0	18.1	417.4	INCLUDES non-NSAP -- ALB = 54.01 t. ; .0037 - oth
	non-NSAP landing sites estimate	0	0	0	0	
6	NSAP	1,877.860	6,803.480	93.020	8,774.360	Previous years under-reported .....
	non-NSAP landing sites estimate	*1,139.980*	*3,949.360*	*39.490*	5,128.830	based on rapid assessment .... 3,021 t. of BET originally but changed to species comp from NSAP sites
8	NSAP			*0.000*	0.000	
	non-NSAP landing sites estimate			*0.000*	*0.000*	
11	NSAP	162.020	308.740	3.470	474.230	13.21 t. ALB
	non-NSAP landing sites estimate	103.800	2,095.800	30.520	2,230.120	502.32t ALB
12	NSAP	2.000	10,320.000	511.000	10,833.000	14 t - Alb
	Private landing wharfs				*0.000*	
	....					
CARAGA	NSAP	151.240	513.980	5.140	670.360	
	non-NSAP landing sites estimate				0.000	
ARMM	NSAP	*0.000*	*0.000*	*0.000*	0.000	
	non-NSAP landing sites estimate	*0.000*	*0.000*	*0.000*	0.000	
		3,806.473	*27,082.360*	*713.871*	*31,602.113*	
		12%	86%	2%		
		3,806	**26,925**	**713**	**31,445**	
	2013	**708**	**12,052**	**767**	**13,527**	
		3%	94%	3%		
	2012	**439**	**14,449**	**508**	**15,396**	
		3%	94%	3%		
	2011	**62**	**10,577**	**225**	**10,864**	
		1%	97%	2%		
	2010	**137**	**13,885**	**364**	**14,385**	
		1%	97%	3%		
	2009	**102**	**7,768**	**330**	**8,200**	
		1%	95%	4%		
					10,833.000	
Complete, Independent estimates						
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
12	*PFDA*				6,200	accounts for fish coming from other areas overland ...

Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
HOOK-AND-LINE (incl. MHL) - 2014						
NSAP + estimates for areas not covered by NSAP						
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
1	NSAP	139.6	135.6	1.9	277	
	non-NSAP landing sites estimate	*0*	*0*	*0*	*0*	
2	NSAP	6.05	5.89	5.81	17.75	
	non-NSAP landing sites estimate	*0*	*0*	*0*	0	
3	NSAP	*1,013*	*729*	*0*	*1,741*	
	non-NSAP landing sites estimate	*0*	*0*	*0*	*0*	
4A	NSAP	84.09	89.88	18.72	192.69	16.68
	non-NSAP landing sites estimate	*0*	*0*	*0*	*0*	
4B	NSAP	195	2,067	94	2,356	HK separated from HL using National NSAP database; 1.38t. ALB
	non-NSAP landing sites estimate	*36*	*0*	*0*	*36*	
5	NSAP	59	27	14	100	0.12 t. ALB
	non-NSAP landing sites estimate				*0*	
6	NSAP	901	1,716	1	2,618	
	non-NSAP landing sites estimate	*0*	*0*	*0*	0	
8	NSAP	0	0	0	0	
	non-NSAP landing sites estimate	*1,659*	*2,518*	*0*	*4,177*	Used 2011 study estimates
9	*non-NSAP landing sites estimate*				*1,000*	
10	NSAP					
	non-NSAP landing sites estimate					
11	NSAP	21	61	0	81	7.1t ALB
	non-NSAP landing sites estimate	178	163	*0*	342	3.62 t. ALB
12	NSAP	220	303	26	549	Municipal outside GSCFP; 3 t. Of ALB
	non-NSAP landing sites estimate					
	....					
ARMM	NSAP	23	3	1	27	
	non-NSAP landing sites estimate	90.47	11.40	3.59	105	
CARAGA	NSAP	1,749.7	605.8	380.2	2,736	
	non-NSAP landing sites estimate	*0*	*0*	*0*	*0*	
		6,373.968	*8,433.801*	*547.627*	*15,355.396*	
		42%	55%	4%		
		6,374	**8,434**	**548**	**15,355**	
	2013	**7,277**	**7,705**	**340**	**15,323**	
		54%	41%	5%		
	2012	**6,533**	**5,055**	**597**	**12,184**	
		54%	41%	5%		
	2011	**4,792**	**9,542**	**384**	**14,718**	
		33%	65%	3%		
	2010	**1,764**	**3,085**	**501**	**5,350**	
		33%	58%	9%		
	2009	**1,519**	**2,744**	**186**	**4,449**	
		34%	62%	4%		

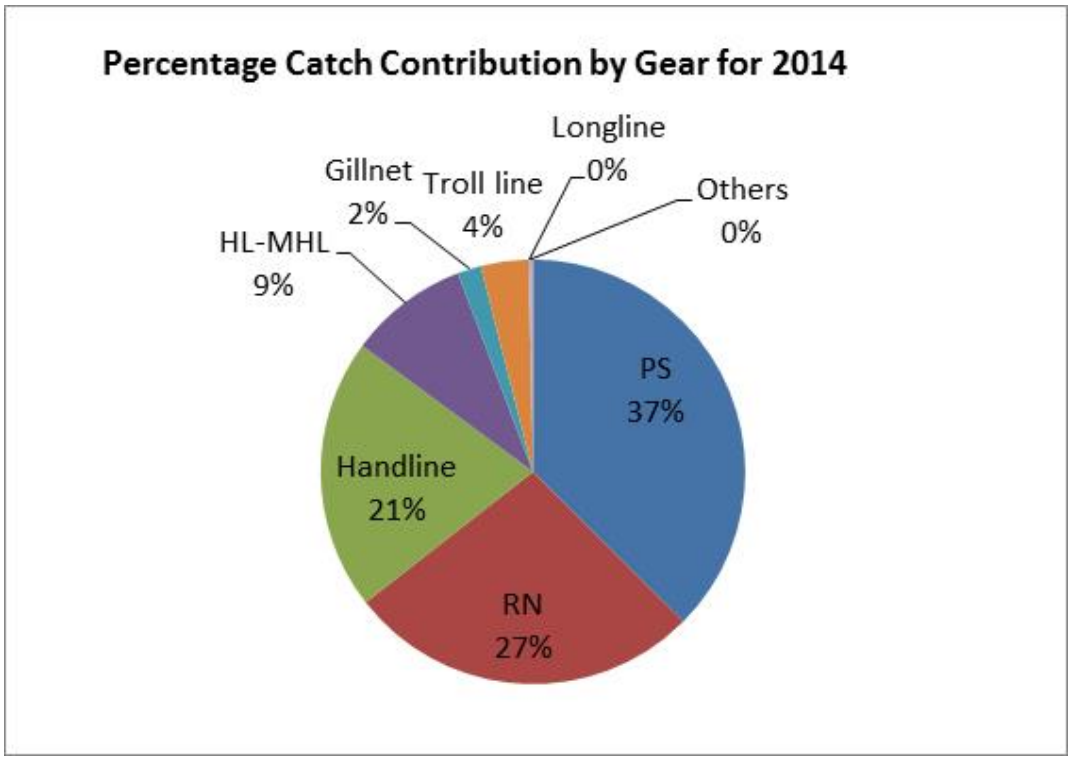
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
GILLNET - 2014						
NSAP + estimates for areas not covered by NSAP						
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
1	NSAP	4.543	1.647	0.008	6.198	
	non-NSAP landing sites estimate	0.000	0.000	0.000	0.000	
2	NSAP	94.000	263.090	5.100	362.190	
	non-NSAP landing sites estimate					
3	NSAP	4.540	2.040	0.000	6.580	Gillnet, trammel net ----- >>> Gillnet
4A	NSAP	5.685	0.297	0.000	5.982	
	non-NSAP landing sites estimate		0.000		0.000	
4B	NSAP	22.030	61.620	0.000	83.650	
	non-NSAP landing sites estimate		0.000		0.000	
5	NSAP	18.531	7.672	6.275	32.478	
	non-NSAP landing sites estimate	0.000	0.000	0.000	0.000	
6	NSAP	1,382.740	22.660	12.440	1,417.840	
	non-NSAP landing sites estimate	*0.000*	*0.000*	*0.000*	0.000	
8	NSAP	*0.000*	*0.000*	*0.000*	0.000	
	non-NSAP landing sites estimate	*504.347*	*375.008*	*0.000*	879.355	
11	NSAP	*1.830*	*0.240*	*0.000*	2.070	
	non-NSAP landing sites estimate	*7.020*	*2.420*	*0.000*	9.440	
12	NSAP	45.000	7.000	0.000	52.000	
	non-NSAP landing sites estimate					
ARMM	NSAP	20.760	0.000	0.000	20.760	
	non-NSAP landing sites estimate	118.360	0.000	0.000	118.360	
CARAGA	NSAP	33.330	0.170	0.000	33.500	
	non-NSAP landing sites estimate	0.000	0.000	0.000	0.000	
		*2,262.7*16	*743.864*	*23.823*	*3,030.403*	
		75%	25%	1%		
		2,263	**744**	**24**	**3,030**	
	2013	**1,389**	**153**	**29**	**1,571**	
		87%	12%	1%		
	2012	**1,193**	**170**	**14**	**1,377**	
		87%	12%	1%		
	2011	**642**	**195**	**1**	**838**	
		77%	23%	0%		
	2010	**354**	**82**	**1**	**437**	
		81%	19%	0%		
	2009	**249**	**98**	**9**	**356**	
		70%	28%	2%		

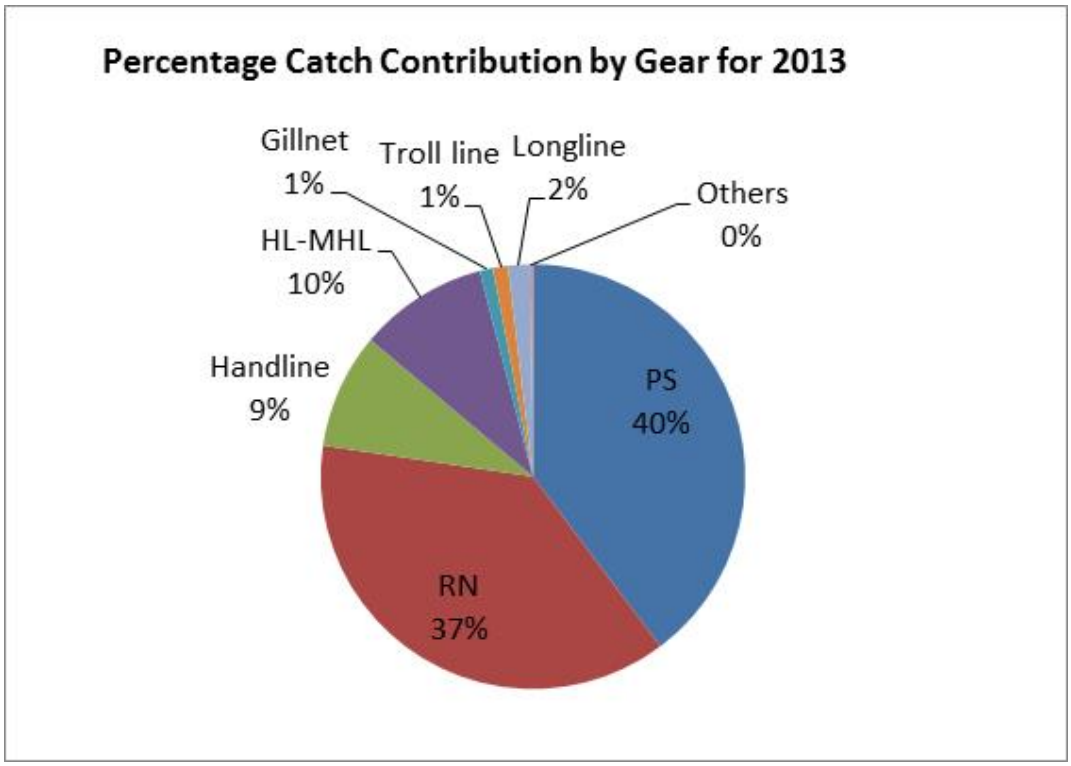
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
TROLL - 2014						
NSAP + estimates for areas not covered by NSAP						
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
1	NSAP	78.720	58.329	2.690	139.739	
	non-NSAP landing sites estimate	0.000	0.000	0.000	0.000	
2	NSAP	86.930	106.870	1.350	195.150	
	non-NSAP landing sites estimate				0.000	
3	*non-NSAP landing sites estimate*				0.000	No known troll activity
4A	NSAP	1.017	0.029	0.000	1.046	
4B	NSAP	1.430	9.570	0.360	11.360	
	non-NSAP landing sites estimate		0.000		0.000	No known troll activity
5	NSAP	0.209	0.183	0.457	0.849	
	non-NSAP landing sites estimate					
6	NSAP	41.480	42.750	0.320	84.550	
	non-NSAP landing sites estimate	*0.000*	*0.000*	*0.000*	*0.000*	
8	NSAP	0.000	0.000	0.000	0.000	
	non-NSAP landing sites estimate	*1015.331*	*754.949*	*0.000*	*1770.280*	
11	NSAP	823.910	301.010	0.290	1125.210	ALB -- 0.31t.
	non-NSAP landing sites estimate	663.620	403.790	0.000	1067.410	ALB -- 11.95t.
12	NSAP	261.000	213.000	3.000	477.000	
	non-NSAP landing sites estimate				*0.000*	
	....					
ARMM	NSAP	14.660	21.230	6.230	42.120	
	non-NSAP landing sites estimate	*84.730*	*122.710*	*36.010*	243.450	
CARAGA	NSAP	563.650	357.770	9.310	930.730	ALB -- 0.17 t.
	non-NSAP landing sites estimate	*36.250*	*0.000*	*0.000*	*36.250*	
		3672.937	*2392.190*	*60.017*	*6125.144*	
		60%	39%	1%		
		3,673	**2,392**	**60**	**6,125**	
	2013	**994**	**788**	**19**	**1,801**	
		63%	35%	1%		
	2012	**1,218**	**677**	**28**	**1,922**	
		63%	35%	1%		
	2011	**271**	**307**	**0**	**579**	
		47%	53%	0%		
	2010	**154**	**175**	**3**	**332**	
		46%	53%	1%		
	2009	**225**	**96**	**6**	**327**	
		69%	29%	2%		

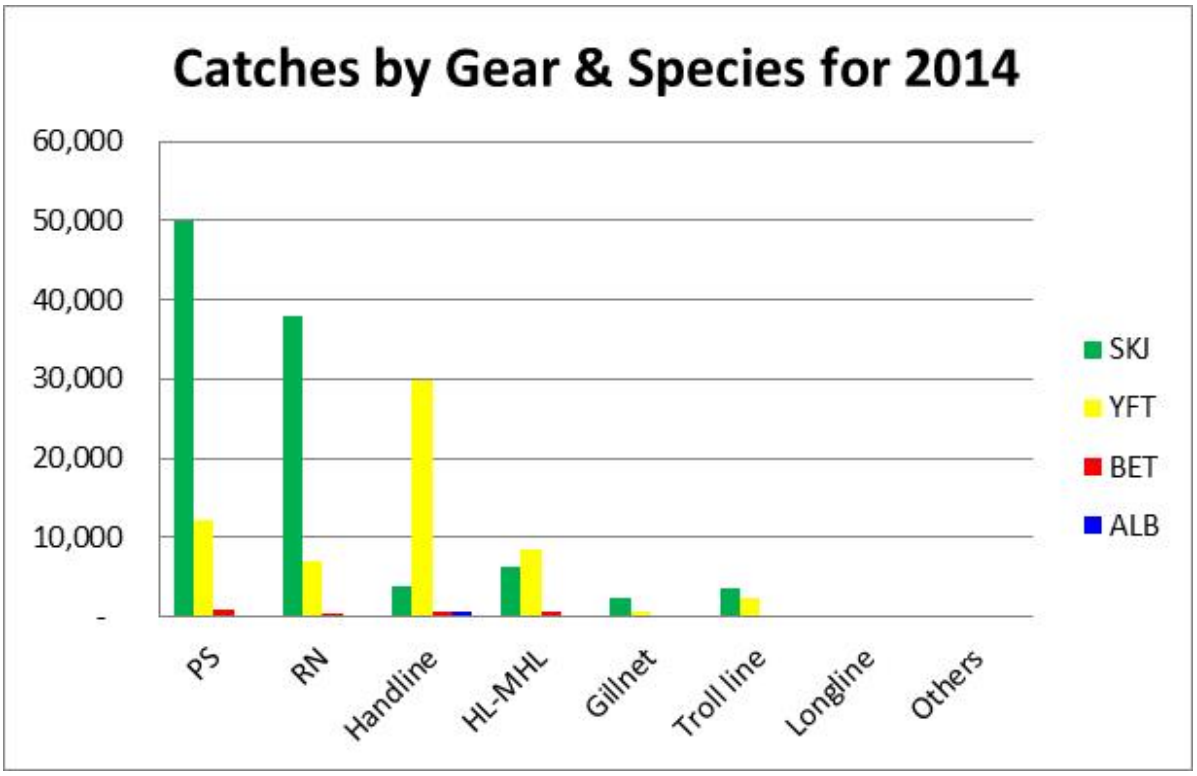
LONGLINE - 2014 (incldes BSLL, DLL etc)						
NSAP + estimates for areas not covered by NSAP						
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
1	NSAP	75.050	62.650	0.190	137.890	
	non-NSAP landing sites estimate				*0.000*	
2	NSAP	23.550	20.320	2.010	45.880	
	non-NSAP landing sites estimate	*0.000*	*0.000*	*0.000*	*0.000*	
3	*non-NSAP landing sites estimate*				*0.000*	
4A	NSAP	*0.000*	0.000	*0.000*	0.000	
4B	NSAP	*3.440*	0.000	*1.590*	5.030	
	non-NSAP landing sites estimate	*6.870*	0.000	*3.140*	*10.010*	
5	NSAP	*0.369*	0.013	0.022	0.404	
6	NSAP	1.200	37.800	0.080	39.080	
8	*non-NSAP landing sites estimate*				*0.000*	
11	*non-NSAP landing sites estimate*				*0.000*	1.00 t - 2012
12	*non-NSAP landing sites estimate*				*0.000*	Yes - but no data - < 1 t.
					0.000	
					0.000	
ARMM	NSAP		*4.190*	*0.430*	*4.620*	
	non-NSAP landing sites estimate		*24.220*	*2.480*	*26.700*	
CARAGA	NSAP	0.330	0.970	0.000	1.300	
		110.479	*124.973*	*7.462*	*242.914*	
		45%	51%	3%		
		111	**150**	**10**	**271**	
	2013	335	2,239	1	2,575	
		58%	42%	0%		
	2012	320	228	0	548	
		58%	42%	0%		
	2011	**236**	**219**	**0**	**455**	
		52%	48%	0%		
	2010	**30**	**11**	**0**	**41**	
		72%	28%	0%		
	2009	**154**	**144**	**0**	**298**	
		52%	48%	0%		

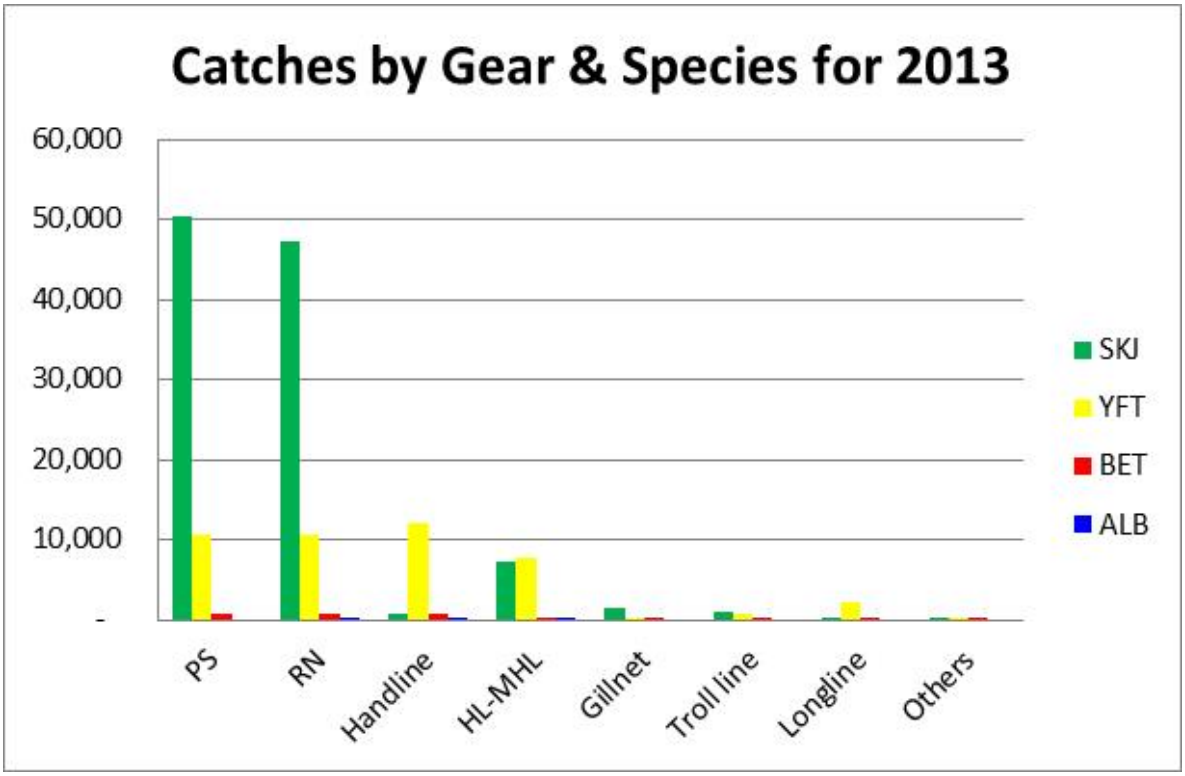
OTHER GEARS - 2014						
NSAP + estimates for areas not covered by NSAP						
Region	Source of estimate	SKJ	YFT	BET	TOTAL	Comments
1	NSAP	2.240	0.473	0.010	2.723	
	non-NSAP landing sites estimate	*0.000*	*0.000*	*0.000*	*0.000*	
2	NSAP	0.000	0.380	0.000	0.380	Round haul seine
	non-NSAP landing sites estimate					
3	NSAP	31.630		0.300	31.930	
4A	NSAP	0.000	0.000	0.000	0.000	?? Not specified
	non-NSAP landing sites estimate	0.000	0.000	0.000	0.000	
4B	NSAP	10.130	16.220	0.000	26.350	?? Not specified
	non-NSAP landing sites estimate	0.040	0.000	0.000	0.040	
5	NSAP	1.310	0.588	0.344	2.242	Range of gears Muro-ami, Fish corral, Danish seine,
	non-NSAP landing sites estimate	*0.000*	*0.000*	*0.000*	*0.000*	
6	NSAP	98.960	104.380	7.200	210.540	Gear = japanese set net and Danish Seine
	non-NSAP landing sites estimate	0.000	0.000		0.000	
8	NSAP				0.000	
	non-NSAP landing sites estimate				0.000	
11	*non-NSAP landing sites estimate*				0.000	
12	*non-NSAP landing sites estimate*				0.000	
					0.000	
					0.000	
ARMM	NSAP	*0.690*	*0.000*		0.690	Bagnet
	non-NSAP landing sites estimate	*3.990*	*0.000*		3.990	Bagnet
CARAGA	NSAP	*0.740*	*0.020*		0.760	Bagnet
		149.730	*122.061*	*7.854*	*279.645*	
		54%	44%	3%		
		150	**122**	**8**	**280**	
	2013	**192**	**158**	**0**	**350**	
		67%	33%	0%		
	2012	**347**	**172**	**1**	**520**	
		67%	33%	0%		

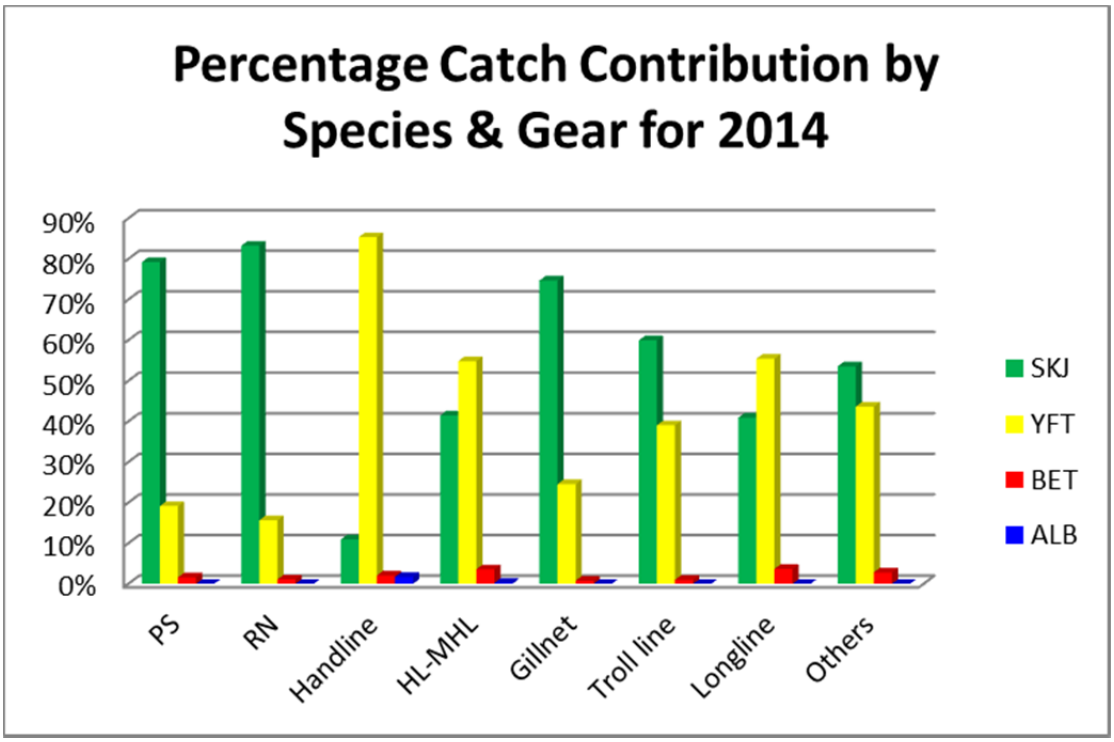
APPENDIX 7 – Summary of estimates by Gear and Species 2014 and 2013

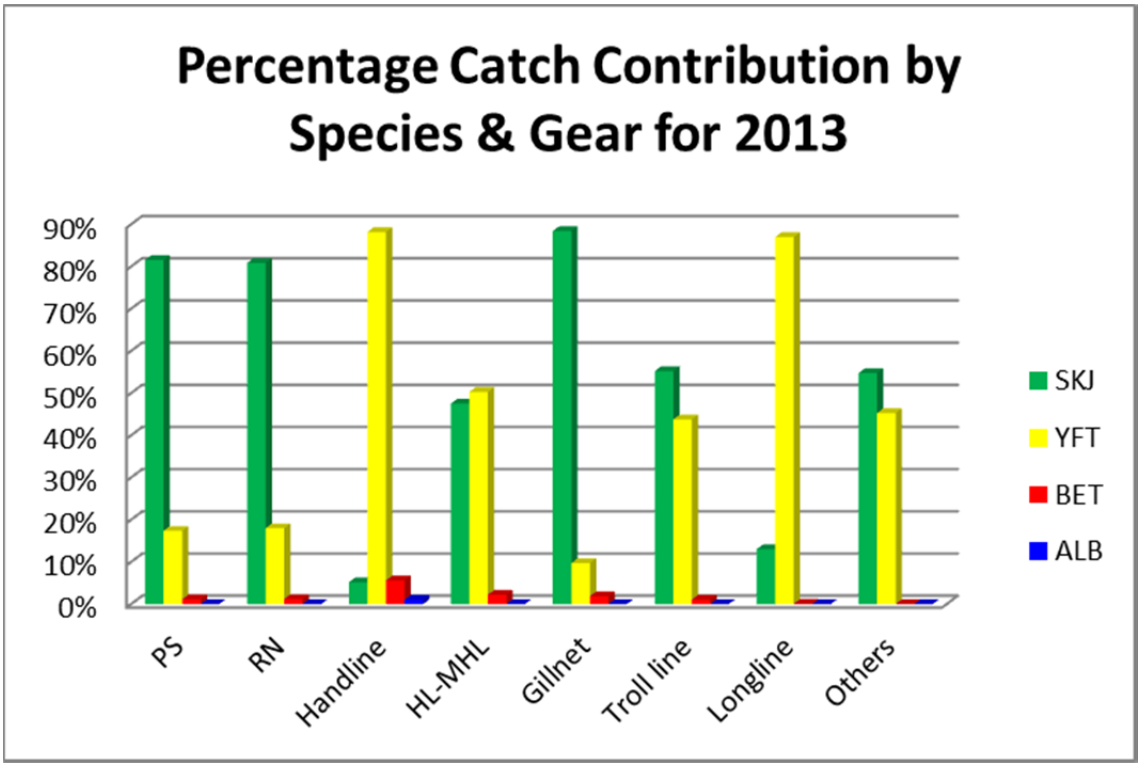





Catches by Gear & Species for 2014
60,000
50,000
40,000
30,000
20,000
10,000
-
PS
RN
Handline
HL-MHL
Gillnet
Troll line
Longline
Others
SKJ
YFT
BET
ALB


Catches by Gear & Species for 2013
60,000
50,000
40,000
30,000
20,000
10,000
-
PS
RN
Handline
HL-MHL
Gillnet
Troll line
Longline
Others
SKJ
YFT
BET
ALB


Percentage Catch Contribution by Species & Gear for 2014
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
PS
RN
Handline
HL-MHL
Gillnet
Troll line
Longline
Others
SKJ
YFT
BET
ALB


Percentage Catch Contribution by Species & Gear for 2013
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
PS
RN
Handline
HL-MHL
Gillnet
Troll line
Longline
Others
SKJ
YFT
BET
ALB

APPENDIX 8 – Project Status: CRITERIA FOR OPTIMUM SITE SELECTION

Criteria for Selection of Optimum Sample Size and Individual Landing Sites for Port Sampling and Data Collection to Improve the Accuracy of Total Annual Tuna Catch Estimates of the Philippines Summary of estimates by Gear and Species 2014 and 2013

1. Introduction

The Western and Central Pacific Fisheries Commission (WCPFC) manages highly migratory fish stocks in the Western and Central Pacific Ocean, including the West Pacific and East Asian Seas through the WPEA SM Project. The Philippine annual work plan for the 2015 WPEA project activities was agreed in January 2015. According to the Annual Work Plan, the Philippine government will conduct a consultancy work to select the optimum number of landing sites and individual landing sites to improve the accuracy of tuna catch estimates to be submitted to WCPFC. The research will utilize the data collected from nationwide landing sites for 2015 – a one-year BFAR project.

With the one-year BFAR project, all the landing areas throughout the country will be monitored this year, hence, it will be a good opportunity to conduct a study that will be able to determine and select the optimum number of landing sites and specific landing sites for data collection, assuming that in the coming years there will be lesser funds available for the monitoring of landed catches. In this case, identifying priority landing sites and determining the optimum number of landing sites (sample size) will greatly enhance the capacity of the Philippine government to provide accurate total tuna catch estimates even with fewer landing sites for data collection.

2. Objectives of the Project

The Terms of Reference (TOR) clearly sets the objective of the study to be the enhancement of national capacity of providing more accurate tuna catch estimates by identifying key landing sites for port sampling and data collection under limited government budget in the future. Specifically,

a) develop some experimental set-ups to conduct this research using statistical sampling techniques and potential multivariate analysis as appropriate;
b) identify and make a list of various factors that can influence the selection of landing sites to improve the reliability of annual total catch estimates – these factors will be used as criteria for the selection of key landing sites under budget constraint;
c) identify landing sites based on a) and b), considering species, gear and geographic distance for cost-effective data collection; and
d) evaluate the different sets of sampling sites (combination of landing sites) to be suggested using the data from the one-year government project.

3. Criteria Setting

It is important that criteria for initially identifying the landing sites be set in place. Evaluation of accuracy may be done only after the 2015 data collected is made available for analysis. The basic data to be used for setting the criteria set is the 2014 data on catches by species and by gear for each sampled landing site. The total number of NSAP sites prior to 2014 is 176, while in 2014, it is increased to 682.

Table 1. Number of Landing Sites per Region

Region	Existing	2014
1	22	60
2	12	76
3	15	41
4A	3	25
4B	4	49
5	21	72
6	12	69
7	7	48
8	10	0
9	14	39
10	14	26
11	18	32
12	8	22
CARAGA	8	54
ARMM	8	30
CAR	0	24
NFBC	0	15
TOTAL	**176**	**682**

In this study, the goal is to find a smaller number of sites to be sampled without sacrificing much of the accuracy in estimation in the event that the current number of landing sites will be further reduced to just around 30-50 sites. It is assumed for the moment that with this smaller number of sites, the main goal is to estimate at the national level.

The criteria for identifying the potential sampling sites will involve the following steps:

1. Identify the top-producing provinces based on annual catch (by species of tuna and overall) from the PSA-BAS reported figures and identify the corresponding NSAP sites within these provinces as an initial guide.
2. Identify the top-producing landing sites based on annual catch (by species of tuna and overall, by type of landing site, by fishing gear) from the NFRDI/BFAR reported figures as an initial guide.
3. The identified sites from the first two steps will be matched and produce a pool of potential landing sites.
4. Each of the identified landing sites will be analyzed using time series data (monthly frequency) to evaluate if any seasonality or structural break in the pattern is present. Each will also be evaluated based on the variety of species,

and gear types. If data is available, compliance with the 10% sub-sampling suggestion will also be evaluated. The proposed landing sites to be sampled will be identified based on the results of these analyses.

5. Lastly, cost and accuracy will be evaluated once the 2015 NSAP data is available.

4. Illustration

At the time the following outputs were generated, NFRDI was still encoding some of the 2014 data. The team currently has the list of WPEA sites, but not the list for all 682 NSAP sites covered in 2014. This illustration only shows the first step in identifying the potential landing sites.

4.1 Current WPEA Sites

Currently, there are 35 NSAP-WPEA sites, i.e., the WPEA Project gives funding for monitoring these landing sites. Most of these sites, according to NFRDI, have significant tuna unloadings based on BFAR-NSAP Regional Office recommendation. The identified NSAP-WPEA sites are

Table 2. List of NSAP-WPEA Sites by Region

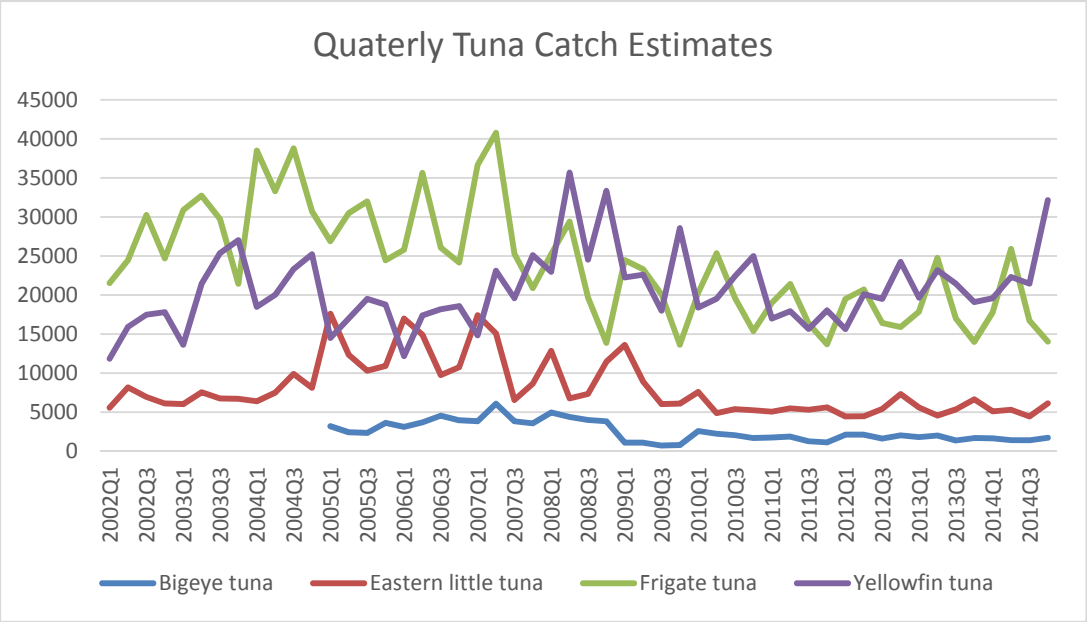
REGION	LANDING CENTER
1	Balinga say, Bolinao, Pangasinan
	Luciente 1, Bolinao, Pangasinan
3	Calibungan Landing Center, Tarlac
	Subic Fishport, Zambales
4B	Bgy. Bagong Silang, Oriental Mindoro
	Brgy. Bancao Bancao/Jacana, Palawan
	Brgy. Matahimik Fishport, Palawan
	Mamburao, Occidental Mindoro (Brgy. II)
	Mamburao, Occidental Mindoro (Brgy.. VII)
	Poblacion, Sablayan, Occidental Mindoro
	Buenavista, Sablayan, Occidental Mindoro
5	Batalay, Catanduanes
	Cabugao, Catanduanes
	Pananaogan, Catanduanes
	Pioduran, Albay
6	Buruanga Aklan, Fish Port of Alegria
	Talisayan, Anini-y, Antique
8	Rodsan Ngolos Guiuan, Eastern Samar
	Sabang 1 Borongan, Eastern Samar
	Sabang 2 Borongan, Eastern Samar
	Sapao Beach Guiuan, Eastern Samar
	Rawis Fishport, Borongan, Eastern Samar

REGION	LANDING CENTER
CARAGA	Manggagoy, Bislig City, Surigao del Sur
	Santan, Bungtod, Surigao del Sur
	Tandag, Bungtod, Surigao del Sur
	Unidad/Aras-Asan, Surigao del Sur
11	Jamboree A, Davao Oriental
	Pob. Kinanga 1, Davao Occidental
	Pob. Kinanga 2, Davao Occidental
	Lower Tagawisan, Davao Oriental
12	M-1, GSCFPC, South Cotabato
	M-3, GSCFPC, South Cotabato
	M-2, GSCFPC, South Cotabato
ARMM	Jolo, Sulu
	Tapian D.O.S., Maguindanao

4.2 Philippine Statistics Authority Data on Fisheries

The dataset utilized in this analysis came from the Commercial Fisheries Volume of Production by Species in the CountrySTAT database. The PSA quarterly catch dataset has only four species of tuna, namely: Big Eye tuna, Eastern little tuna, Frigate tuna, and Yellow Fin tuna. The available dataset runs from first quarter of 2002 until last quarter of 2014; however, the data on the quarterly catch of Big Eye tuna started in first quarter of 2005. The figure below shows the quarterly movement of the tuna catch by species.

Initial time series analyses show that eastern little, frigate, and yellow fin tuna exhibited seasonality. The eastern little tuna catch shows significantly lower catch during the first and third quarters as compared to the last quarter. Moreover, the frigate tuna catch during first and second quarters appear to be significantly higher than the last quarter of each year, with the first quarter being the quarter with the highest catch. Furthermore, the first and third quarters of the yellow fin catch tend to be significantly lower as compared to fourth quarter of each year, with the first quarter being the quarter with the lowest catch in each year. In the case of big eye tuna, seasonality appeared to be absent in the quarterly tuna catch data.



4.3 Provinces with the Highest Tuna Catch by Species

South Cotabato, Zamboanga del Sur, Sulu and Quezon are the top provinces which have the highest yellow tuna catch in 2014. While South Cotabato and Sulu have NSAP-WPEA sites, there are NSAP sites in regions 4A and 9 which may be explored for the provinces of Quezon and Zamboanga del Sur.

Table 3. Top Producing Provinces for Yellow Fin Tuna

Province	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual	Cumulative Total	Cumulative %
South Cotabato	14333.61	14210.42	14076.3	23292.96	65913.29	65913.29	69.00%
Zamboanga del Sur	1052.92	1075.58	1439.83	1476.23	5044.56	70957.85	74.28%
Sulu	925.57	671.88	991.36	1808.52	4397.33	75355.18	78.89%
Quezon	342.7	788.27	645.36	627.87	2404.2	77759.38	81.40%
Eastern Samar	285.13	825.2	635.3	411.4	2157.03	79916.41	83.66%
Palawan	114.74	885.92	193.57	593.37	1787.6	81704.01	85.53%
Davao City	173.78	325.9	484.97	498.13	1482.78	83186.79	87.09%
Lanao del Norte	212.08	340.64	111.74	227.72	892.18	84078.97	88.02%
Iloilo	101.07	46.26	300	368.15	815.48	84894.45	88.87%
Metro Manila	129.96	198.24	269.03	160.84	758.07	85652.52	89.67%

For frigate tuna, 12 provinces give about 80% of the total annual catch in 2014. These provinces are Sulu, Quezon, Zamboanga del Sur, Metro Manila, South Cotabato, Misamis Occidental, Zamboanga City, Cebu, Camarines Sur, Palawan, Iloilo and Lanao del Norte. Of these 12 provinces Sulu, South Cotabato and Palawan currently have NSAP-WPEA sites.

Table 4. Top Producing Provinces for Frigate Tuna

Province	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual	Cumulative Total	Cumulative %
Sulu	4187.31	5158.56	3461.52	2649.48	15456.87	15456.87	20.76%
Quezon	2427.51	4379.56	2091.74	2225.23	11124.04	26580.91	35.70%
Zamboanga del Sur	1428.01	1675.53	1533.42	1534.03	6170.99	32751.9	43.98%
Metro Manila	877.2	3480.32	739.64	488.62	5585.78	38337.68	51.49%
South Cotabato	1188.23	2366.1	1189.76	487.95	5232.04	43569.72	58.51%
Misamis Occidental	809.78	1354.29	1222.63	79.7	3466.4	47036.12	63.17%
Zamboanga City	1409.24	571.4	392.75	761.95	3135.34	50171.46	67.38%
Cebu	676.02	781.21	501.18	415.2	2373.61	52545.07	70.57%
Camarines Sur	404	625.01	696.96	544.02	2269.99	54815.06	73.61%
Palawan	371.82	778.62	519.28	436.34	2106.06	56921.12	76.44%
Iloilo	277.6	83.92	128.52	977.62	1467.66	58388.78	78.41%
Lanao del Norte	202.38	649.6	290.52	267.38	1409.88	59798.66	80.31%

In the case of big eye tuna, the top provinces are Davao City, Quezon, Sulu, Iloilo, Albay, South Cotabato, Leyte and Zamboanga del Sur.

Table 5. Top Producing Provinces for Big Eye Tuna

Province	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual	Cumulative Total	Cumulative %
Davao City	159.76	356.48	431.95	308.44	1256.63	1256.63	20.34%
Quezon	53.68	277.61	306.69	321.63	959.61	2216.24	35.87%
Sulu	609.61	55.85	62.43	74.79	802.68	3018.92	48.86%
Iloilo	359.43	25.91	34.79	90.95	511.08	3530	57.13%
Albay	109.15	106.39	130.33	150.18	496.05	4026.05	65.16%
South Cotabato	61.21	87.42	82.58	100.62	331.83	4357.88	70.53%
Leyte		4.25	61.64	263.67	329.56	4687.44	75.86%
Zamboanga del Sur	17.81	108.39	49.07	94.11	269.38	4956.82	80.22%
Lanao del Norte	23.84	84.72	35.46	34.82	178.84	5135.66	83.11%
Occidental Mindoro	66.25	20.52	34.63	19.24	140.64	5276.3	85.39%

Finally, for eastern little tuna, the top producing provinces are Sulu, Zamboanga del Sur, Zamboanga City, Misamis Occidental, Zamboanga del Norte, South Cotabato and Albay.

Table 6. Top Producing Provinces for Eastern Little Tuna

Province	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual	Cumulative Total	Cumulative %
Sulu	2063.01	2502.18	1998.59	2903.69	9467.47	9467.47	45.12%
Zamboanga del Sur	973.24	607.3	1073.05	1355.47	4009.06	13476.53	64.23%
Zamboanga City	141.44	714.4		590.47	1446.31	14922.84	71.13%
Misamis Occidental	519.76	65.05	97.57	78.64	761.02	15683.86	74.75%
Zamboanga del Norte	210.47	47.21	185.77	87.43	530.88	16214.74	77.28%
South Cotabato	145.9	305.73	2.02	34.2	487.85	16702.59	79.61%
Albay	42.95	48.47	169.54	178.96	439.92	17142.51	81.71%
Cagayan	46.63	184.9	157.19	37.34	426.06	17568.57	83.74%
Basilan	74.45	41.78	123.58	85.04	324.85	17893.42	85.28%
Cebu	27	165	85	40	317	18210.42	86.80%

For all species, the top provinces are South Cotabato, Sulu, Zamboanga del Sur, Quezon, Metro Manila, Zamboanga City, Misamis Occidental, Palawan, Eastern Samar and Iloilo.

Table 7. Top Producing Provinces for All Four Species

Province	Yellow Fin	Frigate	Big Eye	Eastern	TOTAL	Cumulative Total	Cumulative %
South Cotabato	65913.29	5232.04	331.83	487.85	71965.01	71965.01	36.50%
Sulu	4397.33	15456.87	802.68	9467.47	30124.35	102089.4	51.78%
Zamboanga del Sur	5044.56	6170.99	269.38	4009.06	15493.99	117583.4	59.64%
Quezon	2404.2	11124.04	959.61	0	14487.85	132071.2	66.99%
Metro Manila	758.07	5585.78	0	153.9	6497.75	138569.0	70.29%
Zamboanga City	737.13	3135.34	0	1446.31	5318.78	143887.7	72.99%
Misamis Occidental	157.07	3466.4	71.14	761.02	4455.63	148343.4	75.25%
Palawan	1787.6	2106.06	16.66	220.28	4130.60	152474.0	77.34%
Eastern Samar	2157.03	1169.49	137.47	0	3463.99	155938.0	79.10%
Iloilo	815.48	1467.66	511.08	169.29	2963.51	158901.5	80.60%

Given this list of top producing provinces, the landing sites under each province will further be analyzed. In the case of Region 8, the 2013 data will be used as a basis. Currently there are no NSAP sites in Region 8, but the possibility of having NSAP sites again in the region in the future cannot be discounted.

The same procedure will be done on the landing sites covered in 2014, i.e., top producing landing sites will be determined, but this will be done with greater detail considering the gear type and species.

Attachment D

EIGHTH PHILIPPINES/WCPFC ANNUAL TUNA FISHERIES CATCH ESTIMATES REVIEW WORKSHOP

25-26 May 2015

RECOMMENDATIONS

Draft

1. The workshop recommended that **WCPFC/SPC** (in collaboration with **BFAR/NFRDI**) develop an instructions document (initially an electronic version) clearly outlining how to undertake the catch estimation process, including data review process, for purse seine, ringnet and large-fish Handline gears. This document should include, *inter alia*, flow-charts describing the steps involved, what needs to be included/excluded and responsibilities in compiling and providing data to be used in the catch estimation process (**for example, see ANNEX A**). In particular, the following should be included:
    a. The table showing the breakdown of the Philippines-flagged purse seine fleets into categories of sub-fleet which is to be used to compile catch estimates.
    b. A list of the Philippines-flagged purse seine vessels and an indication as to what category they belong to. This list should be used in the compilation of data.
    c. Template tables to be used for data review WS for each Region and for catch estimates WS as an appendix of the document.
    d. Previous year Data Review WS and Catch Estimates WS reports attached as an illustration.

    This document should be distributed to all relevant stakeholders **before the end of 2015, with subsequent reminders leading up to the next workshop**, to prepare for the estimation of 2015 catches. All stakeholders (**BFAR, PSA, PFDA** and **Industry Associations/Representatives)** will be expected to provide presentations of their estimates at future workshops. This document should be reviewed and updated each year to take into account any improvements in the process. This may also require inter-agency (BFAR/NFRDI, PSA and PFDA) validation workshops to be conducted throughout the year to facilitate the process (coordinated by BFAR/NFRDI).

2. The workshop recommended that **BFAR and NFRDI, in collaboration with WCPFC/SPC,** continue to review the differences observed in (i) catch/effort reported and (ii) species and size composition, produced from different data sources (observer data, logbooks, NSAP, cannery data), and report the findings at the next workshop. If necessary, BFAR/NFRDI will have a one-day meeting to finalize the sources of such differences. The primary focus should be on the HSP purse seine vessels but the work should also be extended to other fleets, where relevant.

3. The workshop recommended that **BFAR/NFRDI** and **Industry** follow-up with the fishing companies identified as not providing logsheets to ensure the timely submission of logsheet data, highlighting this requirement as an important WCPFC member-country data submission obligation. (The purse seine fishery is the primary focus at this stage).

4. In regards to initiatives related to E-Reporting, the workshop recommended

    a. **BFAR/NFRDI** liaise with the MARLIN E-Logbook technical service provider to obtain and provide WCPFC/SPC with a sample data file, and then

b. **WCPFC/SPC** will develop a data loader so that detailed vessel logbook data produced from the MARLIN E-Logbook system can be loaded into the NFRDI's version of the TUFMAN, thereby facilitating the submission of operational data to the WCPFC as a member country reporting obligation.

5. **BFAR/NFRDI** will compile NSAP data collected under BFAR 1-year project from all landing sites and convene a consultation meeting with **University of Philippines Statistical Team (UPST)** to brief the frame and scope of NSAP data. **BFAR Regional offices** should submit their 2014 NSAP data as soon as possible to the BFAR/NFRDI central office to ensure all data are available for this study. **UPST** will finalize detailed proposal and submit it to **BFAR/NFRDI** and Project Manager by the end of September 2015. UPST will conduct analysis according to the agreed TOR and present a progress report at a workshop in October/November 2015. Further analysis will continue to provide preliminary results at 2016 NSAP Data Review and Annual Catch Estimates WS.

6. **BFAR/NFRDI** will liaise with **PSA** to review their respective 2014 regional estimates (NSAP-derived and PSA) that differ considerably and report to the next workshop. The regions identified as high priority to be addressed before the other regions are:

   a. Region 9 - Zamboanga Peninsula
   b. Region 12 - SOCCSKSARGEN
   c. Region - ARMM

7. The workshop recommended a dedicated agenda item at next year's workshop to review the methods used in each region to estimate catches in non-NSAP sites, in order to determine the best approach for a standardized estimation process to be used by all regions for the non-NSAP sites (for example, the rapid assessment, interviews, gear/vessel inventory, other approach, etc.). **BFAR/NFRDI** and **BFAR regional offices** will provide a detailed explanation of the methodologies they use to estimate catches in non-NSAP sites to be presented at the 2016 NSAP Data Review and Annual Catch Estimates WS.

ANNEX A. Categories of Philippines-flagged PURSE SEINE fleet used for catch estimation

Category of purse-seine catch	Landing Base	FLEET in the WCPFC estimates
1. Catch from Philippines-based vessels	Philippines	Philippine "domestic"
2. Catch from Philippines-flagged vessels based in PNG operating under bilateral access (e.g. TPJ)	PNG	Philippine "distant-water" [distinguish from "domestic"]
3. Catch from Philippines-flagged catcher vessels, based in PNG (bilateral access) landed into the Philippines (catch may arrive via carrier)	PNG (catcher) Philippines (carrier)	[do not include – counted in logsheets provided from 2. above]
4. Foreign-flagged catcher vessels, landed into Philippine ports (catch may arrive via carrier)	Philippines	FOREIGN-FLAG CATCH [do not include – counted elsewhere]
5. Catch from Philippines-flagged vessels operating under joint-venture fishing companies in PNG (RD Fishing in PNG and Frabelle (PNG) Corporation)	PNG	PNG purse seine catch - charter arrangement [do not include – counted elsewhere]

Criteria for Selection of Optimum Sample Size and Individual Landing Sites for Port Sampling and Data Collection to Improve the Accuracy of Total Annual Tuna Catch Estimates of the Philippines

Presented by

Genelyn Ma. F. Sarte

Kevin Carl P. Santos

- Introduction
- Objectives of the Project
- Criteria Setting
- Initial Runs Using PSA-BAS Data

Introduction

- The Western and Central Pacific Fisheries Commission (WCPFC) manages highly migratory fish stocks in the Western and Central Pacific Ocean, including the West Pacific and East Asian Seas through the WPEA SM Project
- The Philippine annual work plan for the 2015 WPEA project activities was agreed in January 2015
  - According to the Annual Work Plan, the Philippine government will conduct a consultancy work to select the optimum number of landing sites and individual landing sites to improve the accuracy of tuna catch estimates to be submitted to WCPFC
  - The research will utilize the data collected from nationwide landing sites for 2015 – a one-year BFAR project.

Introduction

- With the one-year BFAR project, all the landing areas throughout the country will be monitored this year, hence, it will be a good opportunity to conduct a study that will be able to determine and select the optimum number of landing sites and specific landing sites for data collection, assuming that in the coming years there will be lesser funds available for the monitoring of landed catches
- In this case, identifying priority landing sites and determining the optimum number of landing sites (sample size) will greatly enhance the capacity of the Philippine government to provide accurate total tuna catch estimates even with fewer landing sites for data collection

Objectives of the Project

- Main Objective: the enhancement of national capacity of providing more accurate tuna catch estimates by identifying key landing sites for port sampling and data collection under limited government budget in the future
  - develop some experimental set-ups to conduct this research using statistical sampling techniques and potential multivariate analysis as appropriate;
  - identify and make a list of various factors that can influence the selection of landing sites to improve the reliability of annual total catch estimates – these factors will be used as criteria for the selection of key landing sites under budget constraint;
  - identify landing sites based on a) and b), considering species, gear and geographic distance for cost-effective data collection; and
  - evaluate the different sets of sampling sites (combination of landing sites) to be suggested using the data from the one-year government project

Criteria Setting

- It is important that criteria for initially identifying the landing sites be set in place
- Evaluation of accuracy may be done only after the 2015 data collected is made available for analysis
- The basic data to be used for setting the criteria set is the 2014 data on catches by species and by gear for each sampled landing site
- The total number of NSAP sites prior to 2014 is 176, while in 2014, it is increased to 682.

Region	Existing	2014
1	22	60
2	12	76
3	15	41
4A	3	25
4B	4	49
5	21	72
6	12	69
7	7	48
8	10	0
9	14	39
10	14	26
11	18	32
12	8	22
CARAGA	8	54
ARMM	8	30
CAR	0	24
NFBC	0	15
TOTAL	176	682

Table 1. Number of Landing Sites per Region

Criteria Setting

- The goal is to find a smaller number of sites to be sampled without sacrificing much of the accuracy in estimation in the event that the current number of landing sites will be further reduced to just around 30-50 sites
- It is assumed for the moment that with this smaller number of sites, the main goal is to estimate at the national level

Criteria Setting

- Identify the top-producing provinces based on annual catch (by species of tuna and overall) from the PSA-BAS reported figures and identify the corresponding NSAP sites within these provinces as an initial guide
- Identify the top-producing landing sites based on annual catch (by species of tuna and overall, by type of landing site, by fishing gear) from the NFRDI/BFAR reported figures as an initial guide
- The identified sites from the first two steps will be matched and produce a pool of potential landing sites

Criteria Setting

- Each of the identified landing sites will be analyzed using time series data (monthly frequency) to evaluate if any seasonality or structural break in the pattern is present
- Each will also be evaluated based on the variety of species, and gear type
- If data is available, compliance with the 10% sub-sampling suggestion will also be evaluated
- The proposed landing sites to be sampled will be identified based on the results of these analyses
- Lastly, cost and accuracy will be evaluated once the 2015 NSAP data is available

Initial Runs Using PSA-BAS Data for 2014

Top Producing Provinces for Skipjack

Province	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual	Cumulative Total	Cumulative %
South Cotabato	3245955	2863656	2050115	2054634	10214360	10214359.99	82.39%
Zamboanga del Sur	85072.02	66601.98	89427.86	85520.59	326622.5	10540982.44	85.02%
Zamboanga City	87769.04	140508.2	4982.35	84357.75	317617.4	10858599.81	87.58%
Sulu	37420.61	82782.42	78383.07	75469.7	274055.8	11132655.61	89.79%
Eastern Samar	30812.39	64273.69	61462.5	43640.95	200189.5	11332845.14	91.41%
Metro Manila	20769.03	44366.2	55922.8	26418.98	147477	11480322.15	92.60%
Quezon	18590.76	29502.33	9688.42	29878.39	87659.9	11567982.05	93.30%
Iloilo	48973.4	7856.1	5966.4	20224.97	83020.87	11651002.92	93.97%
Zambales	28543.18	11864.93	13875.84	18653.7	72937.65	11723940.57	94.56%
Sultan Kudarat	13921.68	18926.93	19142.5	19911.1	71902.21	11795842.78	95.14%

Initial Runs Using PSA-BAS Data for 2014

Top Producing Provinces for Yellow Fin Tuna

Province	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual	Cumulative Total	Cumulative %
South Cotabato	14333.61	14210.42	14076.3	23292.96	65913.29	65913.29	69.00%
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Metro Manila	129.96	198.24	269.03	160.84	758.07	85652.52	89.67%

Initial Runs Using PSA-BAS Data for 2014

Top Producing Provinces for Frigate Tuna

Province	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual	Cumulative Total	Cumulative %
Sulu	4187.31	5158.56	3461.52	2649.48	15456.87	15456.87	20.76%
Quezon	2427.51	4379.56	2091.74	2225.23	11124.04	26580.91	35.70%
Zamboanga del Sur	1428.01	1675.53	1533.42	1534.03	6170.99	32751.9	43.98%
Metro Manila	877.2	3480.32	739.64	488.62	5585.78	38337.68	51.49%
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Misamis Occidental	809.78	1354.29	1222.63	79.7	3466.4	47036.12	63.17%
Zamboanga City	1409.24	571.4	392.75	761.95	3135.34	50171.46	67.38%
Cebu	676.02	781.21	501.18	415.2	2373.61	52545.07	70.57%
Camarines Sur	404	625.01	696.96	544.02	2269.99	54815.06	73.61%
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Iloilo	277.6	83.92	128.52	977.62	1467.66	58388.78	78.41%
Lanao del Norte	202.38	649.6	290.52	267.38	1409.88	59798.66	80.31%

Initial Runs Using PSA-BAS Data for 2014

Top Producing Provinces for Big Eye Tuna

Province	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual	Cumulative Total	Cumulative %
Davao City	159.76	356.48	431.95	308.44	1256.63	1256.63	20.34%
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Iloilo	359.43	25.91	34.79	90.95	511.08	3530	57.13%
Albay	109.15	106.39	130.33	150.18	496.05	4026.05	65.16%
South Cotabato	61.21	87.42	82.58	100.62	331.83	4357.88	70.53%
Leyte		4.25	61.64	263.67	329.56	4687.44	75.86%
Zamboanga del Sur	17.81	108.39	49.07	94.11	269.38	4956.82	80.22%
Lanao del Norte	23.84	84.72	35.46	34.82	178.84	5135.66	83.11%
Occidental Mindoro	66.25	20.52	34.63	19.24	140.64	5276.3	85.39%

Initial Runs Using PSA-BAS Data for 2014

Top Producing Provinces for Eastern Little Tuna

Province	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual	Cumulative Total	Cumulative %
Sulu	2063.01	2502.18	1998.59	2903.69	9467.47	9467.47	45.12%
Zamboanga del Sur	973.24	607.3	1073.05	1355.47	4009.06	13476.53	64.23%
Zamboanga City	141.44	714.4		590.47	1446.31	14922.84	71.13%
Misamis Occidental	519.76	65.05	97.57	78.64	761.02	15683.86	74.75%
Zamboanga del Norte	210.47	47.21	185.77	87.43	530.88	16214.74	77.28%
South Cotabato	145.9	305.73	2.02	34.2	487.85	16702.59	79.61%
Albay	42.95	48.47	169.54	178.96	439.92	17142.51	81.71%
Cagayan	46.63	184.9	157.19	37.34	426.06	17568.57	83.74%
Basilan	74.45	41.78	123.58	85.04	324.85	17893.42	85.28%
Cebu	27	165	85	40	317	18210.42	86.80%

Thank you very much!!!

Republic of the Philippines
DEPARTMENT OF AGRICULTURE
BUREAU OF FISHERIES AND AQUATIC RESOURCES
PHILIPPINE FISHERIES OBSERVER PROGRAM

SPECIES IDENTIFICATION MANUAL

This Species Identification Manual is a property of Philippine Fisheries Observer Program of the Bureau of Fisheries and Aquatic Resources. It is primarily designed for Fisheries Observer onboard Purse Seine and Longline Fisheries operating in High Seas and in Philippine EEZ.

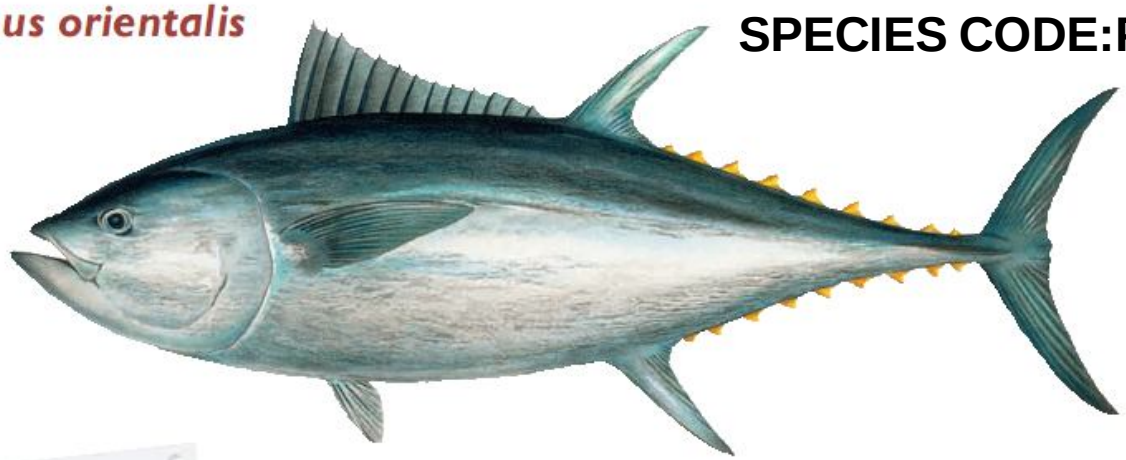
Most fish images are courtesy of Secretariat of Pacific Community (SPC) and can be downloaded at http://www.spc.int/oceanfish/en/species-id-guide . Other photos were taken from http://www.fishbase.org with name of the contributor cited.

Copy of this manual is available at Fisheries Observer Program Management Office, BFAR MCS Station and Fishing Technology Laboratory, Navotas Fishport Complex, Navotas City. Tel: +63 (2) 283-7581. Email: fopmo2010@gmail.com

TUNA

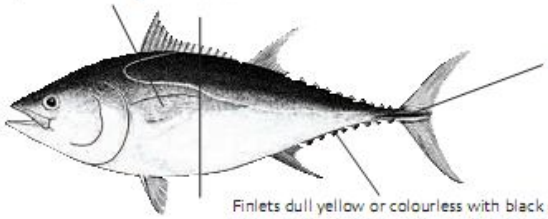
Thunnus orientalis

SPECIES CODE:PBF



English: Pacific bluefin tuna
French: Thon rouge du Pacifique
Japanese: Kuro maguro
Hawaiian: Bluefin tuna
Local:

Pectoral fins short — never reach space between dorsal fins
Nageoires pectorales courtes — ne dépassent jamais l'espace compris entre les nageoires dorsales

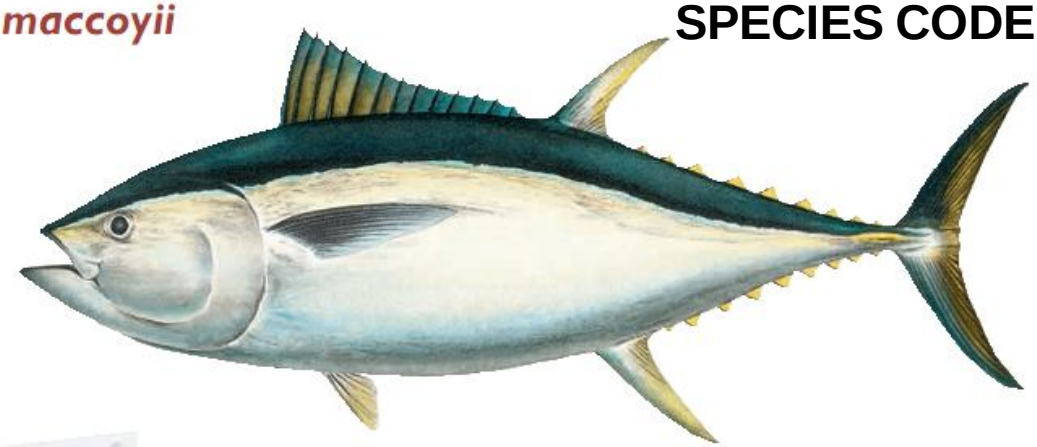


Main caudal keel dark to black
Carène caudale principale, foncée à noire

Finlets dull yellow or colourless with black edge
Pinnules jaune pâle ou incolores à bordure noire

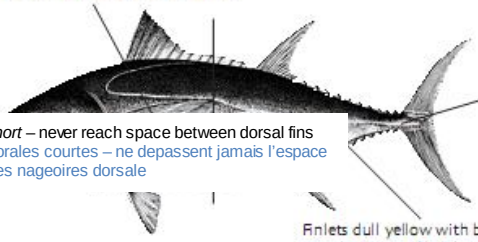
Thunnus maccoyii

SPECIES CODE:SBF



English: Southern bluefin tuna
French: Thon rouge du sud
Japanese: Bachi maguro, Minami maguro
Local:

Pectoral fins short — never reach space between dorsal fins
Nageoires pectorales courtes — ne dépassent jamais l'espace compris entre les nageoires dorsales



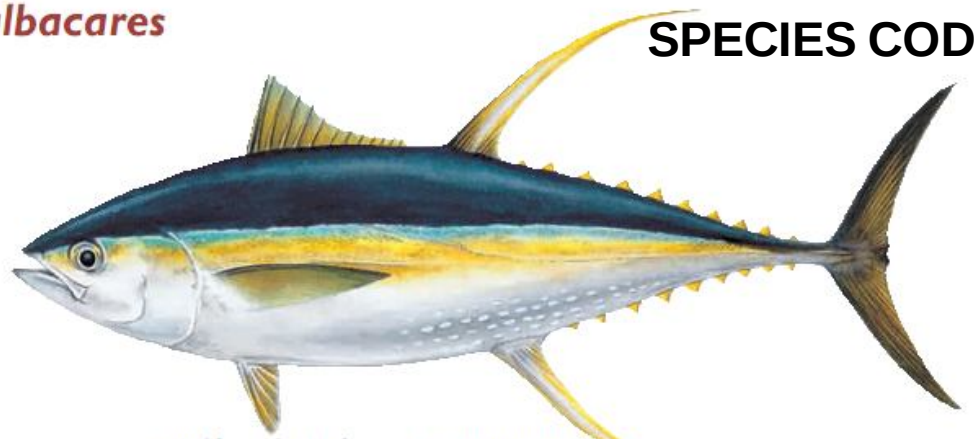
Main caudal keel dull yellow
Carène caudale principale jaune pâle

Pectoral fins short – never reach space between dorsal fins
Nageoires pectorales courtes – ne depassent jamais l'espace
Compris entre les nageoires dorsale

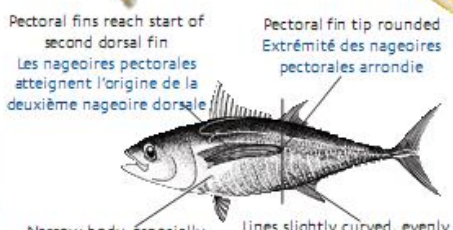
Finlets dull yellow with black edge
Pinnules jaune pâle à bordure noire

Thunnus albacares

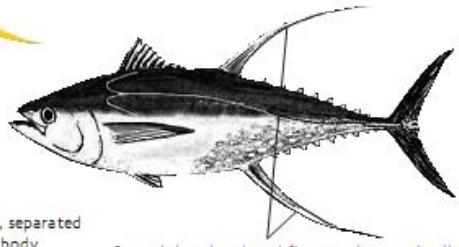
SPECIES CODE:YFT



English: Yellowfin tuna
French: Albacore, Thon jaune
Japanese: Kihada maguro, Shibi
Hawaiian: Ahi (large), Shibi (medium), Shibi-ko (small)
Local:



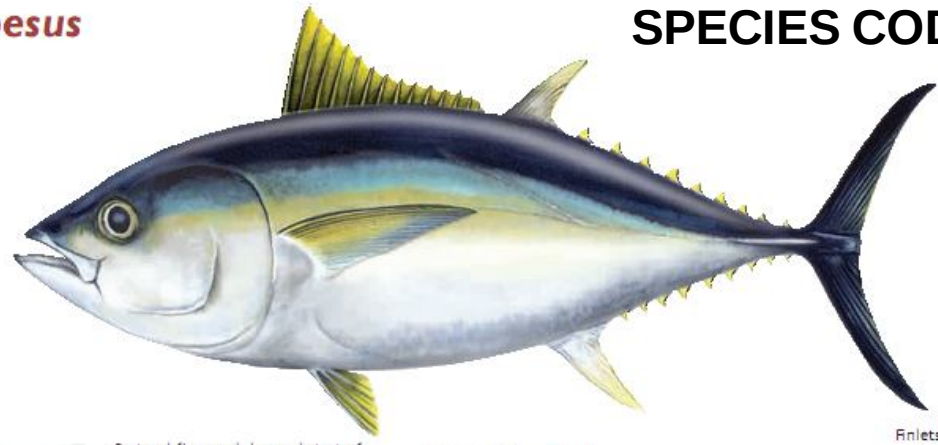
Juvenile (to 70 cm)
Juvénile (jusqu'à 70 cm)



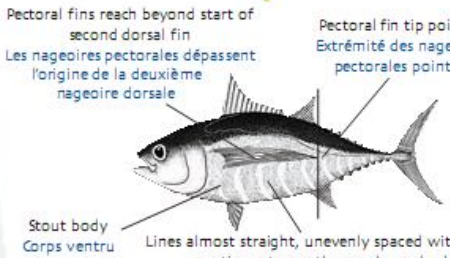
Adult
Adulte

Thunnus obesus

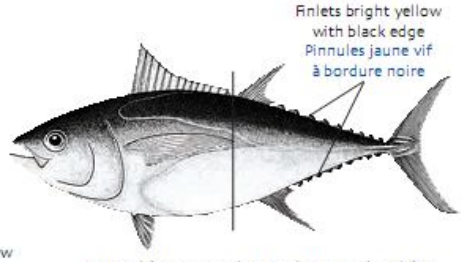
SPECIES CODE:BET



English: Bigeye tuna
French: Thon obèse
Japanese: Mebachi, Mebuto, Shibi
Hawaiian: Ahi, Mebachi, Ahi po'onui
Local:



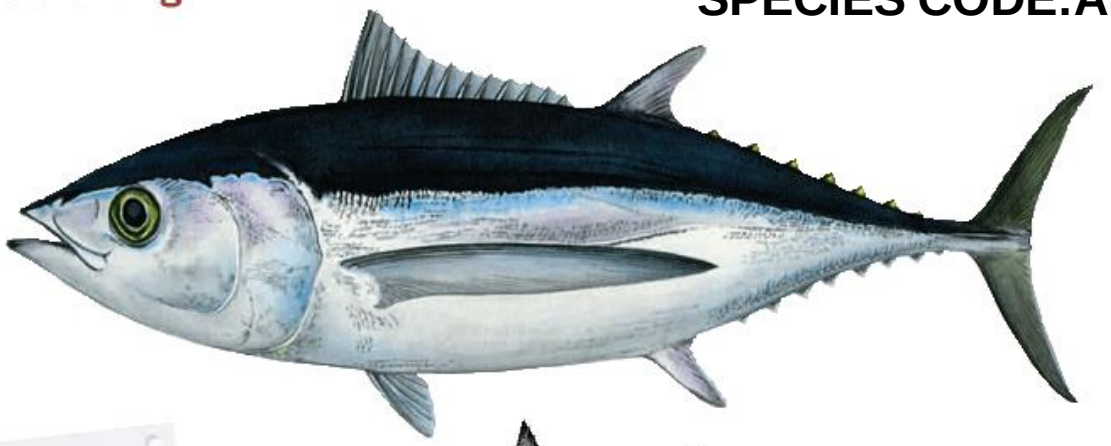
Juvenile (to 70 cm)
Juvénile (jusqu'à 70 cm)



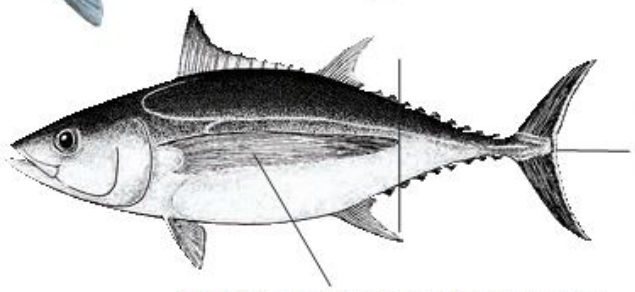
Adult
Adulte

Thunnus alalunga

SPECIES CODE:ALB

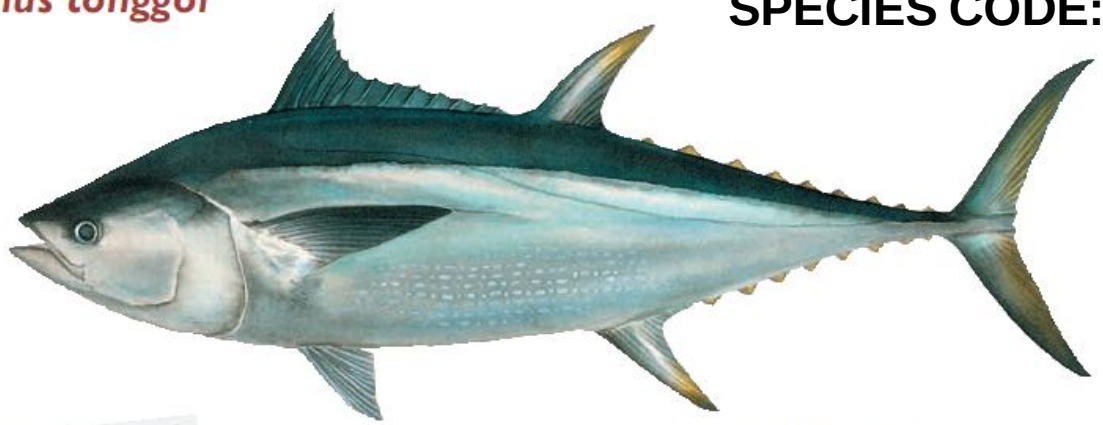


English: Albacore tuna
French: Germon, Thon blanc
Japanese: Tombo, Bincho, Binnaga maguro
Hawaiian: Tombo, Ahi palaha
Local:

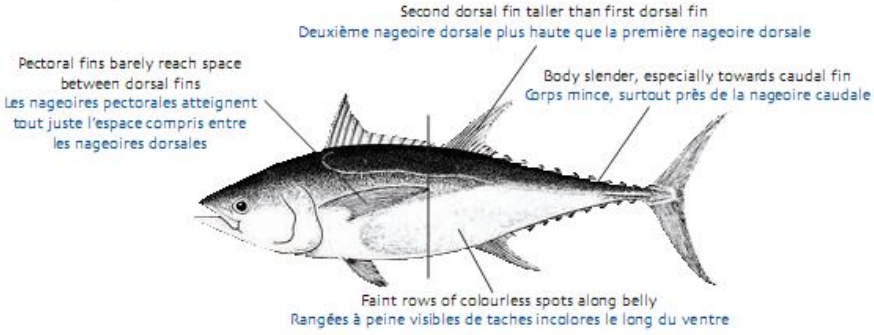


Thunnus tonggol

SPECIES CODE:LOT

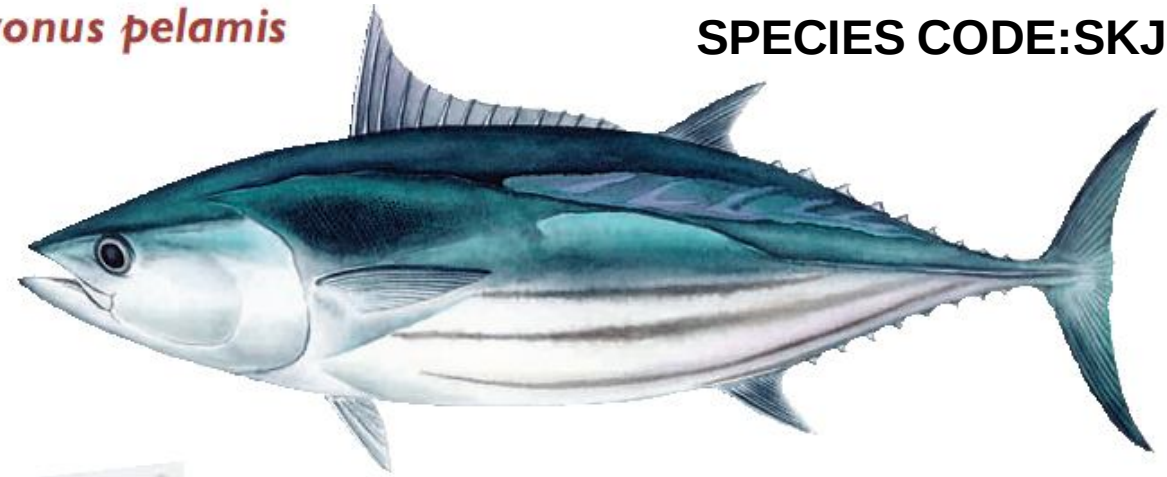


English: Longtail tuna
French: Thon mignon
Japanese: Koshinaga
Local:

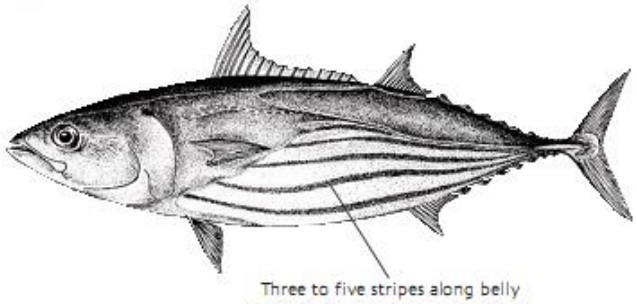


Katsuwonus pelamis

SPECIES CODE:SKJ

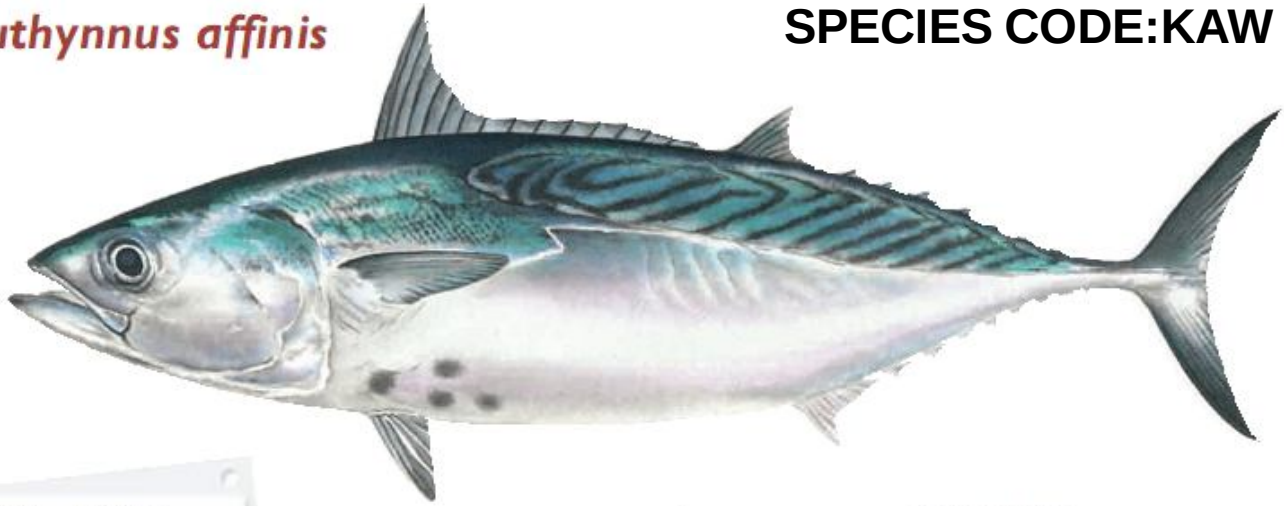


English: Skipjack tuna
French: Bonite à ventre rayé
Japanese: Katsuo
Hawaiian: Aku, Otaru (when large)
Local:

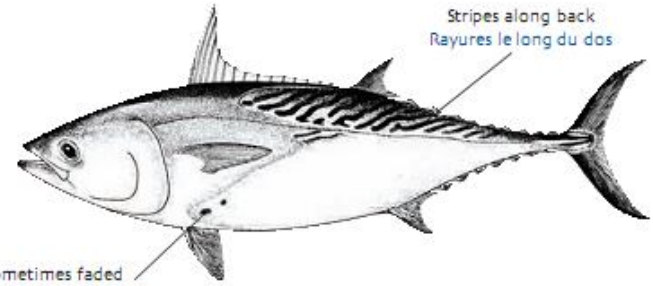


Euthynnus affinis

SPECIES CODE:KAW

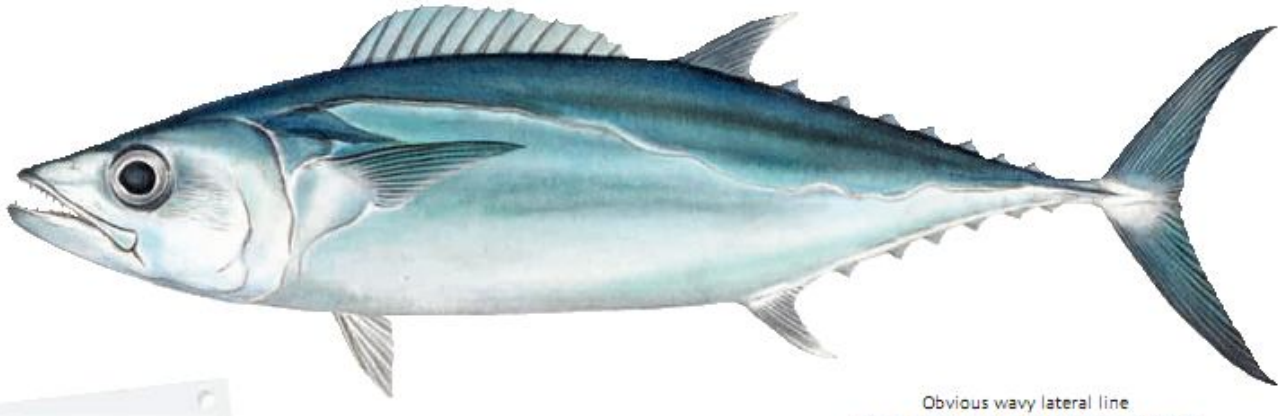


English: Kawakawa, Mackerel tuna
French: Thonine orientale
Japanese: Suma
Hawaiian: Kawakawa
Local:

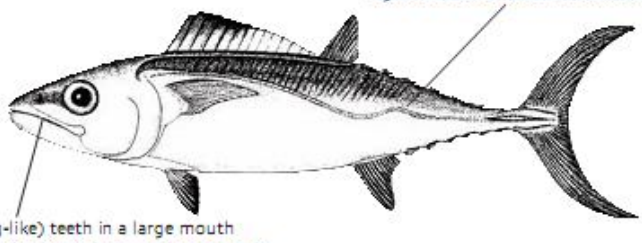


Gymnosarda unicolor

SPECIES CODE:DOT

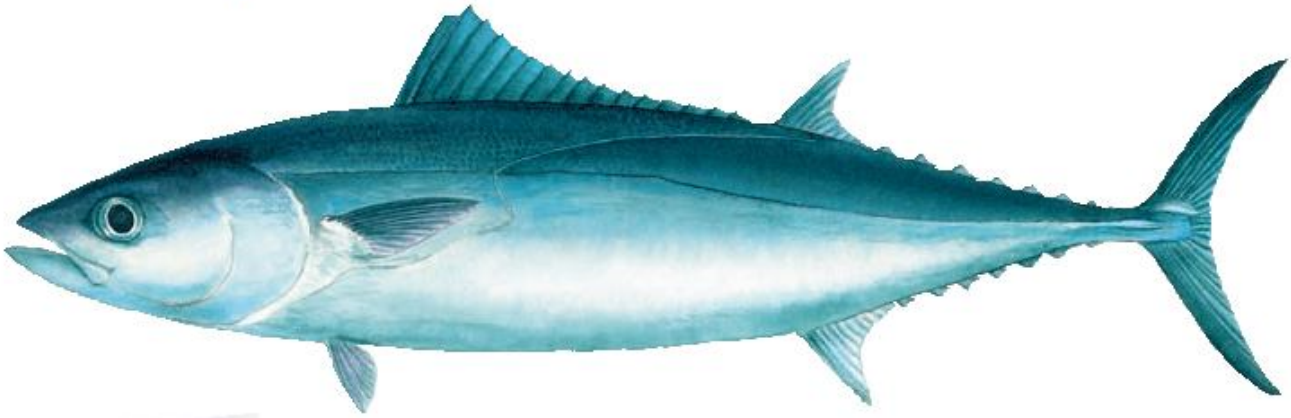


English: Dogtooth tuna
French: Bonite à gros yeux, Thon dents de chien
Japanese: Isomaguro
Local:

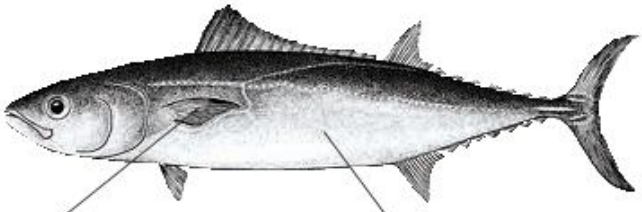


Allothunnus fallai

SPECIES CODE:SLT



English: Slender tuna
French: Thon élégant
Japanese: Hosogatsuo
Local:



Auxis rochei

SPECIES CODE:BLT

Bullet tuna

Photo by Randall J.E

Auxis thazard

SPECIES CODE:FRI

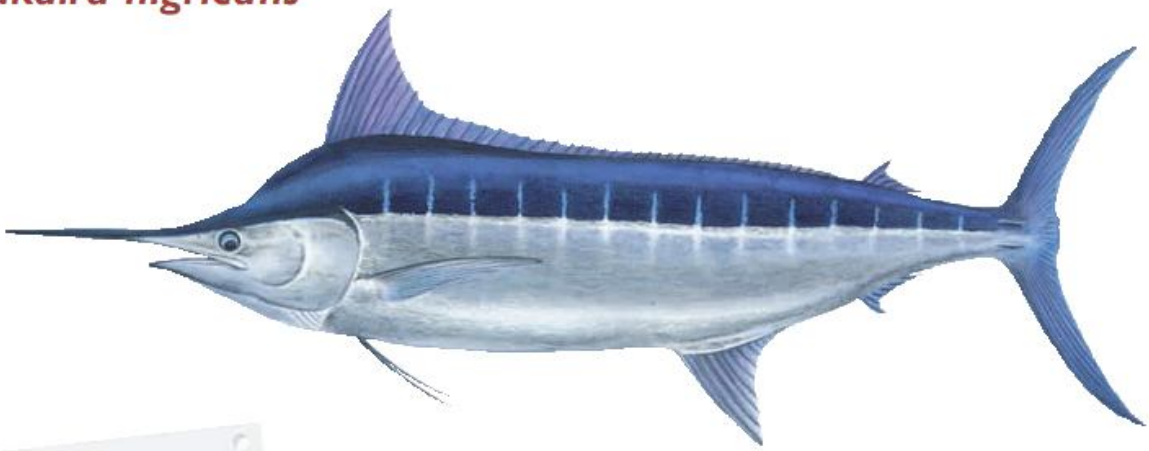
Frigate tuna

Photo by Randall J.E

BILLFISHES

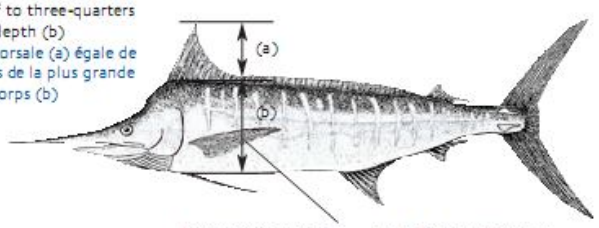
Makaira nigricans

SPECIES CODE:BUM



English: Blue marlin
French: Makaire bleu
Japanese: Nishikuro, Kuro kajiki
Hawaiian: Kajiki, A'u, Blue marlin
Local:

Dorsal fin height (a) half to three-quarters greatest body depth (b)
Hauteur de la nageoire dorsale (a) égale de la moitié aux trois quarts de la plus grande épaisseur du corps (b)



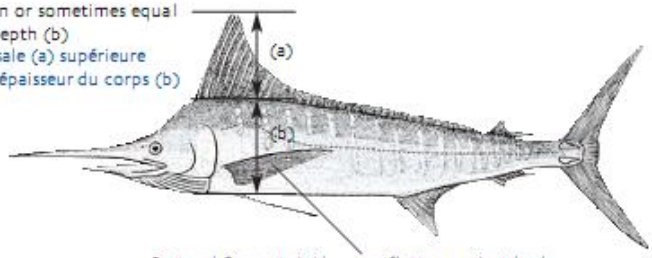
Pectoral fins not rigid — can flatten against body
Nageoires pectorales non rigides — peuvent se replier le long du corps

Tetrapturus audax

SPECIES CODE:MLS

English: Striped marlin
French: Marlin rayé
Japanese: Makajiki, Nairaigi
Hawaiian: Nairaigi, Striped marlin
Local:

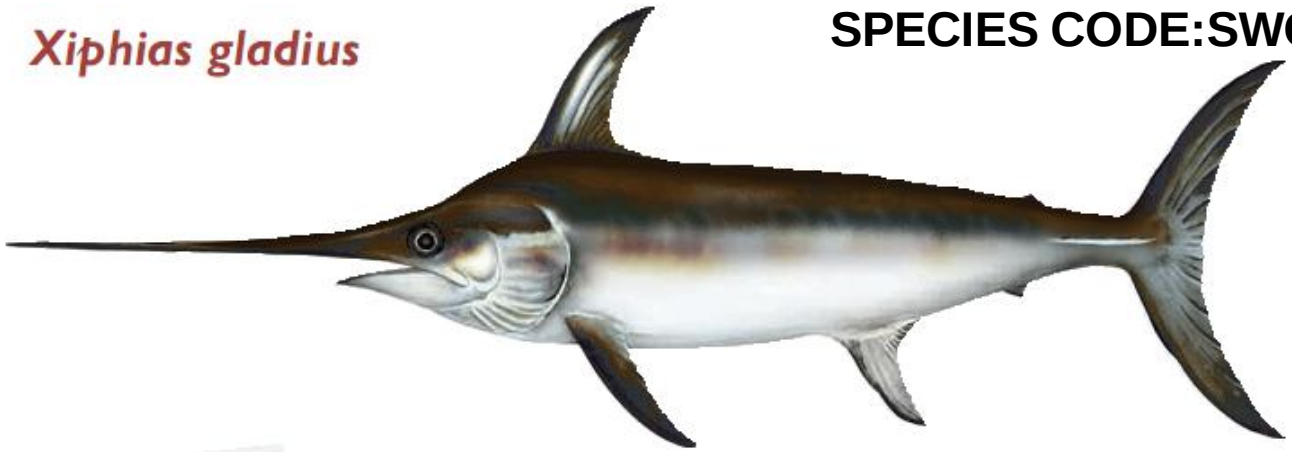
Dorsal fin height (a) higher than or sometimes equal to greatest body depth (b)
Hauteur de la nageoire dorsale (a) supérieure (parfois égale) à la plus grande épaisseur du corps (b)



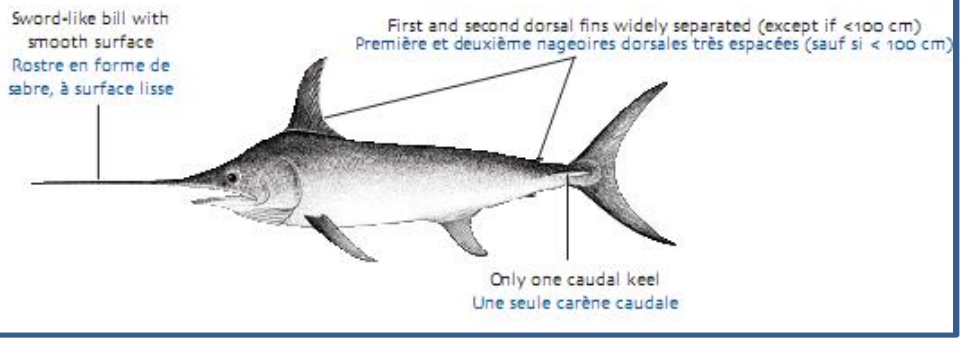
Pectoral fins not rigid — can flatten against body
Nageoires pectorales non rigides — peuvent se replier le long du corps

Xiphias gladius

SPECIES CODE:SWO

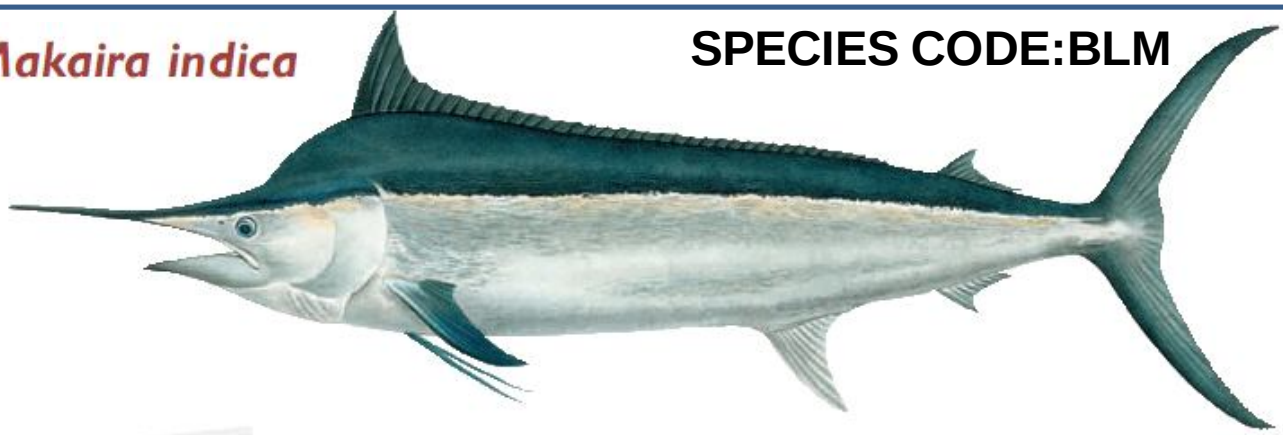


English: Swordfish, Broadbill swordfish
French: Espadon
Japanese: Dakuda, Mekajiki, Shutome
Hawaiian: A'uku, Broadbill, Shutome, Swordfish
Local:

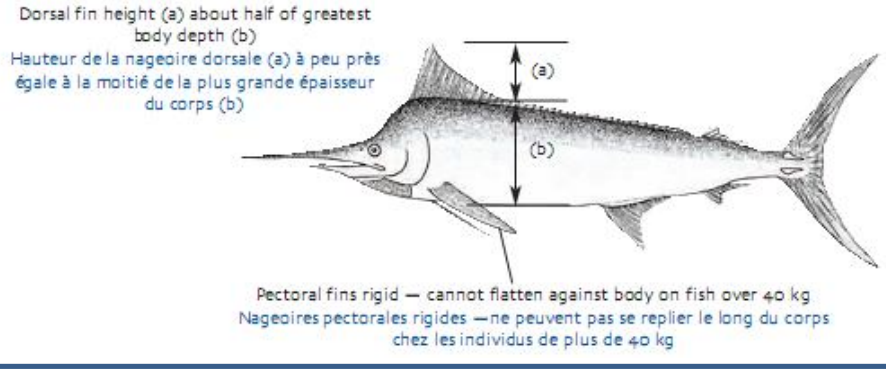


Makaira indica

SPECIES CODE:BLM

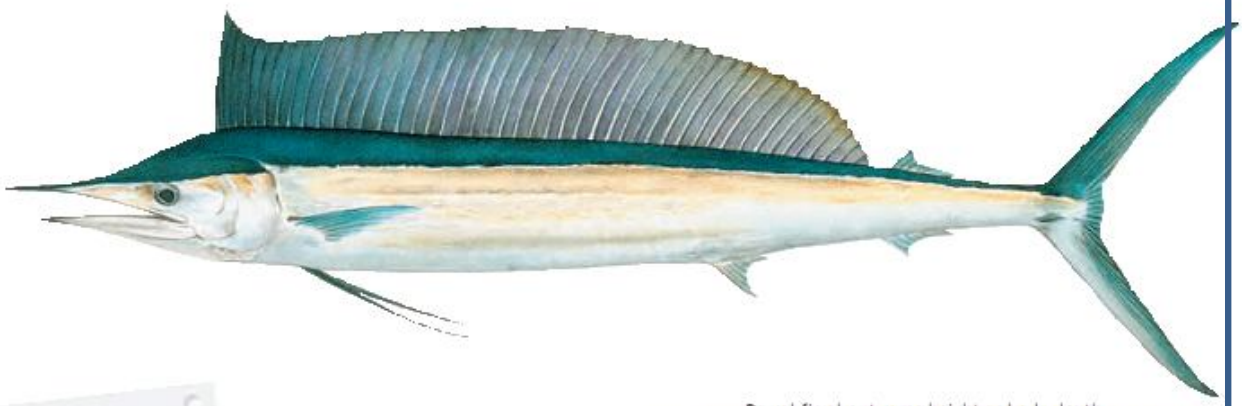


English: Black marlin
French: Makaire noir
Japanese: Shiro kajiki, Shirokawa
Hawaiian: Hida, Hira, A'u, Black marlin
Local:

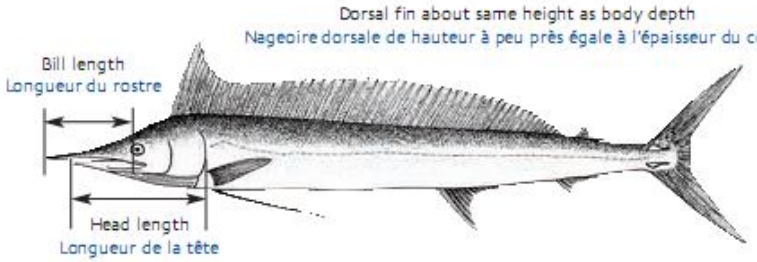


Tetrapturus angustirostris

SPECIES CODE:SSP



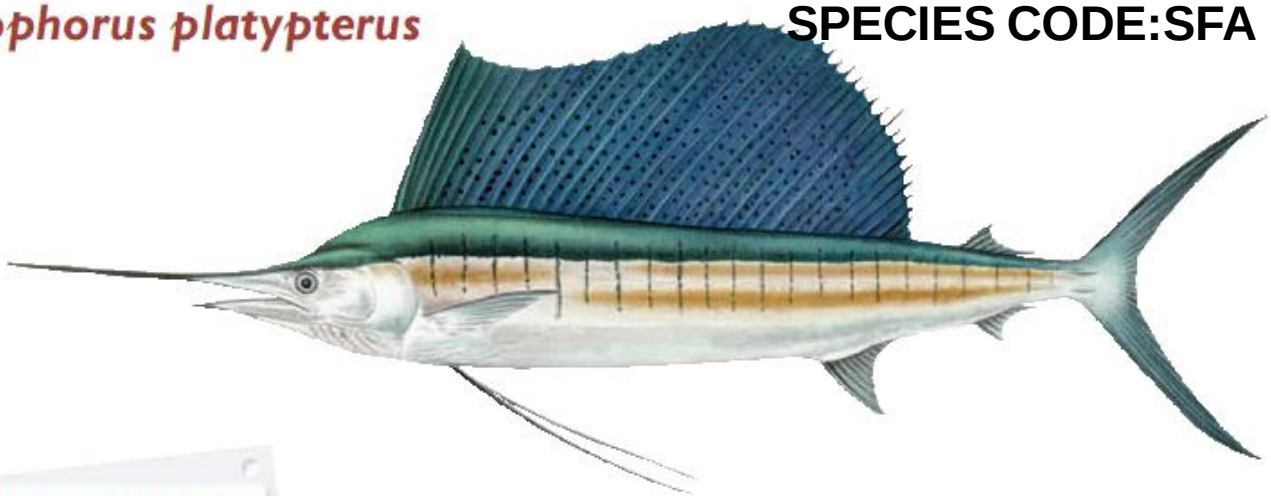
English: Shortbill spearfish
French: Makaire à rostre court
Japanese: Fuurai kajiki
Hawaiian: Hebi
Local:



Bill very short, equal to or shorter than head length
Rostre très court, de longueur égale ou inférieure à celle de la tête

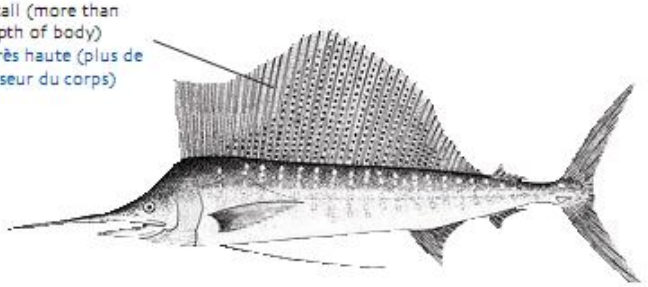
Istiophorus platypterus

SPECIES CODE:SFA



English: Indo-Pacific sailfish
French: Voilier de l'Indo-Pacifique
Japanese: Basho kajiki
Hawaiian: A'u lepe, Sailfish
Local:

Dorsal fin very tall (more than two times depth of body)
Nageoire dorsale très haute (plus de deux fois l'épaisseur du corps)



SHARKS

Carcharhinus falciformis

SPECIES CODE:FAL

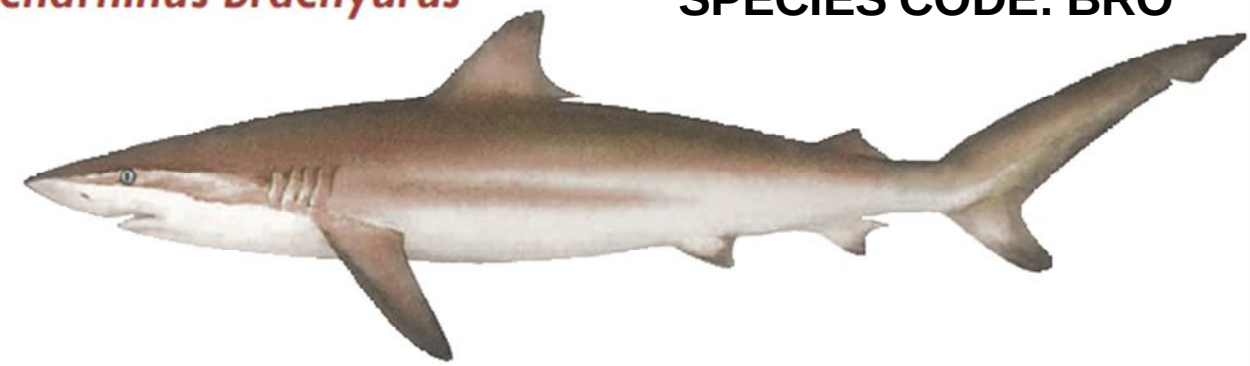
English: Silky shark
French: Requin soyeux
Japanese: Kurotogarizame
Hawaiian: Silk shark
Local:

Front of first dorsal fin clearly behind pectoral fin
Origine de la première nageoire dorsale nettement en arrière de la nageoire pectorale

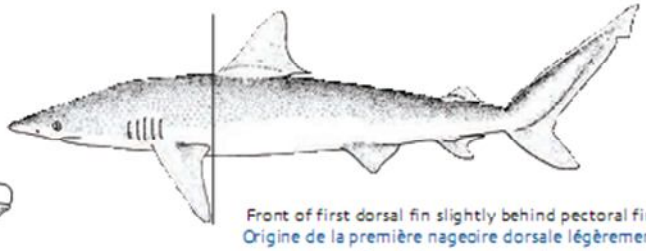
Shape of upper teeth
Forme des dents supérieures

Carcharhinus brachyurus

SPECIES CODE: BRO



English: Copper shark, Bronze whaler
French: Requin cuivre
Japanese: Kuroherimejirozame
Local:



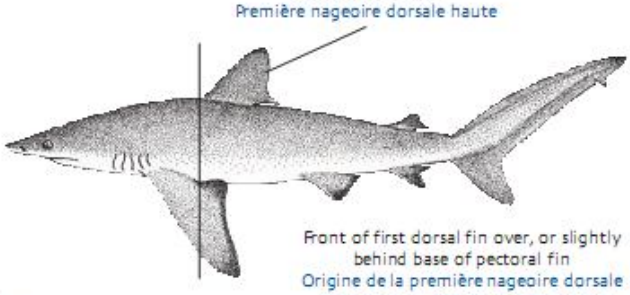
Front of first dorsal fin slightly behind pectoral fin
Origine de la première nageoire dorsale légèrement en arrière de la nageoire pectorale

Shape of upper teeth
Forme des dents supérieures

Carcharhinus altimus

SPECIES CODE:CCA

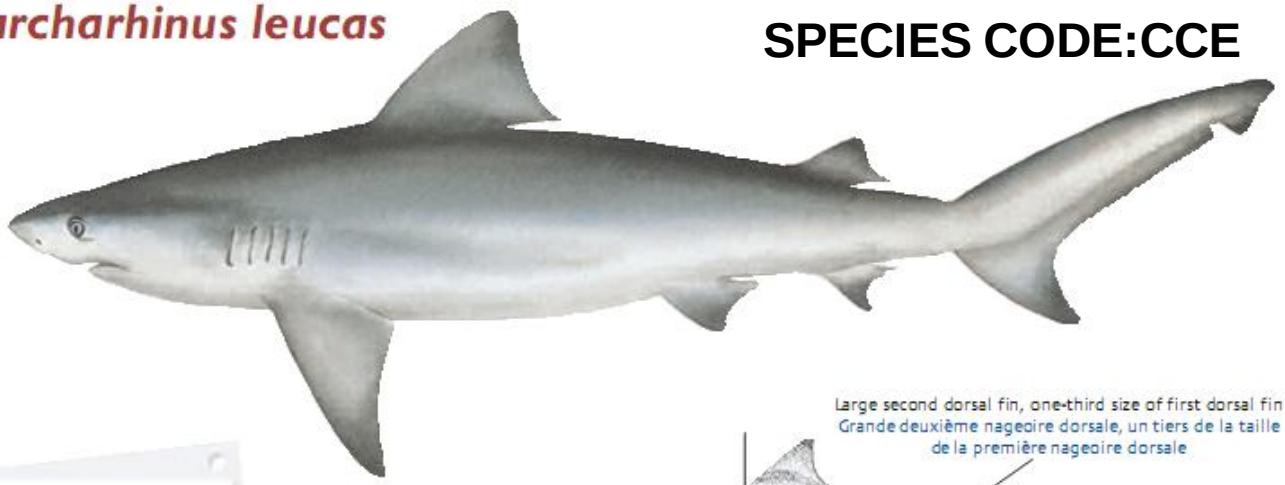
English: Bignose shark
French: Requin babosse
Japanese: Habire
Local:



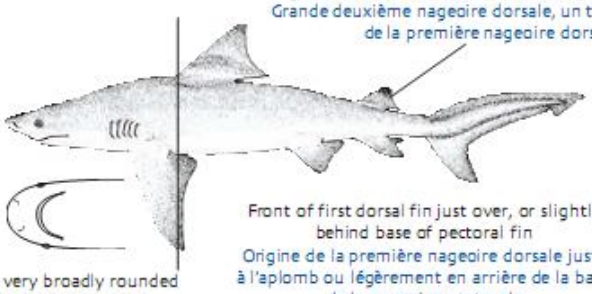
Shape of upper teeth
Forme des dents supérieures

Carcharhinus leucas

SPECIES CODE:CCE



English: Bull shark
French: Requin bouledogue
Japanese: Oomejirozame
Local:

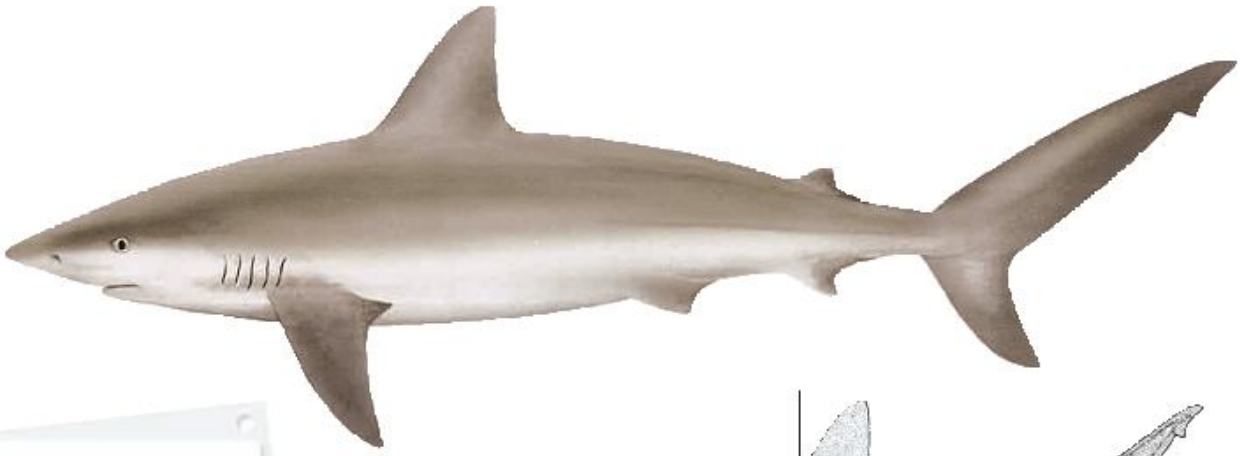


Shape of upper teeth
Forme des dents supérieures

Snout very broadly rounded and extremely short
Museau très largement arrondi et extrêmement court

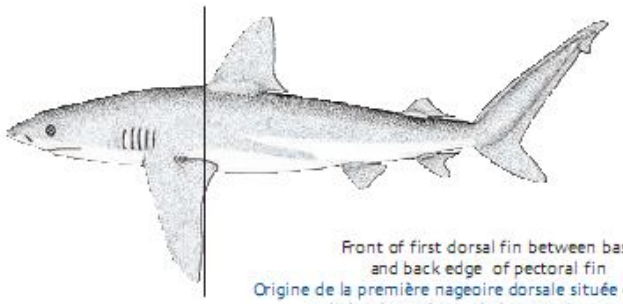
Carcharhinus galapagensis

SPECIES CODE:CCG



English: Galapagos shark
French: Requin des Galapagos
Japanese: Garapagosuzame
Hawaiian: Mano
Local:

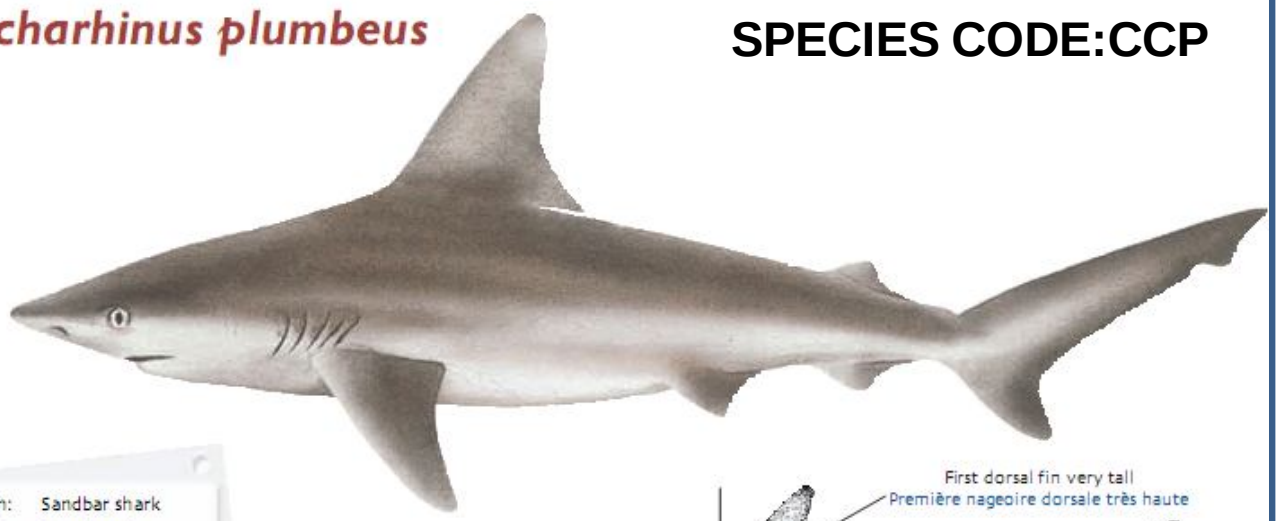
Shape of upper teeth
Forme des dents supérieures



Front of first dorsal fin between base and back edge of pectoral fin
Origine de la première nageoire dorsale située entre la base et le bord postérieur de la nageoire pectorale

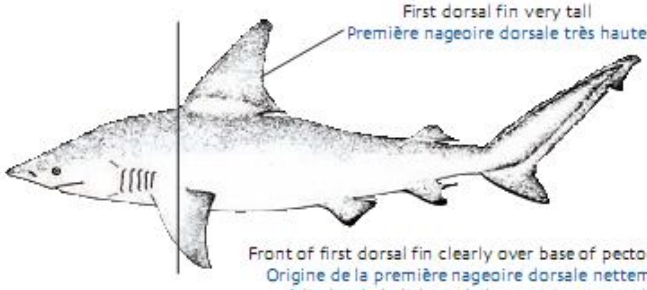
Carcharhinus plumbeus

SPECIES CODE:CCP



English: Sandbar shark
French: Requin gris, Requin gris à haute dorsale
Japanese: Mejirozame, Yajibuka
Hawaiian: Mano
Local:

Shape of upper teeth
Forme des dents supérieures



First dorsal fin very tall
Première nageoire dorsale très haute

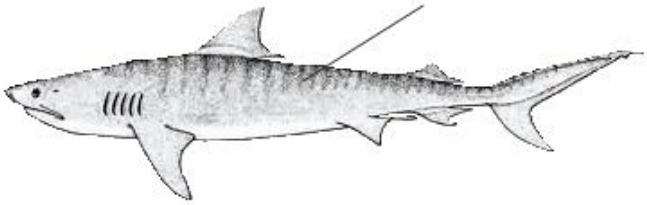
Front of first dorsal fin clearly over base of pectoral fin
Origine de la première nageoire dorsale nettement à l'aplomb de la base de la nageoire pectorale

Galeocerdo cuvier

SPECIES CODE:TIG

English: Tiger shark
French: Requin tigre
Japanese: Itachizame, Tora zame
Hawaiian: Niuhi, Manopa'ele
Local:

Shape of upper teeth
Forme des dents supérieures



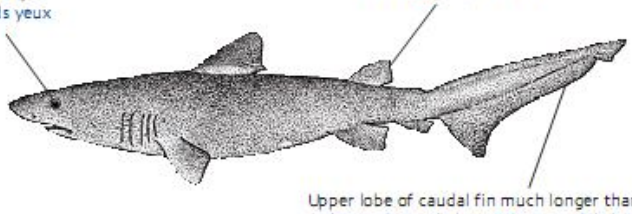
Dark, tiger-stripe markings that may be faded in large adults
Marques noires, tigrées, qui peuvent se décolorer chez les grands adultes

Odontaspis noronhai

SPECIES CODE: ODH

English: Bigeye sand tiger shark
French: Requin noronhai
Japanese: Burajiruwanizame
Local:

Shape of upper teeth
Forme des dents supérieures



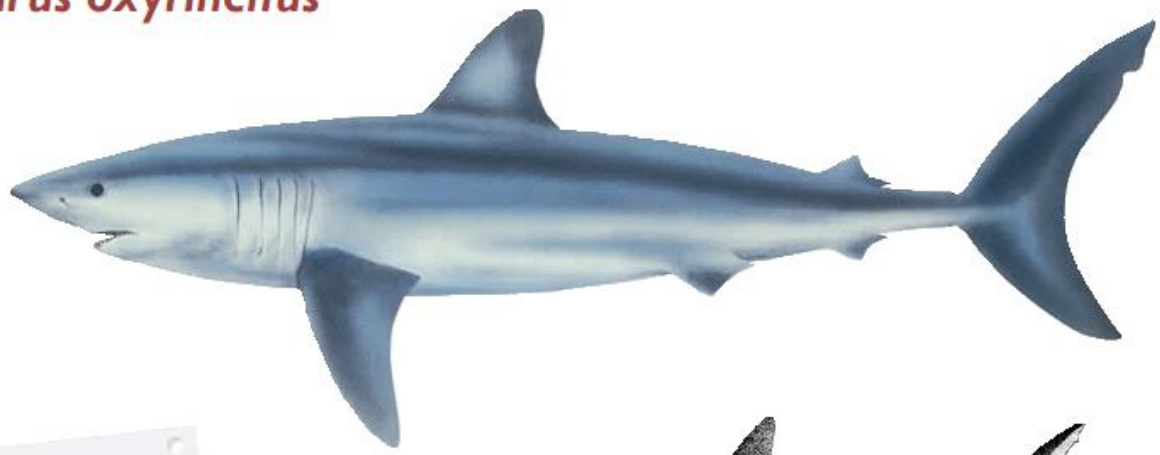
Large eyes
Grands yeux

Second dorsal fin over pelvic fin
Deuxième nageoire dorsale à l'aplomb de la nageoire pelvienne

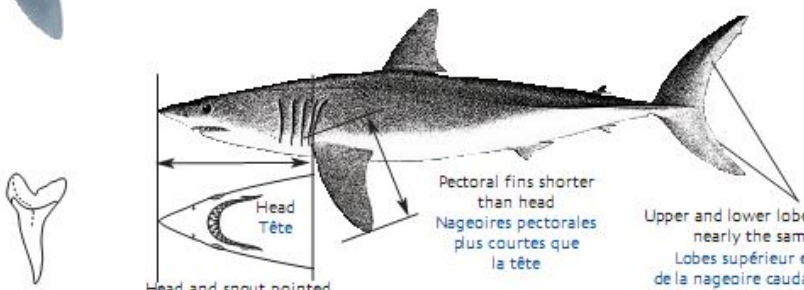
Upper lobe of caudal fin much longer than lower lobe
Lobe supérieur de la nageoire caudale beaucoup plus long que le lobe inférieur

Isurus oxyrinchus

SPECIES CODE: SMA



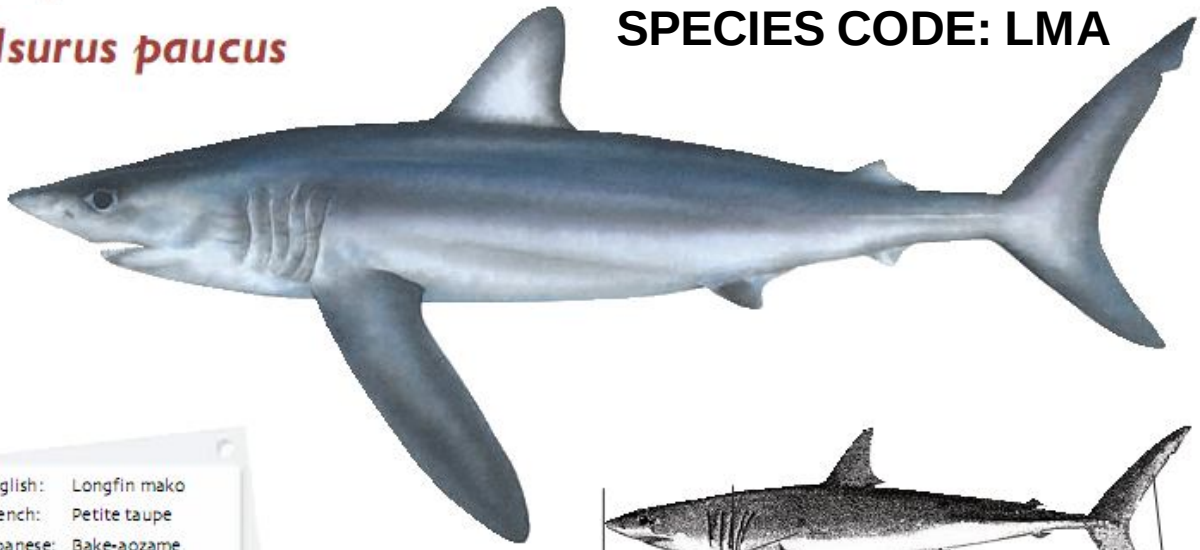
English: Shortfin mako
French: Taupe bleue
Japanese: Aozame
Hawaiian: Mano
Local:



Shape of upper teeth
Forme des dents supérieures

Isurus paucus

SPECIES CODE: LMA

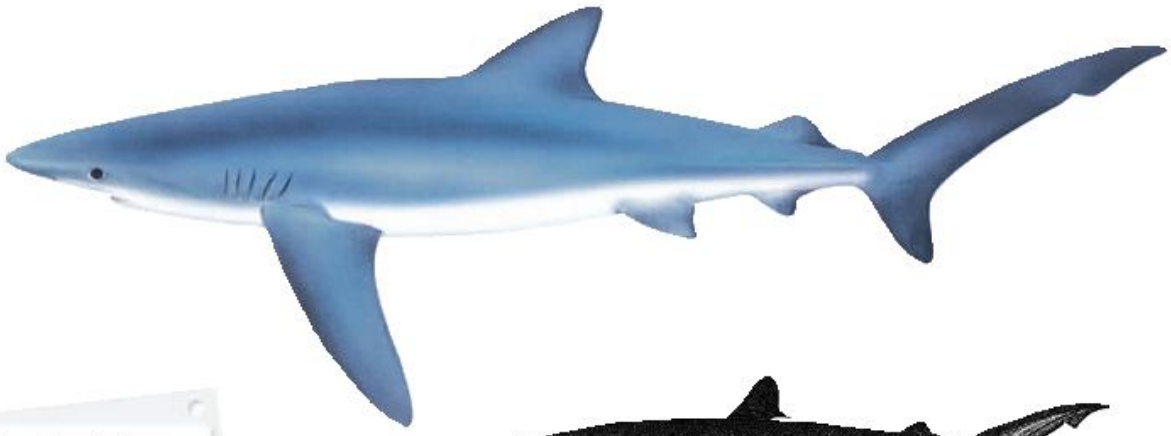


English: Longfin mako
French: Petite taupe
Japanese: Bake-aozame
Hawaiian: Mano
Local:

Shape of upper teeth
Forme des dents supérieures

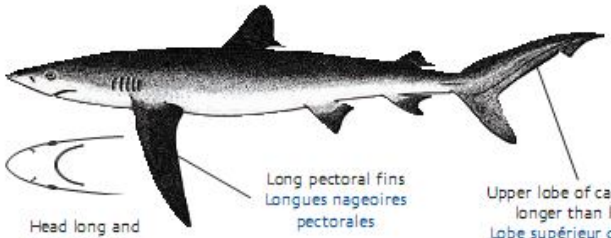
Prionace glauca

SPECIES CODE: BSH



English: Blue shark
French: Peau bleue
Japanese: Yoshikirizame, Mizubuka, Aota
Hawaiian: Mano
Local:

Shape of upper teeth
Forme des dents supérieures



Head long and snout rounded
Tête longue et museau arrondi

Long pectoral fins
Longues nageoires pectorales

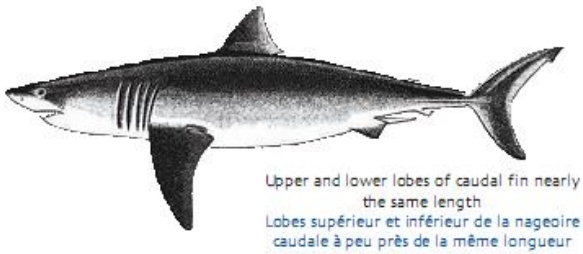
Upper lobe of caudal fin much longer than lower lobe
Lobe supérieur de la nageoire caudale beaucoup plus long que le lobe inférieur

Carcharodon carcharias

SPECIES CODE: WSH

English: Great white shark
French: Grand requin blanc
Japanese: Hohojirozame, Hohojiro, Iragi, Maira
Hawaiian: Niuhi
Local:

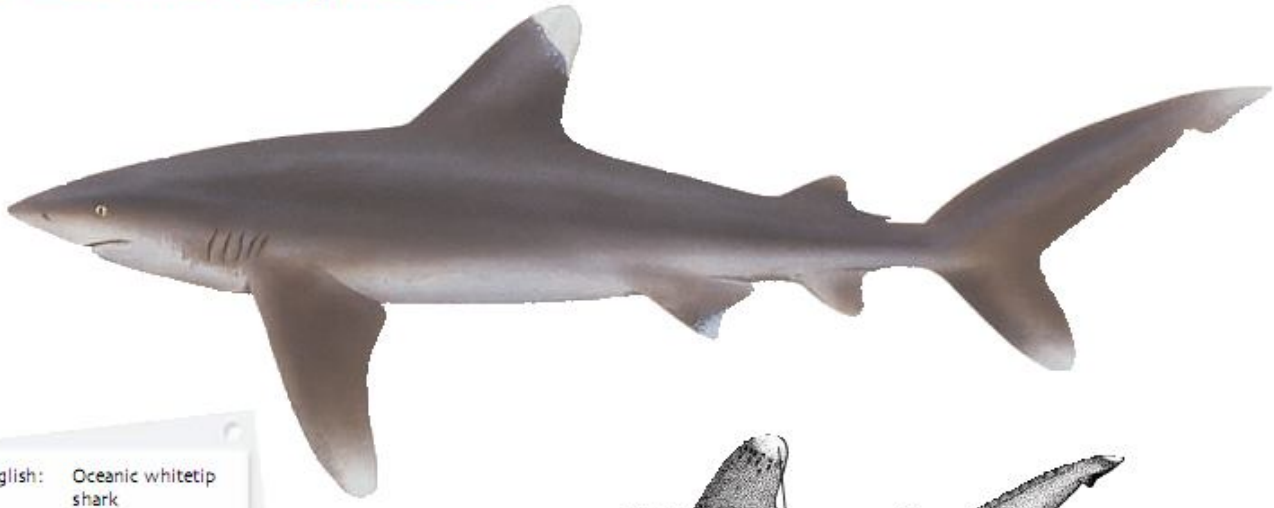
Shape of upper teeth
Forme des dents supérieures



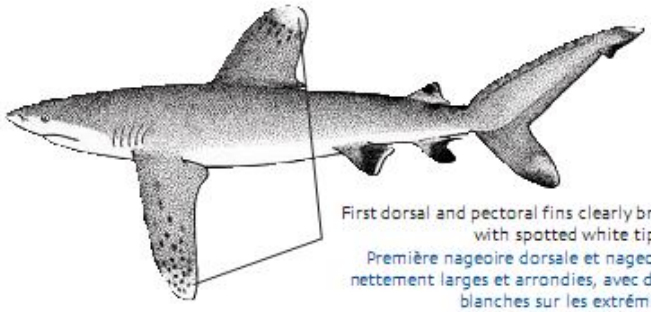
Upper and lower lobes of caudal fin nearly the same length
Lobes supérieur et inférieur de la nageoire caudale à peu près de la même longueur

Carcharhinus longimanus

SPECIES CODE: OCS



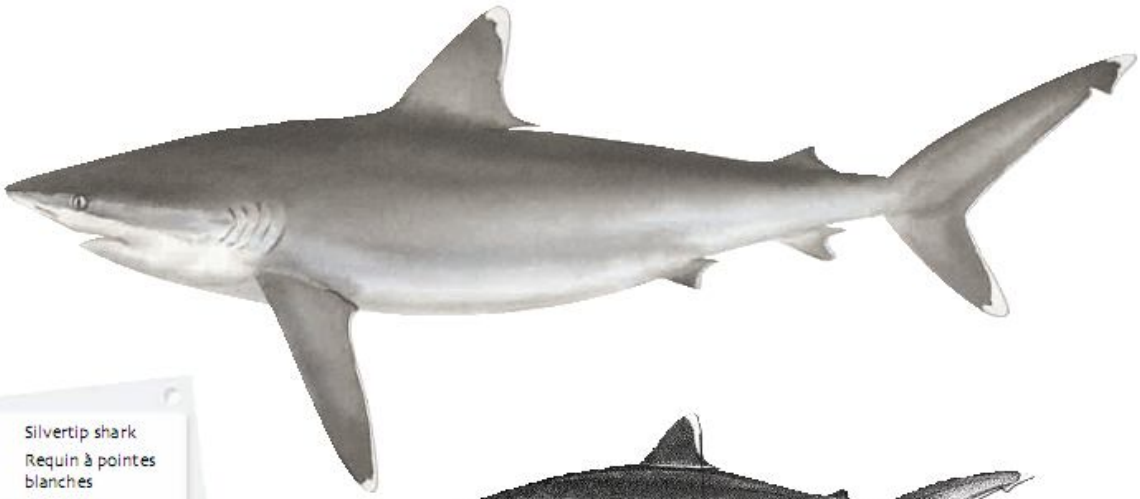
English: Oceanic whitetip shark
French: Requin océanique
Japanese: Yogore
Hawaiian: Mano nigano
Local:



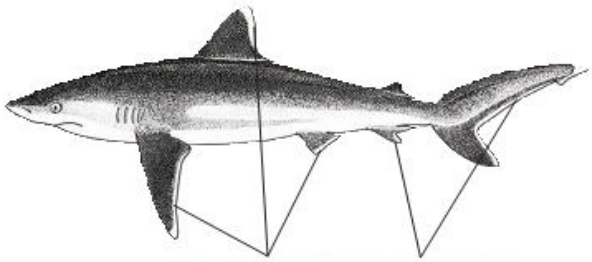
First dorsal and pectoral fins clearly broad and rounded, with spotted white tips
Première nageoire dorsale et nageoires pectorales nettement larges et arrondies, avec des petites taches blanches sur les extrémités

Carcharhinus albimarginatus

SPECIES CODE: ALS



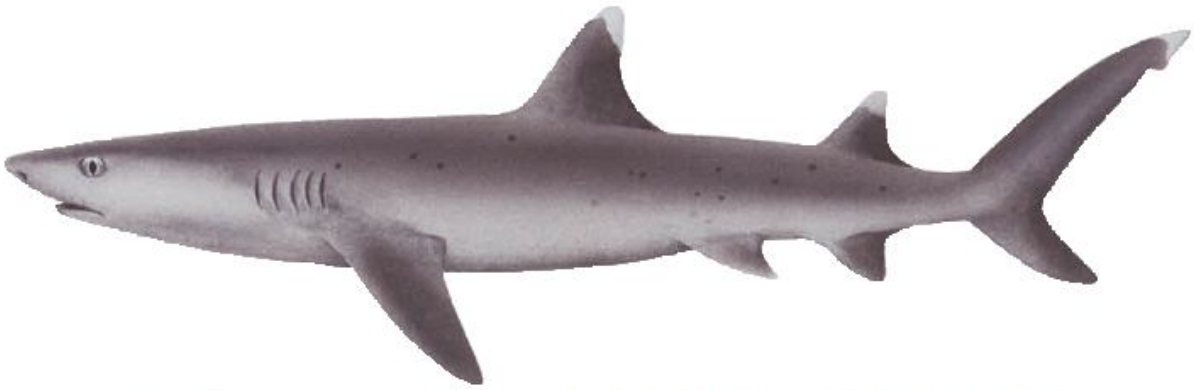
English: Silvertip shark
French: Requin à pointes blanches
Japanese: Tsumajiro
Local:



Back edge (not just tips) of all fins white
Bords postérieurs (pas seulement les extrémités) de toutes les nageoires blancs

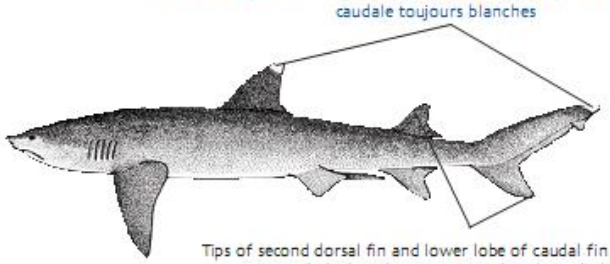
Triaenodon obesus

SPECIES CODE: CCQ



English: Whitetip reef shark
French: Requin corail
Japanese: Nemuribuka
Hawaiian: Mano lalakea
Local:

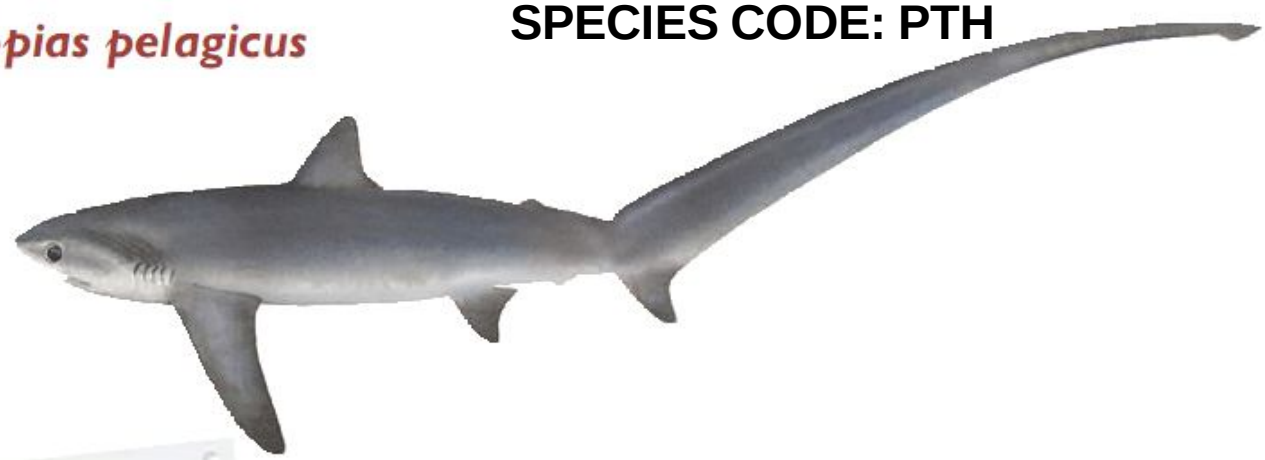
Tips of first dorsal fin and upper lobe of caudal fin always white
Pointes de la première nageoire dorsale et du lobe supérieur de la nageoire caudale toujours blanches



Tips of second dorsal fin and lower lobe of caudal fin sometimes white
Pointes de la deuxième nageoire dorsale et du lobe inférieur de la nageoire caudale parfois blanches

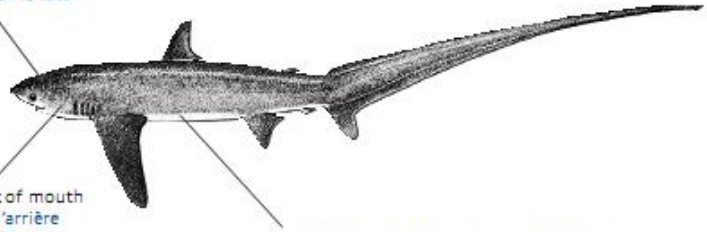
Alopias pelagicus

SPECIES CODE: PTH



English: Pelagic thresher
French: Renard pélagique
Japanese: Nitari
Hawaiian: Mano hi'uka, Thresher shark
Local:

No groove on head
Pas de sillon sur la tête



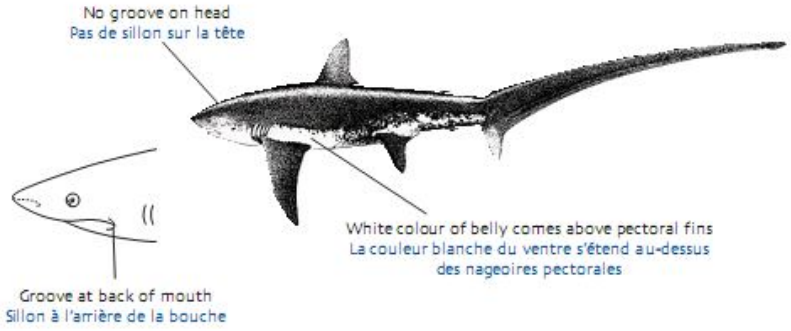
No groove at back of mouth
Pas de sillon à l'arrière de la bouche

Light belly colour only below pectoral fins
Ventre de couleur claire uniquement sous les nageoires pectorales

Alopias vulpinus

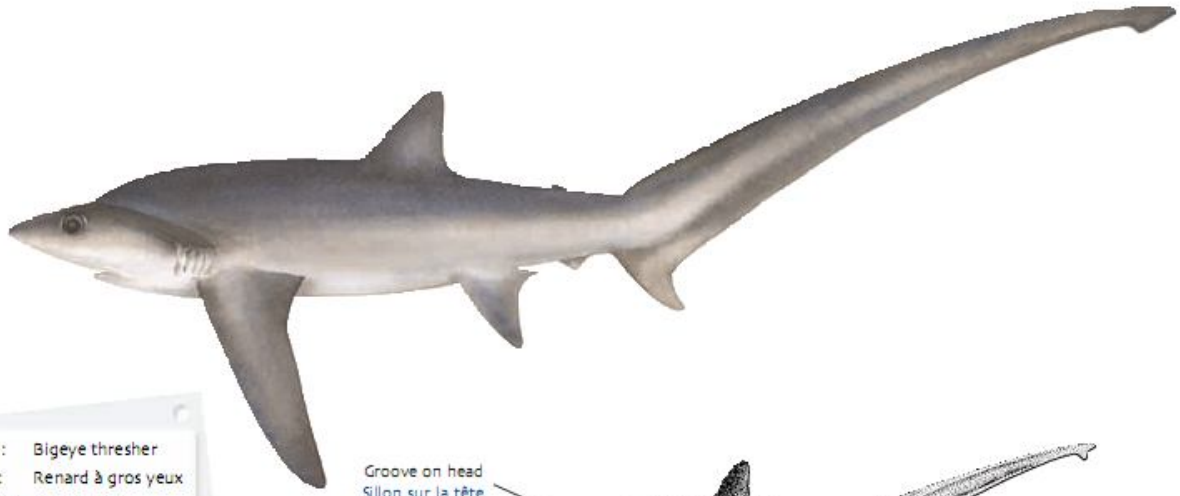
SPECIES CODE: ALV

English: Common thresher, Thintail thresher
French: Renard
Japanese: Ma-onaga, Onaga zame
Hawaiian: Thresher shark
Local:

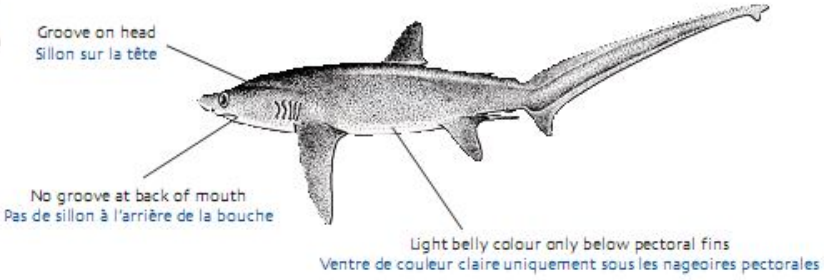


Alopias superciliosus

SPECIES CODE: BTH

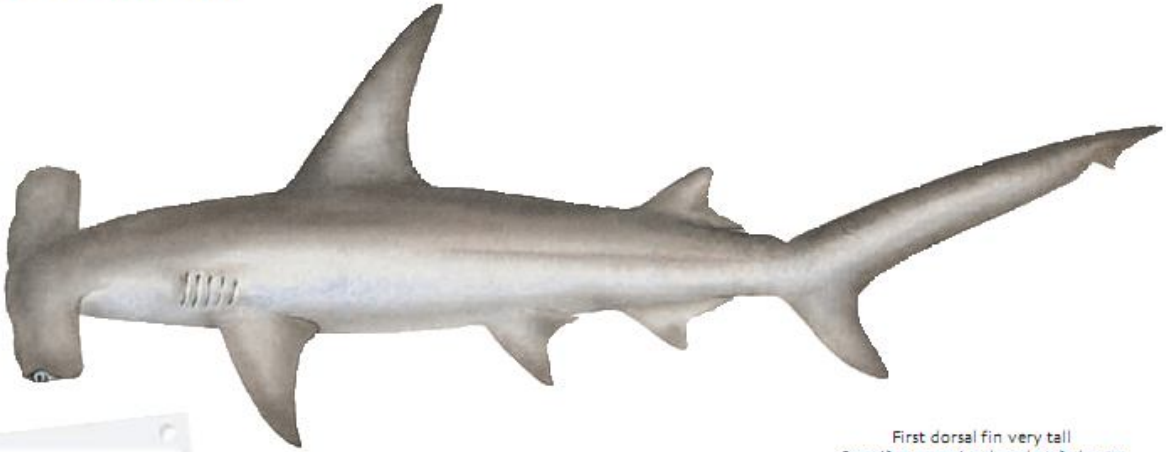


English: Bigeye thresher
French: Renard à gros yeux
Japanese: Hachiware
Hawaiian: Mano hi'uka, Thresher shark
Local:



Sphyrna mokarran

SPECIES CODE: SPK



English: Great hammerhead
French: Grand requin marteau
Japanese: Hirashumokuzame
Local:

Front of head nearly straight with slight dent in middle
Avant de la tête presque rectiligne, légèrement incurvé au milieu

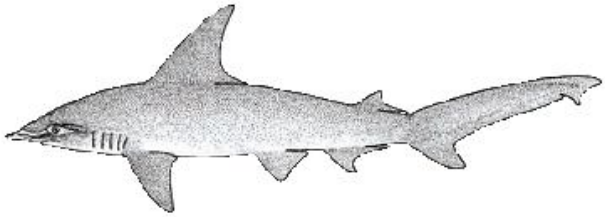
First dorsal fin very tall
Première nageoire dorsale très haute

Eusphyra blochii

SPECIES CODE: EUB

English: Winghead shark
French: Requin marteau planeur
Japanese: Indoshumokuzame
Local:

Head width nearly half of body length
Largeur de la tête égale à près de la moitié de la longueur du corps

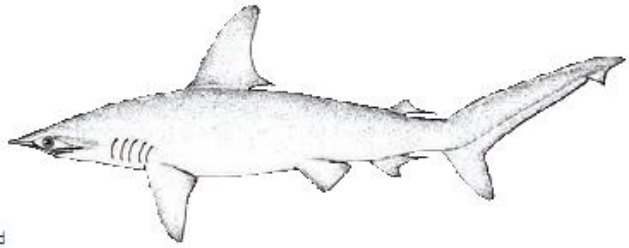


Sphyrna lewini

SPECIES CODE: SPL

English: Scalloped hammerhead
French: Requin marteau halicorne
Japanese: Akashumokuzame
Hawaiian: Mano kihikihi
Local:

Front of head curved with middle dent and a distinct lobe at each end
Avant de la tête courbe, incurvé au milieu, et lobe distinct à chaque extrémité

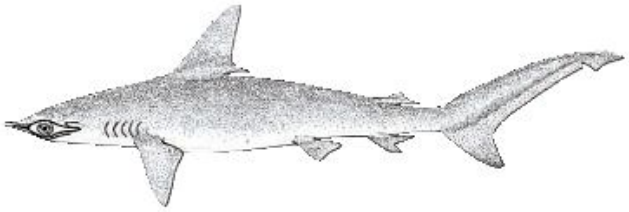


Sphyrna zygaena

SPECIES CODE: SPZ

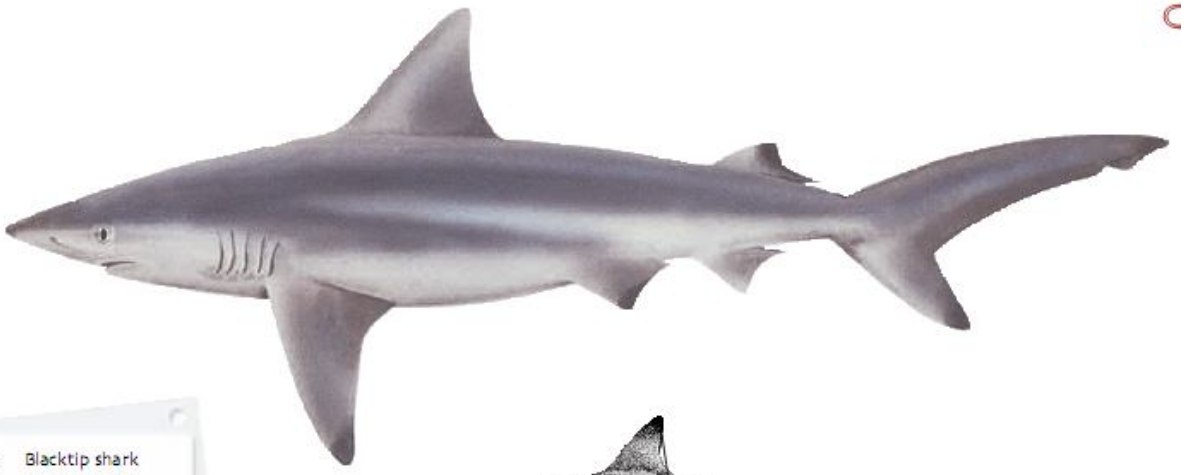
English: Smooth hammerhead
French: Requin marteau commun
Japanese: Shiroshumokuzame
Hawaiian: Mano kihikihi
Local:

Front of head curved with no middle dent
Avant de la tête courbe, non incurvé au milieu

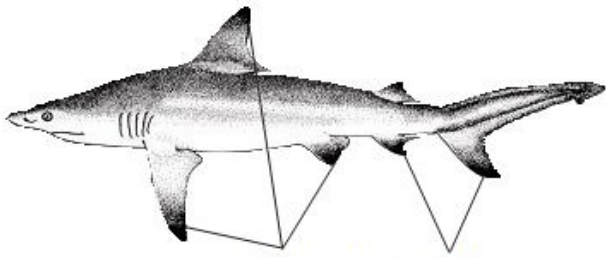


Carcharhinus limbatus

SPECIES CODE: CCL



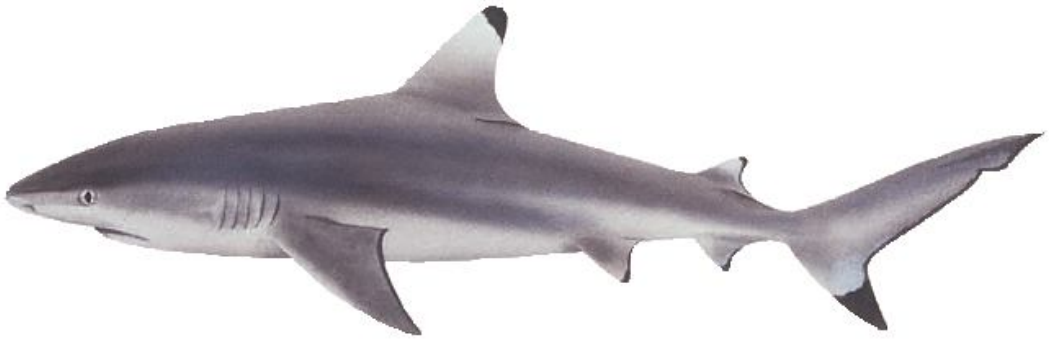
English: Blacktip shark
French: Requin bordé
Japanese: Kamasutogarizame
Hawaiian: Blackfin shark
Local:



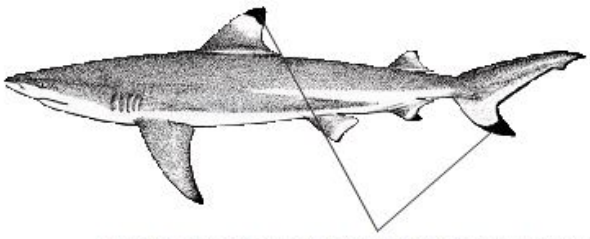
Dark-to-black tips on most fins
Pointes foncées à noires sur presque toutes les nageoires

Carcharhinus melanopterus

SPECIES CODE: BLR



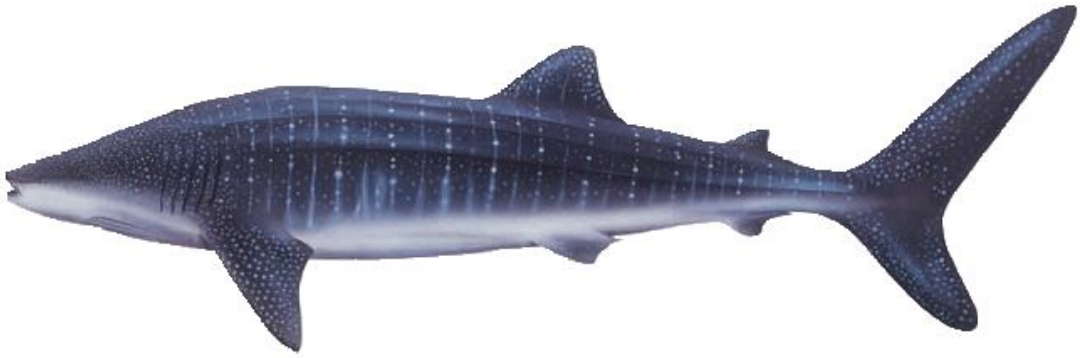
English: Blacktip reef shark
French: Requin à pointes noires
Japanese: Tsumaguro
Hawaiian: Mano pa'ele
Local:



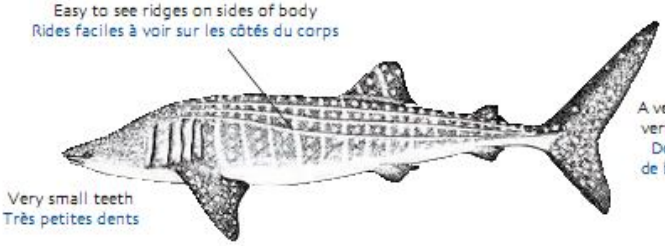
Distinct black markings on tips of first dorsal fin and lower lobe of caudal fin
Marques noires distinctes sur les pointes de la première nageoire dorsale et du lobe inférieur de la nageoire caudale

Rhincodon typus

SPECIES CODE: RHN



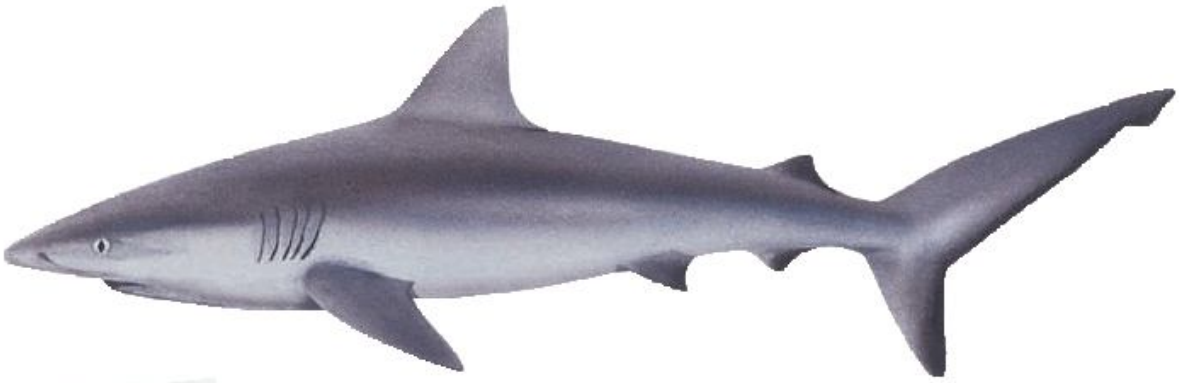
English: Whale shark
French: Requin baleine
Japanese: Jinbeizame
Local:



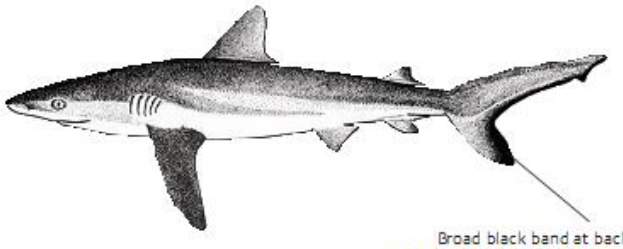
Maximum length: 18 m
Taille maximum : 18 m

Carcharhinus amblyrhynchos

SPECIES CODE: AML



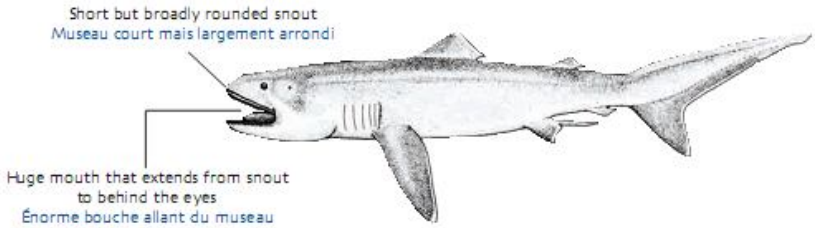
English: Grey reef shark
French: Requin dagsit, Requin gris de récif
Japanese: Oguromejirozame, Hairomejirozame
Hawaiian: Mano lalakea
Local:



Megachasma pelagios

SPECIES CODE: LMP

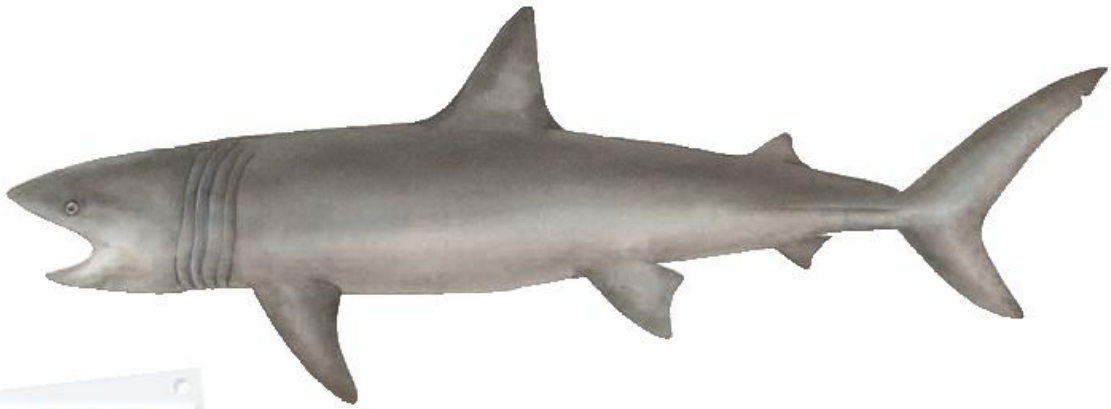
English: Megamouth shark
French: Requin grande gueule
Japanese: Megamausu
Local:



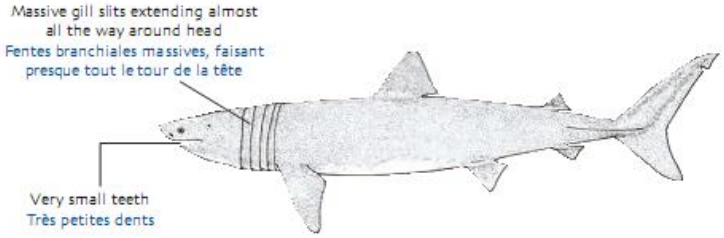
Maximum length: 6 m
Taille maximum : 6 m

Cetorhinus maximus

SPECIES CODE: BSK



English: Basking shark
French: Pèlerin
Japanese: Ubazame
Local:

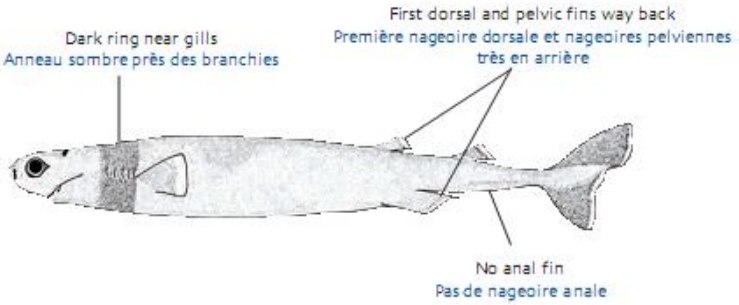


Maximum length: 12 m
Taille maximum : 12 m

Isistius brasiliensis

SPECIES CODE: ISB

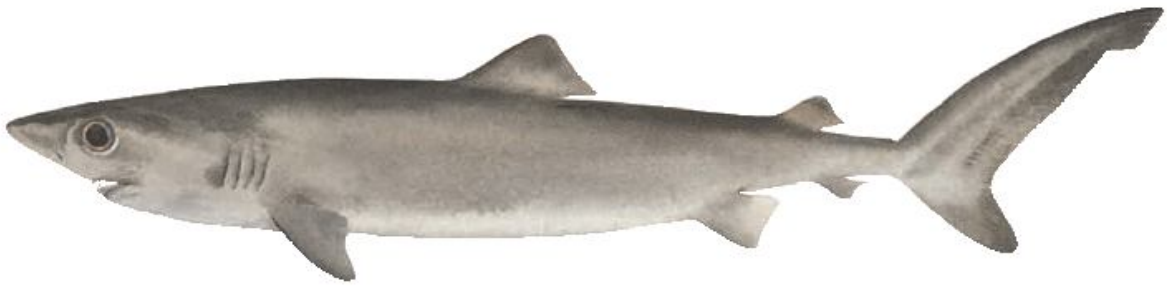
English: Cookie cutter shark
French: Squalelet féroce
Japanese: Darumazame
Hawaiian: Cookie cutter shark
Local:



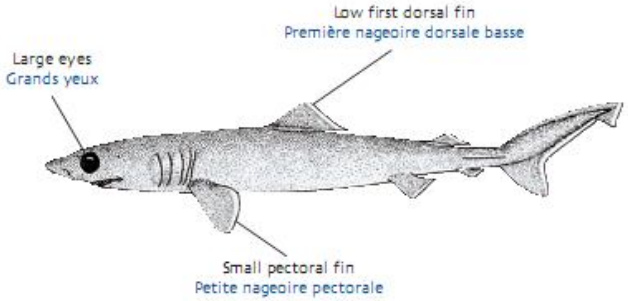
Maximum length: 50 cm
Taille maximum : 50 cm

Pseudocarcharias kamoharai

SPECIES CODE: PSK



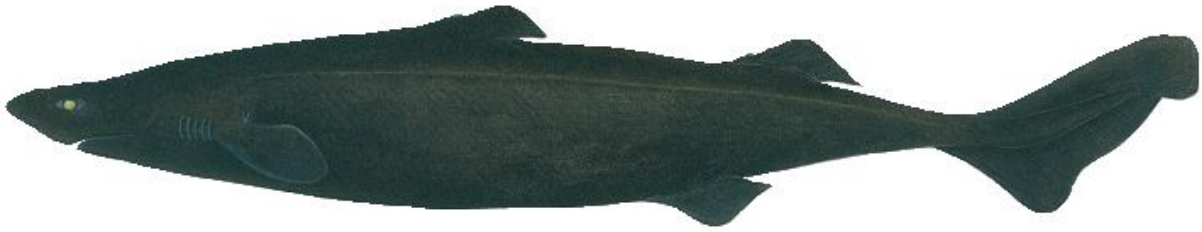
English: Crocodile shark
French: Requin crocodile
Japanese: Mizuwani, Shikkui, Tobituki
Local:



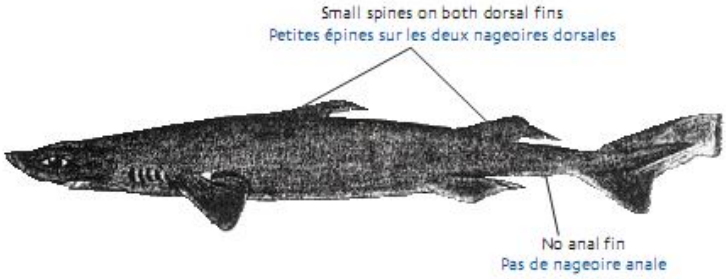
Maximum length: 110 cm
Taille maximum : 110 cm

Scymnodon squamulosus

SPECIES CODE: SSQ



English: Velvet dogfish
French: Squale grogneur velouté
Japanese: Birodozame
Local:

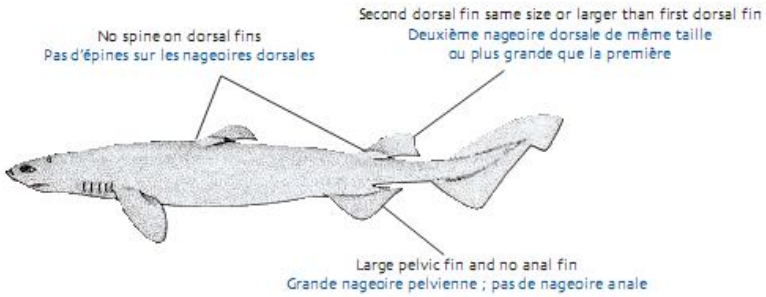


Maximum length: 85 cm
Taille maximum : 85 cm

Dalatias licha

SPECIES CODE: SCK

English: Kitefin shark, Seal shark
French: Squale liche
Japanese: Yoroizame
Local:



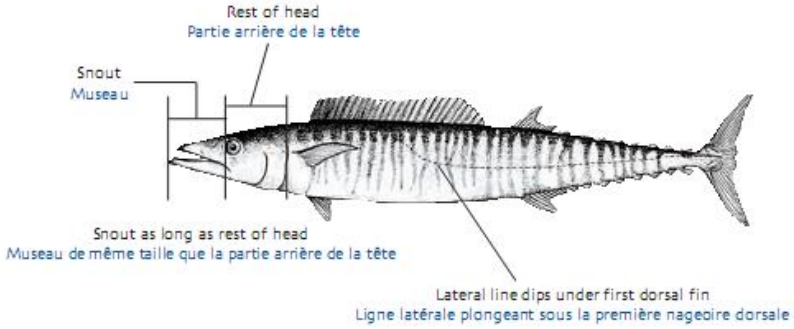
Maximum length: 160 cm
Taille maximum : 160 cm

OTHER FISH SPECIES

Acanthocybium solandri

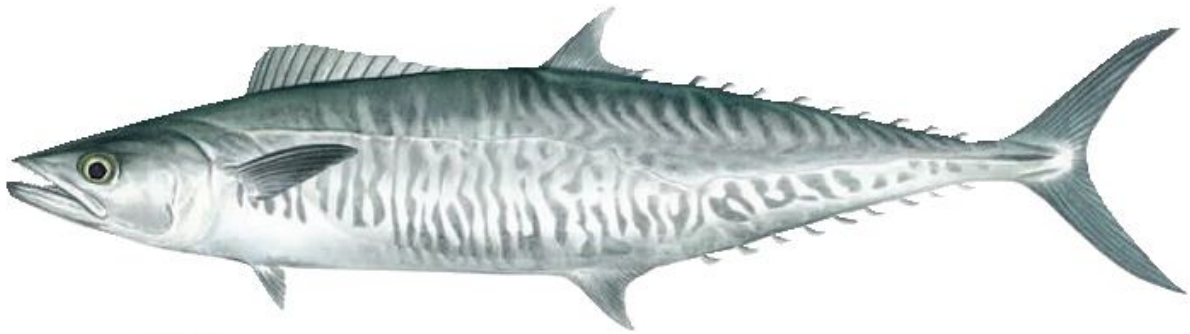
SPECIES CODE: WAH

English: Wahoo
French: Thazard-bâtard
Japanese: Kamasu-sawara
Hawaiian: Ono
Local:

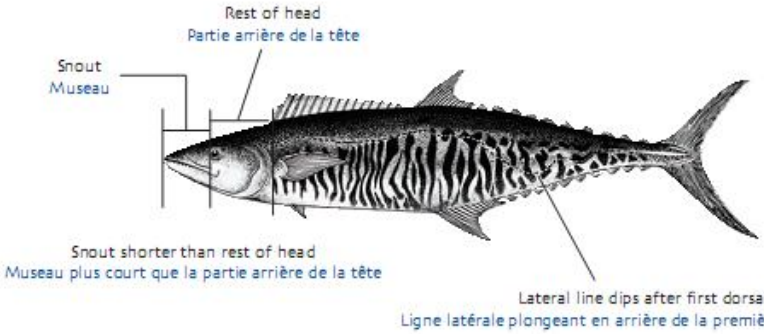


Scomberomorus commerson

SPECIES CODE: COM



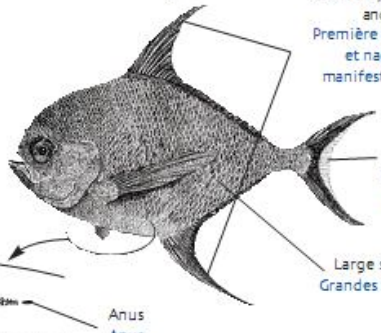
English: Narrow-barred Spanish mackerel
French: Thazard rayé indo-pacifique
Japanese: Yokoshima-sawara
Local:

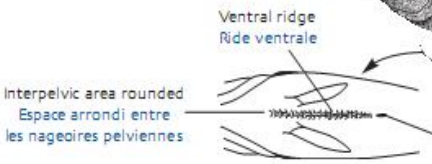


Taractichthys steindachneri

SPECIES CODE: TST

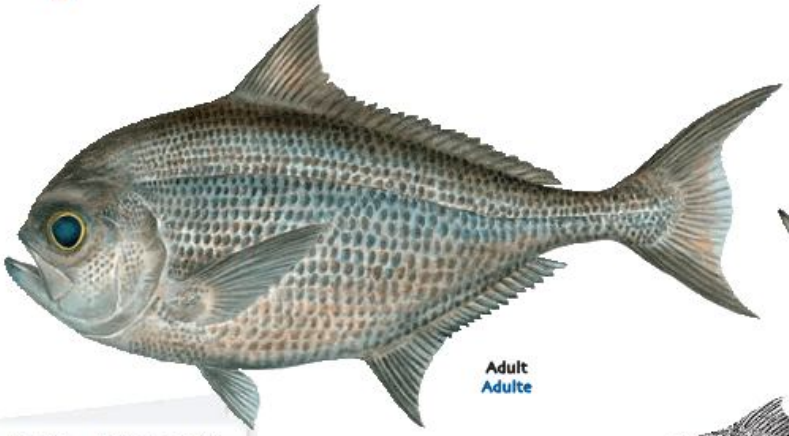
English: Sickle pomfret
French: Castagnole fauchoir, Brème noire
Japanese: Hirejiro-manzai-uo
Hawaiian: Monchong, Pomfret
Local:





Eumegistus illustris

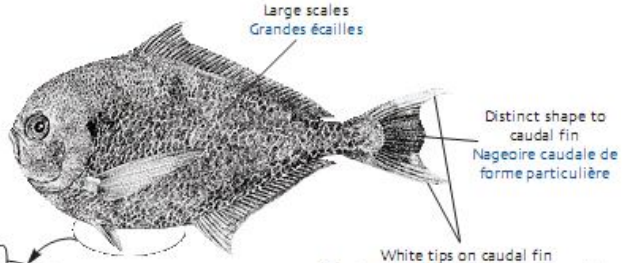
SPECIES CODE: EBS

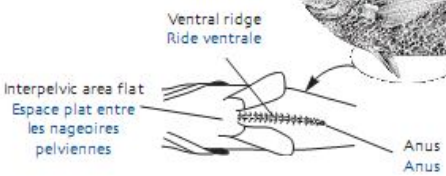


Juvenile (to 30 cm)
Juvénile (jusqu'à 30 cm)

Adult
Adulte

English: Brilliant pomfret, Lustrous pomfret
French: Brème noire brillante
Japanese: Chikame-echiopia
Hawaiian: Monchong, Pomfret
Local:

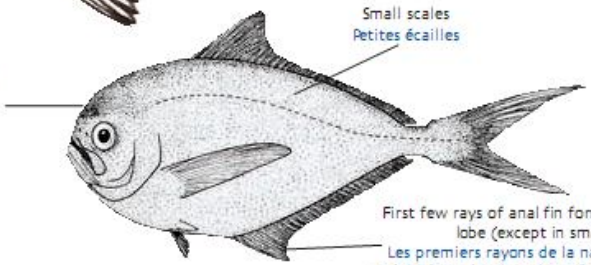




Brama brama

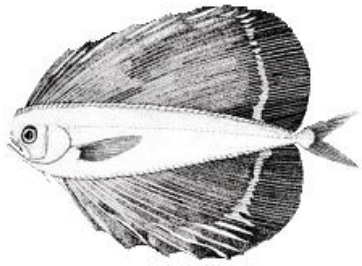
SPECIES CODE: POA

English: Atlantic pomfret, Ray's bream
French: Grande castagnole
Japanese: Echiopia, Shimagatsuo
Local:

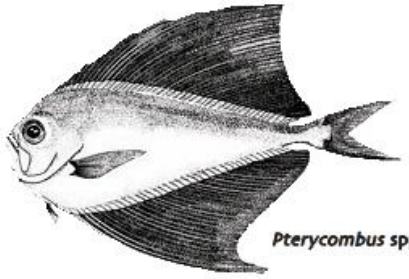


Bramidae (other)

SPECIES CODE: BRA



Pteraclis spp.



Pterycombus spp.

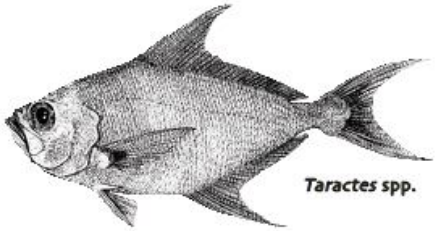
Species in this family have:

- Angle of jaw very slanted
- Single dorsal fin
- Caudal fin of adults strongly forked

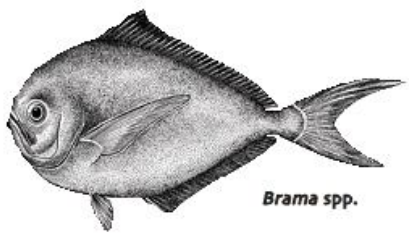
Caractéristiques des espèces de cette famille :

- Angle très prononcé de la mâchoire
- Une seule nageoire dorsale
- Nageoire caudale des adultes très fourchue

English: Other pomfrets and fanfishes
French: Autres Bramidae
Japanese: Shima-gatuo
Hawaiian: Monchong
Local:



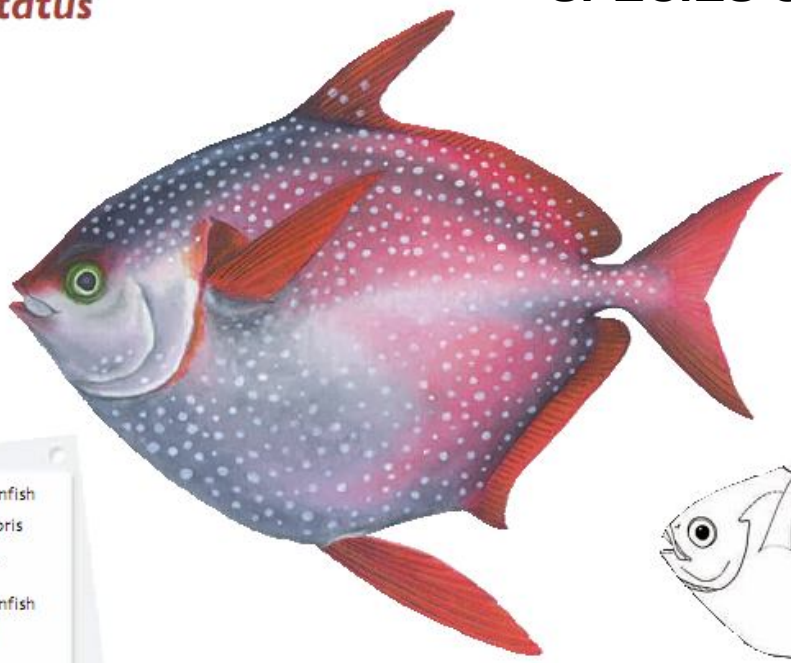
Taractes spp.



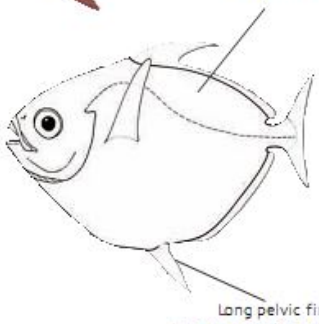
Brama spp.

SPECIES CODE: LAG

Lampris guttatus

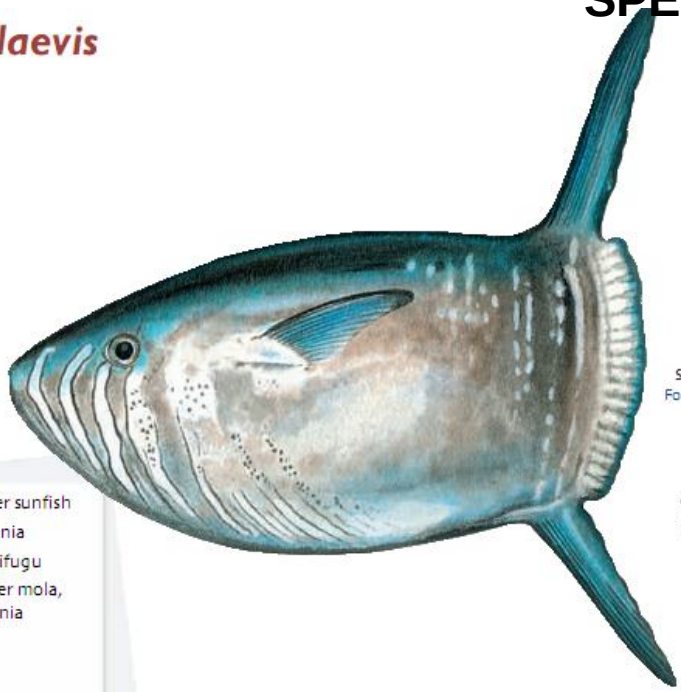


English: Opah, Moonfish
French: Opah, Lampris
Japanese: Akamanbo, Mandai
Hawaiian: Opah, Moonfish Mamendai
Local:

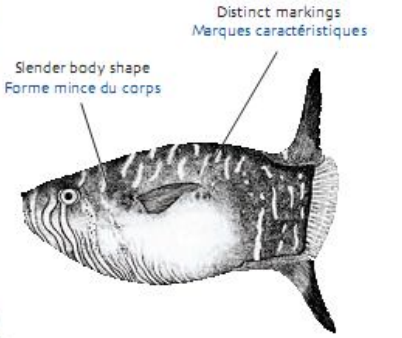


SPECIES CODE: RZV

Ranzania laevis



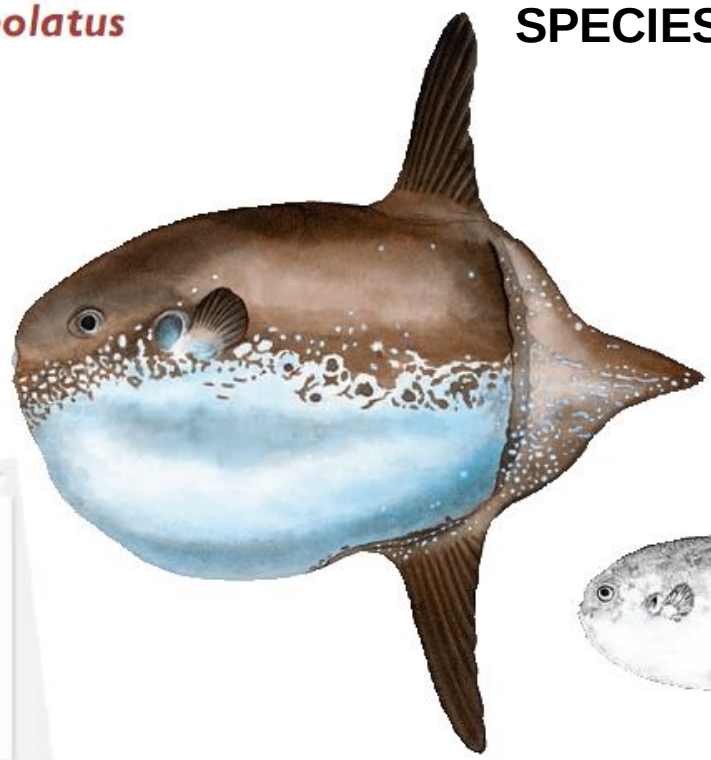
English: Slender sunfish
French: Ranzania
Japanese: Kusabifugu
Hawaiian: Slender mola, Ranzania
Local:

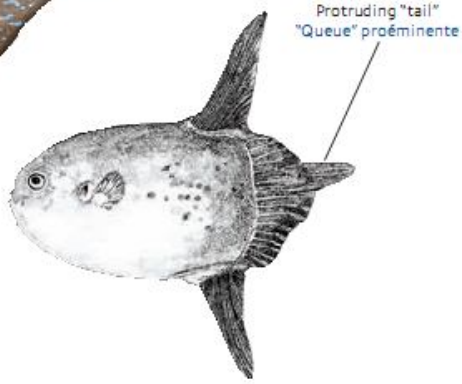


Maximum length: 80 cm
Taille maximum : 80 cm

Masturus lanceolatus

SPECIES CODE: MRW

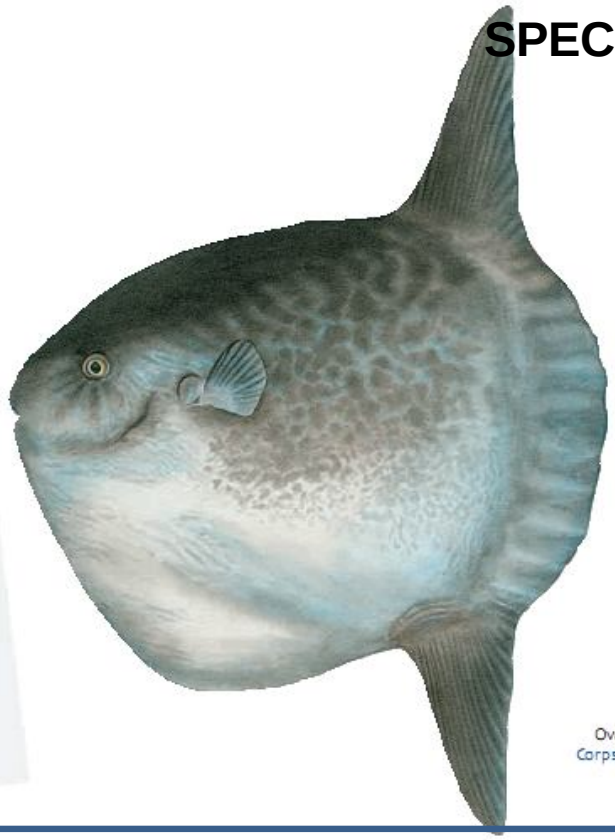


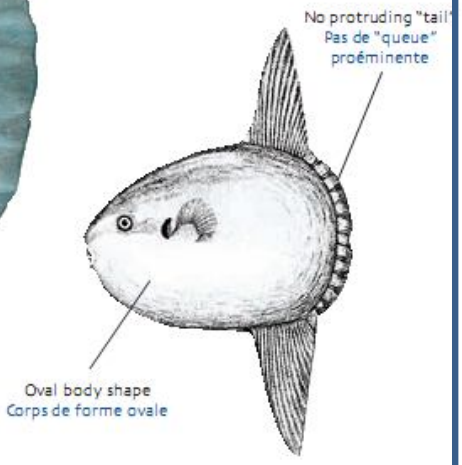


English: Sharptail mola, Sharptail sunfish
French: Poisson-lune à queue pointue
Japanese: Yarimanbo
Hawaiian: Mola, Sunfish
Local:

Mola mola

SPECIES CODE: MOX

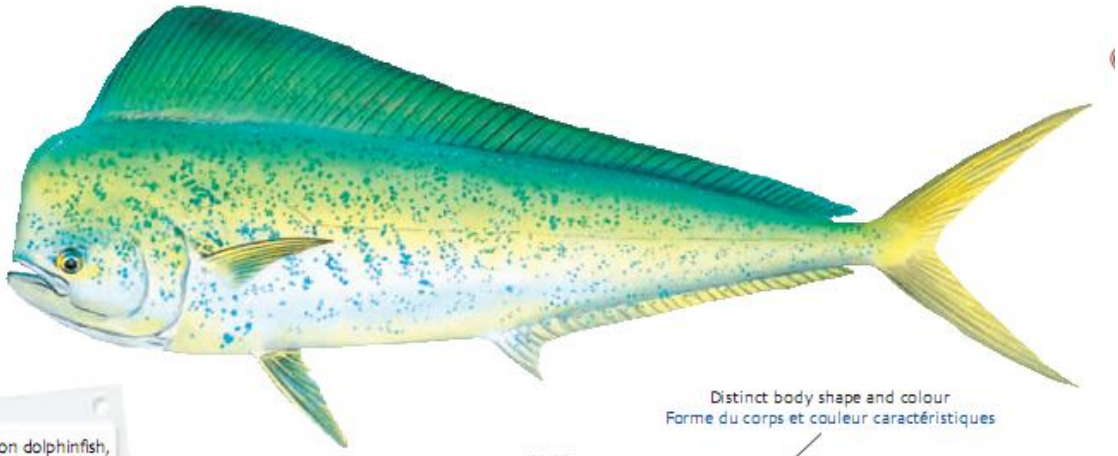




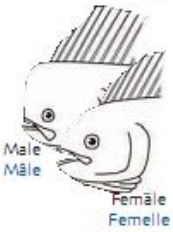
English: Ocean sunfish
French: Poisson-lune
Japanese: Manbo
Hawaiian: Mola mola, Makua, Sunfish
Local:

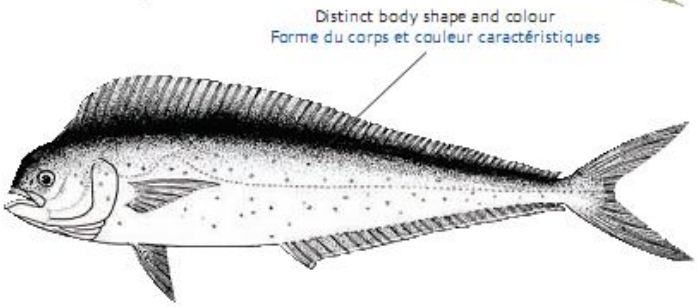
Coryphaena hippurus

SPECIES CODE: DOL



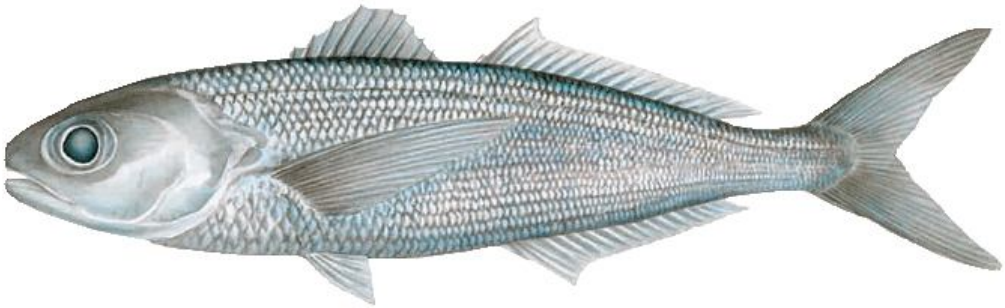
English: Common dolphinfish, Mahi mahi
French: Coryphène commune, Mahi mahi
Japanese: Shiira, Toohyaku
Hawaiian: Mahimahi, Oma, Lapa
Local:



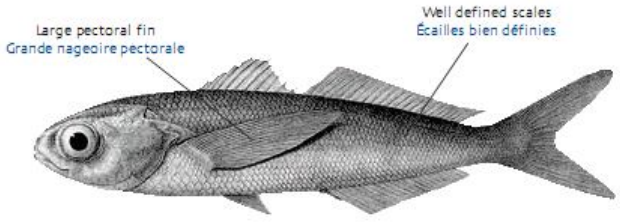


Cubiceps gracilis

SPECIES CODE: CBG



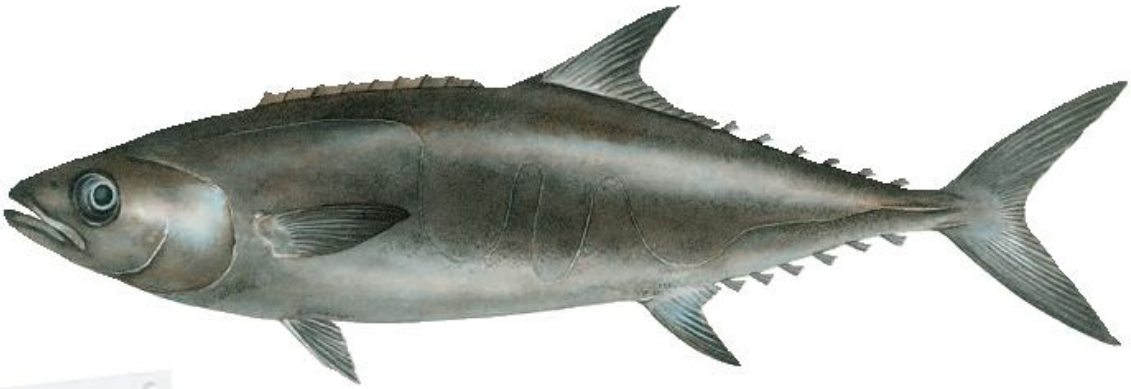
English: Driftfish
French: Dérivant
Japanese: Boozukonnyaku-zoku
Local:



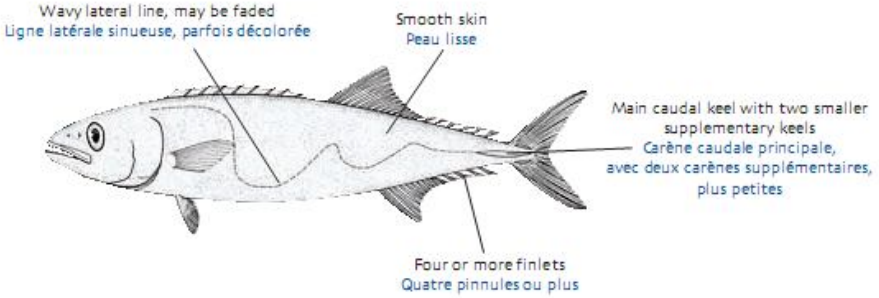
Maximum length: 107 cm
Taille maximum : 107 cm

Lepidocybium flavobrunneum

SPECIES CODE: LEC

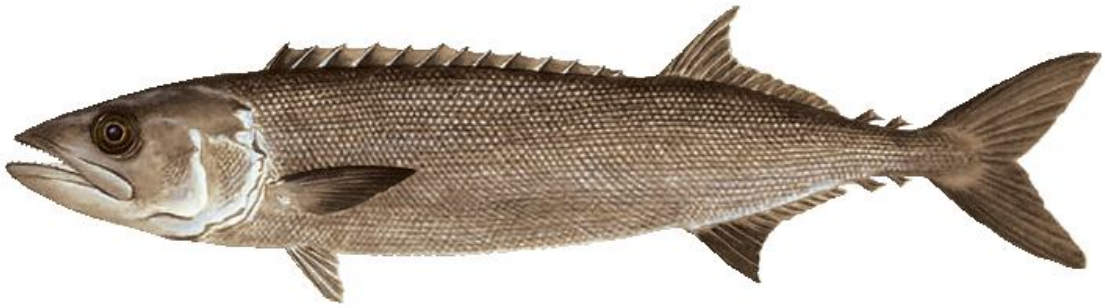


English: Escolar
French: Escolier noir
Japanese: Aburasokomutsu
Hawaiian: Smooth-skin walu, Hawaiian butterfish
Local:

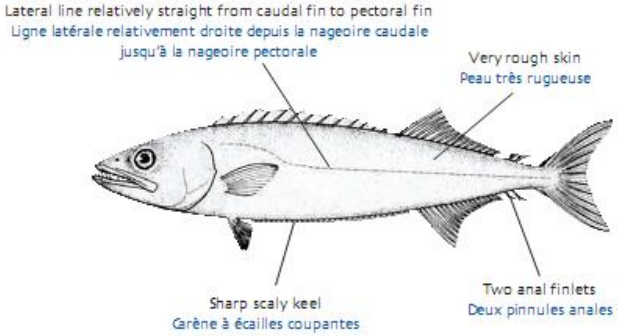


Ruvettus pretiosus

SPECIES CODE:OIL



English: Oilfish
French: Rouvet
Japanese: Baramutsu
Hawaiian: Walu, Rough walu, Hawaiian butterfish
Local:



Promethichthys prometheus

SPECIES CODE: PRP

English: Roudi escolar, Snake mackerel
French: Escolier clair
Japanese: Kuroshibikamasu
Hawaiian: Snake mackerel
Local:

Small pelvic fin, represented by a single very small spine and soft ray
Petite nageoire pelvienne, représentée par une seule épine très petite et un rayon mou

Single lateral line
Ligne latérale unique

Gempylus serpens

SPECIES CODE: GES

English: Snake mackerel
French: Escolier serpent
Japanese: Kurotachikamasu
Hawaiian: Snake mackerel
Local:

First dorsal fin very long, second dorsal fin short and followed by five or six finlets
Première nageoire dorsale très longue, deuxième nageoire dorsale courte, suivie de cinq ou six pinnules

Very small pelvic fin
Très petite nageoire pelvienne

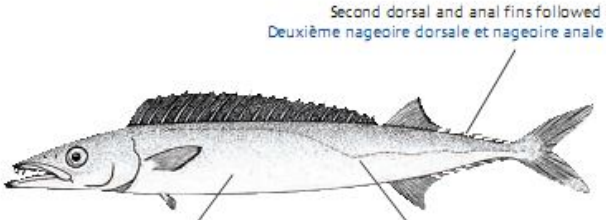
Two distinct lateral lines
Deux lignes latérales caractéristiques

Body very long and skinny
Corps très allongé et étroit

Thyrsites atun

SPECIES CODE: SNK

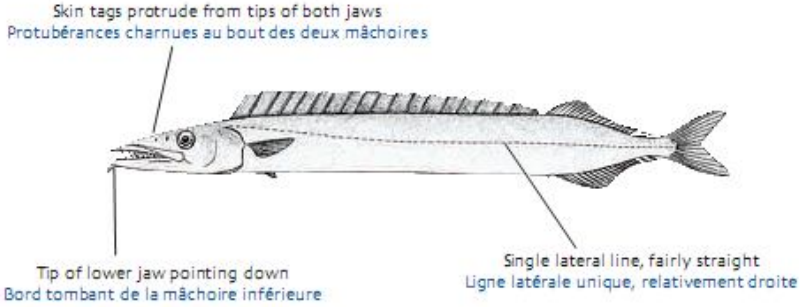
English: Snoek, Barracouta
French: Escolier
Japanese: Ooshibi-kamasu, Barakuta
Local:



Nesiarchus nasutus

SPECIES CODE: NEN

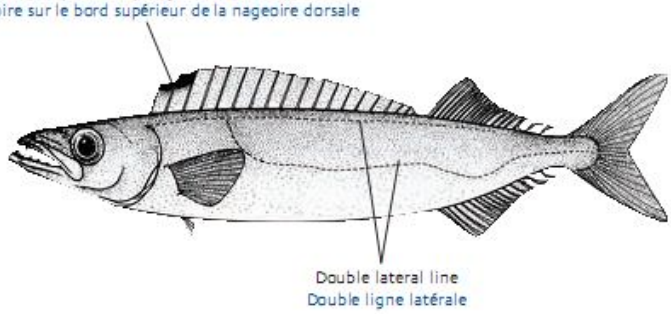
English: Black gemfish
French: Escolier long-nez
Japanese: Hashinagakurotachi
Local:



Rexea solandri

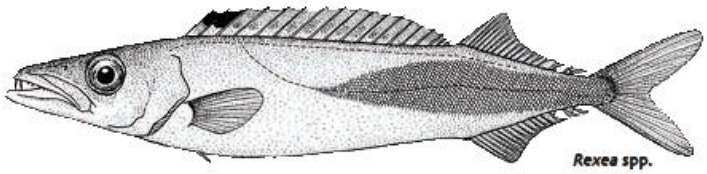
SPECIES CODE: GEM

English: Silver gemfish
French: Escolier tifiati
Japanese: Ookagokamasu
Local:

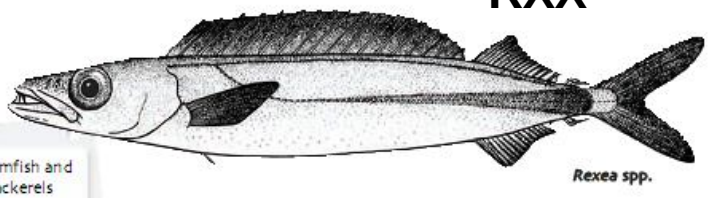


Gempylidae (other)

SPECIES CODE: GEP


Rexea spp.

RXX


Rexea spp.

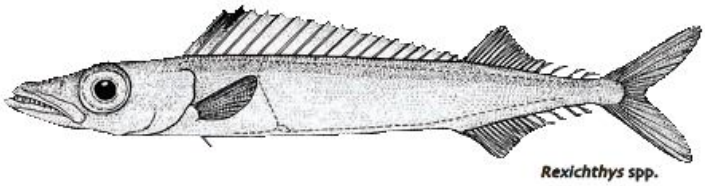
Species in this family have:

- Large mouth with strong teeth
- Two dorsal fins, second shorter than first
- Pelvic fin very small, often just a single spine with a few or no soft rays

Caractéristiques des espèces de cette famille :

- Grande gueule à dents puissantes
- Deux nageoires dorsales, la deuxième plus courte que la première
- Nageoire pelvienne très petite, souvent formée d'une seule épine, avec quelques rayons mous ou pas du tout

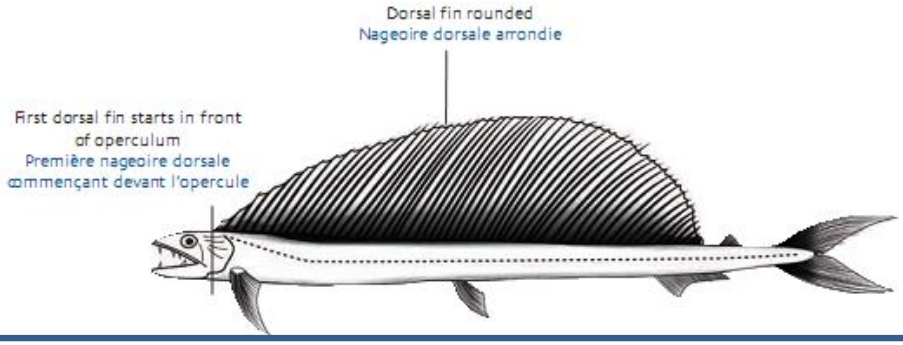
English: Other gemfish and snake mackerels
French: Autres Gempylidae
Japanese: Kurotachikamasu
Local:


Rexichthys spp.

Alepisaurus brevirostris

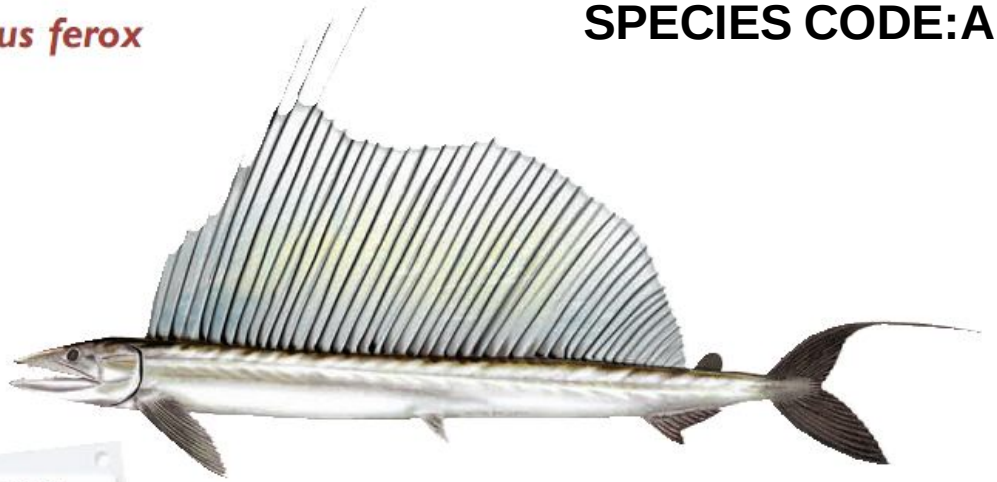
SPECIES CODE: ALO

English: Short snouted (shortnose) lancetfish
French: Lancier à nez court
Japanese: Tsumarimizuuo
Hawaiian: Alepisaurus
Local:

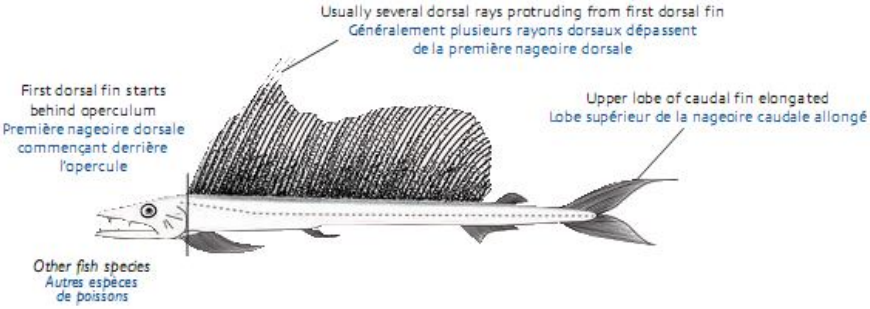


Alepisaurus ferox

SPECIES CODE: ALX

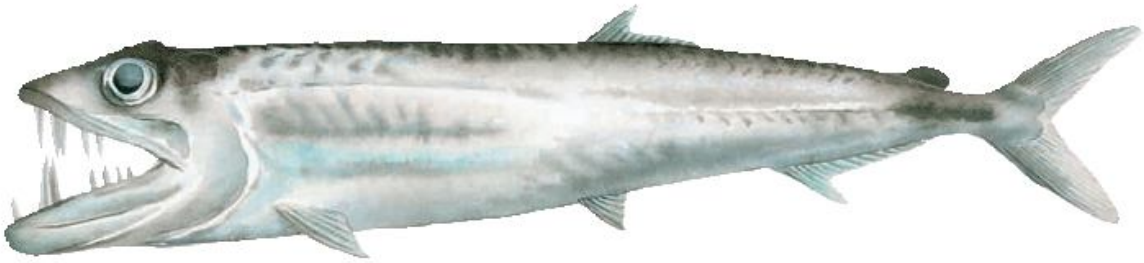


English: Long snouted (longnose) lancetfish
French: Lancier long-nez
Japanese: Mizu-uo, Yoro
Hawaiian: Alepisaurus
Local:

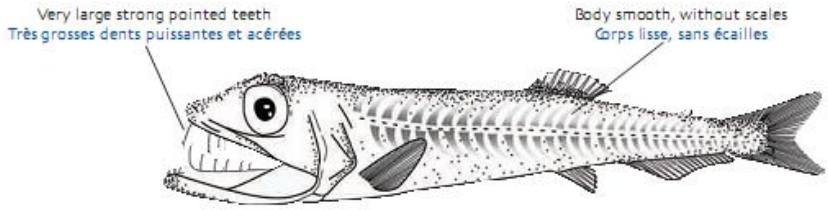


Omosudis lowei

SPECIES CODE: OMW



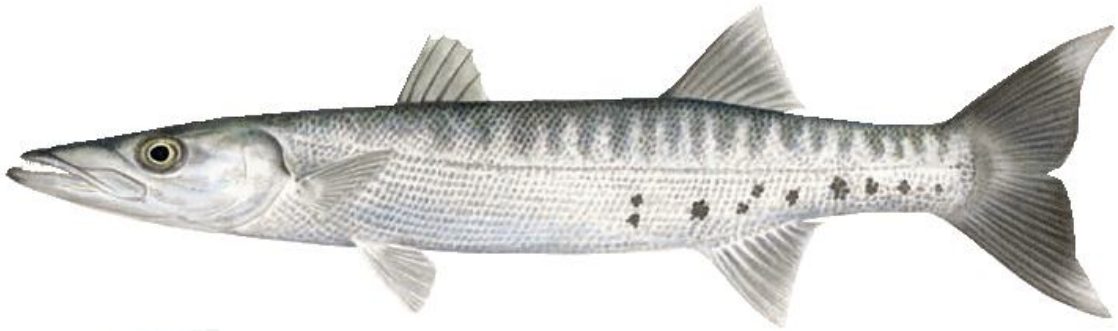
English: Omosudid, Hammerjaw
French: Omosudide
Japanese: Kiba-hadaka
Local:



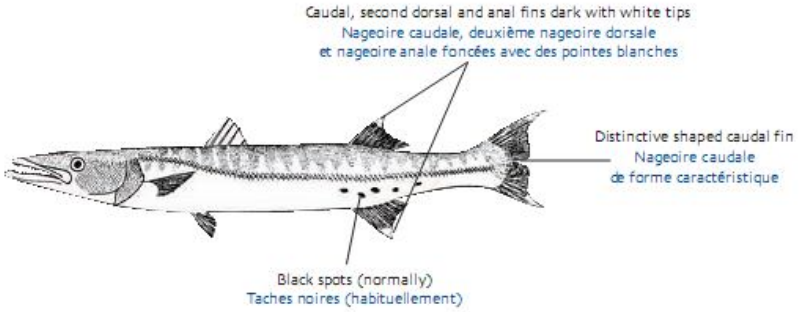
Maximum length: 30 cm
Taille maximum : 30 cm

Sphyraena barracuda

SPECIES CODE: GBA



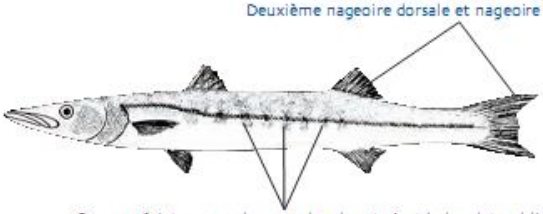
English: Great barracuda
French: Barracuda
Japanese: Oni-kamasu
Hawaiian: Kaku, Barracuda
Local:



Sphyraena jello

SPECIES CODE: BAC

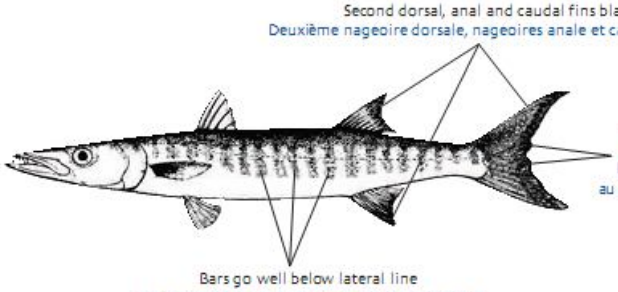
English: Pickhandle barracuda
French: Bécune jello
Japanese: O-kamasu
Local:



Sphyraena qenie

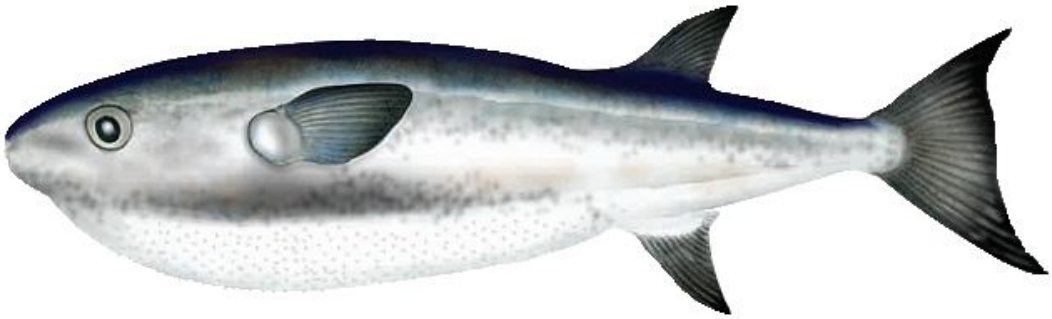
SPECIES CODE:BAB

English: Blackfin barracuda
French: Barracuda à queue noire
Japanese: Burakkufinbarakuda
Local:

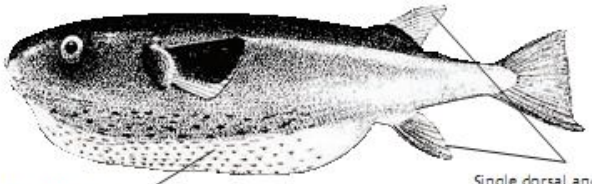


Lagocephalus lagocephalus

SPECIES CODE: LGH



English: Rabbit puffer, Oceanic puffer
French: Compère lièvre
Japanese: Kumasakafugu
Hawaiian: Pelagic puffer
Local:



Rough skin on belly
Peau rugueuse du ventre

Single dorsal and anal fin, roughly in line with each other
Une seule nageoire dorsale et une seule nageoire anale, à peu près dans le même axe

Maximum length: 65 cm
Taille maximum : 65 cm

Grammistes sexlineatus

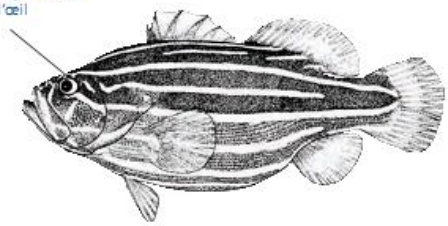
SPECIES CODE: GSE

Adult
Adulte

Juvenile (to 12 cm)
Juvénile (jusqu'à 12 cm)

English: Goldenstriped soapfish, Sixline soapfish
French: Savon rayé d'or
Japanese: Nunosarashi
Local:

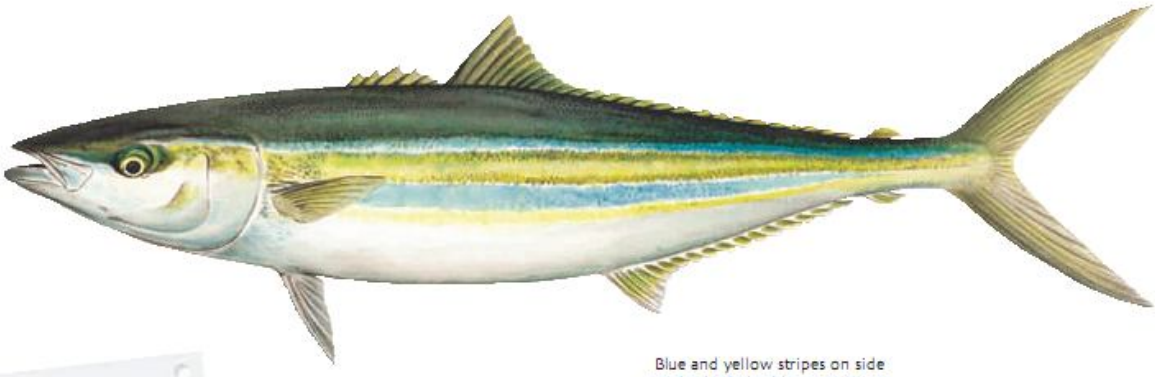
Adult has slight recess above eye
L'adulte présente un léger creux au-dessus de l'œil



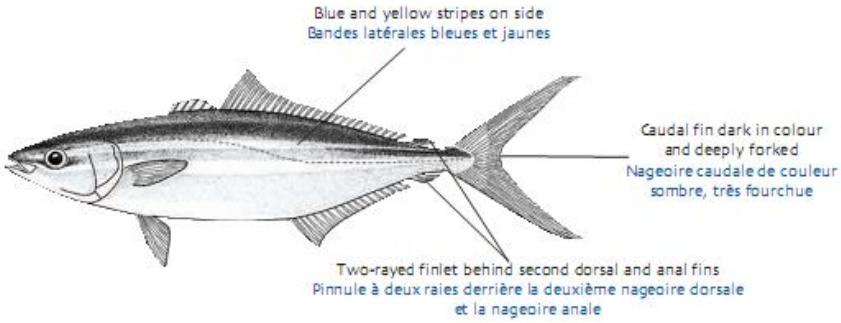
Maximum length: 35 cm
Taille maximum : 35 cm

Elagatis bipinnulata

SPECIES CODE: RRU

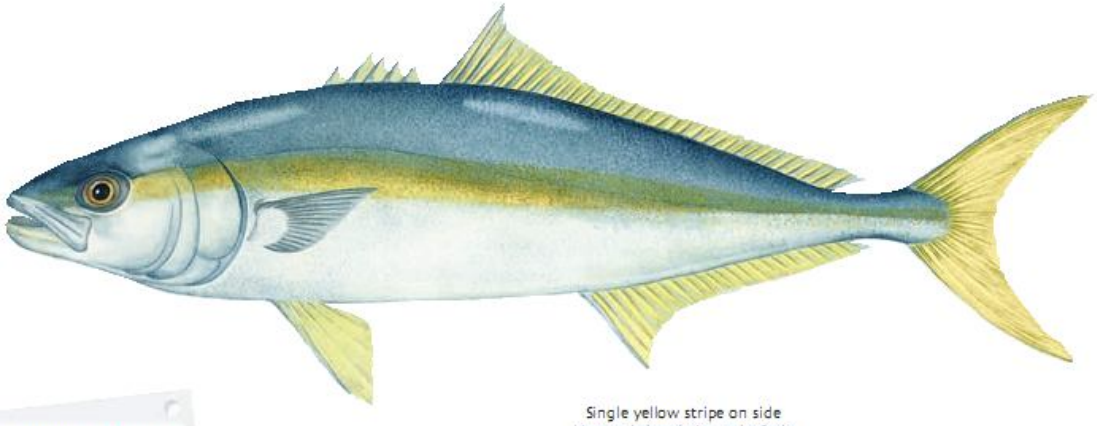


English: Rainbow runner
French: Comète saumon
Japanese: Tsumuburi, Okiburi
Hawaiian: Kamanu, Hawaiian salmon
Local:

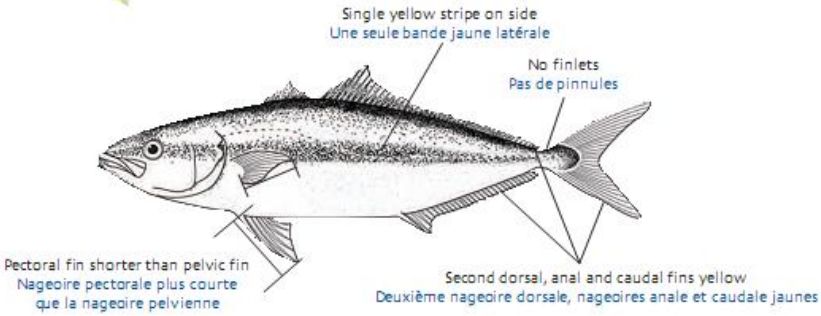


Seriola lalandi

SPECIES CODE: YTC



English: Yellowtail amberjack
French: Sériole chinchard
Japanese: Hiramasa
Local:



Seriola dumerili

SPECIES CODE:AMB

Greater amberjack

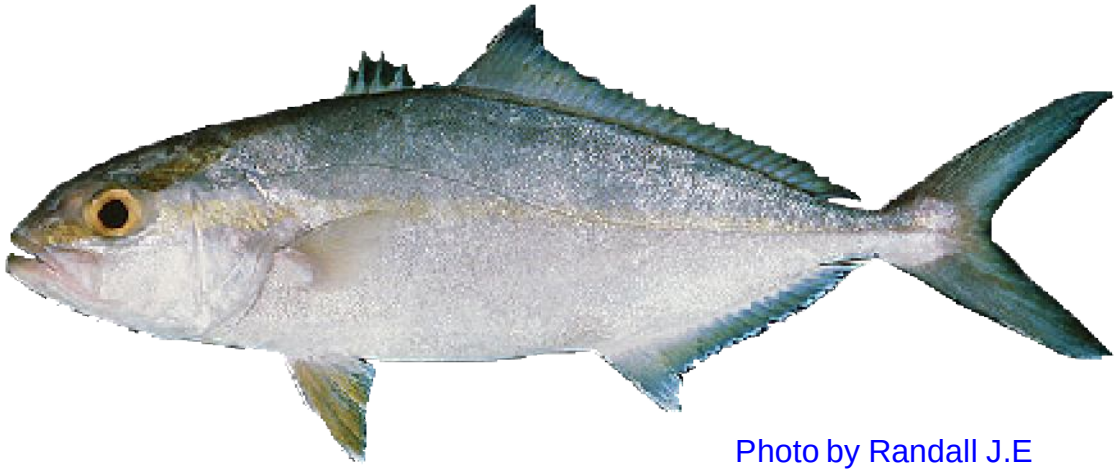


Photo by Randall J.E

Uraspis secunda

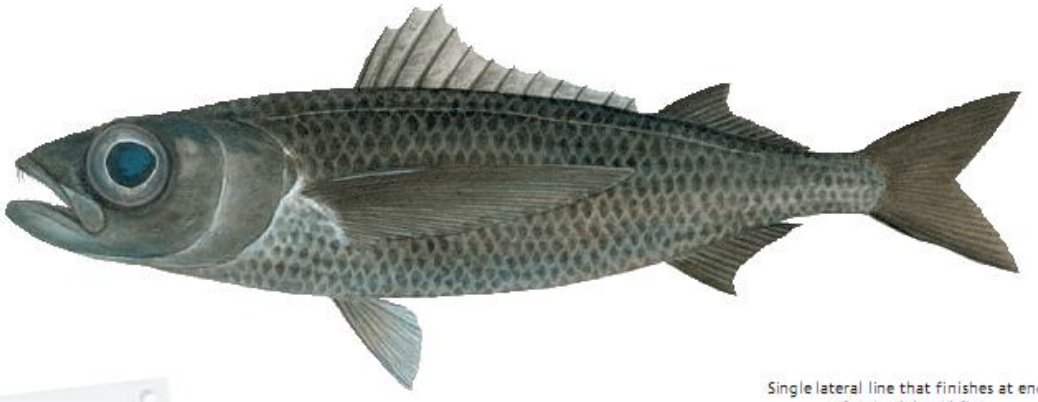
SPECIES CODE:USE

Cottonmouth jack

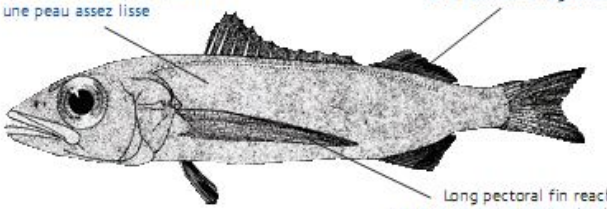
Photo by Cambria Duarte P.M.N.

Scombrolabrax heterolepis

SPECIES CODE: SXH



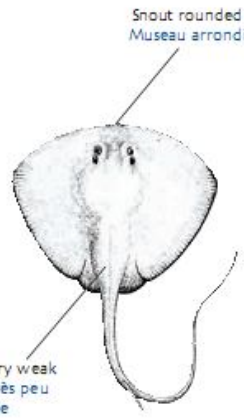
English: Longfin escolar, Black mackerel
French: Escolier aile longue
Japanese: Mukashikurotachi
Local:



Maximum length: 30 cm
Taille maximum : 30 cm

Dasyatis violacea

SPECIES CODE: PLS

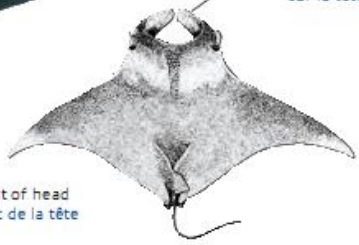


English: Pelagic stingray
French: Pastenague violette
Japanese: Karasu-ei
Hawaiian: Pelagic stingray
Local:

Manta birostris

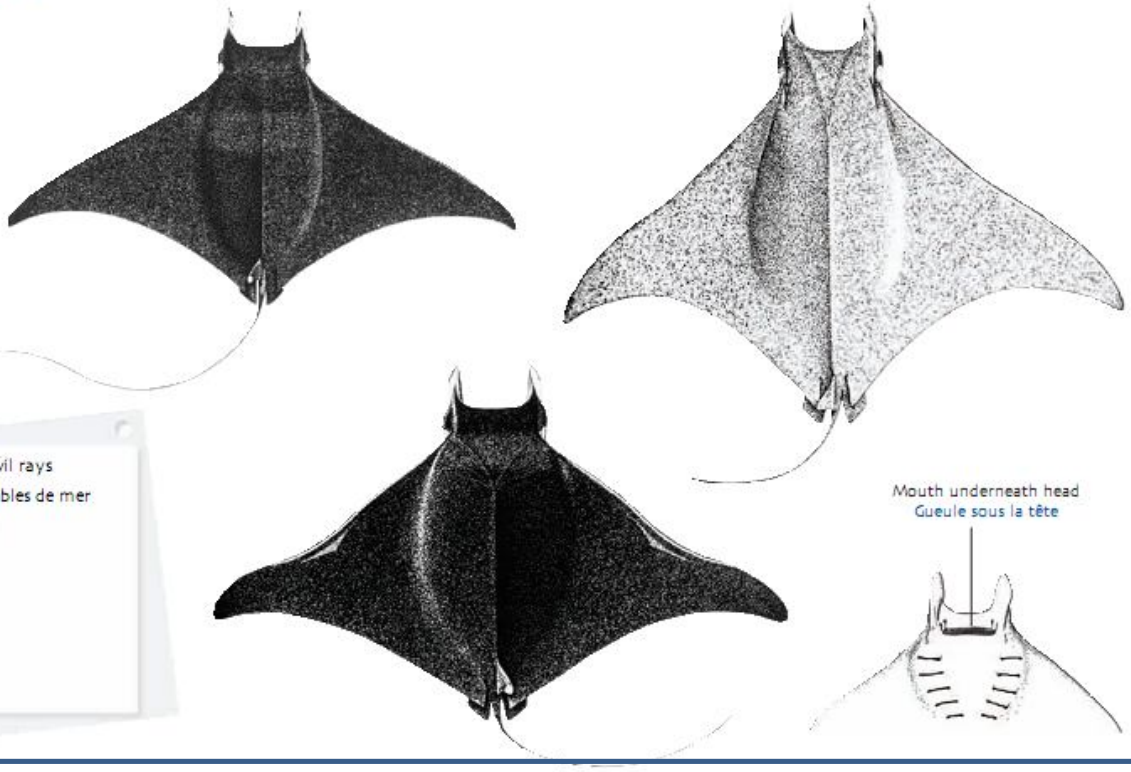
SPECIES CODE: RMB

English: Giant manta
French: Mante géante
Japanese: Oni-itomaki-ei
Hawaiian: Manta ray, Hahalua, Devilray
Local:



Mobula spp.

SPECIES CODE: RMV

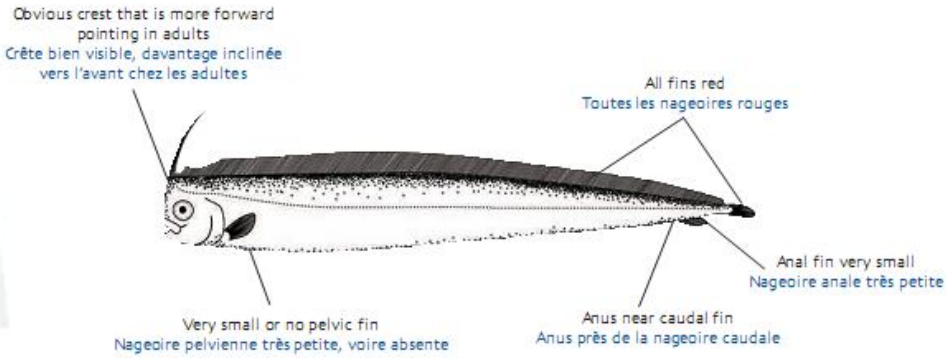


English: Devil rays
French: Diables de mer
Japanese: Ei
Local:

Lophotus capellei

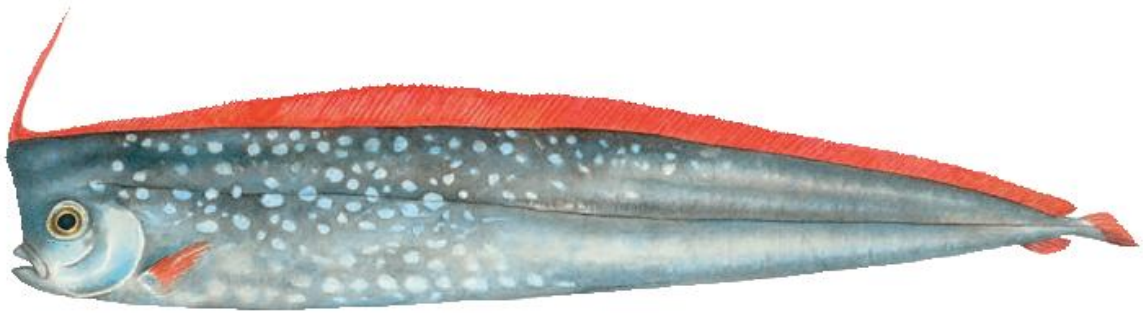
SPECIES CODE: LOP

English: Unicornfish
French: Lophote chevelu
Japanese: Akanamada
Local:

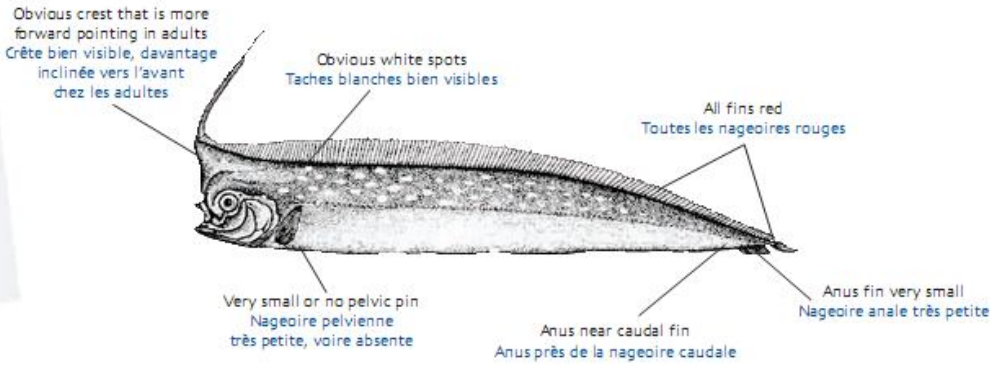


Lophotus lacepede

SPECIES CODE: LLL



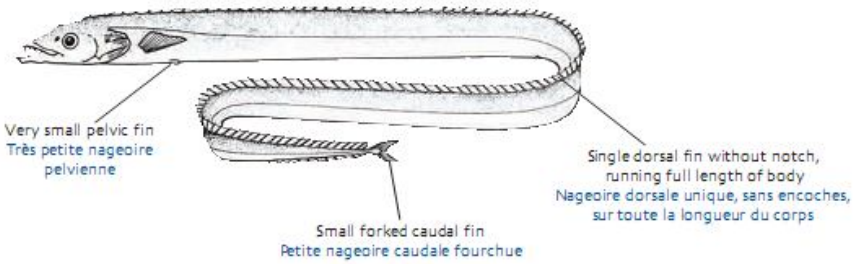
English: Crested oarfish, Crestfish
French: Lophote à crête
Japanese: Akanamada-zoku
Hawaiian: Crestfish
Local:



Assurger anzac

SPECIES CODE: ASZ

English: Razorback scabbardfish
French: Poisson sabre rasoir
Japanese: Nagayumetachi-modoki
Local:



Trichiuridae (other)

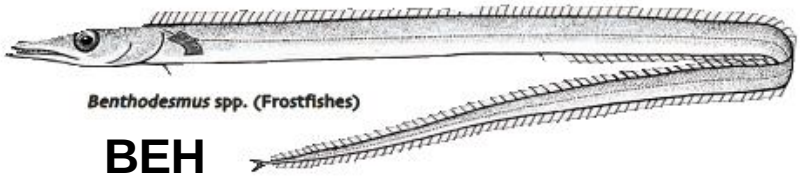
SPECIES CODE: CUT

Species in this family have:

- Strong fang-like teeth
- No red fins
- Body shape long and thin

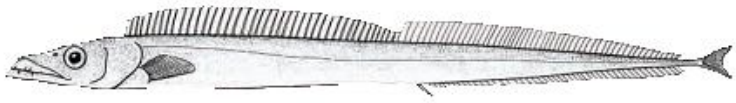
Caractéristiques des espèces de cette famille

- Puissantes dents comme des crochets
- Pas de nageoires rouges
- Corps long et mince



***Benthodesmus* spp. (Frostfishes)**

BEH

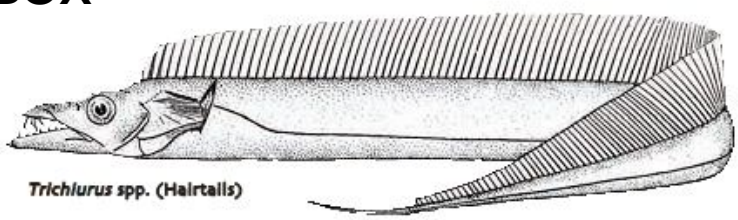


***Aphanopus* spp. (Scabbardfishes)**

BOX

English: Other Frostfishes, Scabbardfishes, Hairtails
French: Autres poissons sabres
Japanese: Tachiuo, Oshiroitachi
Local:

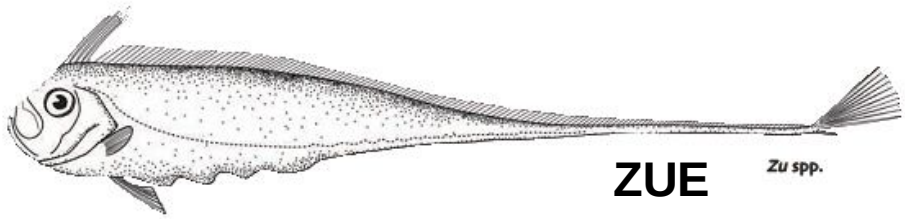
TCW



***Trichiurus* spp. (Hairtails)**

Trachipteridae

SPECIES CODE: TRX



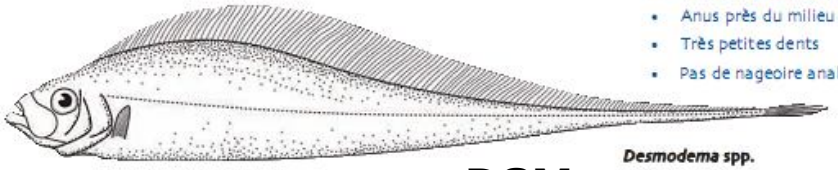
ZUE *Zu* spp.

Species in this family have:

- Red dorsal fin
- Anus near middle of body
- Very small teeth
- No anal fin in adults

Caractéristiques des espèces de cette famille :

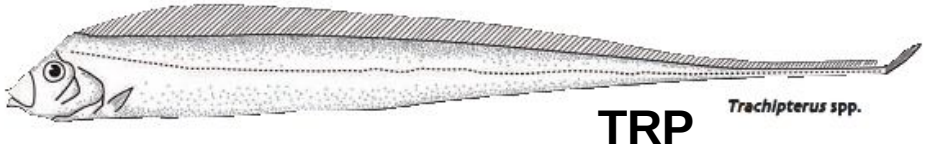
- Nageoire dorsale rouge
- Anus près du milieu du corps
- Très petites dents
- Pas de nageoire anale chez les adultes



Desmodema spp.

DSM

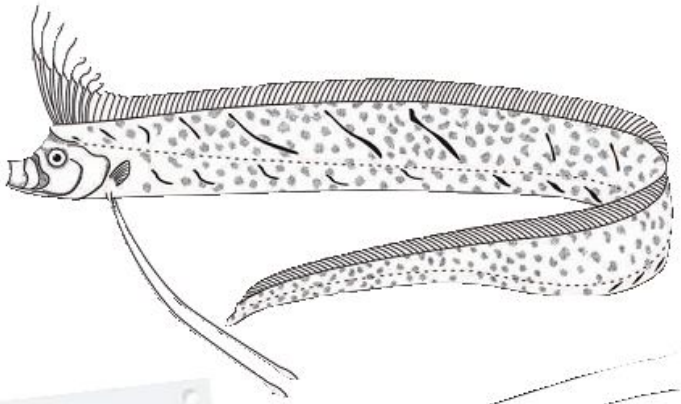
English: Ribbonfish, Dealfish
French: Poissons-rubans
Japanese: Tachiuo, Furisodeuo
Local:



TRP *Trachipterus* spp.

Regalecidae

SPECIES CODE: RRG



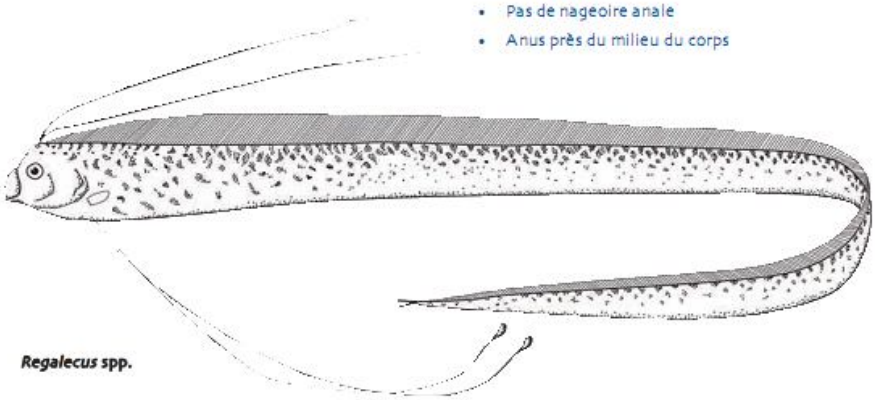
Species in this family have:

- Extremely small teeth
- Red dorsal and pelvic fins
- Pelvic fins very long in adults
- No anal fin
- Anus near middle of body

Caractéristiques des espèces de cette famille :

- Dents extrêmement petites
- Nageoires dorsale et pelvienne rouges
- Nageoires pelviennes très longues chez les adultes
- Pas de nageoire anale
- Anus près du milieu du corps

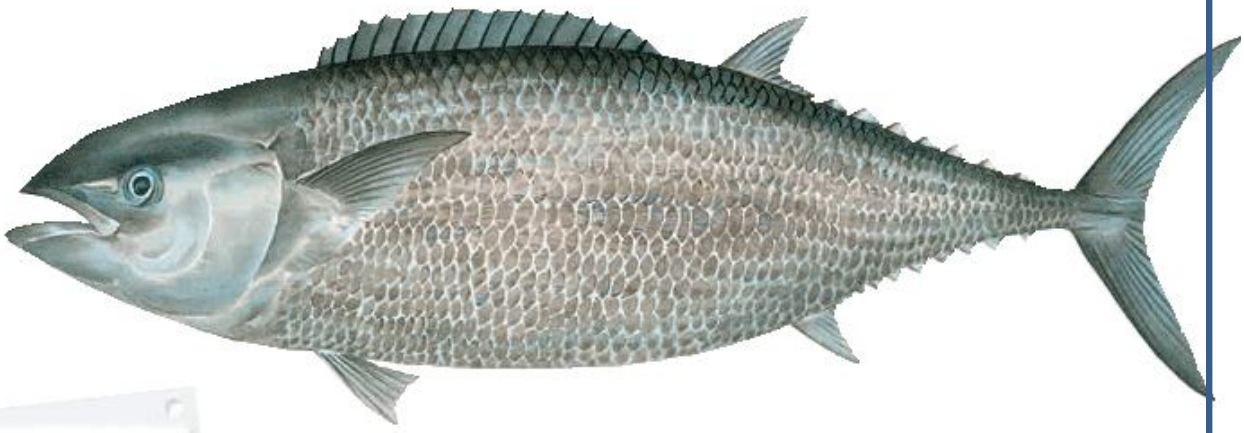
English: Oarfish
French: Régalecs
Japanese: Ryuguno-tsukai
Local:



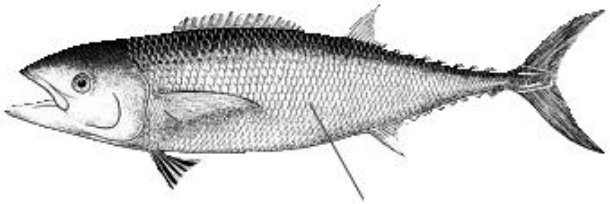
Regalecus spp.

Gasterochisma melampus

SPECIES CODE:BUK



English: Butterfly kingfish
French: Thon papillon
Japanese: Urokomaguro
Local:



Body covered in large shiny scales
Corps couvert de grandes écailles luisantes

Kyphosus cinerascens

SPECIES CODE:KYC

Blue Seachub

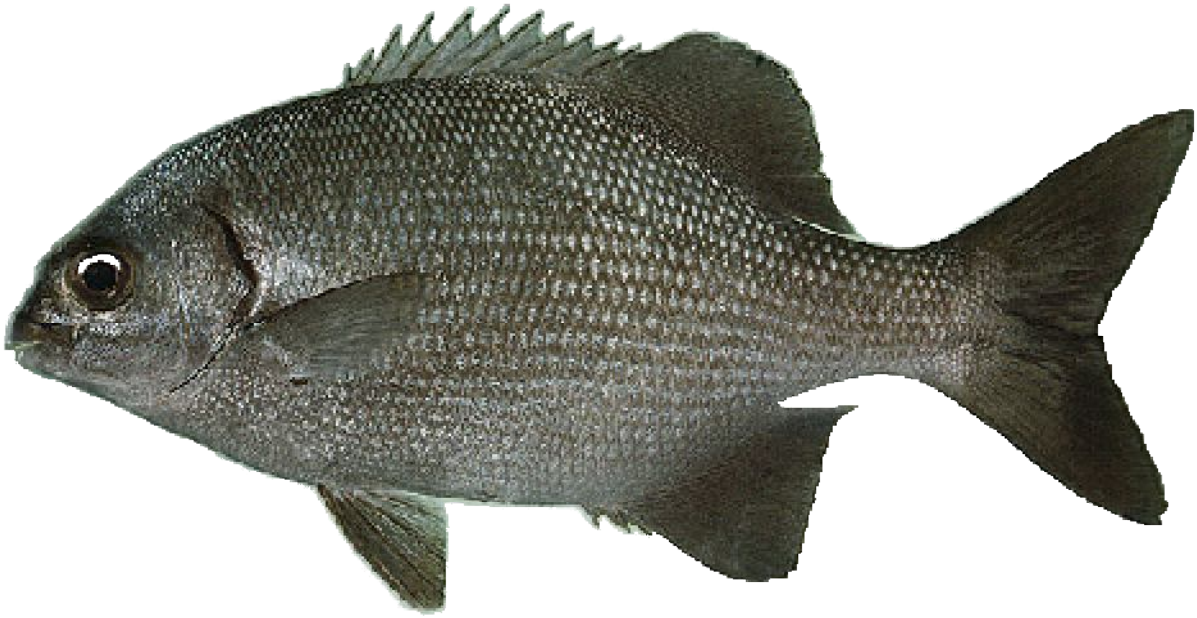


Photo by Randall J.E.

Gnathanodon speciosus

SPECIES CODE:GLT

Golden trevally

Photo by Randall J.E.

Caranx sexfasciatus

SPECIES CODE:CXS

Bigeye trevally

Photo by Randall J.E.

Canthidermis maculates

SPECIES CODE:CNT

Spotted oceanic triggerfish

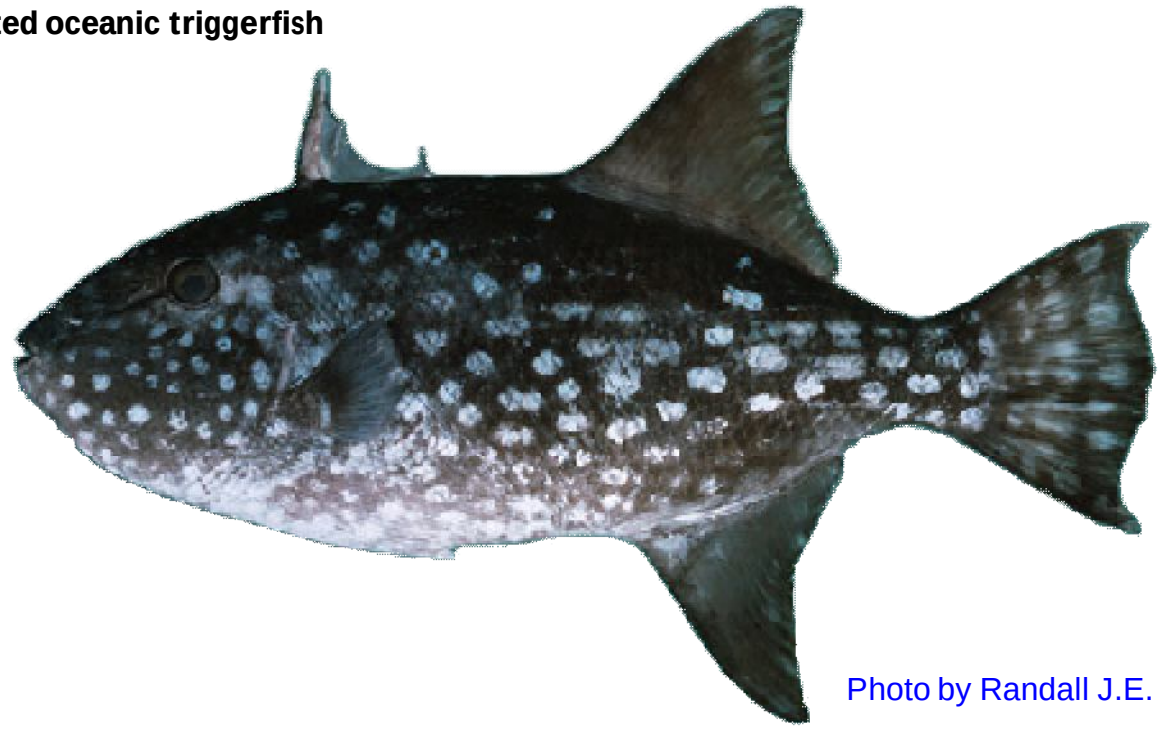


Photo by Randall J.E.

Lobotes surinamensiserascens

SPECIES CODE:LOB

Tripletail

Photo by Lord, R.

Platax tiera

SPECIES CODE:BAO

Longfin batfish

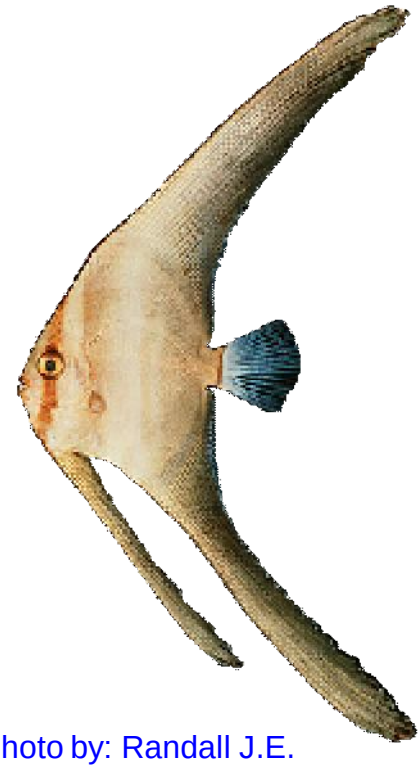


Photo by: Randall J.E.

Scomberoides spp.

SPECIES CODE:QUE

Quenfishes

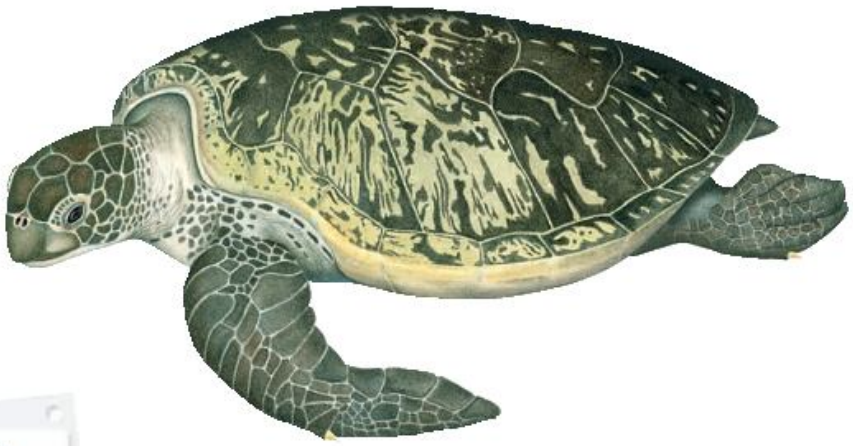
Scomberoides lysan Photo by Hermosa, Jr. G.V.

Scomberoides tol Photo by Gloerfelt-Tarp, T.

SEA TURTLES

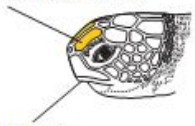
Chelonia mydas

SPECIES CODE: TUG

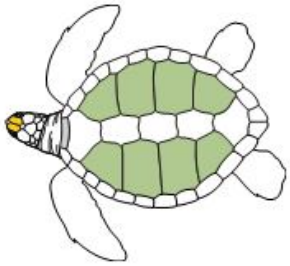


English: Green turtle
French: Tortue verte
Japanese: Ao-umigame
Hawaiian: Honu
Local:

One pair of prefrontal scales
Une paire d'écailles préfrontales



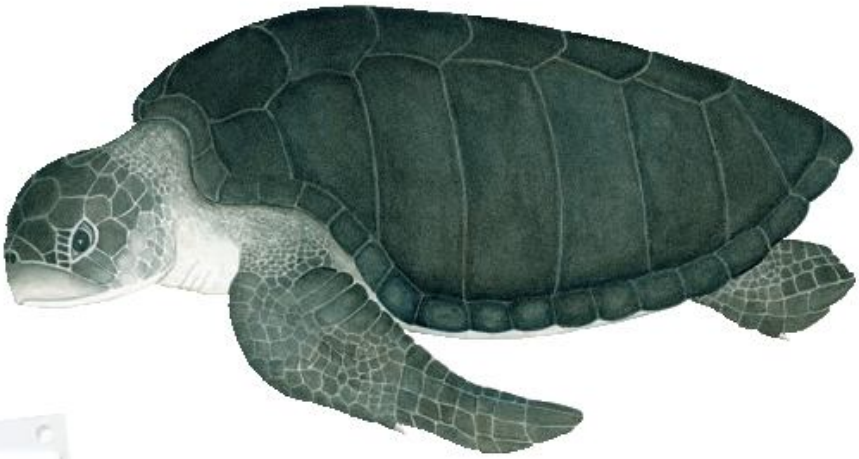
Toothed beak
Bec denticulé



Four pairs of costal scutes; the first pair is not in contact with the nuchal scute
Quatre paires d'écailles costales ; la première paire n'est pas en contact avec l'écaille nucale

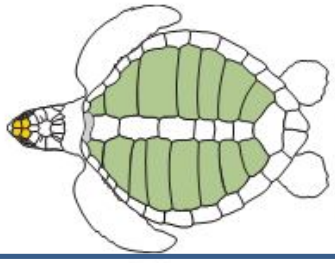
Lepidochelys olivacea

SPECIES CODE: LKV



English: Olive ridley turtle
French: Tortue olivâtre
Japanese: Hime-umigame
Local:

Two pairs of prefrontal scales
Deux paires d'écailles préfrontales



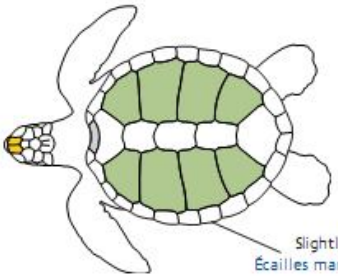
(not necessarily the same number on either side); the first pair is in contact with the nuchal scute.
Cinq à neuf paires d'écailles costales (pas forcément le même nombre de chaque côté) ; la première paire est en contact avec l'écaille nucale.

Natator depressus

SPECIES CODE: FBT

English: Flatback turtle
French: Tortue à dos plat
Japanese: Hirataumigame
Local:

One pair of prefrontal scales
Une paire d'écailles préfrontales



Four pairs of costal scutes; the first pair is not in contact with the nuchal scute
Quatre paires d'écailles costales ; la première paire n'est pas en contact avec l'écaille nucale

Slightly upturned lateral margins
Écailles marginales légèrement retroussées

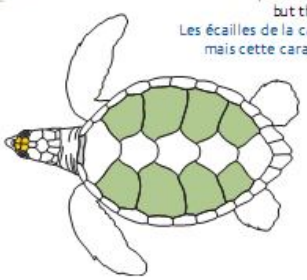
Eretmochelys imbricata

SPECIES CODE: TTH

English: Hawksbill turtle
French: Tortue imbriquée
Japanese: Taimai
Hawaiian: Ea, Honu'ea
Local:

Two pairs of prefrontal scales
Deux paires d'écailles préfrontales

Pointed hooked beak
Bec pointu et crochu

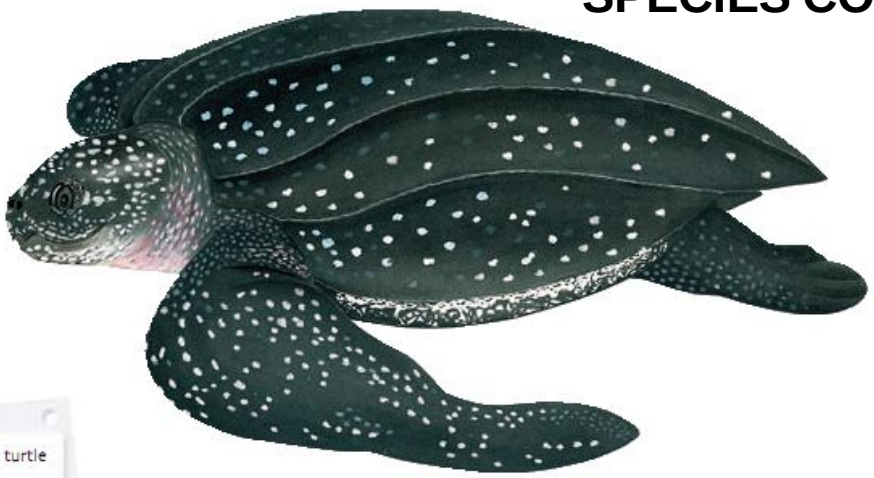


Carapace scutes are generally overlapping but this trait fades with age.
Les écailles de la carapace sont en général imbriquées, mais cette caractéristique s'estompe avec l'âge.

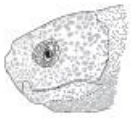
Four pairs of costal scutes; the first pair is not in contact with the nuchal scute
Quatre paires d'écailles costales ; la première paire n'est pas en contact avec l'écailles nucale

Dermochelys coriacea

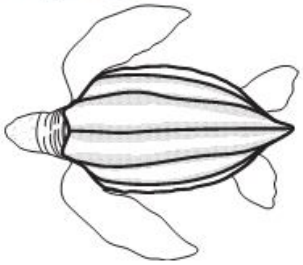
SPECIES CODE: DKK



English: Leatherback turtle
French: Tortue luth
Japanese: Osa-game
Local:



No scales on head
Tête dépourvue d'écailles



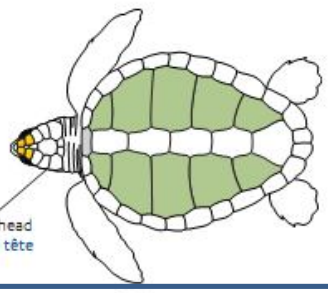
Back (pseudocarapace):
no scales (simply covered by a kind of leather) and divided by seven longitudinal ridges.
Dossière (pseudocarapace) :
dépourvue d'écailles (simplement recouverte d'une sorte de cuir) et divisée par sept carènes longitudinales.

Caretta caretta

SPECIES CODE: TTL

English: Loggerhead turtle
French: Tortue caouanne
Japanese: Aka-umigame
Local:

Two pairs of prefrontal scales
Deux paires d'écailles préfrontales



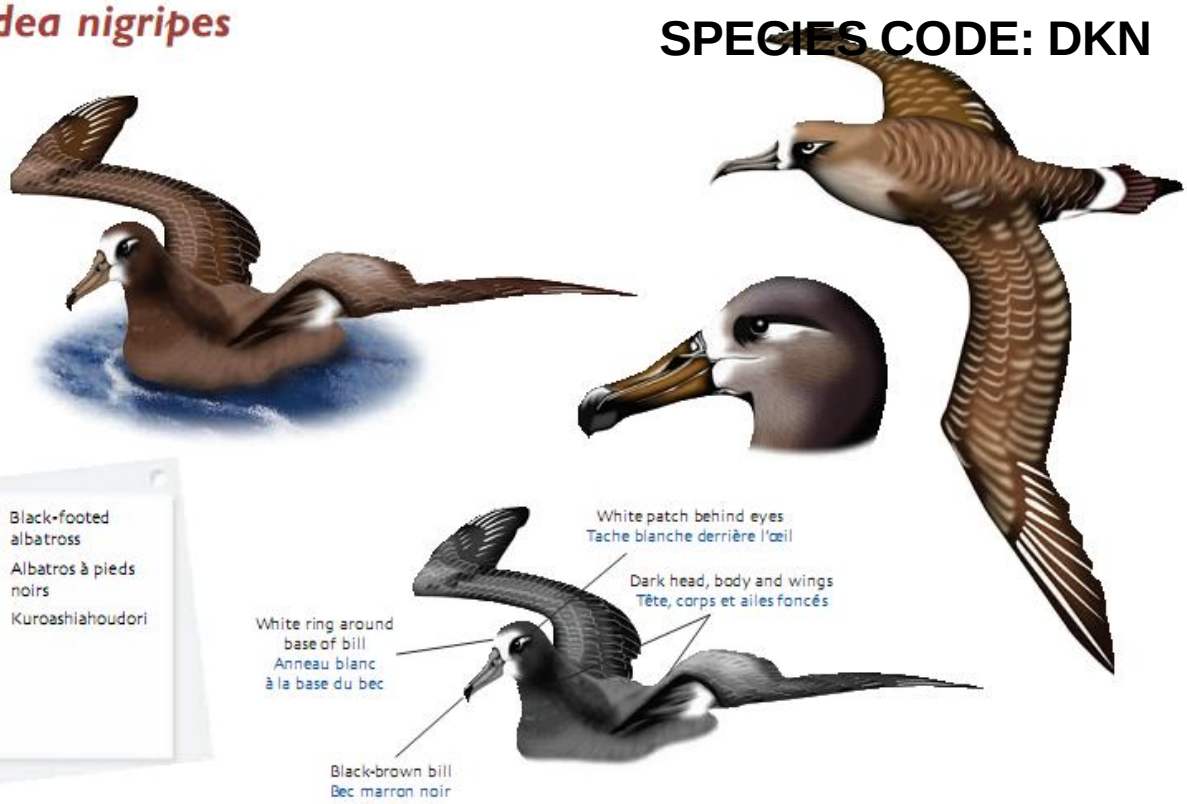
Large head
Grosse tête

Five pairs of costal scutes; the first pair is in contact with the nuchal scute.
Cinq paires d'écailles costales ; la première paire est en contact avec l'écaille nucale.

SEA BIRDS

Diomedea nigripes

SPECIES CODE: DKN



English: Black-footed albatross
French: Albatros à pieds noirs
Japanese: Kuroashiahoudori
Local:

White patch behind eyes
Tache blanche derrière l'œil
Dark head, body and wings
Tête, corps et ailes foncés
White ring around base of bill
Anneau blanc à la base du bec
Black-brown bill
Bec marron noir

Diomedea immutabilis

SPECIES CODE: DIZ

English: Laysan albatross
French: Albatros de Laysan
Japanese: Koahoudori
Local:

Dark upper wings and back
Dos et parties supérieures des ailes sombres
Dark ring around eyes
Anneau foncé autour de l'œil
Flesh coloured bill with grey tip
Bec couleur chair avec extrémité grise
White head, neck and stomach
Tête, cou et ventre blancs

Diomedeidae

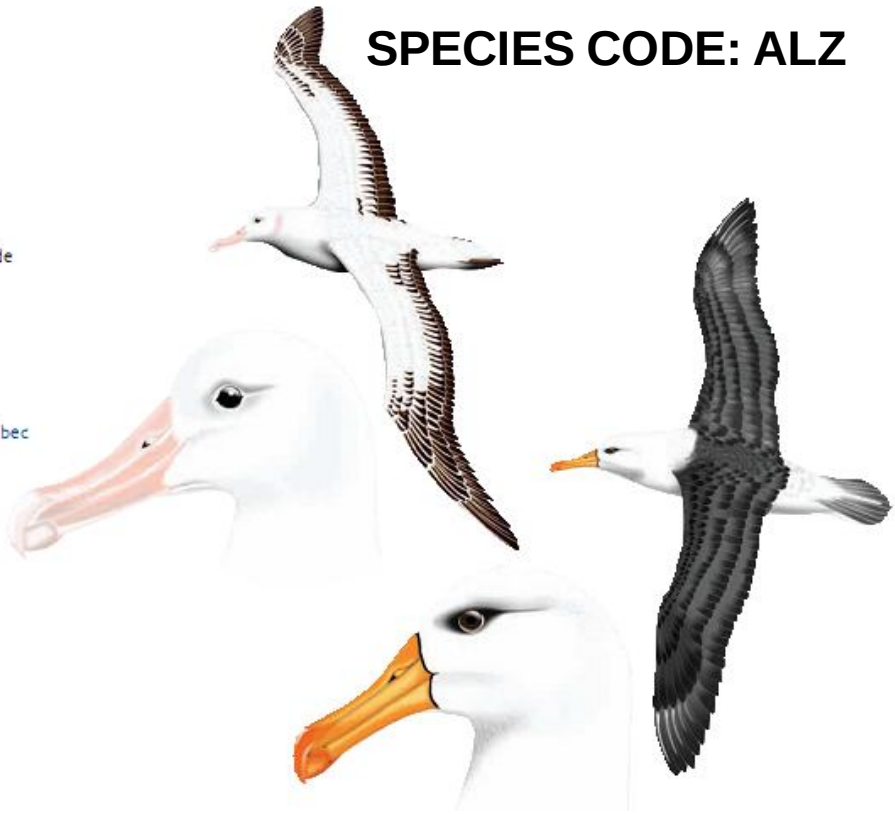
SPECIES CODE: ALZ

Species in this family have:

- Large hooked bill
- Large birds
- Wing span up to 3.5 m
- External nostrils at base of bill, one on each side

Caractéristiques des espèces de cette famille :

- Long bec crochu
- Grands oiseaux
- Jusqu'à 3,5 mètres d'envergure
- Narines externes de chaque côté à la base du bec



English: Albatrosses
French: Albatros
Japanese: Ahoudori
Local:

Sulidae

SPECIES CODE: SZV

Species in this family have:

- Large birds
- Long wings with wing span up to 2.2 m
- Wedge-shaped tail
- Stout conical bill

Caractéristiques des espèces de cette famille :

- Grands oiseaux
- Longues ailes d'une envergure pouvant aller jusqu'à 2,2 mètres
- Queue cunéiforme
- Puissant bec conique

English: Boobies and Gannets
French: Fous
Japanese: Katuodori-ka
Local:

Procellariidae

SPECIES CODE: PTZ

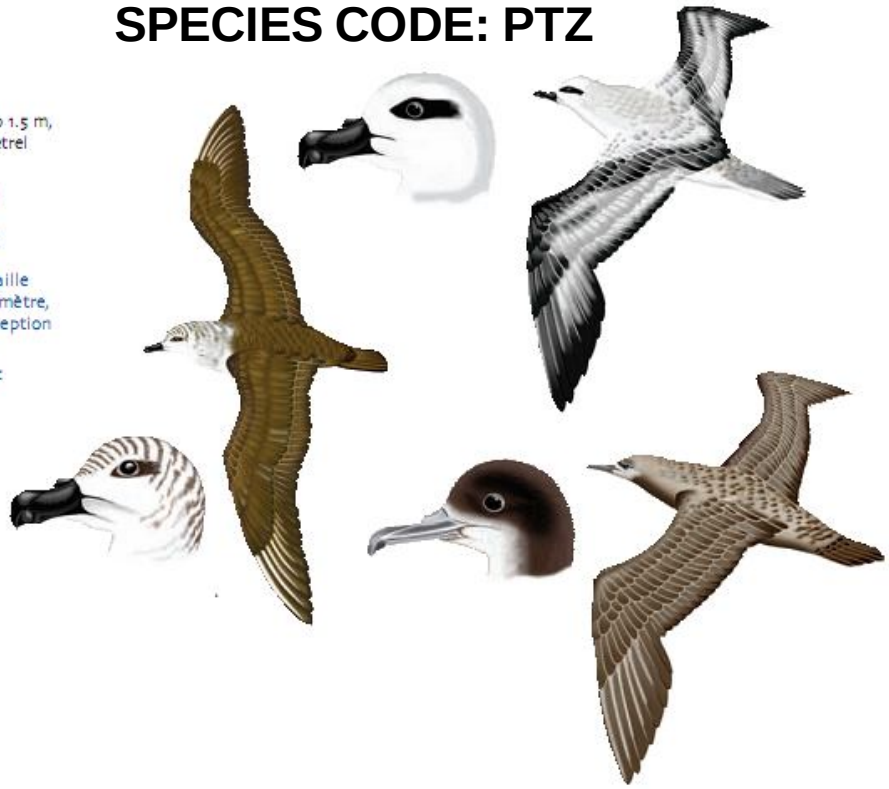
Species in this family have:

- Most species smaller in size (wing span up to 1.5 m, but mainly less than 1 m) except for giant petrel (wing span up to 2.5 m)
- Nostrils united in a single tube on top of bill

Caractéristiques des espèces de cette famille :

- La plupart des espèces sont de plus petite taille (avec une envergure pouvant atteindre 1,5 mètre, mais en général inférieure au mètre) à l'exception du pétrel géant (envergure de 2,5 mètres)
- Les narines se rejoignent au sommet du bec pour former une cavité tubulaire.

English: Petrels and Shearwaters
French: Pétrels et Puffins
Japanese: Kuromizunagodori-rui
Local:



Laridae

SPECIES CODE: LRD

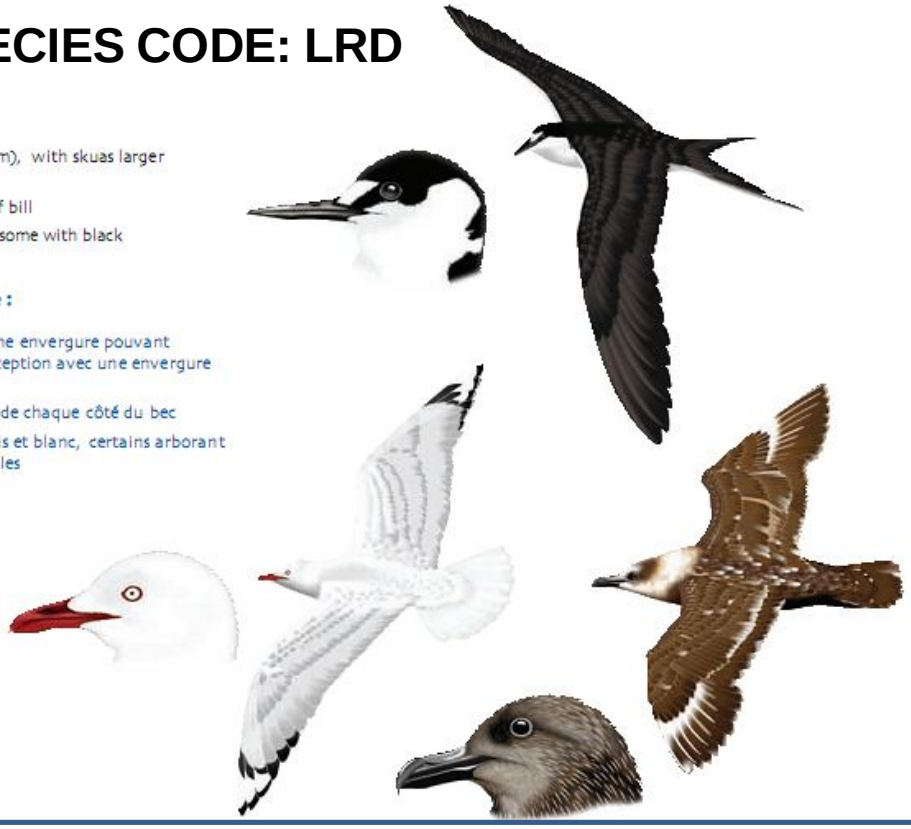
Species in this family have:

- Generally smaller birds (wing span up to 1 m), with skuas larger (wing span up to 1.8 m)
- Nostrils are plain openings on either side of bill
- Most birds have grey and white plumage, some with black on head and wings

Caractéristiques des espèces de cette famille :

- Oiseaux généralement plus petits (avec une envergure pouvant atteindre un mètre), les labbes faisant exception avec une envergure possible de 1,8 mètre
- Les narines sont de simples orifices situés de chaque côté du bec
- La plupart des oiseaux ont un plumage gris et blanc, certains arborant quelques taches noires sur la tête et les ailes

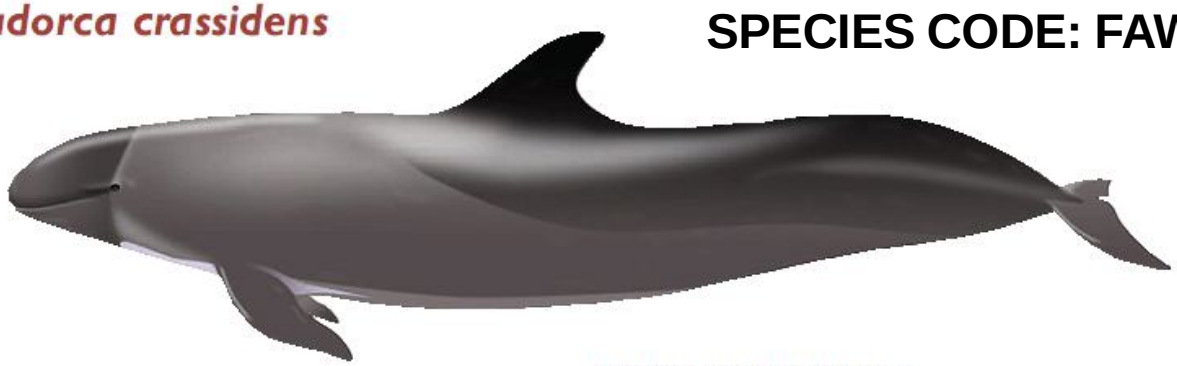
English: Gulls, Terns and Skuas
French: Goélands, Sternes et Labbes
Japanese: Kamome-ka
Local:



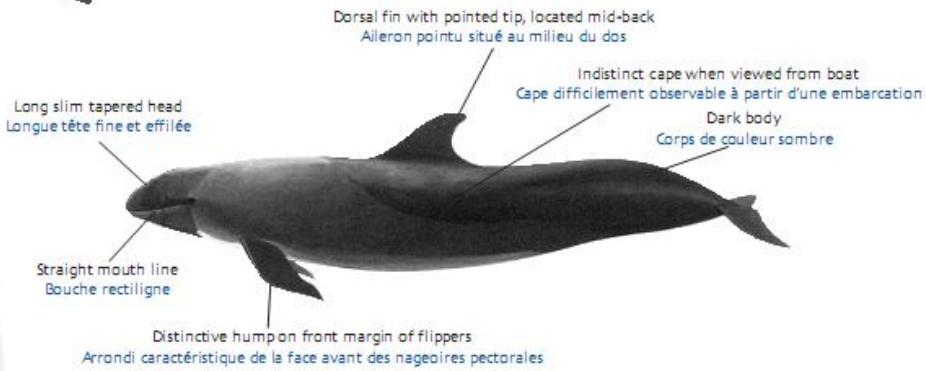
TOOTHED WHALES

Pseudorca crassidens

SPECIES CODE: FAW



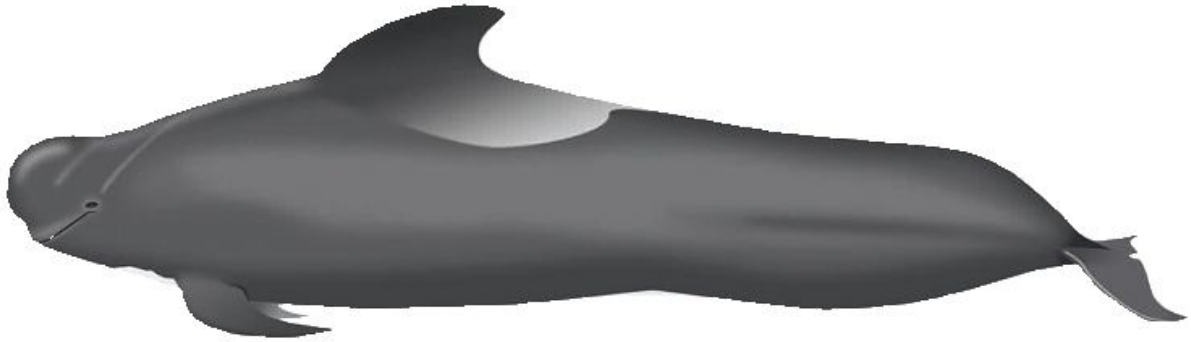
English: False killer whale
French: Faux-orque
Japanese: Oki-gondo
Local:



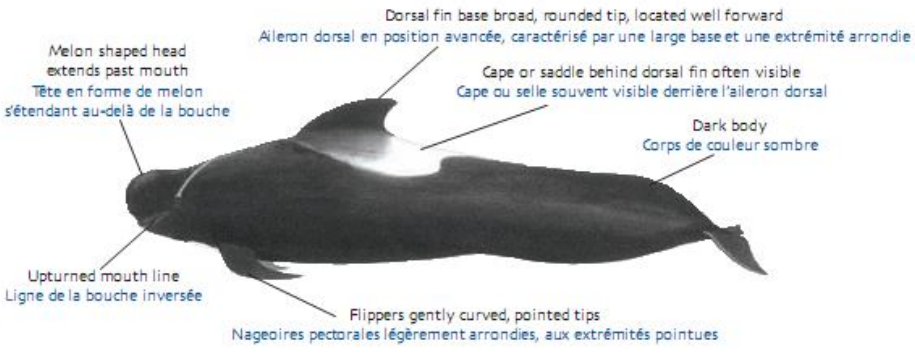
Maximum length: 6 m
Taille maximum : 6 m

Globicephala macrorhynchus

SPECIES CODE: SHW



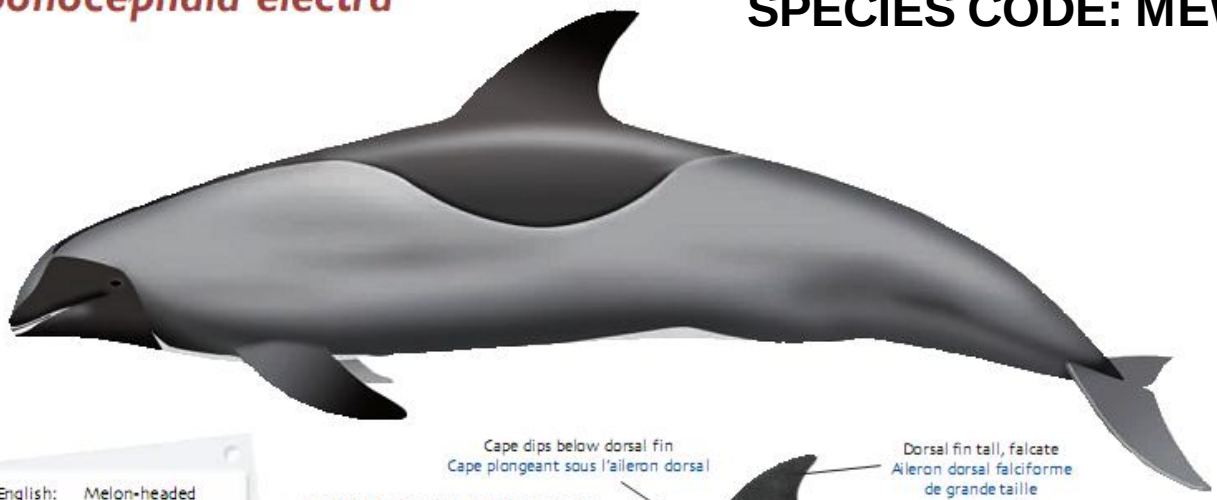
English: Short-finned pilot whale
French: Globicéphale tropical
Japanese: Kobire-gondo
Local:



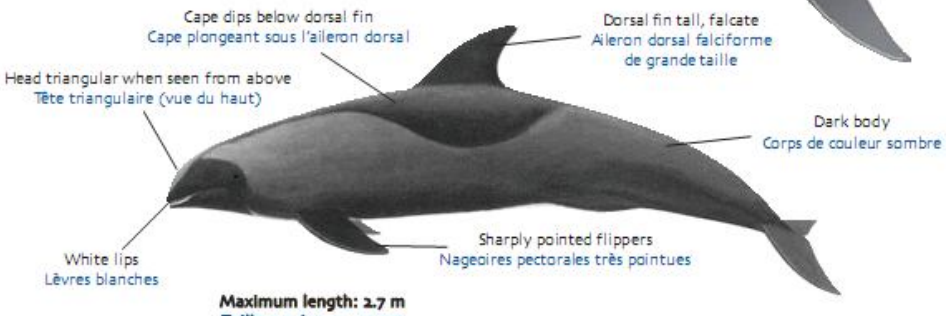
Maximum length: 6 m
Taille maximum : 6 m

Peponocephala electra

SPECIES CODE: MEW



English: Melon-headed whale
French: Péponocéphale
Japanese: Kazuha-gondo
Local:

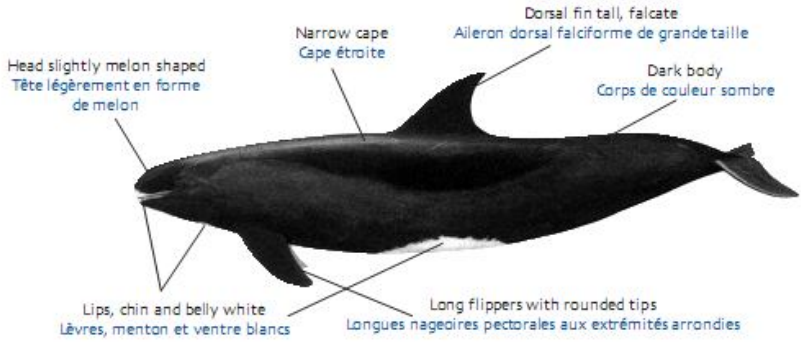


Maximum length: 2.7 m
Taille maximum : 2,7 m

Feresa attenuata

SPECIES CODE: KPW

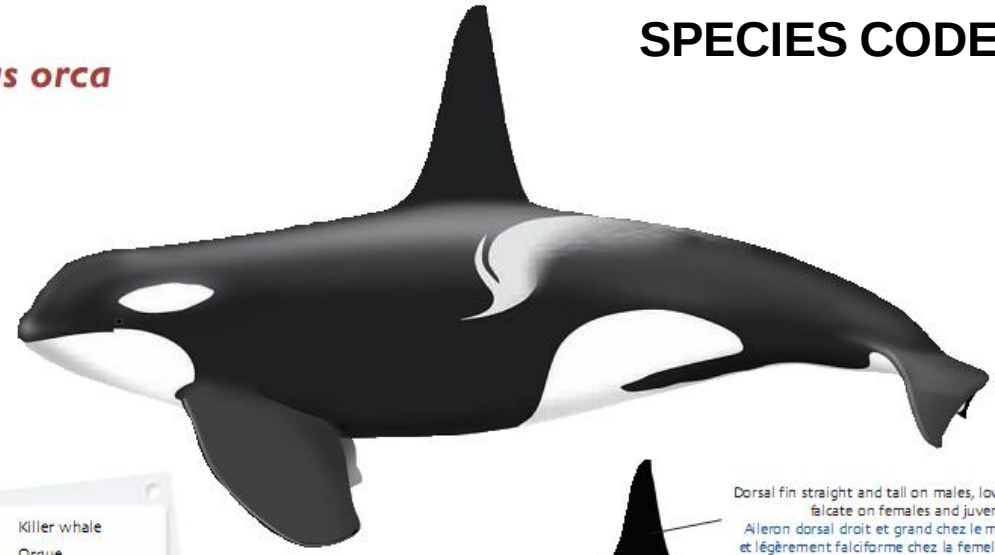
English: Pygmy killer whale
French: Orque pygmée
Japanese: Yume-gondo
Local:



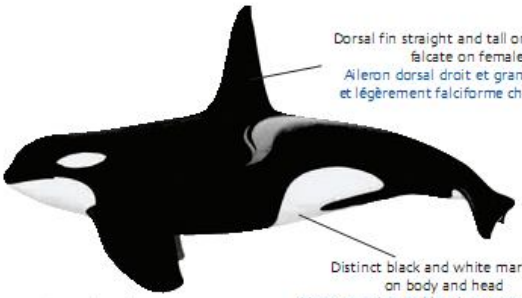
Maximum length: 3 m
Taille maximum : 3 m

Orcinus orca

SPECIES CODE: KIW



English: Killer whale
French: Orque
Japanese: Shachi, Sakamata
Local:



Dorsal fin straight and tall on males, lower and slightly falcate on females and juveniles
Aileron dorsal droit et grand chez le mâle, plus petit et légèrement falciforme chez la femelle et les jeunes

Distinct black and white markings on body and head
Marques noires et blanches caractéristiques sur le corps et la tête

Maximum length: 9 m
Taille maximum : 9 m

Physeter macrocephalus

SPECIES CODE: SPW

English: Sperm whale
French: Cachalot
Japanese: Makko-kujira
Local:

Unique "blow" for a cetacean, with blow directed at an angle forward and to the left
Évent particulier pour un cétacé, le souffle étant orienté vers l'avant et vers la gauche

Low dorsal hump followed by a series of knuckles
Petite bosse dorsale suivie d'une série de protubérances

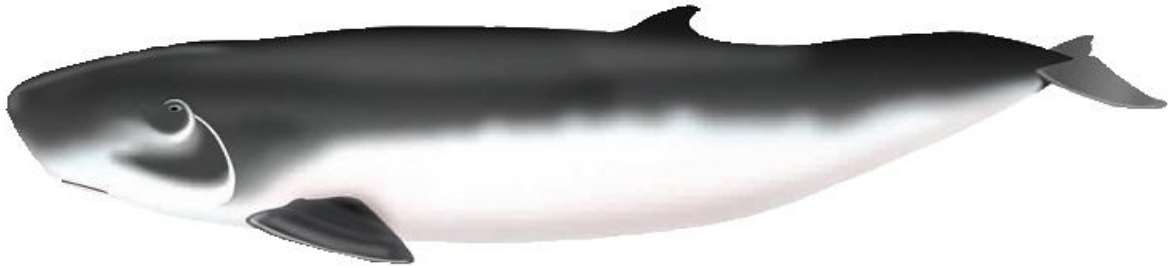
Huge square head
Grosse tête carrée

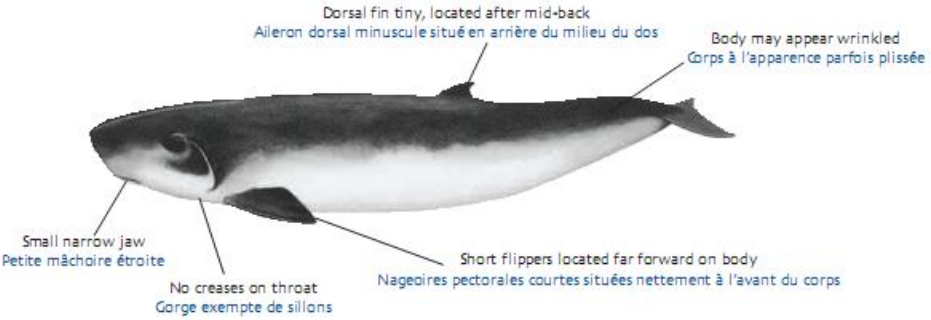
Body appears wrinkled
Corps à l'apparence plissée

Maximum length: 18 m
Taille maximum : 18 m

Kogia breviceps

SPECIES CODE: PYW



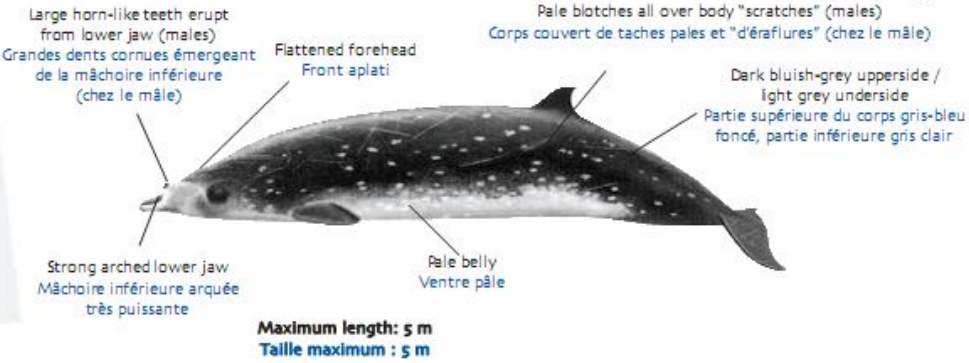


English: Pygmy sperm whale
French: Cachalot pygmée
Japanese: Komakko-kujira
Local:

Maximum length: 3.7 m
Taille maximum : 3,7 m

Mesoplodon densirostris

SPECIES CODE: BBW



English: Blainville's beaked whale
French: Baleine à bec de Blainville
Japanese: Kobuha-kujira
Local:

Maximum length: 5 m
Taille maximum : 5 m

Mesoplodon ginkgodens

SPECIES CODE: TGW

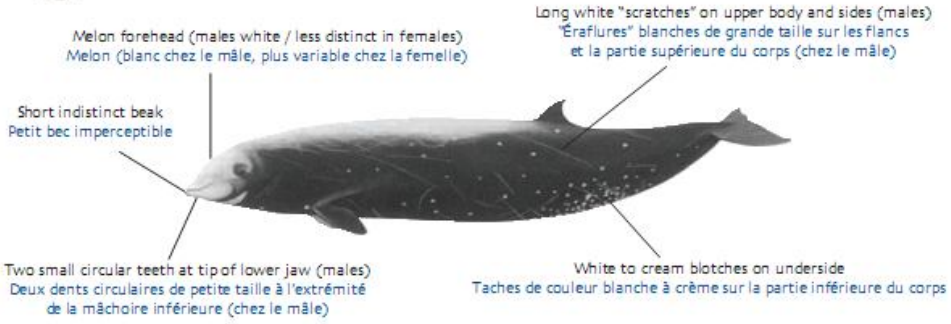
English: Ginkgo-toothed beaked whale
French: Baleine à bec de Nishiwaki
Japanese: Ichoha-kujira
Local:

Maximum length: 5 m
Taille maximum : 5 m

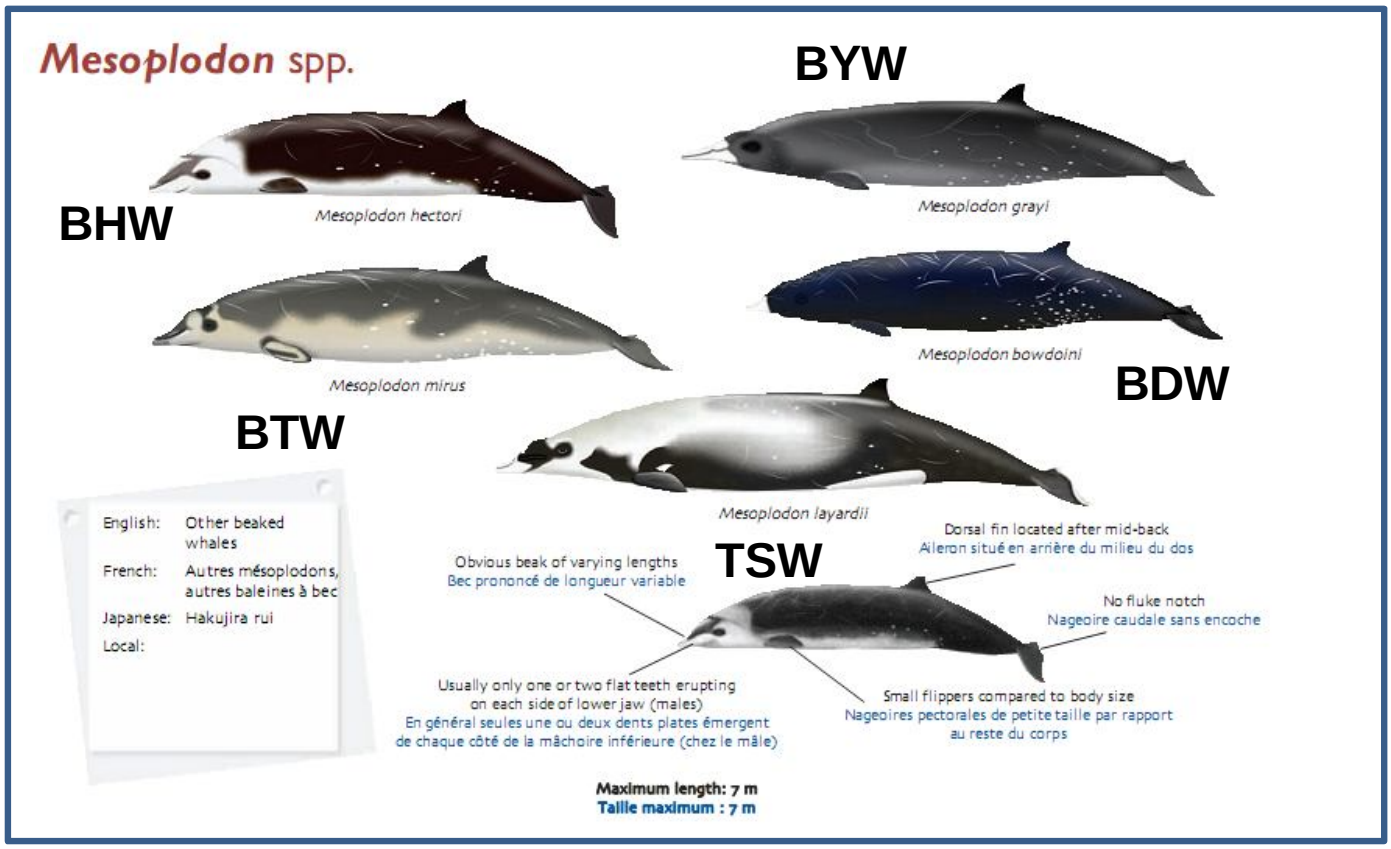
Ziphius cavirostris

SPECIES CODE: BCW

English: Cuvier's beaked whale
French: Ziphius
Japanese: Akabo-kujira
Local:



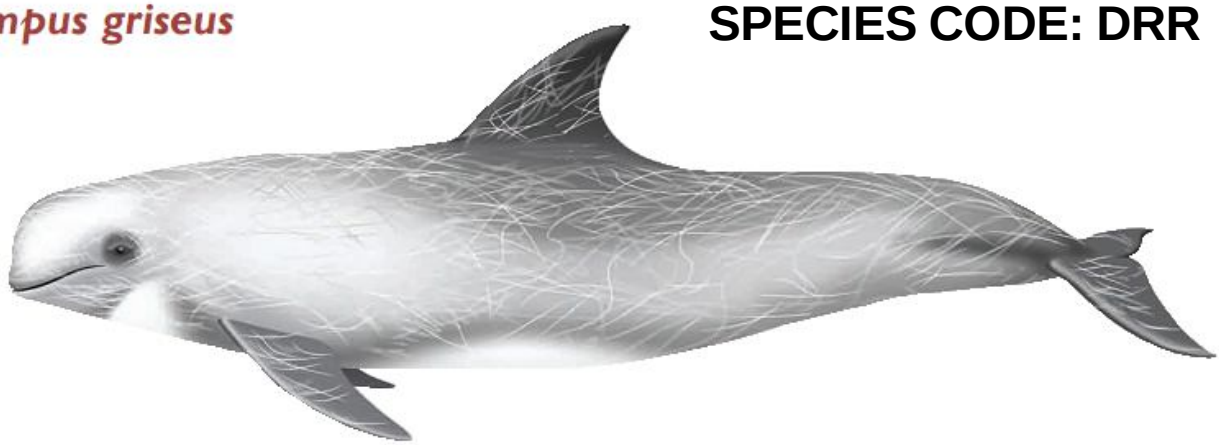
Maximum length: 7 m
Taille maximum : 7 m


Mesoplodon spp.
BYW
BHW
Mesoplodon hectori
Mesoplodon grayi
Mesoplodon bowdoini
BDW
Mesoplodon mirus
BTW
Mesoplodon layardii
English: Other beaked whales
French: Autres mésoplodons, autres baleines à bec
Japanese: Hakujira rui
Local:
TSW
Dorsal fin located after mid-back
Aileron situé en arrière du milieu du dos
Obvious beak of varying lengths
Bec prononcé de longueur variable
No fluke notch
Nageoire caudale sans encoche
Usually only one or two flat teeth erupting on each side of lower jaw (males)
En général seules une ou deux dents plates émergent de chaque côté de la mâchoire inférieure (chez le mâle)
Small flippers compared to body size
Nageoires pectorales de petite taille par rapport au reste du corps
Maximum length: 7 m
Taille maximum : 7 m

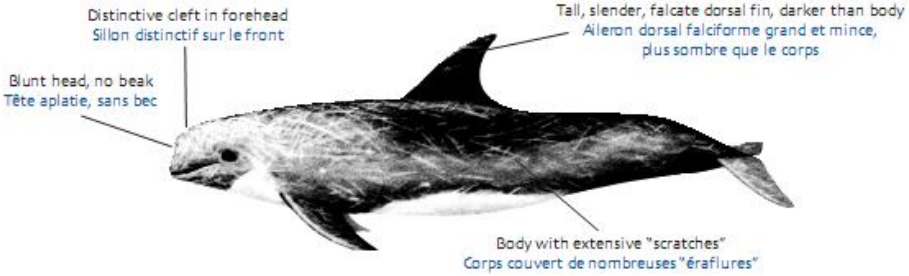
DOLPHINS

Grampus griseus

SPECIES CODE: DRR



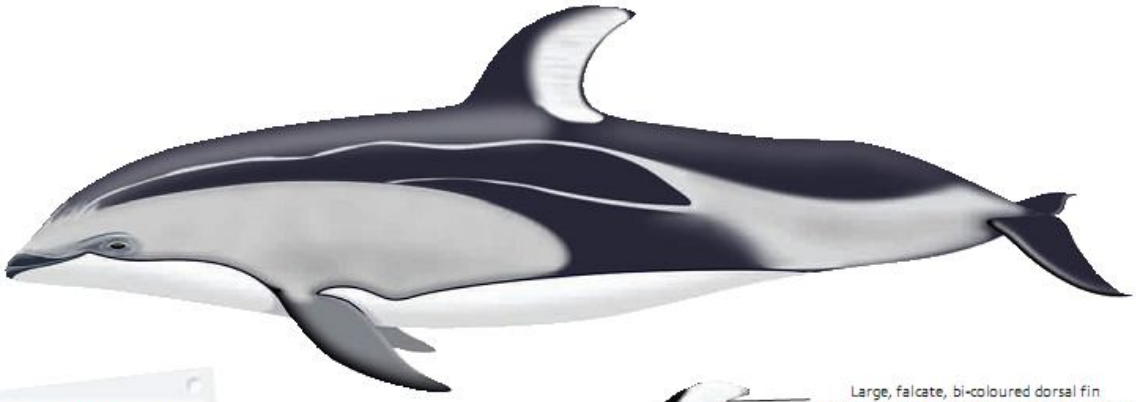
English: Risso's dolphin
French: Grampus
Japanese: Hana-gondo
Local:



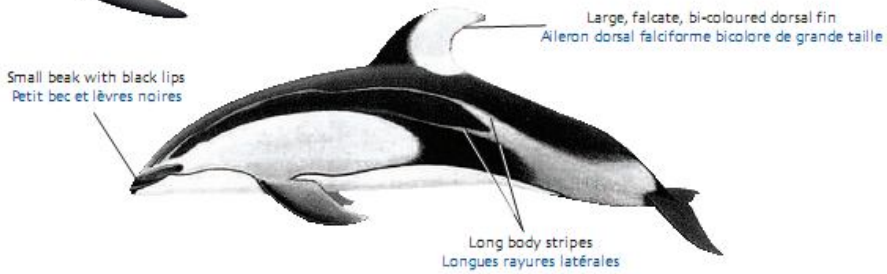
Maximum length: 4 m
Taille maximum : 4 m

Lagenorhynchus obliquidens

SPECIES CODE: DWP



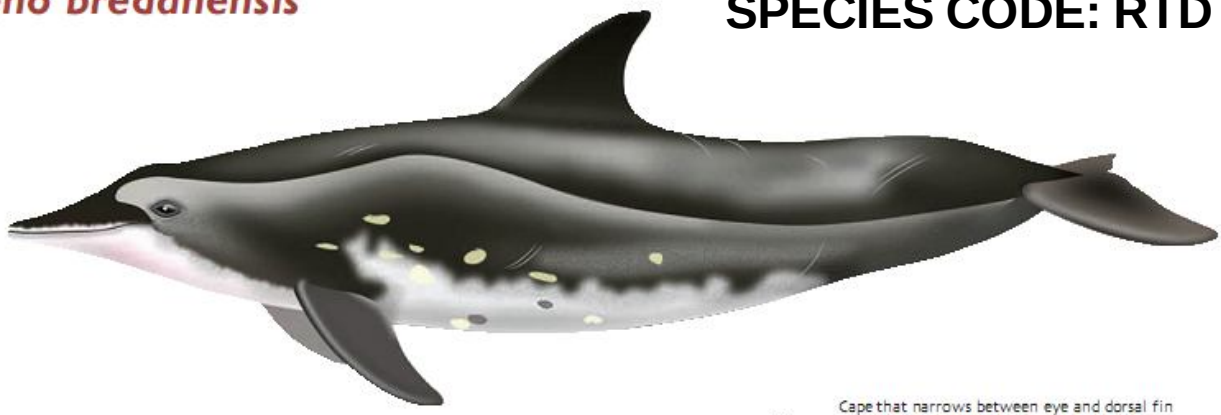
English: Pacific white-sided dolphin
French: Dauphins à flancs blancs du Pacifique
Japanese: Kama-iruka
Local:



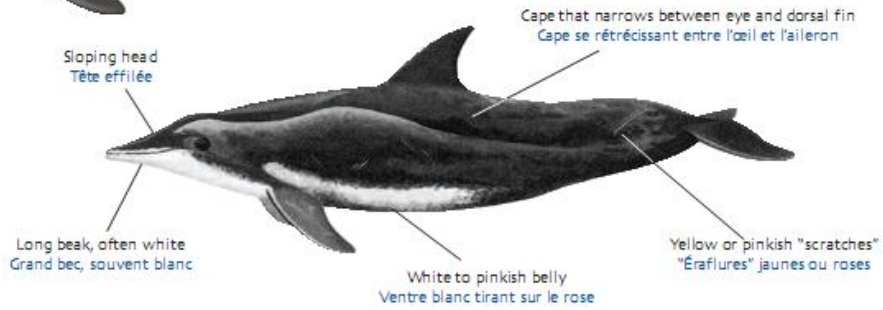
Maximum length: 2.5 m
Taille maximum : 2,5 m

Steno bredanensis

SPECIES CODE: RTD



English: Rough-toothed dolphin
French: Sténo
Japanese: Shiwaha-iruka
Local:



Maximum length: 2.8 m
Taille maximum : 2,8 m

Lagenodelphis hosei

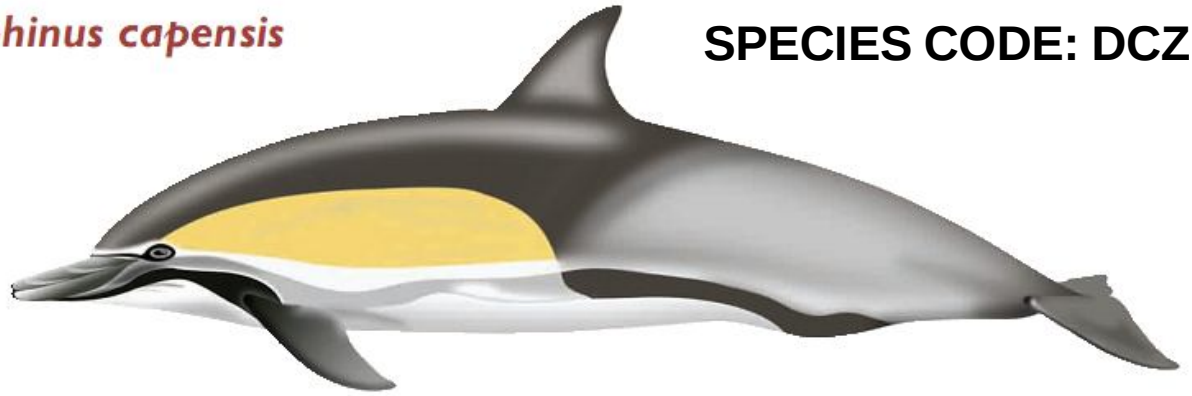
SPECIES CODE: FRD

English: Fraser's dolphin
French: Dauphin de Fraser
Japanese: Sawaraku-iruka
Local:

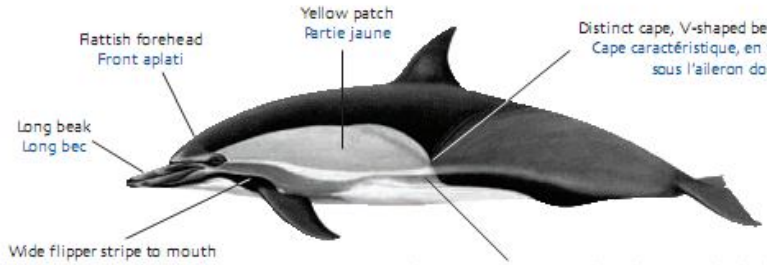
Maximum length: 2.7 m
Taille maximum : 2,7 m

Delphinus capensis

SPECIES CODE: DCZ



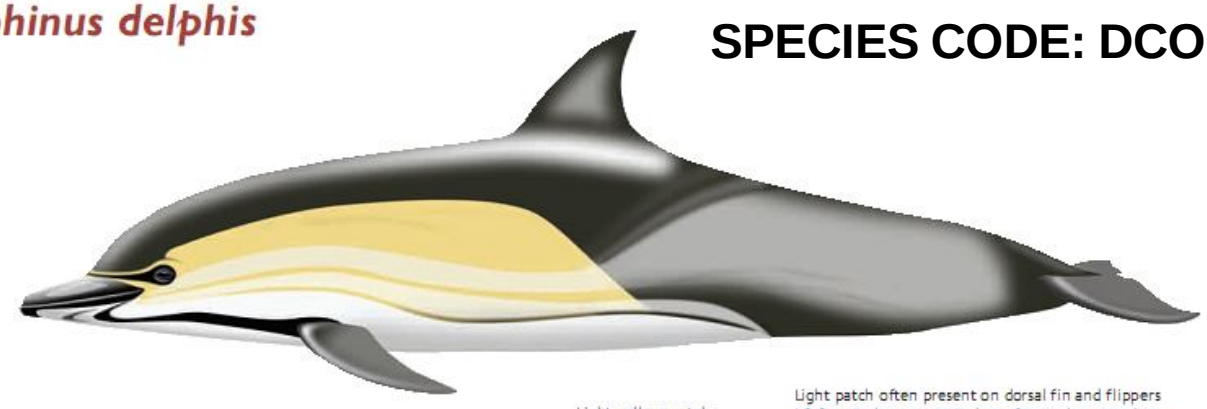
English: Long-beaked common dolphin
French: Dauphin commun à long bec
Japanese: Hase-iruka
Local:



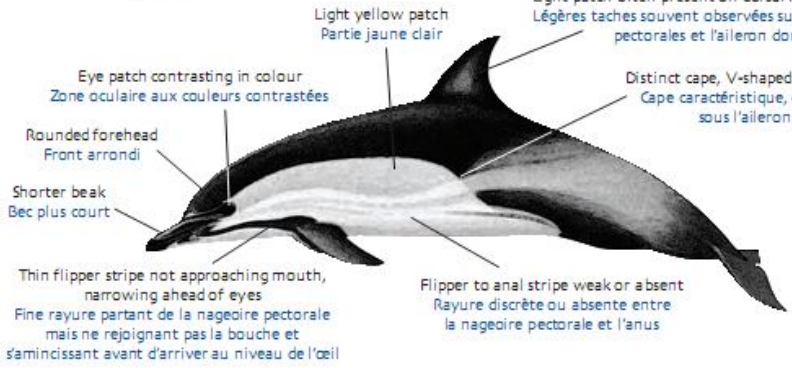
Maximum length: 2.4 m
Taille maximum : 2,4 m

Delphinus delphis

SPECIES CODE: DCO



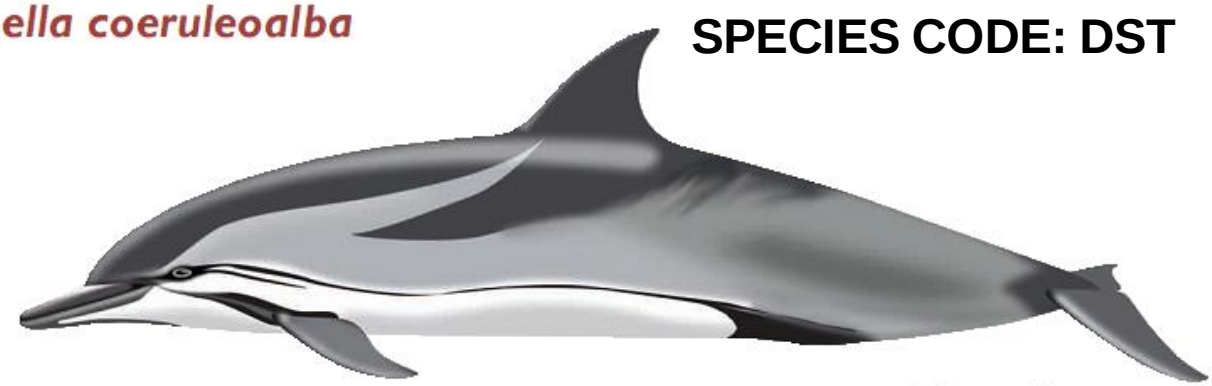
English: Short-beaked common dolphin
French: Dauphin commun
Japanese: Ma-iruka
Local:

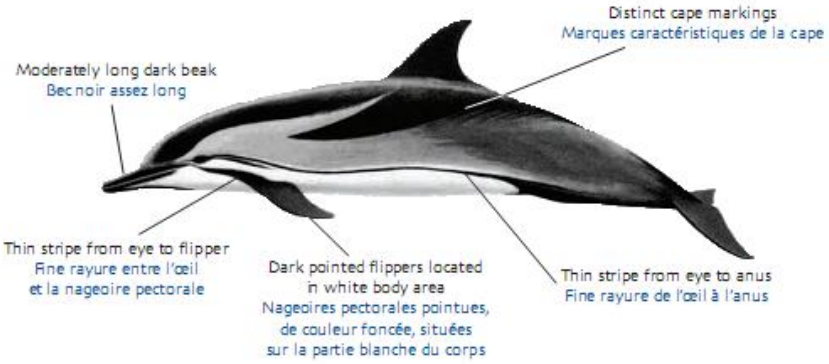


Maximum length: 2 m
Taille maximum : 2 m

Stenella coeruleoalba

SPECIES CODE: DST



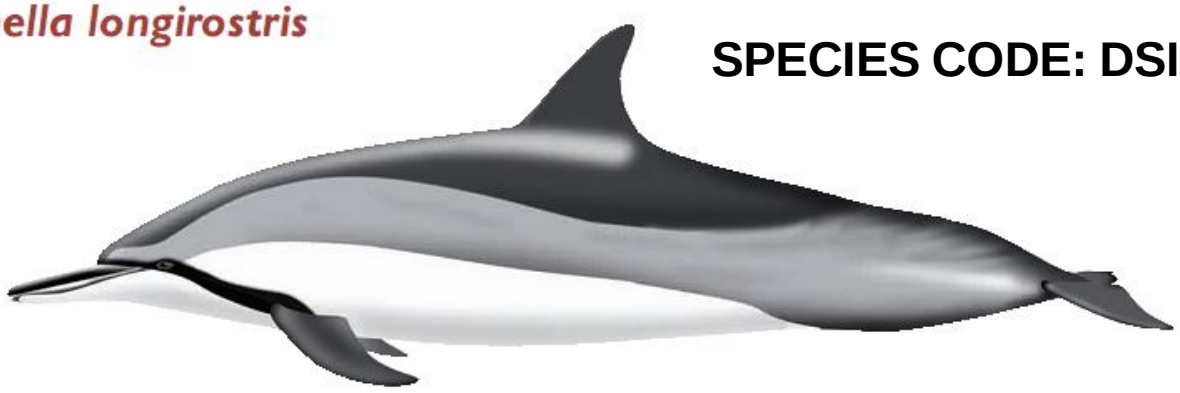


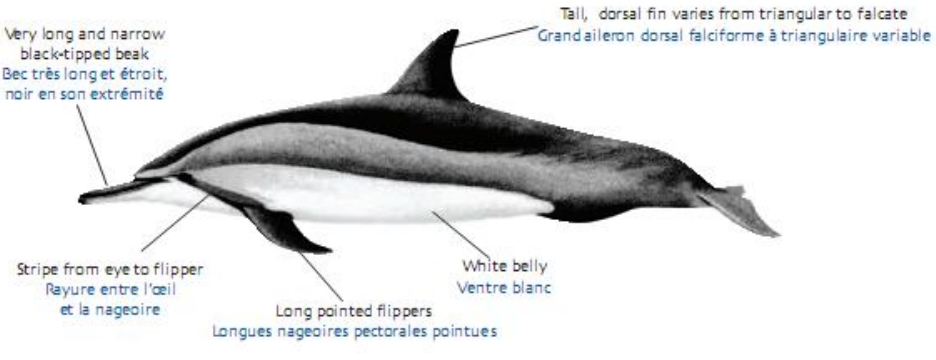
English: Striped dolphin
French: Dauphin bleu et blanc
Japanese: Suji-iruka
Local:

Maximum length: 2.6 m
Taille maximum : 2,6 m

Stenella longirostris

SPECIES CODE: DSI



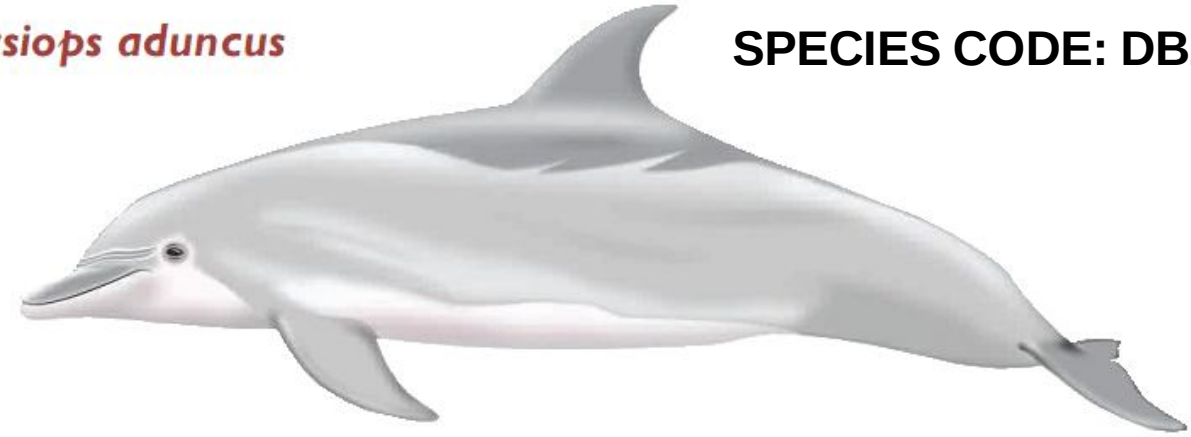


English: Spinner dolphin
French: Dauphin longirostre
Japanese: Hashinaga-iruka
Local:

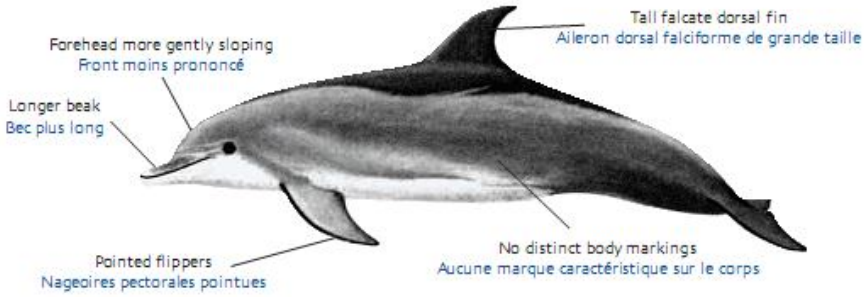
Maximum length: 2.1 m
Taille maximum : 2,1 m

Tursiops aduncus

SPECIES CODE: DBZ



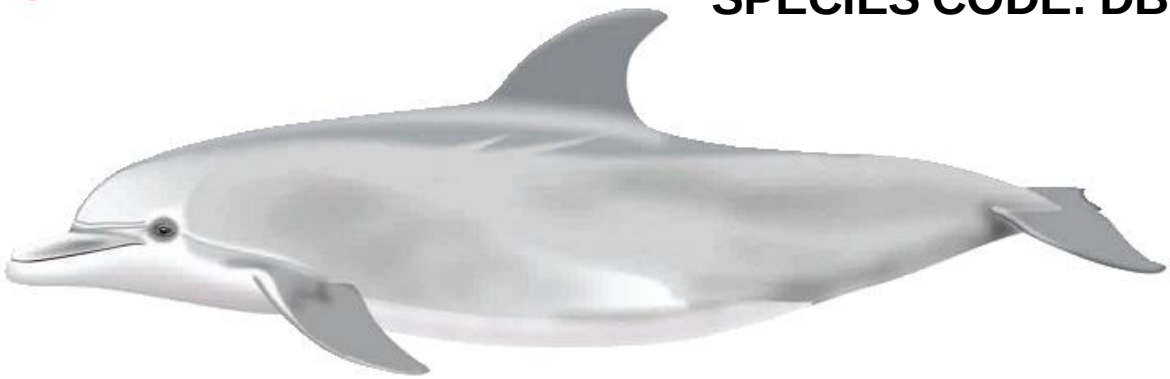
English: Indo-Pacific bottle-nose dolphin
French: Grand dauphin de l'Indo-Pacifique
Japanese: Minamibandou-iruka
Local:



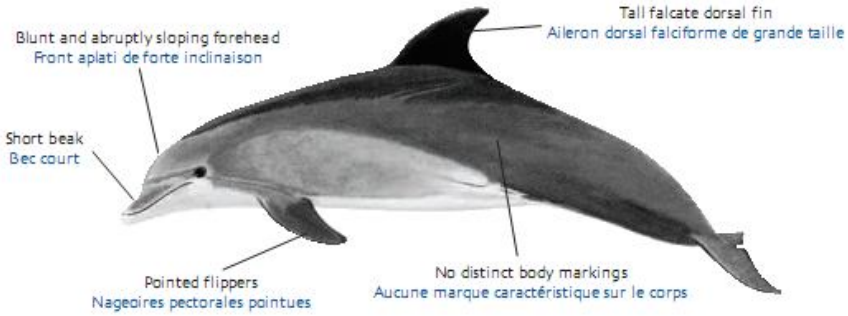
Maximum length: 2.7 m
Taille maximum : 2,7 m

Tursiops truncatus

SPECIES CODE: DBO



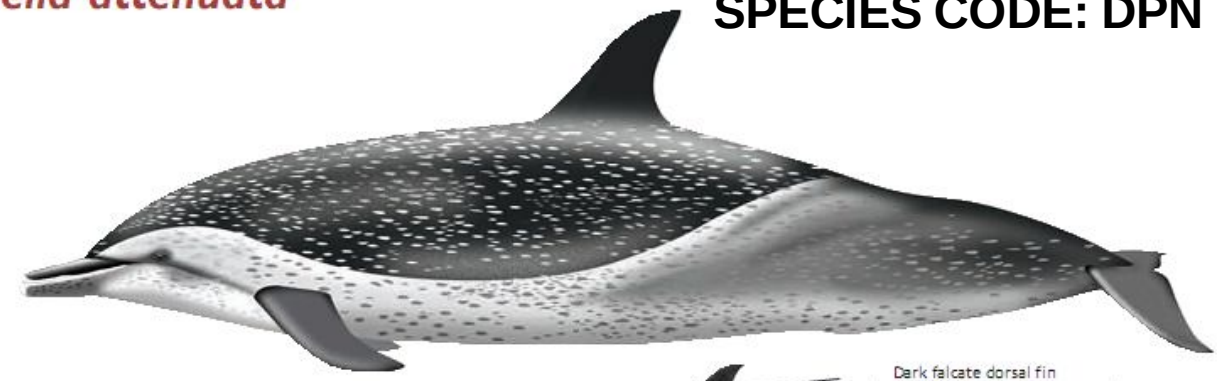
English: Common bottle-nose dolphin
French: Grand dauphin
Japanese: Bando-iruka, Taiseiyo
Local:

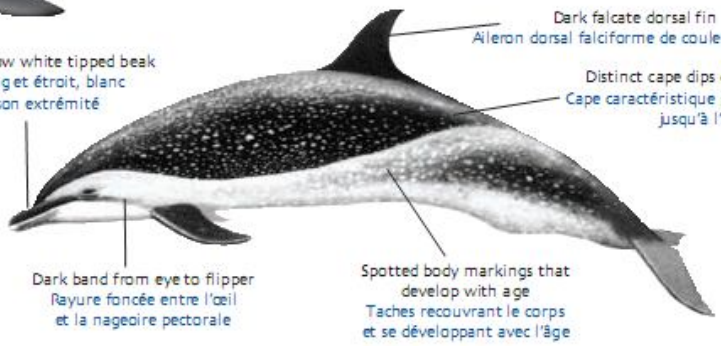


Maximum length: 3.8 m
Taille maximum : 3,8 m

Stenella attenuata

SPECIES CODE: DPN





English: Pantropical spotted dolphin

French: Dauphin tacheté pantropical

Japanese: Madara-iruka

Local:

Maximum length: 2.6 m
Taille maximum : 2,6 m

DAMAGED FISH

Toothed whale damage
Dégâts dus aux baleines à dents

Common characteristics:

- Jagged bite edges often accompanied by long strips of skin and tendons
- Often only the fish's head or mouthparts left on hook
- "Crushed and torn" appearance
- Tooth puncture marks widely spaced
- Damage often found on multiple fish in same set
- Usually appears to be a single bite

Caractéristiques communes :

- Contours irréguliers laissés par une morsure et souvent accompagnés de longs morceaux de peau et de tendons
- Souvent, seules la tête ou des parties de la bouche restent accrochées à l'hameçon
- Apparence écrasée et déchiquetée
- Traces de morsure très espacées
- Dégâts généralement constatés sur plusieurs poissons d'une même calée
- Généralement, le résultat d'une seule morsure

Shark damage
Dégâts dus aux requins

Common characteristics:

- Large bites; few, if any, long strips of tissue
- Gouge marks from individual teeth sometimes seen over surface of wound
- Teeth marks look more like cuts and lacerations than punctures
- Sometimes slashes and superficial cuts
- Often appears to have several bites

Caractéristiques communes :

- Morsures importantes ; peu, voire aucun grand lambeau de chair
- L'entaille de chaque dent est parfois visible à la surface de la blessure
- Les traces de morsure s'apparentent davantage à des coupures et des lacérations qu'à des perforations
- Parfois des écorchures et des coupures superficielles
- Souvent le résultat de plusieurs morsures

Cookie cutter shark damage
Dégâts dus aux squalelets féroces

Common characteristics:

- Circular or oval shaped wounds with clean edges
- Hemispherical and highly concave
- Can be found anywhere, but more common on lower rear of body

Caractéristiques communes :

- Blessures circulaires ou ovales aux bords nets
- Hémisphérique et très concave
- Peut se situer sur n'importe quelle partie du corps, mais le plus souvent sur la partie inférieure

Seabird damage
Dégâts dus aux oiseaux

Common characteristics:

- Jagged wound edges and surfaces
- Many short strips of skin and muscle left on wound edges
- Many scratch marks from beaks on skin around wound edge and on fish's body
- Usually occur on softer parts of fish's body

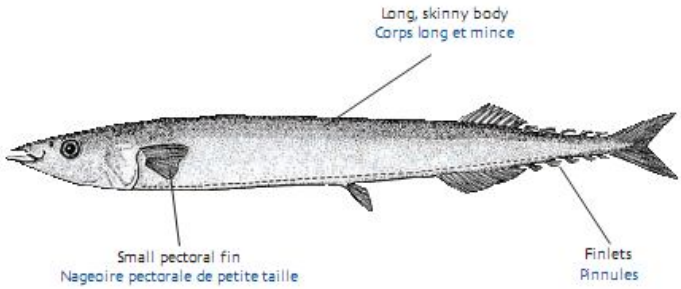
Caractéristiques communes :

- Surface et bords irréguliers de la blessure
- De nombreux lambeaux de peau et de muscle subsistent sur les bords de la blessure
- De nombreuses marques de coups de bec sur la peau au bord de la blessure et sur le corps du poisson
- Se situe en général sur les parties les plus souples du corps du poisson

BAIT FISH

Cololabis saira

SPECIES CODE: SAP

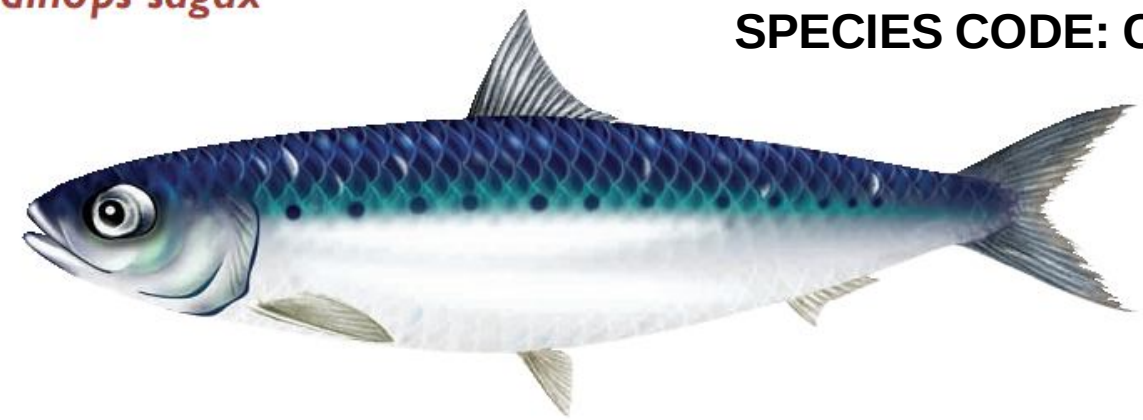


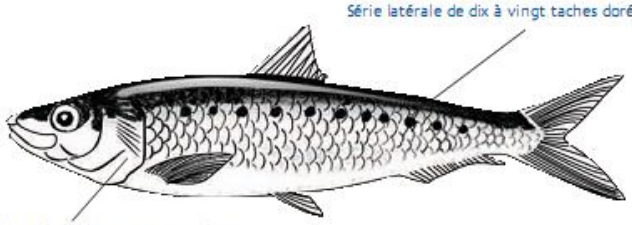
English:	Pacific saury, Sanma
French:	Balaou du Japon, Balaou du Pacifique
Japanese:	Sanma
Hawaiian:	Sanma
Local:	

Maximum length: 45 cm
Taille maximum : 45 cm

Sardinops sagax

SPECIES CODE: CHP



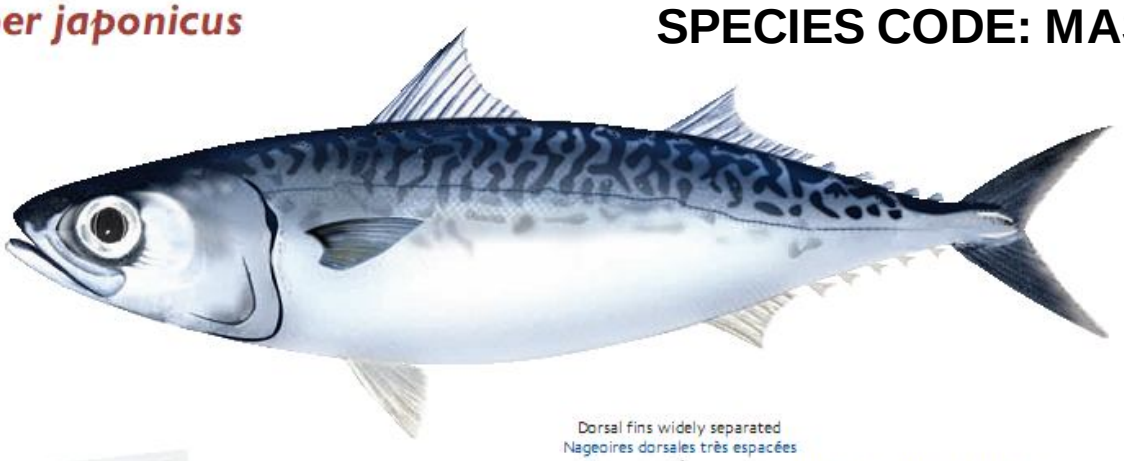


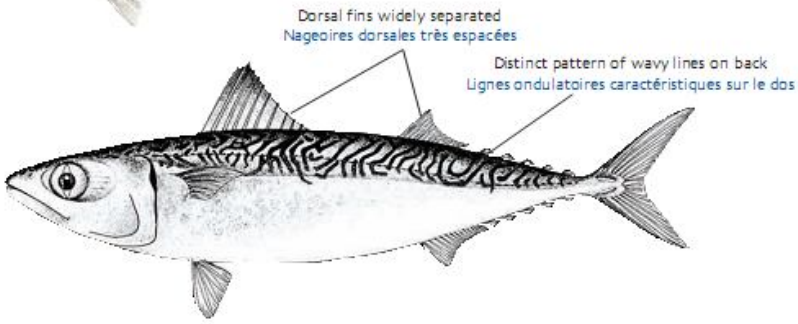
English:	South American pilchard
French:	Pilchard du Pacifique, Pilchard sud-américain
Japanese:	Ma-iwashi
Hawaiian:	Makiawa, Sardine
Local:	

Maximum length: 25 cm
Taille maximum : 25 cm

Scomber japonicus

SPECIES CODE: MAS



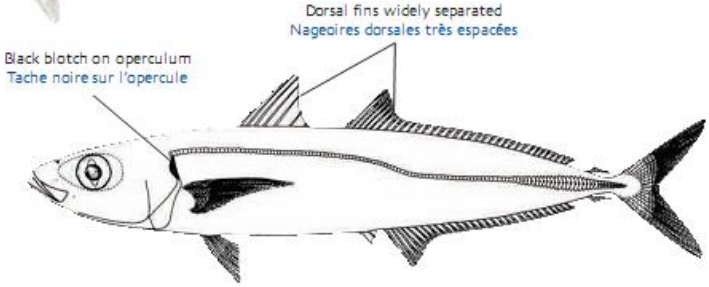


English: Chub mackerel
French: Maquereau espagnol
Japanese: Ma-saba
Hawaiian: Saba, Mackerel
Local:

Maximum length: 50 cm
Taille maximum : 50 cm

Decapterus macarellus

SPECIES CODE: MSD

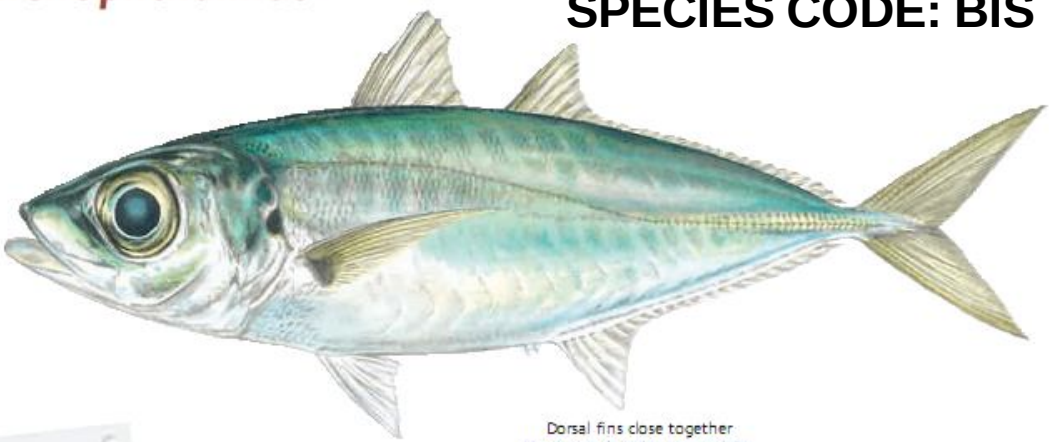


English: Mackerel scad
French: Comète maquereau
Japanese: Kusayamoro, Muro aji
Hawaiian: Opelu, Opelu-mama
Local:

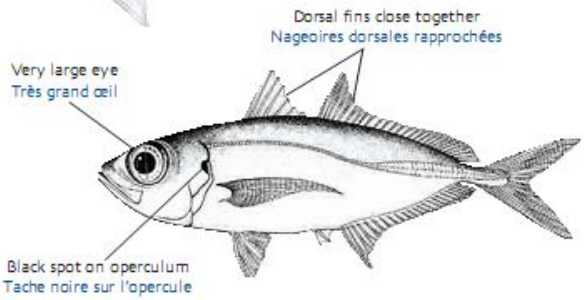
Maximum length: 40 cm
Taille maximum : 40 cm

Selar crumenophthalmus

SPECIES CODE: BIS



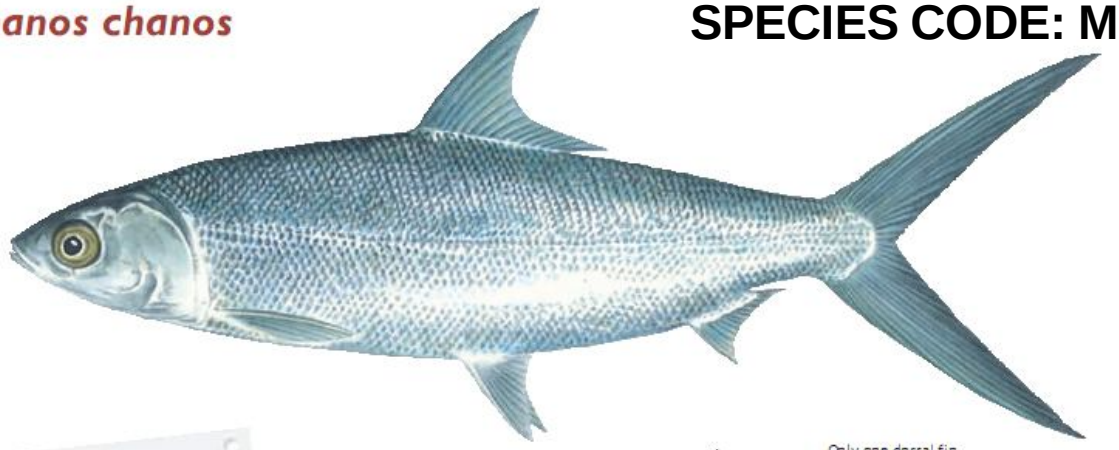
English: Bigeye scad
French: Sélar coulisou
Japanese: Me-aji
Hawaiian: Akule (large), Halalu (medium), Pa'a'a (small)
Local:



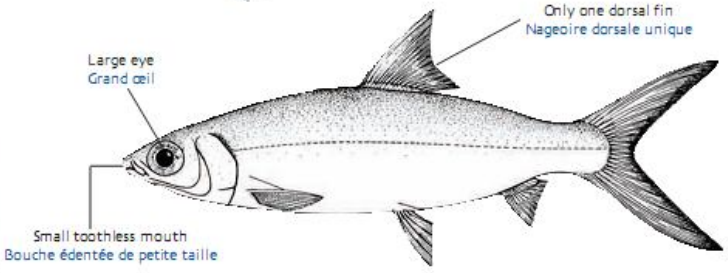
Maximum length: 50 cm
Taille maximum : 50 cm

Chanos chanos

SPECIES CODE: MIL



English: Milkfish
French: Chano, Poisson lait
Japanese: Sabahii, Miruku
Hawaiian: Awa
Local:

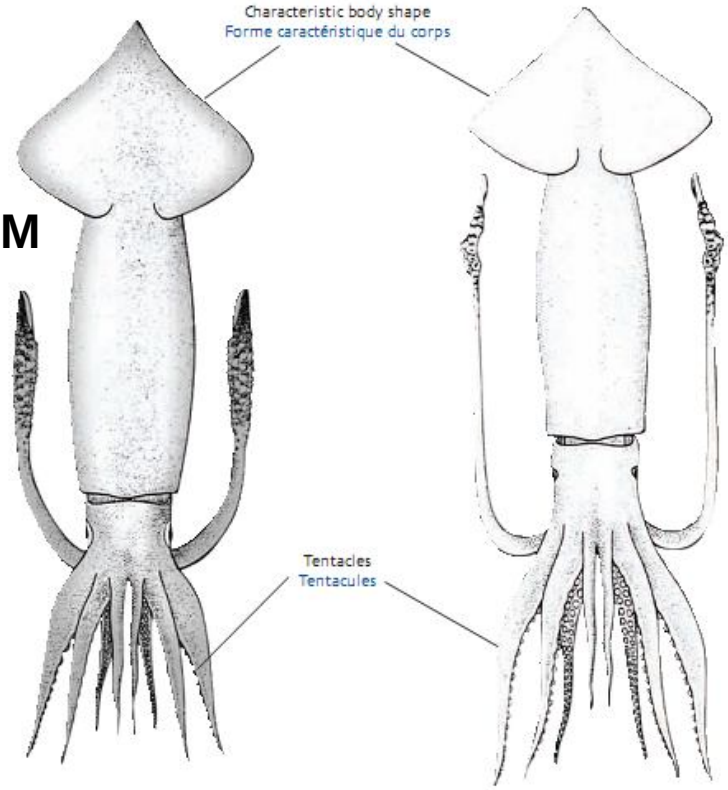


Maximum length: 110 cm
Taille maximum : 110 cm

Ommastrephidae

SPECIES CODE: OMM

English: Squid
French: Encornets
Japanese: Ika-rui
Hawaiian: Mu'hee, Ika, Squid
Local:



MACKERELS

Short Mackerel

Rastrilleger brachyosoma

Local Name : Hasa-hasa/Karavallas
TL: 34.5 cm
FL: 20.0 cm
Species Code: **RAB**

Photo by Gloerfelt-Tarp, T.

Island Mackerel

Rastrilleger faughni

Local Name : Anduhaw/Kabalyas
TL:20.0 cm
Species Code: **RAF**

Photo by Reyes, R.B.

Indian Mackerel

Rastrilleger kanagurta

Local Name : Alumahan/Anduhaw
TL: 35.0 cm
FL: 25.0 cm
Species Code: **RAG**

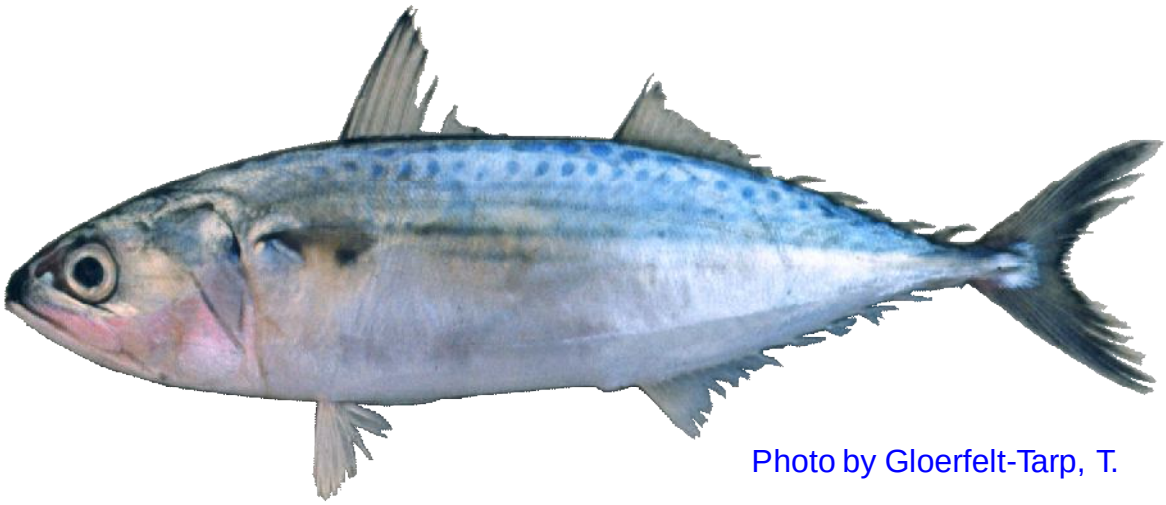


Photo by Gloerfelt-Tarp, T.

SCADS

Shrimp Scad

Alepes djedaba

Local Name : Talakitok/Salay-salay ginto
TL: 40.0 cm
FL: 25.0 cm
Species Code: **LSJ**

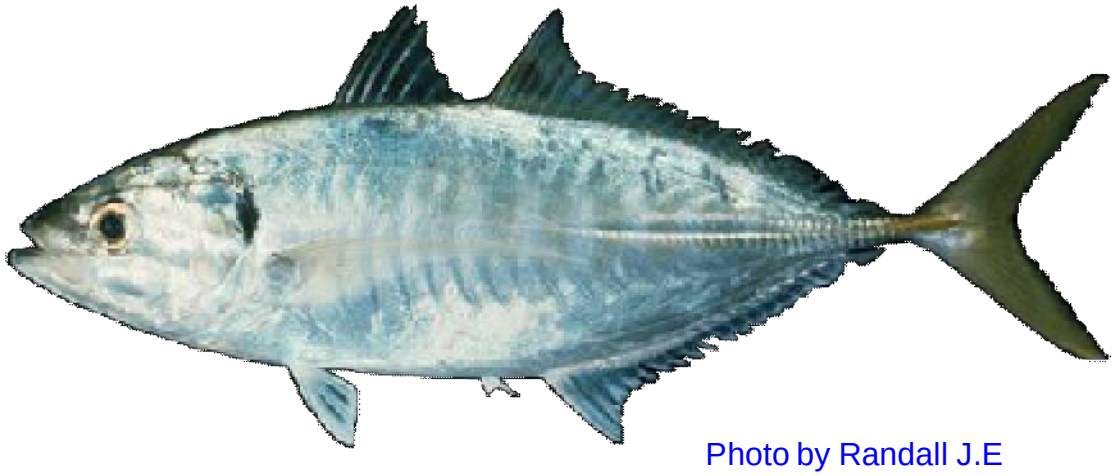


Photo by Randall J.E

Yellowtail Scad

Atule mate

Local Name : Salay-salay
TL30.0 cm
FL: 26.0 cm
Species Code: **TUM**

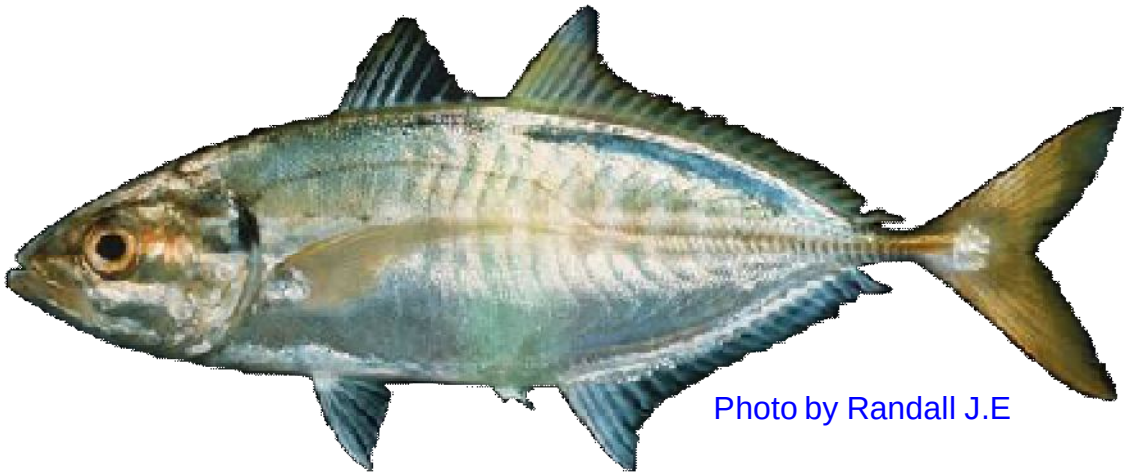


Photo by Randall J.E

Blackfin scad

Alepes melanoptera

Local Name : Talakitok/Salay-salay
TL: 25.0 cm
Species Code: **LSN**

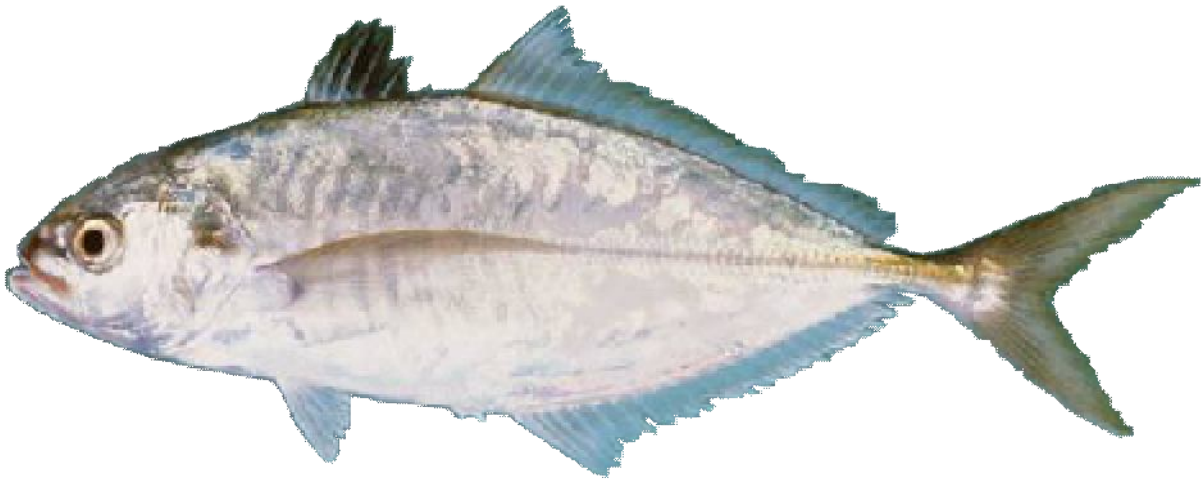


Photo by Randall J.E

Redtail scad

Decapterus kurroides

Local Name : Burot/Galunggong
TL: 45.0 cm
FL: 30.0 cm
Species Code: **DCK**

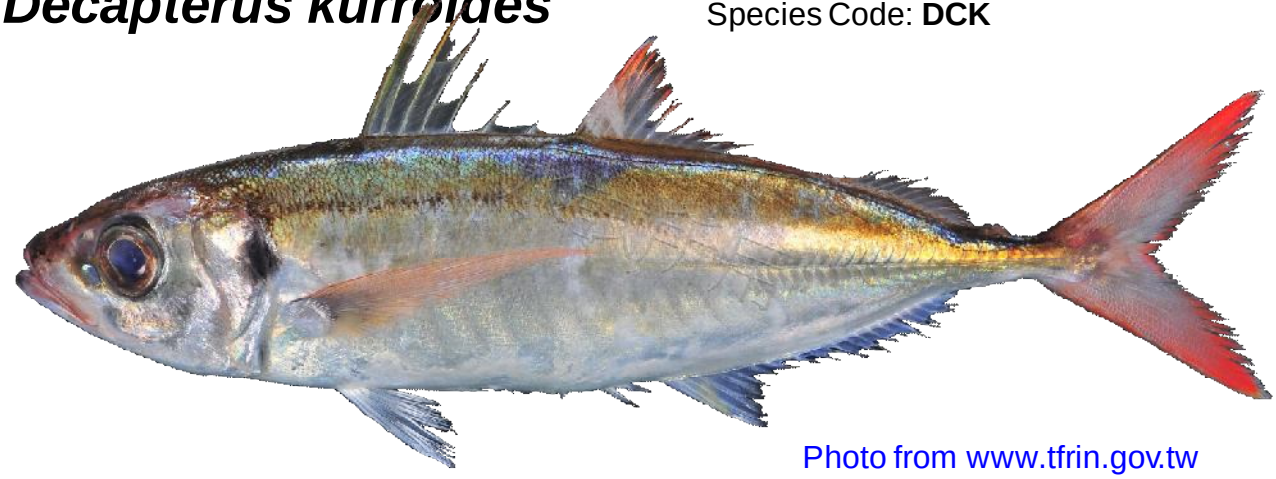


Photo from www.tfrin.gov.tw

Mackerel Scad

Decapterus macarellus

Local Name : Burot/Galunggong
TL: 46.0 cm
FL: 30.0 cm
Species Code: **MSD**

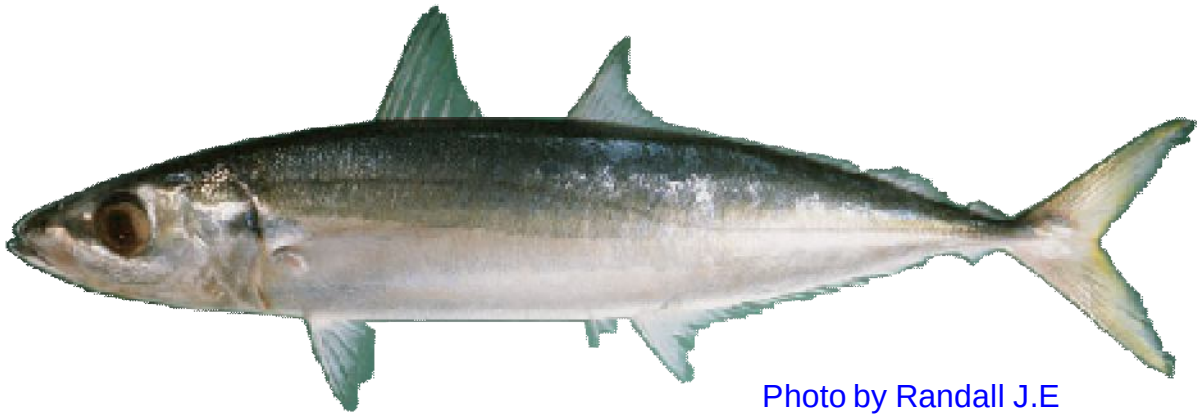


Photo by Randall J.E

Shortfin Scad

Decapterus macrosoma

Local Name : Burot/Galunggong
TL: 35.0 cm
FL: 25.0 cm Species Code: **DCC**

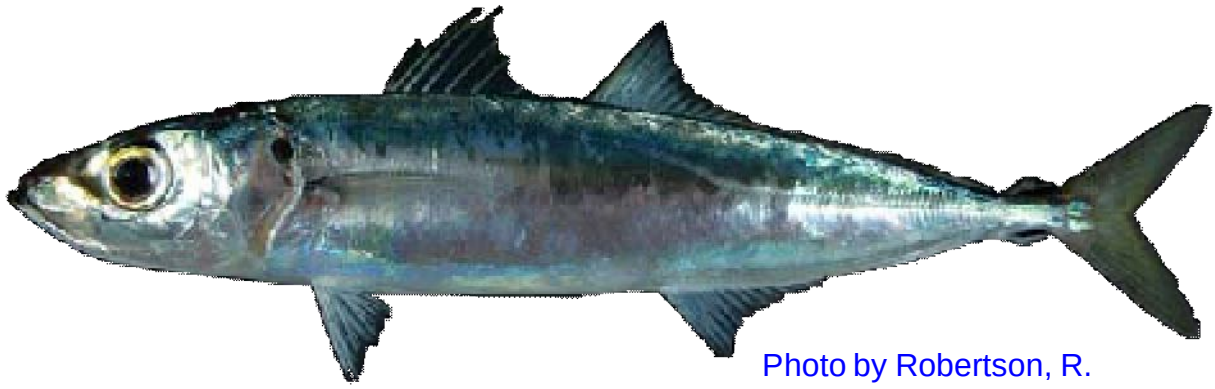


Photo by Robertson, R.

Japanese Scad

Decapterus maruadsi

Local Name : Moro-moro/Galunggong
TL: 50.0 cm
FL: 30.0 cm
Species Code: **RSA**

Photo by: Shao, K.T.

Amberstripe Scad

Decapterus muroadsi

Local Name : Burot/Galunggong
TL: 60.0 cm
FL: 30.0 cm
Species Code: **DCD**

Photo by Randall J.E

Indian Scad

Decapterus russelli

Local Name : Borot/Galunggong
TL: 46.0 cm
FL: 30.0 cm
Species Code: **RUS**

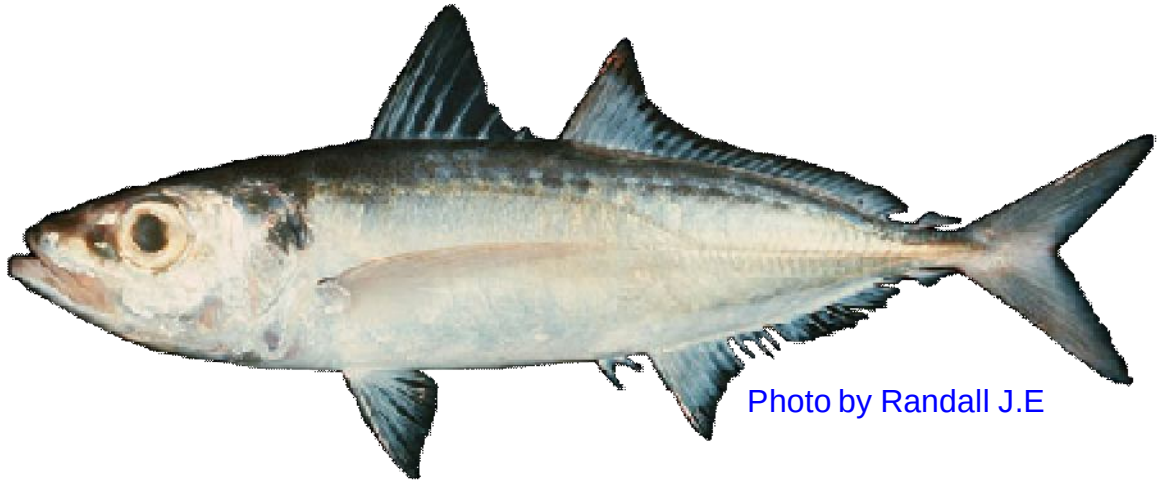


Photo by Randall J.E

Oxeye Scad

Selar boops

Local Name :Matangbaka
TL: 26.0 cm
FL: 22.0 cm
Species Code: **LRO**

Photo by Sainsbury, K.

Bigeye Scad

Selar crumenopthalmus

Local Name : Bulao/Matangbaka
TL: 30.0 cm
Species Code: **BIS**

Photo by Randall J.E

Torpedo Scad

Megalaspis cordyla

Local Name : Tulay/Pak-an/Balangoan
TL: 45.0 cm
Species Code: **HAS**

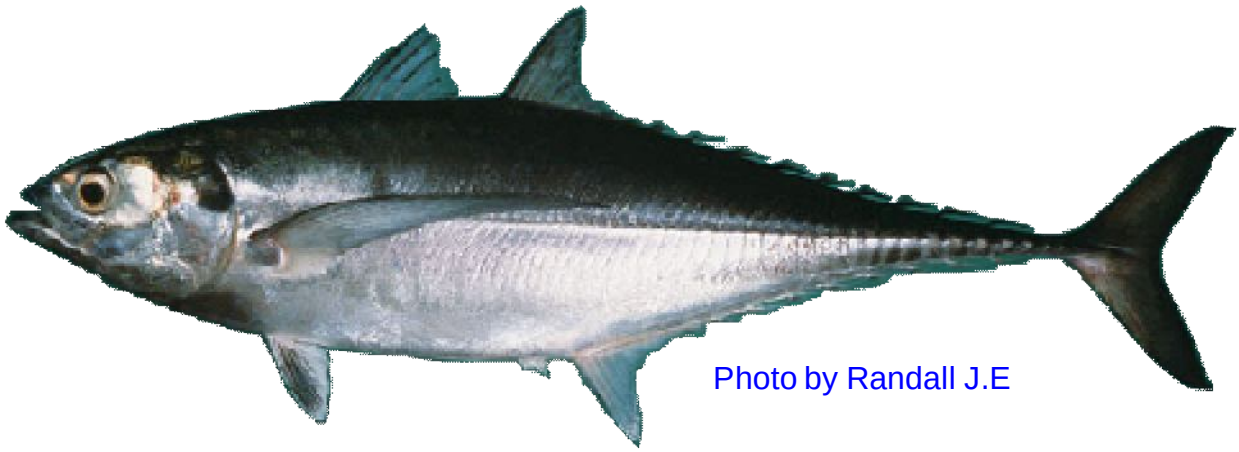


Photo by Randall J.E

SARDINES

Spotted sardinella

Amblygaster sirm

Local Name : Tamban/Tuloy
TL: 27.0 cm
FL: 20.0 cm
Species Code: **AGS**

Photo by Gloerfelt-Tarp, T.

White sardinella

Sardinella albella

Local Name : Tunsoy
TL: 14.0 cm
FL: 10.0 cm
Species Code: **SDB**

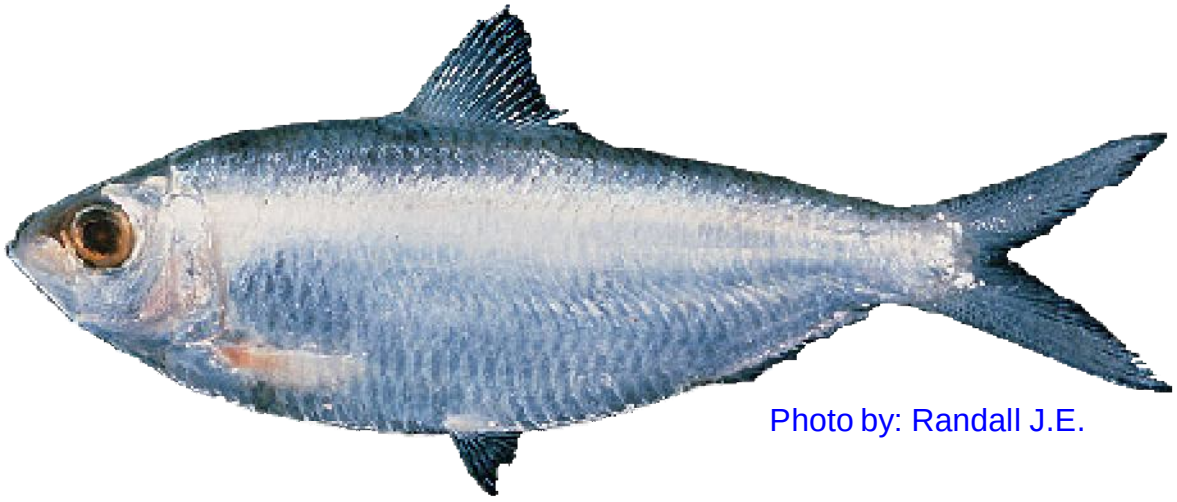


Photo by: Randall J.E.

Fringescale sardinella

Sardinella fimbriata

Local Name : Tunsoy
TL: 13.0 cm
FL: 11.0 cm
Species Code: **FRS**

Photo by Devarapalli, Padmayathi

Bali Sardinella

Sardinella lemuru

Local Name : Tamban/Tunsoy
TL: 23.0 cm
FL: 20.0 cm
Species Code: **SAM**

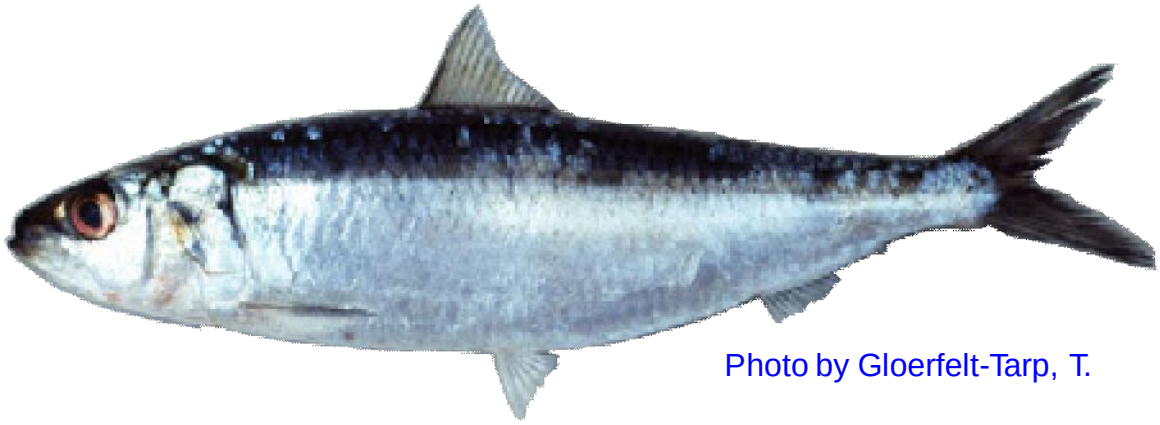


Photo by Gloerfelt-Tarp, T.

Goldstripe Sardinella

Sardinella gibbosa

Local Name : Tamban/Tunsoy
TL: 17.0 cm
FL: 15.0 cm
Species Code: **SAG**

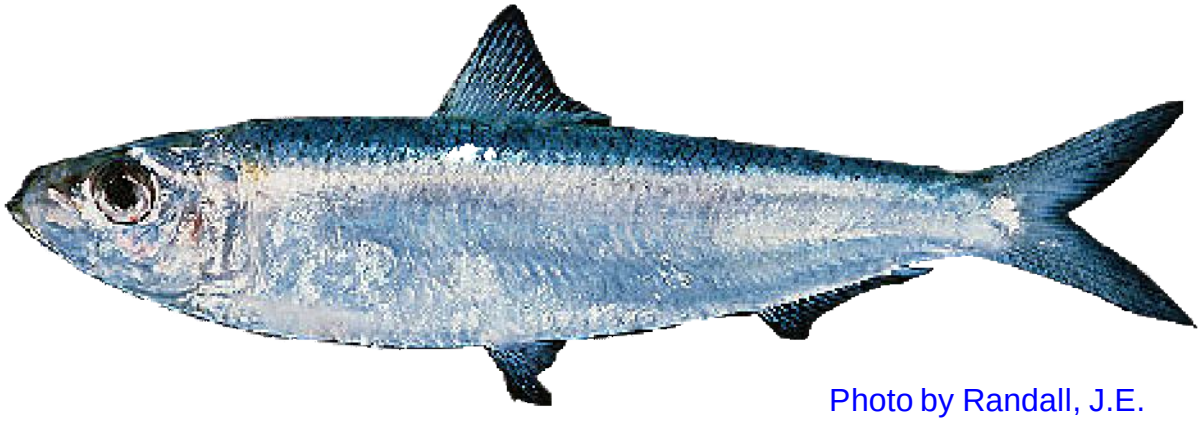


Photo by Randall, J.E.

White sardine

Escualosa thorocata

Local Name : Tamban
TL: 15.2 cm
FL: 10.0 cm
Species Code: **EST**

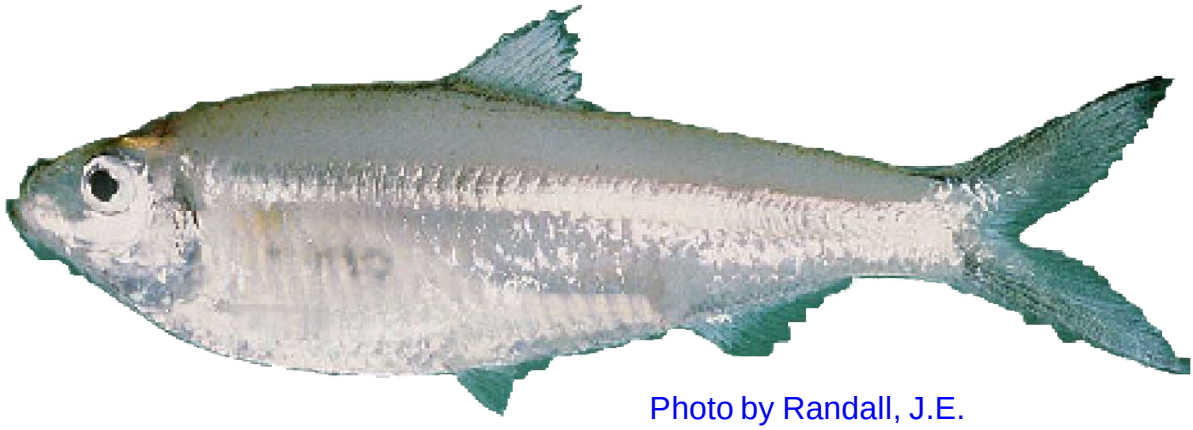


Photo by Randall, J.E.

Bluestripe herring

Herklotsichthys quadrimaculatus

Local Name : Dilat
TL: 15.2 cm
FL: 10.0 cm
Species Code: **HES**

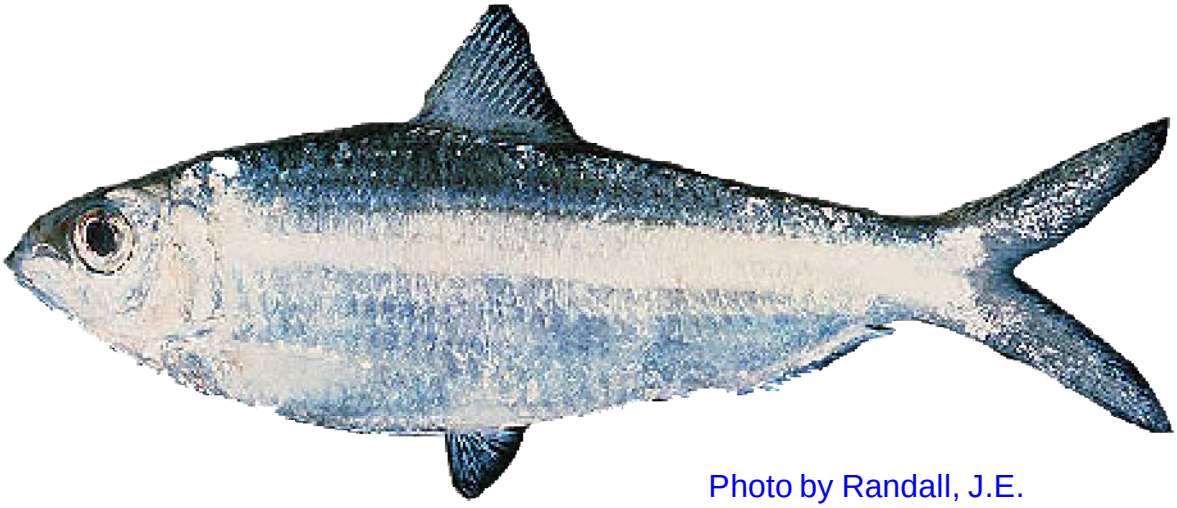


Photo by Randall, J.E.

Blacksaddle herring

Herklotsichthys dipilonotus

Local Name :Dilat
TL: 15.2 cm
FL: 10.0 cm
Species Code: **HKD**

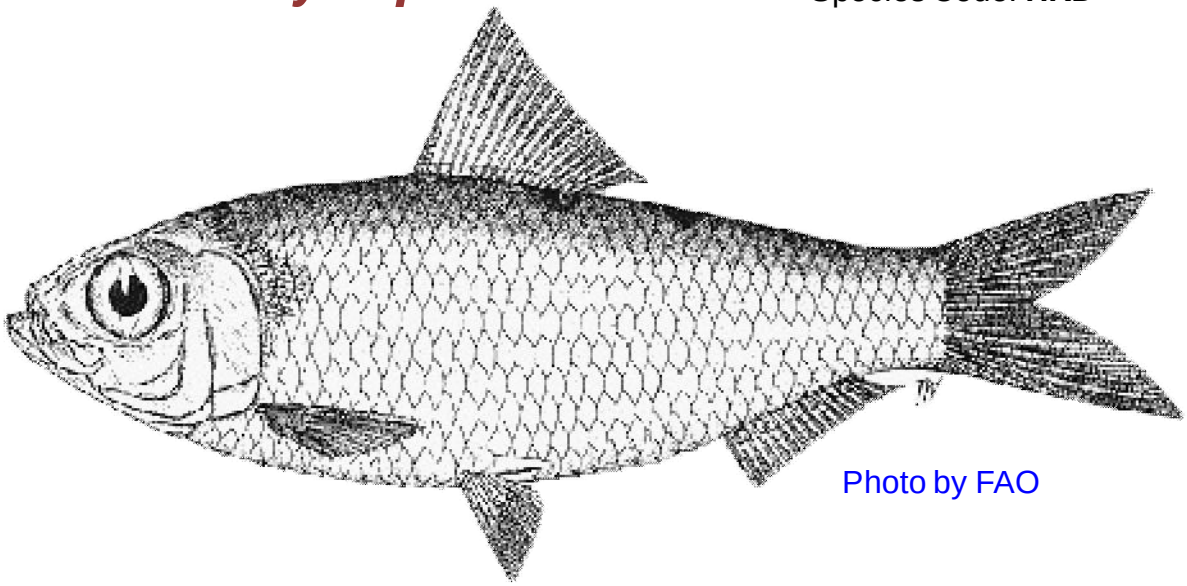


Photo by FAO

Rainbow sardine

Dussumieria acuta

Local Name : Tamban/Tamban-Hilos
TL: 20.0 cm
FL: 15.0 cm
Species Code: **RAS**

Photo by Randall, J.E.

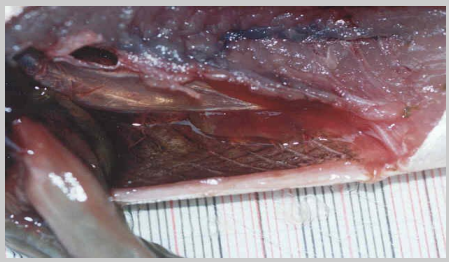
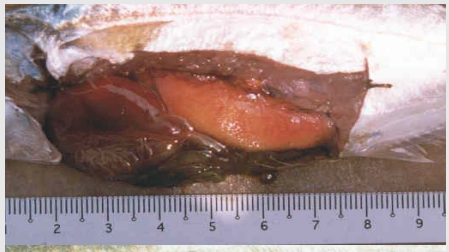
Taiwan sardinella

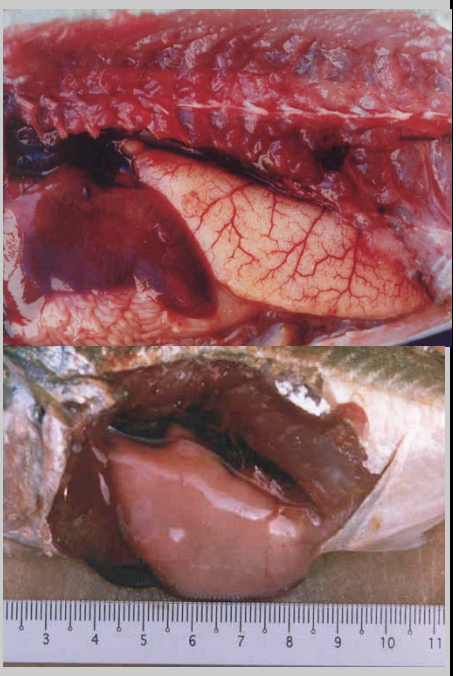
Sardinella hualiensis

Local Name : Tamban
TL: 15.2 cm
FL: 10.0 cm
Species Code: **JSS**

Photo by Shao, K.T.

5 POINT MATURITY SCALE

STAGE	STATE	DESCRIPTION	
I	Immature	Ovary and testis about 1/3 length of body cavity. Ovaries pinkish, translucent; testis whitish. Ova not visible to naked eye.	
II	Maturing	Ovary and testis about ½ length of body cavity. Ovary pinkish, translucent; testis whitish, more or less symmetrical. Ova not visible to naked eye.	 
III	Ripening	Ovary and testis is about 2/3 length of body cavity. Ovary pinkish-yellow colour with granular appearance, testis whitish to creamy. No transparent or translucent ova visible.	 

STAGE	STATE	DESCRIPTION	
IV	Ripe	Ovary and testis from 2/3 to full length of body cavity. Ovary orange-pink in colour with conspicuous superficial blood vessels. Large transparent, ripe ova visible. Testis whitish-creamy soft.	
V	Spent	Ovary and testis shrunken to about ½ length of body cavity. Walls loose. Ovary may contain remnants of disintegrating opaque and ripe ova, darkened or translucent. Testis blood shot and flabby.	

YELLOWFIN AND BIGEYE TUNA IDENTIFICATION

Excerpt from "A Handbook for the Identification of Yellowfin and Bigeye Tunas in *Fresh Condition* (v2)" by David G. Itano

Identification of Yellowfin and Bigeye Tuna by Visual Criteria

Even though tuna are easiest to distinguish in fresh condition, misidentifications and lumping of both species commonly occurs in surface fisheries. The pictures in this handbook should serve as a "best case" scenario for identifying yellowfin from bigeye tuna at all sizes. These examples can then be used to help differentiate samples that are in a less optimal condition, such as those pictured below.

Juvenile yellowfin and bigeye tuna in fresh condition can be reliably identified using a combination of the following features:

Photo: R. Gillett

- Internal characteristics
  - liver appearance and morphology
  - swim bladder morphology
- External characteristics
  - body markings
  - body morphology
  - head and eye morphology
  - pectoral fin characteristics
  - caudal fin characteristics
  - finlet coloration

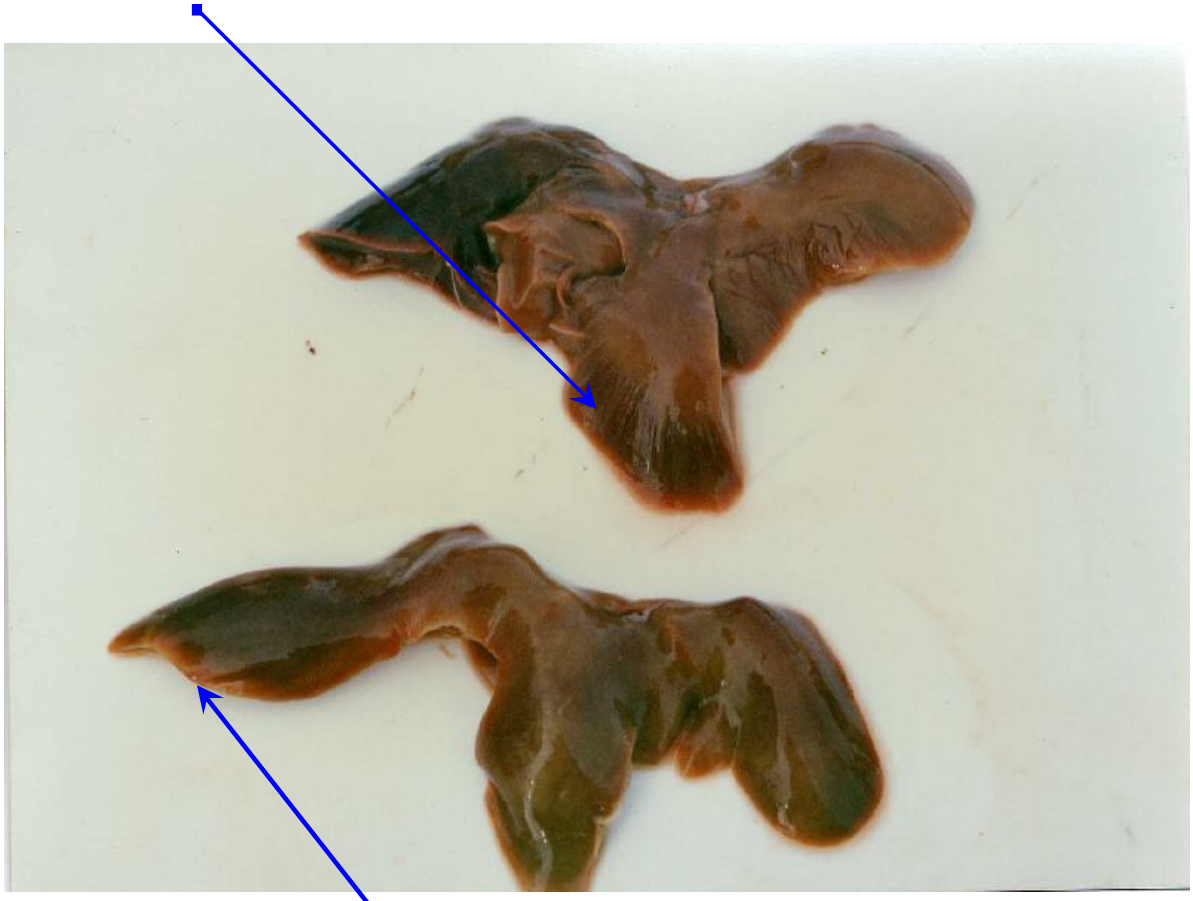
Internal Characteristics

▪ Liver morphology and appearance

- Large, conspicuous organ along anterior, ventral portion of gut cavity

➢ **Bigeye**

- Three rounded lobes of about equal size
- Ventral surface striated



➢ **Yellowfin**

- Right lobe longer and thinner than rounded medial and left lobes
- Lobes smooth, clear. No striations.

Internal Characteristics

- **Swim bladder**

➢ **Bigeye**

– occupies almost entire body cavity

– large, conspicuous, often inflated

➢ **Yellowfin**

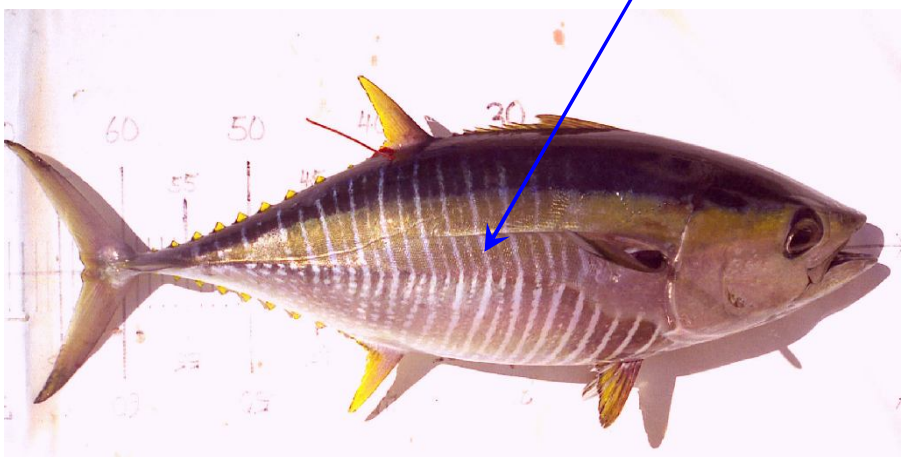
- only in anterior half of body cavity
- inconspicuous, usually deflated or slightly inflated

External Characteristics

▪ Body markings

➢ Yellowfin

- Conspicuous chevron pattern of closely spaced silvery lines
- Solid lines alternate with rows of dots
- Line pattern extends from tail, forward to beneath pectoral fin and to above mid-lateral line



➢ Bigeye

- Irregular vertical, widely spaced white lines or marks
- Some rows of dots but few and irregular
- Line pattern irregular, broken, confined mostly to below mid-lateral line

External Characteristics

- **Coloration**

➢ Yellowfin

- Fresh yellowfin show a bright yellow mid-lateral band
- Dark black back may be separated from the gold by a thin blue band
- Fins yellow to yellowish, anal fin sometimes tinged with silver
- Flanks and belly silvery white

➢ Bigeye

- Golden to brassy mid-lateral band, less distinct
- Dark black back edged with bright metallic blue line
- Fins dusky yellowish with anal fin tinged with silver
- Caudal fin often dusky black
- Flanks and belly pearly white

External Characteristics

- **Body morphology**

➢ **Yellowfin**

- body elongate, long tail
- body outline flat between second dorsal and caudal fin and between anal and caudal fin

➢ **Bigeye**

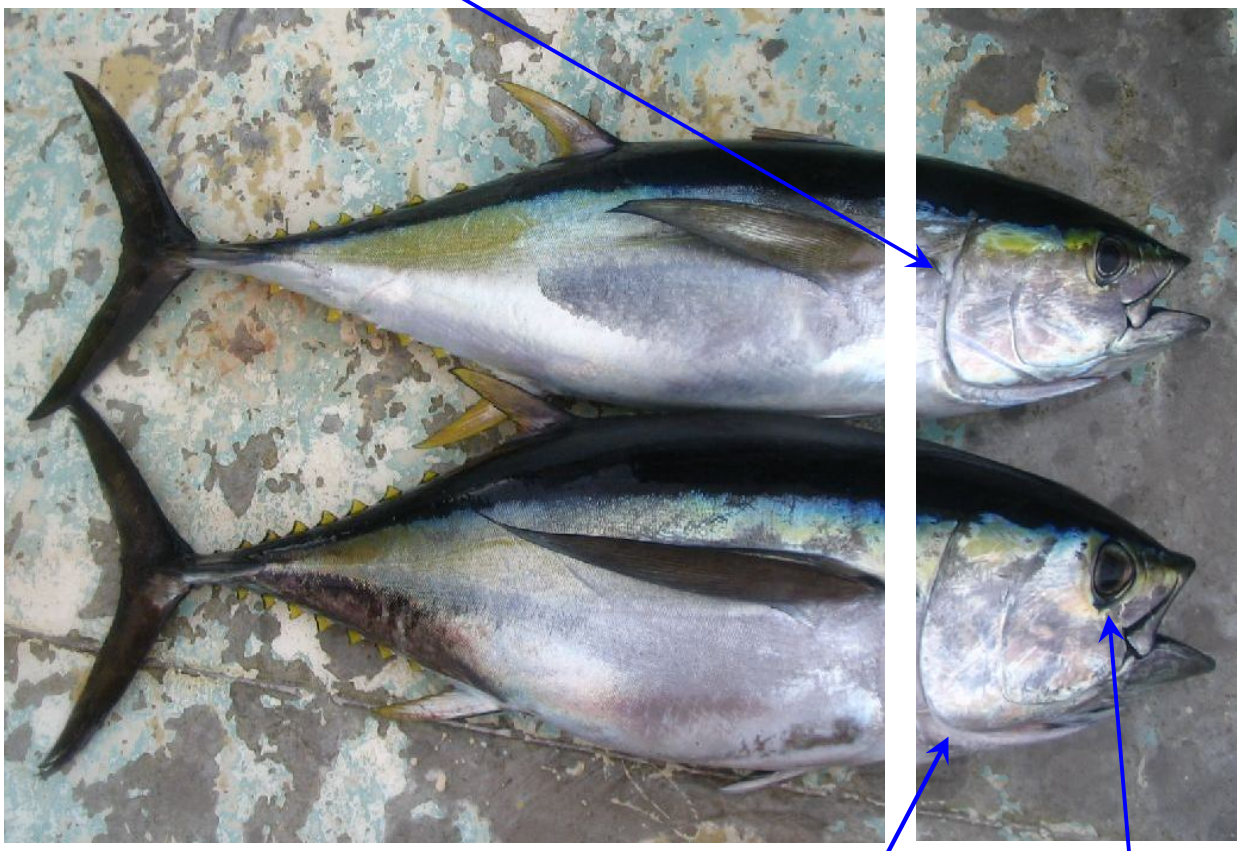
- body deep, rounded
- body outline rounded, forming a smooth dorsal and ventral arc between snout and caudal peduncle

External Characteristics

- **Head and eye morphology**

➢ **Yellowfin**

- shorter head length and depth vs Fork Length than bigeye
- smaller eye diameter compared to bigeye of same Fork Length



➢ Bigeye

- greater head length and depth vs Fork Length than yellowfin
- greater eye diameter compared to yellowfin of same Fork Length

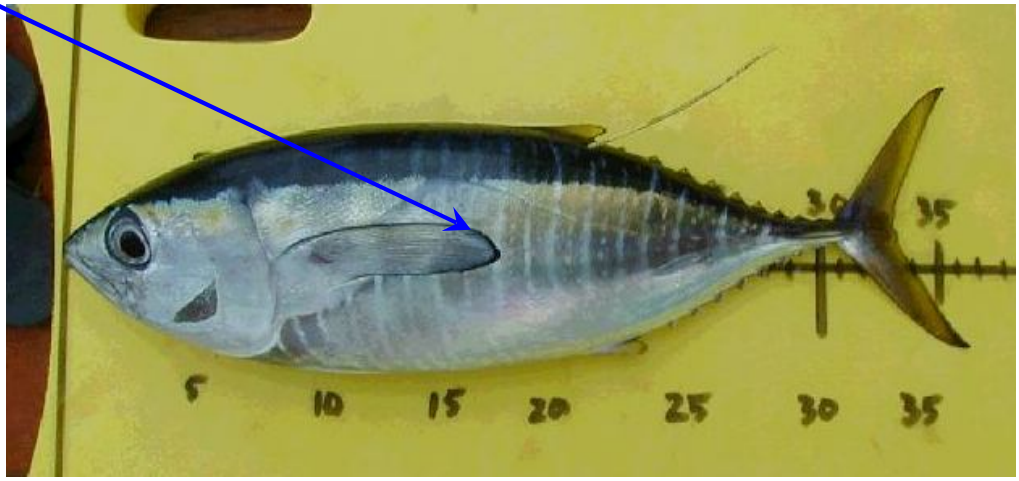
External Characteristics

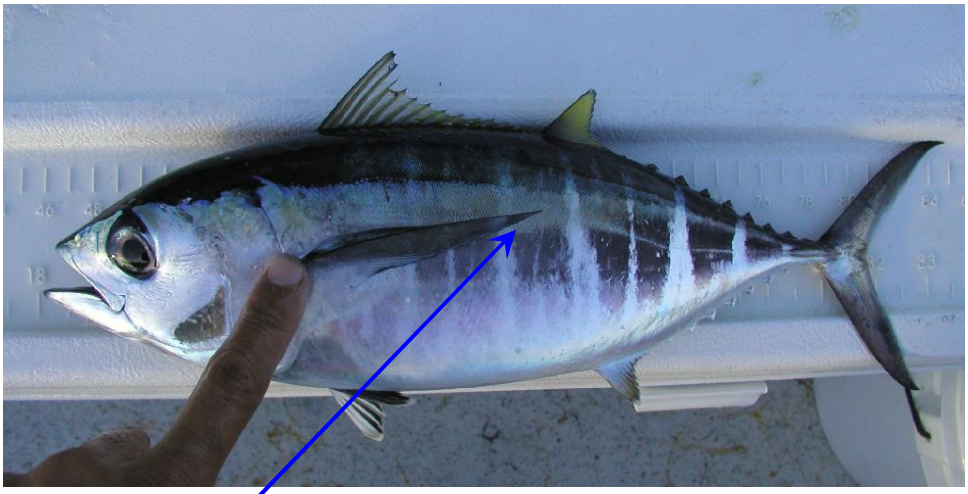
- **Pectoral fin length and characteristics**

(for small fish less than ~ 40 cm Fork Length)

➢ **Yellowfin**

- pectoral fin short, just reaching insertion of second dorsal fin
- pectoral fin thicker, stiffer and rounded at tip





➢ **Bigeye**

- pectoral fin slightly longer reaching second dorsal fin
- pectoral fin thin, flexible and pointed at the tip

However, pectoral fin lengths are not that different for such small fish. Other features are more distinct such as body markings and morphology

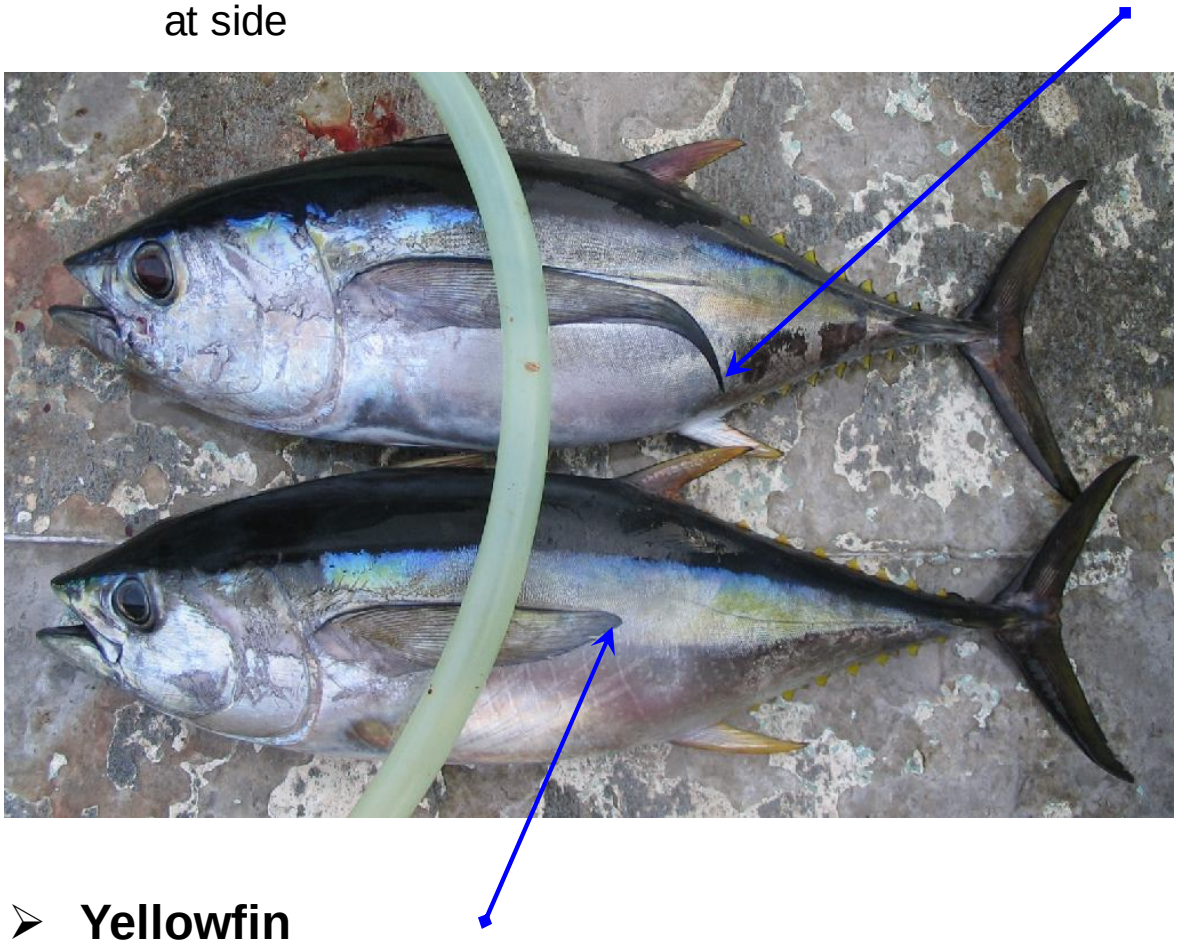
External Characteristics

- **Pectoral fin length and characteristics**

(for medium sized fish ~ 45 – 110 cm Fork Length)

➢ **Bigeye**

- pectoral fin long, extending beyond the second dorsal fin base
- pectoral tapers to thin point, flexible, often curves ventrally at side



➢ **Yellowfin**

- pectoral fin short, extending to base of second dorsal fin
- pectoral fin thicker, stiff, blade-like

For large bigeye and yellowfin above 150 cm, the pectoral fins become similar in size and shape.

External Characteristics

▪ Pectoral fin characteristics

➢ Yellowfin

- pectoral fin shorter, thicker, “blade-like” compared to bigeye

Yellowfin 104 cm

Bigeye 99 cm

➢ Bigeye

- Pectoral fin longer, thinner, pointed at tip

Bigeye 96 cm

Yellowfin 104 cm

Bigeye pectoral fin forms smooth arc with “floppy” tips.
Yellowfin pectoral fins are straight and stiff.

External Characteristics

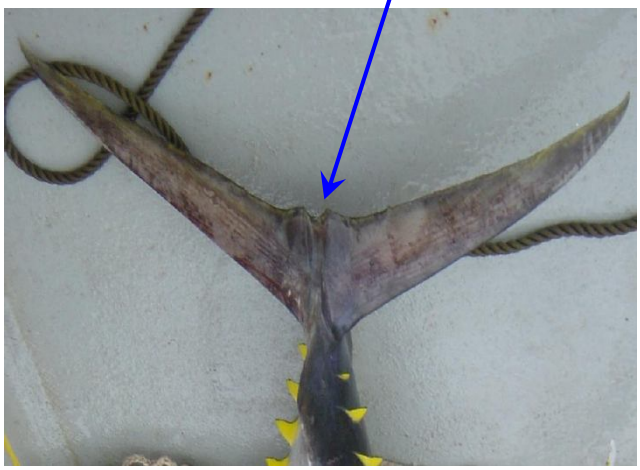
- **Caudal fin**

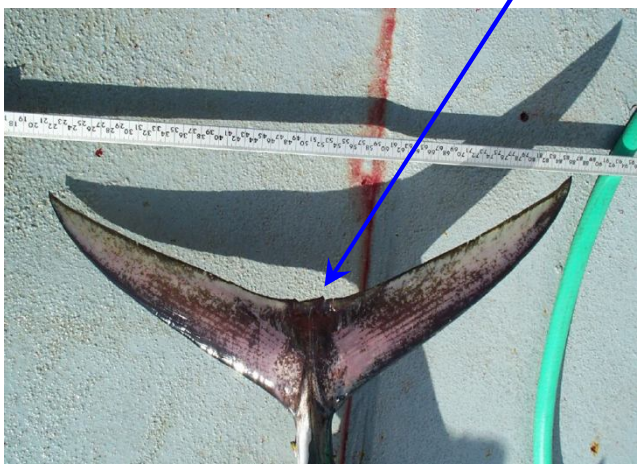
➢ **Yellowfin**

- Central portion of trailing edge forms distinct notch
- Two distinctly raised ridges present that form the “V” notch

➢ **Bigeye**

- Central portion of trailing edge forms a flat or slightly crescent shaped area
- Central area of caudal fin flat with two inconspicuous low mounds present.





External Characteristics

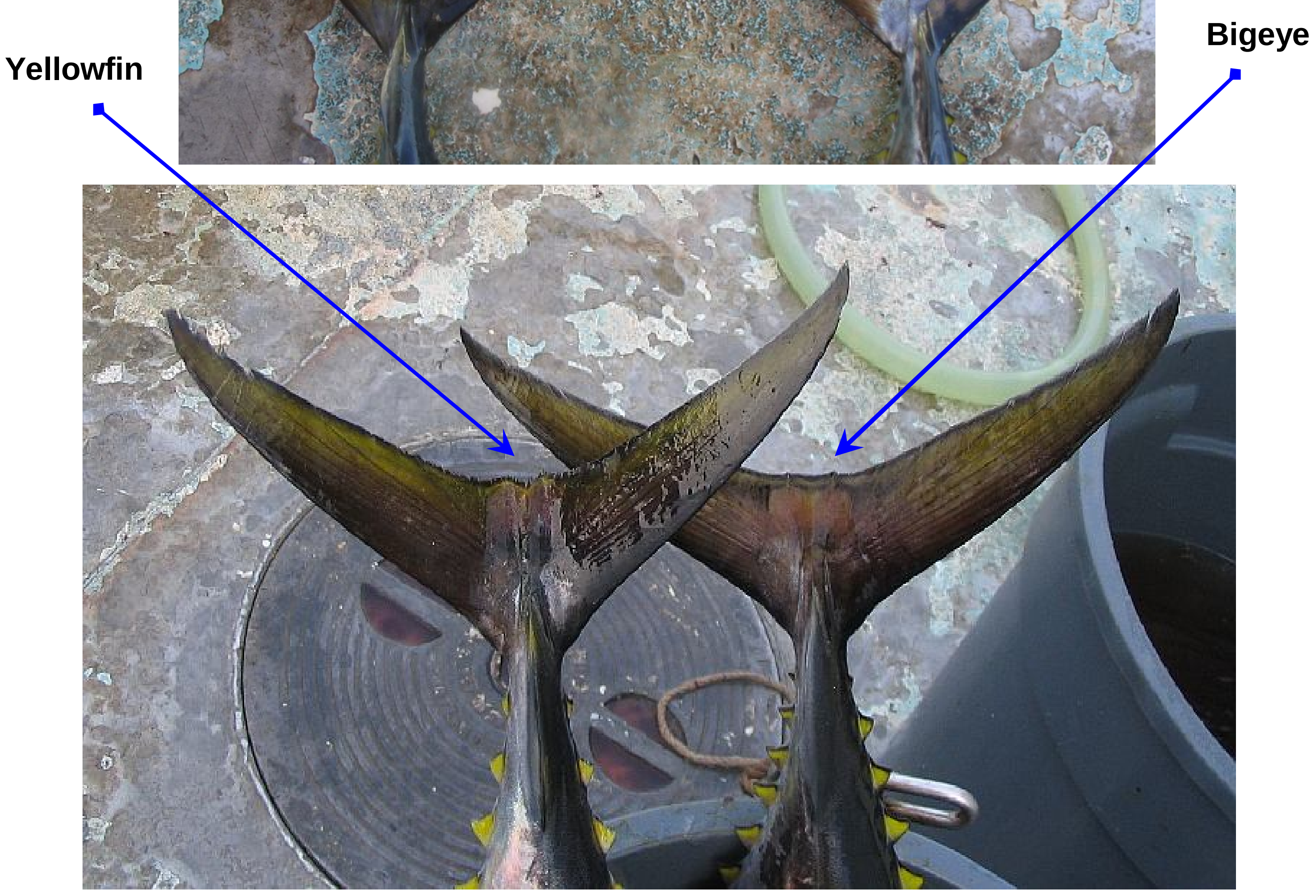
- **Caudal fin – center of trailing edge**

Yellowfin

Forms "V or M" shaped notch

Bigeye

Forms flat or slightly rounded cup



External Characteristics

- **Finlet coloration**

➢ **Yellowfin**

- bright yellow with no or slight black edging

➢ **Bigeye**

- yellowish color edged with black

Attachment W12-E

Sustainable Management of WPEA Tunas
Project Progress Report

3rd Quarter 2015

Submitted by the Project Manager SungKwon Soh

09 October 2015

AWARD BASIC INFORMATION

Award ID:	00077221
Project ID:	00088145
Award Title:	Regional: Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas
Business Unit:	PHL10
Project Title:	Regional: Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas
PIMS no.	4753
Implementing Partner (Executing Agency)	Western and Central Pacific Fisheries Commission (WCPFC)
Award Start Date & End Date	
Total Award Amount	$2,233,578

PROJECT PROGRESS

1. Several activities have been planned for the third quarter but implementation of those activities has been delayed in Indonesia and Vietnam awaiting finalisation of their internal approval process required to action this project, i.e., designating the execution department and finalizing the project activities and related budget. Project activities for these two countries have been deferred to the fourth quarter of 12015 or early 2016. The progress of the WPEA project at each country is annexed below.

Indonesia

2. There are two agencies in Indonesia which implement the WPEA-SM Project: Directorate General for Capture Fisheries (DGCF) and Research Center and Development for Fisheries (RCDF, formerly RCFMC).

3. Though Indonesia has approved the WPEA-SM project and both DGCF and RCDF have provided their official bank accounts, DGCF's internal process for dealing with project activities and budget with their finance office has yet to be cleared (There was a new request from the government in July 2015), hence delays for the project implementation continue in DGCF. In the case of RCDF, there was a re-structuring and the formal institute RCFMC merged with the Aquaculture Center, to become RCDF. However, the implementation of RCDF's project activities have continued to date.

4. Third quarter, WPEA-related activities conduced in Indonesia are listed below:
   a) Collection of tuna catch, effort and biological data from port sampling at these landing sites: Kendari Sodohoa, Bitung, Sorong and Mamuju (Majene). Data summary report - **Attachment A**.
   b) Supervision trip for port sampling conducted during August in Sorong. Trip report - **Attachment B**.
   c) Participation in the 11th regular session of the WCPFC's Scientific Committee as capacity building in fisheries science (5-14 August 2015, Pohnpei, FSM). Trip report - **Attachment C**. The participant described in his report lessons that he learned as follows (extracted from the trip report):
      i) SC11 provided an excellent opportunity for Indonesia to actively participate in the WCPFC, particularly through WPEA project. Indonesia's participation is essential for

maintaining its tuna fishery sustainable development in the long term and active participation in the work of the WCPFC.

ii) It is my first time to attend an SC meeting and I got new knowledge regarding tuna science, particularly in tuna research, since I am currently in charge of tuna management in the ministry of fisheries. This knowledge is quite important for me and for my office to contribute for the better management tuna resources in Indonesia.

iii) By attending the meeting, I fully recognized the importance of the data for research. Therefore, Indonesia should improve collecting data from logbook and observer programme to support tuna research in the WCPFC area.

iv) Another observation is that the research papers during the meeting did not focus much on main tuna species. There are many researches, projects and discussions that were related with bycatch and ecologically related species particularly on shark.

d) Establishment of a new government bank account for WPEA-SM project (in-kind contribution)

e) Development of an academic paper to establish a new research institute for large pelagic fish species in Bitung (In kind Contribution). The report - **Attachment D** (in Bahasa with a cover page in English).

f) Preparation of a prior study for the development of general guidelines on adaptive management and monitoring of highly migratory fish stocks in relation with climate change (on-going).

5. An overview of the project progress is summarized in Table 1.

Table 1. Progress of Indonesia's WPEA-SM project activities. Some activities were deferred to early next year 2016.

Outcomes	Activity (IDN)	Period scheduled	Q1 and Q2	Q3 and Q4
1.1	1. (DGCF) Logbook awareness WS	Q1-Q4		Deferred to early 2016
	2. (DGCF) Capacity building of the country science	Q3	Preparatory actions taken in Q2	Completed in Q3
	3. (DGCF, RCFMC) National tuna coordinator	Q1-Q4	Implemented in Q1 and Q2	Continued
	4. (DGCF) Annual Tuna Catch Estimates Workshop	Q2	Completed in Q2	
1.2	5. Prior Study on Climate Change	Q1-Q4	Preparatory actions taken in Q2	Will be implemented in Q4
1.2 and 2.2	6. Review WS on CC, Supply Chain Analysis, and Sustainability/Certification	Q4	Preparatory actions taken in Q2	Deferred to early 2016
2.1	7. (DGCF) Implementing national compliance review monitoring	Q1-Q4		Continued
2.2	8. Consultancy - Supply chain analysis/traceability	Q1-Q4	Preparatory actions taken in Q2	Will be implemented in Q4
	9. Consultancy on sustainability/certification	Q1-Q4	Preparatory actions taken in Q2	Will be implemented in Q4
2.3	10. Research on harvest strategy	Q2-Q4	Preparatory actions taken in Q2	Continued
	11. Convene a review WS on harvest strategy (RPs and HCRs)	Q4	Preparatory actions taken in Q2	Will be implemented in Q4

	12. (RCFMC) Conduct data review WS	Q1-Q4		Deferred to early 2016
	13. (RCFMC) Sub-regional stock assessment workshop	Q4		Will be implemented in Q4
	14. (RCFMC) Data collection from port sampling	Q1-Q4	Implemented in Q1 and Q2	Continued
3.1	15. Database	Q1-Q4		On-going
	16. IW Learn activities	Q1-Q4		Deferred to 2016

Philippines

6. There have been several activities conducted in the Philippines during the third quarter but some activities scheduled this year will be deferred to early 2016. Key activities include capacity building in science by supporting participation of one BFAR staff in the eleventh session of the WCPFC Scientific Committee and several MCS activities as summarised below.

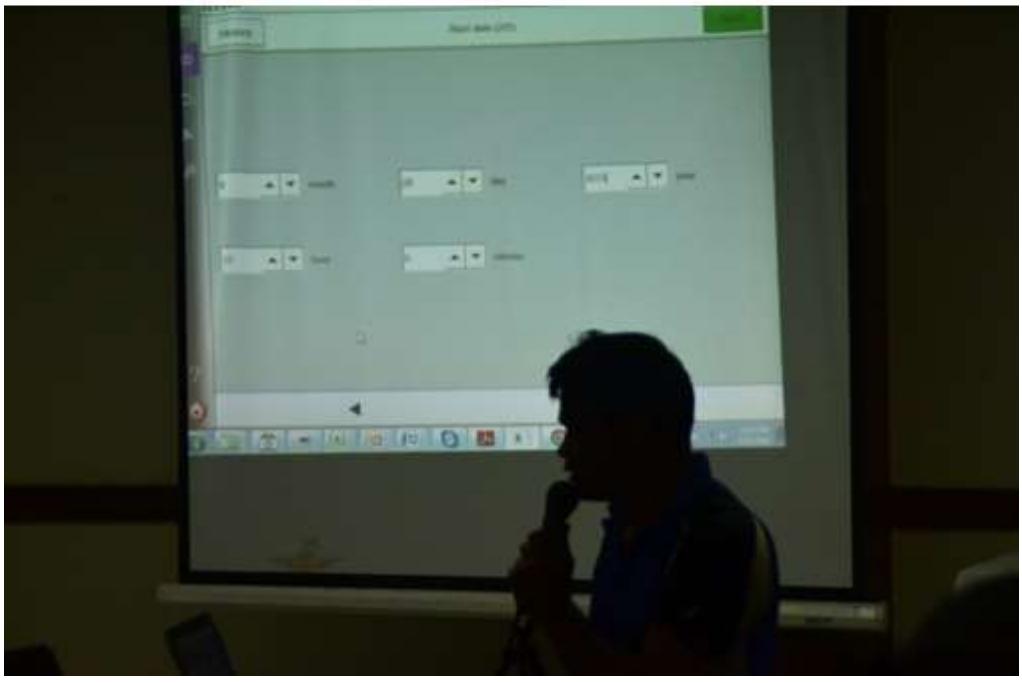
7. Observer Deployment**: A** total of 6 observers in the matrix below were deployed to board commercial fishing vessels (Purse Seine/Ring Net) operating within the Eastern Pacific Seaboard. This was to broaden observer data collection within the Philippine EEZ. Observers are on-board vessels for 10-15 days per month. The observers take on enumerator duties when on shore.

Name of Observer	Region	Area
Ruben Buemia	4-A (Calabarzon)	Infanta, Quezon
Ian Edward Calpe	4-A (Calabarzon)	Infanta, Quezon
Marco Briz	5 (Bicol)	Mercedez, Camarines Norte
Kenneth Molo	5 (Bicol)	Mercedez, Camarines Norte
Oriel Rosero	13 (Caraga)	Surigao
Francisco Piloton Jr.	13 (Caraga)	Surigao

8. Two training workshops were conducted in September.

1) A debriefers Workshop was held on 21-23 September 2015 with 30 participants (Fisheries Observers) at the BFAR MCS Station and the Fishing Technology Laboratory in Navotas City. The workshop aimed for the improvement of debriefing process, and identifying issues and concerns related with observer deployment and observer evaluation.

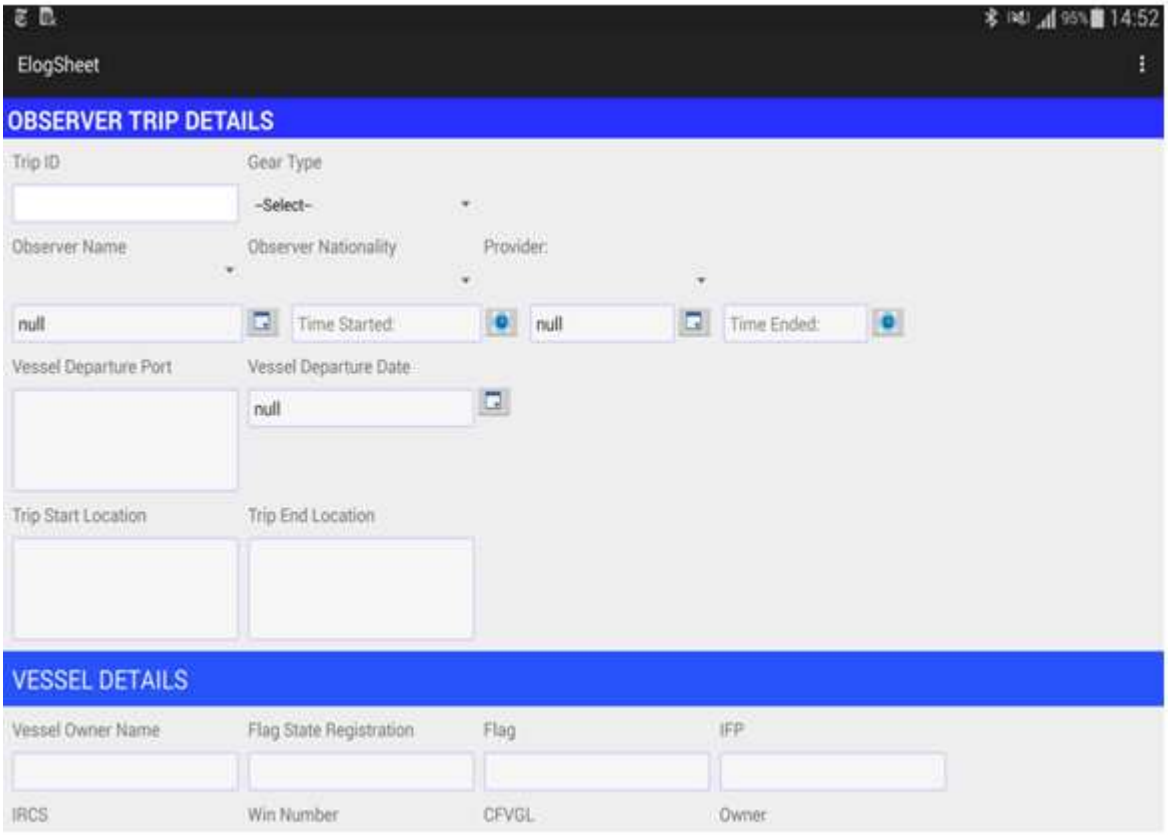
2) A training workshop on E-Logbooks (MARLIN) was held on 28-29 September 2015 in General Santos City with 60 participants (Vessel Captains and Fisheries Observers). Training focused on the operation, use and troubleshooting of the MARLIN unit installed in catcher vessels operating in high seas pockets no.1.



9. WPEA-supported the purchase of required IT equipment.

    1) The Philippine Fisheries Observer Program Management Office (PFOPMO) purchased two desktop units to be used for the Tuna Fisheries Observer System (TUBs) and data encoding of observer forms.
    2) Five Android Tablets for Pilot Testing of Electronic Observer Forms were also purchased..

10. The Development of Electronic Observer Forms. The Program has started to develop Observer Forms in Electronic Format. The Android application is currently undergoing a review and debugging process.



11. Capacity building is one of the main objectives of the WPEA Project. Every year, WPEA supports one scientist per country to attend the WCPFC's Scientific Committee meeting. The 2015 Philippine SC11 trip report is **Attachment E**. The participant described in her report lessons that she learned as follows (extracted from the trip report):

> The attendance on the 11th WCPFC Science Committee meeting in Pohnpei, Federated State of Micronesia, last August 3 to 14, 2015 has been beneficial and useful to the undersigned thus enhanced technical know-how's on various scientific activities contributed/shared by the scientists from other member countries and SPC. Hereunder are the observations and recommendations:
>
> a) The SC has continuously provided a good venue for scientists, fishery managers, compliance managers, regional /national observer coordinators and NGOs to discuss and share each other's works and experiences to upgrade knowledge and competencies on the latest trends and review of various fisheries status with focus on tunas in the WCPO and other species of special interest; issues related with data and statistics; stock assessment; management issues in relation to the implementations of the applicable conservation and management measures; ecosystem and bycatch mitigation and on other research projects including the West Pacific East Asia Project.
>
> b) It was also observed that after each paper presentations, the approach on open discussions to provide comments and observations has encourage the active participation of all member countries thus created a friendly working atmosphere and information sharing. Although there are some debates in the plenary due to different views and opinions, the respect of each other's contribution were deliberated and considered.
>
> c) Regarding the overall management and operation of the SC meeting, I fully support the decision making "Consensus Approach" which resulted in providing a unified scientific outputs.

d) Regarding the conduct of researches, there must be a need to encourage all member countries to conduct their respective compatible researches to validate the overall findings of the WCPFC scientific services provider. In this respect, the Commission must provide the corresponding capacity building training to interested CCMs to standardize the science protocol, methodologies, approaches and funding support in the implementation of the priority studies as well as promote the SPC's collaboration with interested CCMs.

e) In the case of the Philippines, the implementation of the WPEA Project activities and its flexible approach in supporting the country's /CCM's needs has been providing significant benefits. Its support is focused on the diversified requirements of the tuna fishing industry to improve its data collection both at the landing centers and onboard the fishing vessels using various documentation tools such as the NSAP data, logsheets, observers and VMS data. Despite the very limited budget provided by the WPEA Project, the Philippines through our BFAR budget has also provided counterparts in terms of sharing the expertise and/or services of technical and administrative personnel as well as its training and office facilities and other incidentals in order to attain the common objectives on the proper development and management of tuna resources to insure sustainable supply for the regional and national food security.

f) WCPFC Science Committee must develop a comprehensive capacity building programs based on the needs of the respective CCMs.

12. An overview of the project progress is summarized in Table 2.

Table 2. Progress of Philippine WPEA-SM project activities. Some activities were deferred to early 2016.

Outcome	Activity (PHL)	period	Q1 and Q2	Q3 and Q4
1.1	1. Capacity building in country's science	Q3	Preparatory actions taken in Q2	Completed in Q3
	2. Catch estimation WS	Q2	Completed in Q2	
	3. NTC	Q1-Q4	Implemented in Q1 and Q2	Continued
1.2	4. Prior study on CC (consultancy)	Q2	Preparatory actions taken in Q2	On-going
2.1	5. Update *Operational Guide for Filipino Fishermen*	Q1	Implemented in Q1	
	6. WS on national RPs and HCRs	Q4	Preparatory actions taken in Q2	Deferred to early 2016 (Q1)
2.2	7. Prior study on certification and eco-labeling	Q2	Preparatory actions taken in Q2	On-going
	8. Consultancy on Philippine Tuna Supply Chain Analysis	Q2	Preparatory actions taken in Q2	On-going
	9. National workshop on three Consultancy Reports from pilot study	Q2	Preparatory actions taken in Q2	Deferred to early 2016 (Q1)
2.3	10. Sub-regional stock assessment workshop	Q4		Will be implemented in Q4
	11. Data review WS	Q2	Completed in Q2	
	12. MCS and VMS programs established	Q1-Q4	Implemented in Q2	Continued
	13. Port sampling	Q1-Q4	Implemented in Q1 and Q2	Continued
	14. Training WS on E-logbook	Q3		Completed in Q3
2.4	15. Orientation on EAFM and WS on EAFM (combined with WS on RPs and HCRs)	Q2-Q3		Deferred to early 2016 (Q1)
3.1	16. IW Learn / PEMSEA EAS Congress	Q4		Will be implemented in Q4

Vietnam

13. Since a government reshuffling in November 2014, this project has been approved by the Viet Nam Prime Minister, the Minister of the Ministry of Agriculture; and the Rural Department assigned Directorate of Fisheries (D-FISH) as an implementing agency. The D-FISH Director instructed to establish a Project Management Board to facilitate this project. Currently, the Project Board includes four staff: Deputy Director of DECAFISH (which is under D-FISH), the WPEA Project national tuna coordinator (NTC), one staff from finance office, and another from the Science & Technology and International Cooperation Department (Director Nguyen Viet Manh). As of 9 October, Vietnam is in the process of selecting the Project Board member. Once complete, an official government bank account will be established for this project.

14. The NTC provided detailed information on the internal coordination of WPEA-SM project approval process within D-FISH as a record:

a) NTC drafted an official letter for Department of Capture Fisheries (DECAFISH) to submit to D-FISH Director General to assign DECAFISH as a national implementation agency of the project. Based on this proposal, D-FISH Director General has issued a decision No 519/QD-TCTS-KHCN&HTQT dated on 27 October 2015 to allow DECAFISH to propose a National Project Management Board (PMB).

b) Based on the Director Generals Decision, DECAFISH sent an official letter to Administrative Division of D-FISH to send a representative to involve in the project as an accountant. The administrative division assigned Ms. Tran Hai Yen to become involved in the project. Based on this, NTC drafted a proposed list of members for the Project Management Board including the following staff and sent the draft to the Director General of D-FISH:
   - Mr. Nguyen Van Trung, Director of DECAFISH as focal point of Viet Nam with WCPFC.
   - Mr. Pham Ngoc Tuan, Deputy Director of DECAFISH as Director of the project.
   - Mr. Pham Viet Anh, Fisheries Officer of DECAFISG as a NTC.
   - Ms. Tran Hai Yen, Administrative Devision of D-FISH as a project accountant.

c) D-FISH Director has wants an additional member of the PMB to representative of Department of Science and Technology and International Cooperation. Therefore, DECAFISH is preparing another proposal for re-submission to the D-FISH's Director General.

15. Data collection from tuna landing sites is a high priority in the WPEA project, but because of the delay of Vietnam's internal approval of this project, no substantial activities have been conducted including tuna fishery data collection. The Project Manager and NTC visited five key provinces in June 2015 and encouraged each province to resume their port sampling and data collection ASAP, promising that enumerator's salary would be reimbursed once the project approval process is finalized and a bank account is established.

16. During the provincial trip, all provincial Sub-DECAFIREP directors asked an official letter from the central government to resume their port sampling. NTC coordinated the process of sending the official letters. Following receipt of the official letter from D-FISH, all nine provinces have been collecting data since July 2015, using WCPFC sampling protocols.. Some provinces such as Khanh Hoa had already implemented WCPFC-type data collection since January 2015, though logbook data collection was missing. The following table summarizes the progress of port sampling and logbook data collection in the nine provinces during the last three quarters 2015.

Province	Fisheries	Status of data collection
Binh Dinh	Longline	Both port sampling and logbook data collection resumed in July 2015
	Gillnet and purse seine	
Phu Yen	Longline	Both port sampling and logbook data collection resumed in

	Gillnet and purse seine	July 2015
Khanh Hoa	Longline	Port sampling resumed since January and logbook data collection resumed since July 2015
	Gillnet and purse seine	Both port sampling and logbook data collection resumed in July 2015
Da Nang	Gillnet and purse seine	Port sampling resumed in July 2015
Quang Nam		
Quang Ngai		
Ninh Thuan		
Binh Thuan		
Baria-Vung Tau		

17. Capacity building in science in Vietnam was also enhanced by supporting one scientists attendance at the WCPFC's Scientific Committee meeting in August 2015. The trip report to the meeting is in **Attachment F.** The participant described in his report lessons that he learned as follows (extracted from the trip report):

a) SC11 provided much scientific information on the status of tuna stocks and introduced advanced stock assessment methods (e.g. Multifan-CL, Ecopath with Ecosim, SEAPODYM, CPUE standardization methods, etc.).

b) Viet Nam delegation learned the process of tuna management, including data analysis, stock assessment, development of reference points and recommendation of management strategies/measures as being implemented at WCPFC. This was very useful for Viet Nam delegation to understand how to enhance and build capacity on tuna fisheries management and assessment in the future. In addition, lessons learned from the process also emphasized the importance of tuna data collection and obligations of Viet Nam as a cooperating non-Member in complying with WCPFC requirements, especially related with tuna fisheries data collection and provision.

c) SC11 provided a great chance for Viet Nam to gradually approach to the scientific work of WCPFC. Vietnam's participation is very useful in maintaining its tuna fisheries be sustainable in the long term.

d) At the stage, due to the lack of technical expertise, Viet Nam should consider the application of the outcomes of regional stock assessments to its tuna fisheries management at the national level, including application of reference points and management strategies.

e) There is a strong need for Viet Nam to actively participate in the scientific works of the WCPFC and thus Vietnamese Government should consider allocation of a permanent government budget to support its delegation to attend the WCPFC Scientific Committee meetings.

18. An overview of the project progress is summarized in Table 3 below.

Table 3. Progress of the Viet Nam's WPEA-SM project activities. Some activities are deferred to early 2016.

Outcome	Activity (VNN)	period	Q1 and Q2	Q3 and Q4
1.1	1. Support participation of Vietnam to SC11	Q3	Preparatory actions taken in Q2	Completed in Q3
	2. National tuna coordinator	Q1-Q4	Implemented in Q1 and Q2	Continued
	3. Convene a data review and catch estimation workshop	Q2	Deferred to Q4	Will be implemented in Q4
	4. Reconstruction of catch histories	Q2	Preparatory actions taken in Q2	On-going
1.2	5. Prior study on CC	~~Q4~~	Preparatory actions	On-going

		Q3	taken in Q2	
2.1	6. Implementing national compliance review monitoring	Q1-Q4		Continued
	7. Consultancy on RPs and HCRs	Q4		Deferred to 2016
	8. WS on Consultancies for CC and RPs	Q4		Deferred to early 2016
	9. Participation in Tuna Data WS at SPC	Q2	Completed in Q2	
2.2	10. Consultancy – TUNA Supply chain analysis/traceability	Q2	Preparatory actions taken in Q2	On-going
	11. Consultancy on sustainability/certification	Q2	Preparatory actions taken in Q2	On-going
	12. WS on Market-based Sustainability Consultancies	Q4		Deferred to early 2016
2.3	13. Sub-regional SA scientists' meeting	Q4		Will be implemented in Q4
	14. Port sampling	Q1-Q4	Partially implemented	Implemented since July 2015
3.1	15. website			No plan in 2015
	16. Participation in the regional knowledge platform	Q1-Q4		No plan in 2015

Attachment A

Data summary from Port Sampling
INDONESIA

Research Centre and Development for Fisheries

I Gede Bayu Sedana

1. Under WCPFC's WPEA project, Indonesia collects tuna catch, effort and biological data from port sampling at key tuna landing sites for tuna fisheries in Fisheries Management Area (FMA)716, 717 and archipelagic waters FMA 713, 714 and 715.

2. Data collection follows WCPFC's sampling protocol by fishery and by species at Bitung, Sorong, Kendari/Sodohoa and Mamuju since 2015.

3. The attached Table 1 shows the proportion of species composition by fishing gear at three landing areas: Bitung, Kendari/Sodohoa, and Sorong during 2010-2014.

4. Abbreviations

Area

BTG	Bitung
KDI	Kendari/Sodohoa
SOR	Sorong

Fishing gear

LHL	Large Hand Line
SHL	Small Hand Line
LL	Long Line
PL	Pole and Line
PS	Purse Seine
TR	Troll Line
TLH	Troll Line & Hand Line

Table 1. Species Composition – showing the composition of tuna catch for each area and gear in the year of 2010 – 2014.

Unit: Percent (%)

Area	Gear	2010			2011			2012			2013			2014		
		YFT	BET	SKJ	YFT	BET	SKJ	YFT	BET	SKJ	YFT	BET	SKJ	YFT	BET	SKJ
BTG	LHL	98.24	1.76	-	96.18	3.82	-	93.18	6.82	-	90.42	9.58	-	97.05	2.95	-
	LL	93.64	6.36	-	89.69	10.31	-	84.07	15.93	-	97.98	2.02	-	91.79	8.21	-
	PL	4.91	4.90	90.19	3.36	2.27	94.37	4.53	5.25	90.22	3.42	3.59	92.99	8.19	10.30	81.51
	PS	15.79	2.80	81.41	7.09	1.59	91.33	19.59	1.47	78.95	7.44	1.78	90.77	4.70	1.47	93.83
	SHL	93.32	6.68	-	91.54	8.46	-	90.13	9.87	-	1.59	7.75	90.66	100.00	-	-
KDI	PL	13.74	3.74	82.52	26.79	1.77	71.44	30.98	0.39	68.63	29.50	2.24	68.26	33.97	0.39	65.64
	PS	27.71	5.45	66.83	25.84	4.34	69.82	27.74	2.74	69.52	28.51	6.74	64.75	40.73	0.88	58.39
	SHL	21.13	20.51	58.36	30.72	1.08	68.19	44.84	1.29	53.87	34.83	2.71	62.46	47.86	5.43	46.72
	TLH	n/a	n/a	n/a	39.65	10.08	50.27	60.35	10.84	28.81	50.75	5.55	43.70	48.48	8.49	43.03
	TR	22.02	17.39	60.59	30.87	13.49	55.63	27.98	0.57	71.45	34.83	2.94	62.23	50.23	6.68	43.08
SOR	PL	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	10.78	6.43	82.78
	PS	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	13.84	3.27	82.89	12.14	6.23	81.63

Attachment B

WESTERN AND CENTRAL PACIFIC FISHERIES COMMISSION (WCPFC)

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA-SM)

The Port Sampling Supervision and Data Validation Report

August, 2015

Prepared by

Agustinus Anung Widodo

INDONESIA

Background

Lack in biological and fish stock understanding of the tuna resource in Indonesian Pacific Area particularly FMAs 713, 714, 715, 716 and 717 making it difficult to conduct an appropriate tuna management. A major step through port sampling program in key of tuna fisheries bases in eastern Indonesia i.e. Bitung and Kendari, Sorong and Mamuju has been demonstrated by the used as a reference on annual tuna catch. The port sampling program in Bitung and Kendari/Sodohoa started in 2008, whereas in Sorong started in 2012, then followed by Mamuju-Sulawesi in 2014.

Visit the sampling site is urgently required in order to supervise or validate the data that already collected by the enumerators fourth in Bitung,Kendari/Sodohoa, Sorong and Mamuju. The activity will assure, enumerators are completing their tasks correctly. This also gives the RCMFC an opportunity to maintain communication to all enumerators. This report is the result of supervision in Sorong 24-28 August, 2015.

Result

1. General Condition

Port sampling program in Sorong carried out in Citra Raja Ampat Canning Co. Ltd for the pole & line fishery, Anindo Perkasa Abadi Co. Ltd. for hand line fishery and Minatama Sorong Co. Ltd. for purse seine fisheries. Since Indonesia implements legislation banning transhipment that began in December 2014, almost of all the tuna purse seine fleet that no longer in operation. Tuna purse seine fleet fishing in FMAs 714-717 in general practice transhipment, the catcher boats in fishing ground for months while fish catch is transshipped on carrier boats. Unfortunately, Anindo Perkasa Abadi Co. Ltd. is also no longger operation since early 2015. Therefore since January 2015 sampling port program activity is only done on the pole & line and hand line fisheries.

2. The activity during 24 – 28 August 2015

Time	Activity	Venue
24 August 2015	Arrive in Sorong	Stay in Mamberamo Hotel
25 August 2015 (Morning)	- Visit to Sorong Regency Fisheries Office. - Visit to Sorong Fishing Port - Visit Citra Raja Ampat Canning Co. Ltd. in order to work consolidation.	Each of their office (Sorong).

(Afternoon)	Invite enumerators in order to get an explanation regarding the sampling port activities.	Hotel Mamberamo
26 August 2015 (Morning) (Afternoon)	- Class of the sampling technique (a refreshing) for enumerators. - Together with enumerators visit Citra Raja Ampat Canning for work consolidation and check the sampling equipment.	Sorong Regency Fisheries Office. Citra Raja Ampat Canning Co. Ltd's dock.
27 August 2015	Visit Sorong Fisheries Academy for socialization about the WCPFC and the port sampling activity for the student and several lectures.	The Aula of Sorong Fisheries Academy.
28 August 2015	Leaving Sorong.	-

3. Enumerators performance and Sampling Equipment Condition

Overall, enumerators are carrying out their duties properly but some sampling equipment should be renewed especially are rubber boats, rain coat, work uniform (polo shirt with WCPFC/KKP). The performance as per August 2015 is shown in table 1.

Enumerator activity:

Sampling Site	Fishery	Sampling Activity
Citra Raja Ampat Canning Co Ltd	Pole & Line	Good
Anindo Perkasa Abadi Co. Ltd	Hand Line	No activity
Minatama Sorong	Purse Seine	No activity

Sampling Equipment Condition

Sampling Equipment	Number	Condition
Measuring boards	3	Good
Calipers	3	Good
Fish Identification Books	3	Good
Rubber boats	3	Need renew
Rain Coats	3	Need renew
Work uniform (polo shierts)	3	Need renew

Prepared by A.Anung Widodo.

WESTERN AND CENTRAL PACIFIC FISHERIES COMMISSION (WCPFC)

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA-SM)

The Port Sampling Supervision and Data Validation Report

August, 2015

Prepared by

I Gede Bayu Sedana (Data Base Manager-RCFMC), Dr. Lilis Sadiyah, (Data Analyst-RCFMC), and Ignatius Trihargiyatno (Researcher-RCFMC)

INDONESIA

BACKGROUND

In the data collection process that has been done by the enumerators there are still some obstacles:

1. Some data cannot be used because its validity is questionable. It emerged during the last catch estimate workshop. To answer that, clarification is required on site. This activity aims to answer those questions and to identify problems and constraints in the current data collection process.
2. Delays in delivery of the data form resulting in the late process of data entry. This problem is being addressed by the development of an online database. With it, enumerators can directly enter data after the sampling activity is completed.

OBJECTIVES

1. Review of data collection in Bitung (16-19 Aug 2015), Kendari and Sodohoa (20-22 Aug 2015)
2. Introducing the online database prototype and to gather inputs from enumerators about it

PERSON INCHARGE

1. I Gede Bayu Sedana (Data Base Manager-RCFMC)
2. Dr. Lilis Sadiyah, (Data Analyst-RCFMC)
3. Ignatius Trihargiyatno (Researcher-RCFMC)

RESULTS

1. The problems with data collection in Bitung, kendari and sodoha and suggested solutions

No	Locations	Issues	Suggested solution or comments
1.	Bitung	The unusually high composition of BET in the Bitung Fishing Port	It is possible that the fish is misidentified. It is a good idea to have a short training to refresh the enumerators regarding the fish identification.
	Bitung	Very limited Troll Line data	So far there is no Troll Line vessels operating in Bitung, so any existing data is wrong and will be deleted.
	Bitung	Limited gillnet fisheries data	It is suggested that enumerators should start covering the gillnet vessels also.
3	Bitung	Incomplete data forms	Copy missing data on site and bring it to Jakarta.
4	Bitung	Catch composition based on skipper interview	Remind the enumerators that they should use the actual catch info from sampling, not from interviewing the skipper. Sampling Protocol refreshment needed.
5	Kendari	Incomplete data forms	Copy missing data on site and bring it to Jakarta.
6	Kendari dan	Catch composition	Remind the enumerators that they

	Sodohoa	based on skipper interview	should use the actual catch info from sampling, not from interviewing the skipper. Sampling Protocol refreshment needed.

2. Online Database Preview

   To resolve one of the issues where the data entry process is late because of delays in the form data delivery, an online database software will be created. With this software enumerators can directly enter the data after sampling activity is complete. Data entry can be done anywhere - so long as there is an internet connection - using desktop pc, laptop or handphone/tablet as the software is browser based.

   On this trip, database manager showed a prototype of the online database software to the enumerators and having discussion with them to gather inputs and comments regarding the software.

No	Suggestions/Comments	Notes
1	Enumerators suggest that the Vessel Registry be taken from the port authority.	Accepted. Will try to contact persons in charge for the vessel data.
2	Enumerators suggest that the software should be bilingual (English & Bahasa Indonesia)	Accepted. Will be available in the final version.
3	Enumerators suggest that they can only manage their own data (User A cannot manage User B data, and vice versa)	Accepted. Will be applied in the final version.
4	Database Manager explain about the change in the fishing ground information where we'll start to use one degree map	Maps distributed in all three locations and the enumerators will start to use it immidiately
5	Enumerators suggest that the Fish Data Reference should include a picture of the fish	Accepted. Pictures will be available in the final version.
6	Due to limited access to internet, enumerators suggest that the software operated in online & offline mode.	Rejected. That kind of software is hard to maintenance. Regarding the internet access, they will be supplied with gsm modems and monthly internet allowances. The gsm modems will be replaced with better internet connection when available. (Budget?)

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Appendix

Attachment C

WESTERN AND CENTRAL PACIFIC FISHERIES COMMISSION (WCPFC)

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA-SM)

INDONESIA

Trip Report

Participation in the Eleventh Regular Meeting of the Scientific Committee in Phonpei, Federated States of Micronesia, on 5-13 August 2015

Prepared by

Yayan Hernuryadin

Ministry of Marine Affairs and Fisheries

INDONESIA

Executive Summary:

- Attendee Name: Yayan Hernuryadin
- Attendee Title: Mr., Directorate of Fish Resources Management
- Department: **Directorate General of Capture Fisheries, Ministry of Marine Affairs and Fisheries.**
- Implemented site: Phonpei, Federated States of Micronesia.

I . Introduction

1. The eleventh Scientific Committee meeting (SC11) of the WCPFC convened in Phonpei, Federated States of Micronesia, 5-13 Augustus 2015. The SC11 reviewed current status of tuna species at the region of WCPO in order to provide reasonable and relevant management and conservation measures. A good chance has achieved to have a better knowledge of stock assessment of five species (SP albacore, SWP striped marlin, Oceanic whitetip shark, silky shark and SP swordfish) in WCPO and other theme issues such as data and statistics, ecosystem and bycatch and management issues.

2. Scientific Committee meeting (SC) is regularly convened every year in August as a very important part of scientific works of WCPFC. The Scientific Committee of WCPFC has the responsibility to review current status of tuna species at the region of WCPO in order to provide reasonable and relevant management and conservation measures and thus a meeting of the SC has been regularly held to discuss and evaluate current status of the regional tuna fisheries.

3. Opening
   The Eleventh Regular Session of the Scientific Committee (SC101) was held in Phonpei, Federated States of Micronesia from 5–13 August 2013. Ludwig Kumoru chaired the meeting. Rhea Moss-Christian, the Commission Chair of WCPFC, delivered opening remarks.

2. Tuna resource status of WPCO region

2. 1. REVIEW OF FISHERIES

a. Overview of Western and Central Pacific Ocean (WCPO) fisheries

- The provisional total WCPFC Statistical Area tuna catch for 2014 was estimated at 2,860,648 mt, clearly the highest ever at 170,000 mt above the previous record catch in 2013 (2,690,881 mt); this catch represented 83% of the total Pacific Ocean catch of 3,486,124 mt, and 60% of the global tuna catch (the provisional estimate for 2014 is 4,783,629 mt, and when estimates are finalised is expected to be the highest on record mainly due to increased WCPFC Statistical Area catches).
- The 2014 WCPFC Statistical Area catch of skipjack (1,957,693 mt – 68% of the total catch) was the highest recorded, eclipsing the previous record of catch in 2013 by 115,000 mt (1,842,485 mt). The WCPFC Statistical Area yellowfin catch for 2014 (608,807 mt – 21%) was also the highest recorded (5,000 mt higher than the record catch of 2008 – 603,244 mt) mainly due to increased catches in several longline fisheries. The WCPFC Statistical Area bigeye catch for 2014 (161,299 mt – 6%) was slightly higher than in 2013, but relatively stable compared to the average over the past ten years. The 2014 WCPFC Statistical Area albacore catch (132,849 mt - 5%) was slightly lower than in 2013 and about 15,000 mt lower than the record catch in 2002 at 147,793 mt. The WCPFC Statistical Area albacore catch includes catches of north and south Pacific albacore in the WCPFC Statistical Area, which comprised 76% of the total Pacific Ocean albacore catch of 173,702 mt in 2014. The south Pacific albacore catch in 2014 (83,033

mt) was the fourth highest on record (about 6,000 mt lower than the record catch in 2010 of 88,942 mt).

b. Overview of Eastern Pacific Ocean (EPO) fisheries

- Yellowfin tuna catches have remained fairly stable since the mid-1980s, except for a peak in 2001 through 2003, followed by a substantial decline in 2006 through 2008, a slight increase in 2009 and 2010, and again a decline in 2011 through 2013. The 2014 catch on dolphin associated schools was greater than the past three years, but less than 2009 and 2010. The catches of yellowfin in unassociated schools in 2014 remained low, similar to the previous eight years. The current stock assessment method being used for yellowfin is Stock Synthesis 3. Since 2004 recruitment has been relatively low, though not quite as low as it was during 1979 through 1981. Recent estimates indicate that the yellowfin spawning biomass in the EPO is overexploited (S<Smsy), but that overfishing is not taking place (F<Fmsy). The current status of the stock is considerably more pessimistic if a stock recruitment relationship is assumed, if a higher value is assumed for the average size of the older fish, and if lower rates of natural mortality are assumed for adults.
- The status of the skipjack stock has been evaluated using eight different data and model based indicators. The purse-seine catch has been significantly increasing since 1994, and in 2014 was similar to the other peak years over the past decade, and near the upper reference level. Following a large peak in 1999, the catch per days fished on floating objects has generally fluctuated between an average level and the upper reference level. The value for 2014 was similar to that of 2013, and below the upper reference level. Except for 2010, the biomass and recruitment, have been relatively high over the past decade including for 2014, and the exploitation rate has remained relatively high during this same period. There is uncertainty about the status of skipjack tuna in the EPO, and there may be differences in the status of the stock among regions. However, there is no evidence that indicates a credible risk to the skipjack stock(s).
- There have been substantial historical changes in the bigeye fishery in the EPO. Beginning in 1994 purse-seine catches increased substantially from targeting tunas associated with drifting FADs in the equatorial EPO. The estimated 2014 total bigeye catch of 60,000 tons by purse seine vessels was similar to the average of the past decade. The estimated 2014 bigeye longline catch of 35,000 tons was comparable to that of the past six years. The current stock assessment method being used for bigeye is Stock Synthesis 3. A full assessment was conducted in 2012, which included some major changes in methodology to the previous full assessment done in 2010. The assessment for 2014 was similar to that for 2013, except for the inclusion of updated and new data. Recruitment estimates have been variable since 1975. There were very high peaks in recruitment indices corresponding with the major El Nino events in 1983 and 1998. Recruitment indices over the past six years have been close to the average value. Recent estimates indicate that the bigeye spawning biomass in the EPO is not overexploited (S>Smsy), and that overfishing is not taking place (F<Fmsy). The current status of the stock is considerably more pessimistic if a stock recruitment relationship is assumed, if a higher value is assumed for the average size of the older fish, and if lower rates of natural mortality are assumed for adults.

3. Annual report-part 1

Annual report-part 1 of tuna fishery status of Indonesia was also presented during the meeting. The summaries of the report included some main points such as: Fisheries management Areas (FMAs) 716

(Sulawesi Sea) and 717 (PaCific Sea – North Papua), 713(Makassar strait and flores sea), 714 (Halmahera sea), and 715 (Banda Sea) are five fisheries management areas among eleven FMAs which concerned by WCPFC convention area. Long liners and purse seiner are the main fishing gears type operated in EEZ of those FMAs, with 158 and 124 respectively registered in WCPFC in 2014. The national catch estimates of three main tuna species in 2014 was estimated for skipjack –322,840 t (67 %); yellowfin – 136,210 t (28 %) and bigeye – 23,868 t (5 %) with total 482,918 t. Recent workshop of sixth Indonesia/WCPFC annual tuna fisheries catches estimated on 24-26 June 2015 has been revised national catch estimate as reported in the workshop report.

The Data collection for fisheries statistic is mainly conducted by DGCF_MMAF while scientific ports sampling monitoring data is conducted under RCFMC-MMAF. Period of data collection is January – December. Method of data collection is a combination of Landing site based conducted by fishing ports and fish Landing Sites, Port sampling program based conducted for landing ports by enumerators in five landing sites i.e Bitung, Kendari, Sodoha, Sorong and Majene. Other data is collected through fishing log book program, observer and VMS scheme.

The development of fishing logbook is on going but still facing a substantial problem in the operational level,such low level of log book with high data quality submitted by fishers, the coverage of observer program still low and still required to validate,
Key research activities in the WCPFC Convention area are:
Observer program conducted by (RITF) in the Banda Sea (FMA 715) and Catch monitoring for Neritic tuna by RIMF in Archipelagic marine water.

Developing capacity for management of Indonesias pelagic fisheries resources (Colaboration research with ACIAR, CSIRO Australia) (RCFMC and ACIAR_CSIRO) and Tuna research in the sulu-sulawesi in collaboration with SEAFDEC

4. DATA AND STATISTICS THEME

There are some issues regarding the data and statistic gaps:

- Several CCMs continue to provide estimates for the key shark species (which is in accordance with the change in the requirements to include the key shark species catches) and some coastal states have begun using the new extended longline logsheets which have the provision for reporting sharks at the species level. There was also missing aggregate catch/effort data from Indonesia that should generated from fishing log book. Challenge for Indonesia to provide Bycatch data including sharks through observer or logbook programme, currently Indonesia still struggling to implement log book programme.
- The backlog in ROP data provision and processing has improved with observer service providers and ROP data management team becoming more settled in dealing with the requirements for 100% coverage in the purse seine fishery. Currently Indonesia do not has observer for domestic purse seine fishery.

5. STOCK ASSESSMENT THEME

A. Tuna

- **Bigeye**
  - SC11 noted that no stock assessment was conducted for WCPO bigeye tuna in 2015. Therefore, the stock status description from SC10 is still current. SC11 also noted that the total bigeye catch in 2014 was 161,229 mt, which was a 5% increase over 2013 and a 5% increase over the average for 2010–2013. SC11 also noted that the bigeye catch in 2014

was 48% above the estimated maximum sustainable yield (108,520 mt), although those two numbers are not directly comparable because MSY is calculated based on the historical average recruitment.

- SC11 also noted the analysis of the sensitivity of the WCPO bigeye tuna stock assessment to the inclusion of EPO data and dynamics within a Pacific-wide model. SC11 concluded that the dynamics of bigeye tuna in the WCPO estimated using the Pacific-wide model are not substantially different from those estimated using the WCPO-only model, especially with respect to the main stock status indicators used by WCPFC. Therefore, SC11 recommends that it is reasonable to continue to provide management recommendations to WCPFC on the basis of WCPO-only regional stock assessment models.
- SC11 noted that no management advice has been provided since SC10. Therefore, the advice from SC10 should be maintained, pending a new assessment or other new information.

- **Yellowfin tuna**
  - SC11 noted that no stock assessment was conducted for WCPO yellowfin tuna in 2015. Therefore, the stock status description from SC10 is still current.
  - SC11 noted that the total yellowfin catch in 2014 was the highest ever recorded at 608,807 mt, which was a 10% increase over 2013 and a 9% increase over the average for 2010–2013.
  - SC11 noted that no management advice has been provided since SC10. Therefore, the advice from SC10 should be maintained, pending a new assessment or other new information.

- **Skipjack Tuna**
  - SC11 noted that no stock assessment was conducted for WCPO skipjack tuna in 2015. Therefore, the stock status description from SC10 is still current
  - SC11 noted that the total skipjack catch in 2014 is provisionally estimated to be 1,957,693 mt, which is the highest catch recorded, a 6% increase over 2013 and a 14% increase over the average for 2010–2013.
  - The SC noted that skipjack tuna catch in 2014 was 20% above the estimated MSY (1,618,800 mt) although those two numbers are not directly comparable because MSY is calculated based on the historical average recruitment
  - SC11 reviewed information related to identifying changes in the spatial distribution of skipjack (including range contraction) in response to increase in fishing pressure. Project 67 on the impacts of recent catches of skipjack tuna on fisheries on the margins of the WCPFC Convention Area demonstrated no statistical evidence for skipjack range contraction (SA-WP-05). SC11 recommends that WCPFC12 take note of the analyses completed to date and that further work on this issue be undertaken, including:
    - ✓ more extensive skipjack tagging activities, including in sub-tropical and temperate regions to provide better information on stock connectivity and movement; and
    - ✓ analysis of operational longline data including skipjack catch to improve the estimation of relative abundance trends by latitude
  - SC11 noted that no management advice has been provided since SC10. Therefore, taking note of the current catch status pointed above, the advice from SC10 should be maintained

- **South Pacific albacore tuna**

- The South Pacific albacore spawning stock is currently above both the level that will support the MSY and the adopted spawning biomass limit reference point, and overfishing is not occurring (F less than Fmsy).
- While overfishing is not occurring, further increases in effort will yield little or no increase in long-term catches and result in further reduced catch rates.
- Decline in abundance of albacore is a key driver in the reduced economic conditions experienced by many PICT domestic longline fleets. Further, reductions in prices are also impacting some distant water fleets.
- For several years, SC has noted that any increases in catch or effort in sub-tropical longline fisheries are likely to lead to declines in catch rates in some regions (100 S-30oS), especially for longline catches of adult albacore, with associated impacts on vessel profitability.
- Despite the fact that the stock is not overfished and overfishing is not occurring, SC11 reiterates the advice of SC10 recommending that longline fishing mortality and longline catch be reduced to avoid further decline in the vulnerable biomass so that economically viable catch rates can be maintained.

- **North Pacific albacore, Pacific bluefin tuna, North Pacific swordfish**
  - SC11 noted that no stock assessments were conducted for these species in 2015. Therefore, the stock status descriptions from SC10 are still current.
  - SC11 noted that no management advice has been provided since SC10. Therefore, the advice from SC10 should be maintained, pending a new assessment or other new information

B. Shark

- Oceanic whitetip shark (Carcharhinus longimanus), Silky shark (Carcharhinus falciformis) and South Pacific blue shark (Prionace glauca).
- SC11 noted that no stock assessments were conducted for these shark species in 2015. Therefore, the stock status descriptions from SC8 and SC9 are still current for oceanic whitetip shark and silky shark, respectively.
- SC11 noted that no management advice has been provided since SC8 and SC9 for oceanic whitetip shark and silky shark, respectively. Therefore, previous advice should be maintained, pending a new assessment or other new information.
- SC11 noted that no stock assessment was conducted for North Pacific blue shark in 2015. Therefore, the stock status description from SC10 is still current.
- SC11 noted that no management advice has been provided since SC10. Therefore, the advice from SC10 should be maintained, pending a new assessment or other new information.
- SC11 recommends that the Commission consider the undetermined stock status of shortfin mako shark in the North Pacific when developing and implementing management measures.

C. Billfish

- **South Pacific swordfish**
  SC11 noted that no stock assessment was conducted for South Pacific swordfish in 2015. Therefore, the stock status description from SC9 is still current. SC11 noted that no management advice had been provided since SC10. Therefore, the advice from SC9 should be maintained**.**
- **Southwest Pacific striped marlin**
  SC11 noted that no stock assessment was conducted for southwest Pacific striped marlin in 2015. Therefore, the stock status description from SC8 is still current. SC11 noted that no management advice had been provided since SC10. Therefore, the advice from SC8 should be maintained.

- **North Pacific striped marlin**
  overfishing is occurring relative to MSY-based reference points and the WCNPO striped marlin stock is overfished.
  SC11 recommends that the Commission develop a rebuilding plan for North Pacific striped marlin with subsequent revision of CMM 2010-01 in order to improve stock status.
- **Pacific blue marlin**
  SC11 noted that no stock assessment was conducted for Pacific blue marlin in 2015. Therefore, the stock status description from SC9 is still current.
  SC11 noted that no management advice had been provided since SC9. Therefore, the advice from SC9 should be maintained, pending a new assessment or other new information.

6. MANAGEMENT ISSUES THEME

- Noting that SC10 had considered levels of risk associated with breaching the LRP within the range 5-20%, that the identification of acceptable risk is a management issue, SC11 reaffirmed the recommendation made by SC10 that WCPFC12 identify the level of acceptable risk which should be applied to breaching a LRP for the key target species, noting that the UN Fish Stocks Agreement states that the risk of exceeding LRPs should be very low.
- SC11 noted the work undertaken in support of identifying appropriate LRPs for elasmobranchs within the WCPFC, in particular the report of the Pacific shark life history Expert Panel Workshop (WCPFC-SC11-2015/EB-IP-13) and that other work necessary to identify and support the development of LRPs for sharks has been included in the updated shark research plan. SC11 recommends that the WCPFC12 continues to support this work.
- SC11 considered the draft work-plan (WCPFC-SC11-2015/MI-WP-01) provided by Australia to progress the harvest strategy approach, which is required under CMM 2014-06. SC11 strongly supported the initiative by Australia to develop this plan.
- SC11 considered the scientific aspects of the draft CMM on a target reference point for WCPO skipjack tuna (WCPFC-SC11-2015/MI-WP-02) provided by PNA. SC11 recommends that PNA take into consideration comments provided by SC11 in further developing this draft CMM.
- SC11 reviewed information related to the identification of an appropriate TRP for south Pacific albacore tuna, noting in particular a decline in the economic performance of this fishery (WCPFC-SC11-2015/MI-WP-03) and the consequences for the stock and the fishery of a range of candidate target reference points (WCPFC-SC11-2015/MI-WP-04).
- Noting the total number of FAD sets in 2014 was still greater than those in 2010, SC11 reaffirms the recommendation of SC8 (para 351 of the SC8 summary report [check ref]) supporting the need for additional or alternative targeted measures to reduce the fishing mortality on bigeye tuna, as seen as appropriate by the Commission.
- SC11 reviewed the analysis of the relative impact of associated and unassociated set types on skipjack tuna stock status.
- SC11 reviewed information related to understanding bigeye tuna interactions in the purse seine fishery through characterisation of catches in space and between sets with the aim of identifying management options that reduce impacts on bigeye with minimal losses to the purse seine fishery (WCPFC-SC11-2015/MI-WP-07).

7. ECOSYSTEM AND BYCATCH MITIGATION THEME

- Considering the Monte Carlo analysis of longline shark mitigation methods (e.g. hook type, leader material, non-deployment of shallow hooks, and a prohibition on shark lines) presented in SC11-EB-WP-02, in order to inform WCPFC12's further consideration of revising shark CMMs to incorporate shark mitigation requirements that reduce catch rates and at-vessel mortality.
- Noting the Monte Carlo simulations run presented in EB-WP-02, which showed that given the model assumptions, banning wire trace and shark lines would further reduce fishing mortality of

oceanic whitetip and silky sharks by longline compared to the current choice between the two mitigation measures.

- Noting that the Monte Carlo mitigation model and its inputs can be improved through an increase in available observer data and more studies on post-release survival rates for key shark species.
- SC11 was able to review the ratio of fin weight to shark carcass weight from one study (SC11-EB-IP-03). This study demonstrated that shark fin weight data suffered from some serious limitations, potential biases and errors. SC11 was unable to confirm the validity of using a 5% fin to carcass ratio in CMM 2010-07 and forwards these concerns to TCC, noting that an evaluation of the 5% ratio is not currently possible due to insufficient information for all but one of the major fleets implementing these ratios.
- Notes that according to the most recent information provided by SPC, finning still occurs in the Convention Area.
- SC11 recommends that WCPFC 12 adopt the guidelines for safe release of encircled animals including whale sharks as contained in the ISG-4 report (Attachment E) and recommends that TCC11 provide any additional considerations for the Commission's decisión.
- Consider development of a list of minimum requirements that such a plan should include, guidelines to evaluate such a plan, and the definition of a target shark fishery for future review by SC, TCC and the Commission.

8. OTHER RESEARCH PROJECTS

The WCPFC Secretariat reported on the progress of the West Pacific East Asia Project and introduced a new Global Environment Facility-funded project (Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas), which includes Indonesia, Philippines and Vietnam as project partners, Pacific Tuna Tagging Project (PTTP), and ABNJ Tuna Project and Bycatch Components.

9. COOPERATION WITH OTHER ORGANISATIONS

SC11 reviewed the status of WCPFC's cooperation with other organizations.

10. SPECIAL REQUIREMENTS OF DEVELOPING STATES AND PARTICIPATING TERRITORIES

The Secretariat briefly described briefly described how the fund was distributed in 2015, the fourth year of the second phase of the JTF Project. USD$140,553.75 was available this year to support seven projects.

11. FUTURE WORK PROGRAM AND BUDGET

SC 11 has made work program and budget arrangement for 2016. The budget for 2016 is USD 1.732.200, and Indicative Budget for 2017 = USD 1.592.200, and 2018 = USD 1.229.200.

12. ADMINISTRATIVE MATTERS

Indonesia confirmed to host SC12 in Bali, Indonesia, scheduled to take place from 3-11 August 2016

13. CLOSE OF MEETING

Fiji stated that they would volunteer to host the 2016 Commission meeting. The SC Chair closed the meeting at 3:10pm on 13 August 2015.

CLOSING

The SC11 provided a great chance for Indonesia to actively participate in the WCPFC frame of work particularly through WPEA project. Indonesia's participation is very useful for maintaining its tuna fishery sustainable development in the long term and active participation in the work of the WCPFC.

OBSERVATION AND SUGGESTION

1. It is my first time to attend the SC meeting and I got new knowledge regarding tuna science, particularly in tuna research, since I am currently in charge of tuna management in the ministry of fisheries. This knowledge is quite important for me and for my office to contribute for the better management tuna resources in Indonesia.
2. By attending the meeting, I fully recognized the importance of the data for research. Therefore, Indonesia should improve collecting data from logbook and observer programme to support tuna research in the WCPFC area.
3. Another observation is that the research papers during the meeting did not focus much on main tuna species. There are many researches, projects and discussions that were related with bycatch and ecologically related species particularly on shark.

Attachment D

ACADEMIC PAPER
RESEARCH INSTIUTE for OCEANIC FISHERIES - BITUNG
(RIOF BITUNG)

This report is in Bahasa and one paragraph introductory remark is annexed below:

This document is an academic paper required as prerequisite for establishment of any new institute within the Ministry of Marine Affairs and Fisheries. The first effort to establish a research institute for tuna fisheries in Bitung was failed in February 2015 due to similar name in the academic paper related with the existing Tuna Research Institute in Benoa, Bali. This is the second trial of proposing a new research institute with different name, i.e., "Research Institute for Ocean Fisheries (RIOF)". This document is prepared in more detail to establish a new research institute in Bitung to address data collection and monitoring gaps of highly migratory fish species in the Pacific Ocean side. If the proposed Research Institute is agreed by Indonesian government, it will support the activities of Indonesian tuna data collection and monitoring, particularly in fisheries management areas of the Pacific Ocean side (716, 717) and archipelagic waters (713, 714, and715) that currently being supported by the WPEA project. The document also reports all past activities including all facilities that have been historically supported by the WPEA and the Indonesia and Philippines Data Collection Project in order to convince to the government assessor that this academic paper is worth to be approved.

NASKAH AKADEMIK
LOKA PENELITIAN PERIKANAN SAMUDERA– BITUNG
(LPPS-BITUNG)

PUSAT PENELITIAN DAN PENGEMBANGAN PERIKANAN
BADAN PENELITIAN DAN PENGEMBANGAN
KELAUTAN DAN PERIKANAN

KATA PENGANTAR

Puji syukur kepada Allah SWT atas tersusunnya “Naskah Akademik Loka Penelitian Perikanan Samudera, Bitung (LPPS-Bitung)”, yang merupakan pengembangan kelembagaan pada Pusat Penelitian dan Pengembangan Perikanan.

Naskah Akademik ini memuat dasar-dasar pertimbangan dalam penyusunan kelembagaan Loka Penelitian Perikanan Samudera, Bitung, dari dimensi teoretik maupun normatif dengan mempertimbangkan kondisi empirik dan kebutuhan pengembangan lembaga Penelitian perikanan di masa mendatang. Selain itu, dalam naskah ini juga dimuat desain organisasi, sejarah terbentuknya, sarana dan prasarana pendukung, sumberdaya manusia serta kegiatan yang telah dilaksanakan oleh Puslitbang Perikanan sebagai dasar terbentuknya Loka Penelitian Perikanan Samudera Bitung.

Harapan kami, mudah-mudahan kajian ini dapat menjadi bahan pertimbangan yang obyektif, ilmiah, dan rasional dalam menetapkan lebaga Loka Penelitian Perikanan Samudera, Bitung. Dengan berdirinya Loka Penelitian Perikanan Samudera di Bitung diharapkan data dan informasi sumber daya perikanan pelagis besar yaitu berbagai jenis tuna termasuk jenis-jenis ikan beruaya jauh dan endemik lainnya di Samudera Pasifik bagian Barat dan sekitarnya yang sesuai RFMO dapat terpenuhi sehingga makin meningkatkan peran aktif lembaga penelitian dalam organisasi internasional, disamping itu kontinuitas dan keakuratan data dapat terjaga.

Terima kasih kami ucapkan kepada semua pihak yang telah membantu terselesaikannya naskah akademis ini.

Penyusun

DAFTAR ISI

DAFTAR TABEL

DAFTAR LAMPIRAN

NASKAH AKADEMIK

LOKA PENELITIAN PERIKANAN SAMUDERA– BITUNG

A. LATAR BELAKANG

Ruang hidup Bangsa Indonesia setelah berlakunya UNCLOS 1982 mencakup Wilayah Negara Republik Indonesia (NRI) dan Wilayah Yurisdiksi Indonesia. Wilayah Yurisdiksi Indonesia terdiri atas zona ekonomi eksklusif (ZEE), landas kontinen dan zona tambahan (UU nomor 43 tahun 2008). Luas wilayah perairan laut NKRI adalah sekitar 3,1 juta km^2, sedangkan luas ZEE Indonesia adalah sekitar 2,7 juta km^2. Kedaulatan atas Wilayah NKRI dan hak berdaulat atas Wilayah Yurisdiksi Indonesia tersebut, termasuk pula penegakan kedaulatan di Wilayah NKRI ataupun hak berdaulat di Wilayah Yurisdiksi atas sumber daya ikan (SDI), wajib ditegakkan dan dipertahankan. Selain itu, potensi kemakmuran dari SDI yang ada pada ruang hidup Bangsa Indonesia tersebut perlu didayagunakan pada tingkat optimal untuk mewujudkan tujuan dan cita-cita nasional, yaitu antara lain memajukan kesejahteraan umum untuk mewujudkan bangsa yang makmur (Pembukaan Undang Undang Dasar Negara Republik Indonesia tahun 1945). Untuk mewujudkan tujuan dan cita-cita nasional tersebut dilaksanakan pembangunan nasional.

Salah satu modal dasar dalam Pembangunan Nasional adalah sumber kekayaan alam (SKA), antara lain sumber daya ikan (SDI) di laut. Agar SDI tersebut dapat dipergunakan untuk sebesar-besar kemakmuran rakyat secara berkeadilan dan berkelanjutan, Pemerintah melakukan pengelolaan perikanan. Berdasarkan Pasal 6(1) Undang-Undang nomor 31 tahun 2004 tentang Perikanan yang telah direvisi menjadi Undang-Undang nomor 45 tahun 2009, pengelolaan perikanan dalam wilayah pengelolaan perikanan Republik Indonesia (WPP-RI) dilakukan untuk tercapainya manfaat yang optimal dan berkelanjutan, serta terjaminnya kelestarian sumber daya ikan.

Sumber daya ikan (SDI) yang hidup di laut Indonesia, dengan luas keseluruhan sekitar 5,8 juta km^2, dinilai memiliki tingkat keragaman hayati (*biodiversity*) yang paling tinggi, karena terdiri dari sekitar 37% jumlah species ikan di dunia (Kantor Menteri Negara Lingkungan Hidup, 1994). Bila SDI dan tingkat keanekaragaman hayatinya dapat dipertahankan kelestariannya pada tingkat optimum,

kelangsungan usaha penangkapan ikan akan terjamin. Kelestarian usaha penangkapan ikan, pada gilirannya, akan menjamin kelestarian industri hulu dan hilirnya. SDI juga merupakan sumber plasma nutfah yang amat diperlukan dalam pengembangan pembudidayaannya. Pemanfaatan sumber daya tersebut untuk mendukung usaha budidaya antara lain adalah sebagai sumber induk alami. Plasma nutfah sangat penting dalam pemuliaan genetika dalam rangka menghasilkan induk unggul. Dengan demikian, kelestarian SDI dan keanekaragaman hayatinya juga akan memberi jaminan kelangsungan usaha budidaya dan industri penunjangnya, baik industri hulu maupun industri hilirnya.

Didukung oleh potensi perikanan dan peluang pasar yang dimiliki Indonesia, prospek untuk membangun perikanan Indonesia menjadi salah satu kegiatan ekonomi yang strategis dinilai cerah. Hal ini terkait dengan kecenderungan semakin meningkatnya permintaan dunia akan produk perikanan, baik karena pertambahan penduduk maupun pergeseran pola konsumsi ke produk-produk perikanan, dan semakin terbatasnya pasokan dari perikanan dunia yang menjadikan ikan sebagai salah satu komoditas yang semakin strategis di pasar dunia.

Namun, pembangunan perikanan di Indonesia saat ini dihadapkan pada masalah pemanfaatan SDI secara berlebih (*over-exploitation*) serta praktek penangkapan ikan secara IUU (*illegal, unrepoted and unregulated fishing*) dan destruktif serta kondisi lingkungan yang banyak mengalami degradasi. Hal tersebut telah menyebabkan kelestarian SDI terancam dan produksinya menurun, kelangsungan usaha perikanan juga terancam, serta menyebabkan menurunnya manfaat ekonomi yang dapat diperoleh. Peningkatan kasus pemanfaatan SDI yang melebihi daya dukungnya diikuti dengan peningkatan konflik antar nelayan.

Pada saat ini, sebagian besar stok SDI pada beberapa Wilayah Pengelolaan Perikanan Republik Indonesia (WPP-RI) telah dimanfaatkan penuh bahkan ada yang melebihi daya dukungnya. Komisi Nasional Pengkajian Sumber Daya Ikan menyimpulkan bahwa 21 stok/sub-stok ikan atau sekitar 55.3% dari 38 stok/sub-stok ikan di WPP-RI telah dimanfaatkan penuh bahkan ada yang melebihi daya dukungnya. Sementara itu sembilan stok/sub-stok ikan atau sekitar 23.7% belum dapat ditentukan tingkat pemanfaatannya karena data/informasi belum mencukupi. Jumlah stok ikan yang dapat dikatakan masih memungkinkan ditingkatkan pemanfaatannya hanya sebanyak delapan stok/sub-stok ikan atau sekitar 21%. Sejumlah *species* ikan dilaporkan telah sulit didapatkan bahkan nyaris

hilang dari perairan Indonesia.

Pusat Penelitian dan Pengembangan Perikanan (Puslitbangkan), yang merupakan salah satu unit organisasi eselon II di bawah Badan Penelitian dan Pengembangan Kelautan dan Perikanan (Balitbang KP), Kementerian Kelautan dan Perikanan, mempunyai tugas melaksanakan penelitian dan pengembangan perikanan di bidang kelautan danperikanan. Di dalam melaksanakan tugas tersebut Puslitbangkan didukung 4 (empat) eselon III yaitu Bagian Tata Usaha, Bidang Bidang Perencanaan dan Kerja Sama, Bidang Tata Laksana dan Pelayanan Jasa dan Bidang Data, Informasi, Monitoring dan Evaluasi. Puslitbang perikanan didukung oleh 9 (sembilan) Unit Pelaksana Teknis (UPT). Dari UPT yang ada, dalam melaksanakan tugas penelitian khususnya di bidang perikanan tangkap dan konservasi, Puslitbangkan didukung oleh 4 (empat) Unit Pelaksana Teknis (UPT) yaitu Balai Penelitian Perikanan Laut (BPPL) di Muara Baru, Jakarta, Balai Penelitian Peikanan Perairan Umum (BP3U) di Mariana, Palembang, Balai Penelitian Pemulihan dan Konservasi Sumber Daya Ikan (BP2KSI) di Jatiluhur, Purwakarta dan Loka Penelitian Perikanan Tuna (LPPT) di Benoa, Bali.

Dari sisi kelembagaan, Puslitbangkan adalah institusi utama yang diberi tugas untuk melaksanakan penelitian dan pengembangan perikanan di bidang kelautan dan perikanan. Tugas tersebut meliputi wilayah kerja yang mencakup seluruh perairan NRI sedangkan keberadaan UPT sebagian besar berlokasi di bagian barat Indonesia. Secara geografis perairan di bagian timur Indonesia mempunyai karakteristik ekologis yang berbeda dengan perairan di bagian barat Indonesia, sehingga dalam rangka peningkatan kinerja penelitian yang efektif dan efisien diperlukan pengembangan kelembagaan. Karena hal-hal tersebut maka perlu untuk membentuk Loka Penelitian Perikanan Samudera(LPPS) yang berlokasi di Bitung sehingga tugas yang diemban oleh P4KSI dapat dilaksanakan dengan baik.

Indonesia terletak di antara dua samudera dan dua benua serta berbatasan dengan beberapa negara. Indonesia memiliki peran sangat strategis dalam pengelolaan bersama terhadap sumber daya ikan yang bersifat "*shared*", "*stradling*" dan "*highly migratory*" terutama kelompok sumber daya perikanan pelagis besar khususnya tuna dan marlin yang habitatnya merupakan perairan laut lepas atau perairan Samudera. Konsekuensi logis dari kondisi tersebut, maka Indonesia meratifikasi UNCLOS. Oleh karena itu, Indonesia seyogyanya mengikuti

konvensi-konvensi Internasional. Selanjutnya Indonesia berkewajiban mendukung lembaga pengelola sumber daya ikan regional seperti WCPFC (*Western and Central Pacific Fisheries Commission*), CCSBT (*Commision for Conservation of Southern Bluefin Tuna*), IOTC (*Indian Ocean Tuna Commission*),APFIC (*Asia-Pacific Fishery Commission*), IATTC(*Inter-American Tropical Tuna Commission*), maupun lembaga regional lain sepertiSCS-LME (*Sulu Celebes Sea Large Marine Ecoregion*), SEAFDEC (*Southeast Asian Fisheries Development Center*) dan APEC (*Asia-Pacific Economic Cooperation*), serta CTI (*Coral Triangle Inisiative)*.

Pada tanggal 9 Juli 2007 Indonesia menjadi anggota tetap pada organisasi pengelola perikanan regional IOTC, dan sejak tanggal 8 April 2008 menjadi anggota tetap pada CCSBT. Pada tahun 2006, Indonesia telah menjadi CNM (*cooperating non member*) pada WCPFC dan pada tahun 2013 resmi menjadi *full member*. Pada tahun 2013 Indonesia menjadi CNM (*cooperating non member)* dari Inter-American Tropical Tuna Commission (IATTC). Dengan masuknya Indonesia ke dalam empat lembaga tersebut menunjukkan komitmen Indonesia bekerjasama dengan negara-negara lain dalam mengelolaan sumber dayaikan tuna di Samudera Hindia dan Samudera Pasifik secara berkelanjutan dan meningkatkan upaya penanggulangan *illegal fishing*, terutama jenis-jenis ikan tuna.

Keanggotaan Indonesia dalam organisasi internasional, khususnya yang terakhir sebagai anggota penuh pada WCPFC memberikan beberapa keuntungan, antara lain: (1) menghemat waktu dan biaya yang sangat mahal dengan adanya kesempatan kerjasama penelitian dan pengumpulan data perikanan, pemanfaatan TAC (*Total Allowable Catch*), MCS (*Monitoring, Controlling and Surveylance*) dan penegakan hukum, serta pengelolaan dan konservasi sumber daya ikan yang banyak membutuhkan tenaga ahli; (2) tidak dianggap melakukan penangkapan tuna secara *illegal* di perairan laut lepas di wilayah perairan Samudera Pasifik; dan (3) mendapatkan jaminan akses pemasaran tuna di pasar Internasional. Berbagai kebutuhan informasi ilmiah terutama yang menyangkut data ilmiah tentang sumber daya perikanan pelagis besar khususnya ikan tuna yang menjadi komoditas utama organisasi WCPFC akan diperoleh dan dihasilkan dari LPPS Bitung dengan wilayah kerja di Perairan Samudera Pasifik Bagian Barat.

B. JUSTIFIKASI

Sebagai konsekuensi logis keikutsertaan Indonesia dalam lembaga pengelolaan sumber daya ikan regional seperti WCPFC dan lembaga lainnya sangat diperlukan dukungan data yang komprehensif. Dalam rangka persiapan melaksanakan komitmen tersebut maka Indonesia harus menyiapkan data dan informasi yang berkaitan dengan sumber daya sesuai dengan standar Organisasi Pengelola Perikanan Regional (*Regional Fisheries Management Organization*-RMFO).

Sampai saat ini institusi yang sangat berperan dalam dukungan data bagi kerjasama WCPFC adalah Stasiun Monitoring Perikanan Tuna Bitung yang lokasinya berada di Pelabuhan Perikanan SamuderaBitung,Sulawesi Utara. Institusi yang sudah ada tersebut masih belum terstruktur secara resmi sebagai bagian dari unit pelaksana teknis di bawah Puslitbangkan.Keberadaan institusi formal yang bertanggung jawab terhadap ketersediaan data ilmiah di Bitung semakin mendesak dengan telah masuknya Indonesia sebagai *Full Member* pada organisasi WCPFC sejak tanggal 28 Agustus 2013 dengan ketetapan Peraturan Presiden Republik Indonesia No. 61 tahun 2013. Mengingat perannya yang sangat penting tersebut, maka diperlukan suatu sistem organisasi yang dibentuk secara logis dan terstruktur sebagai institusi penelitian yang berada di bawah Puslitbangkan, Balitbang KP, KKP. Untuk mendukung maksud tersebut dan mengantisipasi bahwa sumber daya yang akan dikelola oleh WCPFC tidak hanya ikan tuna tetapi berbagai jenis ikan yang secara ekologis terkait dengan perikanan tuna, Puslitbangkan mengusulkan Stasiun Monitoring Perikanan Tuna Bitung tersebut menjadi Loka Penelitian Perikanan Samudera, Bitung (LPPS-Bitung).

C. TUJUAN

Membentuk institusi penelitian sumber daya perikanan samudera yaitu berbagai jenis tuna termasuk jenis-jenis ikan peruaya jauh dan endemik lainnya di perairan Samudera Pasifik bagian Barat dan sekitarnya agar tersedia data dan informasi ilmiah yang memadai sebagai bahan pengelolaan secara bertanggung jawab serta mendukung peranan Indonesia pada organisasi pengelola perikanan regional.

D. MANDAT

1. Melaksanakan penelitian sumber daya perikanan samudera yaitu berbagai jenis tuna termasuk jenis-jenis ikan peruaya jauh dan endemik lainnya di perairan Samudera Pasifik bagian Barat yang meliputi bidang biologi, dinamika dan genetika populasi, pengkajian stok sumber daya ikan, oseanografi perikanan, dinamika perikanan tangkap, alat tangkap, alat bantu penangkapan, dan metoda penangkapan ikan, serta pelaksanaan eksplorasi dan evaluasi sumber daya ikan;
2. Melaksanakan kegiatan kerjasama penelitian sumber daya perikanan pelagis besar di perairan Samudera Pasifik bagian Barat dan sekitarnya baik nasional, regional dan internasional;
3. Menyediakan data dan informasi terkait perikanan sumber daya perikanan pelagis besar di perairan Samudera Pasifik bagian Barat dan sekitarnya;
4. Mendukung kegiatan lembaga lingkup KKP kaitannya dalam hal peranan Indonesia pada lembaga pengelolaan perikanan regional.

E. KEDUDUKAN, TUGAS DAN FUNGSI

Loka Penelitian Perikanan Samudera, Bitung yang selanjutnya disingkat LPPS-Bitung, adalah unit pelaksana teknis Kementerian Kelautan dan Perikanan di bidang penelitian sumber daya perikanan perikanan pelagis besar yaitu berbagai jenis tuna termasuk jenis-jenis ikan peruaya jauh dan endemik lainnya yang dipimpin oleh seorang Kepala, berada di bawah dan bertanggung jawab kepada Kepala Pusat Penelitian dan Pengembangan Perikanan serta dibina secara umum oleh Kepala Badan Penelitian dan Pengembangan Kelautan dan Perikanan.

LPPS-Bitung mempunyai tugas melaksanakan kegiatan penelitian sumber daya perikanan perikanan pelagis besar yaitu berbagai jenis tuna termasuk jenis-jenis ikan peruaya jauh dan endemik lainnya di perairan Samudera Pasifik bagian Barat dan sekitarnya.

Dalam melaksanakan tugas sebagaimana dimaksud di atas, LPPS-Bitung menyelengarakan fungsi:

a. Penyusunan rencana, program dan anggaran; pemantauan dan evaluasi, serta laporan;
b. Pelaksanaan kegiatan teknis penelitian sumber daya perikanan perikanan pelagis besar yaitu berbagai jenis tuna termasuk jenis-jenis ikan peruaya jauh dan endemik lainnya di perairan Samudera Pasifik bagian Barat yang meliputi bidang biologi, dinamika dan genetika populasi, pengkajian stok sumber daya ikan, oseanografi perikanan, dinamika perikanan tangkap, alat tangkap, alat bantu penangkapan, dan metoda penangkapan ikan, serta pelaksanaan eksplorasi dan evaluasi sumber daya ikan;
c. Pelayanan teknis penelitian, jasa, informasi, komunikasi, penyebarluasan hasil penelitian dan pengelolaan kerja sama penelitian;
d. Pengelolaan sarana dan prasarana penelitian; dan
e. Pelaksanaan urusan tata usaha dan rumah tangga.

F. SUSUNAN ORGANISASI

LPPS-Bitung terdiri dari:

a. Urusan Tata Usaha;
b. Subseksi Tata Operasional;
c. Subseksi Pelayanan Teknis; dan
d. Kelompok Jabatan Fungsional.

Urusan Tata Usaha mempunyai tugas melakukan urusan tata usaha, administrasi keuangan, persuratan, kearsipan, perlengkapan dan rumah tangga; kepegawaian dan organisasi.

Dalam melaksanakan tugas sebagaimana dimaksud di atas,Urusan Tata Usaha menyelenggarakan fungsi melaksanakan urusan tata usaha, administrasi keuangan, persuratan, kearsipan, perlengkapan dan rumah tangga;kepegawalandan organisasi.

Subseksi Tata Operasional mempunyai tugas melakukan penyusunan rencana,program dan anggaran; pemantauan dan evaluasi serta pelaporan.

Dalam melaksanakan tugas sebagaimana dimaksud di atas Subseksi Tata Operasional menyelenggarakan fungsi melaksanakan penyiapan bahan penyusunan rencana, program dan anggaran; pemantauan dan evaluasi serta

pelaporan.

Subseksi Pelayanan Teknis mempunyai tugas melakukan pelayanan jasa, informasi, komunikasi, penyebarluasan hasil penelitian, pengelolaan kerja sama penelitian dan pengelolaan sarana dan prasarana penelitian.

Dalam melaksanakan tugas sebagaimana dimaksud di atas Subseksi Pelayanan Teknis menyelenggarakan fungsi melaksanakan pelayanan jasa, penyiapan bahan informasi, dokumentasi, promosi, komunikasi dan penyebarluasan hasil penelitian; pengelolaan kerja sama penelitian,pendayagunaan dan pemeliharaan sarana dan prasarana penelitian termasuk laboratorium; serta pengelolaan perpustakaan.

G. KELOMPOK JABATAN FUNGSIONAL

Kelompok Jabatan Fungsional di lingkungan LPPS-Bitung mempunyai tugas melaksanakan kegiatan penelitian sumber daya perikanan perikanan pelagis besar yaitu berbagai jenis tuna termasuk jenis-jenis ikan peruaya jauh dan endemik lainnyadan kegiatan lain yang sesuai dengan tugas masing-masing jabatan fungsional berdasarkan peraturan perundang-undangan yang berlaku.

Kelompok Jabatan Fungsional terdiri dari Peneliti, Perekayasa, Teknisi Penelitian dan Perekayasaan, Arsiparis, Pranata Komputer, Pranata Humas, Statistisi, Pustakawan dan jabatan fungsional lain yang diatur berdasarkan peraturan perundang-undangan yang berlaku.

Masing-masing kelompok jabatan fungsional dikoordinasikan oleh seorang tenaga fungsional senior yang ditetapkan oleh Kepala LPPS - Bitung.

Jumlah pejabat fungsional sebagaimana dimaksud di atas ditentukan berdasarkan kebutuhan dan beban kerja.

Jenis dan jenjang jabatan fungsional sebagaimana dimaksud di atas diatur sesuai dengan peraturan perundang-undangan yang berlaku.

H. TATA KERJA

Dalam melaksanakan tugas, pimpinan satuan organisasi dan kelompok jabatan fungsional wajib menerapkan prinsip koordinasi, integrasi, dan

sinkronisasi baik dalam lingkungan masing-masing maupun antarsatuan organisasi dalam Iingkungan LPPS-Bitung serta dengan instansi lain di luar LPPS- Bitung sesuai tugas masing-masing.

Setiap pimpinan satuan organisasi wajib mengawasi pelaksanaan tugas bawahan masing-masing dan apabila terjadi penyimpangan agar mengambil langkah-langkah yang diperlukan sesuai dengan peraturan perundang-undangan yang berlaku.

Setiap pimpinan satuan organisasi bertanggung jawab memimpin dan mengkoordinasikan bawahan masing-masing dan memberikan bimbingan serta petunjuk pelaksanaan tugas kepada bawahannya.

Setiap pimpinan satuan organisasi dan kelompok jabatan fungsional wajib mengikuti dan mematuhi petunjuk dan bertanggung jawab kepada atasan masing-masing serta menyampaikan laporan berkala tepat pada waktunya.

Setiap laporan yang diterima oleh pimpinan satuan organisasi daribawahan, wajib diolah dan dipergunakan sebagai bahan penyusunan laporan lebih lanjut dan untuk memberikan petunjuk kepada bawahan.

Dalam penyampaian laporan kepada atasan, tembusan laporan wajib disampaikan pula kepada satuan organisasi lain yang secara fungsional mempunyai hubungan kerja.

Dalam melaksanakan tugas, setiap pimpinan satuan organisasi dibantu oleh pimpinan satuan organisasi di bawahnya dan dalam rangka pemberian bimbingan kepada bawahan masing-masing wajib mengadakan rapat berkala.

I. PROGRAM KERJA

Program kerja LPPS-Bitung terdiri dari 2 program utama, yaitu program penelitian dan program pengembangan kapasitas institusi.

1. Program Penelitian

   Penelitian biologi, yang mencakup aspek reproduksi (fekunditas, *length at first maturity*, *maturity*, taksonomi, serta *stomach conten*t), aspek tingkah laku/*behaviour* (kebiasaan makan), siklus hidup ikan *(life history)*.

Penelitian dinamika dan genetika populasi, pengkajian stok sumber daya ikan, oseanografi perikanan dan lingkungan, mencakup aspek *mortality*, *growth* (tingkat pertumbuhan), *recruitment, length and frequency* dan hasil tangkapan, data *catch* bulanan menurut spesies, data komposisi jenis dan ukuran (berat dan panjang per individu setiap jenis tuna dan *by catch* yang didaratkan). Aspek oseanografi perikanan dan lingkungan mencakup dinamika fisika kimiawi dan biologi perairan.

Penelitian dinamika eksploitasi, mencakup struktur armada yang memanfaatkan sumberdaya tersebut, *catch dan effort* (jumlah tangkapan per satuan upaya), daerah penangkapan (*fishing ground*), musim penangkapan, teknologi penangkapan dan alat bantu penangkapan serta sarana dan prasarana yang digunakan untuk mengeksploitasi sumberdaya dan tingkah laku ikan *(fish behaviour)*.

2. Program Pengembangan Kapasitas Institusi

Program pengembangan kapasitas institusi terdiri dari pengembangan sumber daya penelitian (SDM, sarana dan prasarana serta dana), pengembangan kerjasama, serta diseminasi. Sumber daya penelitian merupakan faktor penting yang menentukan keberhasilan pelaksanaan program penelitian yang ada di LPPS -Bitung. Untuk meningkatan kualitas, kapasitas dan kapabilitas sumber daya penelitian khususnya SDM penelitian dilakukan melalui:

- Peningkatan jenjang pendidikan
- Peningkatan jenjang jabatan fungsional dan struktural
- Peningkatan keterampilan administrasi dan teknis
- Rekruitmen tenaga dilakukan sesuai dengan kebutuhan dan bidang keahlian

J. LOKASI

Loka Penelitian Perikanan Samudera (LPPS) Bitung berada di kompleks Pelabuhan Perikanan Samudera -Bitung, Sulawesi Utara. Aktifitas kegiatan administrasi perkantoran loka penelitian dijalankan pada lokasi dengan gedung dan

tanah yang berstatus sewa jangka panjang. Pada saat ini sudah mendapat persetujuan dari pihak Pelabuhan Perikanan Samudera – Bitung untuk membangun gedung kantor di dalam area pelabuhan dengan luas tanah sekitar 500 m^2. Wilayah kerja dari LPPS Bitung adalah peariran Indoneisa bagian timur yang merupakan bagian dari perairan Samudera Pasifik Bagian Barat.

K. SEJARAH BERDIRINYA LOKA PENELITIAN PERIKANAN SAMUDERA, BITUNG

Perairan laut Indonesia yang cukup luas dan mempunyai berbagai sumber daya akuatik yang menghuninya diharapkan akan menjadi tulang punggung pembangunan Indonesia, maka didalam pengembangan perikanan tangkap keikutsertaan secara aktif dalam suatu *Regional Fisheries Management Organization* (RFMO) maupun organisasi perikanan regional lainnya adalah merupakan hal yang penting. Dalam rangka pengelolaan eksploitasi sumber daya ikan berbasis pemanfaatan berkelanjutan kaitannya dengan RFMO bermanfaat bagi Indonesia antara lain : (1) Data dan informasi yang berkaitan dengan sumber daya tersebut (sesuai dengan yang dipersyaratkan) harus dipersiapkan dengan baik, dan (2) Keikutsertaan dalam pertemuan regional secara konsisten harus diikuti. Dengan demikian diharapkan Indonesia mempunyai peran kunci di dalam organisasi-organisasi regional dan internasional tersebut.

Indonesia adalah negara yang mempunyai laut terluas di kawasan Asia. Penangkapan sumber daya ikan tuna di perairan Samudera Pasifik bagian Barat oleh armada perikanan Indonesia adalah cukup nyata sehingga kelangkaan data dan informasi ilmiah akan menimbulkan masalah bagi Indonesia didalam pengelolaan sumber daya yang bersifat highly migratory maupun *stradling* secara keseluruhan.

Langkah awal dalam memperoleh data/informasi ilmiah yang diperlukan sebagai calon anggota RFMO telah dilaksanakan di perairan Samudra Pasifik Bagian Barat melalui kerja sama dengan SPC, IPTP dan IATTC, namun kegiatan tersebut telah berakhir pada tahun 2007, sedangkan data/informasi ilmiah tersebut harus secara terus menerus diperoleh sebagai bahan untuk pengelolaan yang berkesinambungan.Sejak tahun 2008, kerjasama dengan WCPFC mulai dirintis untuk memperoleh data/informasi ilmiah yang lebih konprehensif dan terstruktur

dengan melakukan kegiatan sampling di Bitung.

Sampai saat ini data dan informasi yang berkaitan dengan sumber daya yang bersifat *highly migratory* sesuai dengan yang disyaratkan oleh RFMO masih belum memadai. Statistik nasional perikanan Indonesia masih memiliki kekurangan yakni belum bisa digunakan untuk analisis catch per unit effort, hasil tangkapan tidak menggambarkan asal perairan ikan tersebut ditangkap dan informasi tentang ukuran ikan yang tertangkap secara time series tidak tergambar.

Sejauh ini metoda pengumpulan data yang dipergunakan ditujukan untuk memperoleh informasi yang berkaitan dengan keperluan statistik produksi (untuk seluruh jenis ikan) bukan untuk keperluan pengkajian stok, sehingga suatu perlakuan khusus dalam hal metoda pengumpulan data untuk beberapa jenis ikan tertentu perlu diterapkan.

Sebagai negara anggota dari WCPFC Indonesia juga berkewajiban untuk memenuhi resolusi-resolusi yang telah ditetapkan. Salah satunya adalah Indonesia wajib menghadiri pertemuan *Scientific Committee Meeting* yang dilakukan WCPFC dalam setiap tahunnya. Dalam pertemuan tersebut Indonesia wajib menyampaikan temuan ilmiah dalam rangka menetukan status perikanan tuna dan sejenisnya di Perairan Samudera Pasifik dan sekitarnya.

Hal-hal tersebut di atas telah mendorong Pusat Penelitian Penelitian dan Pengembangan Perikanan mendirikan Loka Penelitian Perikanan Samudera, Bitung dengan tujuan mendapatkan data dan informasi yang tepat dan akurat serta yang sesuai dengan kepentingan Indonesia dalam perundingan-perundingan di RFMO, khususnya di WCPFC.

L. SUMBERDAYA MANUSIA

Sumber daya manusia sampai dengan tahun 2015 terdiri dari 15 (lima belas) orang. Kelima belas orang ini terdiri atas 1 (satu) orang PNS, 2 (dua) orang CPNS, 1 (satu) orang koordinator, 10 (sepuluh) orang petugas enumerator, dan 1 (satu) orang petugas data entry.

Enumerator adalah pengumpul data perikanan tuna (purse seine, longline dan pole and line) yang didaratkan dan diproses di perusahaan pemrosesan. Secara lebih rinci daftar tenaga dimaksud dapat dilihat pada Tabel 1.

Table 1. Tenaga yang saat ini ada di Loka Penelitian Perikanan Samudera Bitung.

NO	NAMA	STATUS	Pendidikan/Jurusan	Jabatan
1	Adi Kuswoyo, S.Pi	PNS	S1. Pemanfaatan Sumberdaya Perikanan	Teknisi Litkayasa
2	Roy Kurniawan. S.Pi	CPNS	S1 Managemen Sumber daya Perairan	Peneliti
3	Novan Setiawan	CPNS	DIII Perikanan	Penyiap Bahan
4	Mistun, S.T	Tenaga Kontrak	S1. Teknik Kelautan	Koordinator Enumerator
5	Farid Irawan, A.Md	Tenaga Kontrak	DIII perikanan	Enumerator
6	Hamilton Kakambong, A.Md	Tenaga Kontrak	DIII Perikanan	Enumerator
7	Ronaldo E. A. Kumaunang, S.T	Tenaga Kontrak	S1. Teknik Kelautan	Enumerator
8	Musthaqim Massora, A.Md	Tenaga Kontrak	DIII Perikanan	Enumerator
9	Samsir, A.Md	Tenaga Kontrak	DIII Perikanan	Enumerator
10	Muhammad Jaenal Sukri, A.Md	Tenaga Kontrak	DIII Perikanan	Enumerator
11	Suprianto, A.Md	Tenaga Kontrak	DIII Perikanan	Enumerator
12	Suriadi, A.Md	Tenaga Kontrak	DIII Perikanan	Enumerator
13	Tasbih, A.Md	Tenaga Kontrak	DIII Perikanan	Enumerator
14	Jondris Dilli	Tenaga Kontrak	SLTA	Enumerator
15	Salman, S.Pi	PNS pada Stasiun PSDKP Bitung	S1 Perikanan	Entry data

M. SARANA DAN PRASARANA

Sampai dengan akhir tahun 2013 telah tersedia sarana gedung kantor sementara yang menempati salah satu bangunan di blok perkantoran di dalam

komplek Pelabuhan Perikanan Samudera, Bitung. Sarana dan prasarana yang telah tersedia sebagaimana tercantum dalam Tabel 2.

Table 2. Daftar Barang Inventaris Intrakomtabel

No	Nama Barang	Merk/Type	Tahun Perolehan	Kuantitas	Kondisi	
					Baik	Buruk
1	Sepeda Motor	Honda Revo	2010	2	V	
2	AC	Thosiba 10 SKSPX	2010	1	V	
3	Meja	½ biro 2 laci	2010	3	V	
4	Kursi Besi	Putar OCS Series	2010	3	V	
5	Almari Besi	Lemari Arsip	2010	1	V	
6	Meja Komputer	Meja+kursi	2010	1	V	
7	Komputer	-	2010	1	V	
8	Printer	HP Laser Jet K209A	2010	1	V	
9	Printer	Canon M348	2010	1		V
10	Frezzer	Sanyo SFC 21 K	2010	1	V	
11	Kamera Digital	10 Mega pixel	2010	1	V	

N. HASIL

Loka Penelitian Perikanan Samudera -Bitung sudah menunjukkan eksistensinya di dunia internasional sejak tahun 2009. Hal tersebut merupakan langkah dan upaya untuk memperbaiki sistem pendataan yang

berstandar internasional melalui mekanisme pengumpulan data oleh enumerator. Selanjutnya pengolahan data dilakukan dengan menggunakan software yang telah dibuat khusus untuk keperluan menyimpan data hasil enumerasi ke dalam bentuk database sesuai dengan standar WCPFC.

Data yang dikumpulkan dalam kegiatan enumerasi ini adalah data pendaratan (informasi trip, dan informasi tangkapan), serta data sampling biologi (spesies, ukuran panjang dan berat). Data tersebut disesuaikan dengan kebutuhanorganisasi pengelola perikanan regional (RFMO) dalam rangka Estimasi hasil tangkapan tahunan per spesies per jenis alat tangkap yang diperlukan untuk pengkajian stok.

Sebagai output dari kegiatan ini telah dihasilkan sebuah buku protokol sampling yang di terbitkan Pusat Penelitian Pengelolaan Perikanan dan Konservasi Sumber daya Ikan (sekarang Puslitbangkan). Selain itu, hasil sampling digunakan oleh Direktorat Sumber daya Ikan, Direktorat Jenderal Perikanan Tangkap untuk memperbaiki data statistik perikanan tangkap dengan cara menjabarkan komposisi jenis tuna.

O. MANFAAT

Diharapkan dengan adanya LPPPB-Bitungdapat memudahkan operasional dan pelaksanaaan kegiatan penelitian di Bitung, Sulawesi Utara, dalam rangka pengumpulan dan analisa data perikanan khususnya sumber daya tuna dan jenis ikan peruaya jauh di Samudera Pacifik (area konvensi WCPFC)dan sekitarnya dalam rangka pengelolaan sumber daya yang bertanggung jawab dan mendukung kegiatan lembaga lingkup KKP kaitannya dengan peranan Indonesia pada lembaga pengelolaan perikanan regional.

Sentra perikanan tuna terbesar di Indonesia berada di Bitung (Propinsi Sulawesi Utara). Kesinambungan usaha perikanan tuna yang ada di Bitung tersebut sangat dipengaruhi oleh kondisi sumber daya yang ada (Samudera Pasifik bagian Barat sebagai daerah penangkapan). Kesinambungan keberadaan sumber daya tuna memerlukan pengelolaan yang baik yang didukung oleh data ilmiah yang memadai. Dengan demikian maka kesinambungan usaha akan tetap terjamin sehingga akan menjamin pula peluang lapangan kerja bagi penduduk setempat.

P. DAMPAK

Dampak yang diharapkan dari adanya LPPPB-Bitung ini adalah kelancaran operasional kantor penelitian di Bitung untuk mendukung peningkatan peran aktif lembaga penelitian dalam berpartisipasi pada organisasi pengembangan perikanan regional seperti WCPFC. Dampak lain yang timbul adalah peningkatan peran Indonesia dalam negosiasi penentuan alokasi pemanfaatan sumber daya ikan tuna di area konvensi WCPFC khususnya spesies tuna sirip kuning, tuna mata lebar dan cakalang. Disamping itu juga dalam rangka penguatan kelembagaan P4KSI yang memiliki mandat pengkajian sumber daya ikan khususnya di perairan konvensi WCPFC.

PENUTUP

Dengan berdirinya Loka Penelitian Perikanan Samudera di Bitung diharapkan data dan informasi sumber daya perikanan Samudera yaitu berbagai jenis tuna termasuk jenis-jenis ikan beruaya jauh dan endemik lainnya di Samudera Pasifik bagian Barat dan sekitarnya yang sesuai RFMO dapat terpenuhi sehingga makin meningkatkan peran aktif lembaga penelitian dalam organisasi internasional,

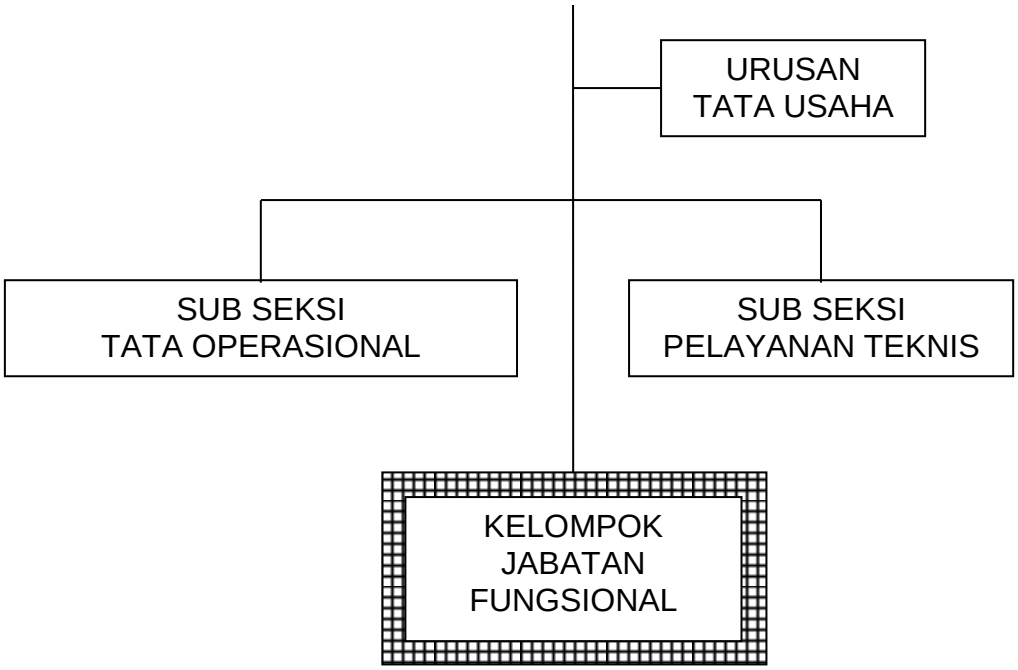
disamping itu kontinuitas dan keakuratan data dapat terjaga.

Terima kasih kami ucapkan kepada semua pihak yang telah membantu terselesaikannya naskah akademis ini.

Lampiran 1. Struktur Organisasi Bitung

STRUKTUR ORGANISASI
LOKA PENELITIAN PERIKANAN PELAGIS BESAR, BITUNG

LOKA PENELITIAN
PERIKANAN PELAGIS
BESAR - BITUNG


URUSAN
TATA USAHA
SUB SEKSI
TATA OPERASIONAL
SUB SEKSI
PELAYANAN TEKNIS
KELOMPOK
JABATAN
FUNGSIONAL

Lampiran 2. Dokumentasi Kegiatan Stasiun Monitoring Perikanan Tuna Bitung

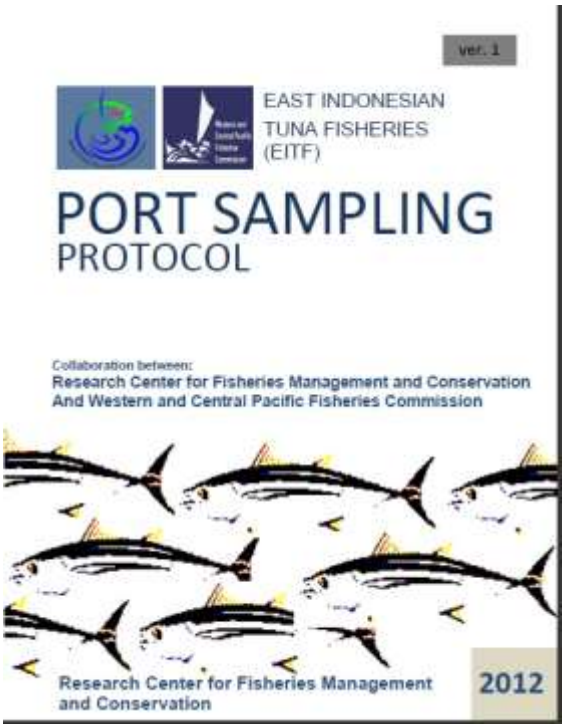
Sumberdaya Manusia

Sarana dan Prasarana

Kegiatan Enumerasi




Document



Attachment E

Republic of the Philippines
Department of Agriculture
BUREAU OF FISHERIES AND AQUATIC RESOURCES
PCA Compound, Elliptical Road, Diliman, Quezon City
Tel No. 929-9597
Fax No. 929-8074

TITLE / SUBJECT : OFFICIAL TRAVEL REPORT

DATE : 28 August 2015

1. NAME/S :	ALMA DICKSON, DFT
2. POSITION :	**Chief, National Marine Fisheries Development Center;**
3. OFFICE :	Bureau of Fisheries and Aquatic Resources / National Fisheries Research and Development Institute PCA Building, Elliptical Road Diliman, Quezon City
4. TRAVEL AUTHORITY :	
5. DATE OF TRAVEL :	Departure : August 2, 2015 Arrival : August 17, 2015
6. DESTINATION :	Pohnpei, Federated States of Micronesia
7. NATURE/PURPOSE OF TRAVEL :	To attend/participate in the 11th Regular Session of the Scientific Committee of the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPFC-SC11).

8. ACTIVITIES UNDERTAKEN:

HEADS OF DELEGATIONS MEETING

The Meeting was convened a day prior to the SC11 Meeting for the Heads and Delegations to discuss and agree on the agenda and structure of the Meeting.

AGENDA ITEM 1 — OPENING OF MEETING

The meeting was opened by the Chair of the Scientific Committee Ludwig Kumoru, welcoming delegations of the WCPFC Members, Cooperating Non-members and Participating Territories (CCMs) and Observers to the Eleventh Regular Session of the Scientific Committee (SC11). Opening remarks were presented by the Commission Chair Rhea Moss-Christian. The new Executive Director Feleti Teo made remarks which emphasised strong communication, community engagement by the Commission, and early consultations with stakeholders are valuable.

AGENDA ITEM 2 — REVIEWS OF FISHERIES

Peter Williams (SPC-OFP) and P. Maru (FFA Secretariat) presented SC11-GN-WP-01, an overview of tuna fisheries in the western and central Pacific Ocean for 2014, including economic conditions.

The provisional total WCPFC Statistical Area tuna catch for 2014 was estimated at 2,860,648 mt, clearly the highest ever at 170,000 mt above the previous record catch in 2013 (2,690,881 mt); this catch represented 83% of the total Pacific Ocean catch of 3,486,124 mt, and 60% of the global tuna catch (the provisional estimate for 2014 is 4,783,629 mt, and when estimates are finalised is expected to be the highest on record mainly due to increased WCPFC Statistical Area catches).

The 2014 catch of skipjack (1,957,693 mt – 68% of the total catch) was the highest recorded, eclipsing the previous record of catch in 2013 by 115,000 mt (1,842,485 mt). The yellowfin catch for 2014 (608,807 mt – 21%) was also the highest recorded (5,000 mt higher than the record catch of 2008 – 603,244 mt) mainly due to increased catches in several longline fisheries. The bigeye catch for 2014 (161,299 mt – 6%) was slightly higher than in 2013, but relatively stable compared to the average over the past ten years. The 2014 albacore catch (132,849 mt - 5%) was slightly lower than in 2013 and about 15,000 mt lower than the record catch in 2002 at 147,793 mt.

Economic conditions in the tuna fisheries of the WCPFC Statistical Area during 2014 were mixed compared with

2013. US dollar (USD) prices for canning lightmeat raw materials (skipjack and yellowfin) saw a year on year decline in 2014 of around 30% across major markets while prices for whitemeat raw materials increased by 10% to 20%. In contrast USD prices for longline sashimi products in 2014 were little changed from 2013.

STATUS OF TUNAS IN THE EASTERN PACIFIC OCEAN (EPO)

Kurt Schaefer, IATTC presented a summary of the fishery and assessments of the major stocks of tunas exploited in the Eastern Pacific Ocean (SC11-GN-WP-02). The fishing capacity of the purse-seine fleet fishing in the EPO increased rapidly during 1995 to 2005, but has been fairly steady since about 2006, at about 200,000 cubic meters of well volume. Recent estimates indicate that the yellowfin spawning biomass in the EPO is overexploited (S<Smsy), but that overfishing is not taking place (F<Fmsy).For skipjack, except for 2010, the biomass and recruitment, have been relatively high over the past decade including for 2014, and the exploitation rate has remained relatively high during this same period. Recent estimates indicate that the bigeye spawning biomass in the EPO is not overexploited (S>Smsy), and that overfishing is not taking place (F<Fmsy).

UPDATES ON TUNA FISHERY BY CCM

Each member country, participating territories and cooperating non-members (CCMs) were given opportunity to give updates of their tuna fishery, highlighting recent changes and developments in their fisheries as described in Part 1 of their Annual Report to the Commission.

The Philippines reported ongoing initiatives such as a national stock assessment program and observer program, catch documentation and validation, the implementation of a Vessel Monitoring System and other collaborative activities supporting Philippines' efforts towards improving tuna data collection. Philippines passed Republic Act 10654 known as the Philippine Fisheries Code of 1998 and in 2015 Philippines approved and implemented Fisheries Administrative Order No. 245-3 (FAO 245-3) on the Regulations and Implementing Guidelines on Group Tuna Purse Seine Operations in High Seas Pocket Number 1 as a Special Management Area. This is supported by other FAO initiatives such as the National Tuna FAD Management Policy (FAO No. 244), FAO 236-4: Extension of FAO 236 series of 2010 and other FAOs.

AGENDA ITEM 3 — DATA AND STATISTICS THEME

The Data and Statistics theme was convened by L. Kumoru (PNG). P. Williams (SPC-OFP) presented SC11-ST-WP-01 on scientific data available to the Western and Central Pacific Fisheries Commission including a review of the tier scoring system for scientific data submission which has been developed for evaluating compliance with the provision of scientific data to the Commission. Also presented was recent development in WPEA Phase 2 project taking place in Indonesia, Philippines and Vietnam and main data gaps for these two CCMs and one cooperating non-member.

AGENDA ITEM 4 — STOCK ASSESSMENT THEME

SC11 strongly recommends that the multi-fleet operational level data be retained by SPC for the purpose of conducting stock assessments, with particular emphasis on WCPO bigeye tuna. SC11 noted that the total yellowfin catch in 2014 was the highest ever recorded at 608,807 mt, which was a 10% increase over 2013 and a 9% increase over the average for 2010–2013. SC11 noted that no stock assessment was conducted for WCPO skipjack tuna in 2015. Therefore, the stock status description from SC10 is still current.

SC11 noted that no management advice has been provided since SC8 and SC9 for oceanic whitetip shark and silky shark, respectively. Therefore, previous advice should be maintained, pending a new assessment or other new information. SC11 also noted that no management advice has been provided for South Pacific blue shark.

AGENDA ITEM 5 — MANAGEMENT ISSUES THEME

SC11 reviewed information related to tropical tunas (WCPFC-SC11-2015/GN-WP-01). Noting the longline bigeye catch and the total number of FAD sets in 2014 was still higher than in 2010 (taken as a reference year for the current CMM), and the number of FAD sets was 5% above the mean total number for the 2005-2014 period, SC11 recommends the need for additional or alternative targeted measures to reduce the fishing mortality on bigeye tuna, as seen as appropriate by the Commission.

SC11 also reviewed evaluation of CMM-2013-01 (WCPFC–SC11-WCPFC11-03). Noting revised tropical tuna measure adopted at WCPFC 11 (CMM-2014-01) is slightly different from the assumption used in the analysis, SC11 requests the Science Service Provider consider the implementation of updated projections, including

evaluation of the potential impact of CMM 2014-01, for the consideration of tropical tuna measures at WCPFC12.

Noting the request in paragraph 584 of the SC10 report, SC11 reviewed working paper WCPFC-SC11-2015/MI-WP-05 which analysed the relative impact of associated and unassociated set types on skipjack tuna stock status. Results indicated that skipjack stock status is relatively insensitive to the proportions of associated or unassociated sets of purse seine effort, with slight benefits to stock status with a higher proportion of unassociated sets. In addition, SC11 noted that the analyses had assumed a linear relationship between CPUE and stock abundance (potentially unrealistic in purse seine fisheries) and had not taken account of effort creep in purse-seine effort, for both associated and unassociated sets. SC11 also noted that a decrease in days searching and an increase of days in transit in logbooks might partially explain the increased CPUE observed. SC11 recommends that WCPFC12 take note of this paper and that further analyses be undertaken taking into account the issues identified above.

SC11 reviewed working paper WCPFC-SC11-2015/MI-WP-09 which analysed the relative impact of associated and unassociated set types on yellowfin tuna stock status. SC11 advises WCPFC12 that based on the results of the analyses described in this paper yellowfin tuna stock status in the WCPO is relatively insensitive to whether purse seine effort is comprised of mainly associated sets or unassociated sets and these results are consistent with working paper WCPFC-SC10-2014/MI-WP-05. SC11 also noted that a slightly better stock status (higher spawning biomass) for yellowfin tuna and slightly lower average catch of yellowfin tuna occurred when purse seine effort compositions favoured unassociated sets. SC11 recommends that WCPFC12 take note of these conclusions and that further analyses be undertaken taking into account alternative relationships between CPUE and abundance.

SC11 reviewed analyses undertaken to estimate potential tropical purse seine fleet sizes given existing effort limits and candidate target stock levels (WCPFC-SC11-2015/MI-WP-10). SC11 noted that these analyses are an important contribution to the development of a purse seine capacity management scheme for the WCPFC and supported further work to identify patterns of participation by full-time and part-time vessels within the fishery, the need to relate both participation and effort creep to vessel characteristics, and the expansion of similar analyses to the longline fleets. SC11 recommends that WCPFC12 take note of these preliminary analyses and requests the Commission identity any specific analyses which may assist the Commission's consideration of fleet capacity.

AGENDA ITEM 6 — ECOSYSTEM AND BYCATCH MITIGATION THEME

Ecosystem and Bycatch Mitigation Theme convenor J. Annala reminded the Committee that SC11 has been asked to review five CMMs and provide advice. SC11 was also asked to conduct a brief review of the SEAPODYM model.

AGENDA ITEM 7 — OTHER RESEARCH PROJECTS

West Pacific East Asia Oceanic Fisheries Management Project

The WCPFC Science Manager gave a brief presentation on the new GEF-funded 'Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas'project, including the development process, key activities, budget scope, and key outcomes from the previous projects (WCPFC-SC11-2015-RP/WPEA-01).

Pacific Tuna Tagging Project

The Chair of the Pacific Tuna Tagging Project(PTTP) working group, L. Kumoru (PNG) noted that the group met on Thursday 6 August 2015 in Pohnpei, FSM. The steering committee summary report (SC11-RP-PTTP-01) was made available to SC11 participants.

AGENDA ITEM 8 — COOPERATION WITH OTHER ORGANISATIONS
AGENDA ITEM 9 — SPECIAL REQUIREMENTS OF DEVELOPING STATES AND PARTICIPATING TERRITORIES
AGENDA ITEM 10 — FUTURE WORK PROGRAMME AND BUDGET
AGENDA ITEM 11 — ADMINISTRATIVE MATTERS

Future operation of the Scientific Committee

The SC Chair noted that the Secretariat had trialed a new procedure this year for developing its meeting report. Observing that it had worked well the Chair called for views from SC11.

Election of Officers of the Scientific Committee

The SC Chair noted the need for an SC Vice-Chair.Cook Islands noted that this was the SC Chair's third year as Chair and acknowledged his work. This CCM encouraged non-FFA members to provide support to the Commission as SC Chair.

J. Annala (New Zealand), co-convenor of the Ecosystems and Bycatch Theme advised SC11 that next year will be his last as co-convenor and his co-convenor, A. Batibasaga (Fiji), was not going to be available next year. There was a need to appoint a new co-convenor for this Theme and eventually two.

Tonga was nominated by Fiji and accepted as the new co-convenor for the Ecosystems and Bycatch Theme. After discussions around whether or not the SC Chair and Vice Chair had to be from different chambers within the Committee, advice from the Secretariat and views of a number of CCMs in plenary, A. Batibasaga's nomination was accepted and he was accepted by SC11 as the SC Vice-Chair.

Next meeting

Indonesia confirmed to host SC12 in Bali, Indonesia, scheduled to take place from 3-11 August 2016. The Cook Islands flagged that discussions are taking place in-country about the possibility of hosting SC13 in 2017. The SC Chair noted that if no other CCM offers to host SC13, it will be held in Pohnpei, FSM.

AGENDA ITEM 12 — OTHER MATTERS

There were no other matters raised for discussion.

AGENDA ITEM 13 — ADOPTION OF SC11 SUMMARY REPORT

The Report of the 11th Regular Session of the Science Committee will be adopted intercessionally.

AGENDA ITEM 14 – CLOSE OF THE MEETING

Fiji mentioned that it would be hosting the 2016 Commission meeting. Sincere thanks were expressed to the Chair, theme convenors, the Secretariat and the rapporteur for their hard work, professionalism and smoothly run meeting. The SC members were thanked for their good spirits and collaborative work. FSM's hospitality was particularly noted. On behalf of Secretariat, the Commission Executive Director thanked and congratulated the SC for accomplishing its task. FSM wished participants a safe trip home. The SC Chair closed the meeting at 3:10pm on 13 August 2015.

9. IMPRESSIONS :

The SC11 Meeting of the WCPFC was well attended by scientist, some managers, industry representatives and delegation members of each CCMs. The meeting gave a good venue to show the recent stock assessment results of scientific research/analysis done in the WPO that will serve as basis for formulating conservation and management measures for the sustainable management of our tuna fishery resources particularly our tuna stocks and other highly migratory fish stocks in the Western and Central Pacific Ocean (WCPO).

10. RECOMMENDATIONS:

It is recommended that implementation of various programs including WPEA-SM, NSAP, Observer, VMS to improve the compliance to data requirements and other obligations as a member country to the Western and Central Pacific Fisheries Commission (WCPFC).

SUBMITTED BY:

ALMA C. DICKSON, DFT
Chief, National Marine Fisheries
Development Center

Annex. OBSERVATIONS AND RECOMMENDATIONS

The attendance on the 11th WCPFC Science Committee meeting in Pohnpei, Federated State of Micronesia, last August 3 to 14, 2015 has been beneficial and useful to the undersigned thus enhanced technical know-how's on various scientific activities contributed/shared by the scientists from other member countries and SPC. Hereunder are the observations and recommendations:

a) The SC has continuously provided a good venue for scientists, fishery managers, compliance managers, regional /national observer coordinators and NGOs to discuss and share each other's works and experiences to upgrade knowledge and competencies on the latest trends and review of various fisheries status with focus on tunas in the WCPO and other species of special interest; issues related with data and statistics; stock assessment; management issues in relation to the implementations of the applicable conservation and management measures; ecosystem and bycatch mitigation and on other research projects including the West Pacific East Asia Project.

b) It was also observed that after each paper presentations, the approach on open discussions to provide comments and observations has encourage the active participation of all member countries thus created a friendly working atmosphere and information sharing. Although there are some debates in the plenary due to different views and opinions, the respect of each other's contribution were deliberated and considered.

c) Regarding the overall management and operation of the SC meeting, I fully support the decision making "Consensus Approach" which resulted in providing a unified scientific outputs.

d) Regarding the conduct of researches, there must be a need to encourage all member countries to conduct their respective compatible researches to validate the overall findings of the WCPFC scientific services provider. In this respect, the Commission must provide the corresponding capacity building training to interested CCMs to standardize the science protocol, methodologies, approaches and funding support in the implementation of the priority studies as well as promote the SPC's collaboration with interested CCMs.

e) In the case of the Philippines, the implementation of the WPEA Project activities and its flexible approach in supporting the country's /CCM's needs has been providing significant benefits. Its support is focused on the diversified requirements of the tuna fishing industry to improve its data collection both at the landing centers and onboard the fishing vessels using various documentation tools such as the NSAP data, logsheets, observers and VMS data. Despite the very limited budget provided by the WPEA Project, the Philippines through our BFAR budget has also provided counterparts in terms of sharing the expertise and/or services of technical and administrative personnel as well as its training and office facilities and other incidentals in order to attain the common objectives on the proper development and management of tuna resources to insure sustainable supply for the regional and national food security.

f) WCPFC Science Committee must develop a comprehensive capacity building programs based on the needs of the respective CCMs.

WEST PACIFIC EAST ASIA OCEANIC FISHERERIES MANAGEMENT PROJECT

TRIP REPORT

Participation at the Eleven Regular Meeting of the Scientific Committee at Pohnpei, Federated States of Micronesia, on 5-13 August 2015

Executive Summary:

- Government agency representative: Pham Viet Anh.
- Title: Fisheries Officer.
- Name of organization: Directorate of Fisheries, Ministry of Agriculture and Rural Development.

- Scientific agency representative: Nguyen Viet Nghia.
- Title: Vice-Director.
- Name of organization: Research Institute for Marine Fisheries, Ministry of Agriculture and Rural Development.

Introduction

1. Scientific Committee meeting (SC) is regularly convened every year in August as a very important part of scientific works of WCPFC. The Scientific Committee of WCPFC has the responsibility to review current status of tuna species at the region of WCPO in order to provide reasonable and relevant management and conservation measures and thus a meeting of the SC has been regularly held to discuss and evaluate current status of the regional tuna fisheries.

2. Under the WPEA OFM project, Viet Nam has been supported a fund source to send its delegation to participate the SC11 meeting. The main aims of the participation were to provide better understanding on scientific work of WCPFC and to gradually improve compliance in term of scientific data provisions of tuna fisheries for regional stock assessments. The meeting also provide a chance for the participants from member countries to report and update their countries' tuna fisheries status.

3. The theme conveners and their assigned themes are:

Data and Statistics theme	L. Kumoru (PNG)
Stock Assessment theme	J. Brodziak (USA) and H. Nishida (Japan)
Management Issues theme	R. Campbell (Australia)
Ecosystem and Bycatch Mitigation theme	J. Annala (NZ) and A. Batibasaga (Fiji)

Tuna resource status of WPCO region

4. Information on status, biology and related ecosystems of tuna stocks in the WCPO region were obtained and understood. This information can be summarized as follows:

5. The provisional total WCPFC Statistical Area tuna catch for 2014 was estimated at 2,860,648 mt, clearly the highest ever at 170,000 mt above the previous record catch in 2013 (2,690,881 mt); this catch represented 83% of the total Pacific Ocean catch of 3,486,124 mt, and 60% of the global tuna catch (the provisional estimate for 2014 is 4,783,629 mt, and when estimates are finalised is expected to be the highest on record mainly due to increased WCPFC Statistical Area catches).

6. The 2014 WCPFC Statistical Area catch of skipjack (1,957,693 mt – 68% of the total catch) was the highest recorded, eclipsing the previous record of catch in 2013 by 115,000 mt (1,842,485 mt). The WCPFC Statistical Area yellowfin catch for 2014 (608,807 mt – 21%) was also the highest recorded (5,000 mt higher than the record catch of 2008 – 603,244 mt) mainly due to increased catches in several longline fisheries. The WCPFC Statistical Area bigeye catch for 2014 (161,299 mt – 6%) was slightly higher than in 2013, but relatively stable compared to the average over the past ten years. The 2014 WCPFC Statistical Area albacore catch (132,849 mt - 5%) was slightly lower than in 2013 and about 15,000 mt lower than the record catch in 2002 at 147,793 mt. The WCPFC Statistical Area albacore catch includes catches of north and south Pacific albacore in the WCPFC Statistical Area, which comprised 76% of the total Pacific Ocean albacore catch of 173,702 mt in 2014. The south Pacific albacore catch in 2014 (83,033 mt) was the fourth highest on record (about 6,000 mt lower than the record catch in 2010 of 88,942mt).

Annual report-part 1

7. All Members, Participating Territories and Cooperating Non-Members presented in the meeting presented their annual report-part 1 on their tuna fishery status and data collection and research at the meeting.

8. Annual report-part 1 of tuna fishery status of Vietnam was also presented during the meeting. The summaries of the report included some main points such as: There are three main fisheries in Vietnam targeting tuna species and tuna-like species. These fisheries are tuna longline, gillnet and purse seine fisheries, which are mostly catching bigeye, yellowfin and skipjack tuna species in the Vietnamese waters. Over the past some years, data collection system for Vietnamese tuna fisheries was insufficient and thus total catches of tuna and other related species were not available.

9. Longlines/handline fishery (LL/HL) is the main fishing method used in tuna fisheries and this fishery is highly developed in the central provinces (i.e. Phu Yen, Khanh Hoa and Binh Dinh). There is no LL/HL vessel registered in other provinces. There is a slight down trend on tuna LL/HL vessel number in 2014 comparing to 2013. Total of tuna LL/HL of 2014 is 1,607 vessels (Table 1). All these vessels are registering to fish in the Vietnamese EEZ.

10. In addition, tuna species can also be caught by purse seine and other fisheries targeting on skipjack tuna and other neritic tuna and bycatch species. In 2014, number of gillnet have keep a stable with a slight change compared to 2013. Total number of gillnet vessels registered in 2014 is 979 vessels focusing on large capacity vessel groups. In contrast, there was a significant increase of purse seine vessels in 2014. While there were only more than 500 units of purse seine vessels in 2012, it was increased 1,581 in 2014. However, it is noted that these purse seine vessels are not only targeting on oceanic tuna but many of them are purse seine vessels targeting on small pelagic fishes such as mackerel, anchovy, scad, herring.

Stock status of four tuna species

Yellowfin tuna:

11. SC11 noted that no stock assessment was conducted for WCPO yellowfin tuna in 2015. Therefore, the stock status description from SC10 is still current.

12. SC11 noted that the total yellowfin catch in 2014 was the highest ever recorded at 608,807mt, which was a 10% increase over 2013 and a 9% increase over the average for 2010–2013.

Bigeye tuna:

13. SC11 noted that no stock assessment was conducted for WCPO bigeye tuna in 2015. Therefore, the stock status description from SC10 is still current.

14. SC11 noted that the total bigeye catch in 2014 was 161,229 mt, which was a 5% increase over 2013 and a 5% increase over the average for 2010–2013. SC11 also noted that the bigeye catch in 2014 was 48% above the estimated maximum sustainable yield (108,520 mt), although those two numbers are not directly comparable because MSY is calculated based on the historical average recruitment.

15. SC11 also noted the analysis of the sensitivity of the WCPO bigeye tuna stock assessment to the inclusion of EPO data and dynamics within a Pacific-wide model. SC11 concluded that the dynamics of bigeye tuna in the WCPO estimated using the Pacific-wide model are not substantially different from those estimated using the WCPO-only model, especially with respect to the main stock status indicators used by WCPFC. Therefore, SC11 recommends that it is reasonable to continue to provide management recommendations to WCPFC on the basis of WCPO-only regional stock assessment models.

16. SC11 did not consider the Pacific-wide sensitivity analysis to be a new stock assessment for the purpose of formulating management advice.

Skipjack tuna:

17. SC11 noted that no stock assessment was conducted for WCPO skipjack tuna in 2015. Therefore, the stock status description from SC10 is still current.

18. SC11 noted that the total skipjack catch in 2014 is provisionally estimated to be 1,957,693mt, which is the highest catch recorded, a 6% increase over 2013 and a 14% increase over the average for 2010-2013.

19. The SC noted that skipjack tuna catch in 2014 was 20% above the estimated MSY (1,618,800mt) although those two numbers are not directly comparable because MSY is calculated based on the historical average recruitment.

20. SC11 reviewed information related to identifying changes in the spatial distribution of skipjack (including range contraction) in response to increase in fishing pressure. SC11recommends that WCPFC12 take note of the analyses completed to date and that further work on this issue be undertaken, including:

    - more extensive skipjack tagging activities, including in sub-tropical and temperate regions to provide better information on stock connectivity and movement; and
    - analysis of operational longline data including skipjack catch to improve the estimation of relative abundance trends by latitude.

Final remarks/conclusion

21. SC11 provided much scientific information on status of tuna stocks and introduced advanced stock assessment methods (e.g. Multifan-CL, Ecopath with Ecosim, SEAPODYM, CPUE standardization methods…).

22. Viet Nam's delegations have also learnt the process from data analysis, stock assessment, development of reference points and recommendation of management strategies/measures as being implemented at WCPFC. This is very useful to enhance and build capacity for Viet Nam's delegations on tuna fisheries management and assessment in the future. In addition, learning from these processes also emphasized the importance on tuna data collection and obligations of CNM as Viet Nam to comply with WCPFC requirements on tuna fisheries data collection and provision.

23. The SC11 provided a great chance for Viet Nam to gradually approach to scientific work of WCPFC. Vietnam's participation is very useful for maintaining its tuna fishery sustainable development in the long term.

24. At the moment, due to lack of skilled expertise and thus Viet Nam should consider to use outcomes of regional stock assessment for its tuna fisheries management at the national level such as application of reference points and management strategies.

25. There is a strong need for Viet Nam to actively participate the scientific works of WCPFC and thus Vietnamese Government should take into consideration to annually

allocate a permanent budget source to fund for its delegations even in the case without obtaining funding source of WCPFC.

Attachment W12-F

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA SM Project)

THREE-COUNTRY WORKSHOP ON STOCK ASSESSMENT IN THE WPEA

3-6 November 2015

Research Institute For Marine Fisheries,
Haiphong, Viet Nam

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA SM Project)

THREE-COUNTRY STOCK ASSESSMENT WORKSHOP

RIMF Meeting Room, Haiphong, Viet Nam
3-6 November 2015

WORKSHOP SUMMARY REPORT

AGENDA ITEM 1. OPENING

1. The Research Institute for Marine Fisheries (RIMF) vice-Director Mr Nguyen Viet Nghia and Project Manager Dr SungKwon Soh opened the workshop which was hosted by the RIMF. Welcome remarks were made by Mr To Viet Chau and the RIMF Director Dr. Nguyen Quang Hung. All participants representing Indonesia, Philippines, Vietnam and SEAFDEC introduced themselves. Dr John Hampton was introduced as the workshop resource person. The list of participants is in **Attachment A**.

AGENDA ITEM 2. ADOPTION OF AGENDA, CHAIR, RAPPORTEURS

A

2. The Project Manager briefed participants on the objectives and process of the workshop and the provisional agenda was adopted as in **Attachment B**.

3. The Project Manager chaired the workshop. Dr Jose Ingles was selected as a rapporteur.

AGENDA ITEM 3. OVERVIEW OF TUNA STOCKS IN THE WPEA AND WCPFC REGION

4. Dr Hampton presented an *Overview of Stocks and Fisheries in the WPEA and WCPFC Region* (**Attachment C**). In his presentation, he covered WCPO tuna biology, migration and stock structure, fisheries as defined in the WCPFC assessments, tuna catches, size composition and regional stock status of bigeye, yellowfin and skipjack tuna.

5. The following points were highlighted during his presentation and discussion:

a) New geographic regions were designated in the 2014 stock assessment. There are 9 regions for bigeye and yellowfin tuna stock assessment and 5 regions for skipjack tuna assessment.
b) Tagging results analysis covering several decades and incorporated into the assessment model showed that tunas tagged largely stayed in the area where they were released, particularly in the far east and far west Pacific. Those tagged and released in the central Pacific Ocean tend to spread widely towards the east and west, mixing with those from the other regions.
c) Stock composition analysis using the stock assessment models showed some differences between species. For region 7, skipjack and yellowfin tuna are comprised mainly of fish originating in the same area; in contrast, bigeye tuna are comprised also of fish moving from regions 3 and 5.

d) Archival tagging data indicate that bigeye tuna do not to maintain an association with individual FADs for extended periods of time (more than a week). In addition, tagging data suggests bigeye move predominantly eastward in the WPO despite the fact that currents (and drifting FADs) move westwards with the counter equatorial current.
e) There is little concrete evidence of significant movement of WCPO tuna into the Indian Ocean.
f) The period before tagged fish are recaptured (duration) is dependent on dynamics and distribution of fishing effort.
g) The stock structure graphs for SKJ and YFT indicate that effective management can be undertaken within the WPEA region.

AGENDA ITEM 4. THE STATUS OF STOCK ASSESSMENTS OF THE PARTICIPATING COUNTRIES AND AGENCIES

4.1 Indonesia

6. Mr Anung Widodo introduced *Fishery Profile of Indonesian WCPFC Statistical Area* (**Attachment D**), covering five fishery management areas (FMA), fleets, catch levels of oceanic tunas in the archipelagic waters and Pacific side EEZs, and national fishery data collection system.

7. Mr Widodo noted that Banda Sea was closed to fishing because of its spawning and nursery characteristics for tunas. It was also noted that anywhere is suitable for spawning where the temperature is about 26 degrees and productivity conditions are suitable for tunas. Spawning is a broad scale; central Pacific around upwelling areas and an area in the northern Philippines for the Pacific bluefin tuna.

8. Dr Fayakun Satria presented an *Update on Development of Tuna Data Collection and its Support for NTMP- Indonesia FMAs (713 to 717)* (**Attachment E)**. He noted that his center is now called the Center for Fisheries Research and Development (CFRD). He described the structure of the institute, data collection from port sampling, estimated tuna catches by gear, the newly approved National Tuna Management Plan and related researches. Regarding tuna management, there is a total allowable catch (TAC) for southern bluefin tuna only and no TACs are yet set for other tunas.

9. Dr Lilis Sadiyah presented a *Preliminary Length-based Spawning Potential Ratio Analysis on Skipjack in the Indonesia's FMAs 713-717* as in **Attachment F**. She showed the application of spawning potential ratio (SPR) on skipjack to estimate biomass and noted that it is used mainly for data poor fisheries. Results presented from analysis suggested very low estimated SPR of 0.02 and high fishing mortality values.

10. The length-based SPR analysis assumed large fish that are missing in the catch if all fish have been caught. Within the length data used in the analysis large fish were not included. Based on the selectivity analysis by WCPFC for skipjack tuna however, it was revealed that large size of skipjack tuna were caught by longline in Region 4, WPEA area. The low estimated SPR and high estimated fishing mortality from the analysis presented a pessimistic scenario. However, Dr Hampton suggested that this may be due to the use of asymptotic selectivity and suggested to use a dome-shape selectivity as a sensitivity analysis.

4.2 Philippines

11. Mr Noel Barut and Ms Elaine Garvilles presented an *Overview of the Philippine Tuna Fisheries* as in **Attachment G**, covering gear types, data collection, stock assessment related researches and fishery management.

12. The Philippines provided the history of data collection in the Philippines, starting with the FAO funded Tuna Research Project under the South China Sea Fisheries Development and Coordinating Programme. The data collection sites were implemented in Southern Philippines namely: Zamboanga City, Misamis Oriental, Davao Del Sur and Gen Santos City. The project started in 1979 and continued until 1987. From then on the Bureau of Fisheries continued the data collection until 1997. In 1998 the National Stock Assessment Program (NSAP) was launched to collect catch and effort data, length and weight measurements and other biological data for selected commercially important fish species including tuna and tuna-like species. In 2005, the WCPFC funded the Indonesia-Philippines Data Collection Project (IPDCP). This project expanded the collection of oceanic tuna data in other known landing centers where the tuna are landed in commercial quantities. Following IPDCP, the WPEA project was implemented to cover more landing centers in major as well as minor tuna landing centers of the Country. In 2014, the number of NSAP landings sites was increased from 159 to 556 landing centers monitored from 1998 to 2013. The expansion of the NSAP landing centers also expanded the collection of the different tuna species data in major and minor landing centers where the WPEA project did not assign tuna data enumerators.

13. It was noted that the sources of data collected for stock assessment include port sampling at landing area, logbooks, and observer program. Results of a preliminary analysis include estimation of yellowfin and skipjack tuna CPUE for handline and purse seine; and calculation of ring net effort for yellowfin and skipjack tuna, using data up to 2014.

- CPUE analysis showed that there was a reduction in effort resulting in decreased catch rates;
- Ring net catches showed pulses, which can be potentially used as an index of recruitment, considering that ring net targets juvenile tunas only.

4.3 Viet Nam

14. Dr Pham Viet Ahn presented an *Overview of the WPEA Project and WCPFC-related Reporting Requirements* as shown in **Attachment H.** He covered the tuna catch data collection system, required reporting to WCPFC, length-frequency analysis, and the ministerial approval of the National Tuna Management Plan.

15. Mr Nguyen Viet Nghia presented *Stock Assessment of the Oceanic Tuna in Vietnam Waters* as per **Attachment I**. It covers the elaborate survey design with longline and gillnet and data collection for fishery and oceanographic parameters from 60 stations along the waters of Vietnam. He showed initial results on species composition by fishing gear, number of species, and catch rates for longline and gillnet sampling gears. Catch and length frequency data were collected from WPEA-1 project in 2012, and a length based cohort analysis (LCA) was conducted to estimate growth, mortality, exploitation ratio, biomass, etc.

16. Issues and comments highlighted during the presentation and discussion are summarized below.

a) It was noted that the survey undertaken by Viet Nam was good as it is done over a long period of time (since 2000) and provided useful information. However, more thought should be undertaken to refine the survey design and analysis prior to conducting the survey.
b) The time period for this length based analysis was very short and this analysis may not be applicable for bigeye tuna which is longed-lived species. Longer time series data are needed to conduct length-frequency analysis for bigeye tuna.
c) The WS noted that tagging experiments are crucial in the WPEA area to identify stock structure and the feasibility of an independent stock assessment. Regarding tagging experiment in the WPEA region, it was also noted that around $5mil over 3 years may be

required to undertake a meaningful tagging activity and an elaborate preparatory work for the tag recovery, including awareness raising for the fishermen about the tagging program.

d) Dr Hampton suggested that Viet Nam contact Australia (Dr Robert Campbell) on their use of methods on harvest strategy evaluation using regional assessment results which is similar with that of Viet Nam's desire to use WCPFC results with the use of local data application.
e) Cost issues were raised related with tuna surveys. The WS suggested that it would be useful to use observer data, logbook data, catch documentation systems technology, etc., as an option rather than conducting surveys.

4.4 Southeast Asian Fisheries Development Center (SEAFDEC)

17. The SEAFDEC presented *Tuna Stock Assessment Program for SEAFDEC member countries* as attached in **Attachment J**. Recently, SEAFDEC established the Scientific Working Group (SWG) for neritic tuna with a main focus on strengthening data collection and analysis to formulate sustainable management of neritic tuna resources in the region. This working group will also consider including oceanic tunas in the future.

18. The SEAFDEC had conducted a neritic tuna tagging program before, however, the recovery rate was very small and not much information was generated to determine the stock and migration pattern of neritic tuna species. SEAFDEC have carried out two survey cruises in the Sulu Sulawesi Sea targeting for oceanic tuna species. At the same time, a genetic study was carried out to determine population structure. If the tuna stock in Sulu Sulawesi Sea is the same stock in WCPO, assessments should be carried out within one ecosystem, rather than in separate by areas. SEAFDEC looks forward to collaborating with other regional bodies including WCPFC in the future in order to provide greater benefit for the member countries.

4.5 World Wildlife Fund (WWF)

19. Ms Nguyen Dieu Thuy introduced the *Fishery Improvement Project (FIP) of WWF Vietnam on the Longline and Handline Fishery* as attached in **Attachment K**.

20. It was noted that:

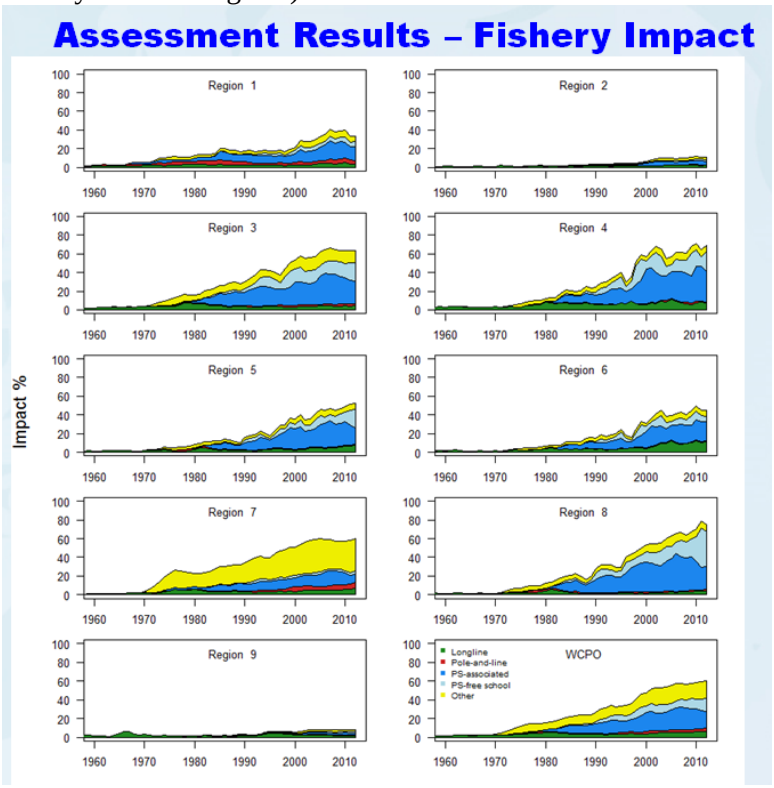
a) the FIP is a market based approach funded by the private sector where activities to improve the management of the fisheries were identified from a pre-assessment of the fishery using the MSC standards.
b) one of the FIP's objectives is to provide the stakeholders with WCPFC information on the different conservation and management efforts at the local level. WWF works as a conduit, to bring a government and the private sector into the table to discuss how to improve the governance and the management of the resources.

21. It was also noted that much information needs to be translated into the local language. The WPEA Project Manager advised that this work can be supported to provide relevant stakeholders with collated information and translation.

AGENDA ITEM 6. INTRODUCTION OF WCPFC-STYLE MFCL-BASED TUNA STOCK ASSESSMENT AND PROJECTIONS

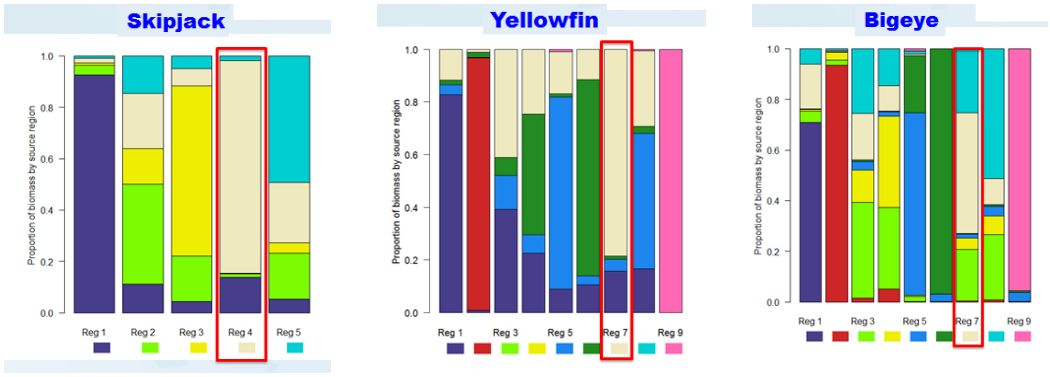
22. Dr Hampton presented *Tuna Stock Assessments – WCPFC Style* (**Attachment L**). He covered an introduction to stock assessment and use of MULTIFAN CL, management evaluations, and management frameworks that include management objectives, reference points, harvest control rules and performance indicators. The following points were noted:

- Movement coefficients were estimated mainly through tagging data and other indices such as CPUE but no information on oceanographic influences was incorporated in estimating the movement parameters.
- The influence of fishery impact in Region 7 extended to other Regions. For example, the impact of "Other" fishery in Region 7 (yellow portion) appears in other Regions (there is no "Other" fishery in other Regions).

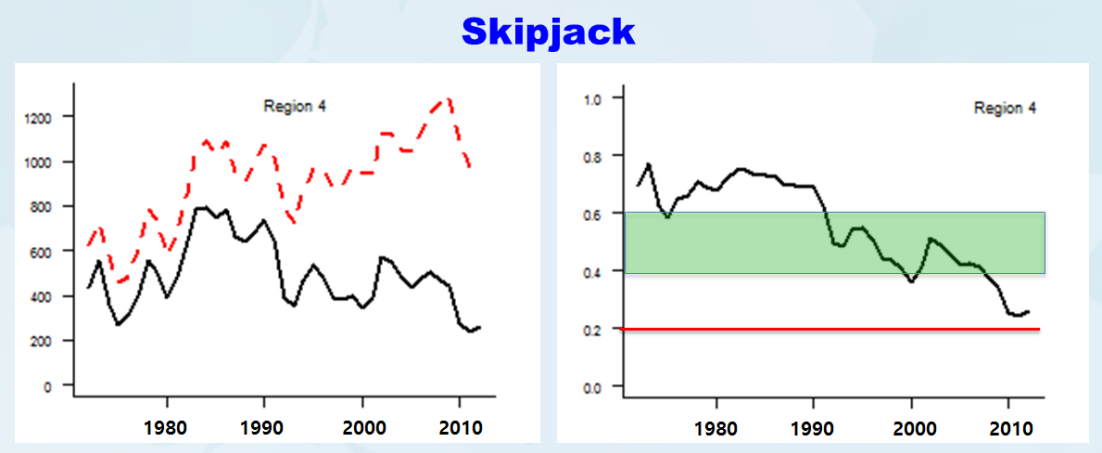


23. Dr Hampton presented *Information on Tropical Tuna Stocks in the WPEA Region (Region 7) based on SPC Stock Assessments* (**Attachment M)**. Key highlights include:

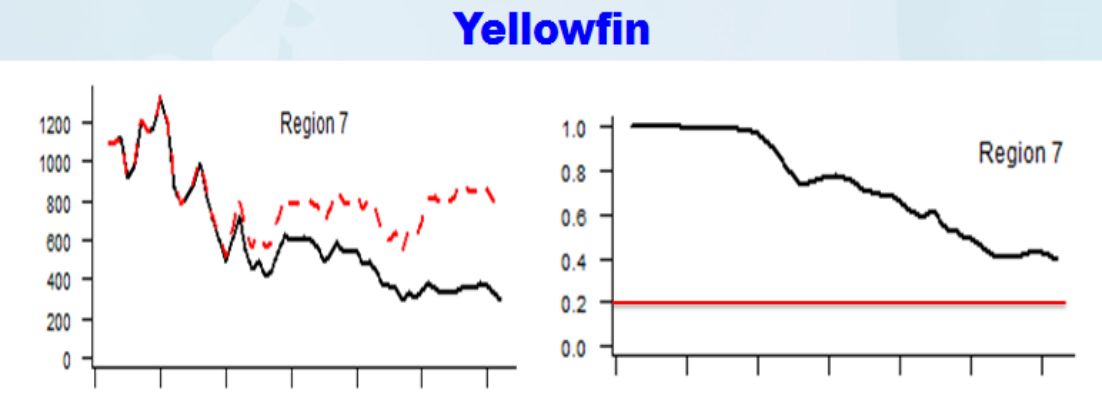
- the stock structure of Region 4 for skipjack and Region 7 for yellowfin showed that the biomass are sourced from within the region and influenced on a minor scale by biomass from Region 1 (Japan). Stock structure of bigeye on the other hand comes from nearby Regions.



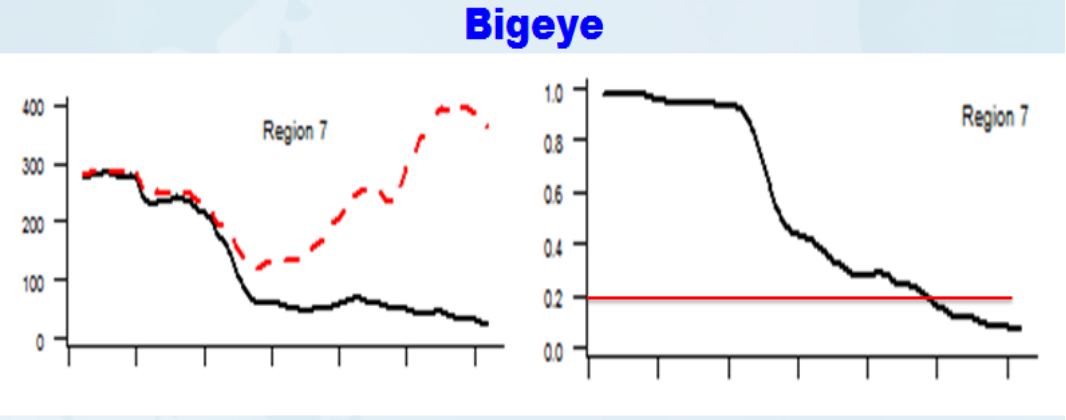
- Spawning biomass of skipjack is on downward trend despite high levels of recruitment. Depletion rate of skipjack is low and is approaching the limit reference point of $0.2SB_{F=0}$.



- Yellowfin recruitment and spawning biomass remain constant over the last several years, and depletion rate is still above the limit reference point.



- Bigeye recruitment remains high (disregarding the last two years) but spawning stock biomass remains on a downward trajectory. Depletion rate has breached the limit reference point of $0.2SB_{F=0}$.



- The biggest fishery impact on the skipjack biomass in Region 4 is caused by gears classified as “Others”. These include small handline targeting the surface tunas, the drift gillnet, troll

lines and handline. Similarly, for yellowfin, the biggest fishery impact on the biomass is caused by these same gears.

- For bigeye, however, it is the longline and the purse seine fishery that causes the biggest impact on the biomass for Region 7.

24. Dr Hampton asked the following questions in his presentation, which were discussed under Agenda Item 8.

- Do the WCPFC-wide assessments provide sufficient information to potentially support sub-regional management in the WPEA area?
- If not, what more would be required?
- What additional data would be required to support WPEA stand-alone assessments?

AGENDA ITEM 7. COMPONENTS OF HARVEST STRATEGY

25. Dr Hampton presented *Management Strategies (objectives, indicators, reference points and harvest control rules): the Equatorial Skipjack Purse Seine Fishery as an Example* (**Attachment N**). The WS considered a harvest strategy as a newly developed fishery management framework available to the current fishery managers and understood the concept of harvest strategy elements.

26. The presentation was an introduction of how fisheries management decisions in support of achieving target reference points can be put into practice using harvest control rule(s). It covered the objective of management decisions depending on tradeoffs between maximizing catch (and revenue) versus minimizing variability of catches (which translates to stability of the resources). Examples were provided to explain the HCR concept, the design of HCR with alternative options, and testing the robustness of two scenarios.

27. The workshop was informed that harvest strategies will be considered in greater detail at the next three-country workshop in 2016.

AGENDA ITEM 8. DEVELOPMENT OF WPEA STOCK ASSESSMENT GUIDELINES

28. The Project Manager reminded participants of the purpose of this stock assessment workshop: firstly, capacity building in understanding the requirements (biological information and input data) and scope (modeling process and interpretation) of work for the Pacific tuna stock assessment, and secondly, the feasibility of conducting a national-level tuna stock assessment within their waters of national jurisdiction. He noted that individual governments would like to take the initiative to manage their fishery resources based on their assessment but stock assessment of the highly migratory fish stocks such as tunas should be conducted with a special consideration, especially related with the stock structure and migration patterns.

29. Through the four stock assessment related presentations by Dr Hampton and comprehensive questions and answers, the WS participants understood the complexity and scope of tuna stock assessments. Following lengthy discussions among the participants, the three members prepared their position regarding national-level stock assessments and their expectations, entitled the *WPEA Stock Assessment Workshop Recommendations for the Guidance of National-level Tuna Stock Assessment* (**Attachment O**).

30. In summary, Indonesia wishes to conduct an independent assessment for tuna resources in its archipelagic waters (FMA 713-715); and they may use the results of WCPFC's stock assessments for tuna management in the Pacific side (FMA 716 and 717). The Philippines generally utilizes the outcomes of

WCPFC's stock assessments but they will continue to conduct CPUE analysis to monitor the tuna fisheries in their waters. Vietnam intends to conduct a separate assessment in the South China Sea (which is also called the East Sea in Viet Nam). However, they also accepted the difficulties of the independent assessment because of insufficient fishery data and biological information.

AGENDA ITEM 9. OTHER MATTERS

9.1 Other stock assessment tools and issues related with climate change

31. Dr Hampton briefly mentioned SEAPODYM as an independent tool to estimate the status of tuna stocks.

9.2 Adoption of the workshop report

32. The participants reviewed the draft workshop minutes, which will be developed as a meeting report and finalized in the near future through inputs by the participant in the relevant sections.

33. The next three-country workshop is scheduled to be convened in May or June 2016, focusing on issues related to harvest strategy framework.

AGENDA ITEM 10. CLOSE OF MEETING

34. There were brief closing remarks on the process of the WS and its outcomes from each delegation. All appreciated the host agency RIMF and the invited scientist Dr John Hampton, stating that the workshop was very useful in terms of understanding tuna stock assessment and drafting future work plans.

35. The workshop closed at 5pm on 5 November and prepared a field trip on 6 November.

ATTACHMENTS

Attachment A	List of participants
Attachment B	Agenda
Attachment C	**Overview of Stocks and Fisheries in the WPEA and WCPFC Region**
Attachment D	Fishery Profile of Indonesian WCPFC Statistical Area
Attachment E	Update on Development of Tuna Data Collection and its Support for NTMP-Indonesia FMAs (713 to 717)
Attachment F	Preliminary Length-based Spawning Potential Ratio Analysis on Skipjack in the Indonesia's FMAs 713-717
Attachment G	Overview of the Philippine Tuna Fisheries
Attachment H	Overview of the WPEA project and WCPFC-related reporting requirements
Attachment I	Stock Assessment of the Oceanic Tuna in Vietnam Waters
Attachment J	Tuna Stock Assessment Program for SEAFDEC member countries
Attachment K	Fishery Improvement Project (FIP) of WWF Vietnam on the Longline and Handline Fishery
Attachment L	**Tuna Stock Assessments – WCPFC Style**
Attachment M	**Information on Tropical Tuna Stocks in the WPEA Region (Region 7) based on SPC Stock Assessments**
Attachment N	**Management Strategies (objectives, indicators, reference points and harvest control rules): the Equatorial Skipjack Purse Seine Fishery as an Example**
Attachment O	WPEA Stock Assessment Workshop Recommendations for the Guidance of National-level Tuna Stock Assessment

Attachment A

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA SM Project)

THREE-COUNTRYSTOCK ASSESSMENT WORKSHOP

RIMF Meeting Room, Haiphong, Viet Nam
3-6 November 2015

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26 October 2015

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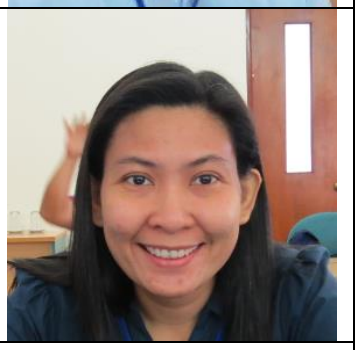
Elaine G. Garvilles	Aquaculturist II / Asst. National Tuna Coordinator Bureau of Fisheries and Aquatic Resources/National Fisheries Research and Dev't Institute 5F Corporate 101, Bldg., Mother Ignacia avenue, Quezon City, Philippines 1101 +6323725063 egarvilles@yahoo.com	
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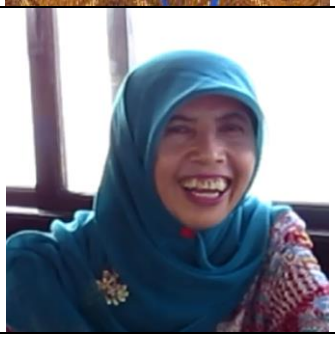
Sofi Chullatus Sofia	Head of SubDivision Identification Resources Management IEEZ and High sea Directorat of Fisheries Resources Management Directorat General of Capture Fisheries Email: chullatus_sofia@yahoo.co.id Or sdi.dfpt@yahoo.com Phone: +62 213453008	

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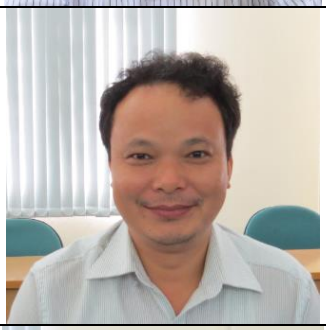
Nguyen Khac Bat	Vice Director Research Institute For Marine Fisheries Ministry of Agriculture & Rural Development No 224 Le Lai,Ngo Quyen, Hai Phong, Viet Nam Email: nkbat2005@gmail.com Phone: +84 916497967	
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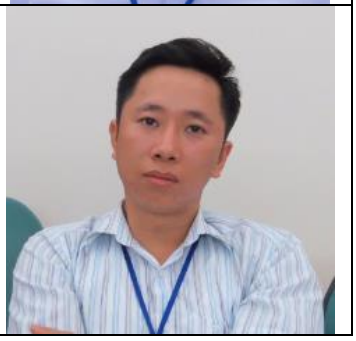
Tran Van Cuong	Deputy Head of Marine Fisheries Resources Department Research Institute For Marine Fisheries Ministry of Agriculture & Rural Development No 224 Le Lai,Ngo Quyen, Hai Phong, Viet Nam Email: cuongrimf@gmail.com Phone: +84 982728365	

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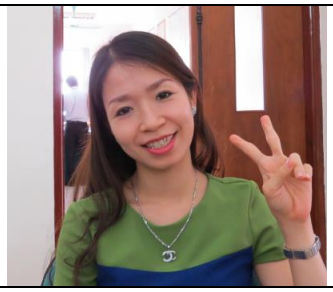
Vu Thu Hang	Science, Int.cooperation and Training Dept. Research Institute For Marine Fisheries Ministry of Agriculture & Rural Development No 224 Le Lai,Ngo Quyen, Hai Phong, Viet Nam Email: vthang@rimf.org.vn Phone: +84 1222259929	
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SungKwon Soh	Science Manager / WPEA Project Manager Western and Central Pacific Fisheries Commission P.O. Box 2356 Kolonia, Pohnpei 96941 Federated States of Micronesia Ph : (691) 320-1992/1993 Fax: (691) 320-1108 Email: sungkwon.soh@wcpfc.int Website: www.wcpfc.int	

Attachment B

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA SM Project)

THREE-COUNTRY STOCK ASSESSMENT WORKSHOP

RIMF Meeting Room, Haiphong, Viet Nam
3-6 November 2015

PROVISIONAL AGENDA

Workshop Chair: Dr SungKwon Soh
Resource Person: Dr John Hampton
Lead Rapporteur: Dr Jose Ingles

WORKSHOP GOAL

To understand how a sub-regional stock assessment is conducted and to develop guidelines for national-level tuna fishery management

KEY TOPICS AND AGENDA

Day 1, Tuesday, 3 Nov

Morning

0830 – 0900 Registration
0900 – 0930 Opening remarks and introduction of participants; group photos
0930 – 1000 Adoption of agenda, selection of rapporteur
1000 – 1030 Morning break
1030 – 1200 Overview of stocks and fisheries in the WPEA and WCPFC Region; Introduction of harvest strategy

- WCPO-EAS region tuna fisheries and stocks

  The WS will go through some summary information on biology, stock structure, key fisheries in the region. John Hampton and each country will prepare a brief presentation on this issue so that we can share basic information on tuna fisheries and stocks in the East Asian Seas.

- Stock assessment 101 – conceptual formula, types of data, model structures, errors, prediction and projection, indicator analysis, sensitivity analysis, retrospective analysis, etc.

  Dr John Hampton will explain the concept of stock assessment 101 terminologies and the group will try to fully understand these concepts.

If time available, the group will cover Harvest Strategy 101 together. This session, we will try to understand terminologies related with harvest strategies, such as management objectives, reference points, acceptable risks, harvest control rules, MSE, etc.

1200 – 1330 Lunch

Afternoon

1330 – 1500 Introduction on the status of stock assessments in Indonesia, Philippines and Viet Nam
1500 – 1530 SEAFDEC's plan for stock assessment
1530 – 1600 Afternoon break
1600 – 1800 Develop guidelines for the national level stock assessments and tuna fisheries management in the WPEA area (Template distributed and assignment given)

- Presentation on national stock assessments and the status of national-level tuna fishery management

  Each country will present their national stock assessment and fishery management for tunas in their waters. The group will review their assessment tools and management approaches with Dr Hampton.

Day 2, Wednesday, 4 Nov

Morning

0830 – 1000 WCPO tuna stock assessments using MFCL
1000 – 1030 Morning break
1030 – 1200 Short-term projection and management actions

- MultiFan-CatchLength (MFCL) stock assessment in Region 7
  1) Dr Hampton will introduce the MFCL stock assessment process, focusing on Region 7. Participants will be introduced to the concept of stock for stock assessment, assessment process, input data required, etc. for a Region 7 stock assessment.

  2) Introduction of fishery management through short term projections

1200 – 1330 Lunch

Afternoon

1330 – 1530 Harvest strategies – components, concepts and examples
1530 – 1600 Afternoon break
1600 – 1800 Develop guidelines for the national level stock assessments and tuna fisheries management in the WPEA area

- Harvest Strategy 101 – This session will include presentations on reference points (RP), limits and targets, risk and uncertainty, harvest control rules (HCR), decision points and an overview of the MSE concept

- Developing guidelines for implementing stock assessments and tuna fishery managements at national/sub-regional level

  Recently, many regional agencies use RPs and HCRs in fishery management, including national-level agencies. However, highly migratory fish stocks should be managed collaboratively within the migratory range – at a regional level. In order to meet national needs, the group will learn about related terminologies and consider the feasibility of national-level tuna stock assessment and management. If national-level assessment and management are feasible, then the group will consider how to conduct such assessment or management at national-level and develop any such draft guidelines.

Day 3, Thursday, 5 Nov

Morning

0830 – 1000 Other stock assessment tools and issues related with climate change
1000 – 1030 Morning break
1030 – 1200 Develop guidelines for the national level stock assessments and tuna fisheries management in the WPEA area

- Other tools which may support stock assessments, including SEAPODYM, Ecopath, Ecosim, etc. will be introduced and discussed, including issues related with the potential impacts of climate change on tuna and tuna fisheries

  John Hampton will briefly introduce other stock assessment tools related with ecosystem approach to fisheries management at 101 level and reference some relevant experts.

1200 – 1330 Lunch

Afternoon

1330 – 1530 Adoption of the Guidelines; Next workshop schedule; WS Report
1530 – 1600 Afternoon break
1600 - Close of the workshop; Move to Hai Long City

- Develop guidelines for national-level tuna fishery management

Day 4, Friday, 6 Nov

Field trip to fishing villages

1700 – Back to Hai Phong

Day 5, Saturday, 7 Nov

Departure

Attachment C

Overview of Stocks and Fisheries in the WPEA and WCPFC Region

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA SM Project)

THREE-COUNTRY STOCK ASSESSMENT WORKSHOP

RIMF Meeting Room, Haiphong, Viet Nam
3-6 November 2015

Overview

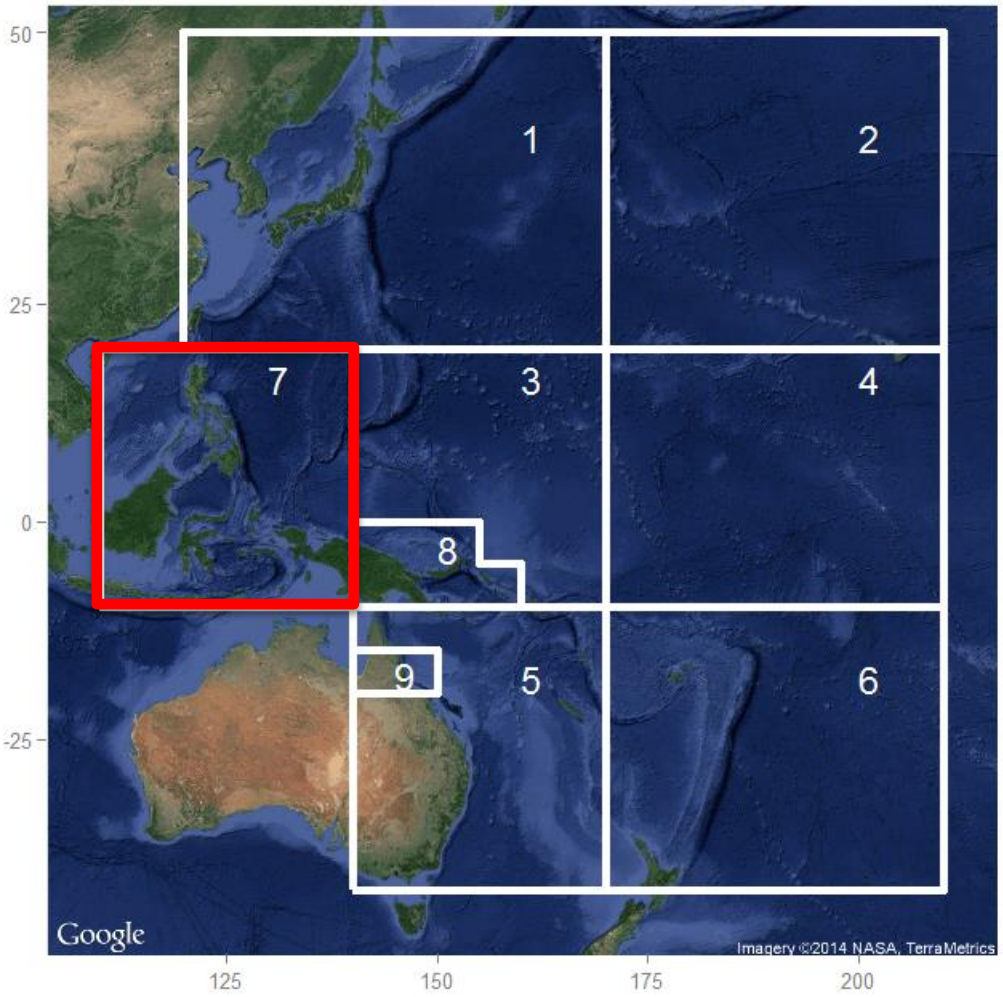
1. WPEA Region and the WCPFC Convention Area
2. Tropical tuna stocks and their key characteristics
   - Distribution
   - Movement and stock structure
3. Fisheries – as defined in WCPFC assessments
   - Catches
   - Size composition
4. Regional stock status

Tropical Tuna Stocks (Oceanic)

- **Skipjack tuna (*Katsuwonus pelamis*)**
- **Yellowfin tuna (*Thunnus albacares*)**
- **Bigeye tuna (*Thunnus obesus*)**

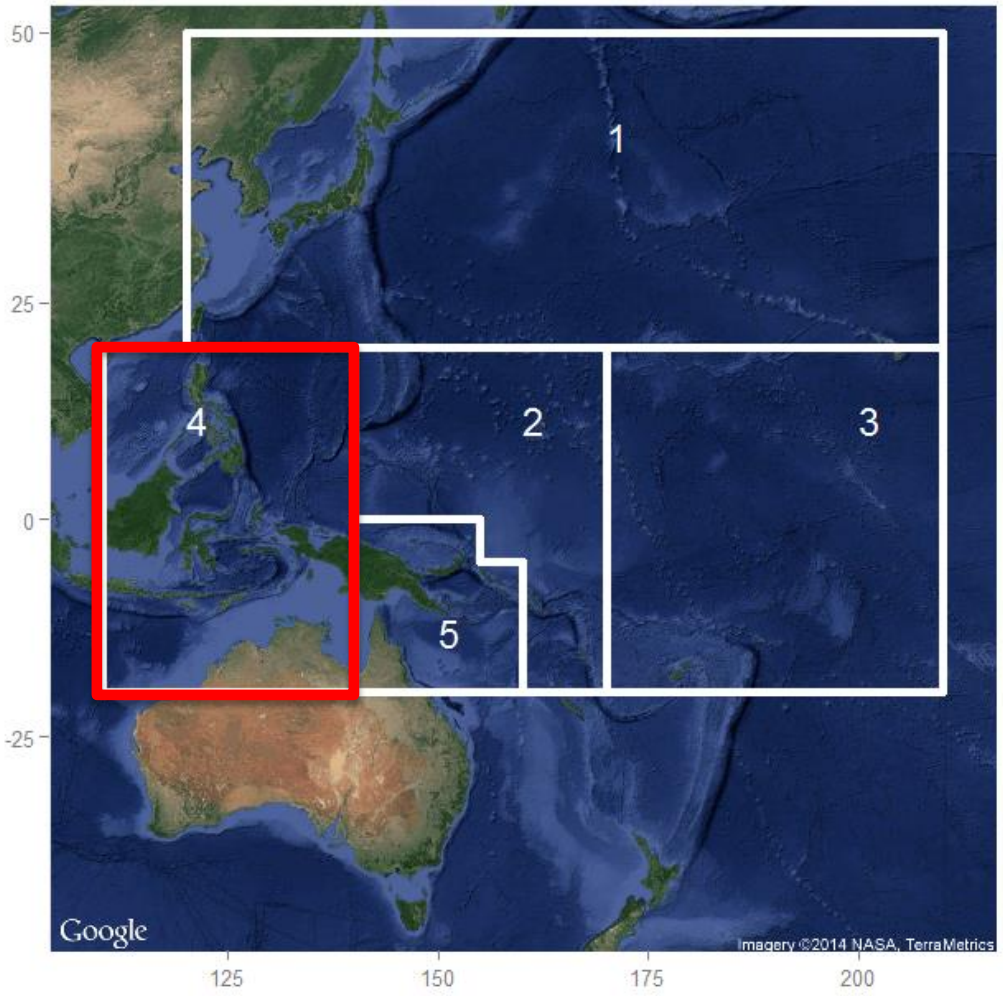
WPEA Region in the WCPFC

Yellowfin and Bigeye Assessment Regions

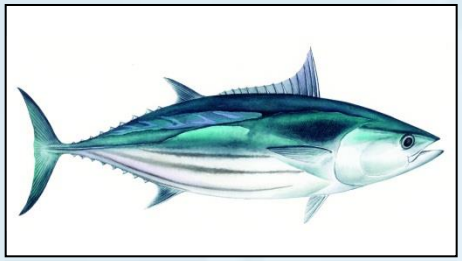


WPEA Region in the WCPFC

Skipjack Assessment Regions

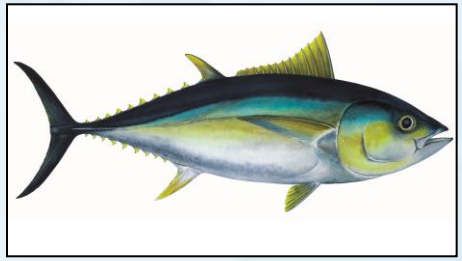


Tuna Stocks – Characteristics



Skipjack: short lived (3-4 years), fast growth, very productive, high resilience to fishing.

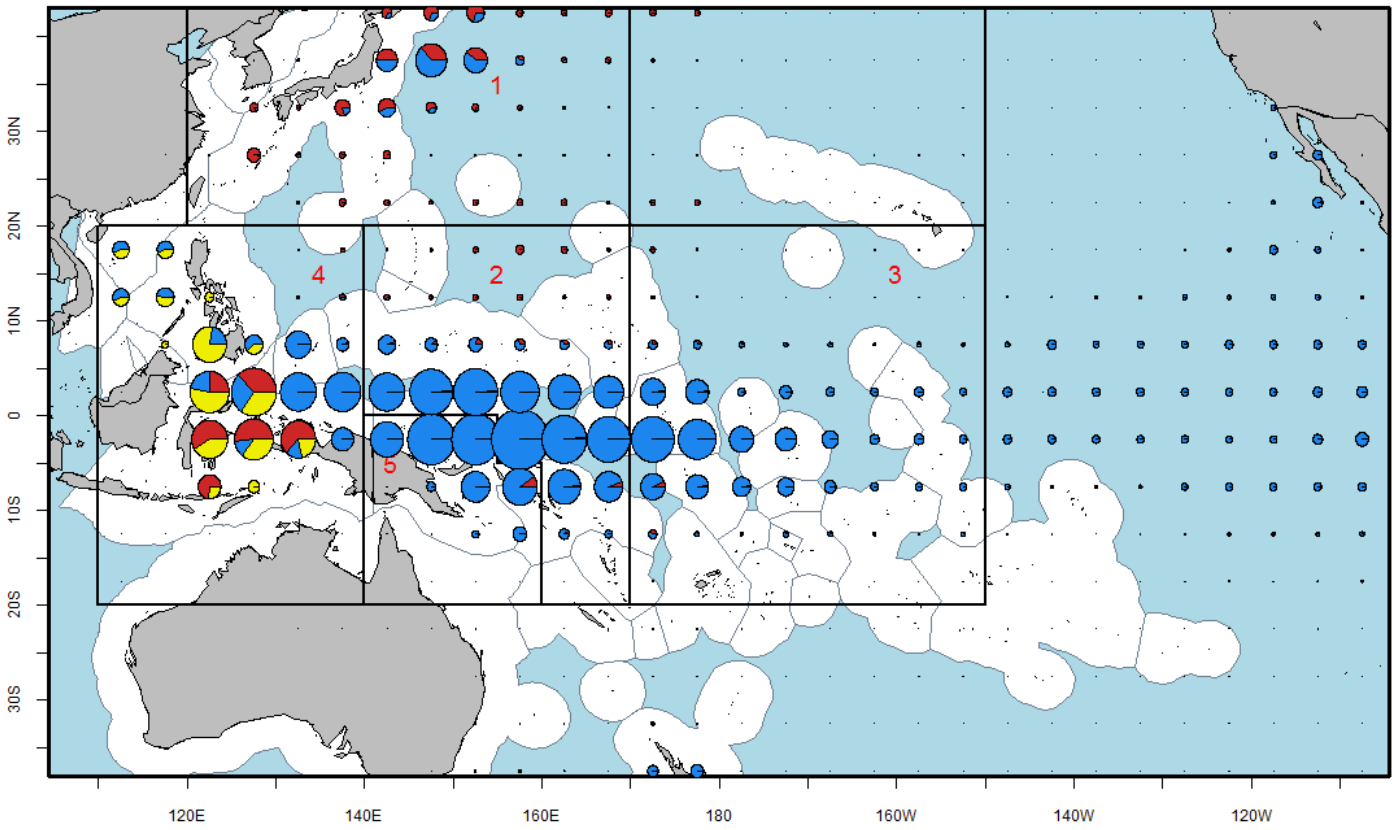
Yellowfin: longer lived (7-8 years), fast growth, moderately productive, moderate resilience to fishing.



Bigeye: long lived (12+ years), moderate growth, lower productivity, lower resilience to fishing.

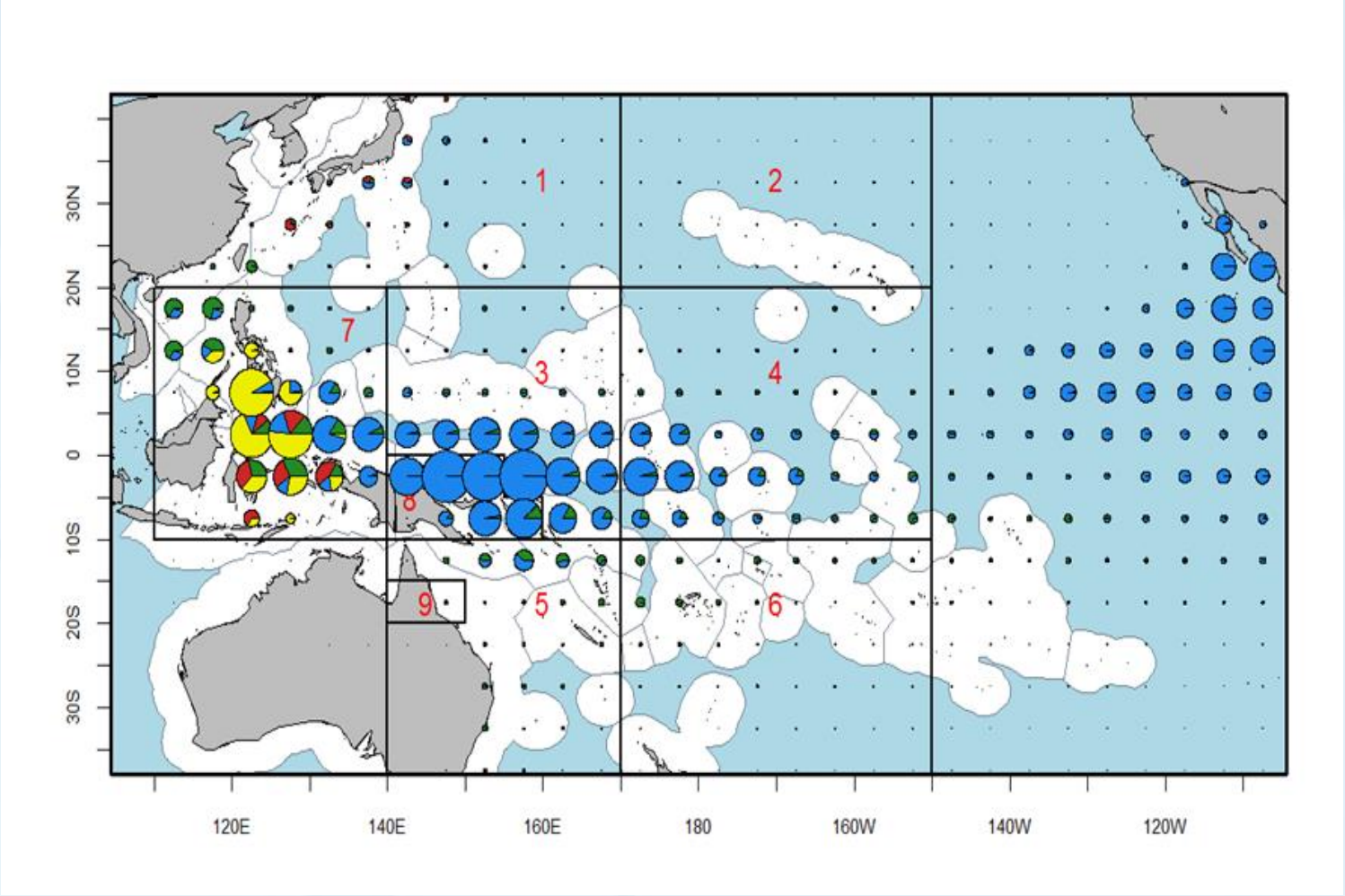
Spatial Distributions (Fisheries)

Skipjack



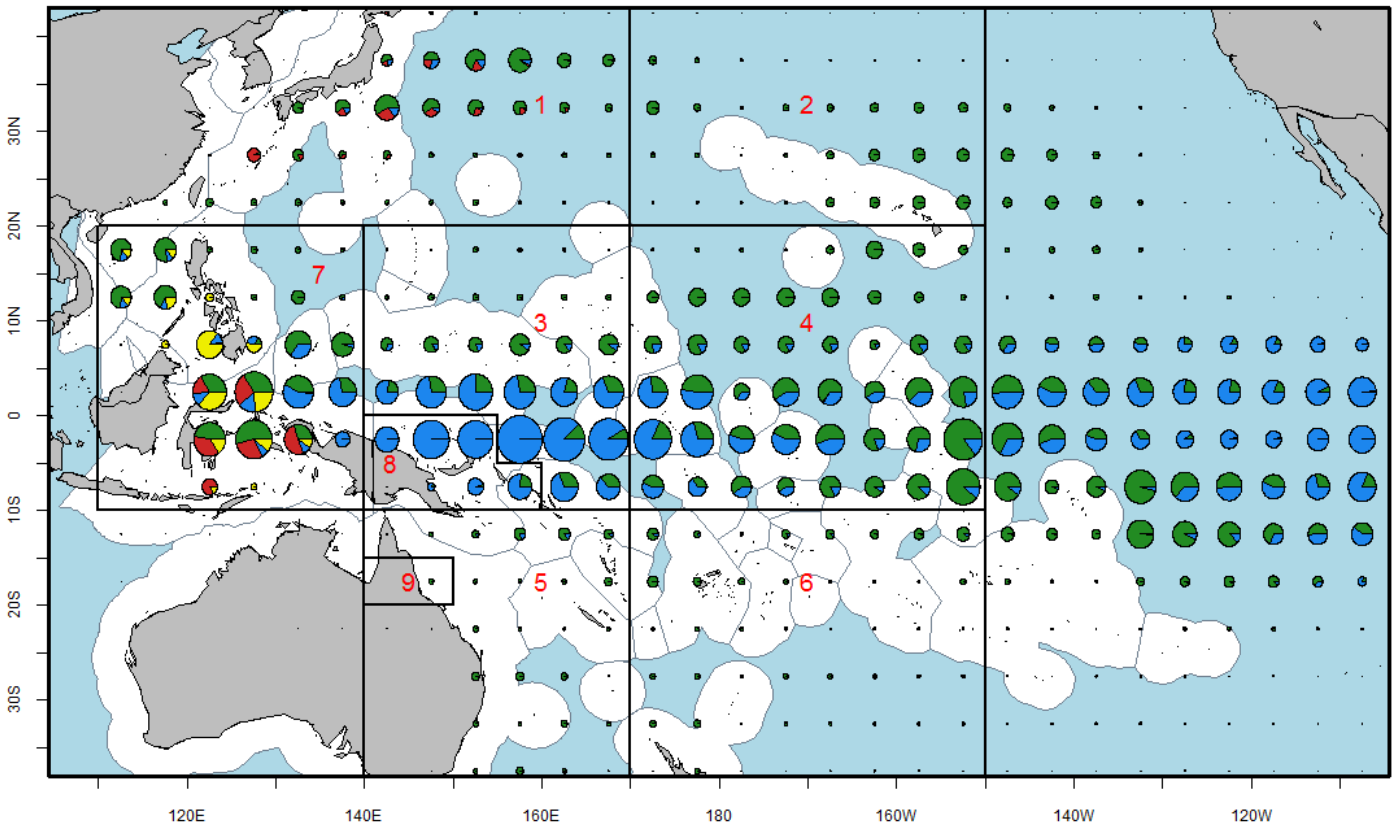
Spatial Distributions (Fisheries)

Yellowfin



Spatial Distributions (Fisheries)

Bigeye



Movement (Tagging)
Skipjack

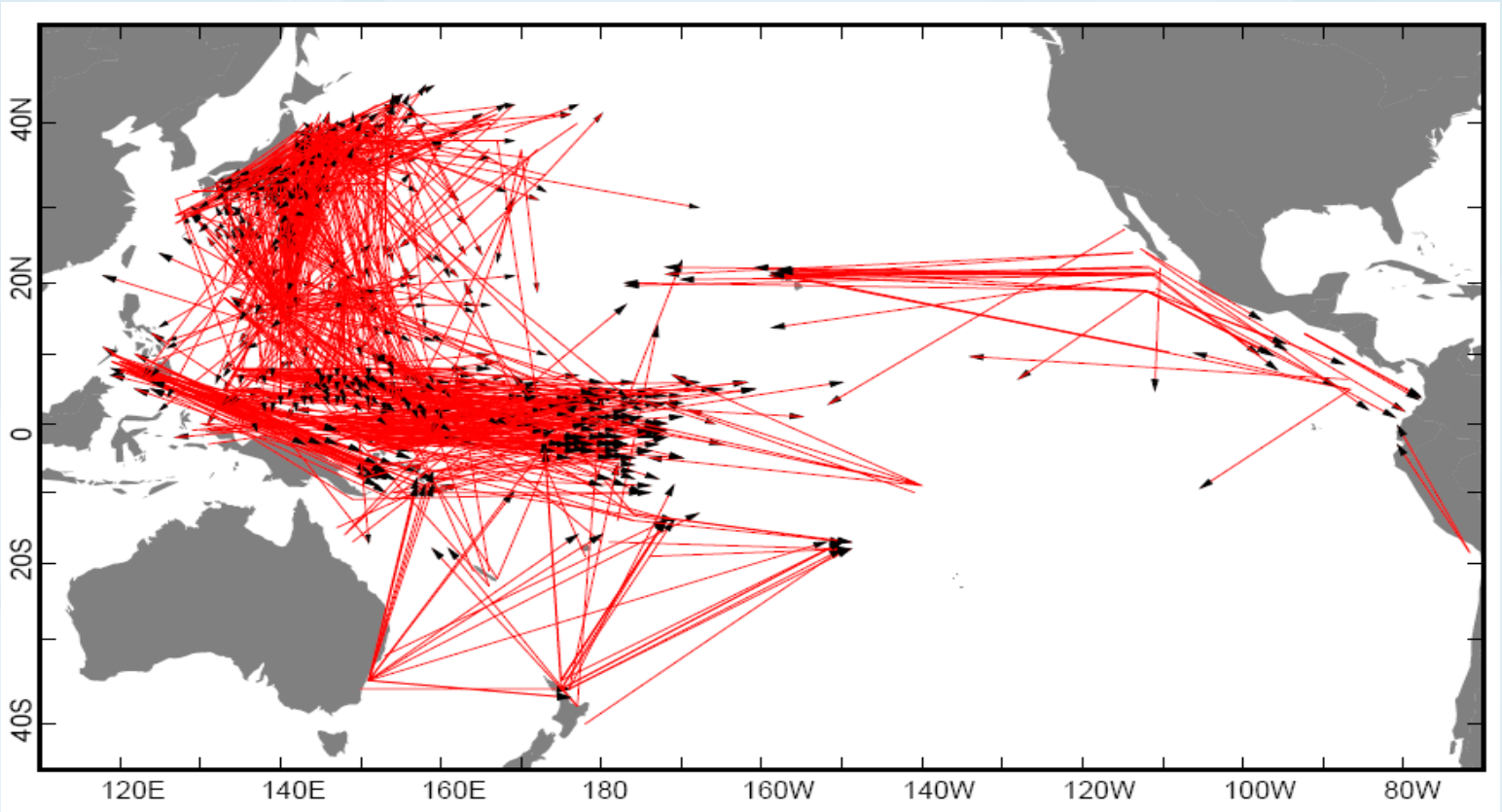


Figure 1. Long-distance (greater than 1,000 nmi) movements of tagged skipjack.

Movement (Tagging)
Yellowfin

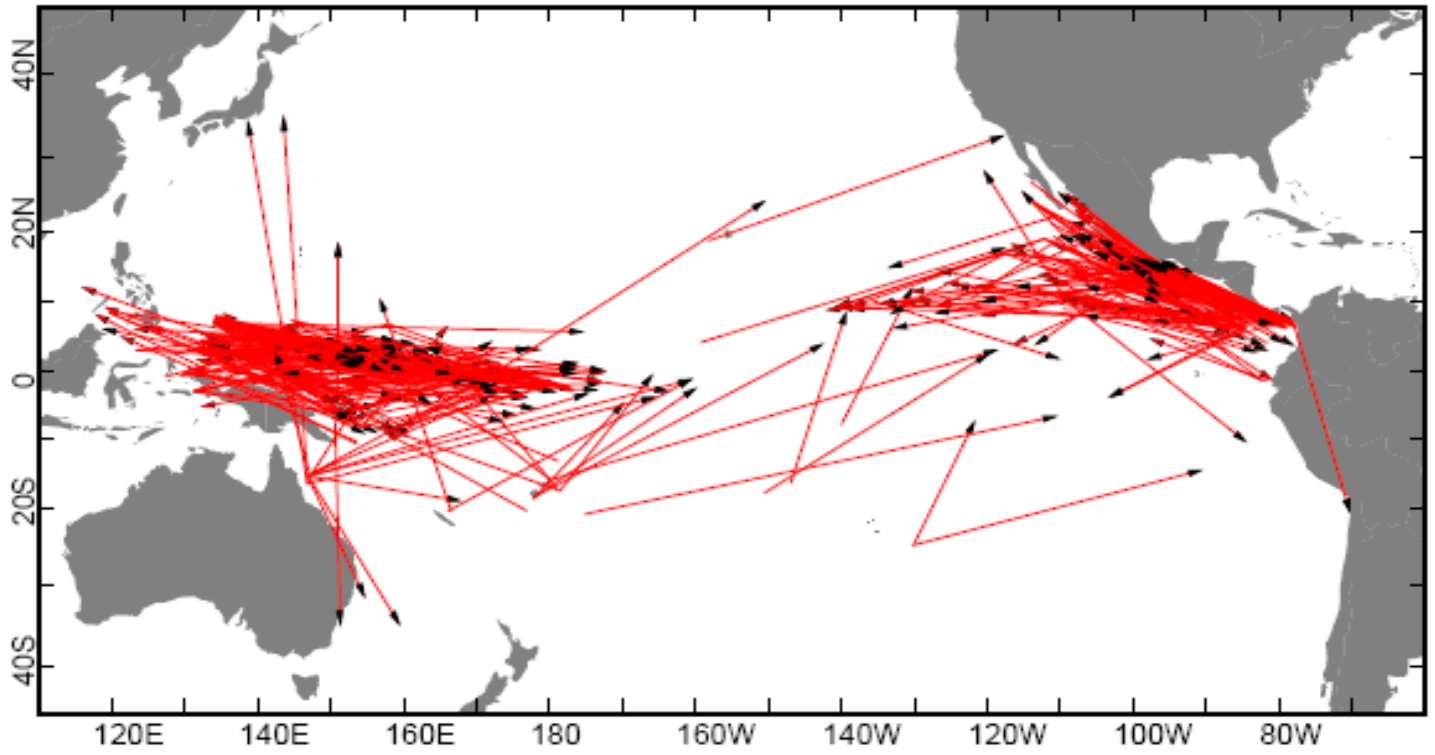
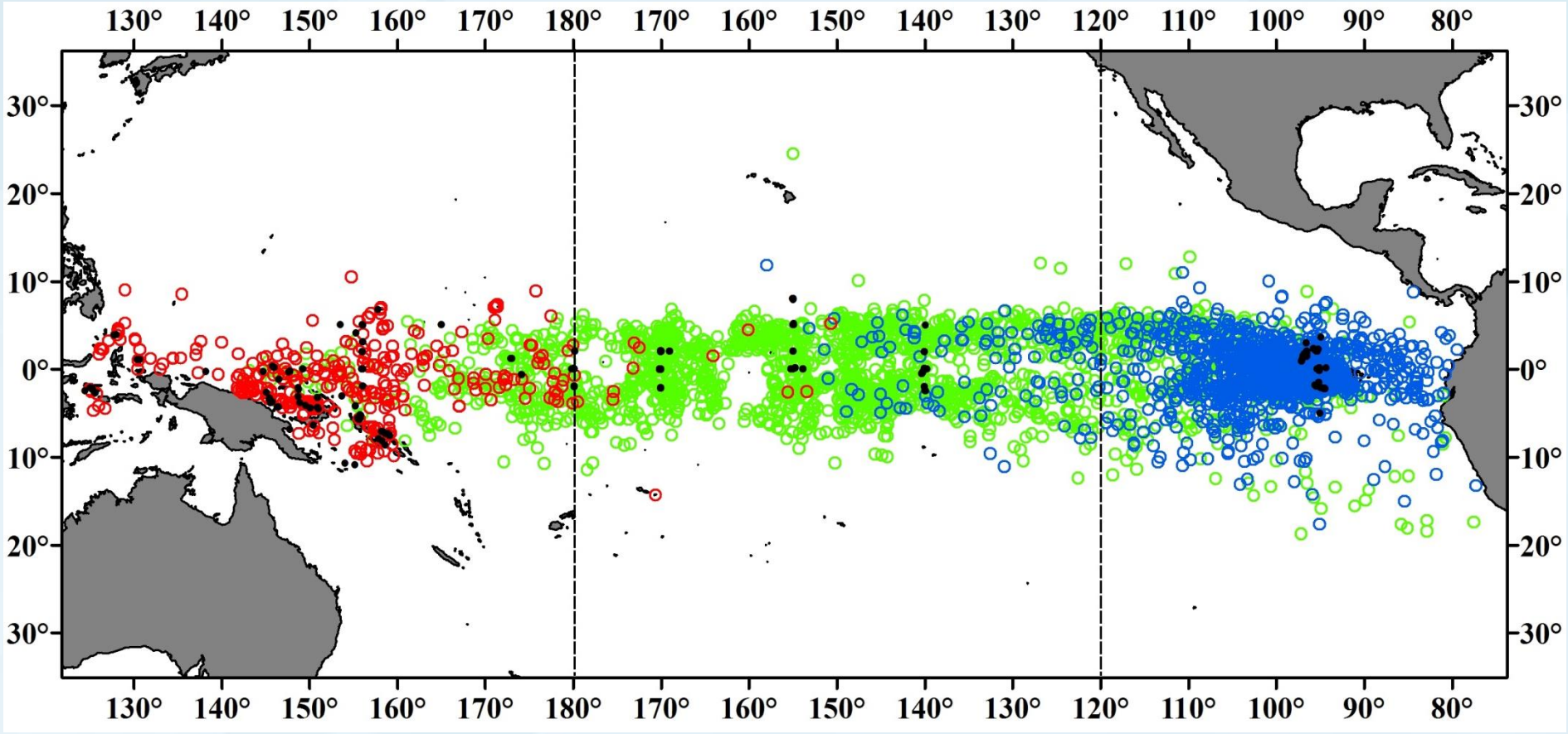


Figure 1. Long-distance (>1,000 nmi) movements of tagged yellowfin tuna.

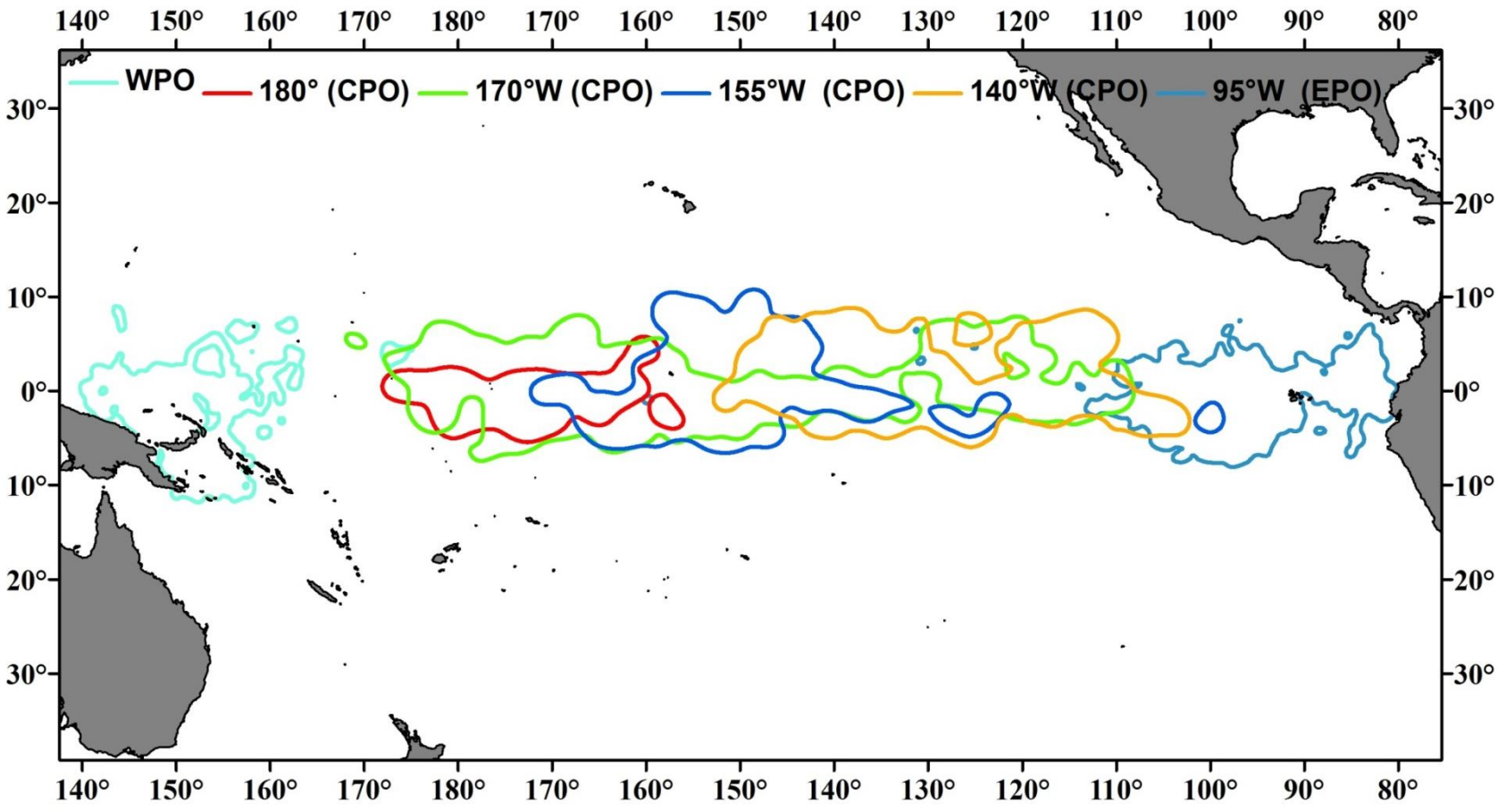
Movement (Tagging)

Bigeye



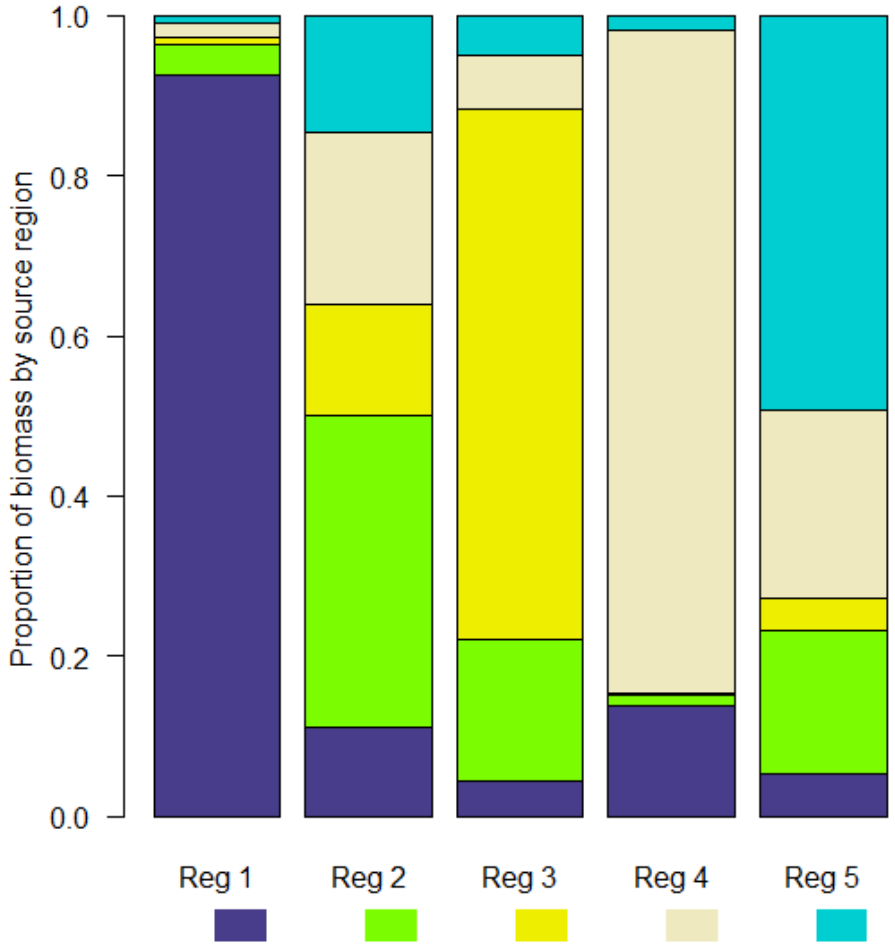
Movement (Tagging)

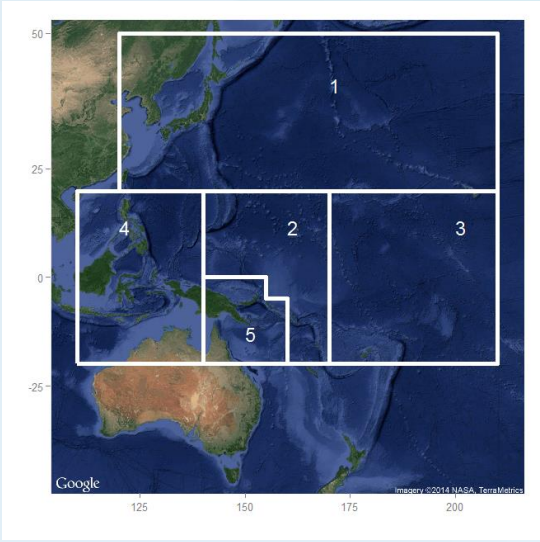
Bigeye Archival Tagging



Stock Structure (MFCL)

Skipjack

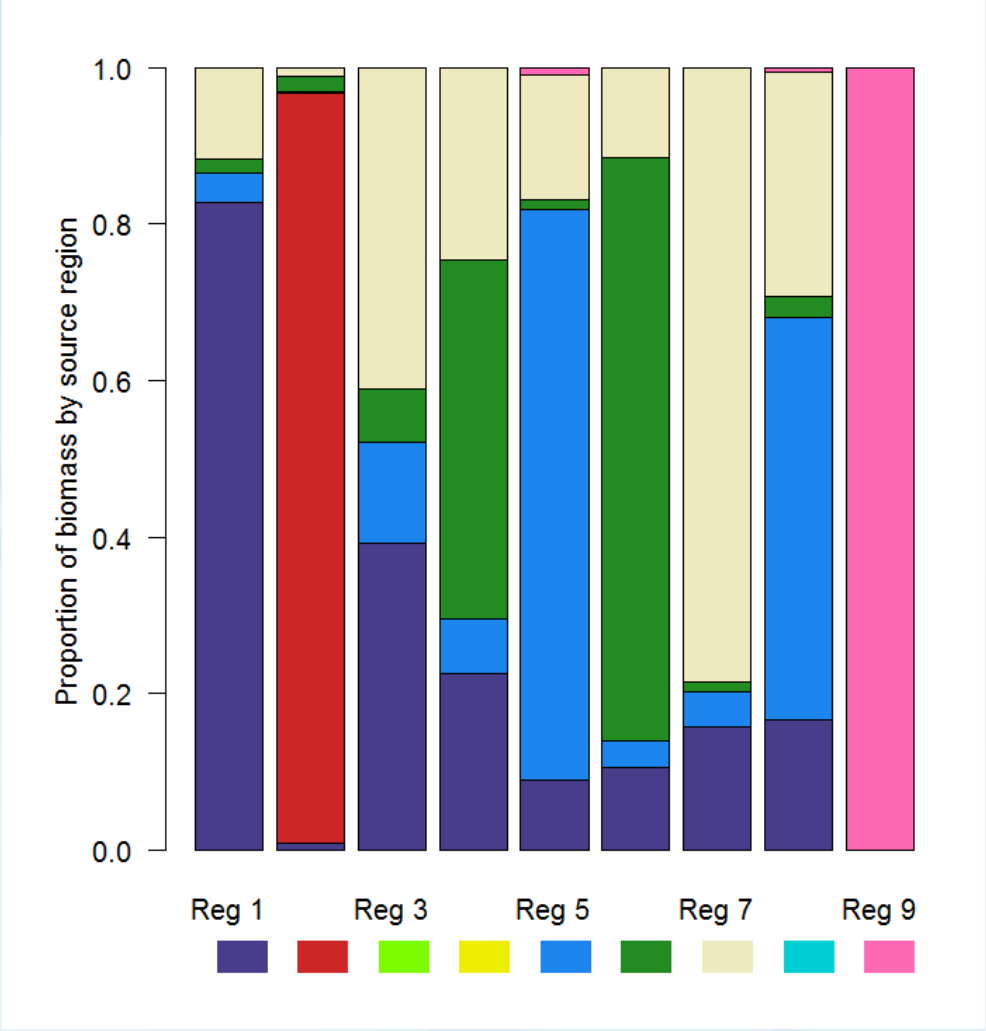


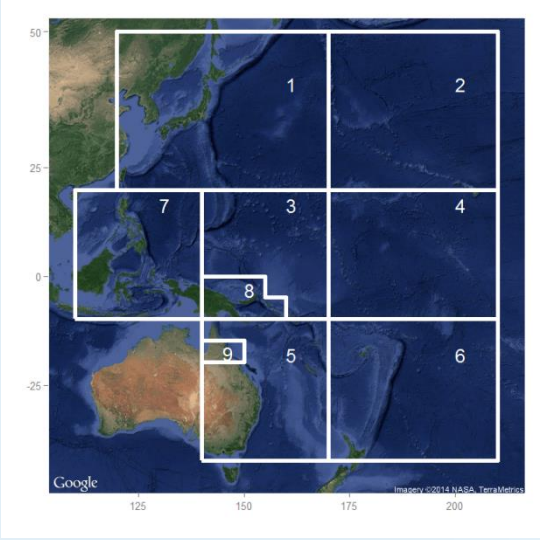


Proportional distribution of total biomass (by weight) in each region apportioned by the source region of the fish for the reference case.

Stock Structure (MFCL)

Yellowfin

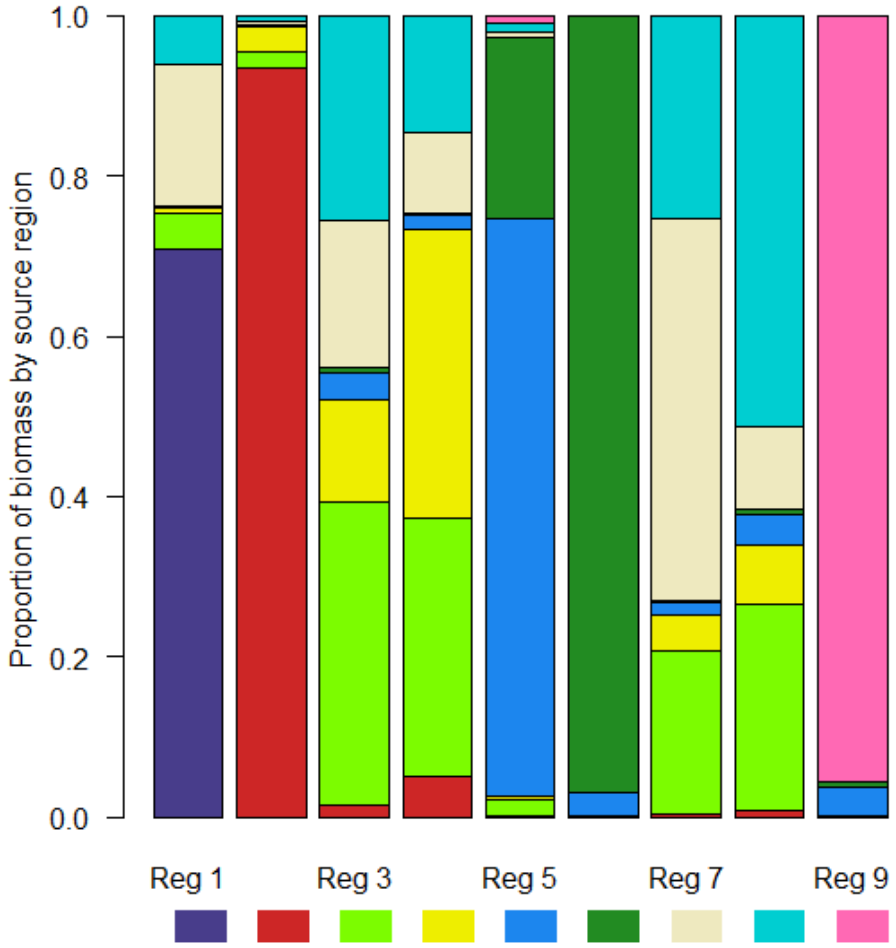


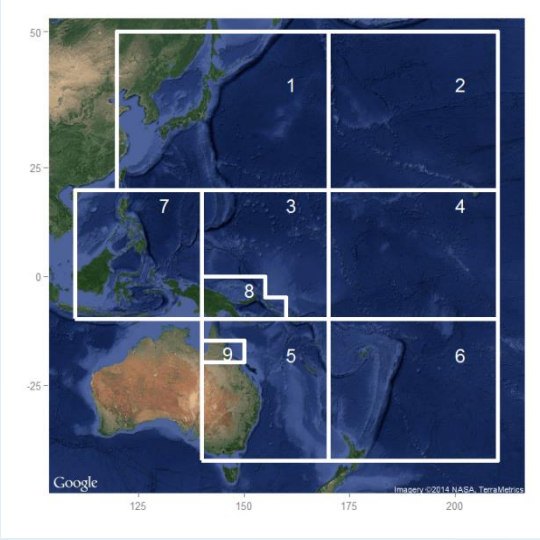


Proportional distribution of total biomass (by weight) in each region apportioned by the source region of the fish for the reference case.

Stock Structure (MFCL)

Bigeye





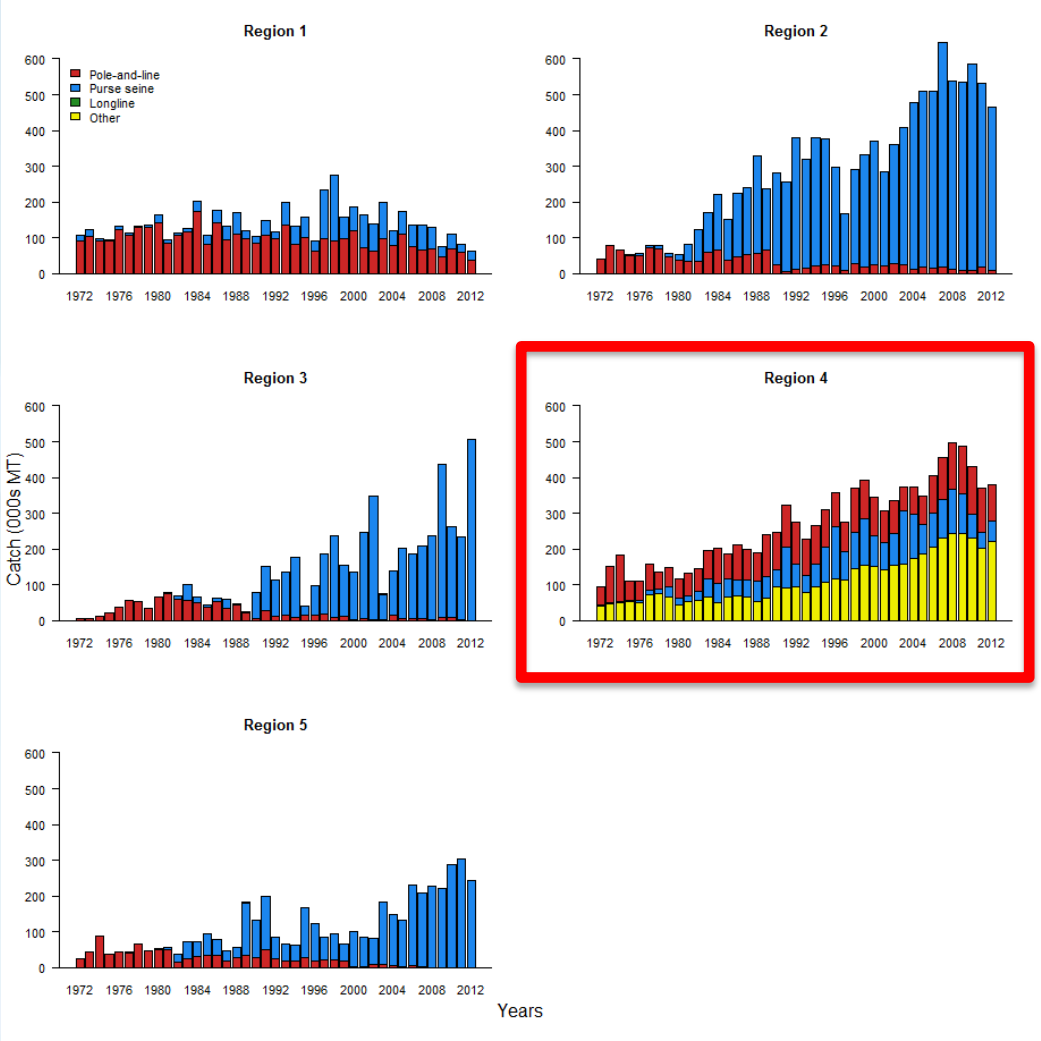
Proportional distribution of total biomass (by weight) in each region apportioned by the source region of the fish for the reference case.

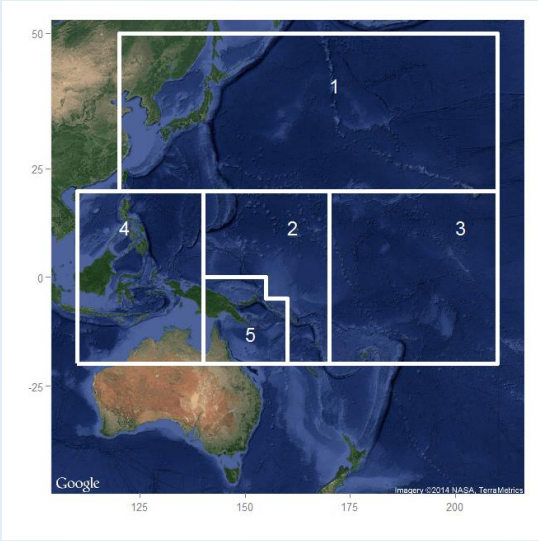
Stock Structure Main Points

- Tropical tunas are “connected” throughout WCPFC area and possibly beyond
- Numerous observations of long-distance movements of tagging fish
- But there may be significant “stickiness” (residence) of stocks in parts of the Pacific, particularly in the vicinity of land, islands and archipelagos
- In such areas, there may be localised effects of fishing and good reasons for local management

Fisheries – Catches

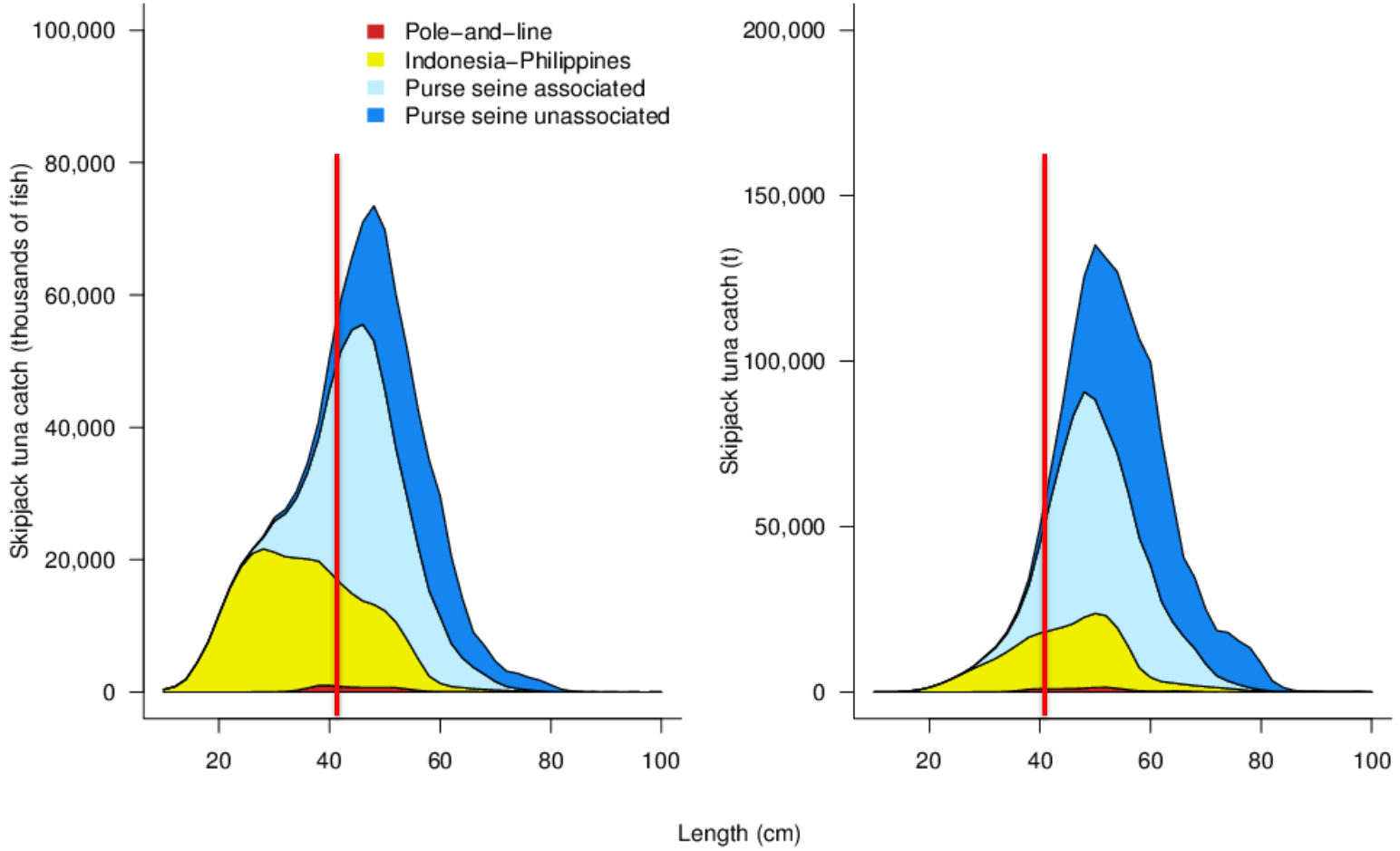
Skipjack





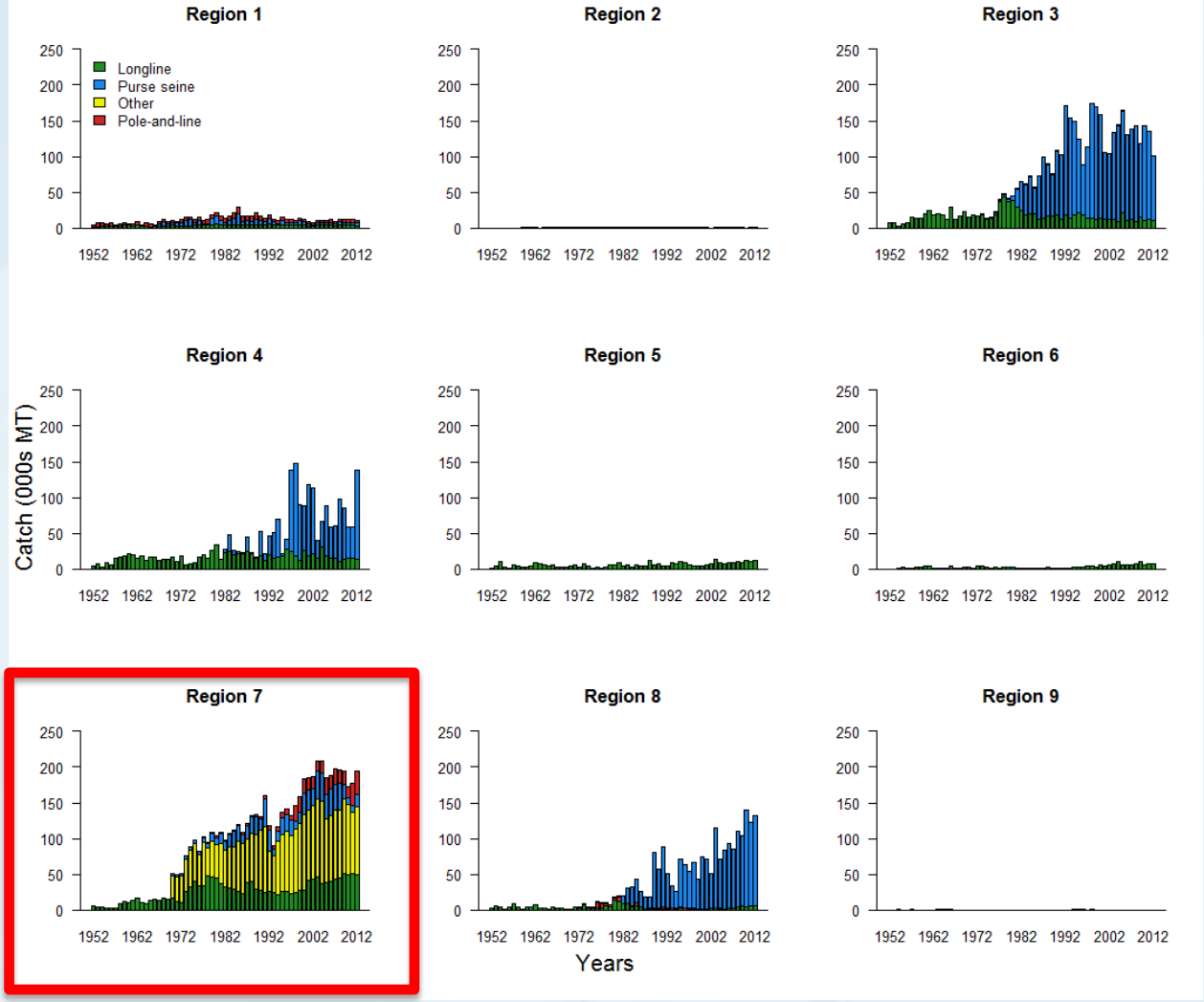
Fisheries – Catch Size

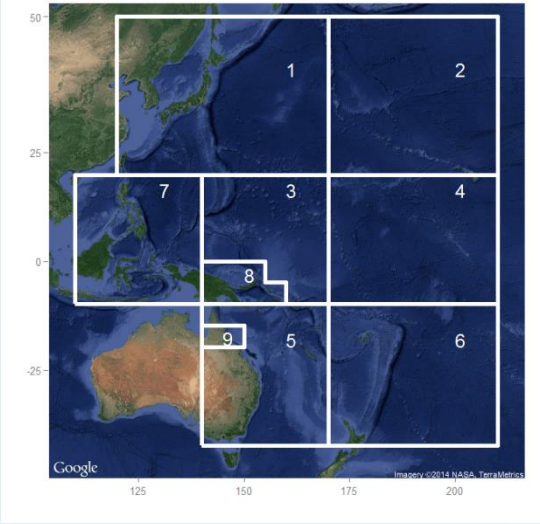
Skipjack



Fisheries – Catches

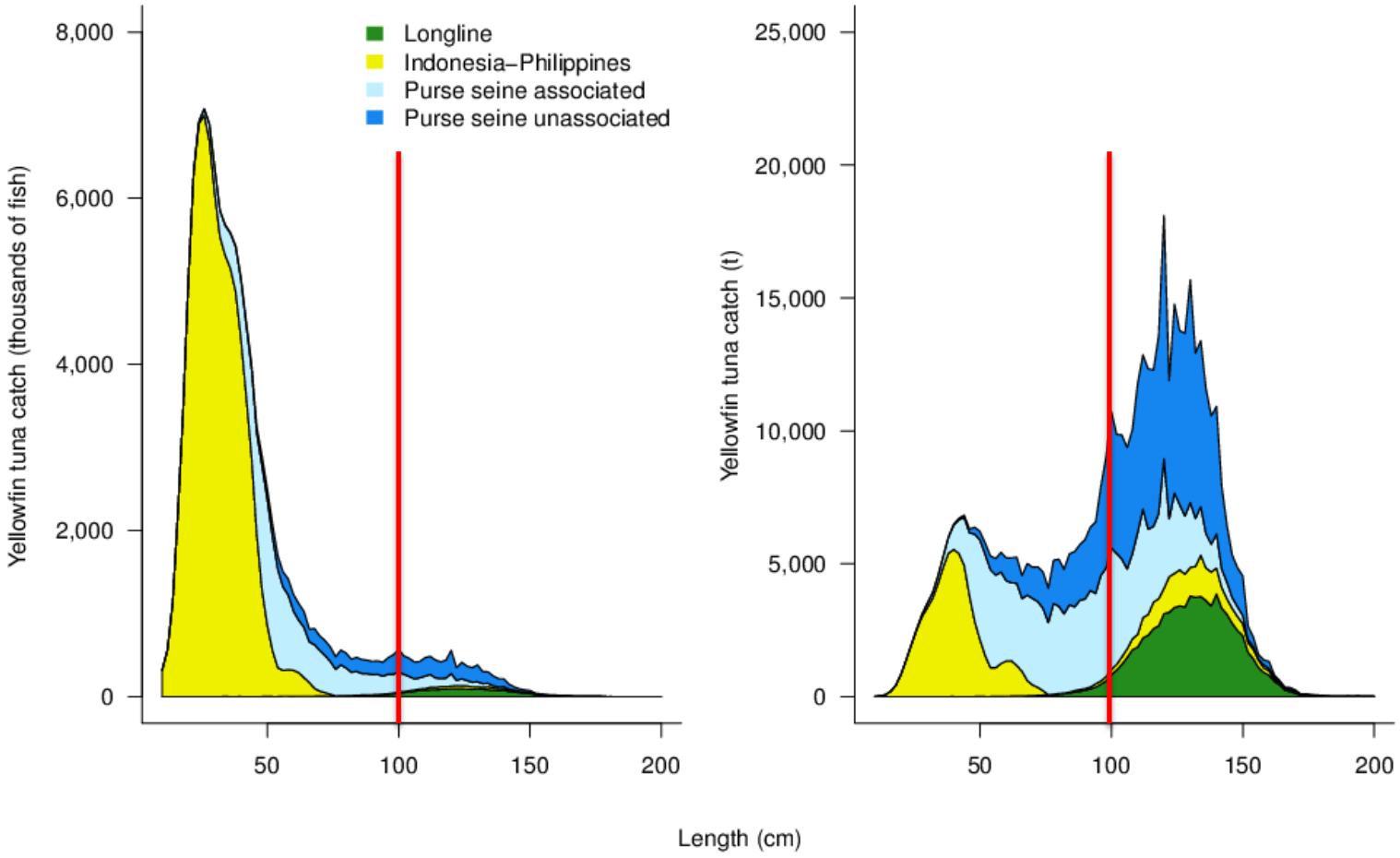
Yellowfin





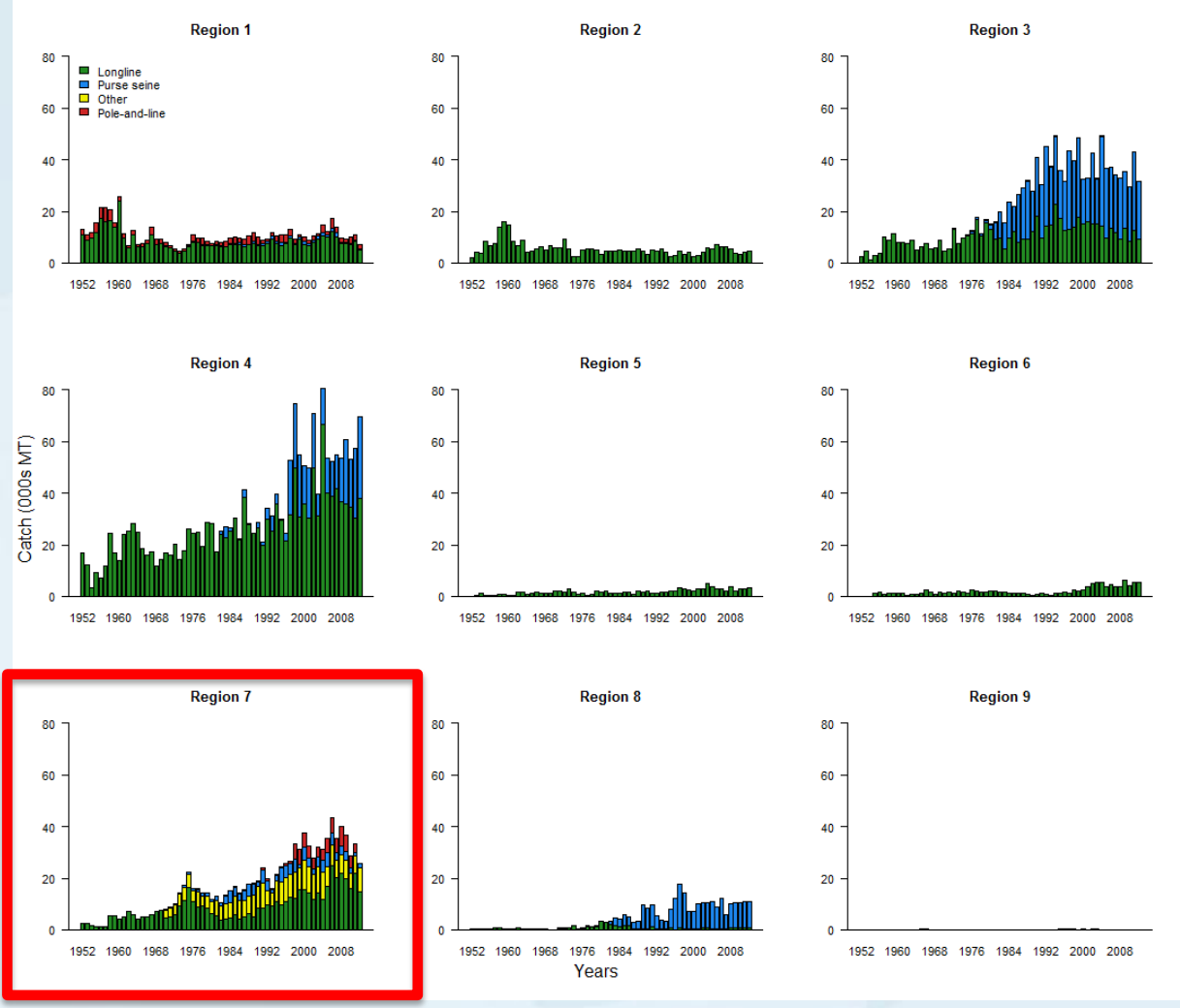
Fisheries – Catch Size

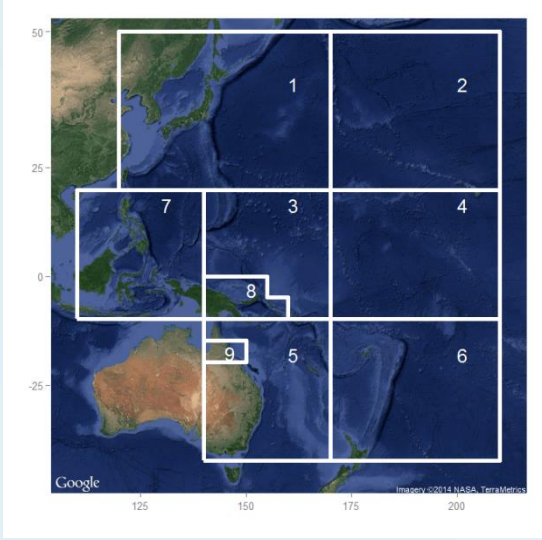
Yellowfin



Fisheries – Catches

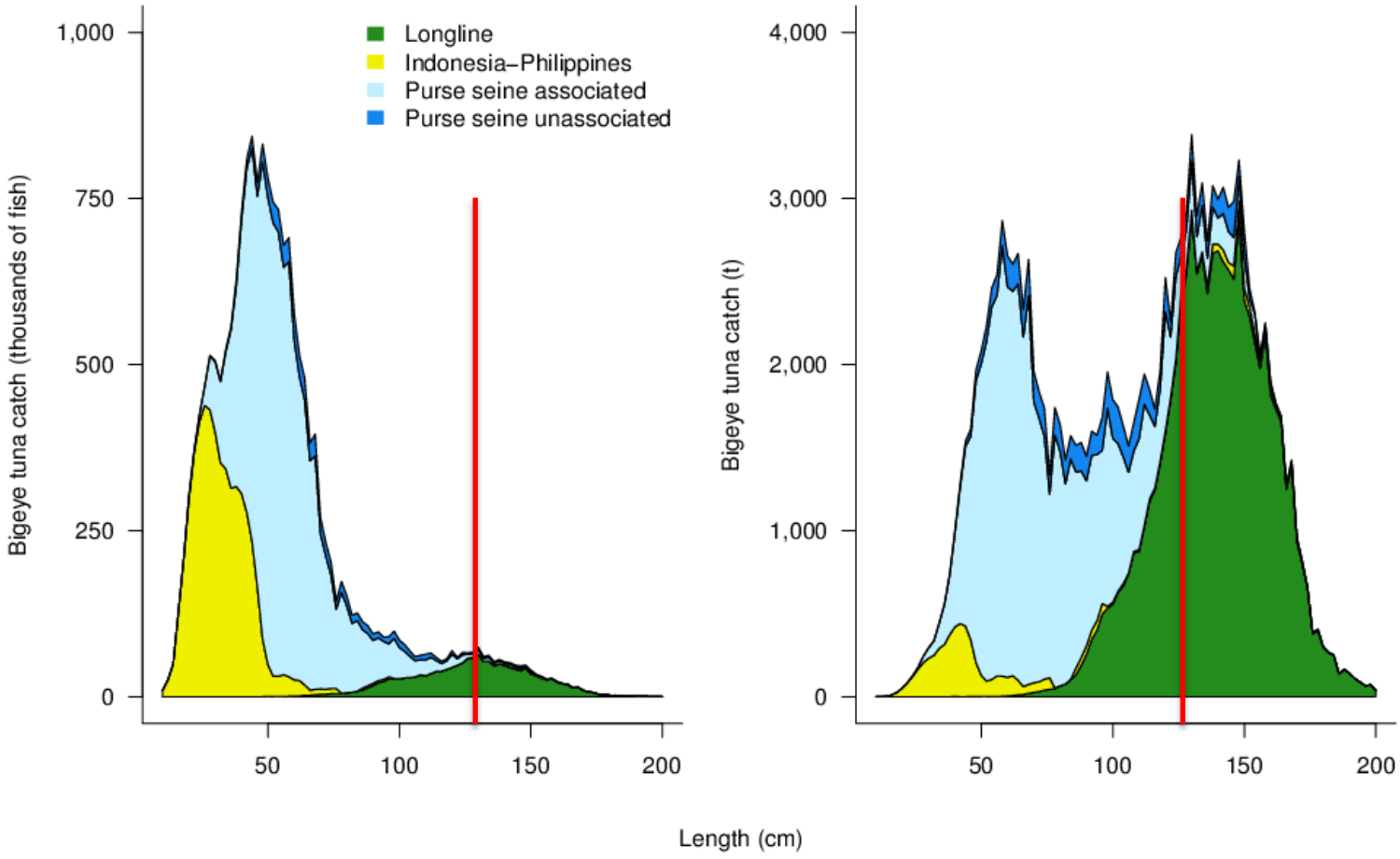
Bigeye



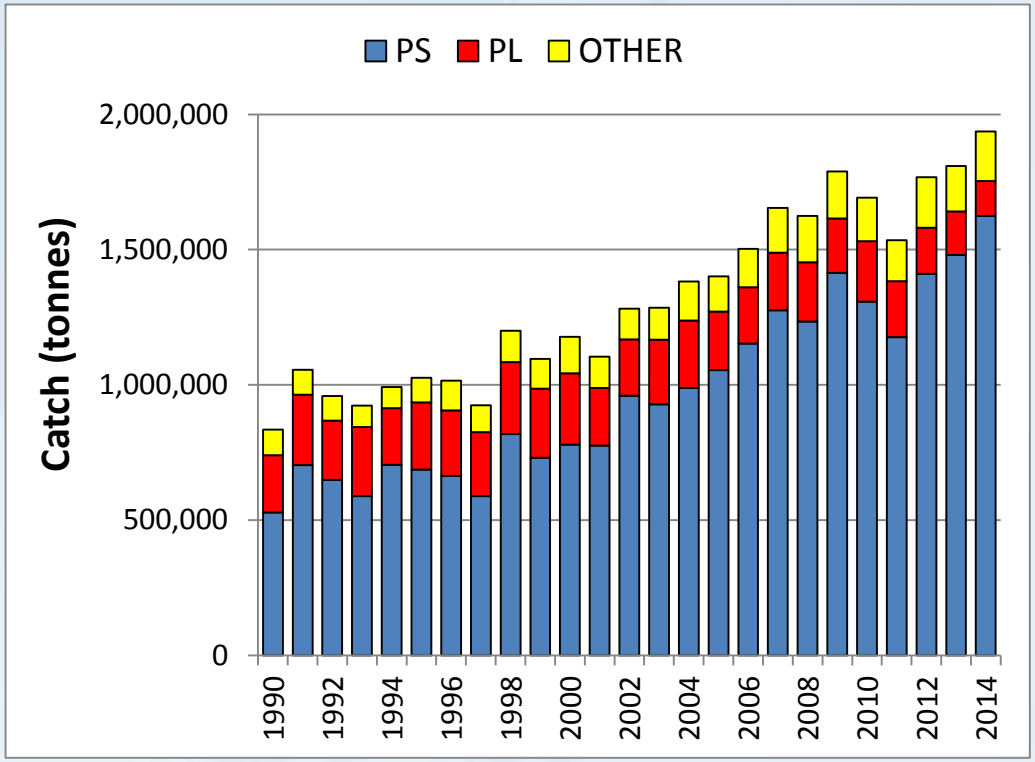


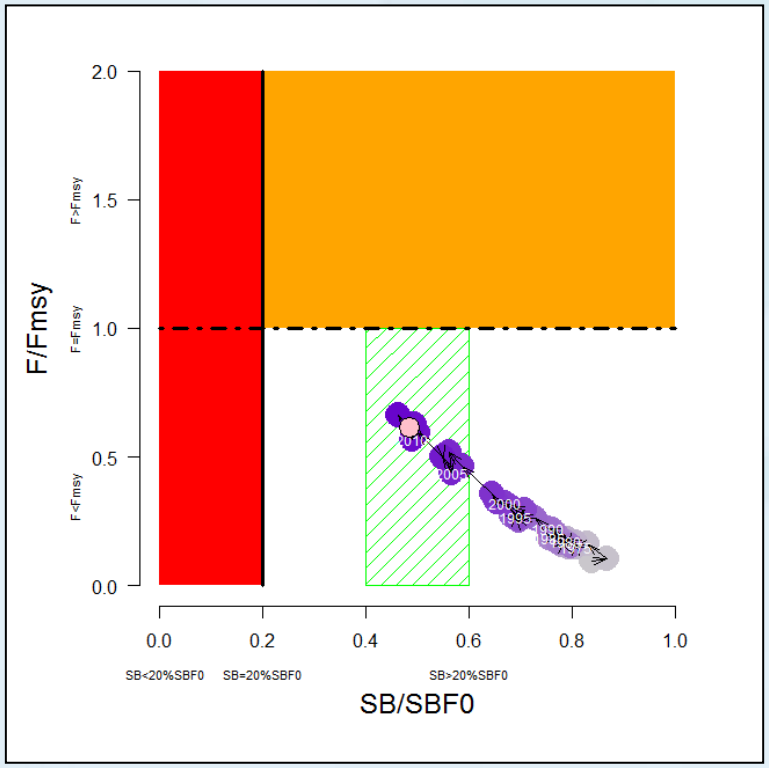
Fisheries – Catch Size

Bigeye



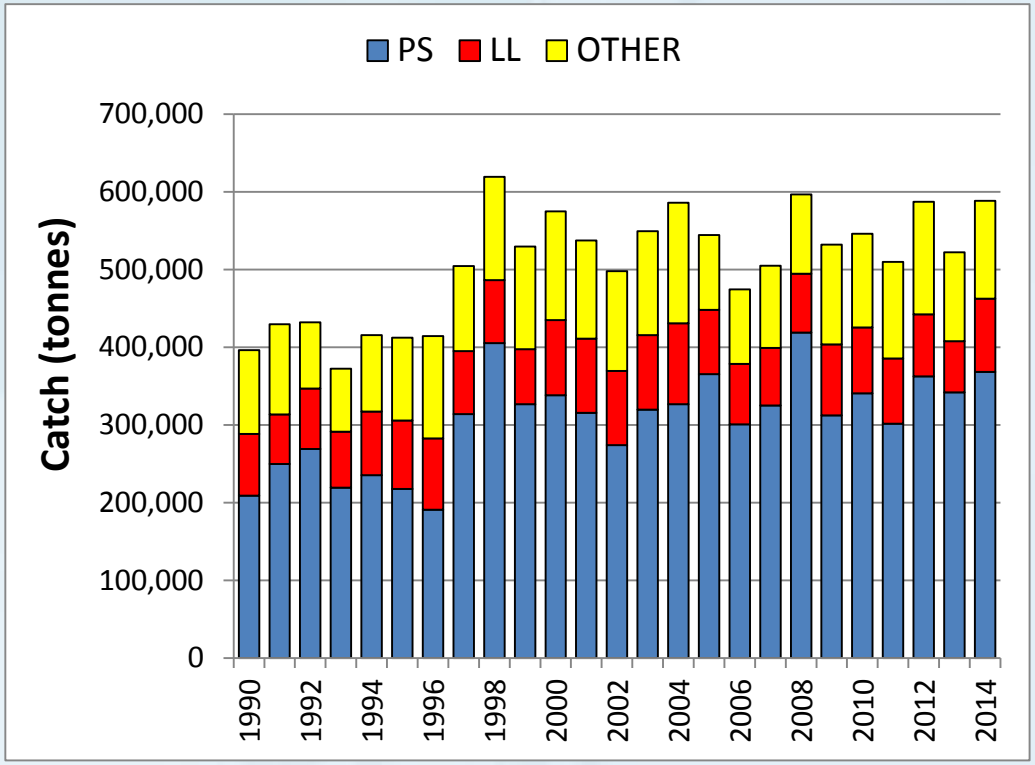
Regional Stock Status – Skipjack

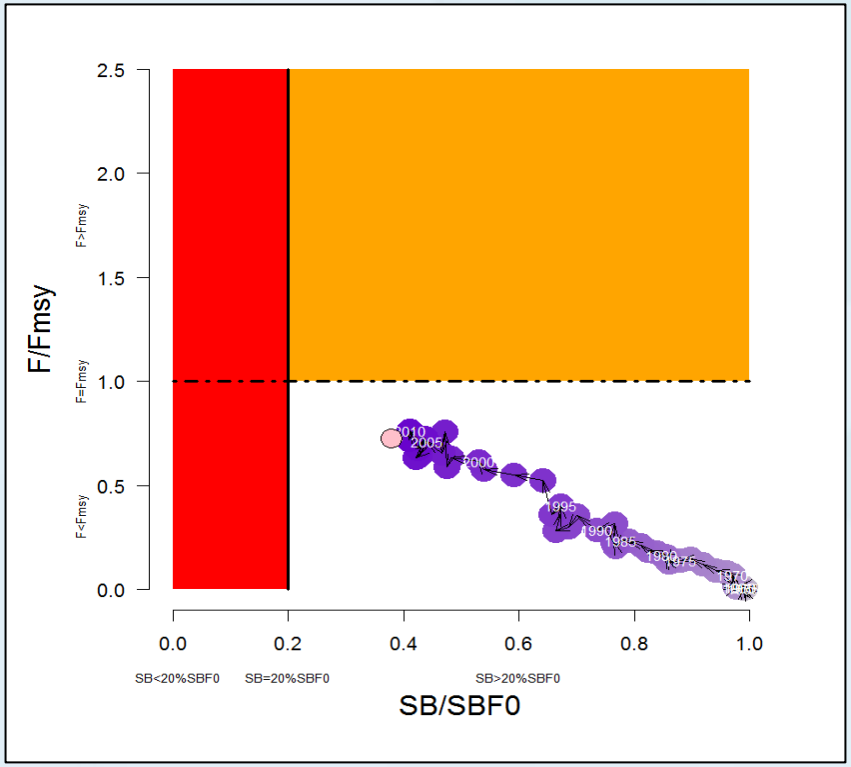




- Catch has continued to increase
- Spawning biomass declined to ~50% of unexploited levels
- Fishing mortality less than MSY level

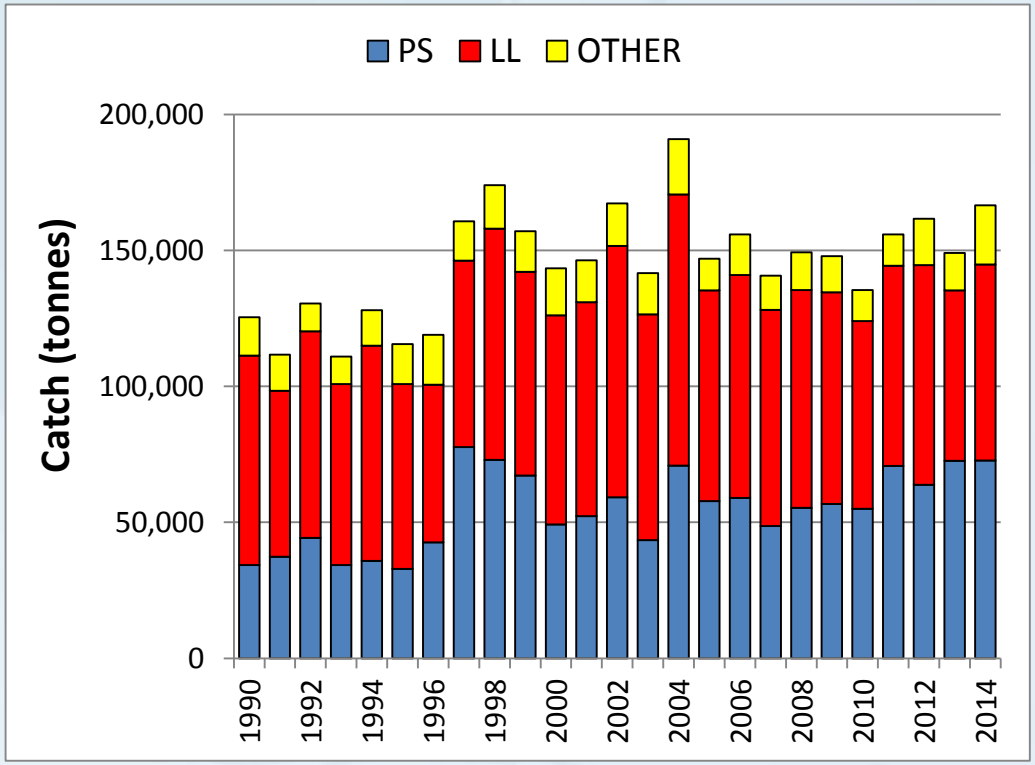
Regional Stock Status – Yellowfin

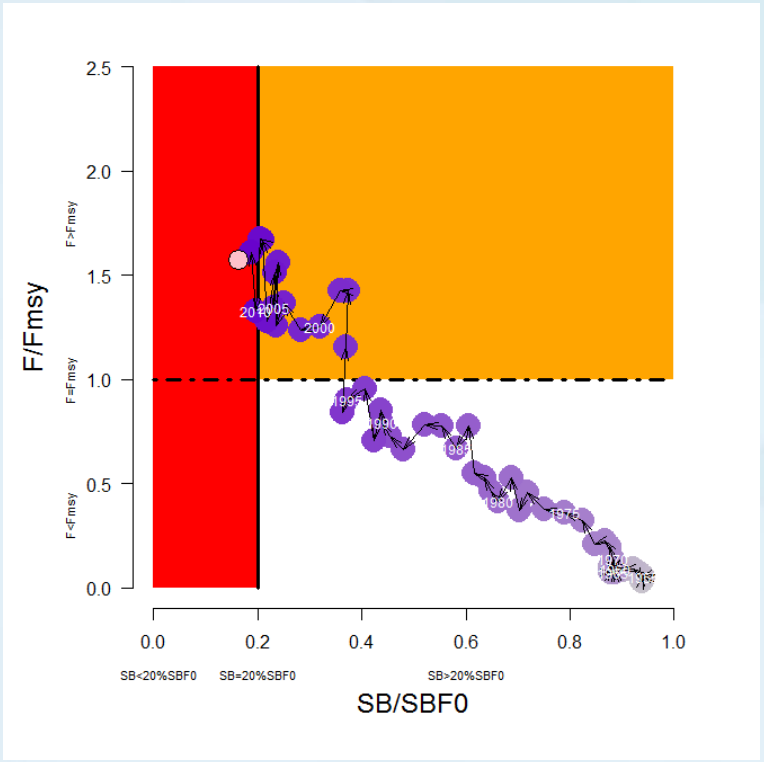




- Catch peaked in late 1990s, has not increased in spite of increased effort and technology
- Spawning biomass declined to ~38% of unexploited levels
- Fishing mortality less than MSY level

Regional Stock Status – Bigeye





- Catch stable since late 1990s, has not increased in spite of increased effort and technology
- Spawning biomass declined to ~16% of unexploited levels
- Fishing mortality >50% greater than MSY level

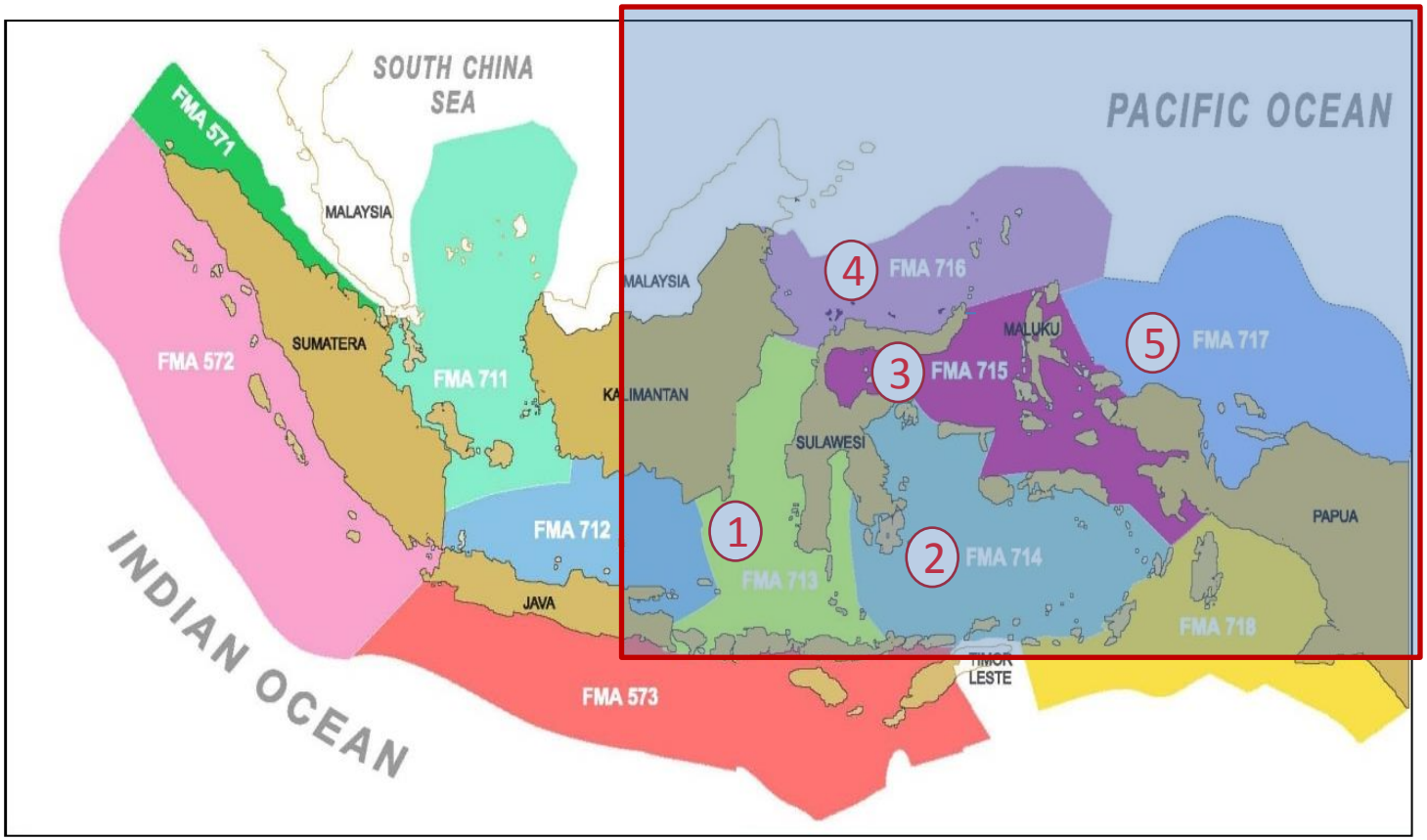
Attachment D

Fisheries Profile of Indonesian WCPFC Statical Area

(a snapshoot)

Anung Widodo
Fayakun Satria
Lilis Sadiyah
Fisheries Research and Development Center
INDONESIA

5 Indonesian FMA s including WCPFC Stat. Area



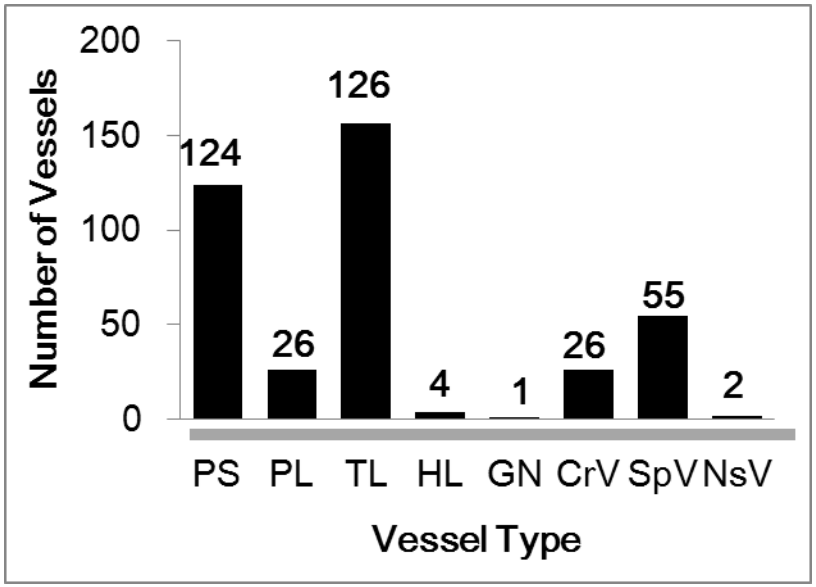
Fleet (recorded in WCPFC data base)

PS

PL

TL

HL



https://www.wcpfc.int/record-fishing-vessel-database

The actual number is convinced more than the vessel number which was recoded in the WCPFC data base.

Fleet

The Indonesian FADs

- anchored fads ,
- atractor made from biodegredable material (palm leaves) and do not use netting,
- non-entangling.

Except TL, all gears use FADs.

Tuna (SKJ, YFY, BET) Catch

TOTAL TUNA CATCH - ALL GEARS (FMA 713, 714,715,716,717)							
Year	Estimated Tuna Catch (metric tonnes)						
	SKJ	%	YFT	%	BET	%	Total tuna
2000	220.717	64	105.317	31	16.167	5	342.200
2001	203.101	64	96.911	31	14.876	5	314.888
2002	195.213	64	93.147	31	14.299	5	302.659
2003	199.129	64	95.016	31	14.585	5	308.730
2004	262.179	64	125.100	31	19.204	5	406.483
2005	173.203	70	63.625	26	10.688	4	247.515
2006	217.310	76	55.920	20	12.612	4	285.842
2007	243.118	76	67.773	21	10.999	3	321.890
2008	255.918	76	63.055	19	15.613	5	334.586
2009	279.985	72	92.887	24	15.762	4	388.635
2010	273.637	76	73.846	21	10.771	3	358.253
2011	270.101	68	114.442	29	12.901	3	397.444
2012	272.052	61	151.789	34	19.476	4	443.317
2013	351.901	67	146.646	28	20.446	4	518.993
2014	335.007	68	135.527	27	23.970	5	494.504
Avg	250.171	69	98.733	27	15.491	4	364.396

The catch contributes ± 52.6 % of National of tuna catch.

Issue with the National Fisheries Data Collection System

Issue with the National Fisheries Data Collection System.

1. A system designed for producing comprehensive production statistic, but not well designed for data usefull in science-based stock assessments and for meeting national reporting to RFMOs.

2. Aggregation of fish species, fish groups (although much improves post 2004 for tunas and shark). - good detail at District/Port level often lost through aggregation 'on way up'.

3. Difficult to understand inter-annual fluctuation/inconsistences in catches without explanations, and sometimes evidence of replication of data across years.

4. Validation meetings effective at higher level but insufficient validation lower level.

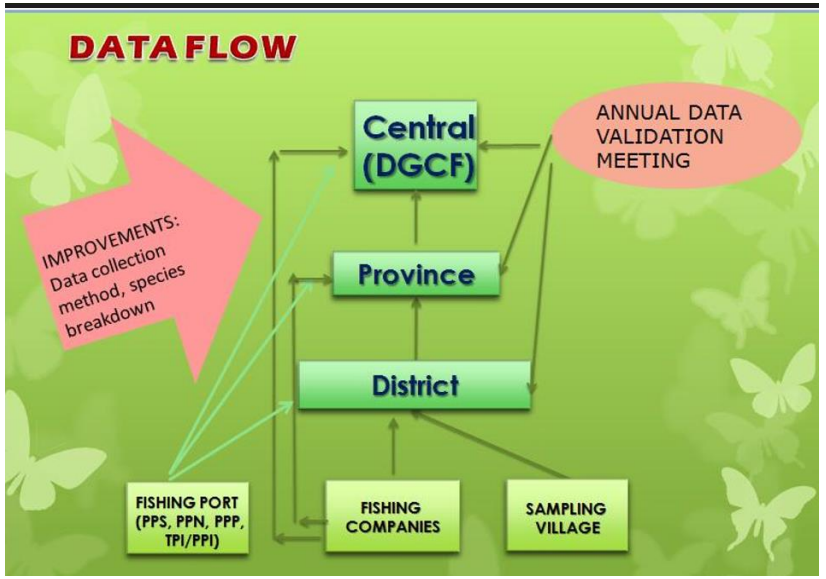
5. Under-reporting of catches as result of 'retribution'-tax paid by fishing companies-vessel owners.

6. Insufficient resources for achieving the level of sampling and reporting required - operation costs, skill enumerators (including lack of fish ID, skill supervisors, data prcessors at all levels.

7. Duplications of effort in data collection and reporting e.g. Dinas KP, Fishing Port, Research Institutes – insufficient coordinating (but improving).

8. Enumerators task to provide required training to staff across the archipelago and also problems with staff turnover, continuity.

9. Devolution of power to province (decentralisation) in 2000 inpacts on implementation and maintenance of standard practice and protocols.

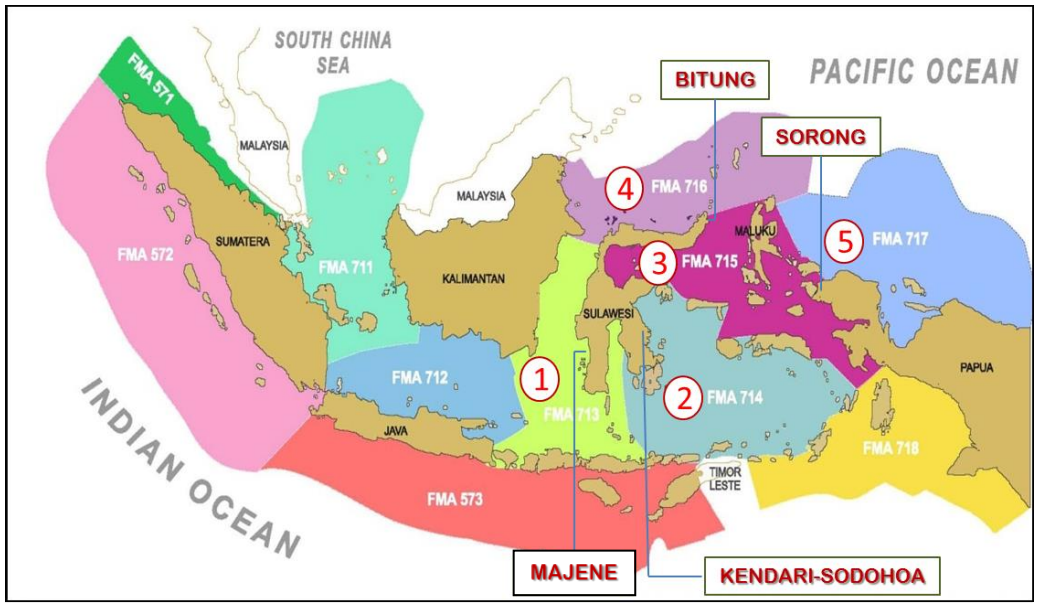


Improvements:

1. West Pacific East Asia Project (WCPFC).
   - Port sampling program.
   - Annual Catch Estimation Workshops.

2. ACIAR/CSIRO/RCFMC Project FIS/2009/059 includes improved enumeration FAD-based fisheries at 4 ports.

3. Port sampling program s conduct by some NGOs (WWF, MDPI, P2HI, IMAC, SFP etc)



Sampling Sites
BITUNG 5 landing sites (BMU, BMB, Nutrindo, Sinar purefoods, Fishing port (12 Enumerators)
KENDARI (PPS Kendari 5 enumerators and Sodohoa 3 enumerators)
SORONG (3 enumerators)
MAJENE (2 enumerators)

Detailed results will be presented Dr. Fayakun

Some National Regulations wich have effect to the tuna fisheries:

1. Minister Decree No. 107/KEPMEN-KP/2015 on the National Tuna Mgt. Plan.

2. Minister Decree No. 57/KEPMEN-KP/2014 on the transhipment banning.

3. Minister Regulation No. 4/PERMEN-KP/2015 on the prohibiton of fishing in FMA 714 – Banda SEA.

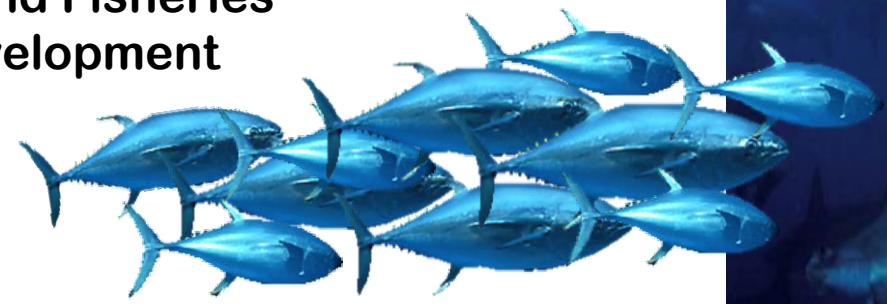
THANK YOU

Attachment E

UPDATE on Development of Tuna Data Collection and its Support for NTMP- Indonesia FMAs (713 to 717)

Center for Fisheries Research And Development (CFRD)
Fayakun Satria, Anung Widodo, Lilis Sadiyah, Sofi Chullatus S

Agency for Marine and Fisheries Research and Development



~~Research Center for Fisheries Managemant and Conservation (RCMFC)~~ ~~*According to Minesterial Decree (PER.15/MEN/ 2010)*~~

Center for Fisheries Research And Development (CFRD)
Decree (PER 23 /MEN/2015)

Marine Fisheries (RIMF) Muara-Baru

SA Marine

Inland Fisheries (RIIF) Palembang

SA Inland

Tuna Fisheries (RITF) Bali

Fisheries Enhancement and Conservation (RIFEC) Jatiluhur

Research Institute for Oceanic Fisheries (RIOF) (Bitung) → Progressing

ORGANISATION existing

- R and D for Mariculture Gondol
- R and D Freshwater Aquaculture, Bogor
- R and D Brackish Aquaculture, Maros
- R and D Fish Genetic, Sukamandi
- R and D Ornamental fish Aquaculture, Depok
- R and D Seaweed culture, Gorontalo
- R and D fish Desease, Depok

pengembangan

11 Fisheries Management Area (FMAs)

1.Archipelagic state waters (3.1 million km^2)
2.Indonesia Economic Exclusive Zone (2.7 million km^2, since 1982)

ROLE, MANDATE, AND FUNCTION

NATIONAL COMMISSION FOR FISH RESOURCE ASESSMENT

1. MINISTERIAL REGULATION No PER.14/MEN/2005
2. MINISTERIAL REGULATION PER.13/MEN/2009
3. MINISTERIAL REGULATION No PER.16/MEN/2012

ROLE

- The national commission for fish resource asessment in this regulation namely as “Komnas KAJISKAN” is an independently non structural institution which under and responsible directly to the minister of marine and Fisheries

MANDATE AND FUNCTION

- To give input and recommendation to ministry of marine and fisheries affairs through scientific assessment of fish resources with the best scientific evidence available including potency and TAC in order to conduct responsible fisheries management within National FMAs

MEMBERSHIP OF the COMMISSION "KOMNAS KAJISKAN 2012-2015"

Minesterial Regualation No. 16/2012 article 5 :

consists of : Expert, Universities representatives and related Research institution riset

In the field of fish resources

No.	Name	Field of expertise	Institution/Afiliation
1	Abdul Ghofar, Dr., Ir.	Fish resource assessment	UNDIP, Semarang (University)
2	Agus Heri Purnomo, Dr., Ir.	Fisheries institutional analyst	Balitbang KP AMFRD)
3	Ali Suman, Prof. Dr.	Shrimps Biologist	Balitbang KP (AMFRD)
4	Aryo Hanggono, Dr.	Remote sensing	Balitbang KP AMFRD)
5	Badrudin, Ir., M.Sc.	Fish Biologist	Pakar (expert)
6	Budi Sulistyo, Dr.	GIS	Balitbang KP (AMFRD)
7	Djamaluddin Djompa, Prof., Dr.	Biologi Perikanan Karang	UNHAS, Makassar (Uvniversity)
8	Eko Sri Wahyono, Dr.,M.Si.	Fishing Capacity	IPB, Bogor (University)
9	Endi Setiadi Kartamihardja, Prof., Dr.	Inland Fisheries Management	Balitbang KP (AMFRD)
10	Indra Jaya, Prof., Dr.	Fisheries acoustics	IPB, Bogor (University)
11	Janni D. Kusen, Prof. Dr., Ir., M.Sc.	Reef fishes	UNSRAT, Manado (university)
12	Ki Abdul Aziz, Ir., M.Sc.	Fisheries Statistic	Pakar (expert)
13	Nani Hendiarti, Dr., Ir., M.Sc.	Oceanography	BPPT (Research technology ins)
14	Ngurah Nyoman Wiadnyana, Prof., Dr.	Marine environment and ecology	Balitbang KP (AMFRD)
15	Purwanto, Ir., MS., Ph.D	Fisheries Bio-economy	Balitbang KP
16	Purwito Martosubroto, Dr.,Ir., M.Sc.	Fisheries Management	Pakar (expert)
17	Sam Wouthoysen, Dr.	Oceanography	Puslit Oseanografi, LIPI
18	Sriati, Dr., Ir., M.Si.	Population Dynamic	UNPAD, Bandung
19	Sulastri, Ir.	Lymnologi	Puslit Limnologi, LIPI
20	Subhat Nurhakim, Dr.,Ir.,MS.	Fisheries Biologist	Pakar (expert)
21	Wudianto, Prof., Dr.,Ir.,M.Sc	Marine Fisheries Management	Balitbang KP (AMFRD)
22	Direktur Sumber Daya Ikan		Ditjen Perikanan Tangkap (DGCF)
23	Direktur Pelayanan Usaha Penangkapan Ikan		Ditjen Perikanan Tangkap (DGCF)

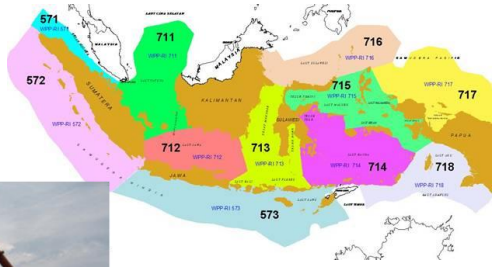
DATA, ANALYSIS AND OUTPUT

INPUT/SUMBER DATA

Research Vessel : data Densities, biology environment/habitat, Oceanografi, Biodiversity, Catch rate, bathymetry.

Observer and logbook: Data Fishing capacity, species, size, Catch, Composition, Catch rate, CPUE, ERS, geographical distribution, Fishing ground, Fishing System

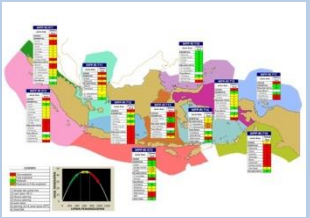
Port/landing site sampling (Enumerator): Total production, Fishing Trip duration, landing Catch composition Species, Size, Fishing Fleet, Fishing system



Data entry and analysis

Biology parameter, Fishing capacity, Risk Asessment, Reference point, thematic mapping
(Involved expert from University, KomNAS Kajiskan, LIPI)

OUTPUT



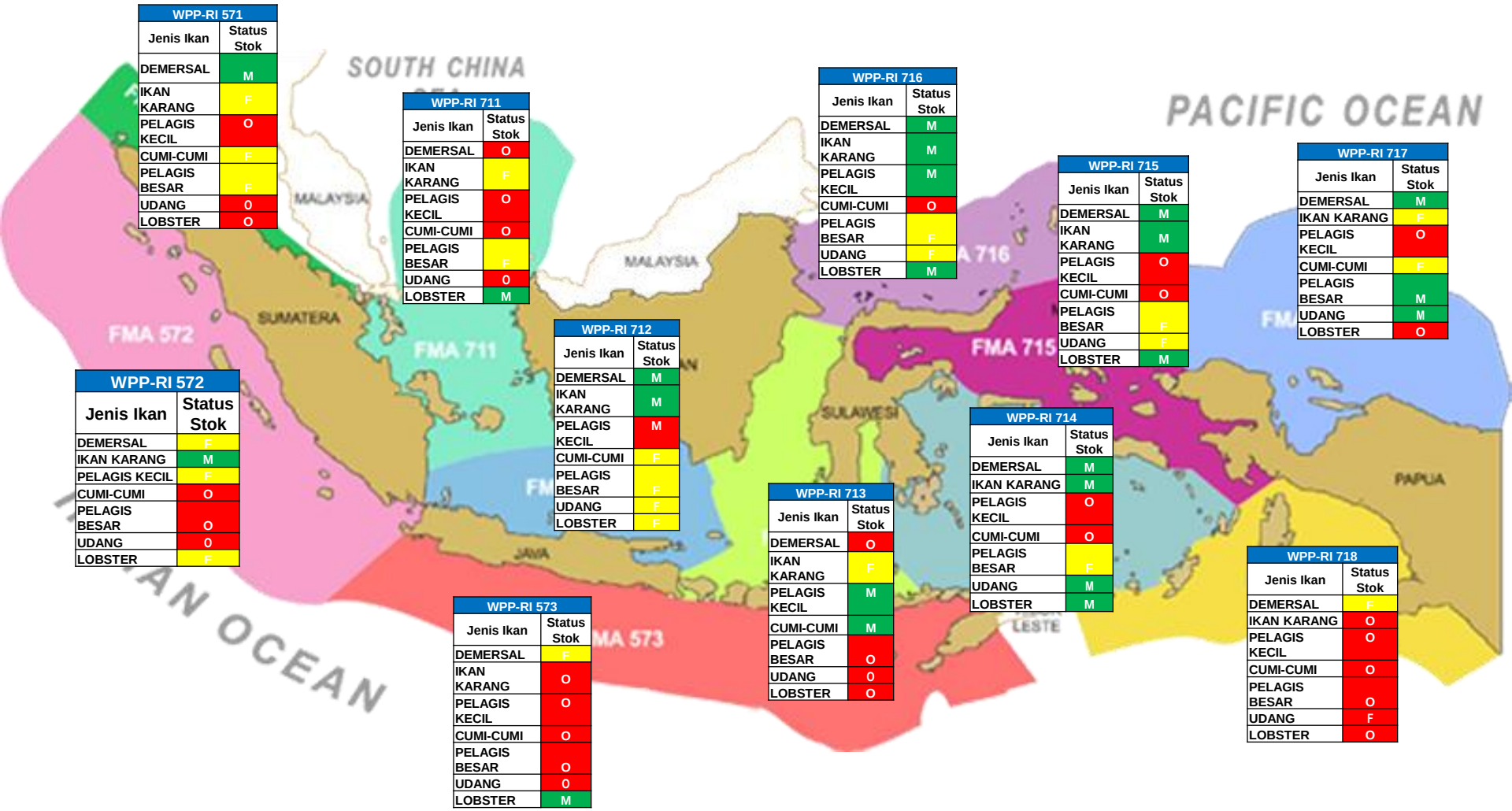
Untuk Pengelolaan:

- Potential Stock, stock status on FMAs
- TAC, Max Fishing fleet for each FMAS
- projection and forecast of fishing strategy on stock
- Seasonal estimation fluctuation of fish stock production

For Fishing:

- Potential fishing ground
- Technical efficiency for fishing system

Stock Status of fish resource In National FMAS, 2013



WPP-RI 571	
Jenis Ikan	Status Stok
DEMERSAL	M
IKAN KARANG	F
PELAGIS KECIL	O
CUMI-CUMI	F
PELAGIS BESAR	F
UDANG	O
LOBSTER	O

WPP-RI 711	
Jenis Ikan	Status Stok
DEMERSAL	O
IKAN KARANG	F
PELAGIS KECIL	O
CUMI-CUMI	O
PELAGIS BESAR	F
UDANG	O
LOBSTER	M

WPP-RI 716	
Jenis Ikan	Status Stok
DEMERSAL	M
IKAN KARANG	M
PELAGIS KECIL	M
CUMI-CUMI	O
PELAGIS BESAR	F
UDANG	F
LOBSTER	M

WPP-RI 715	
Jenis Ikan	Status Stok
DEMERSAL	M
IKAN KARANG	M
PELAGIS KECIL	O
CUMI-CUMI	O
PELAGIS BESAR	F
UDANG	F
LOBSTER	M

WPP-RI 717	
Jenis Ikan	Status Stok
DEMERSAL	M
IKAN KARANG	F
PELAGIS KECIL	O
CUMI-CUMI	F
PELAGIS BESAR	M
UDANG	M
LOBSTER	O

WPP-RI 572	
Jenis Ikan	Status Stok
DEMERSAL	F
IKAN KARANG	M
PELAGIS KECIL	F
CUMI-CUMI	O
PELAGIS BESAR	O
UDANG	O
LOBSTER	F

WPP-RI 712	
Jenis Ikan	Status Stok
DEMERSAL	M
IKAN KARANG	M
PELAGIS KECIL	M
CUMI-CUMI	F
PELAGIS BESAR	F
UDANG	F
LOBSTER	F

WPP-RI 713	
Jenis Ikan	Status Stok
DEMERSAL	O
IKAN KARANG	F
PELAGIS KECIL	M
CUMI-CUMI	M
PELAGIS BESAR	O
UDANG	O
LOBSTER	O

WPP-RI 714	
Jenis Ikan	Status Stok
DEMERSAL	M
IKAN KARANG	M
PELAGIS KECIL	O
CUMI-CUMI	O
PELAGIS BESAR	F
UDANG	M
LOBSTER	M

WPP-RI 573	
Jenis Ikan	Status Stok
DEMERSAL	F
IKAN KARANG	O
PELAGIS KECIL	O
CUMI-CUMI	O
PELAGIS BESAR	O
UDANG	O
LOBSTER	M

WPP-RI 718	
Jenis Ikan	Status Stok
DEMERSAL	F
IKAN KARANG	O
PELAGIS KECIL	O
CUMI-CUMI	O
PELAGIS BESAR	O
UDANG	F
LOBSTER	O

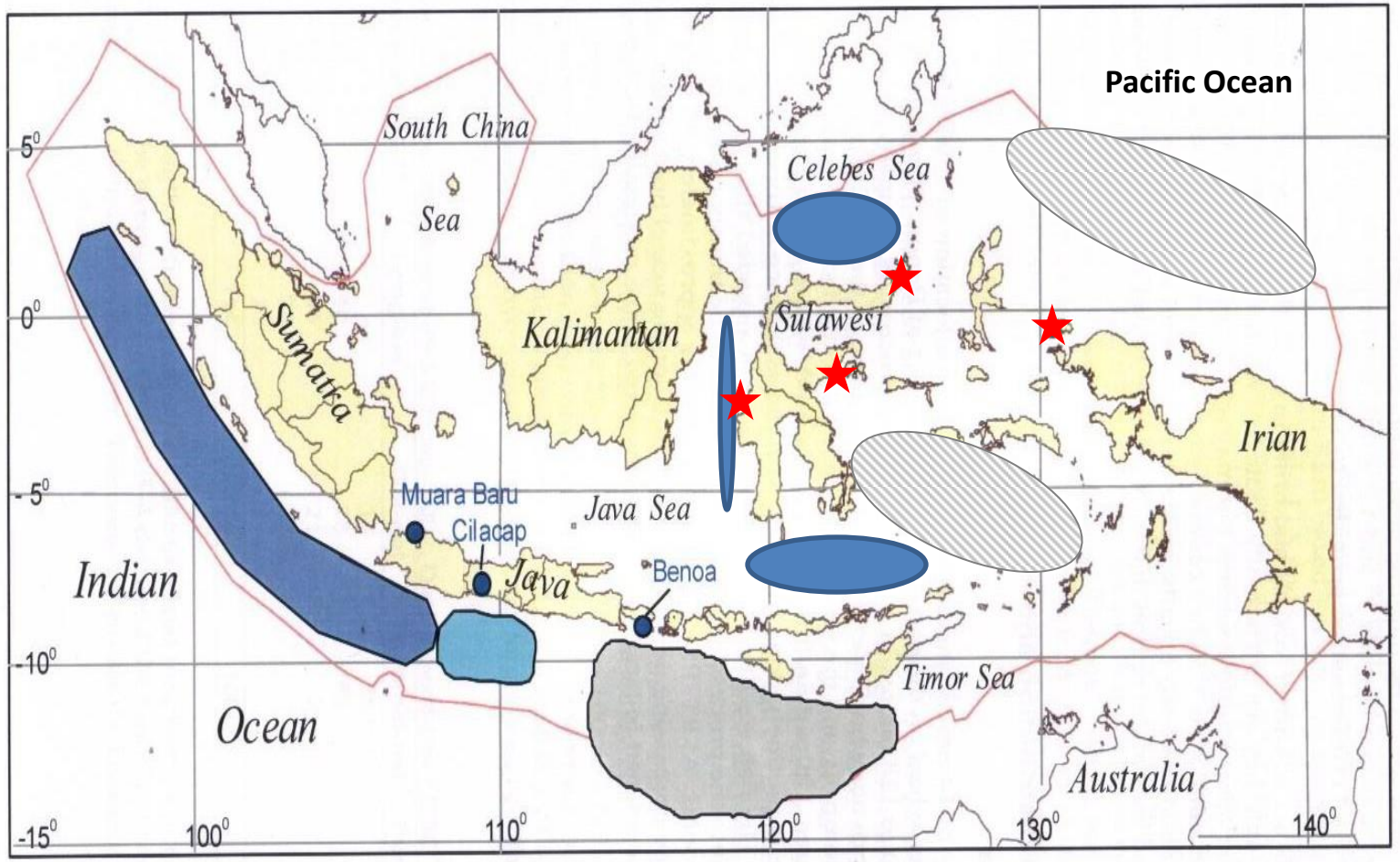
At National level Currently:

- Not conduct specific stock assessment to main tuna species (SBT, YFT, BET, ALB, SKJ)
- Adopted/Utilized Data and information from RFMO (CCSBT, IOTC, WCPFC)
  - Stock Status
  - Reference Points

WCPFC-RCFMC-WPEA

PORT SAMPLING BASED

Main fishing ground for tuna fisheries and sampling sites



SAMPLING LOCATIONS AND ENUMERATORS

SAMPLING SITE	GEAR	TARGET OF CATCH
1. BITUNG (12 enumerators)		
PT. Aneka Loka	TLL	YFT, BET
PT. Bintang Mandiri Bersaudara	PS	SKJ, YFT, BET
PT. Bitung Mina Utama	TLL	YFT, BET
PPS Bitung	TLL, PS, PL, HL/TR	YFT, BET, SKJ
PT. Nutrindo Fresh food Int'l	HL, TLL	YFT, BET
PT. Perikani HL	HL	YFT, BET
PT. Sinar Purefood	PS	SKJ, YFT, BET
2. KENDARI (8 enumerators)		
PPS. Kendari	PS, PL	SKJ, YFT, BET
Sodohoa	HL/TR	SKJ, YFT, BET
3. SORONG (3 enumerators)		
PT. Citra Rajaampat Canning	PL	SKJ, YFT, BET
PT. Anindo Perkasa Abadi	HL	YFT, BET
4. MAJENE (2 enumerators)		
PT. Obi	HL	YFT, BET, SKJ

Total Number of sample by Sites and Gear (2010-2014)

Area	Gear	YFT	BET	SKJ	Total
BTG	HL	34,929	1,070	93	36,092
	LL	33,504	2,230	-	35,734
	PL	5,242	6,932	112,822	124,996
	PS	57,613	5,173	442,531	505,317
	TR	7	17	276	300
KDI	HL	6,564	270	13,070	19,904
	PL	9,022	408	23,296	32,726
	PS	36,594	3,831	79,341	119,766
	TLH	5,169	368	4,301	9,838
	TR	5,699	1,466	12,766	19,931
SOR	PL	501	210	3,201	3,912
	PS	545	182	2,539	3,266

Prelim Catch rate estimation

Landing Site	Year	Gear	Landing (vessel)	Sample (Vessel)	Sampling Coverage (%)	YFT		BET		SKJ		Total Catch (Kg)	CPUE (Kg/Vessel/ Landing)
						Kg	%	Kg	%	Kg	%		
Bitung	2010	HL	1.865	224	12,01	1.443.968	99,32	8.530	0,59	-	-	1.453.920	779,58
	2010	PL	125	65	52,00	19.567	1,78	28.683	2,61	1.046.734	95,30	1.098.338	8.786,70
	2010	PS	277	223	80,51	1.559.426	14,23	385.486	3,52	8.932.791	81,53	10.956.351	39.553,61
Kendari	2010	HL	111	40	36,04	14.912	13,82	40	0,04	91.606	84,87	107.934	972,38
	2010	PL	492	147	29,88	238.632	10,15	-	-	2.103.234	89,42	2.351.973	4.780,43
	2010	PS	168	62	32,00	1.323.000	26,00	254.000	4,99	3.511.000	69,01	5.088.000	30.285,71
	2010	TR	266	92	34,59	89.122	29,22	51.362	16,84	162.640	53,33	304.957	1.146,45

Landing Site	Year	Gear	Landing (vessel)	Sample (Vessel)	Sampling Coverage (%)	YFT		BET		SKJ		Total Catch (Kg)	CPUE (Kg/Vessel/ Landing)
						Kg	%	Kg	%	Kg	%		
Bitung	2011	HL	2.669	338	12,66	1.471.011	94,87	70.399	4,54	-	-	1.550.610	580,97
	2011	PL	92	52	56,52	-	-	10.332	1,93	523.080	97,93	534.150	5.805,98
	2011	PS	406	303	74,63	920.962	6,14	-	-	13.991.466	93,24	15.006.121	36.960,89
Kendari	2011	HL	181	52	28,73	30.698	24,48	-	-	90.048	71,81	125.399	692,81
	2011	PL	469	55	11,73	565.204	25,34	41.689	1,87	1.613.918	72,35	2.230.727	4.756,35
	2011	PS	167	60	35,93	1.913.732	40,04	186.928	3,91	2.495.669	52,22	4.779.111	28.617,43
	2011	TLH	115	23	20,00	1.780	42,19	-	-	1.075	25,48	4.219	36,69
	2011	TR	301	72	23,92	100.944	24,92	13.094	3,23	284.928	70,35	405.034	1.345,63

Prelim Catch rate estimation (Contd)

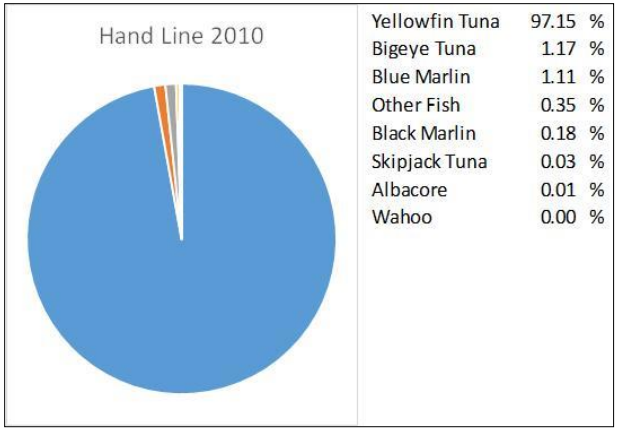
Landing Site	Year	Gear	Landing (vessel)	Sample (Vessel)	Sampling Coverage (%)	YFT		BET		SKJ		Total Catch (Kg)	CPUE (Kg/Vessel/ Landing)
						Kg	%	Kg	%	Kg	%		
Bitung	2012	HL	2.968	338	11,39	2.191.639	95,23	97.487	4,24	-	-	2.301.364	775,39
	2012	PL	75	55	73,33	-	-	196.625	14,62	1.125.360	83,67	1.345.000	17.933,33
	2012	PS	651	325	49,92	10.010.610	37,58	657.604	2,47	15.796.591	59,31	26.636.004	40.915,52
Kendari	2012	HL	159	49	30,82	83.780	55,83	-	-	63.141	42,08	150.057	943,75
	2012	PL	212	20	9,43	34.612	3,29	-	-	949.921	90,20	1.053.184	4.967,85
	2012	PS	178	81	45,51	1.437.874	27,54	34.686	0,66	3.723.751	71,31	5.221.807	29.335,99
	2012	TLH	91	39	42,86	1.790	24,38	1.000	13,62	-	-	7.342	80,68
	2012	TR	63	11	17,46	16.759	8,18	-	-	187.877	91,70	204.891	3.252,24

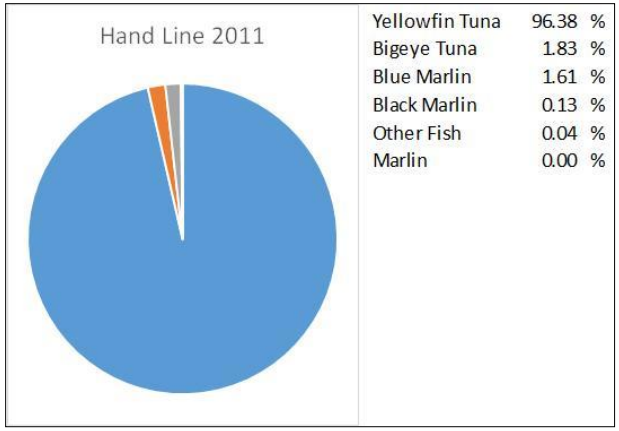
Landing Site	Year	Gear	Landing (vessel)	Sample (Vessel)	Sampling Coverage (%)	YFT		BET		SKJ		Total Catch (Kg)	CPUE (Kg/Vessel/ Landing)
						Kg	%	Kg	%	Kg	%		
Bitung	2013	HL	1.418	454	32,02	859.700	93,80	51.174	5,58	-	-	916.556	646,37
	2013	PL	218	103	47,25	317.706	9,17	83.502	2,41	3.046.280	87,90	3.465.700	15.897,71
	2013	PS	774	404	52,20	2.549.075	8,04	116.858	0,37	28.903.951	91,19	31.694.732	40.949,27
	2013	TR	1	1	100,00	-	-	-	-	5.100	100,00	5.100	5.100,00
Kendari	2013	HL	151	51	33,77	36.889	25,84	943	0,66	88.188	61,78	142.740	945,30
	2013	PL	229	11	4,80	-	-	-	-	685.865	55,91	1.226.740	5.356,94
	2013	PS	169	93	55,03	1.405.961	29,55	444.529	9,34	2.710.740	56,98	4.757.475	28.150,74
	2013	TLH	81	40	49,38	-	-	-	-	2.352	39,54	5.949	73,44
	2013	TR	104	25	24,04	50.699	16,96	-	-	204.174	68,30	298.937	2.874,39
Sorong	2013	PS	7	7	100,00	60.799	16,41	-	-	309.751	83,59	370.551	52.935,86

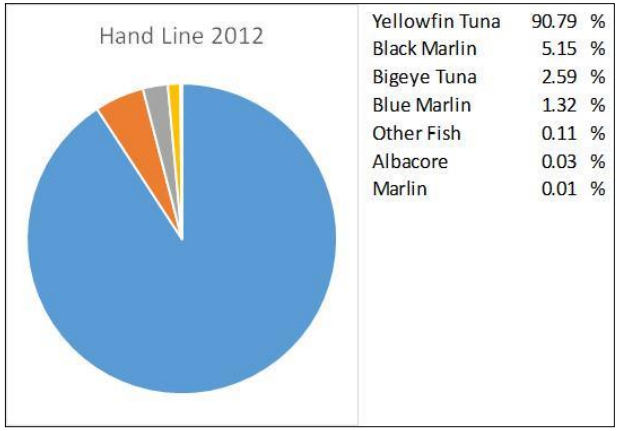
Prelim Catch rate estimation (Contd)

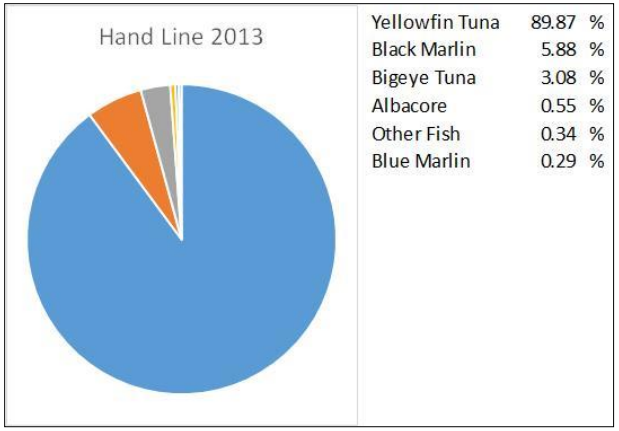
Landing Site	Year	Gear	Landing (vessel)	Sample (Vessel)	Sampling Coverage (%)	YFT		BET		SKJ		Total Catch (Kg)	CPUE (Kg/Vessel/ Landing)
						Kg	%	Kg	%	Kg	%		
Bitung	2014	HL	3.182	593	18,64	1.740.769	95,12	79.069	4,32	-	-	1.830.040	575,12
	2014	PL	173	158	91,33	172.060	6,74	247.505	9,70	2.117.840	82,98	2.552.200	14.752,60
	2014	PS	737	408	55,36	1.867.284	5,84	625.033	1,96	29.219.256	91,42	31.963.219	43.369,36
Kendari	2014	HL	91	17	18,68	-	-	-	-	17.686	72,86	24.273	266,74
	2014	PL	98	6	6,12	118.635	24,25	-	-	370.501	75,75	489.136	4.991,18
	2014	PS	75	46	61,33	348.489	33,19	-	-	692.795	65,98	1.049.984	13.999,79
	2014	TLH	111	43	38,74	-	-	392	4,81	5.820	71,42	8.149	73,41
	2014	TR	40	4	10,00	-	-	-	-	115.304	100,00	115.304	2.882,60
Sorong	2014	PL	68	40	58,82	112.715	20,75	10.452	1,92	414.487	76,32	543.088	7.986,59
	2014	PS	28	28	100,00	126.512	12,85	-	-	853.359	86,66	984.762	35.170,07

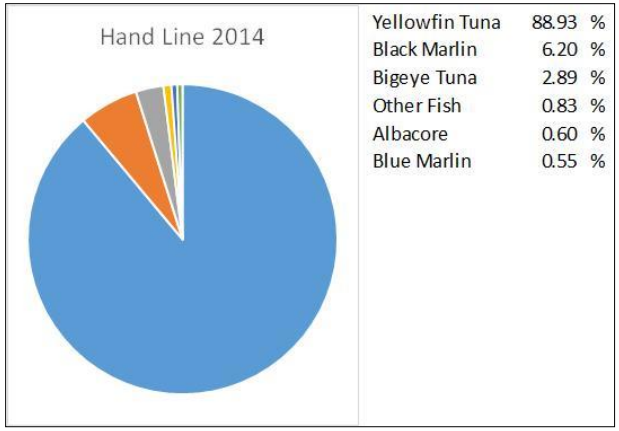
Species Composition: Hand Line



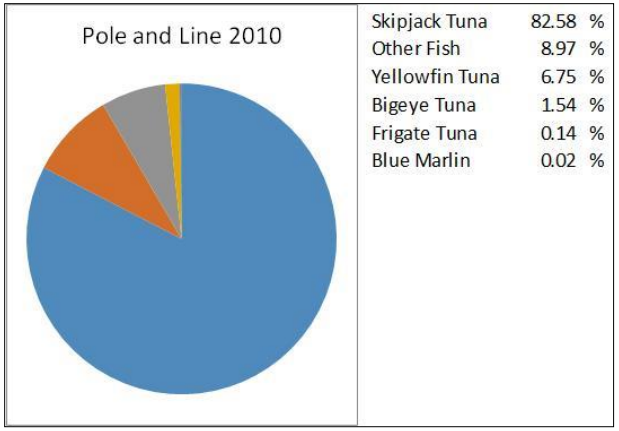


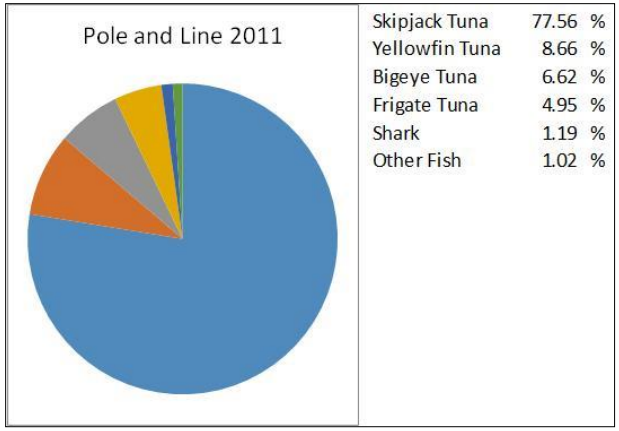


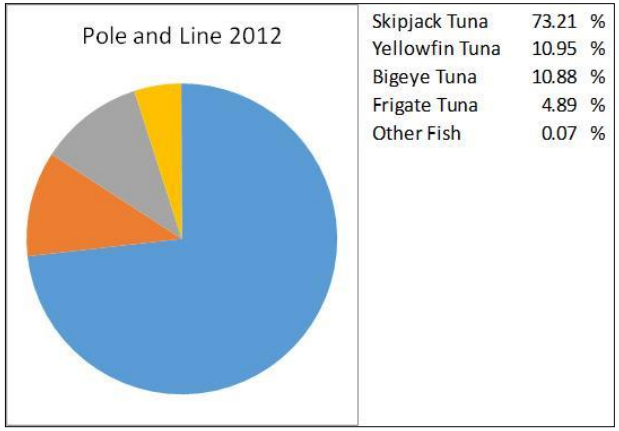


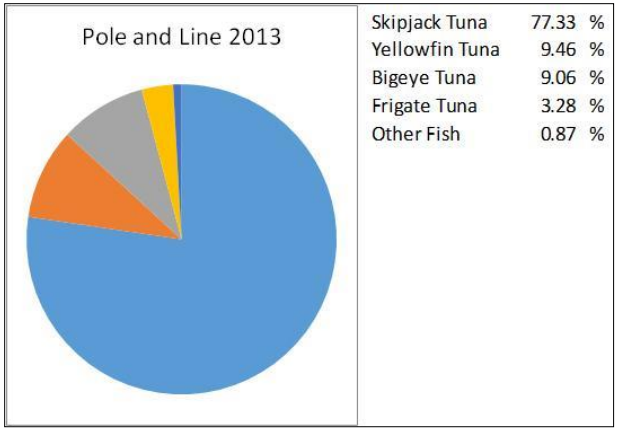


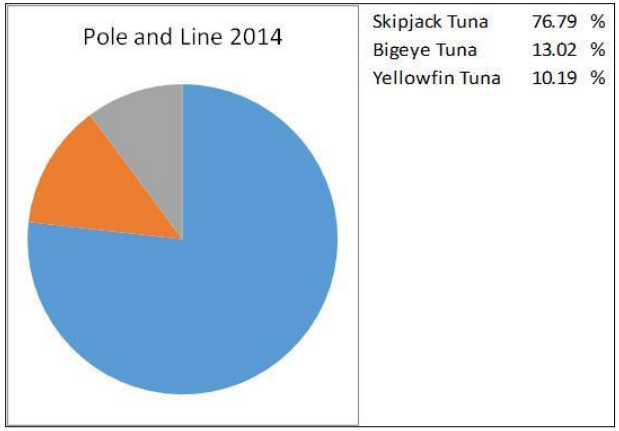
Species Composition: Pole and Line



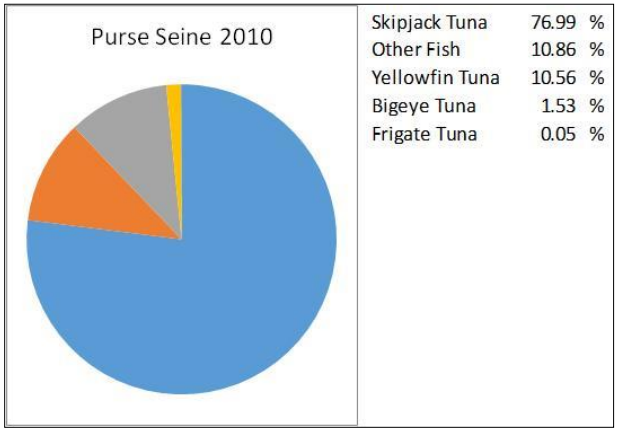


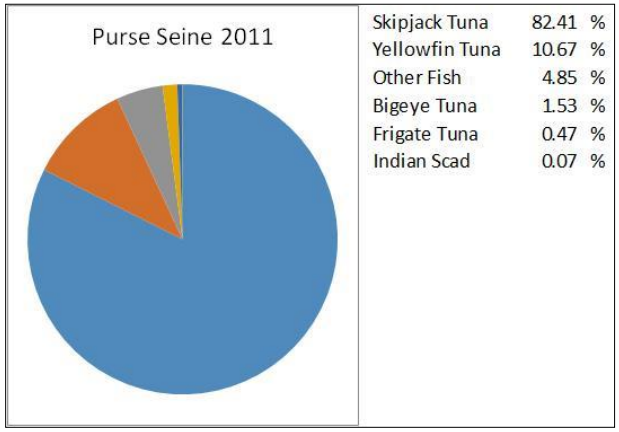


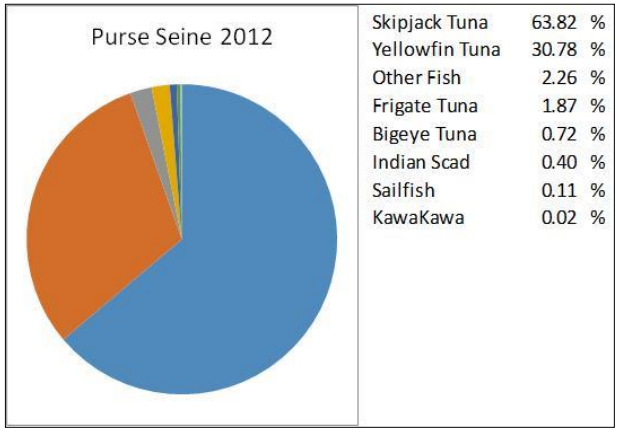


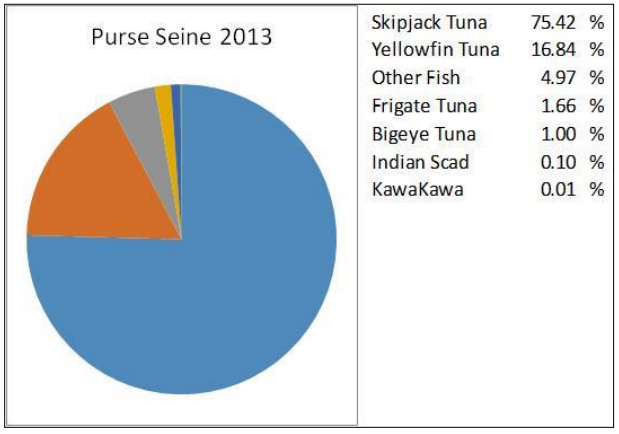


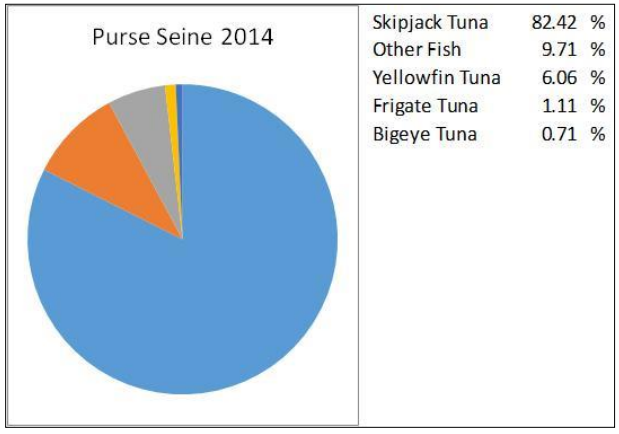
Species Composition: Purse Seine



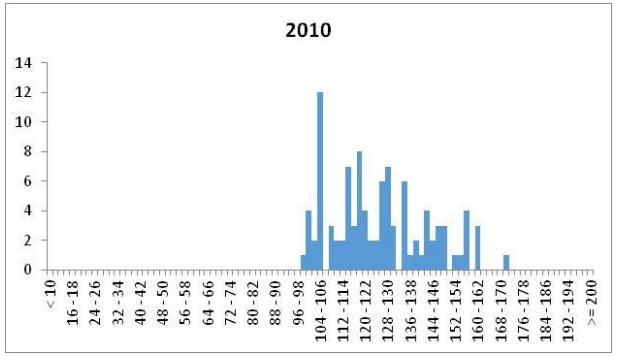


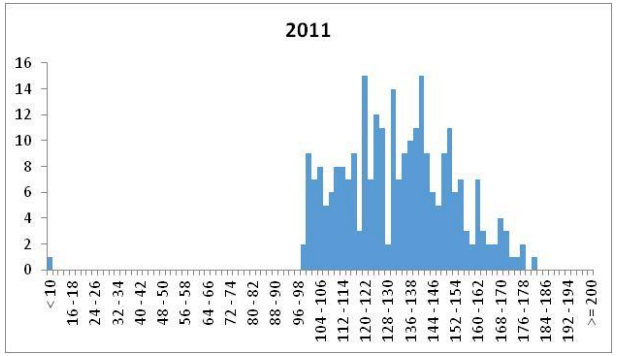


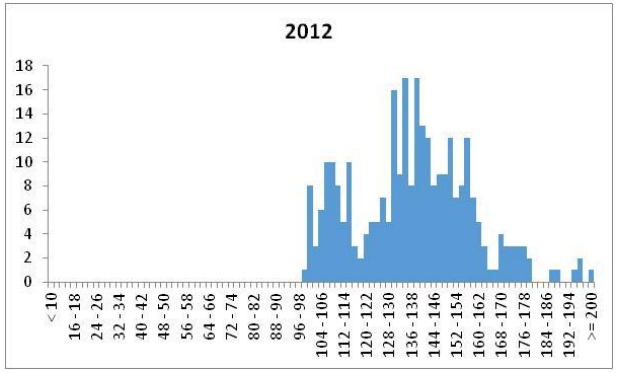


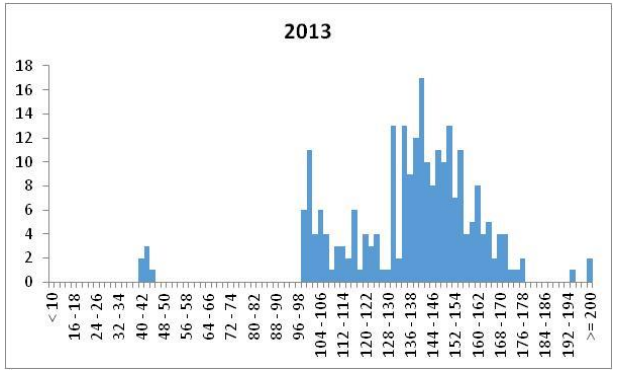


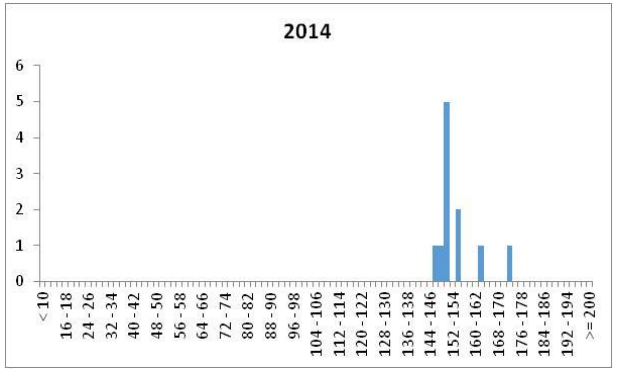
Length Frequency
Hand Line – Bigeye Tuna



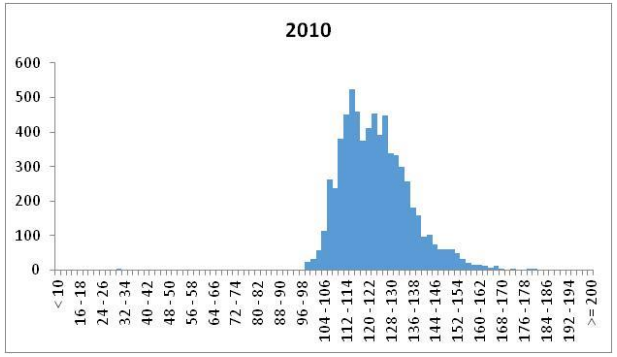


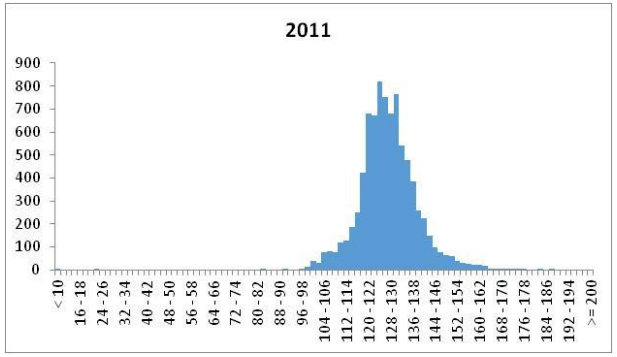


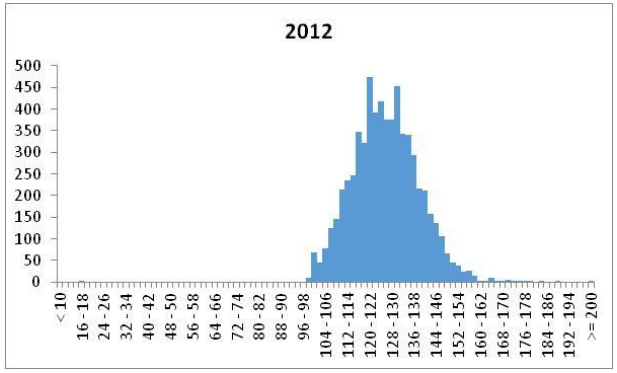


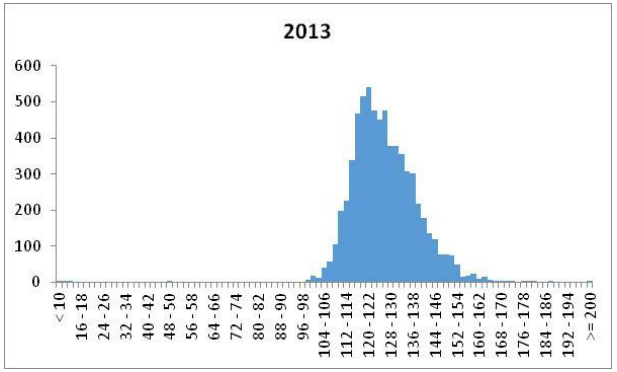


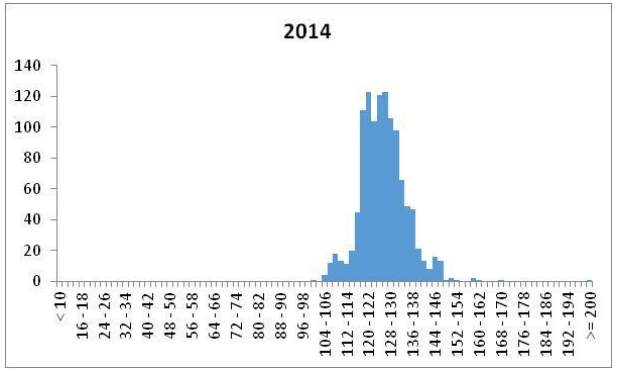
Length Frequency
Hand Line – Yellowfin Tuna





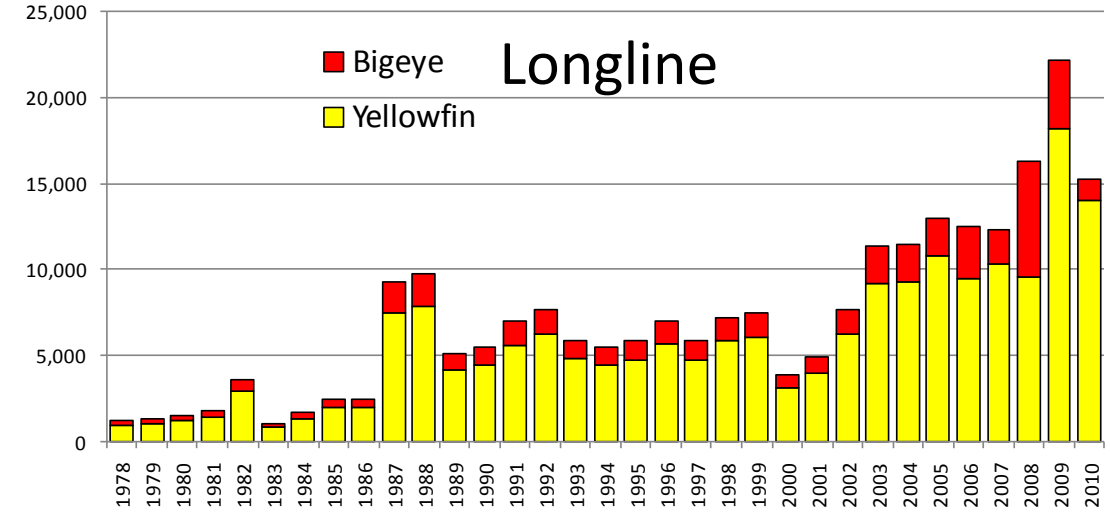


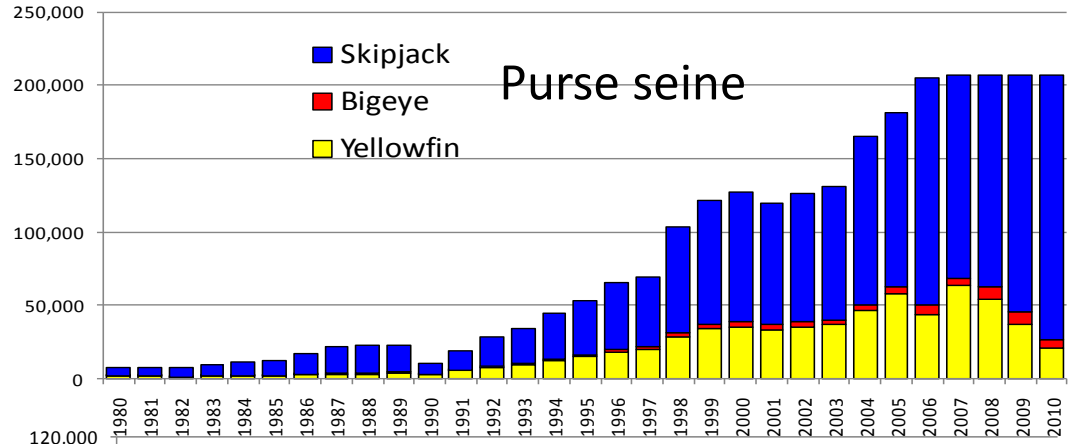


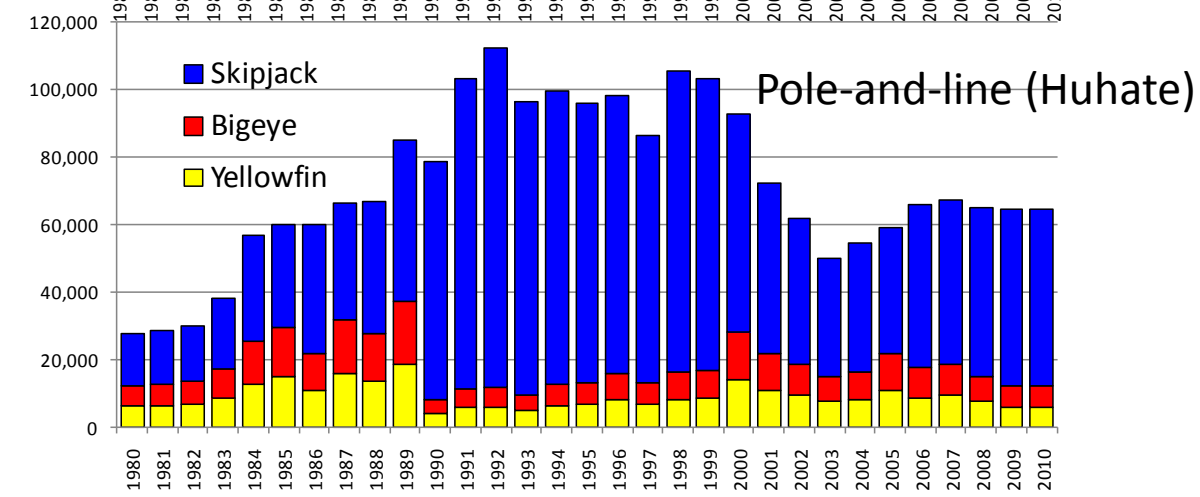


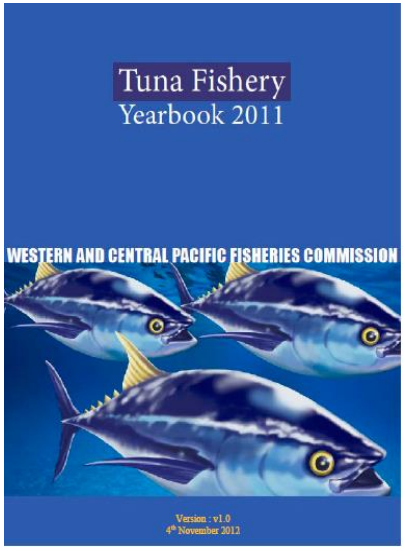
DETAILED RESUTL WITH
PRESENTED BY DR. LILIS SADIYAH

Indonesian Tuna Data
ANNUAL CATCH ESTIMATES - - (WCPFC Area)









Indonesia Constitution 1945

3. Article 33 (3) : earth, waters and all resources contained therein shall be fully controlled by the state and be used for the welfare of the people.

- Conclusion :

Tuna, Skipjack Tuna, and Neritic Tuna in Indonesia Waters shall be fully controlled by Indonesia as a state.

- Mandate :

As a state, Indonesia shall develop regulations in relation to the exploitation of Tuna, Skipjack Tuna, and Neritic Tuna in Indonesia waters to ensure the sustainable use of the resources.

KEPUTUSAN
MENTERI KELAUTAN DAN PERIKANAN REPUBLIK INDONESIA
NOMOR 107/KEPMEN-KP/2015

TENTANG

RENCANA PENGELOLAAN PERIKANAN
TUNA, CAKALANG DAN TONGKOL

DENGAN RAHMAT TUHAN YANG MAHA ESA
MENTERI KELAUTAN DAN PERIKANAN REPUBLIK INDONESIA,

Ministerial Regulation No 107/KEPMEN-KP/2015

Fisheries Management Plan : Tuna, Skipjack and Neritic Tuna

NPOA-NTMP
1.2.2.1. Objective 1 Point 3
(Harvest Strategy)
And
1.2.2.2 Objective 2 Point 4
Meeting among Scientist, Manager and Stakeholder

Some activities related to NTMP

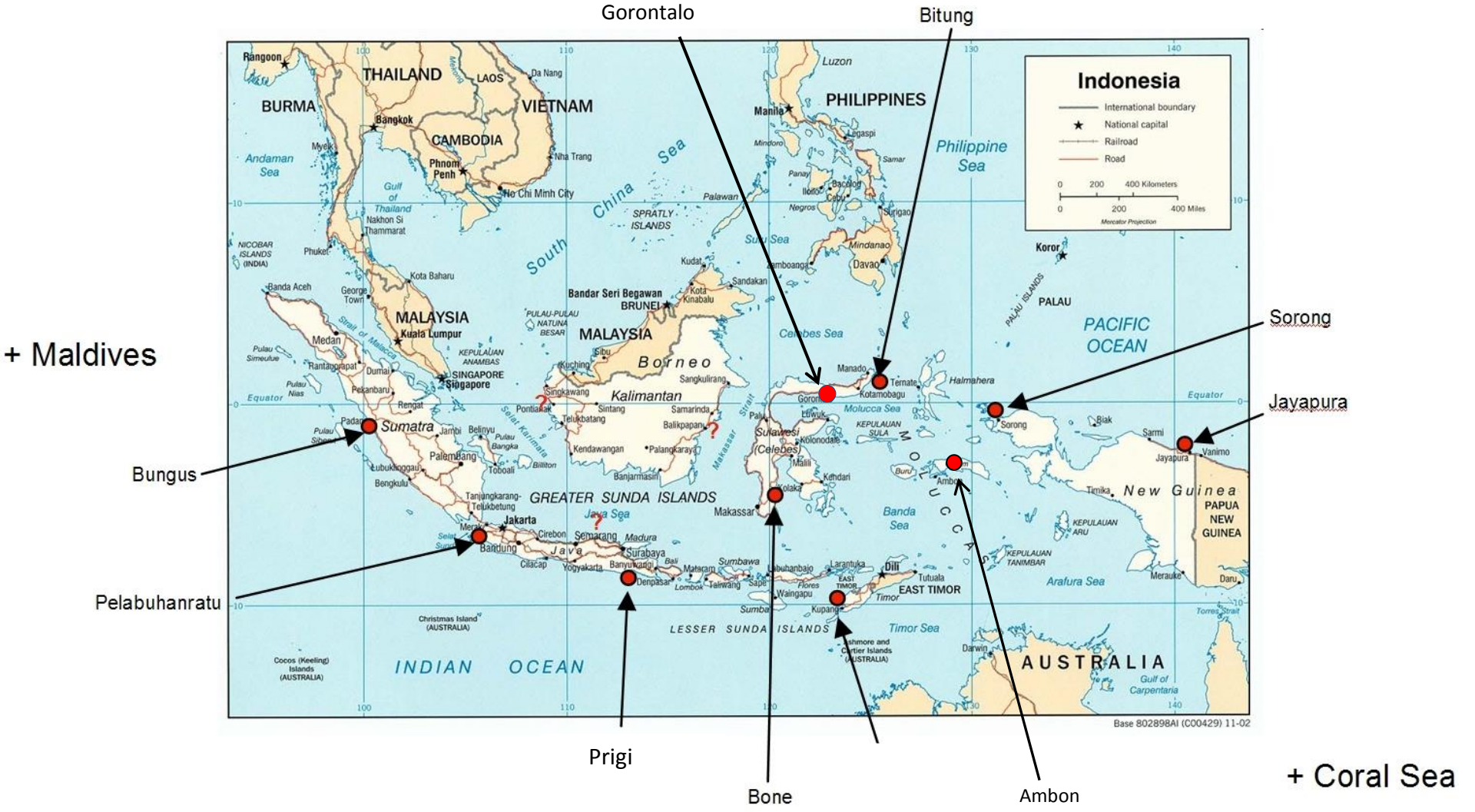
1. National tuna Profile (713,714,715) and National tuna Profile (716, 717)
2. NTMP Launching Bali 2014
3. Legalized NTMP by Ministerial decree 2015
4. First HCR Workshop (Bogor 2014)
5. Second HCR Workshop (Bogor 2015)
6. SPR training Bogor (2015)– could this use for initial start for developing reference point for Tuna.
7. SA WS Haipong Vietnam (Nov 2015)
8. Harvest Strategy Workshop Bali (Nov 2015)

ON GOING RESEARCH

- Tuna Population Structure , through FAD Study, genetic markers, otolith chemistry, and parasite fauna, and connectivity of YFT and BET in Indonesian archipelagic waters, Indian Ocean and Pacific: RCFMC-ACIAR

- Monitoring For highly Migratory Species (Catch composition by gear by species, size data with regular port sampling : RCFMC - WCPFC

ON GOING RESEARCH



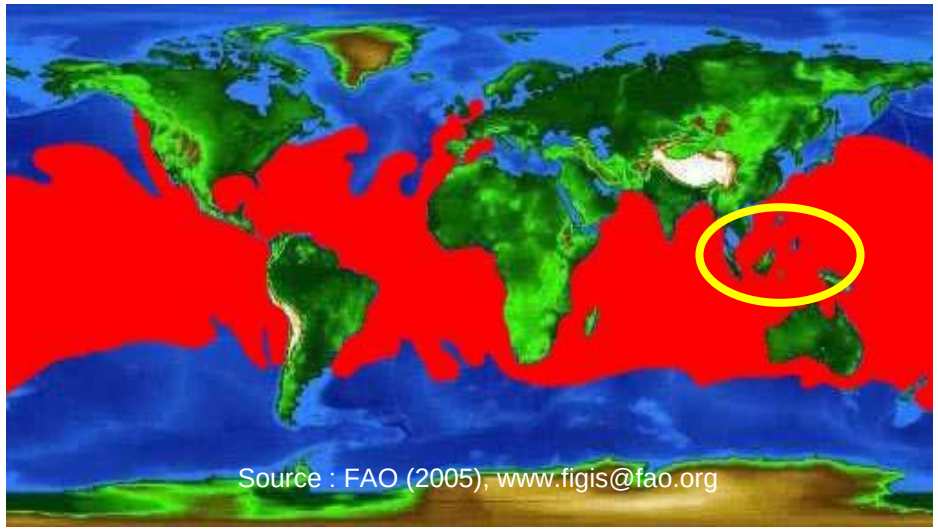
Map showing location of suggested sampling sites

Note: Gorontalo has replaced Kupang

TERIMA KASIH
THANK YOU

Preliminary Length-based Spawning Potential Ratio Analysis on Skipjack in the Indonesia's FMAs 713-717

Attachment F



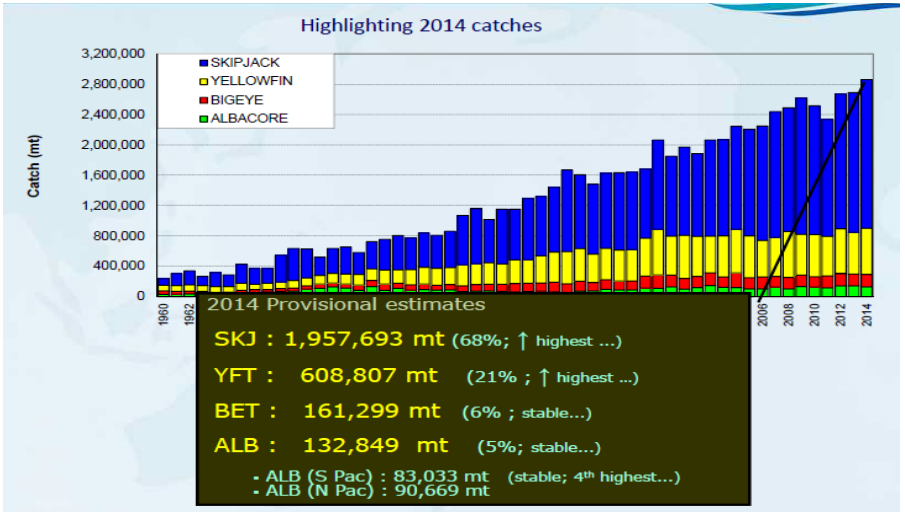
Fayakun Satria
Lilis Sadiyah
Agustinus A. Widodo

KEMENTERIAN KELAUTAN DAN PERIKANAN

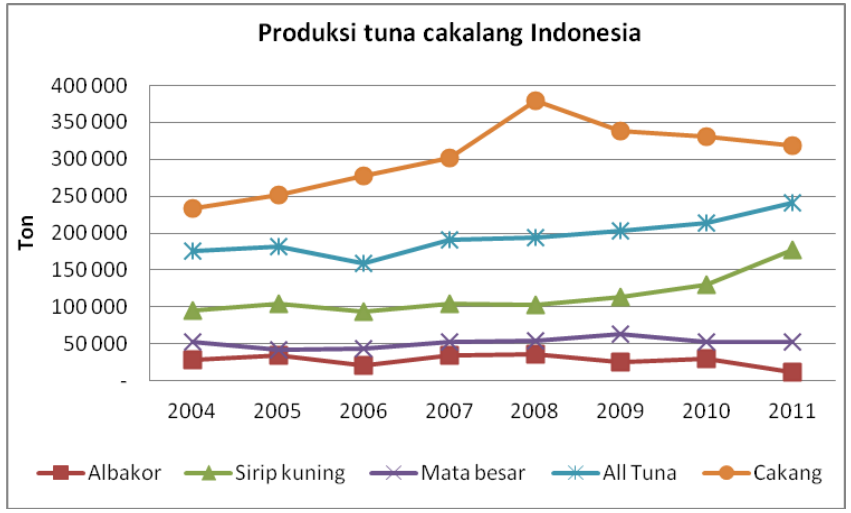
The Three-Country (Indonesia, Philippines and Vietnam) Stock Assessment Workshop
WPEA - WCPFC
Hai Pong, Vietnam, 3 - 6 November 2015

Introduction

- SKJ is economically important in the world, highest catches than other tuna species.
- In the Pacific Ocean, SKJ was 68% of the tuna catches in 2014.
- SKJ in the WCPO is suggested in healthy condition where overfishing is not occurring and the stock is not overfished.
- SKJ also the most dominant catch in Indonesia compared to other tuna species.
- In the Indonesian FMAs 713-717, SKJ is main target for PL, PS, TR.
- Indonesia has initiated an assessment of SKJ status within the Indonesian EEZs in an attempt to develop a harvest strategy for its SKJ fishery, as a part of the Indonesian FMP for Tuna.



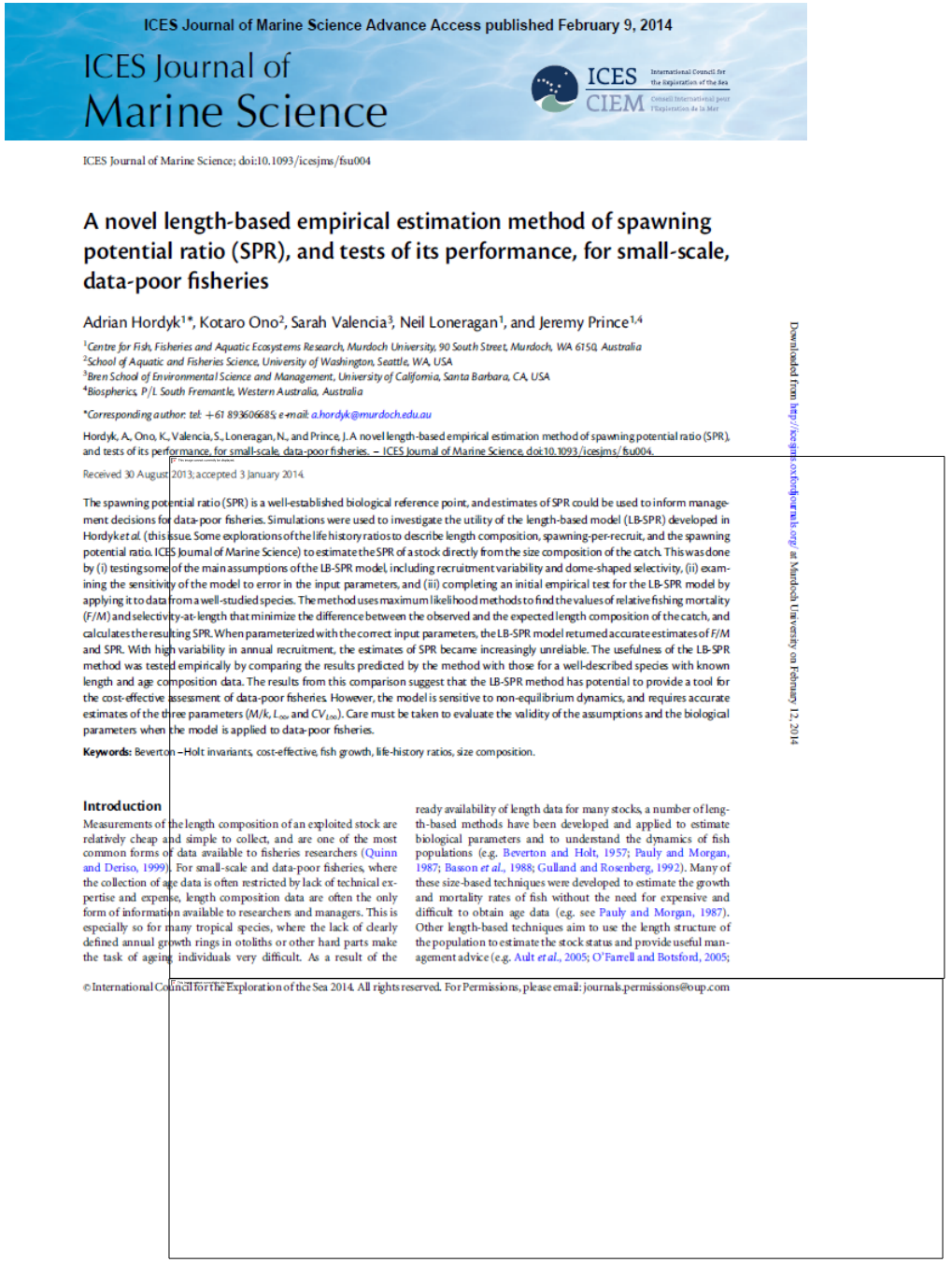
Tuna production in WCPFC area
Source : Williams (2014)



Tuna production in Indonesia
Source : (MMAF)

Introduction (cont'd)

- Several SA methods require a time-series C & E data.
- In fact, the lack of C & E data from Indonesian fishery, in general, is an int'l concern.
- LB-SPR has been developed for data poor fisheries to assess the stock status.
- A port-based sampling program (Indonesia & WCPFC -WPEA project) has been established in BTG, KDI, SDH and Sorong for tuna fishery in the Indonesia's FMAs 713 - 717.
- The SPR was estimated using the LB-SPR.



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ICES Journal of Marine Science; doi:10.1093/icesjms/fsu004

A novel length-based empirical estimation method of spawning potential ratio (SPR), and tests of its performance, for small-scale, data-poor fisheries

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[2]School of Aquatic and Fisheries Science, University of Washington, Seattle, WA, USA
[3]Bren School of Environmental Science and Management, University of California, Santa Barbara, CA, USA
[4]Biospherics, P/L South Fremantle, Western Australia, Australia

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Hordyk, A., Ono, K., Valencia, S., Loneragan, N., and Prince, J. A novel length-based empirical estimation method of spawning potential ratio (SPR), and tests of its performance, for small-scale, data-poor fisheries. – ICES Journal of Marine Science, doi:10.1093/icesjms/fsu004.

Received 30 August 2013; accepted 3 January 2014

The spawning potential ratio (SPR) is a well-established biological reference point, and estimates of SPR could be used to inform management decisions for data-poor fisheries. Simulations were used to investigate the utility of the length-based model (LB-SPR) developed in Hordyk *et al.* (this issue. Some explorations of the life history ratios to describe length composition, spawning-per-recruit, and the spawning potential ratio. ICES Journal of Marine Science) to estimate the SPR of a stock directly from the size composition of the catch. This was done by (i) testing some of the main assumptions of the LB-SPR model, including recruitment variability and dome-shaped selectivity, (ii) examining the sensitivity of the model to error in the input parameters, and (iii) completing an initial empirical test for the LB-SPR model by applying it to data from a well-studied species. The method uses maximum likelihood methods to find the values of relative fishing mortality (F/M) and selectivity-at-length that minimize the difference between the observed and the expected length composition of the catch, and calculates the resulting SPR. When parameterized with the correct input parameters, the LB-SPR model returned accurate estimates of F/M and SPR. With high variability in annual recruitment, the estimates of SPR became increasingly unreliable. The usefulness of the LB-SPR method was tested empirically by comparing the results predicted by the method with those for a well-described species with known length and age composition data. The results from this comparison suggest that the LB-SPR method has potential to provide a tool for the cost-effective assessment of data-poor fisheries. However, the model is sensitive to non-equilibrium dynamics, and requires accurate estimates of the three parameters (M/k, L_∞ and $CV_{L\infty}$). Care must be taken to evaluate the validity of the assumptions and the biological parameters when the model is applied to data-poor fisheries.

Keywords: Beverton–Holt invariants, cost-effective, fish growth, life-history ratios, size composition.

Introduction

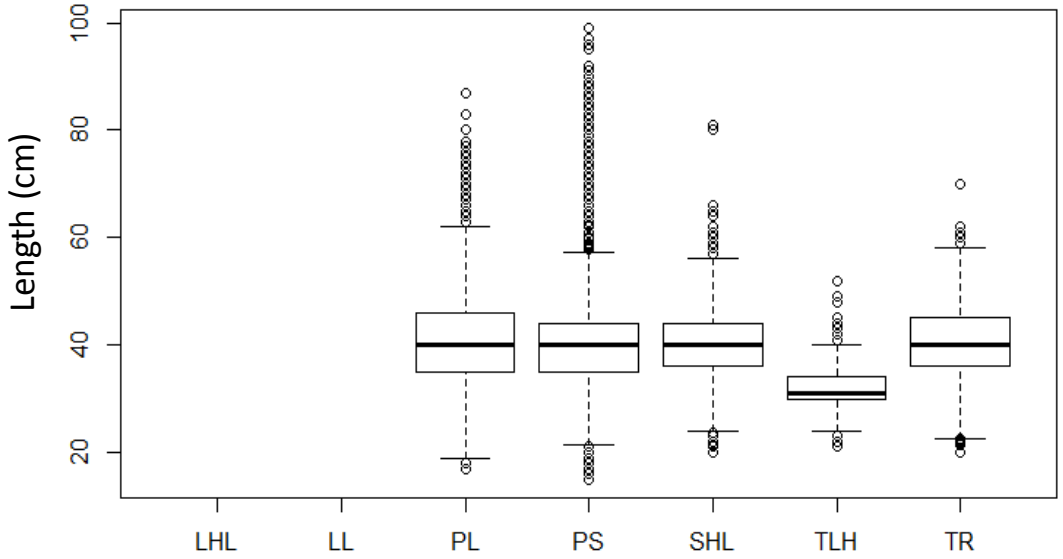
Measurements of the length composition of an exploited stock are relatively cheap and simple to collect, and are one of the most common forms of data available to fisheries researchers (Quinn and Deriso, 1999). For small-scale and data-poor fisheries, where the collection of age data is often restricted by lack of technical expertise and expense, length composition data are often the only form of information available to researchers and managers. This is especially so for many tropical species, where the lack of clearly defined annual growth rings in otoliths or other hard parts make the task of ageing individuals very difficult. As a result of the ready availability of length data for many stocks, a number of length-based methods have been developed and applied to estimate biological parameters and to understand the dynamics of fish populations (e.g. Beverton and Holt, 1957; Pauly and Morgan, 1987; Basson *et al.*, 1988; Gulland and Rosenberg, 1992). Many of these size-based techniques were developed to estimate the growth and mortality rates of fish without the need for expensive and difficult to obtain age data (e.g. see Pauly and Morgan, 1987). Other length-based techniques aim to use the length structure of the population to estimate the stock status and provide useful management advice (e.g. Ault *et al.*, 2005; O'Farrell and Botsford, 2005;

Available Data

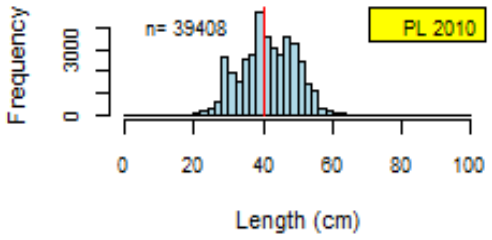
Agency/ organisation	SDI - statistics	SDI - logbook and observer	RITF	RIMF	ACIAR / CSIRO / RCMFC	RCFMC-WCPFC WPEA	Logbook Bitung (RCFMC)	AP2HI	MDPI	WWF
Time range of coverage	2002 → ongoing	observer 2013 - 2014	2002		Oct 2013 - Dec 2015	2010 - 2014	2011 - 2013	2010 - 2014 → ongoing (some companies from 2000)	2012 → ongoing	2006 → present, ongoing
Species (FAO codes)	SKJ, YFT, BET	multi sp incl. SKJ, YFT	BET, YFT	SKJ, YFT	YFT, BET, SKJ, all bycatch spp.	YFT, BET, SKJ	SKJ, YFT, layang, tongkol	SKJ, YFT	YFT, SKJ, BET, ALB, bait species, all other retained species	YFT landing in Wakatobi district
Gear types	All gears	LL & PS	LL	PL, HL	HL/TL, PL	PL, PS, SHL, TLH, TR, LHL,LL (in KDI, BTG, SDH)	PS	HL (3 yrs, MDPI data, possible to retrieve data up to 10 yrs but not done yet)+ PL (14 yrs)	HL + PL	HL < 5 GT
IFMA	713, 714, 715	715	714		714, 715	713, 714, 715, 716 & 717	714, 715	714, 715, 716	713, 714, 715	714

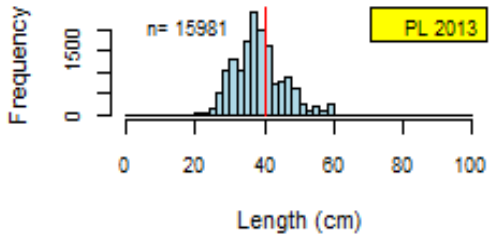
Data Overview – WPEA project

Gear Type	Number of SKJ sampled				
	2010	2011	2012	2013	2014
PL	39408	30774	22327	15981	27261
PS	65713	88243	113335	142788	109203
SHL	2463	4567	3172	2587	372
TLH	0	667	1150	1456	1028
TR	2998	6044	1379	2471	149
LHL	0	0	0	0	0
LL	0	0	0	0	0
Total	110582	130295	141363	165283	138013



Results


n= 39408
PL 2010
Frequency
0
3000
0
20
40
60
80
100
Length (cm)


n= 15981
PL 2013
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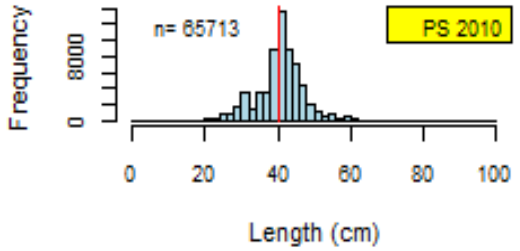
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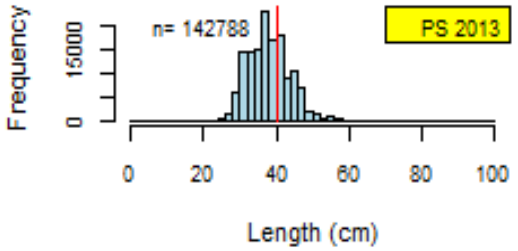
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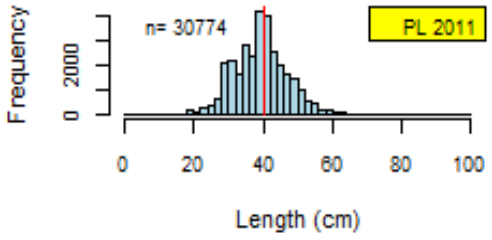
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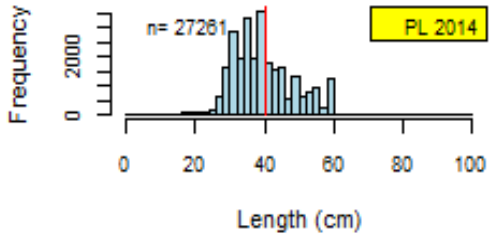
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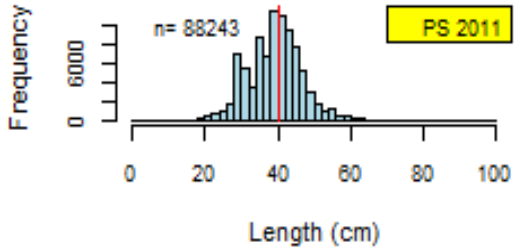
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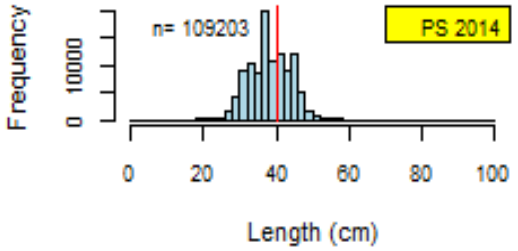
Length (cm)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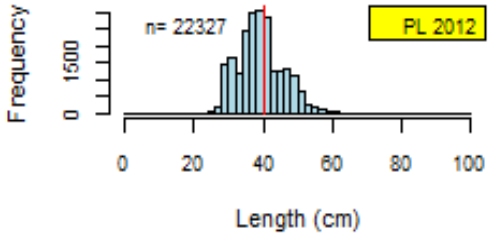
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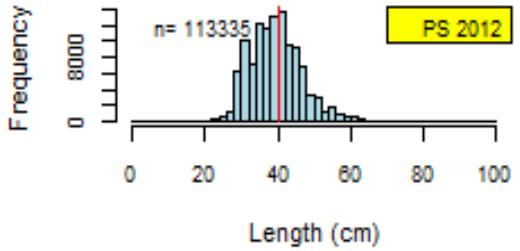
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Length (cm)

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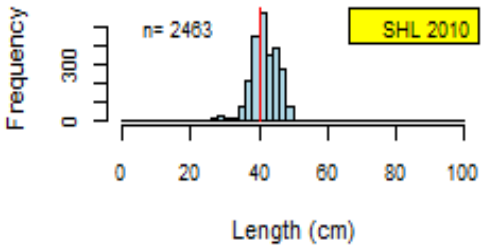

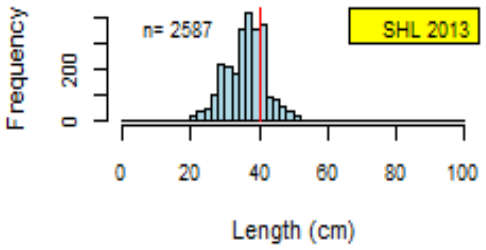

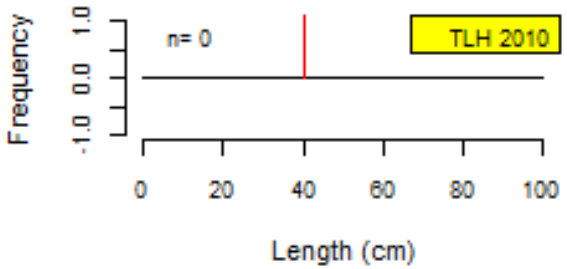

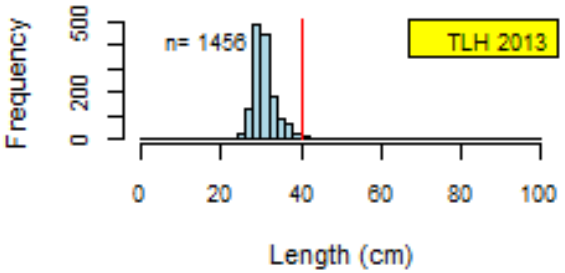

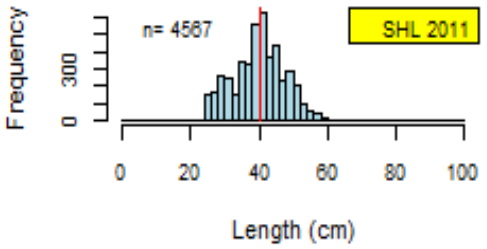

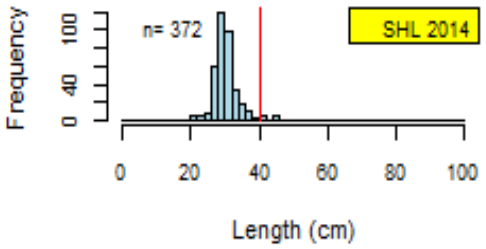

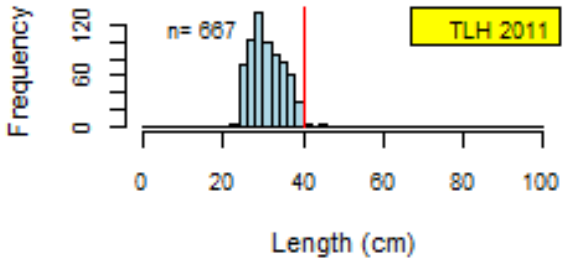

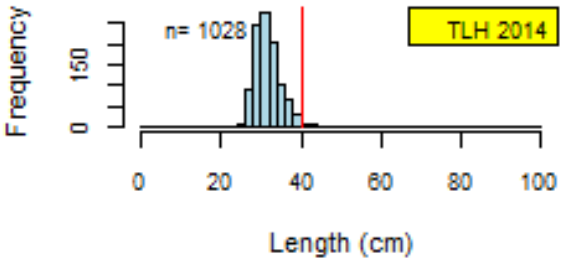

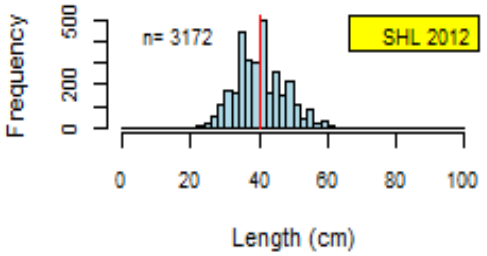

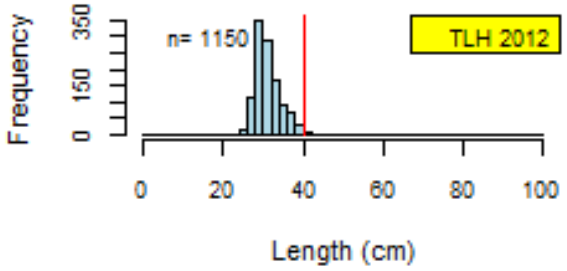

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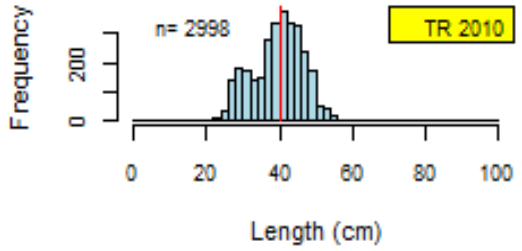

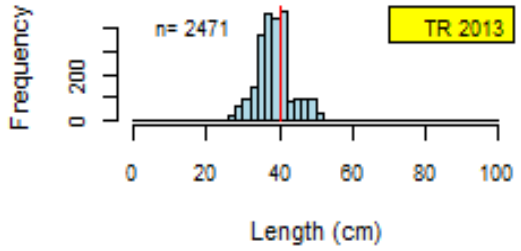

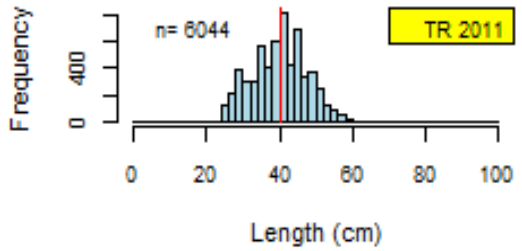

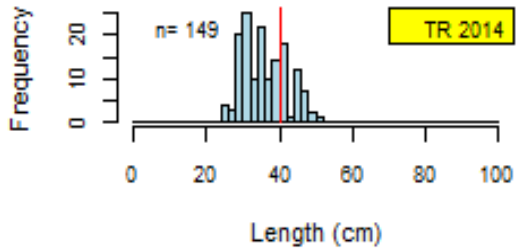

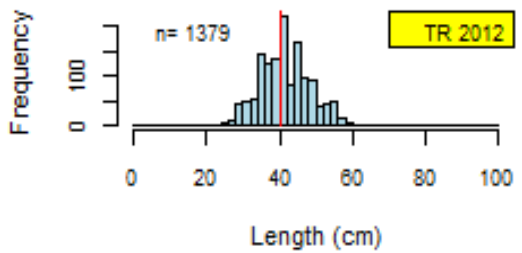

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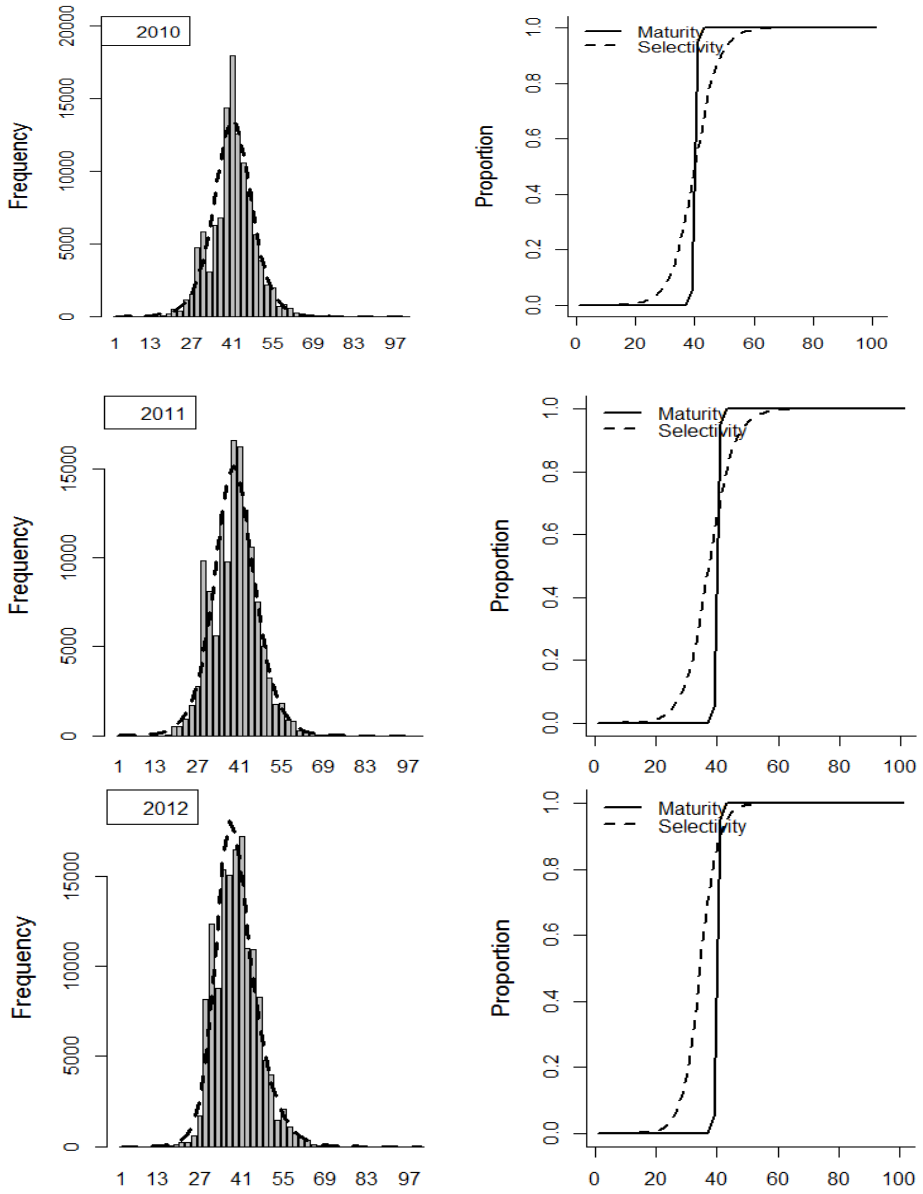
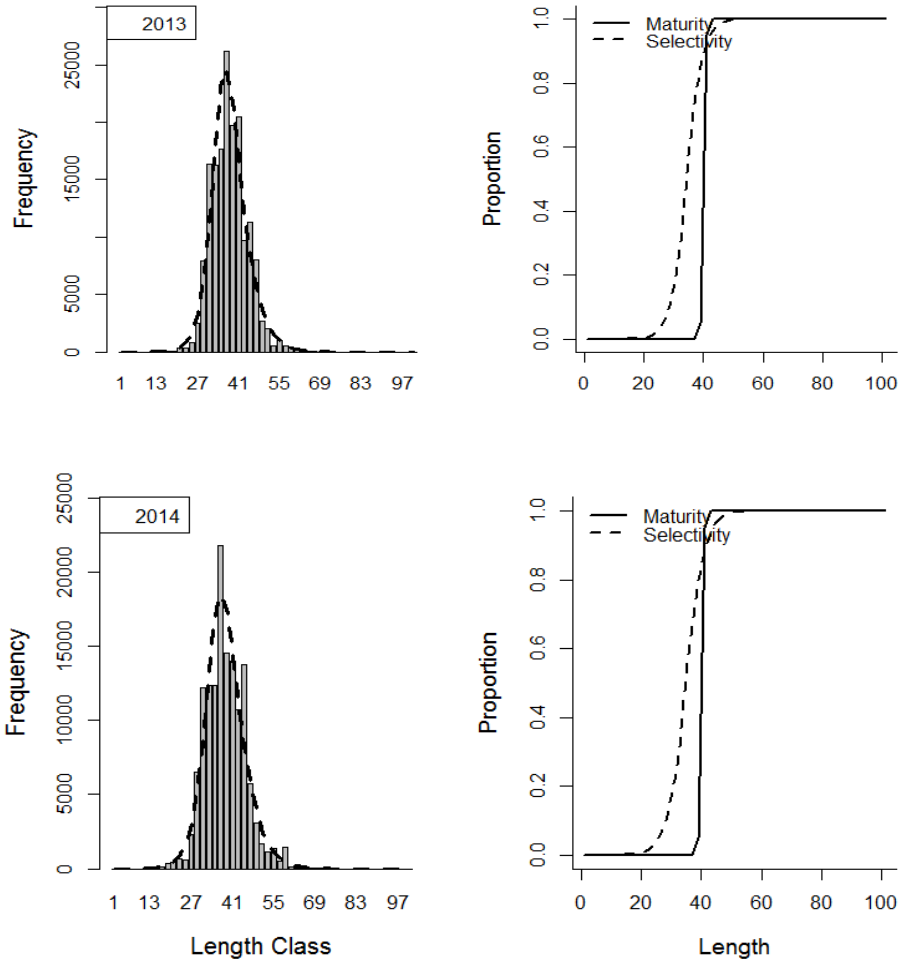




Results (cont'd)

Year	Est. SPR	Est. F/M
2010	0.04	7.28
2011	0.03	6.44
2012	0.03	5.15
2013	0.02	6.96
2014	0.02	6.20

Biological parameters	
M/k	1.4
Linf	93.6
L50	40
L95	41

Hoyle *et al.* (2011); Tanabe *et al.* (2003)

- The LB-SPR analysis assumed that large fish that are missing in the catch have all been caught.
- Within the length data used in the analysis do not cover large fish. But, based on selectivity analysis by WCPFC for SKJ revealed large size of SKJ being caught by LL in region 4.
- The low estimated SPR and high estimated F/M maybe pessimistic.

Number of fish sampled less than 40 cm (%)

	PL	PS	SHL	TLH	TR
2010	38	29	22	0	45
2011	47	44	41	96	43
2012	51	48	44	98	35
2013	59	58	70	99	59
2014	55	54	97	96	71

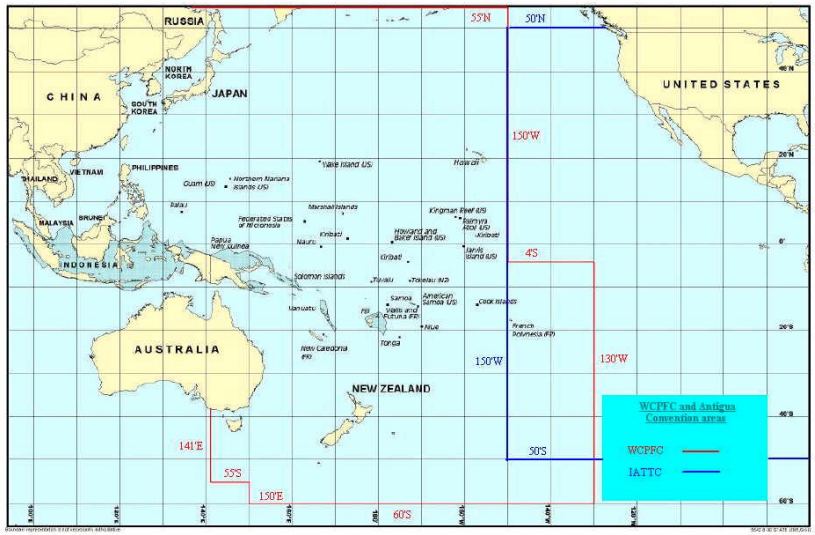
Attachment G

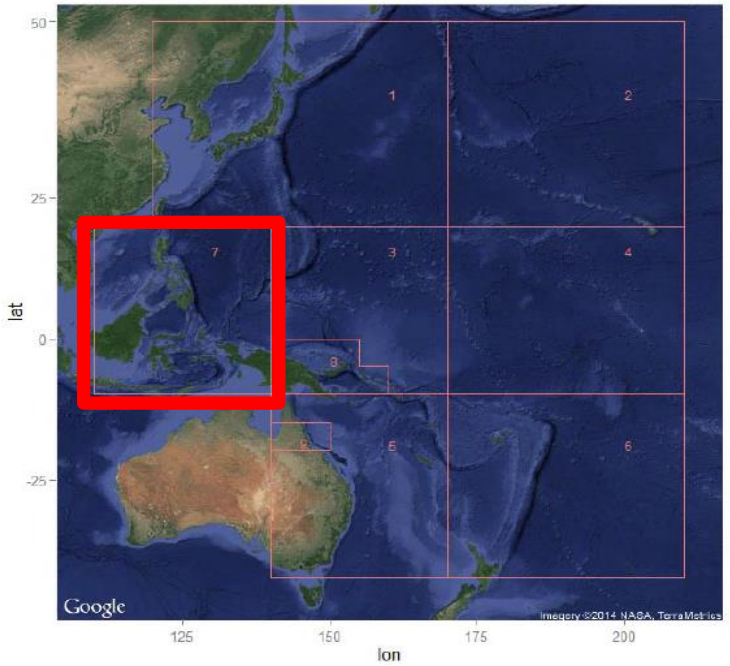
Three-Country Stock Assessment Workshop (Philippines)

Haiphong, Vietnam
3 – 6 November 2015

Outline

1. Overview: Philippine Tuna Fisheries
2. Philippine Data Collection Initiatives
3. Data for Stock Assessment and Related Studies
4. Tuna Fishery Management





Overview: Tuna Fisheries

• The tuna fisheries became the largest and most valuable fisheries in the Philippines during the mid-1970s when bamboo rafts (or payao, a fish aggregating device), were introduced.

•The country became the number one (1) producer of tuna in the Southeast Asia in the 1980s. When the catch rates of tuna in Philippine waters started declining in the late 1980s, Filipino fishing companies started to fish in international waters.

•This made the Philippines one of the distant-water fishing nations in the Pacific, in addition to US, Japan, Korea, Taiwan and China.

Overview: Tuna Fisheries

- **21 species of tuna have been recorded in the Philippine waters but only five are listed in Philippine fisheries statistics, namely:**

  -yellowfin (*Thunnus albacares*)
  - skipjack (*Katsuwonus pelamis*)
  - eastern little tuna or kawa-kawa (*Euthynnus affinis*)
  - bigeye tuna (*Thunnus obesus*)
  -frigate tuna (*Auxis thazard*)

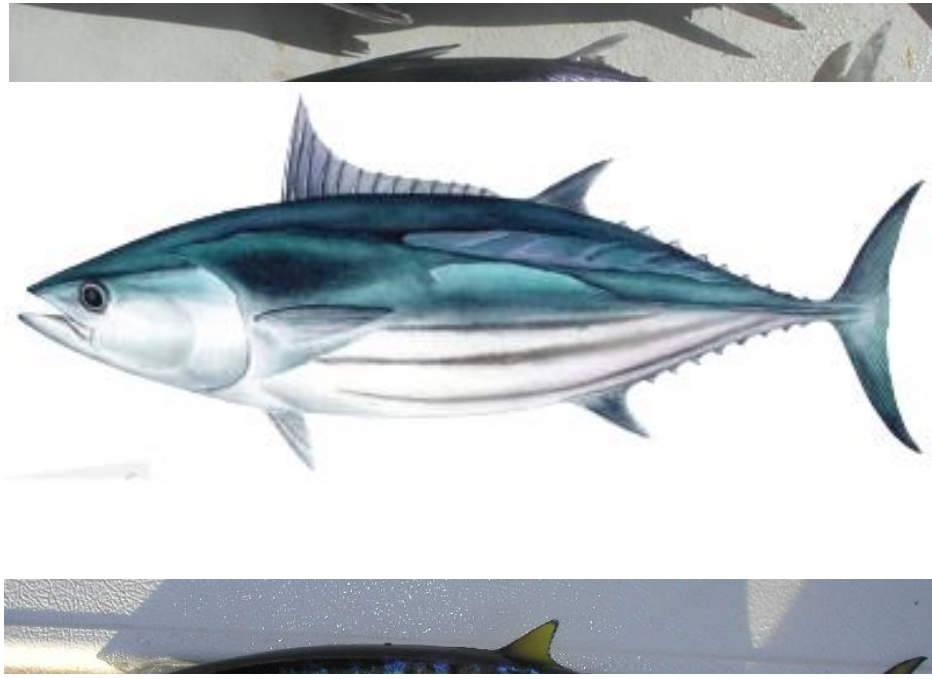
- **There is a difficulty in differentiating**

  -bigeye tuna (*Thunnus obesus*) and yellowfin tuna (*Thunnus albacares*) with a size of <60 cm
  - frigate tuna (*Auxis thazard*) and bullet tuna (*Auxis rochei*)

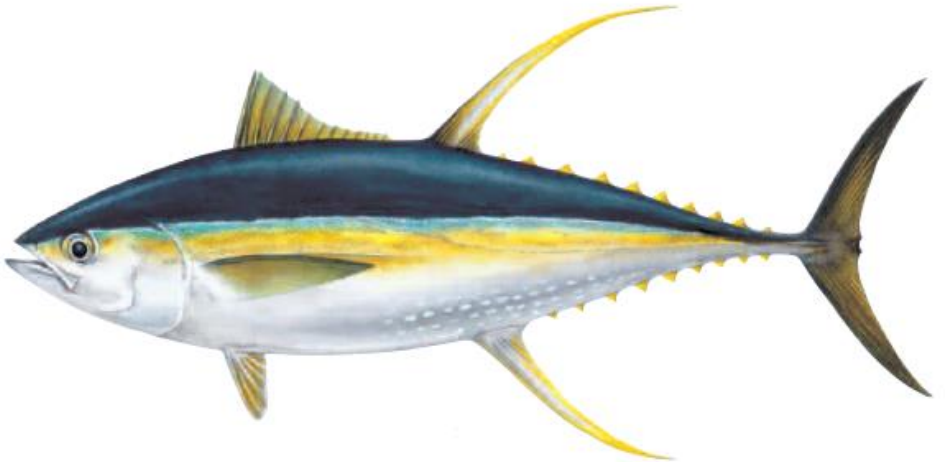
Overview: Tuna Fisheries

Major Tuna Species

- **Skipjack tuna**
  - *Katsuwonus pelamis*
  - gulyasan



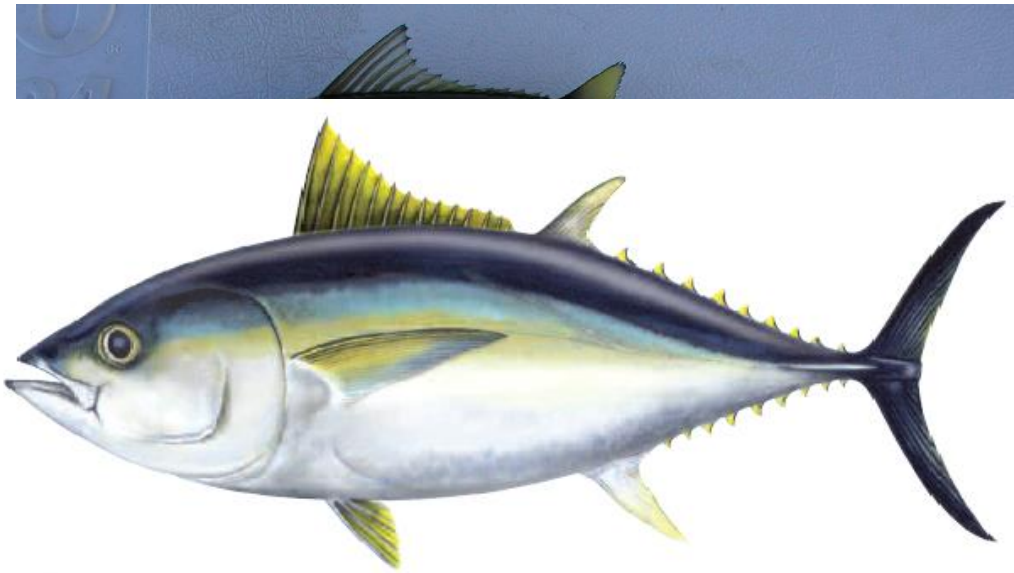
- **Yellowfin tuna**
  - *Thunnus albacares*
  - tambakol/bariles



Overview: Tuna Fisheries

Major Tuna Species

- **Bigeye tuna**
  - *Thunnus obesus*
  - tambakol/bariles



- **Eastern Little tuna**
  - *Euthynnus affinis*
  - katchorita/kawa-kawa

Overview: Tuna Fisheries

Major Tuna Species

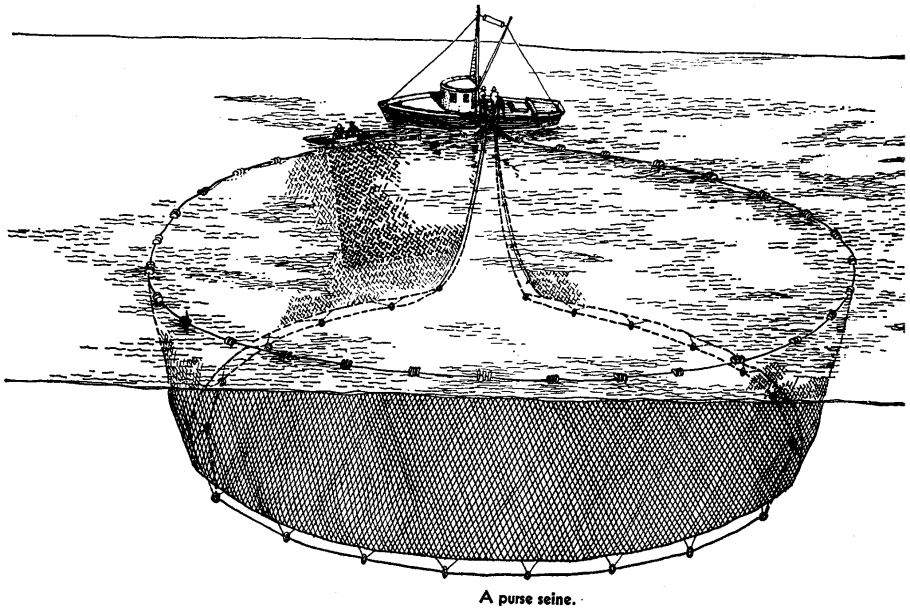
- **Frigate tuna**
  - *Auxis thazard*
  - tulingan

- **Bullet tuna**
  - *Auxis rochei*
  - tulingan

Overview: Tuna Fisheries

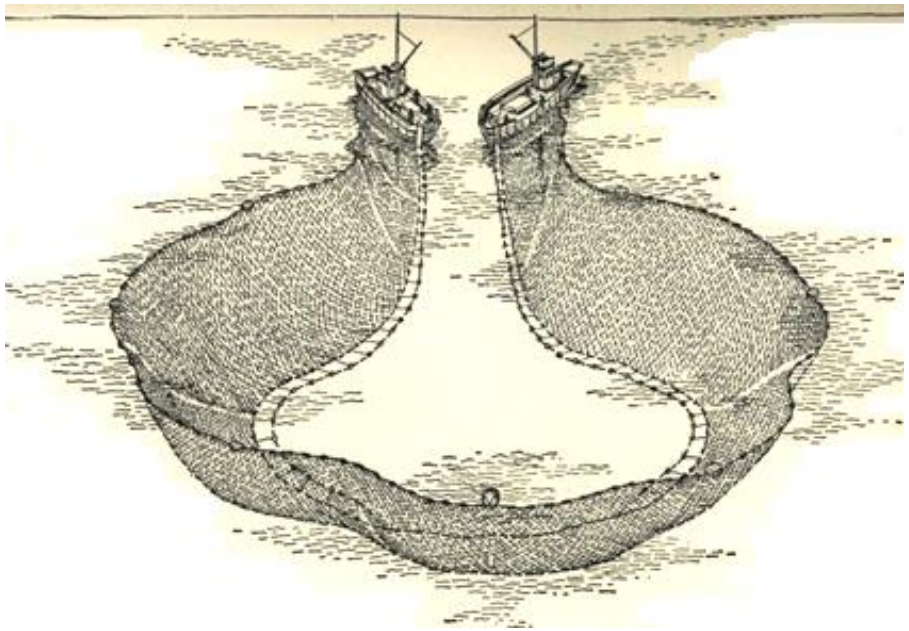
Major Tuna Fishing Gears

- **Purse Seine**



A purse seine.

- **Ringnet**



Overview: Tuna Fisheries

Major Tuna Fishing Gears

- **Hook & Line**

Overview: Tuna Fisheries

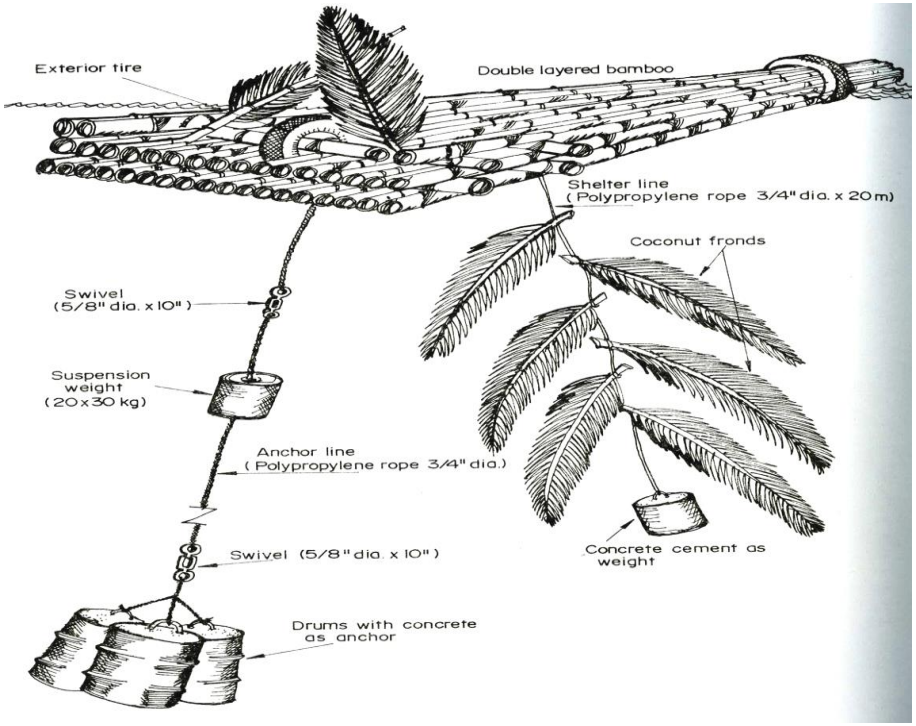
Major Tuna Fishing Gears

- **Handline**

Overview: Tuna Fisheries

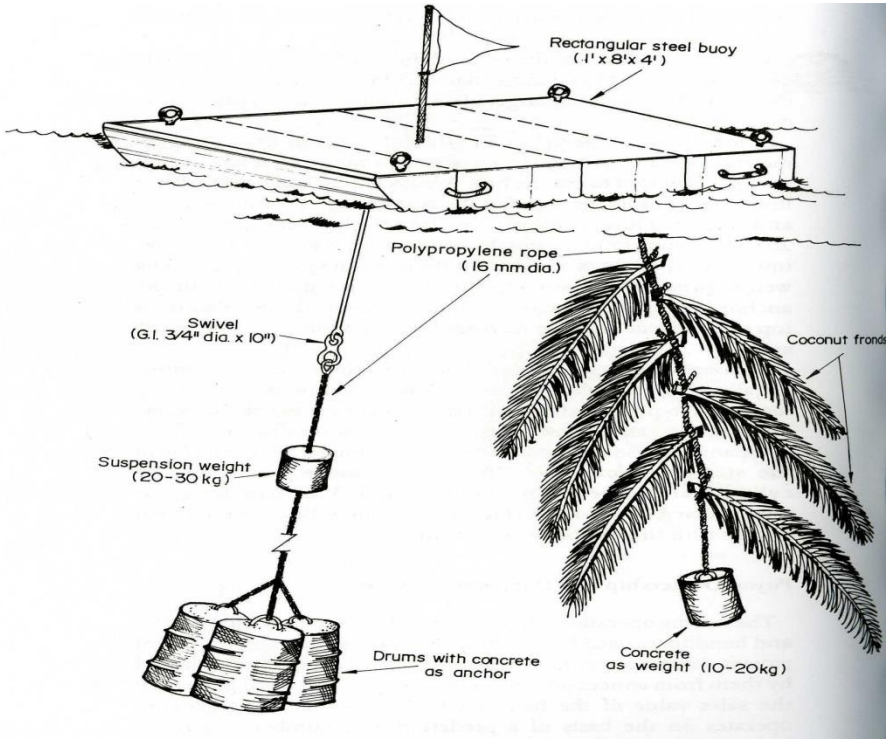
Major Tuna Fishing Gears

- FADs or *payao*



A *payao* made of bamboo

(Based on de Jesus 1982)

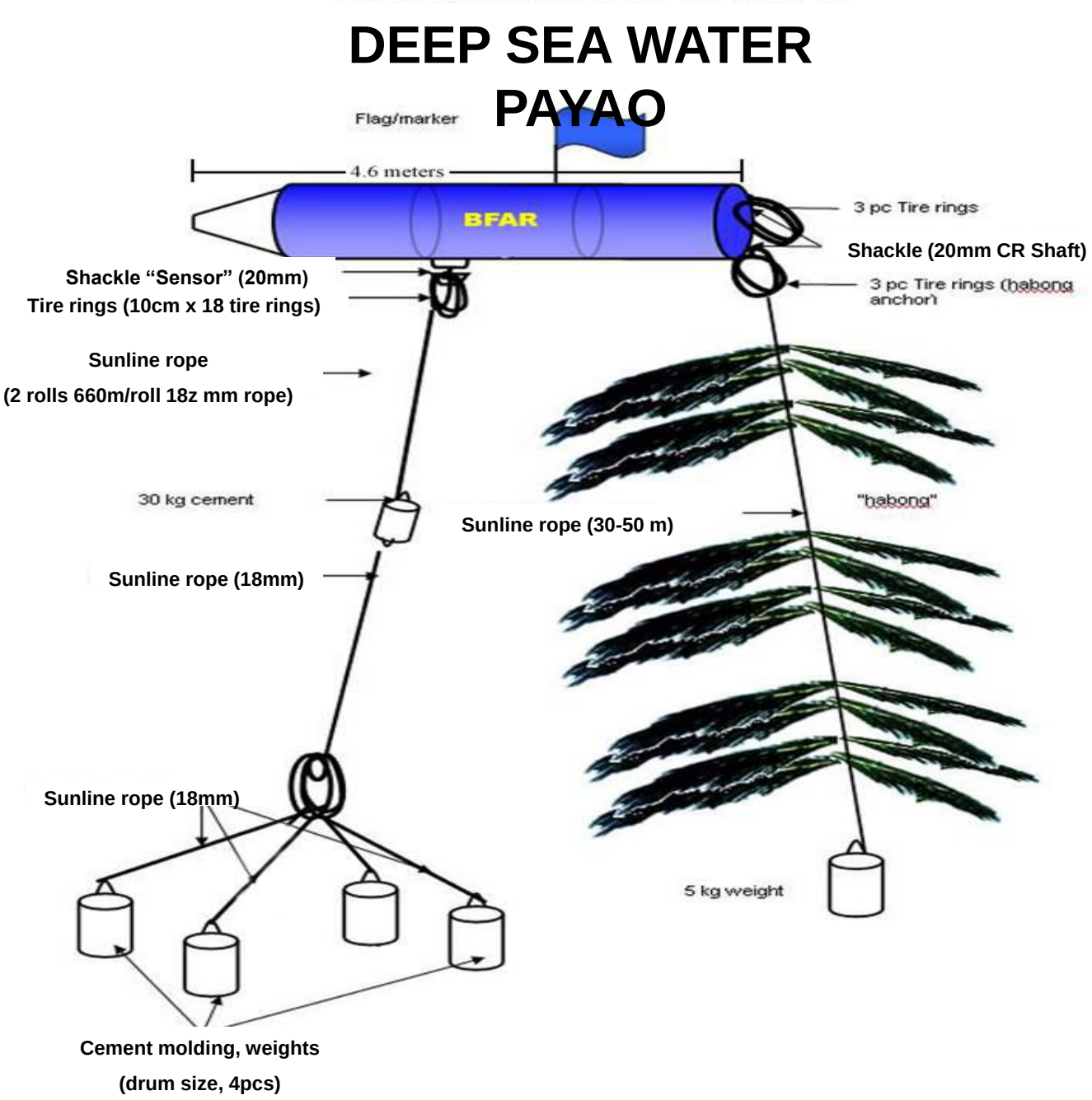


A steel ponton type of *payao*

(Based on de Jesus 1982)

Major Tuna Fishing Gears

- FADs or *payao*



Source: BFAR, NMFDC

Tuna Data Collection Initiatives

1. National Stock Assessment Program (NSAP)

- was conceptualized due to the lack of standardized and continuous information on fishery resources, e.g. fishery statistics, which is fundamental to fishery management.
- the program was introduced in 1983 and formally implemented nationwide in January 1997.
- Data collection in major and minor landing sites of the identified study areas of each of the political regions of the country is being conducted.
- Data gathered:
  - Volume of catch by gear
  - Species composition by gear
  - Fishing effort by gear
  - Length sizes by species and gear
  - Boat and gear particulars (through boat and gear inventory)

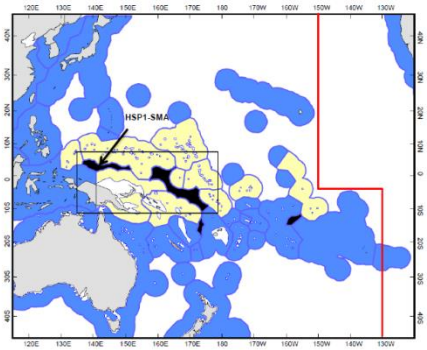
Tuna Data Collection Initiatives

2. Philippine Fisheries Observer Program (PFOP)

- was established in 2008 to comply with WCPFC CMM 2007 - 01

-Data collected:

- catch (e.g. volume, species, size)
- gear attributes
- other scientific information
- monitor implementation of WCPFC Conservation and Management Measures



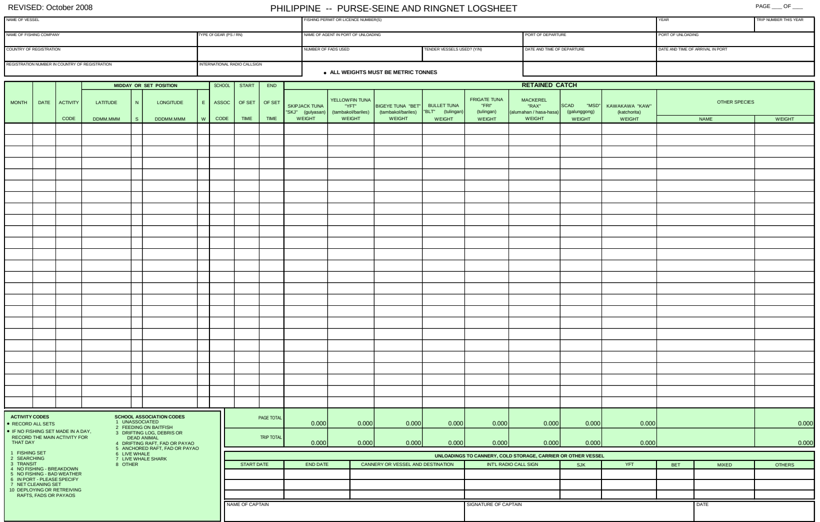
Tuna Data Collection Initiatives

3. Logsheets Data

- In 2008, the Bureau of Fisheries and Aquatic Resources (BFAR) launched the catch documentation scheme which includes the gathering of operational logsheet data for purse seine and ringnet catcher vessels.

- Data gathered from logsheets includes

  - ✓ vessel name and company name of the catcher vessel
  - ✓ the volume of catch by species
  - ✓ type of gear (PS/RN)
  - ✓ type of fishing activity
  - ✓ type of fishing set
  - ✓ position (latitude and longitude)
  - ✓ country of registration
  - ✓ registration number
  - ✓ fishing permit or license number
  - ✓ time of set (start and end)



REVISED: October 2008

PHILIPPINE -- PURSE-SEINE AND RINGNET LOGSHEET

PAGE ___ OF ___

NAME OF VESSEL | FISHING PERMIT OR LICENCE NUMBER(S) | YEAR | TRIP NUMBER THIS YEAR

NAME OF FISHING COMPANY | TYPE OF GEAR (PS / RN) | NAME OF AGENT IN PORT OF UNLOADING | PORT OF DEPARTURE | PORT OF UNLOADING

COUNTRY OF REGISTRATION | NUMBER OF FADS USED | TENDER VESSELS USED? (Y/N) | DATE AND TIME OF DEPARTURE | DATE AND TIME OF ARRIVAL IN PORT

REGISTRATION NUMBER IN COUNTRY OF REGISTRATION | INTERNATIONAL RADIO CALLSIGN

• ALL WEIGHTS MUST BE METRIC TONNES

MONTH	DATE	ACTIVITY CODE	MIDDAY OR SET POSITION LATITUDE DDMM.MMM	N S	LONGITUDE DDDMM.MMM	E W	SCHOOL ASSOC CODE	START OF SET TIME	END OF SET TIME	RETAINED CATCH: SKIPJACK TUNA "SKJ" (gulyasan) WEIGHT	YELLOWFIN TUNA "YFT" (tambakol/bariles) WEIGHT	BIGEYE TUNA "BET" (tambakol/bariles) WEIGHT	BULLET TUNA "BLT" (tulingan) WEIGHT	FRIGATE TUNA "FRI" (tulingan) WEIGHT	MACKEREL "RAX" (alumahan / hasa-hasa) WEIGHT	SCAD "MSD" (galunggong) WEIGHT	KAWAKAWA "KAW" (katchorita) WEIGHT	OTHER SPECIES NAME	OTHER SPECIES WEIGHT
									PAGE TOTAL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
									TRIP TOTAL	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000

ACTIVITY CODES
- RECORD ALL SETS
- IF NO FISHING SET MADE IN A DAY, RECORD THE MAIN ACTIVITY FOR THAT DAY

1 FISHING SET
2 SEARCHING
3 TRANSIT
4 NO FISHING - BREAKDOWN
5 NO FISHING - BAD WEATHER
6 IN PORT - PLEASE SPECIFY
7 NET CLEANING SET
10 DEPLOYING OR RETREIVING RAFTS, FADS OR PAYAOS

SCHOOL ASSOCIATION CODES
1 UNASSOCIATED
2 FEEDING ON BAITFISH
3 DRIFTING LOG, DEBRIS OR DEAD ANIMAL
4 DRIFTING RAFT, FAD OR PAYAO
5 ANCHORED RAFT, FAD OR PAYAO
6 LIVE WHALE
7 LIVE WHALE SHARK
8 OTHER

UNLOADINGS TO CANNERY, COLD STORAGE, CARRIER OR OTHER VESSEL

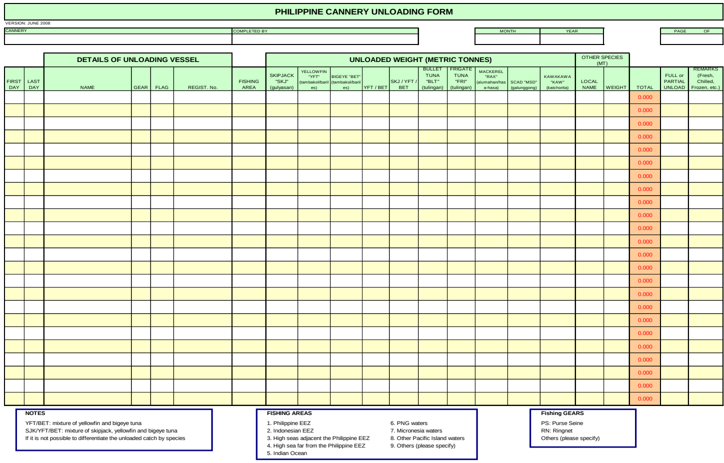
START DATE	END DATE	CANNERY OR VESSEL AND DESTINATION	INT'L RADIO CALL SIGN	SJK	YFT	BET	MIXED	OTHERS

NAME OF CAPTAIN | SIGNATURE OF CAPTAIN | DATE

4. Cannery Unloadings Data

- In 2008, BFAR also introduced the gathering of monthly cannery unloading data

- Data gathered from canneries includes
  - ✓Vessel name
  - ✓Gear
  - ✓Flag
  - ✓Registration number
  - ✓Fishing area
  - ✓Unloaded weight by species
  - ✓State of unloaded catch (fresh, chilled or frozen)



PHILIPPINE CANNERY UNLOADING FORM

VERSION: JUNE 2008

CANNERY	COMPLETED BY	MONTH	YEAR	PAGE OF

		DETAILS OF UNLOADING VESSEL					UNLOADED WEIGHT (METRIC TONNES)										OTHER SPECIES (MT)				
FIRST DAY	LAST DAY	NAME	GEAR	FLAG	REGIST. No.	FISHING AREA	SKIPJACK "SKJ" (gulyasan)	YELLOWFIN "YFT" (tambakol/bariles)	BIGEYE "BET" (tambakol/bariles)	YFT / BET	SKJ / YFT / BET	BULLET TUNA "BLT" (tulingan)	FRIGATE TUNA "FRI" (tulingan)	MACKEREL "RAX" (alumahan/hasa-hasa)	SCAD "MSD" (galunggong)	KAWAKAWA "KAW" (katchorita)	LOCAL NAME	WEIGHT	TOTAL	FULL or PARTIAL UNLOAD	REMARKS (Fresh, Chilled, Frozen, etc.)
																			0.000		
																			0.000		
																			0.000		
																			0.000		
																			0.000		
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NOTES
YFT/BET: mixture of yellowfin and bigeye tuna
SJK/YFT/BET: mixture of skipjack, yellowfin and bigeye tuna
If it is not possible to differentiate the unloaded catch by species

FISHING AREAS
1. Philippine EEZ
2. Indonesian EEZ
3. High seas adjacent the Philippine EEZ
4. High sea far from the Philippine EEZ
5. Indian Ocean
6. PNG waters
7. Micronesia waters
8. Other Pacific Island waters
9. Others (please specify)

Fishing GEARS
PS: Purse Seine
RN: Ringnet
Others (please specify)

Tuna Data Collection Initiatives

5. Philippine Statistics Authority *(PSA formerly BAS)*

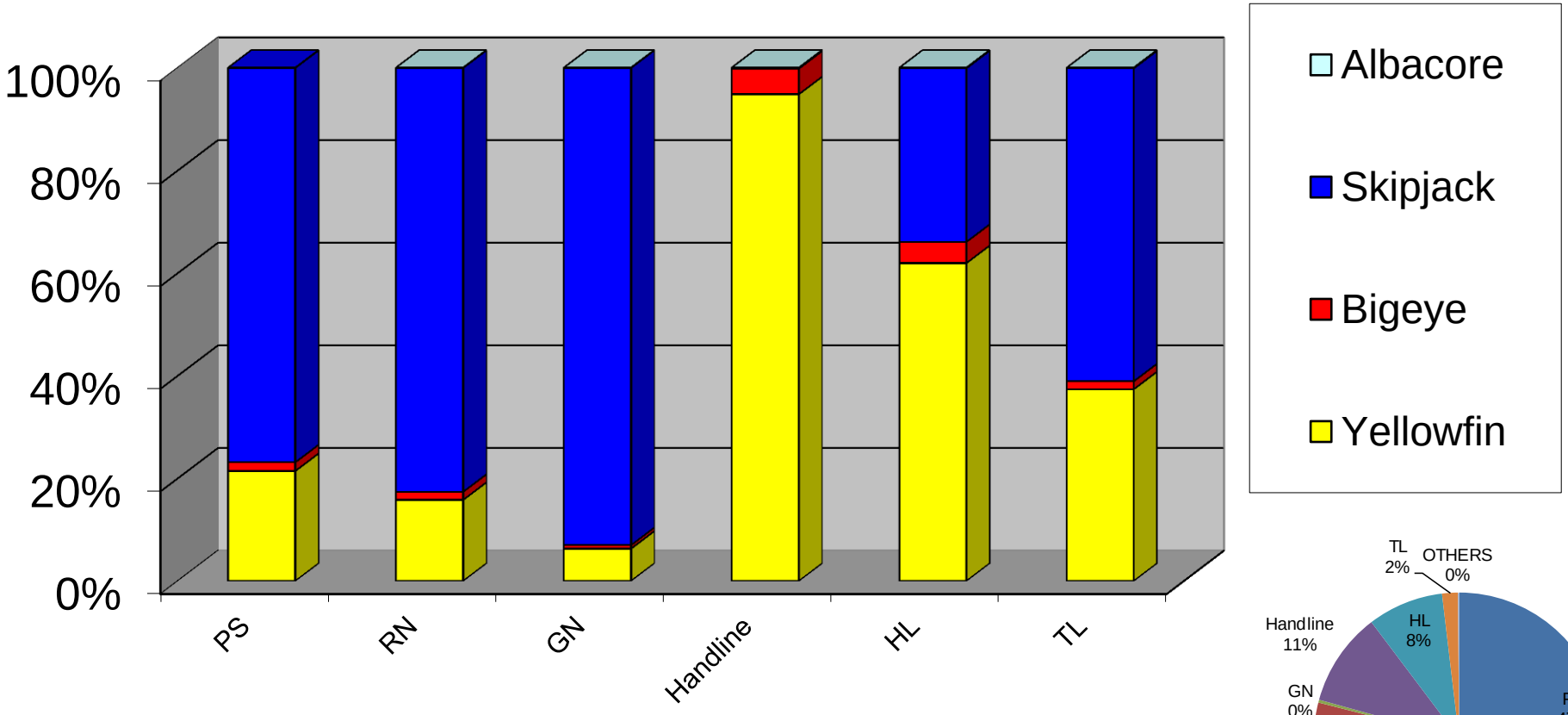
- generate estimates of the volume by species and value of production from the diverse and complex fisheries sector

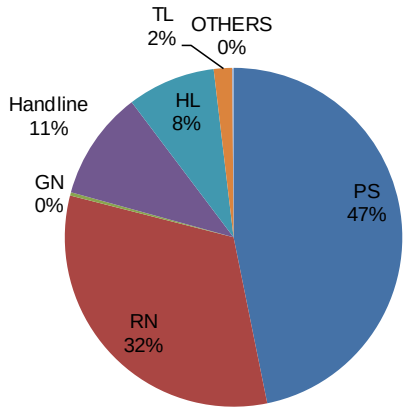
- carries out probability (stratified random sampling by data collectors) and non-probability (interviews by BAS staff) surveys.

- supplemented by secondary data from administrative sources like PFDA landings.

Data for Stock Assessment

Percentage Catch Contribution by Gear by Species for 2014

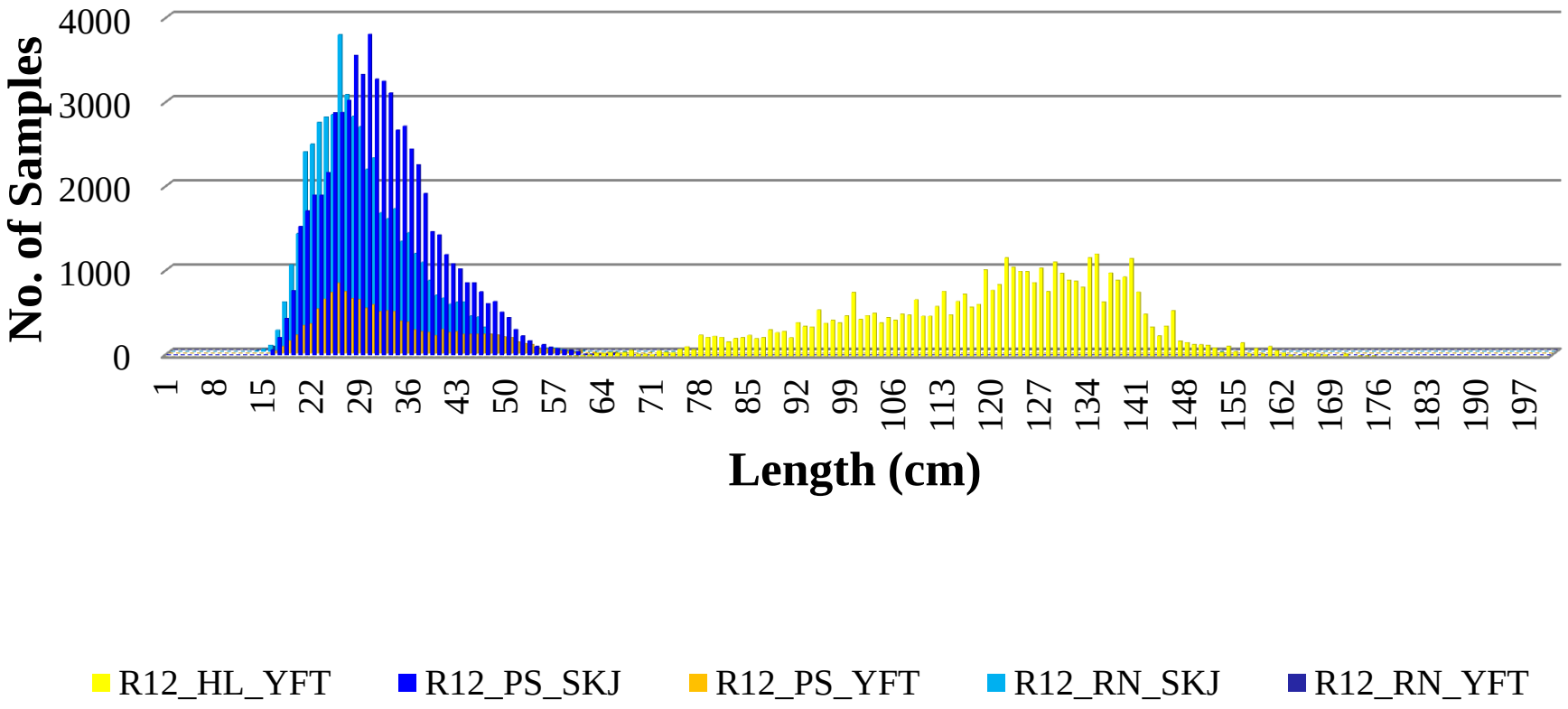




Source: 6th WPEA-NSAP, May 2015

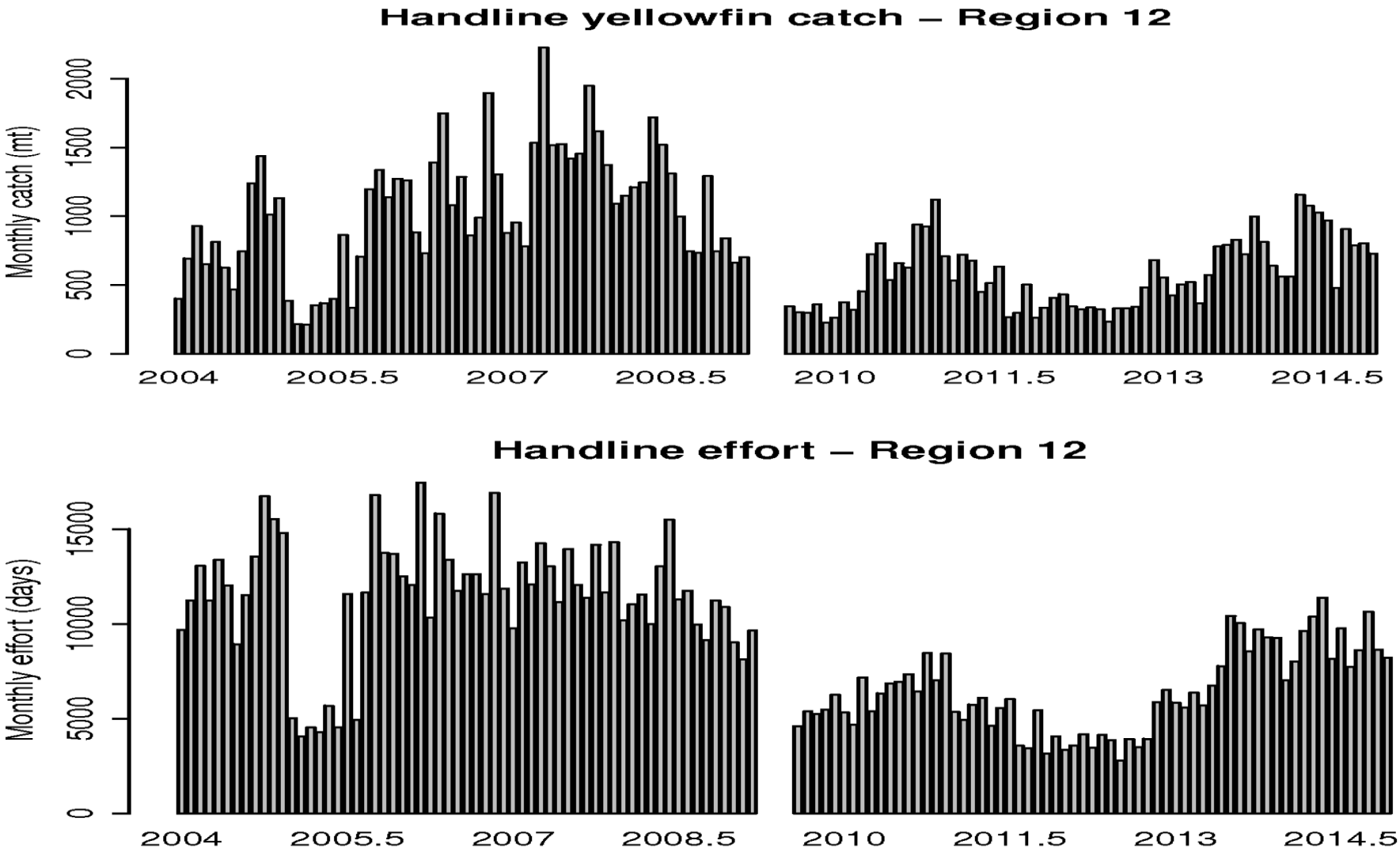
Data for Stock Assessment

Observed Length Sizes of Yellowfin & Skipjack Tunas Caught by Different Gears for 2014



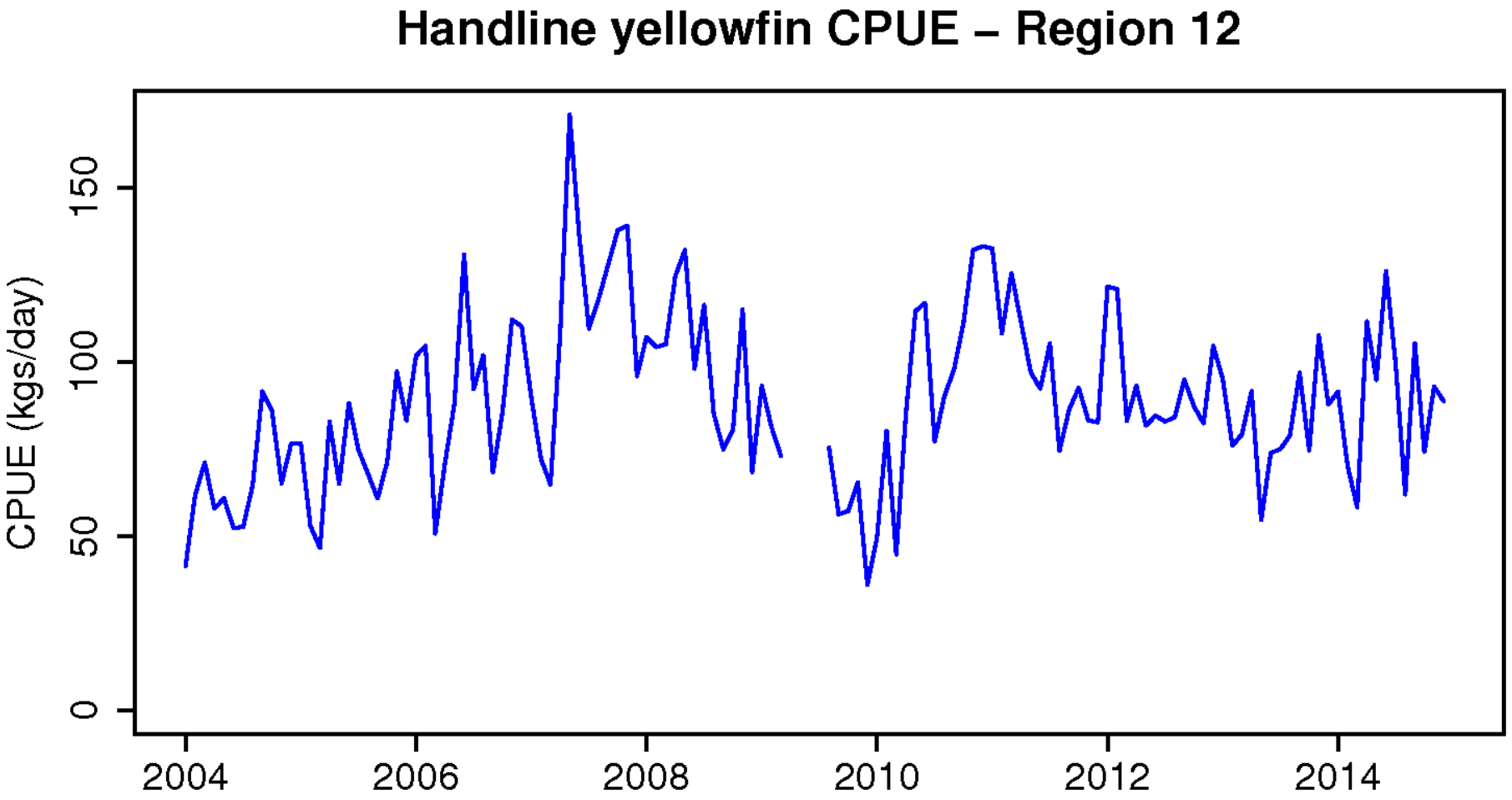
Source: 6th WPEA-NSAP, May 2015

Recent Studies on Tuna Stocks



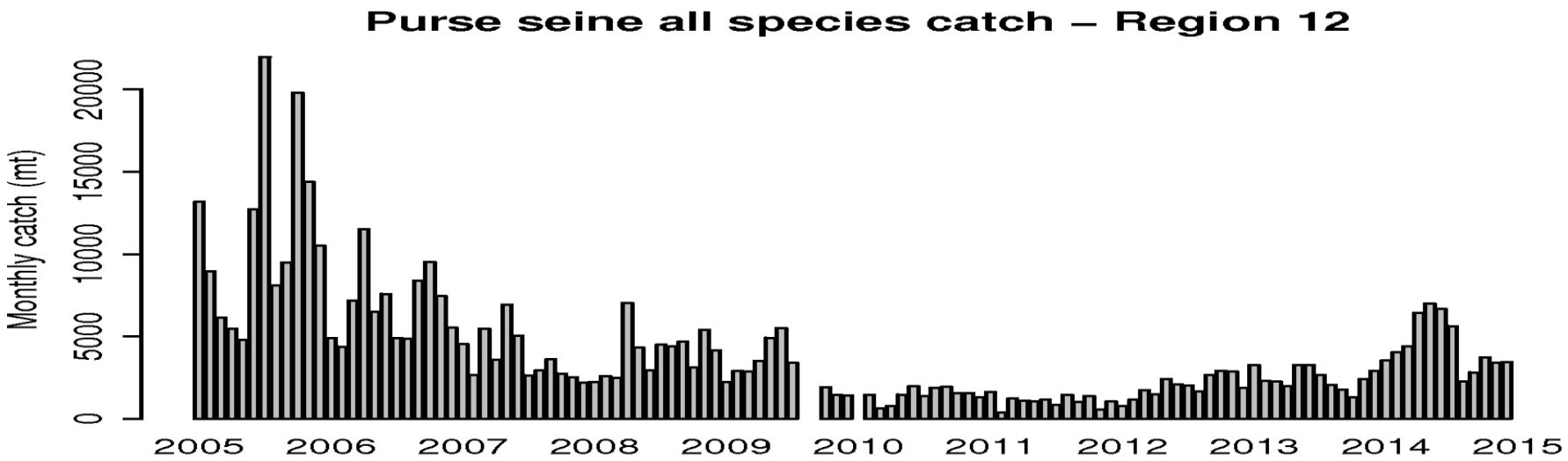
Source: Bigelow, K. et.al. Fishery trends and abundance of tuna stocks in the Moro Gulf (Philippine Region 12), estimates of depletion due to fishing and Maximum Sustainable Yield

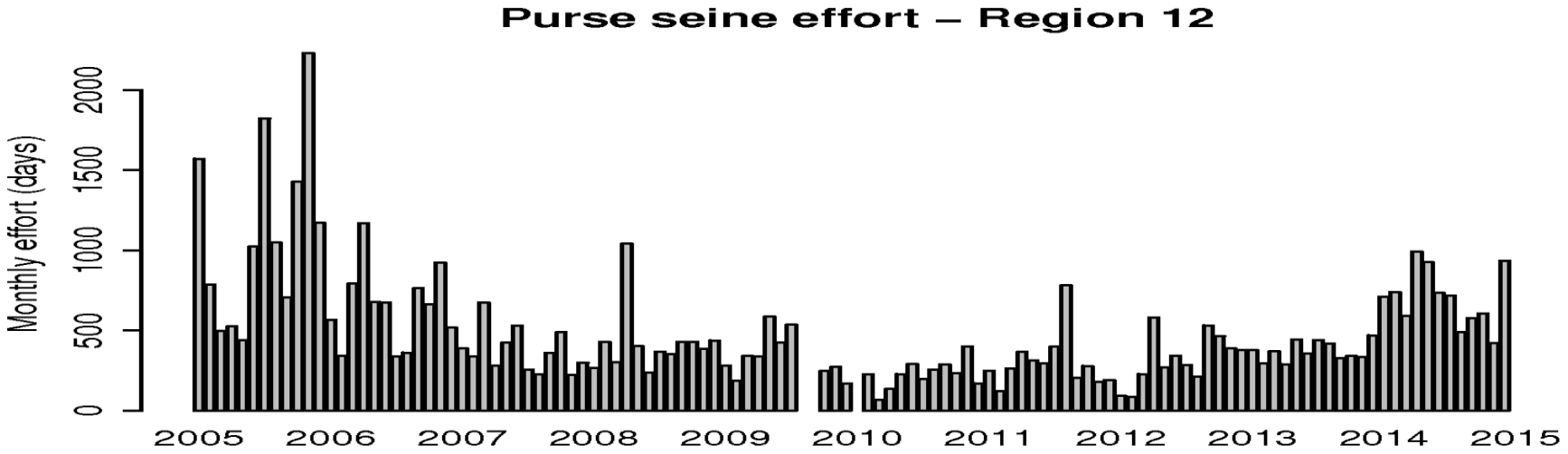
Recent Studies on Tuna Stocks



Source: Bigelow, K. et.al. Fishery trends and abundance of tuna stocks in the Moro Gulf (Philippine Region 12), estimates of depletion due to fishing and Maximum Sustainable Yield

Recent Studies on Tuna Stocks





Source: Bigelow, K. et.al. Fishery trends and abundance of tuna stocks in the Moro Gulf (Philippine Region 12), estimates of depletion due to fishing and Maximum Sustainable Yield

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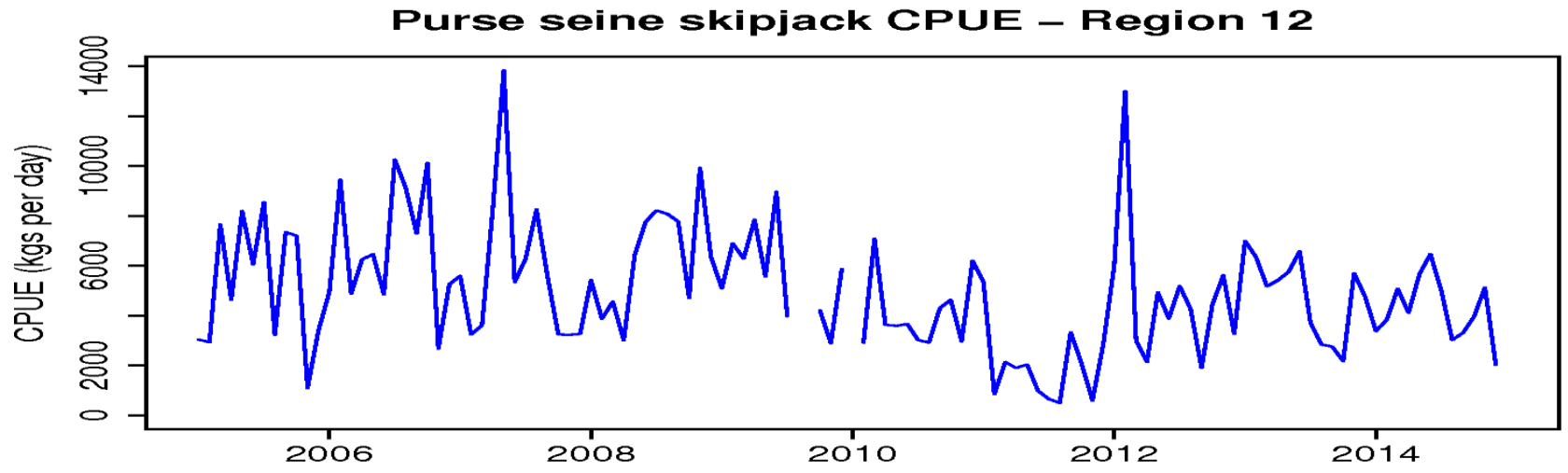

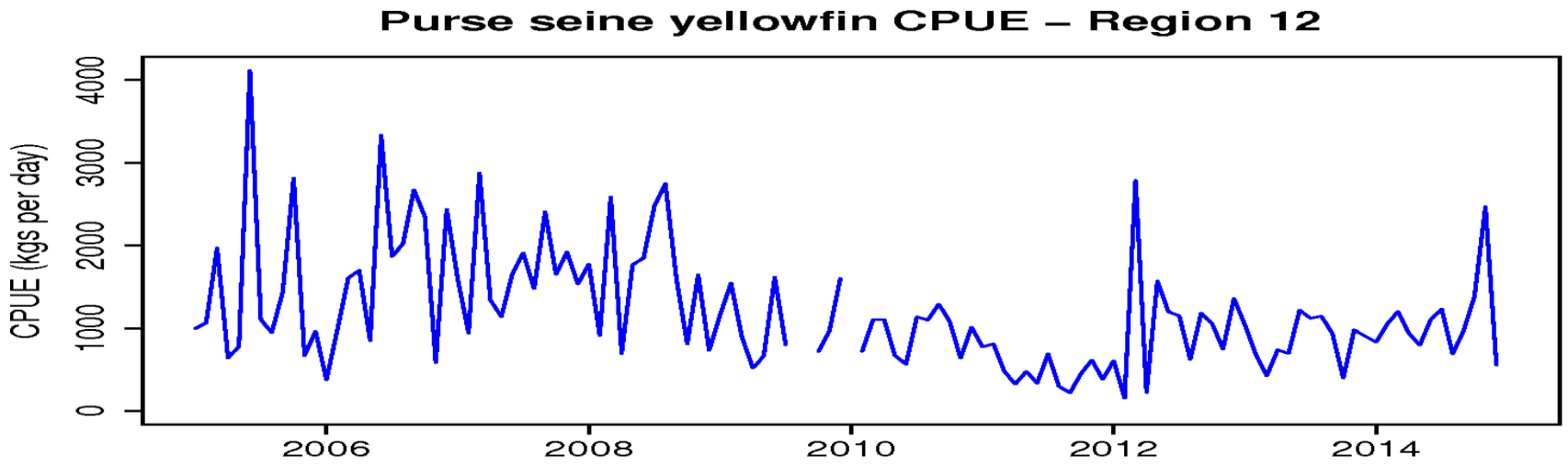

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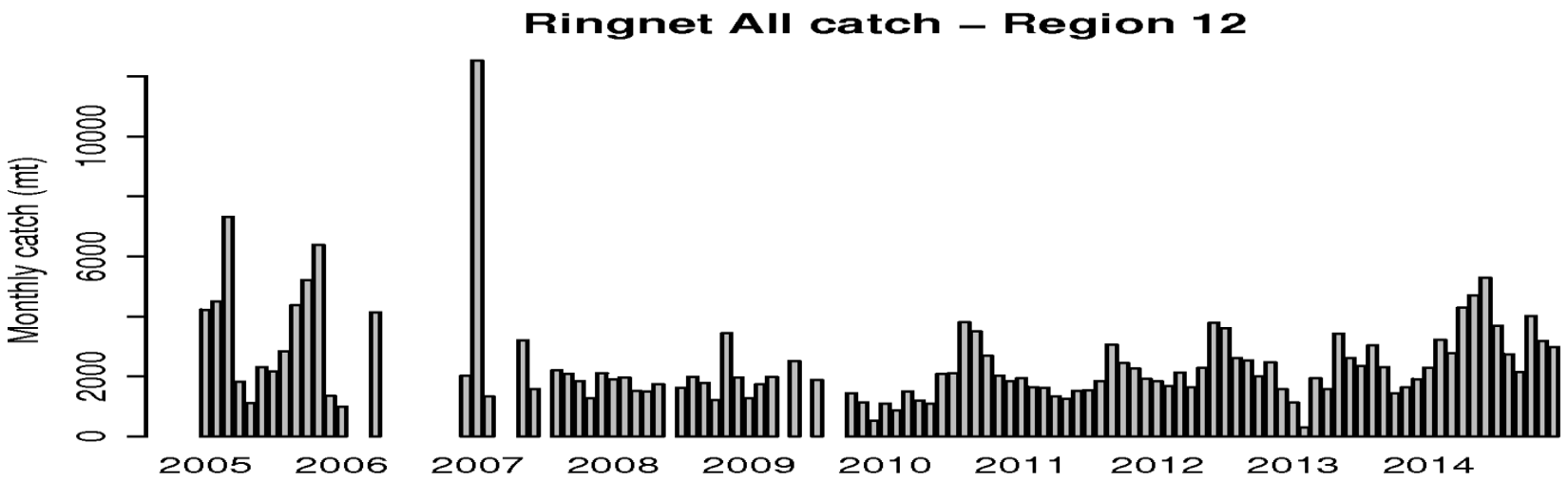

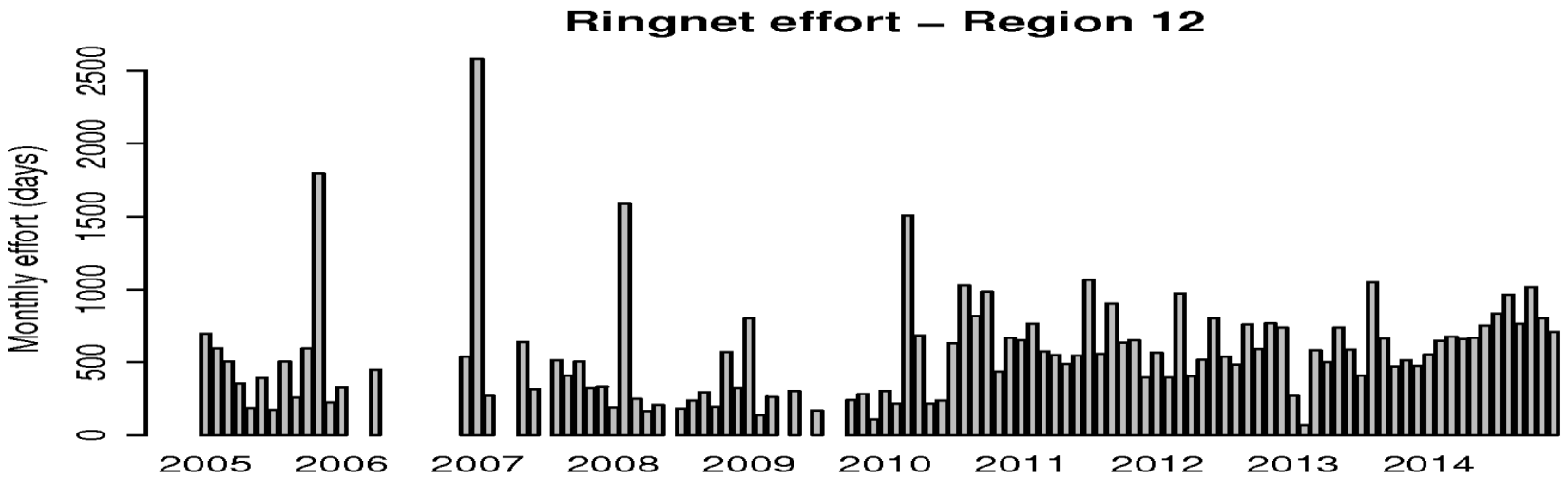

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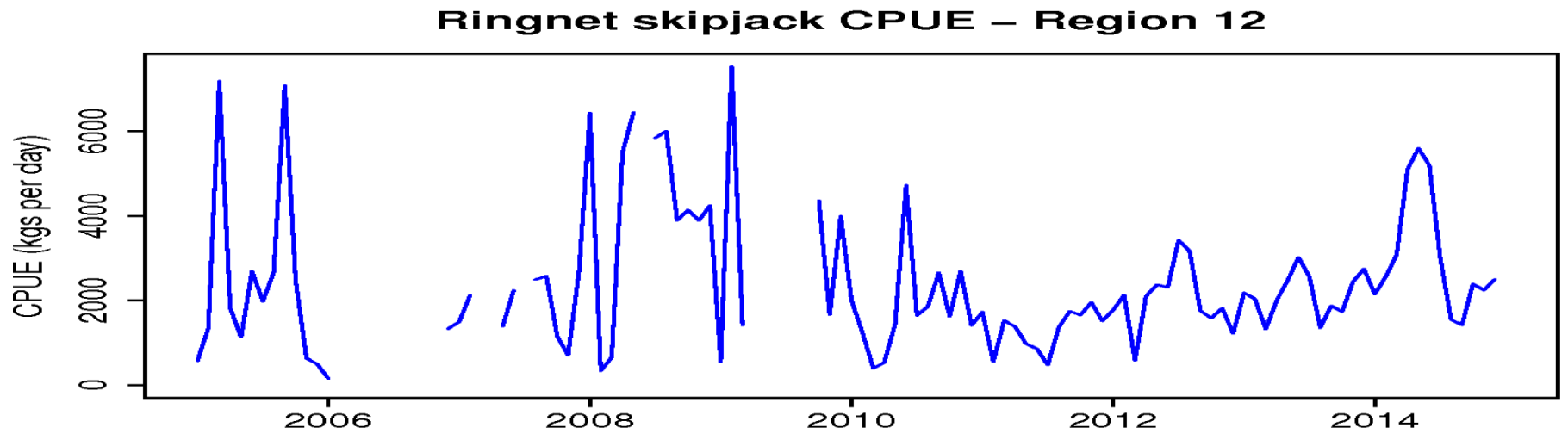
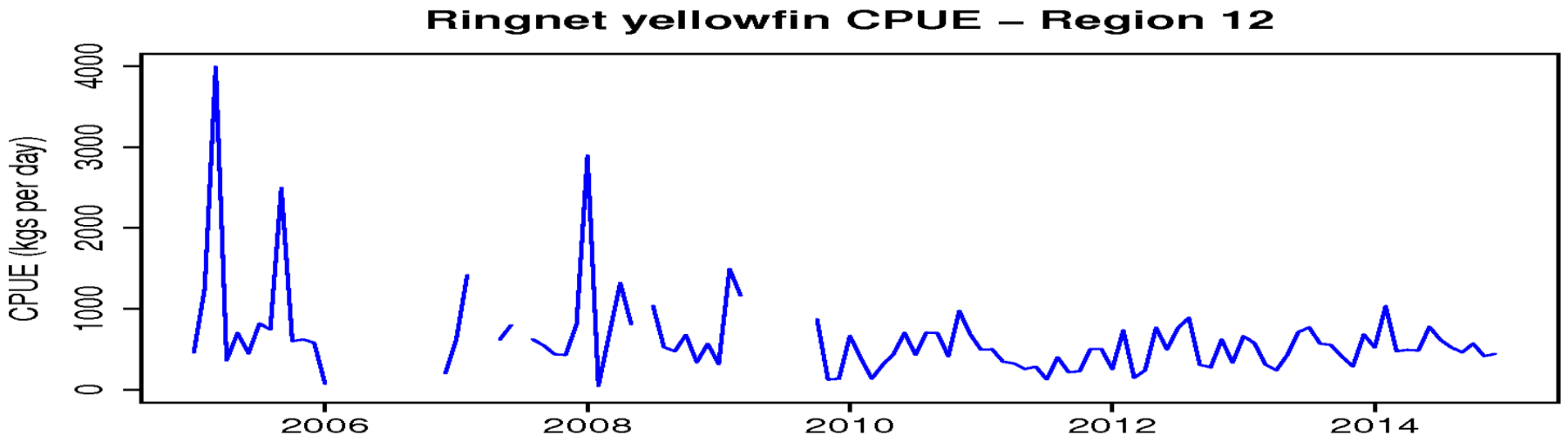




Source: Bigelow, K. et.al. Fishery trends and abundance of tuna stocks in the Moro Gulf (Philippine Region 12), estimates of depletion due to fishing and Maximum Sustainable Yield

Tuna Fishery Management

❖ Philippines has recently passed **Republic Act 10654 (RA 10654)** "An act to prevent, deter and eliminate illegal, unreported and unregulated fishing, amending Republic Act 8550, otherwise known as " The Philippine Fisheries Code of 1998", and for other purpose.

Fisheries Administrative Orders:

❖**FAO No. 240**: Rules and Regulations in the Implementation of Fisheries Observer Program in the High Seas

- *100% observer coverage for Philippine fishing operation in HSP1*

❖ **FAO No. 241**: Regulations and Implementation of the Vessel Monitoring System in the High Seas

❖**FAO 245-3**: Regulation and Implementing Guidelines on Group Tuna Purse Seine Operations in High Seas Pocket Number 1 as a Special Management Area

❖ **FAO 236-4**: Extension of FAO 236 series of 2010 or the Rules and Regulations on the Operations of Purse Seine and Ring Net Vessels Using Fish Aggregating Devices (FADs) locally known as *Payaos* during the FAD Closure Period, and other FAOs

☺ THANK YOU☺

Attachment H

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA SM Project)

THREE-COUNTRY STOCK ASSESSMENT Workshop

Haiphong, Viet Nam
3-6 November 2015

ANNUAL REPORT TO THE COMMISSION

Prepared by CCMs and CNMs

PART 1: INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

PART 2: MANAGEMENT AND COMPLIANCE

SCIENTIFIC COMMITTEE
(August each year)

TECHNICAL AND COMPLIANCE COMMITTEE
(Sept./Oct. each year)

PART 1: INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

To be prepared and submitted **one month** prior to the Scientific Committee meeting

Due for submission to WCPFC before 9th July 2011

SCIENTIFIC COMMITTEE

(August each year)

TUNA FISHERIES DATA COLLECTION

UNLOADING DATA

PORT SAMPLING DATA

LOGSHEET DATA

OBSERVER DATA

Tuna Fishery Data Collection

Landing sites to be covered:

- Binh Dinh: 9 sites (all in Tam Quan) and 01 site in Quy Nhon
- Phu Yen: 2 sites for LL and 01 for PS&GL
- Khanh Hoa: 1 sites for all LL, GN&PS
- Add more in 6 provenes:

Human resources:

- DECAFIREP: 4 staffs (01 Director, 01 Coordinator, 01 data encoder and 01 accountant)
- Binh Dinh: 04 enumerators, 1 supervisor, and six volunteers for logsheet delivery and recovery
- Phu Yen: 04 enumerators, 01 supervisor and 3 volunteers
- Khanh Hoa: 04 enumerators, 01 supervisor and two volunteers

Number of samples

Province	Gear	Unload-ing	Port sam-pling	Unloading samples	Log-book
Khanh Hoa	Purse seine	137	33	57	128
	Long-line/Handline	1,845	360	1,430	1,135
	Other gears	1,603	312	1,317	137
Phu Yen	Purse seine	73	33	73	
	Long-line/Handline	719	152	377	
	Other gears	55	23	55	
Binh Dinh	Purse seine	1,817	230	1,161	844
	Long-line/Handline	3,557	243	1,547	1,620
	Other gears	71		58	
Total		**9,877**	**1,386**	**6,075**	**3,864**

Scientific issues: Annual report – Part 1

SCIENTIFIC COMMITTEE
ELEVENTH REGULAR SESSION

Pohnpei, Federated States of Micronesia
5-13 August 2015

ANNUAL REPORT TO THE COMMISSION
PART 1: INFORMATION ON FISHERIES, RESEARCH, AND STATISTICS

WCPFC-SC11-AR/CNM-36

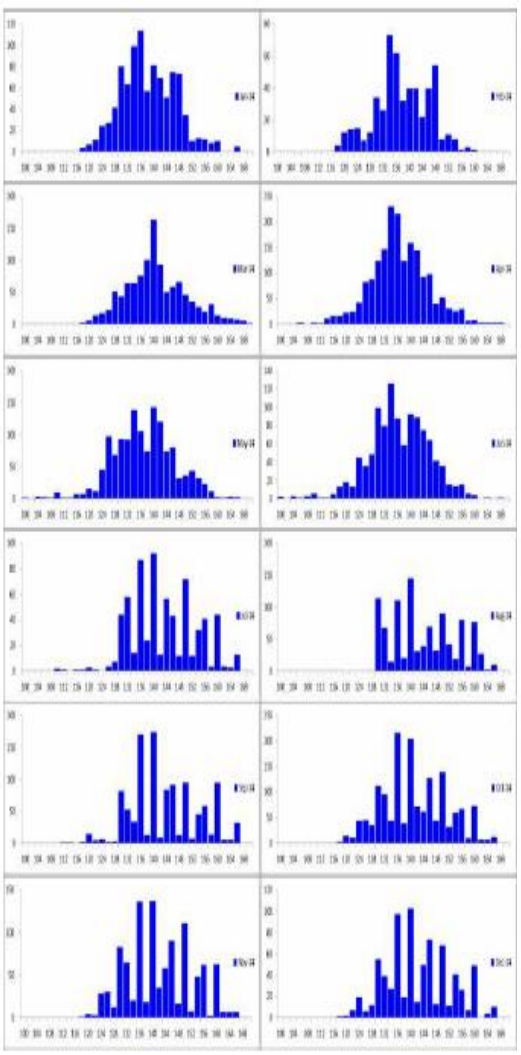
Number of tuna vessel by gear and capacity in 2014

GEAR	TUNA LONGLINE/HANDLINE				
Size class (HP)	YEAR				
	2010	2011	2012	2013	2014
50 - 89	280	161	122	7	5
90 - 149	99	97	513	144	0
150 - 249	382	326	738	384	165
250 - 399	209	227	251	663	600
> 400	7	54	54	536	667
Unclassified	-	-	-	-	170
Total	**977**	**714**	**1,678**	**1,734**	**1,607**
GEAR	**GILLNET**				
Size class (HP)	YEAR				
	2010	**2011**	**2012**	**2013**	**2014**
50 - 89	709	627	605	212	133
90 - 149	245	261	200	307	60
150 - 249	160	184	174	175	86
250 - 399	222	216	204	132	199
> 400	33	24	21	72	261
Unclassified	-	-	-	-	240
Total	**1369**	**1,312**	**1,204**	**898**	**979**
GEAR	**MARKERAL PURSE SEINE (DAILY PURSE SEINE)**				
Size class (HP)	YEAR				
	2010	**2011**	**2012**	**2013**	**2014**
50 - 89	139	134	136	131	78
90 - 149	115	184	194	118	68
150 - 249	117	44	56	114	109
250 - 399	131	233	206	242	356
> 400	5	20	0	409	726
Unclassified	-	-	-	-	244
Total	**507**	**595**	**592**	**1,014**	**1,581**

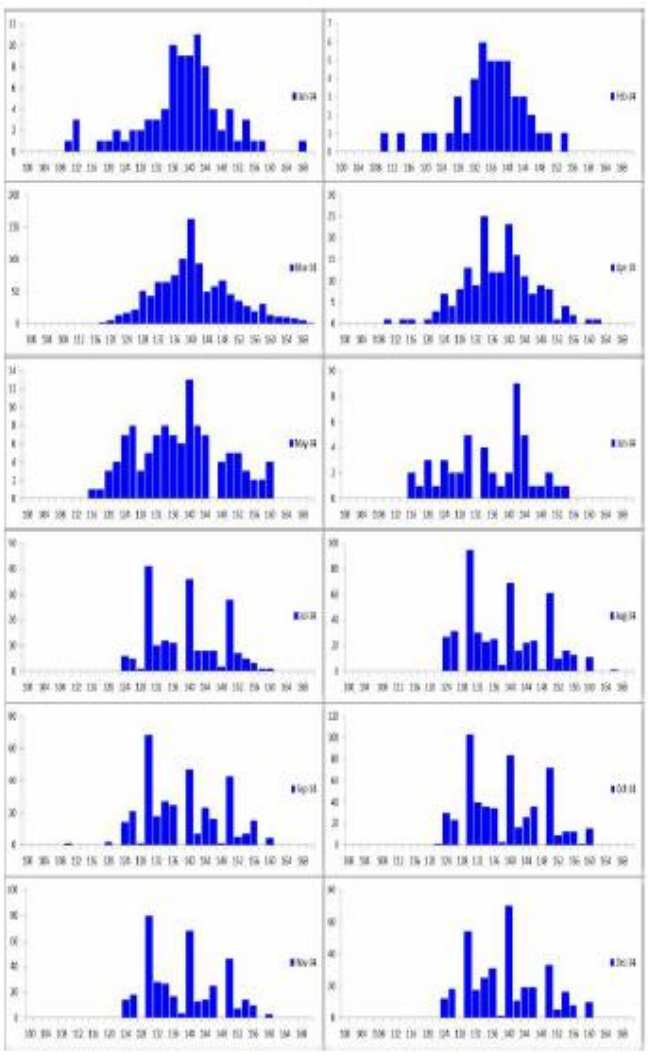
Catch by gear and species in 2014

Gear type	BET	YFT	SKJ	Total
Gillnet	641	173	32.789	33.603
Purse seine	1.572	4.229	27.485	33.286
Longline/Handline	2.350	11.603	-	13.952
Total	**4.563**	**16.004**	**60.274**	**80.841**

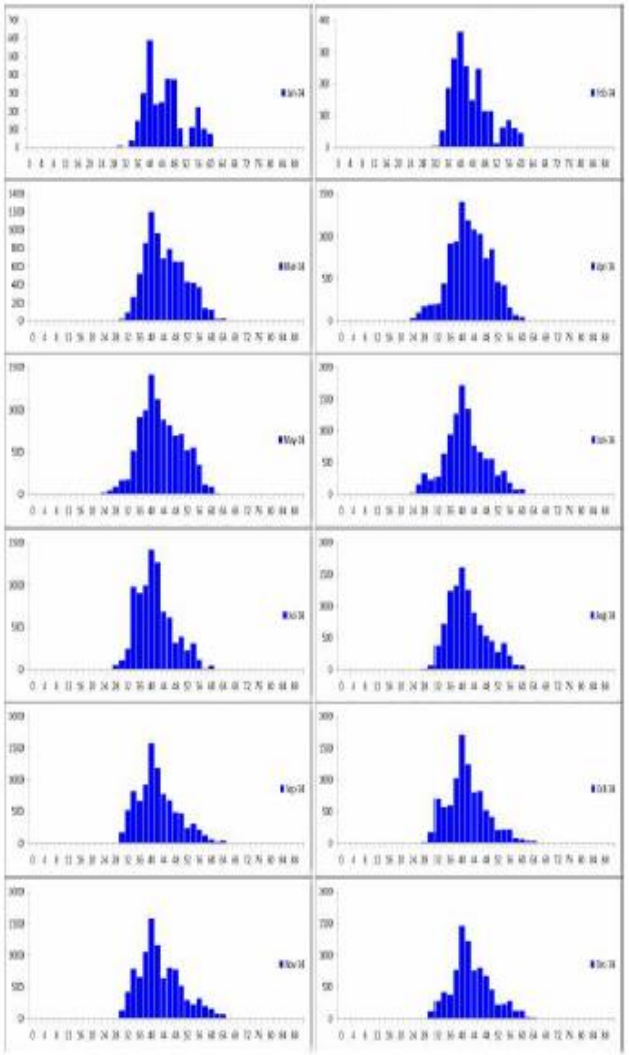
Length frequency data for tuna species in 2014



YFT



BET



SKJ

Management perspectives

1. Annual report – part 2: submitted every year since 2010.

2. Reorganizing tuna fisheries in Viet Nam:

-Decision 3465/QD-BNN-TCTS dated on 6 Aug 2014.

-To reorganize tuna fisheries by defining and reorganizing the supply chain

3. Development of tuna management plan:

-Convened 4 consultation meetings: every year from 2011

-Approved by Minister of Agriculture and Rural Development,

-Decision No 3562/QĐ-BNN-TCTS dated on 1 September 2015

THANK YOU

Attachment I

STOCK ASSESSMENTS OF THE OCEANIC TUNA IN VIETNAM MARINE WATERS

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA-SM Project)

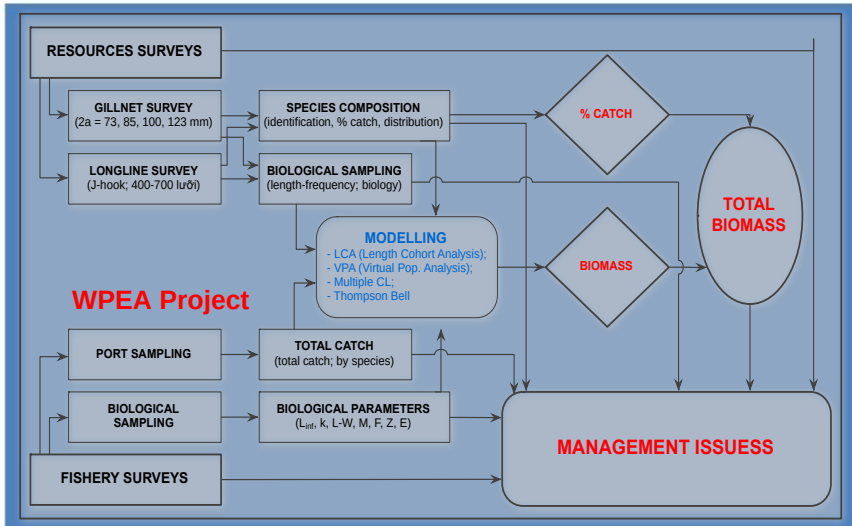
"THREE-COUNTRY STOCK ASSESSMENT WORKSHOP"

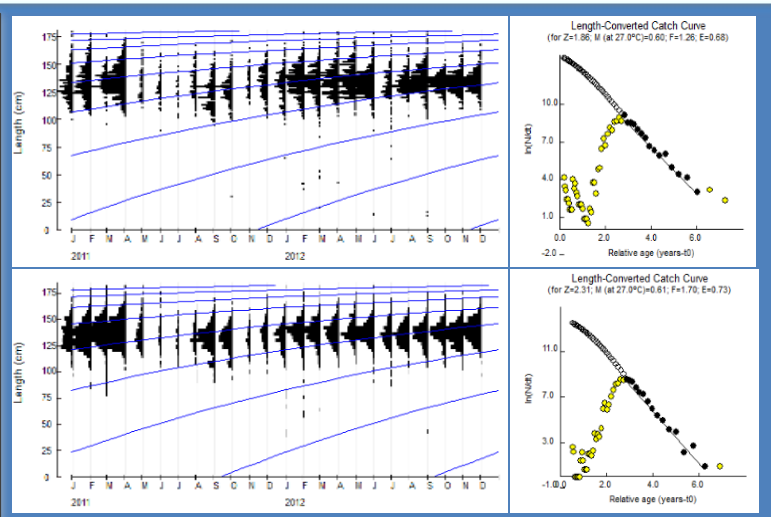
RIMF Meeting Room, Haiphong, Viet Nam

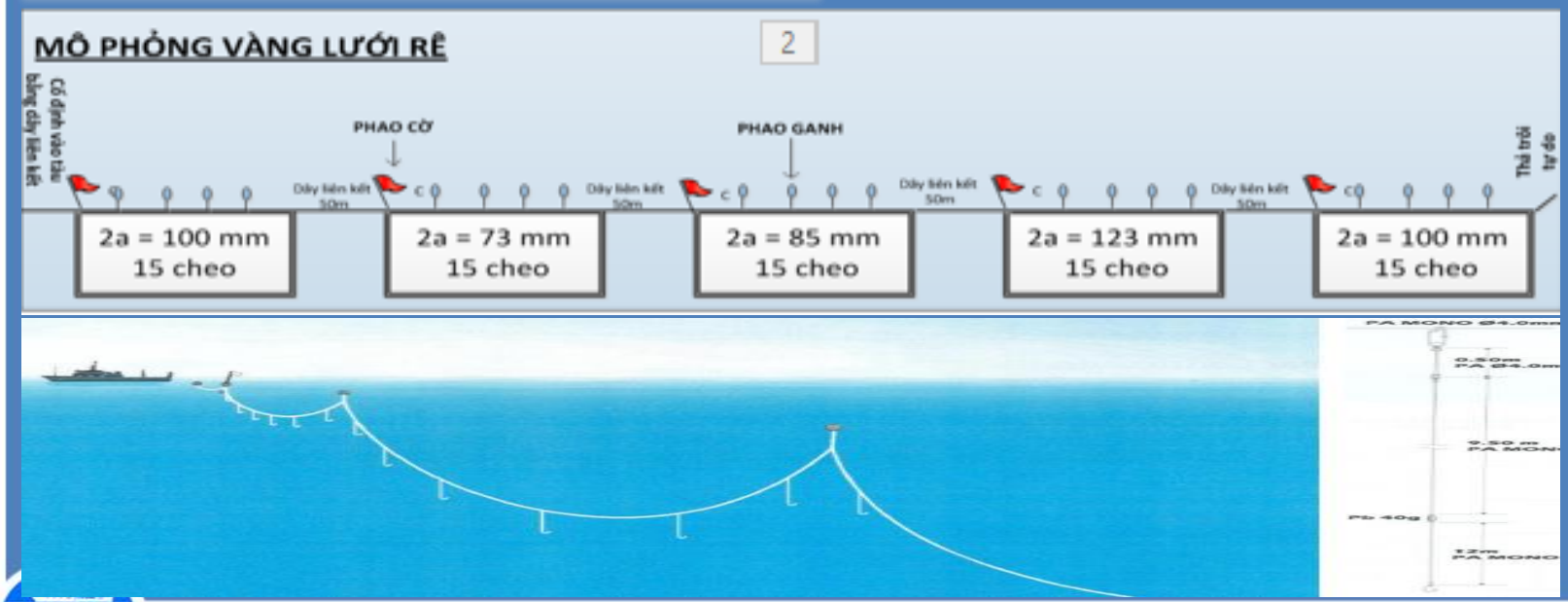
3-6 November 2015

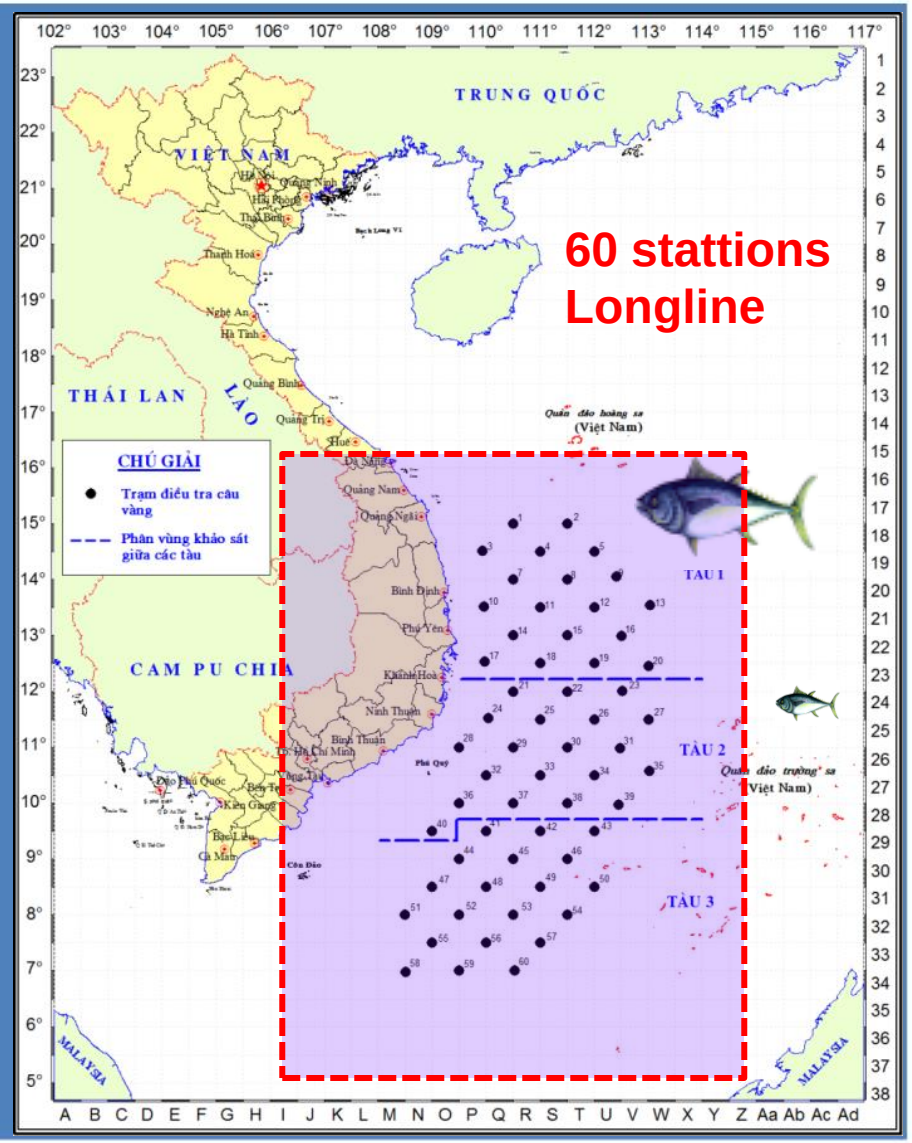
VIỆN NGHIÊN CỨU HẢI SẢN
224 Lê Lai, Ngô Quyền, Hải Phòng

DATA COLLECTION

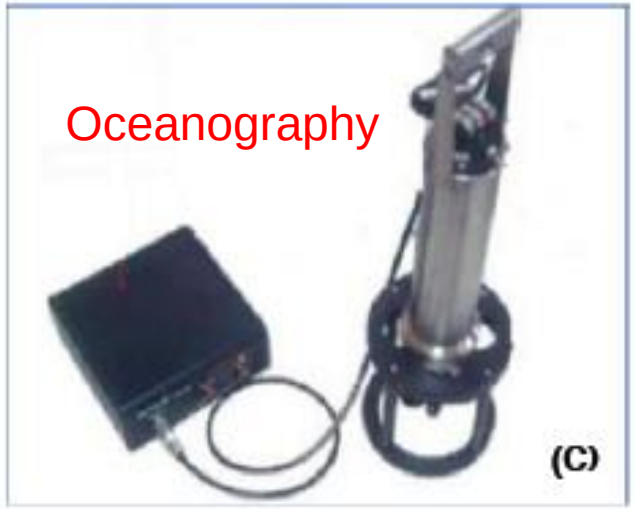






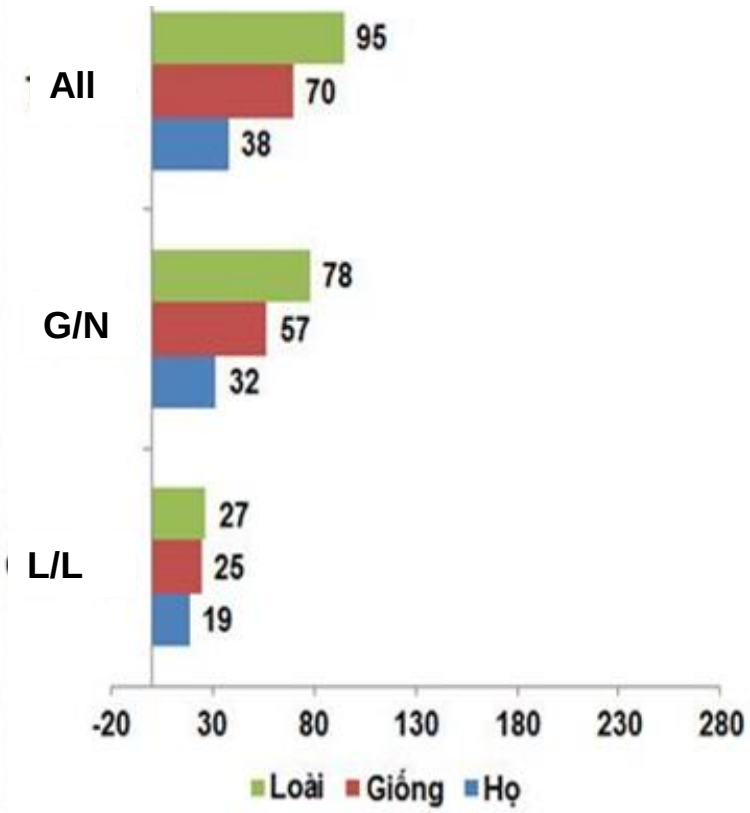


OCEANIC TUNA SURVEYS

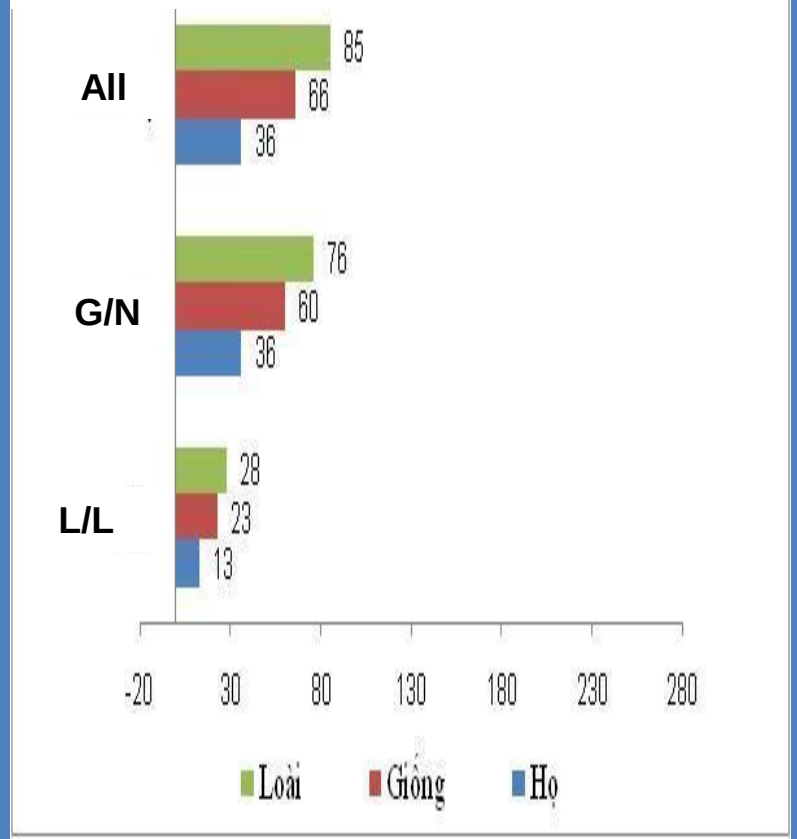


SPECIES COMPOSITION

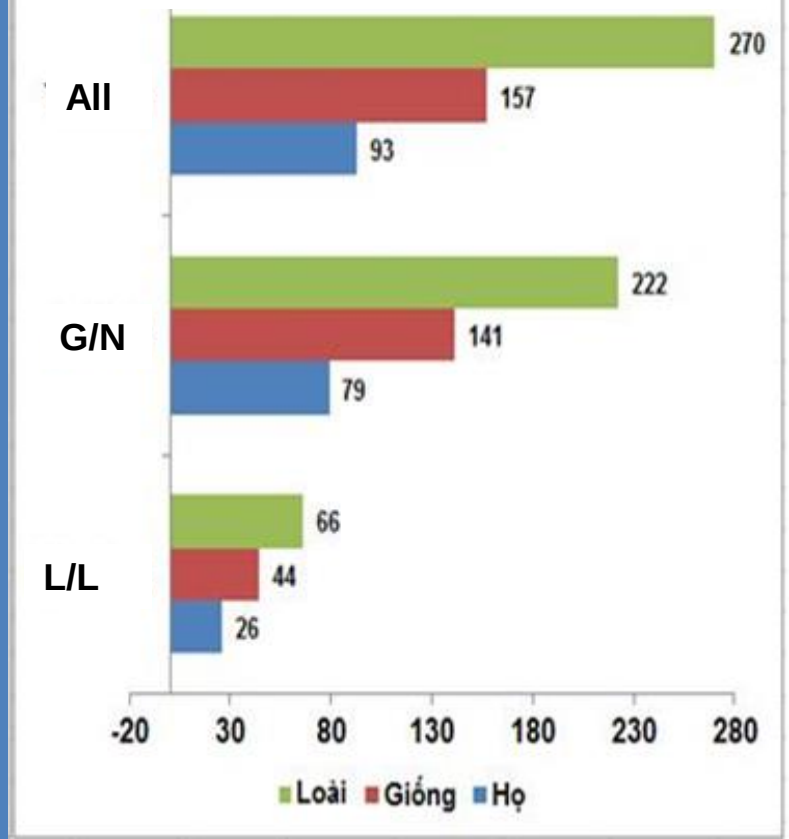
Numbers of species (NE monsoon, 2011)



Numbers of species (SW monsoon, 2012)



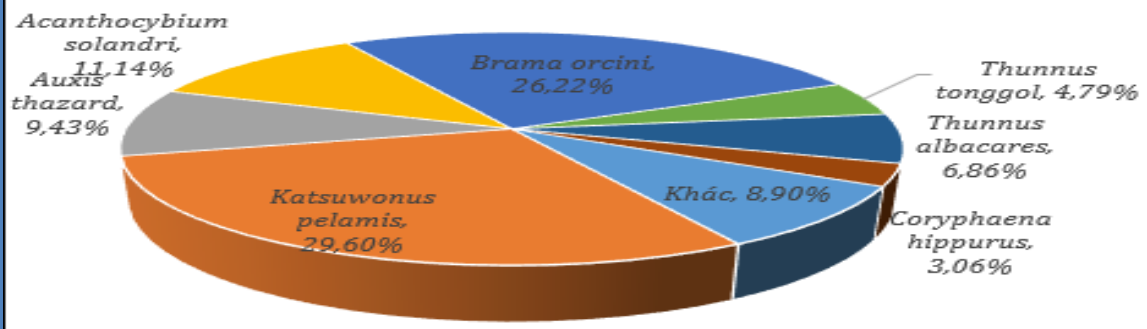
Numbers of species (2000-2005)



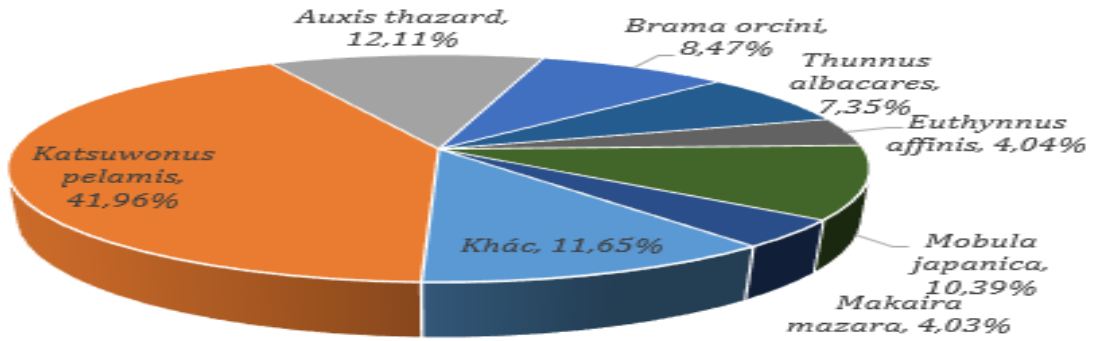
DOMINANT SPECIES

GILLNET SURVEYS

NE MONSOON, 2011
Gillnet (2a=100mm)

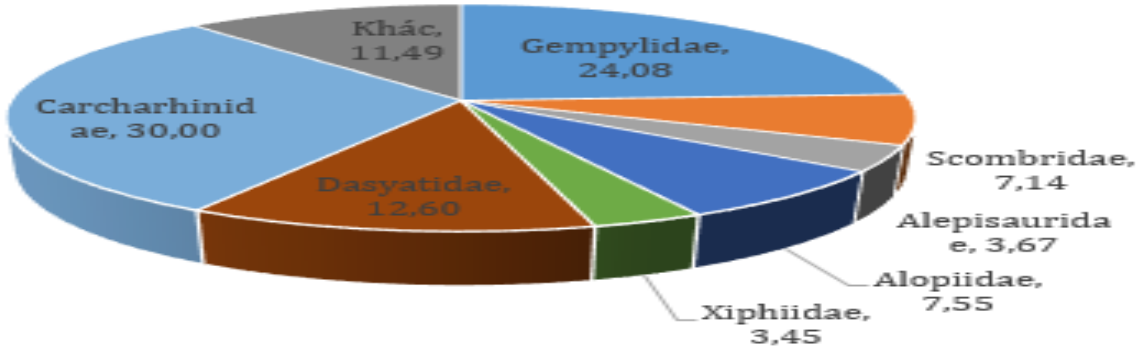


SW MONSOON, 2012
Gillnet (2a=100mm)

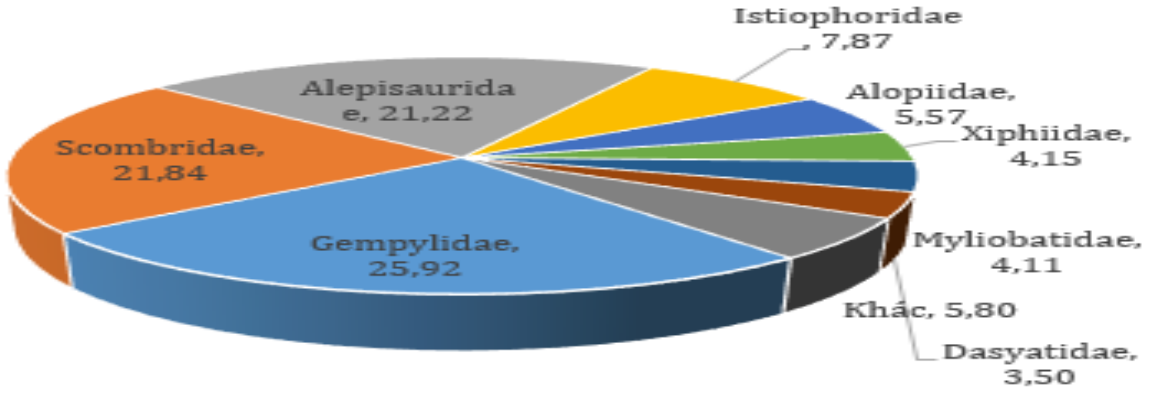


LONGLINE SURVEYS

NE MONSOON, 2011

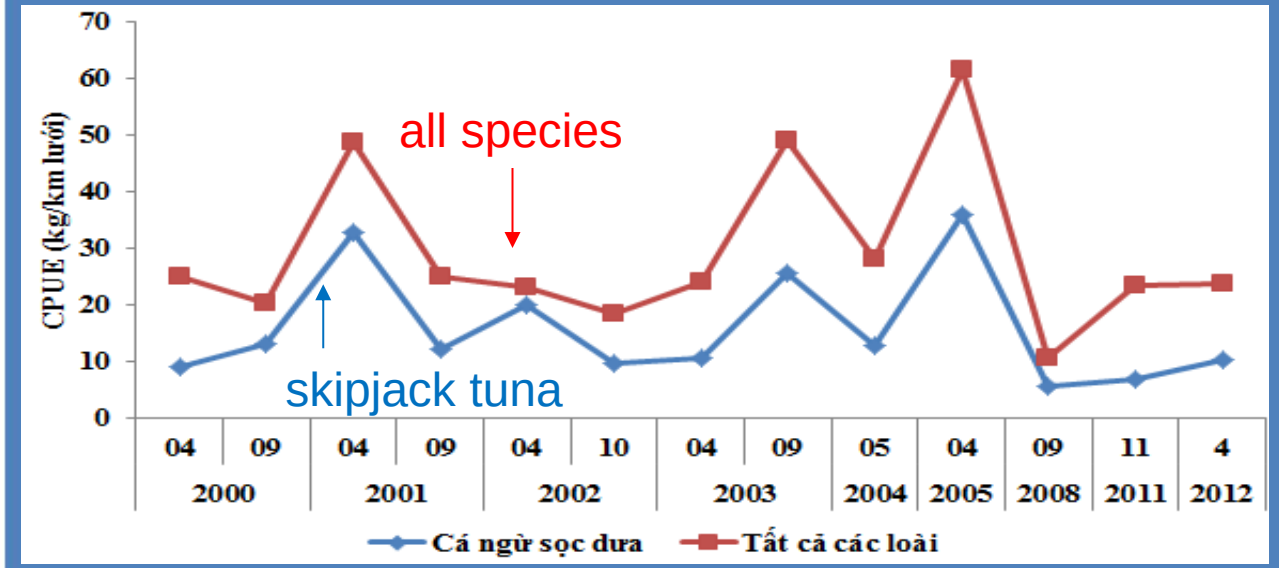


SW MONSOON, 2012

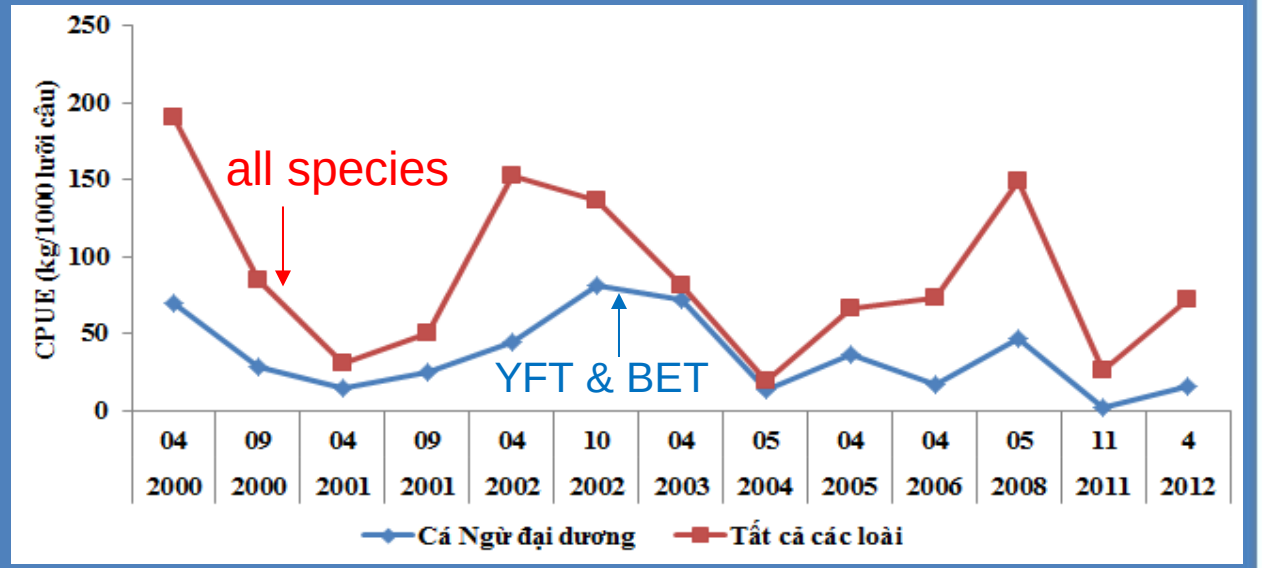


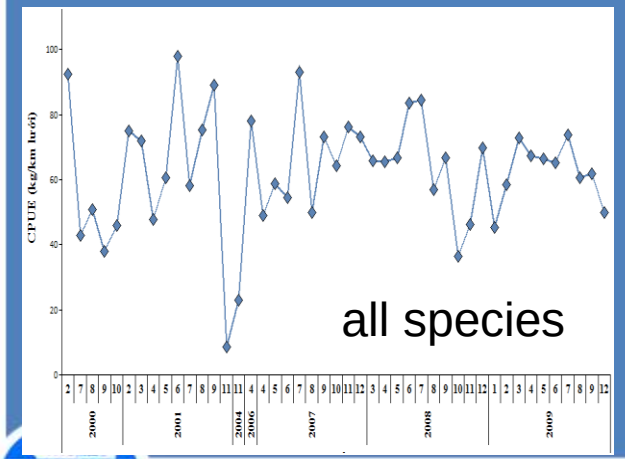
CATCH RATE (CPUE)

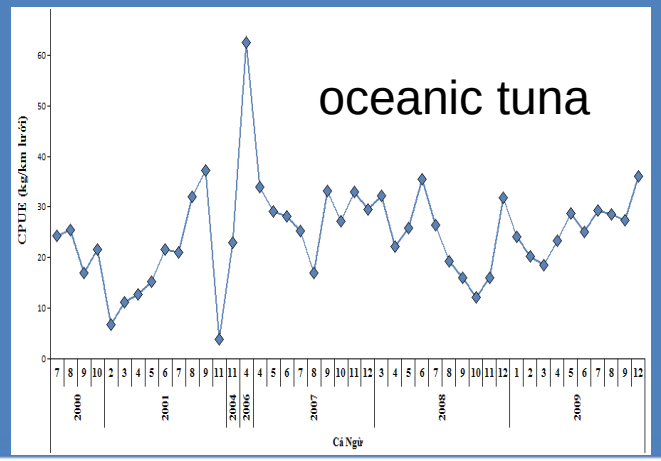
GILLNET SURVEYS

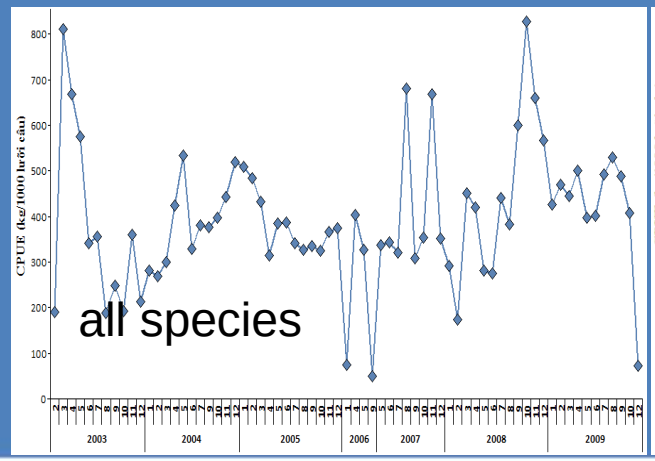


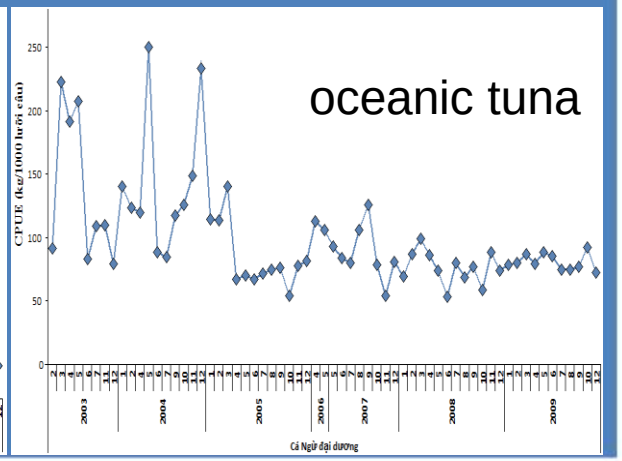
LONGLINE SURVEYS



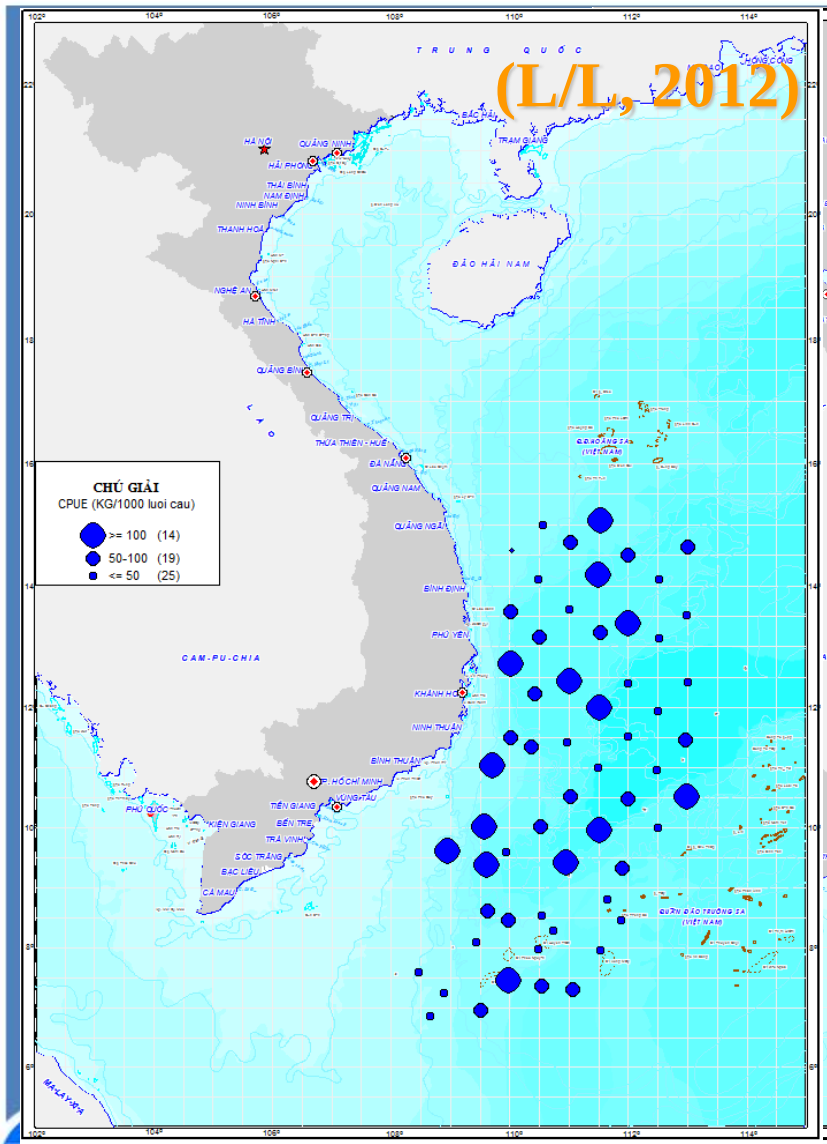


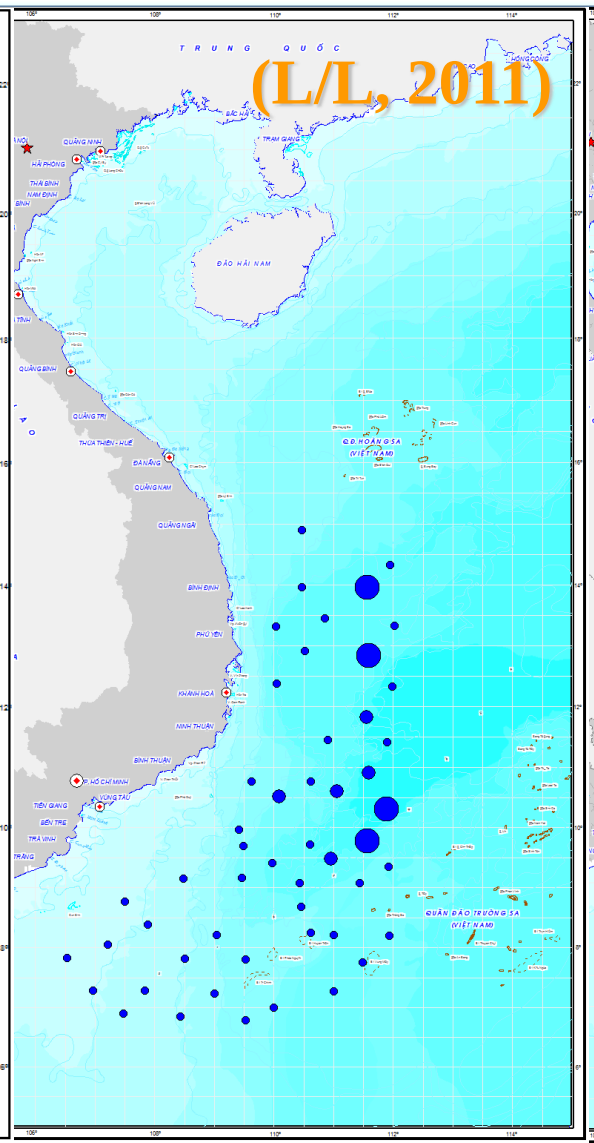


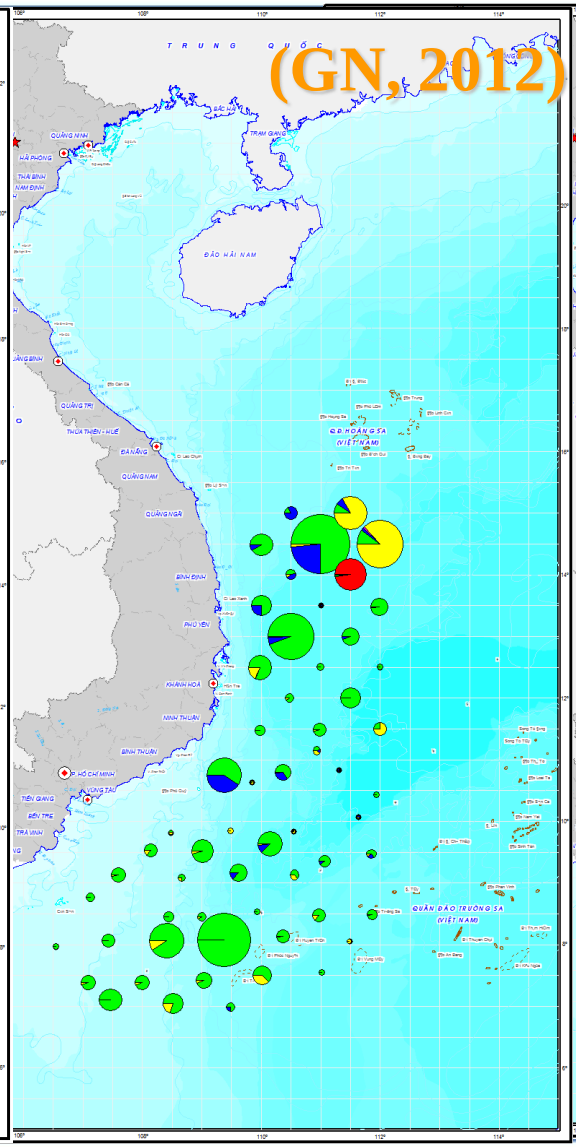


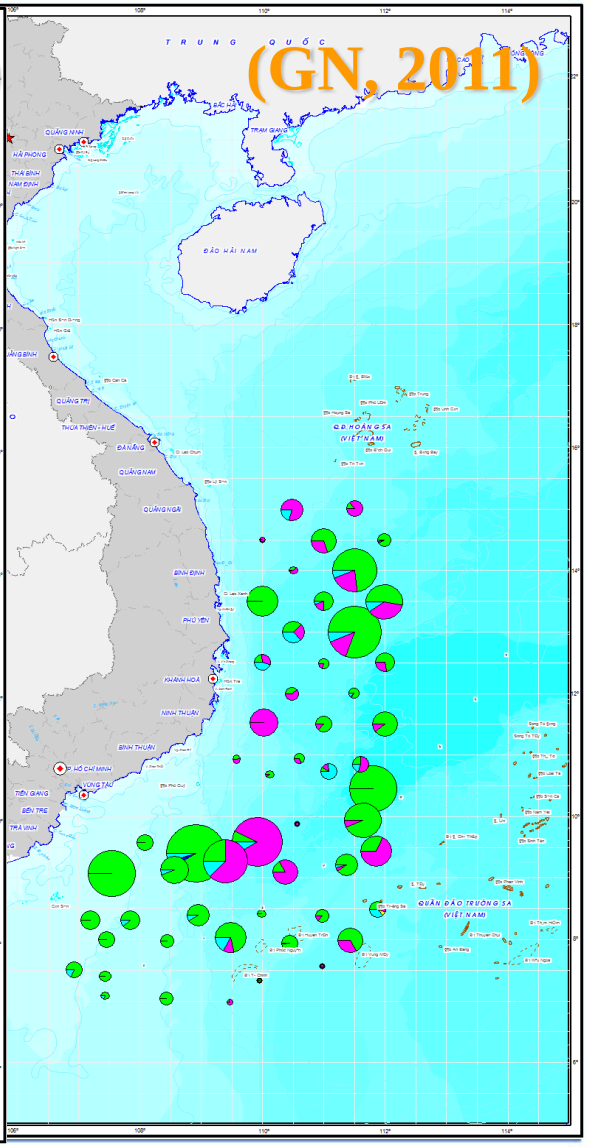


SPATIAL DISTRIBUTION

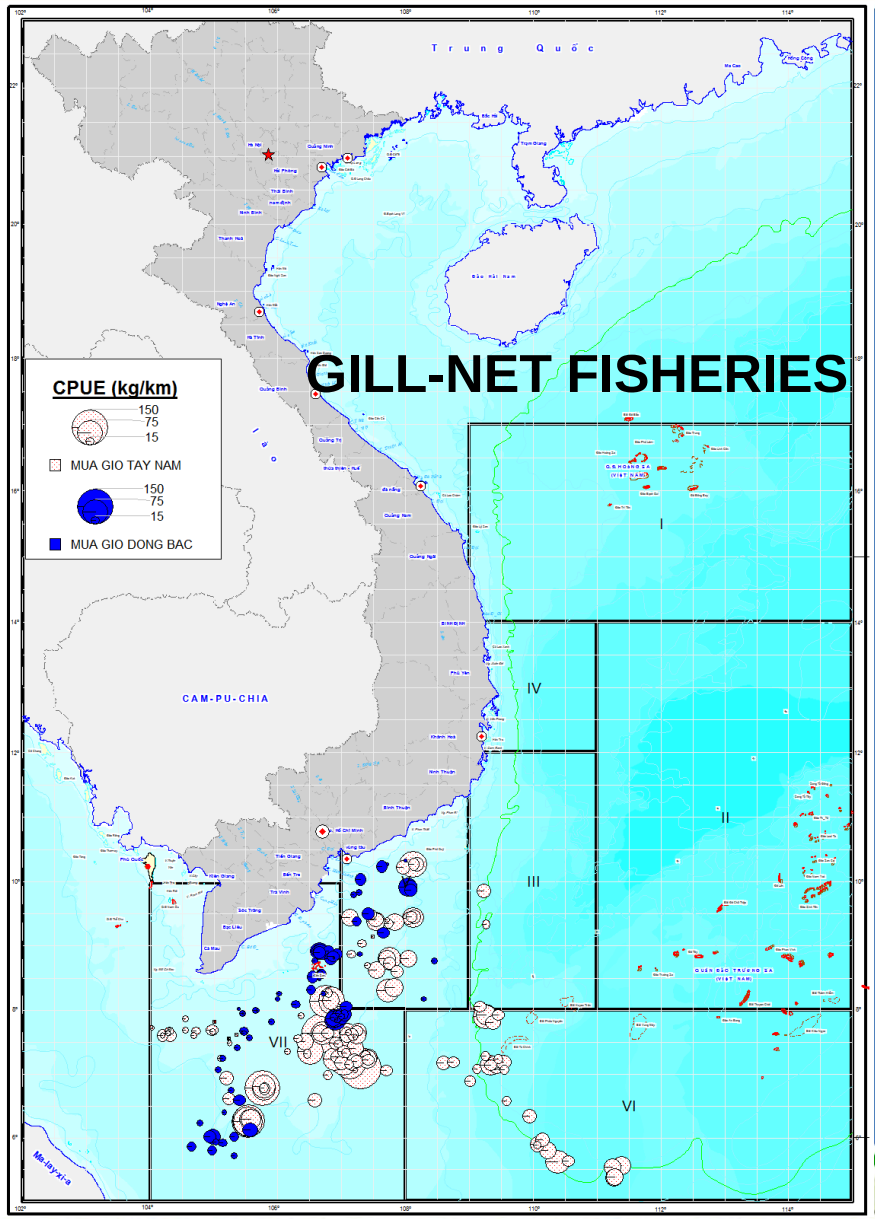


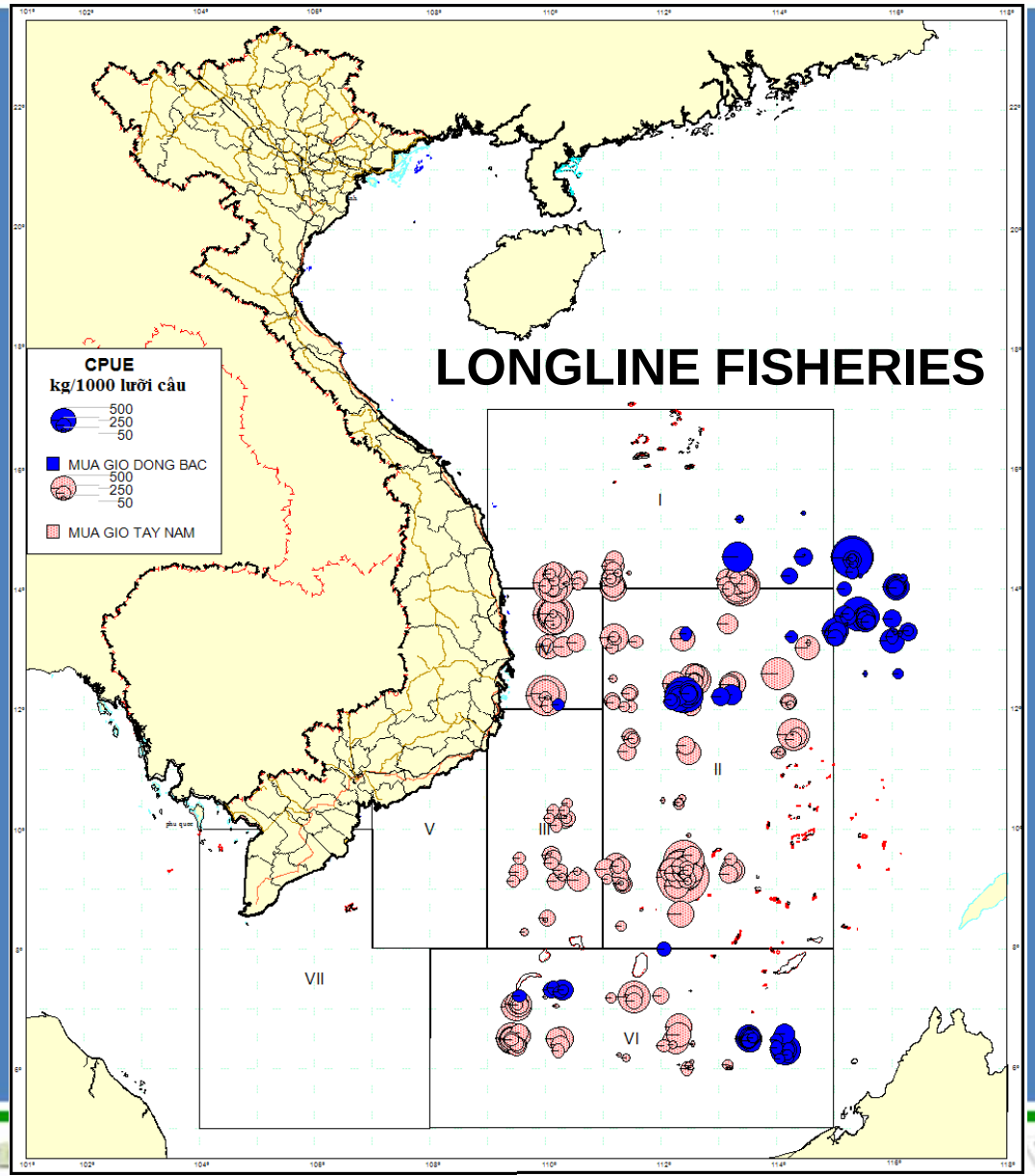




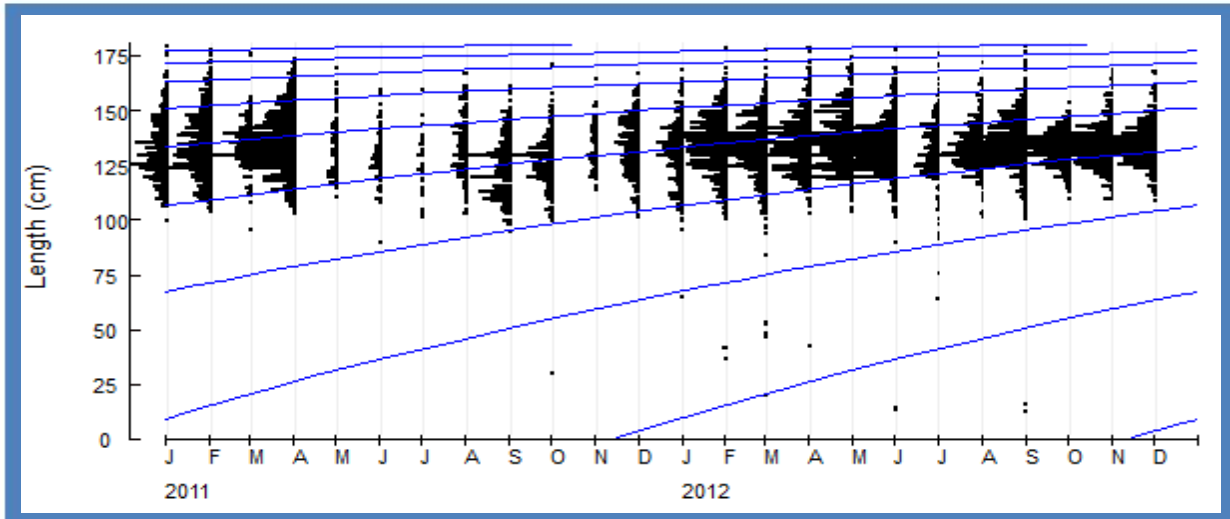


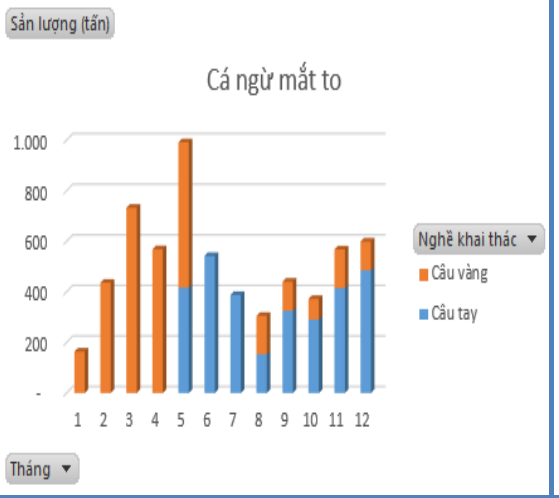
FISHING GROUND

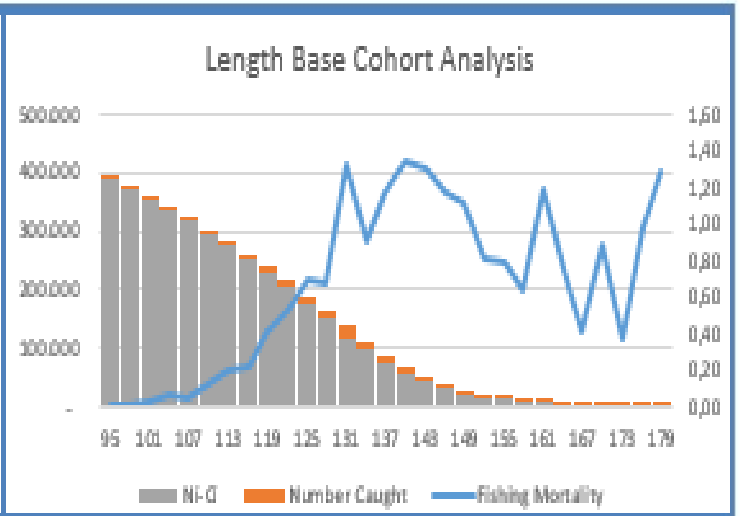


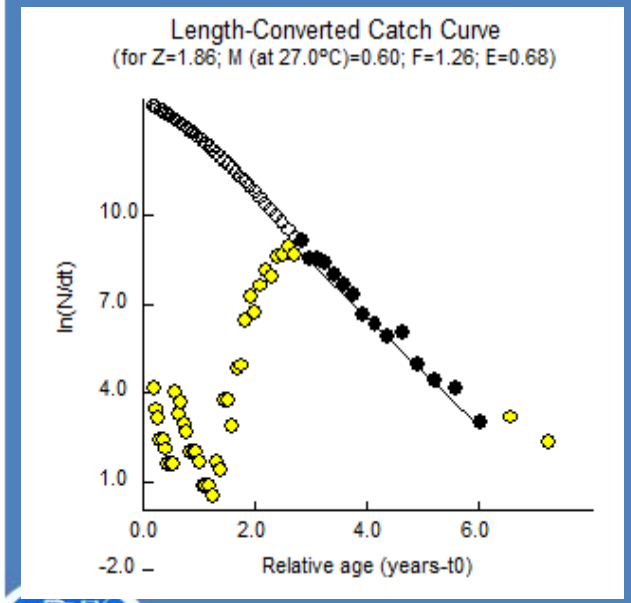


2012 - STOCK ASSESSMENTS (BET)







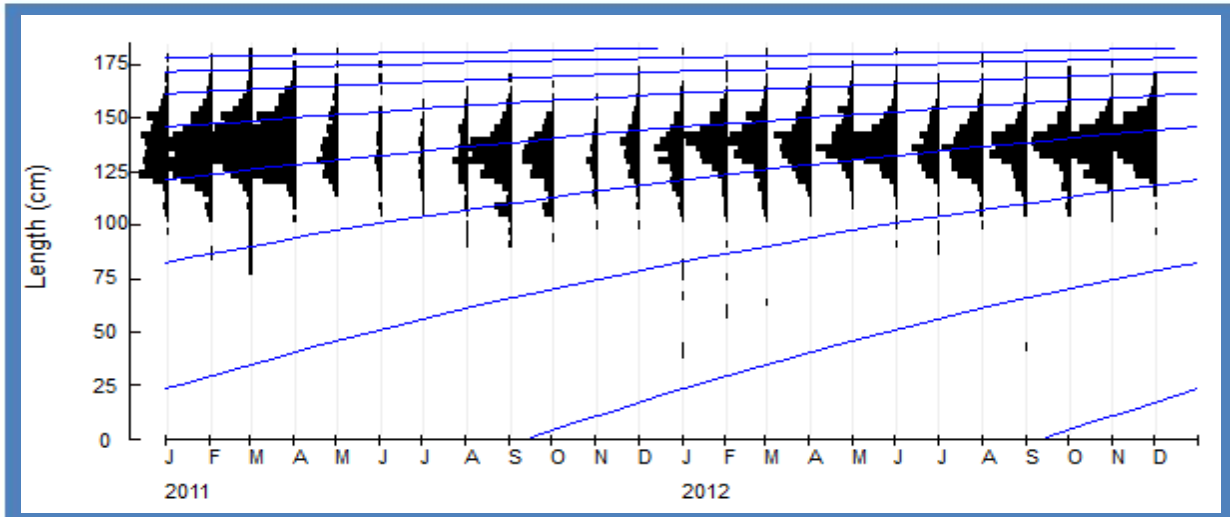


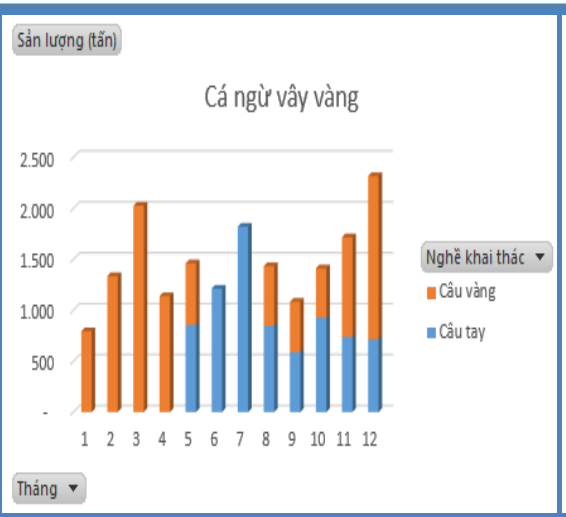
KEY PARAMETERS:

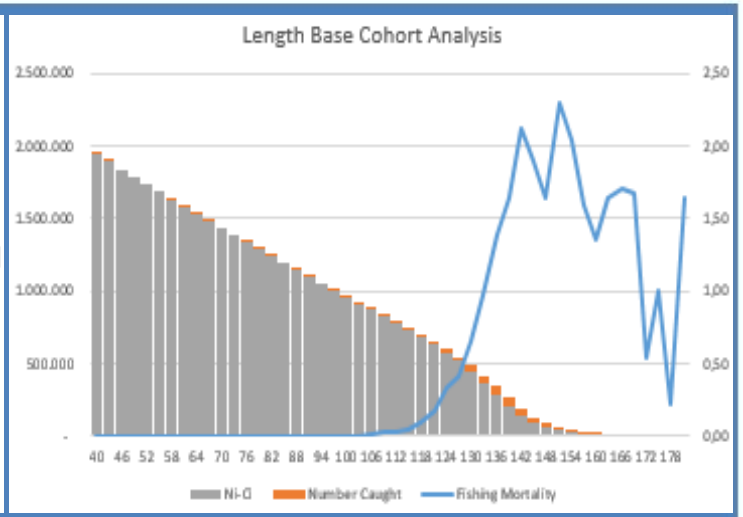
- L_∞ = 187,95
- K = 0,42
- a = 0,0000182
- b = 2,98
- M = 0,6
- F = 1,26
- E = 0,68
- **Biomass ~ 19.700 tons**

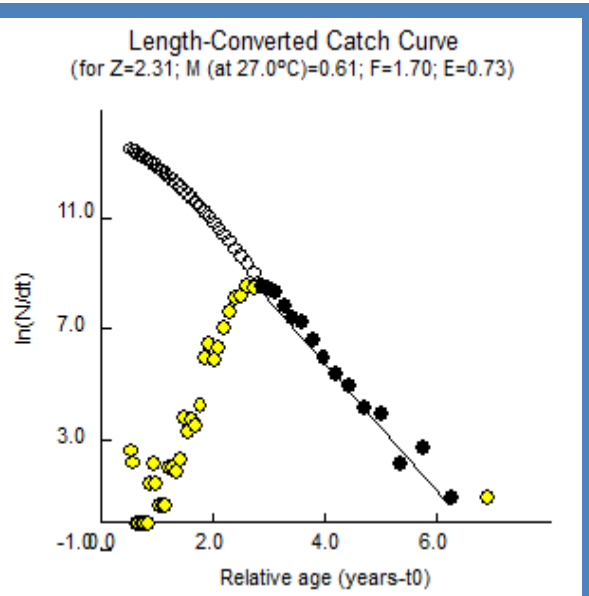
Base											
Length Infinity	187,95		Natural Mortalit	0,6	a	0,0000182					
k	0,42		Fishing Mortality (F)		b	2,98					
to			Total Mortality (Z)								
			Exploitation Rat	0,68							
LengthGr	Natural Mortal	Number Caught	Number Of Survivors	Exploitation Rate	Fishing Morta	Total Mortality	Mean Body Weight	Mean N *delta-t	Mean Biomass * delta-t	Yield Tonnes	Ni-Ci
L1-L2	H (L1, L2)	C (L1, L2	N (L1)	F/Z	F	Z	w (L1, L2)	eanN(L1, L2)*delt	eanB*delta-	Y (L1, L2)	
95	1,02371	207,227	390499	0,0114603	0,01	0,6069559	14,92666	29.792	445	3	390.292
98	1,02452	210,185	372417	0,0117939	0,01	0,60716079	16,3525	29.352	480	3	372.207
101	1,0254	818,679	354595	0,045116	0,03	0,62834855	17,86605	28.879	516	15	353.777
104	1,02633	1891,92	336449	0,1001708	0,07	0,66679323	19,4699	28.325	551	37	334.557
107	1,02734	1237,49	317562	0,0692003	0,04	0,644607	21,16664	27.742	587	26	316.325
110	1,02843	3279,81	299679	0,1679481	0,12	0,72110887	22,95887	27.082	622	75	296.400
113	1,02961	5248,32	280151	0,2501794	0,20	0,80019137	24,84916	26.217	651	130	274.902
167	1,11672	704,502	4162	0,4840631	0,56	1,1629329	78,5849	1.251	98	55	3.457
170	1,13954	802,098	2707	0,6048288	0,92	1,51832938	82,82825	873	72	66	1.904
173	1,17349	221,484	1380	0,3908079	0,38	0,98491096	87,22114	575	50	19	1.159
176	1,22935	351,63	814	0,6264494	1,01	1,60620807	91,76615	349	32	32	462
179		171,604	252	0,68	1,28	1,875	101,2816	135	14	17	81
188									19.732	11.879	6.939.939

2012 - STOCK ASSESSMENTS (YFT)









KEY PARAMETERS:

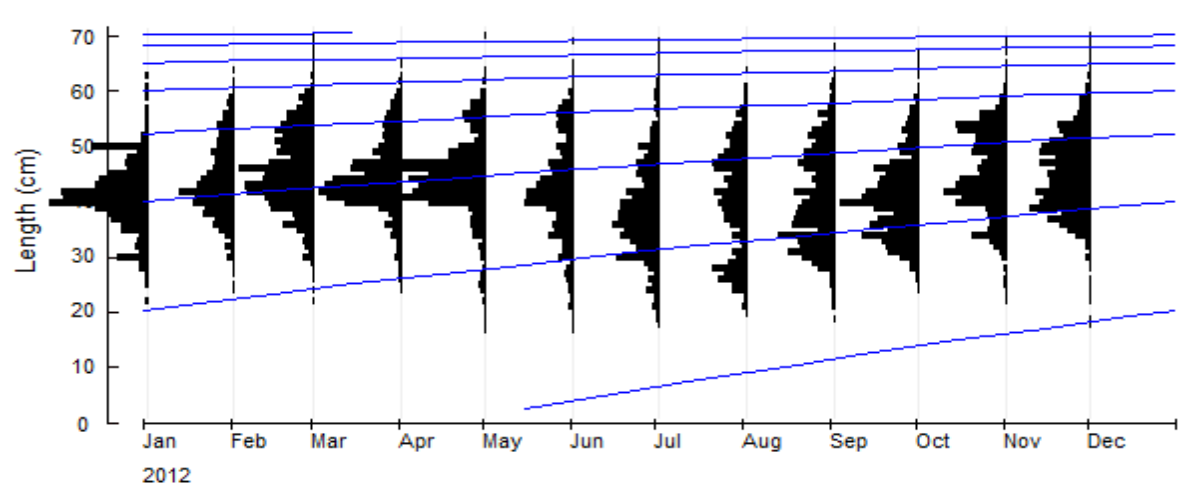
- L_∞ = 190,05
- K = 0,44
- a = 0,0000224
- b = 2,94
- M = 0,61
- F = 1,70
- E = 0,73
- **Biomass ~ 60.700 tons**

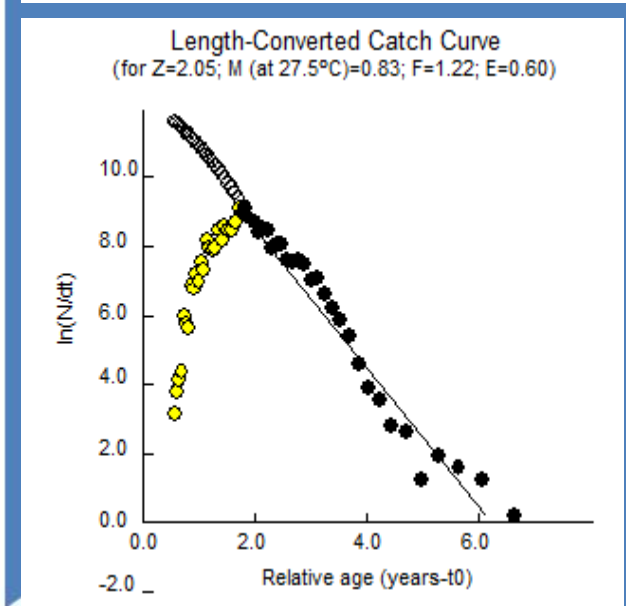
Base

Length Infi	190,05	Natural Mortalit	0,61	a	0,0000224
k	0,44	Fishing Mortality (F)		b	2,94
to		Total Mortality (Z)			
		Exploitation Rat	0,73		

LengthGr	Mortality Factor	Number Caught	Number Of Survivors	Exploitation Rate	Fishing Mortality	Total Mortality	Mean Body Weight	Mean N *delta-t	Mean Biomass * delta-t	Yield Tonnes	Ni-Ci
L1-L2	M (L1, L2)	C (L1, L2)	N (L1)	F/Z	F	Z	w (L1, L2)	MeanN(L1, L2)*delta-t	MeanB*delta-t	Y (L1, L2)	
40	1,014	65	3020392	0,00	0,00	0,61	1,28	136.738	175	0	3.020.328
43	1,014	83	2937517	0,00	0,00	0,61	1,57	135.661	213	0	2.937.434
46	1,015	0	2854681	0,00	0,00	0,61	1,90	134.572	256	-	2.854.681
49	1,015	0	2772592	0,00	0,00	0,61	2,28	133.471	304	-	2.772.592
52	1,015	0	2691175	0,00	0,00	0,61	2,70	132.355	358	-	2.691.175
55	1,016	0	2610439	0,00	0,00	0,61	3,17	131.223	416	-	2.610.439
58	1,016	32	2530393	0,00	0,00	0,61	3,69	130.076	480	0	2.530.361
61	1,016	32	2451015	0,00	0,00	0,61	4,27	128.911	550	0	2.450.383
64	1,017	116	2372348	0,00	0,00	0,61	4,90	127.727	626	1	2.372.231
67	1,017	32	2294318	0,00	0,00	0,61	5,59	126.525	707	0	2.294.286
70	1,018	0	2217105	0,00	0,00	0,61	6,34	125.308	794	-	2.217.105
154	1,062	17341	54444	0,77	2,05	2,66	62,22	8.467	527	1.079	37.103
157	1,068	8526	31938	0,71	1,53	2,14	65,82	5.573	367	561	23.412
160	1,076	5124	20003	0,63	1,33	1,94	69,55	3.860	268	356	14.885
163	1,085	4001	12530	0,72	1,55	2,16	73,41	2.576	189	294	8.523
166	1,097	2666	6958	0,74	1,73	2,34	77,42	1.538	119	206	4.292
169	1,112	1421	3354	0,74	1,73	2,34	81,57	820	67	116	1.933
172	1,134	264	1432	0,48	0,56	1,17	85,86	472	41	23	1.168
175	1,167	337	880	0,65	1,11	1,72	90,30	304	27	30	543
178	1,220	48	358	0,31	0,27	0,88	94,88	178	17	5	310
181		147	201	0,73	1,65	2,26	104,56	83	9	15	54
190									60.683	28.423	59.668.216

2012 - STOCK ASSESSMENTS (SKJ)





KEY PARAMETERS:

- L_∞ = 73,5 cm
- K = 0,46/year
- a = 0,000005
- b = 3,3674
- M = 0,83
- F = 1,22
- E = 0,60
- **Biomass ~ 417.300 tons**

Base

Length Infinity	73.5	Natural Mortality (M)	0.83	a=	0.000005
k	0.46	Fishing Mortality (F)		b=	3.3674
to		Total Mortality (Z)			
		Exploitation Rate (E.)	0.6		

LengthGr	Natural Mortality Factor	Number Caught	Number Of Survivors	Exploitation Rate	Fishing Mortality	Total Mortality	Mean Body Weight	Mean N *delta-t	Mean Biomass * delta-t	Yield Tonnes	Ni-Ci
L1-L2	H (L1, L2)	C (L1, L2)	N (L1)	F/Z	F	Z	w (L1, L2)	eanN(L1, L2)*delt	MeanB*delta-t	Y (L1, L2)	
22	1.017847651	568179	385644372	0.041	0.035	0.865	0.179	16,139,493	2,885	102	385,076,194
23	1.018207858	94696	371680414	0.007	0.006	0.836	0.207	15,870,390	3,285	20	371,585,718
24	1.018582904	473482	358413294	0.035	0.030	0.860	0.238	15,602,128	3,716	113	357,939,812
25	1.018973726	1515143	344990046	0.107	0.099	0.929	0.272	15,301,080	4,169	413	343,474,903
26	1.01938134	94696	330775007	0.008	0.006	0.836	0.310	15,007,923	4,655	29	330,680,310
58	1.06201412	2272714	15604901	0.581	1.153	1.983	4.464	1,971,702	8,801	10,145	13,332,187
59	1.066591887	3030285	11695675	0.712	2.052	2.882	4.726	1,476,672	6,979	14,321	8,665,389
60	1.071899431	1136357	7439751	0.561	1.062	1.892	4.999	1,070,326	5,350	5,680	6,303,394
61	1.078126392	1136357	5415023	0.628	1.399	2.229	5.282	812,070	4,290	6,003	4,278,666
62	1.085534362	568179	3604643	0.531	0.941	1.771	5.577	603,500	3,366	3,169	3,036,470
63	1.094494579	662875	2535565	0.647	1.521	2.351	5.883	435,774	2,564	3,900	1,872,690
64	1.10555212	284089	1510998	0.534	0.952	1.782	6.201	298,346	1,850	1,762	1,226,909
65	1.11954116	284089	979281	0.629	1.407	2.237	6.531	201,964	1,319	1,855	695,192
66	1.137806002	284089	527562	0.768	2.753	3.583	6.873	103,187	709	1,953	243,473
67		94696	157827	0.600	1.245	2.075	8.267	76,061	629	783	63,131
73.5									417,306	199,001	6,432,613,391

ISSUES

- Insufficient data for stock assessments;
- Uncertainty on LCA model for Highly Migratory Species;
- There maybe exist a stock/substock in the SCS => consider to separate the “sub-stock” in SCS from Region 7;
- Sampling program for stock assessments (Data Collection System);
- Develop Reference Points for Tuna Fisheries Managements;
- Develop management strategies at National level;

Thank you very much!

HEAD QUATER

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Hai Phong City, Viet Nam
Telephone: (+84)313 836656
Fax: (+84)313 836812
Website: www.rimf.org.vn

Head Office (Hai Phong)

- Research Institute under MARD;
- 6 Research Depts; 3 Support Divisions;
- 1 Sub-Institute; 4 Research Centers;
- 150 Permanent Staffs;
- Leadership: Director; 3 Vice Directors

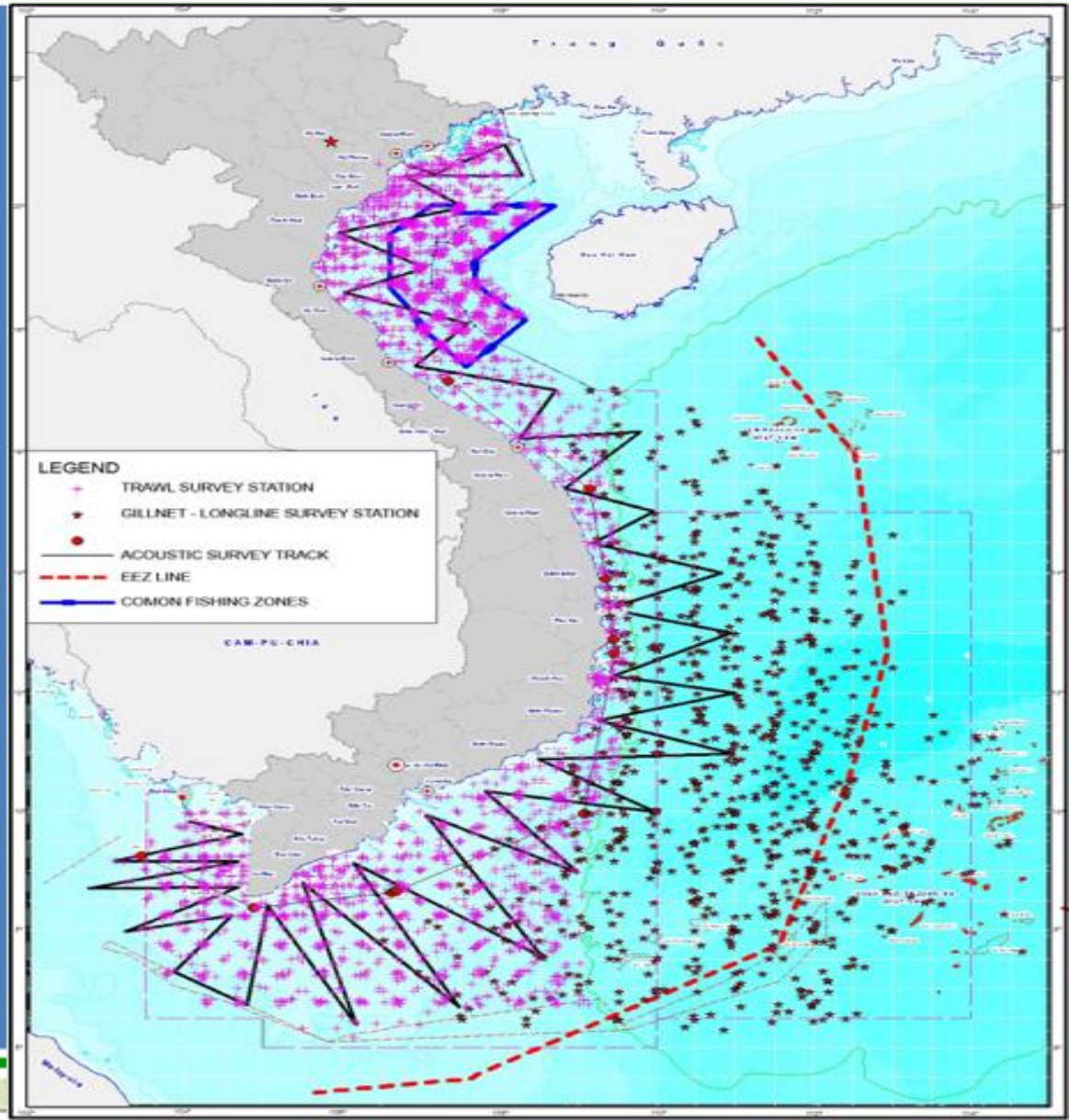
SUB-INSTITUTE

Address: Boulevard 3/2
Vung Tau City, Viet Nam
Telephone: (+84)646 521768

Sub-Institute (Vung Tau)

Key facts

- Established in 1961;
- The only Institute for Marine Fisheries in Vietnam;
- Coverage: Long Coast of 3.260 km; Large EEZ; Spratly Islands; Paracel Islands;
- 6 Research Divisions; 4 Research Centers
- 3 Administrative Divisions;
- 150 staffs;
- Man-day work at sea: 6,000 /year
- Research areas:
  - Fisheries Resources Assessment
  - Fishing Ground Forecast
  - Fishing Technology
  - Post-Harvest Technology
  - Marine Biodiversity
  - Marine Environment
  - Marine Biotechnology
  - Aquaculture



Attachment J

TUNA STOCK ASSESSMENT PROGRAM FOR SEAFDEC MEMBER COUNTRIES

SEAFDEC

ASEAN MEMBER COUNTRIES

SCIENTIFIC WORKING GROUP ON NERITIC TUNA

- Develop RPOA-Neritic Tuna
- Funding support from SEAFDEC-SWEDEN.
- 1st meeting – October 2013 in Songkla, Thailand
- Expert Group Meeting – June 2014 in Krabi, Thailand
- 1st meeting for SWG-neritic tuna to outline work plan on stock assessment of neritic tuna.
- Endorsed by 47th meeting of SEAFDEC Council in April 2015.

SCIENTIFIC WORKING GROUP ON NERITIC TUNA

- Determining available data and information, improving data collection and developing key indicators.
- Improving sustainable fisheries management
- Improving sustainable interaction between fisheries and marine ecosystem
- Improving compliance to rules and regulations and access to markets
- Addressing Social Issues
- Regional Cooperation

STOCK ASSESSMENT ON TROPICAL TUNA

- Under Sub-regional Joint Research Program on Tuna Resources in Sulu Sulawesi Sea.
- Countries involved: Philippines, Indonesia and Malaysia
- Partly supported by the Japanese Trust Fund
- Cost-sharing basis
- 1st survey cruise by MV SEAFDEC 2 : 17 Oct – 9 Dec 2014
- 2nd survey cruise by MV SEAFDEC 2 : 20 April – 12 May 2015

ONBOARD OF MV SEAFDEC 2 : 2nd LEG

JOINT RESEARCH PROGRAM ON TUNA RESOURCES IN SULU SULAWESI SEA

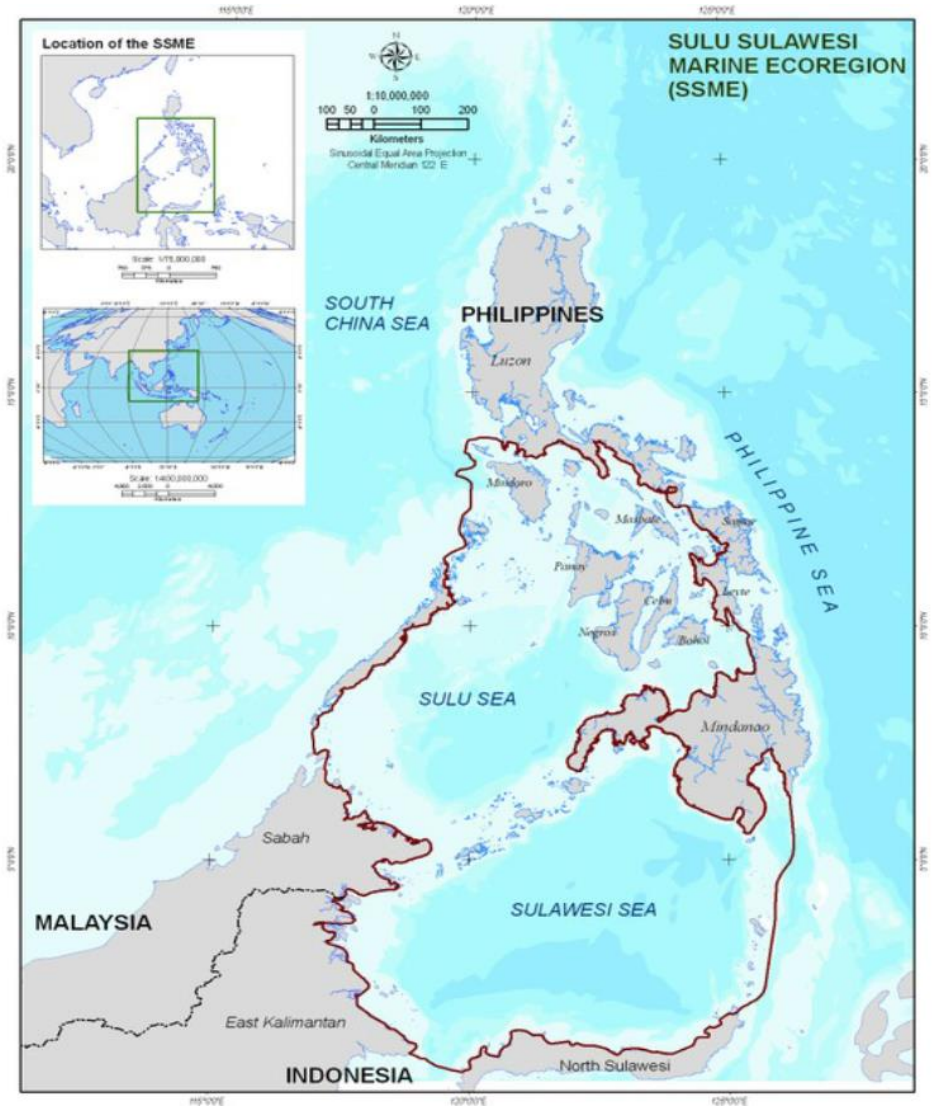
Overall goals of the program

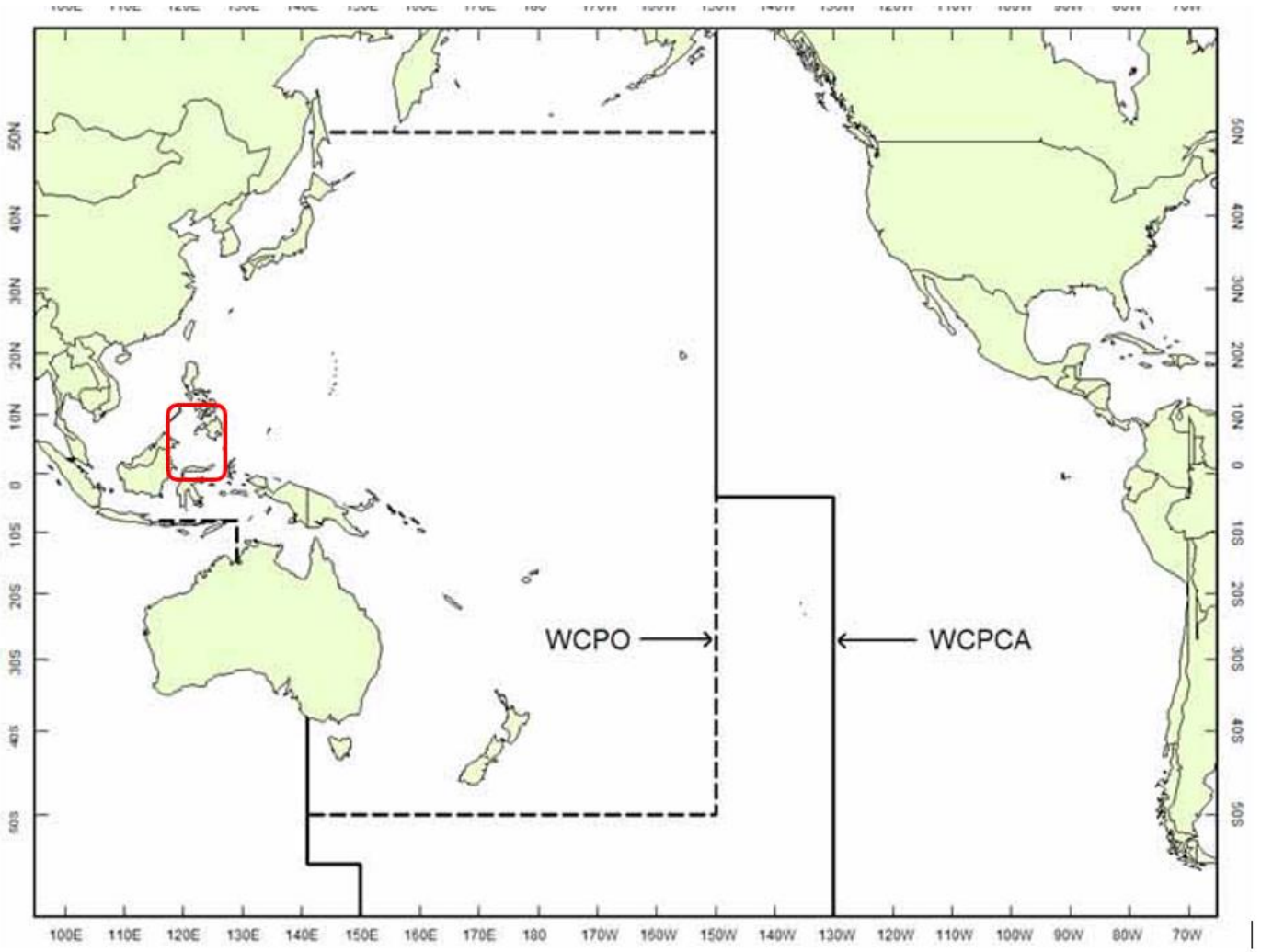
I. Review of the catch and efforts, biological data/information on the tuna harvested in SSSs
II. Primary data collection (tissue samples for genetic analysis; catch-effort and biological data; and fishing ground profiling)
III. Tuna stock assessment
IV. Determination of tuna spawning grounds
V. Assessment on the use of FADs in tuna fisheries
VI. Organization of scientific committee meeting

III: STOCK ASSESSMENT

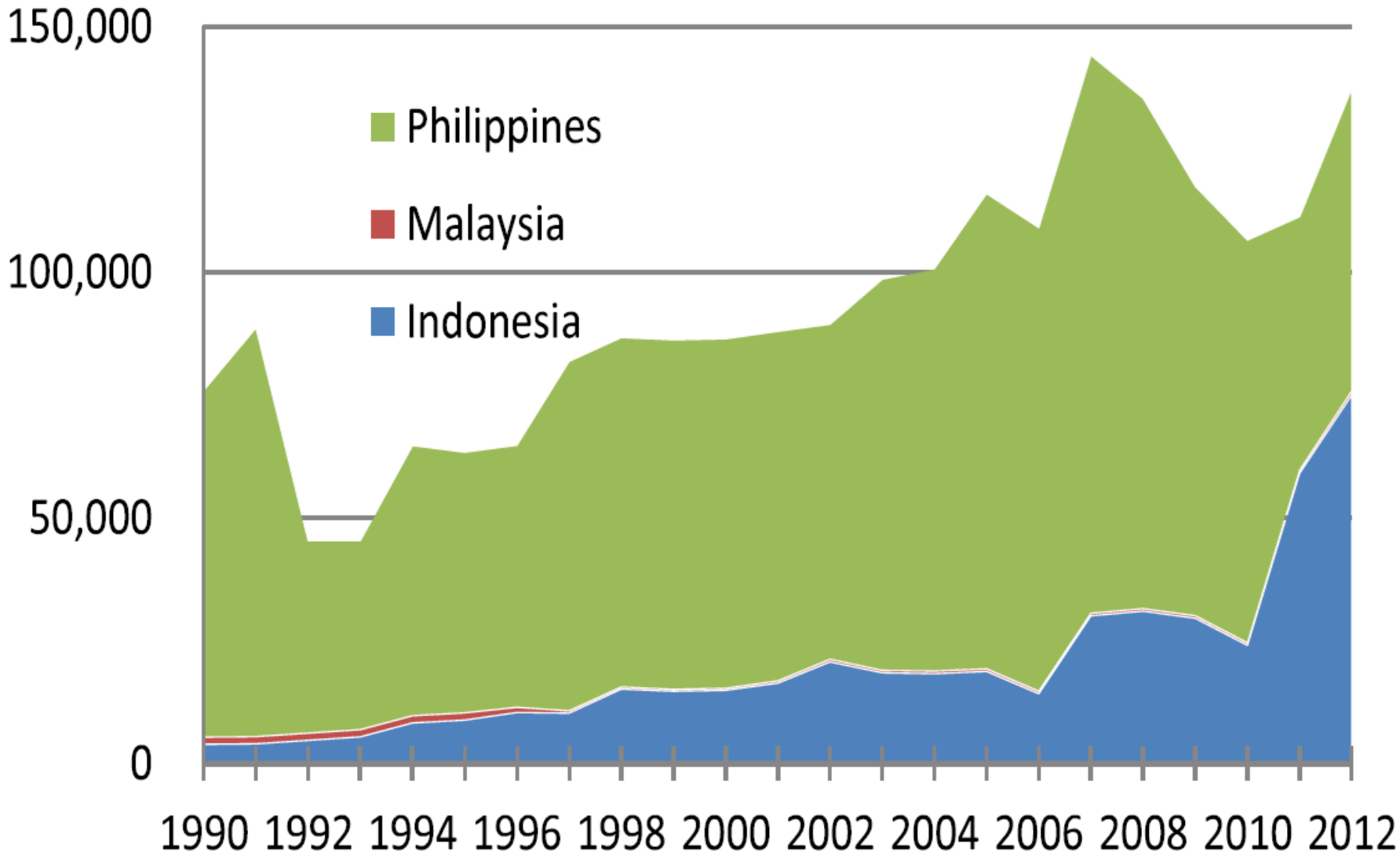
- Stock Assessment of
  - Yellowfin (Thunnus albacares)
  - Bigeye (Thunnus obesus)
  - Skipjack (Katsuwonus pelamis)
- Using A Stock Production Model Incorporating Covariates (ASPIC)
- Sulu Sulawesi is a small part of WCPO
- With the assumption of one single stock: need confirmation through genetic study

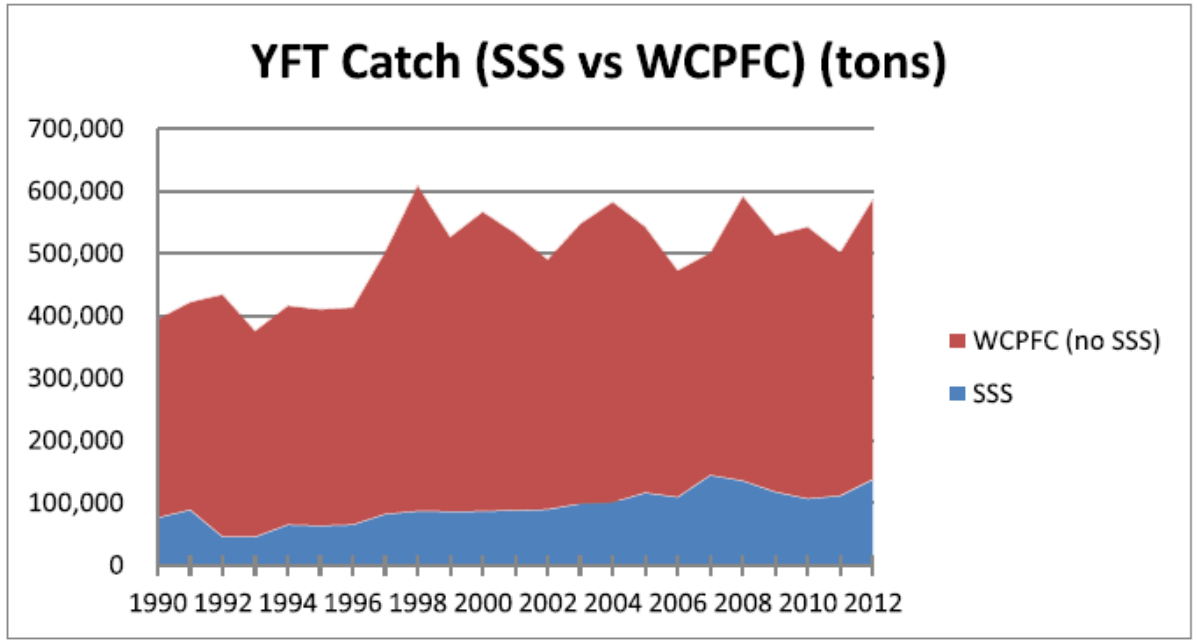
SULU SULAWESI SEA

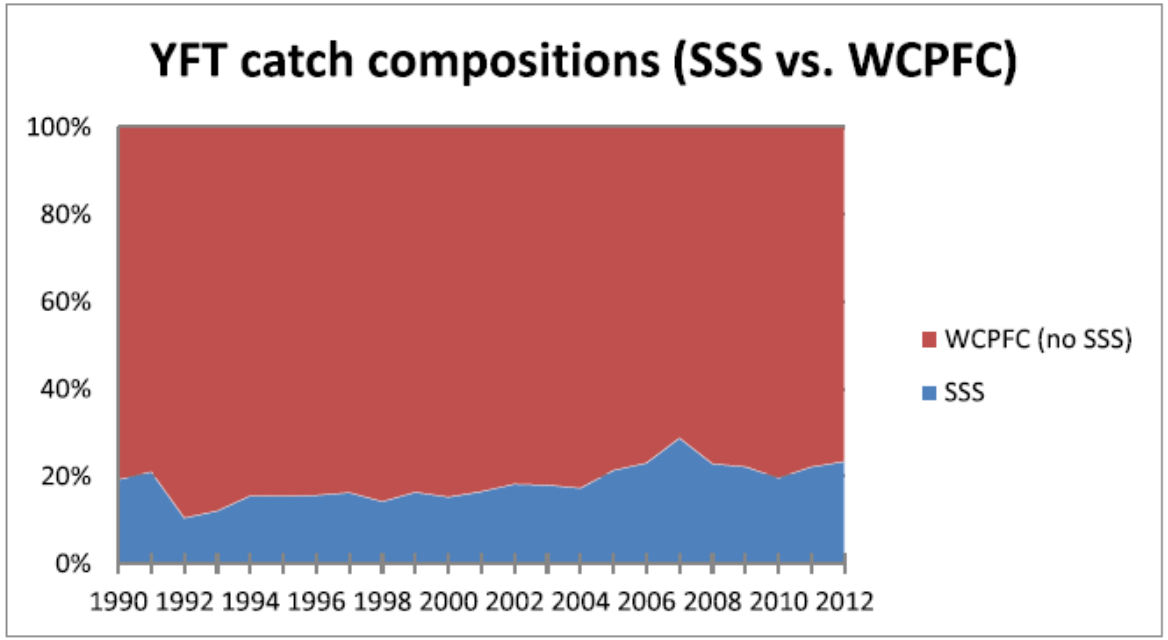




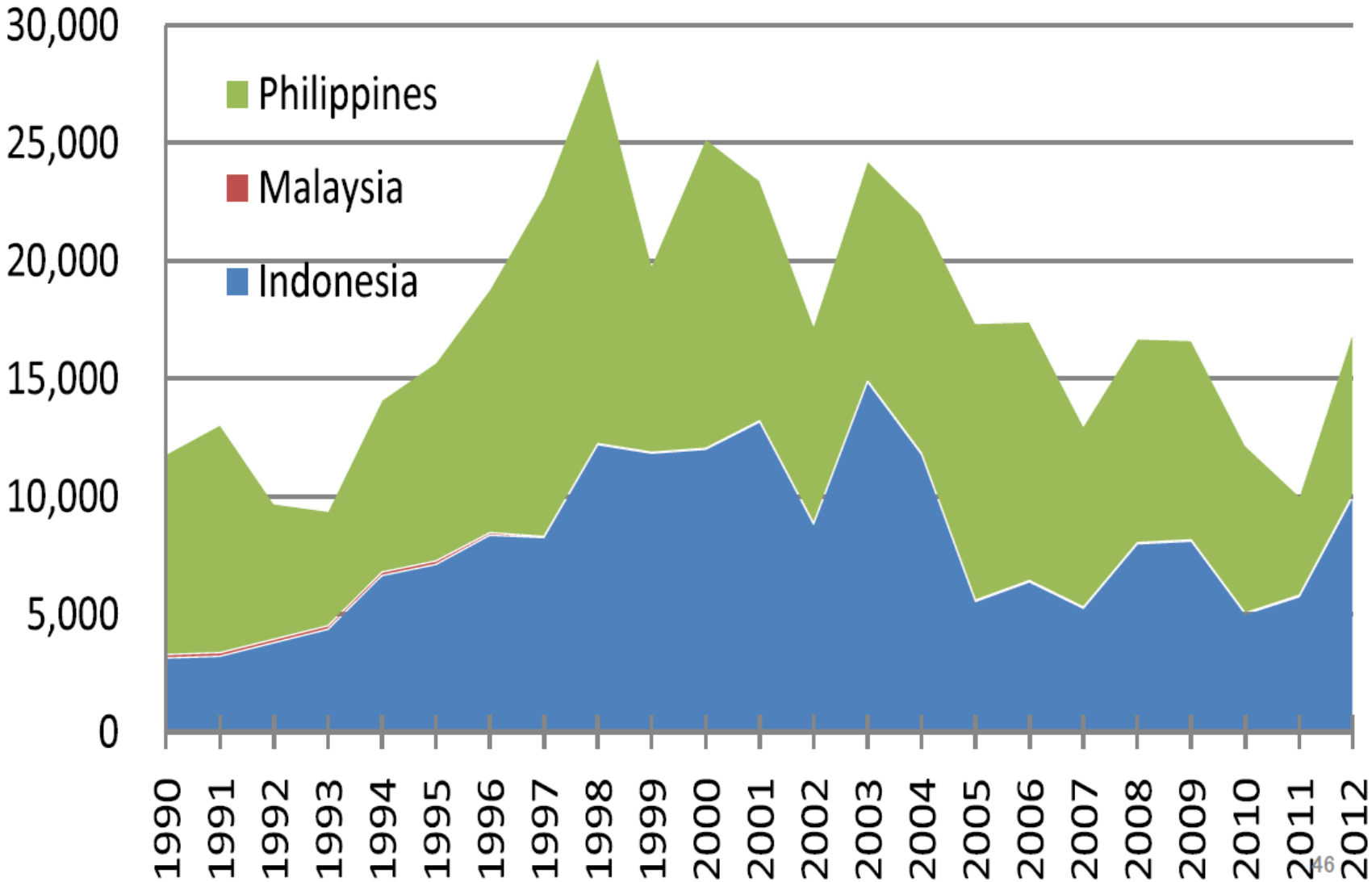
YFT catch (SSS) (1990-2012) (tons)

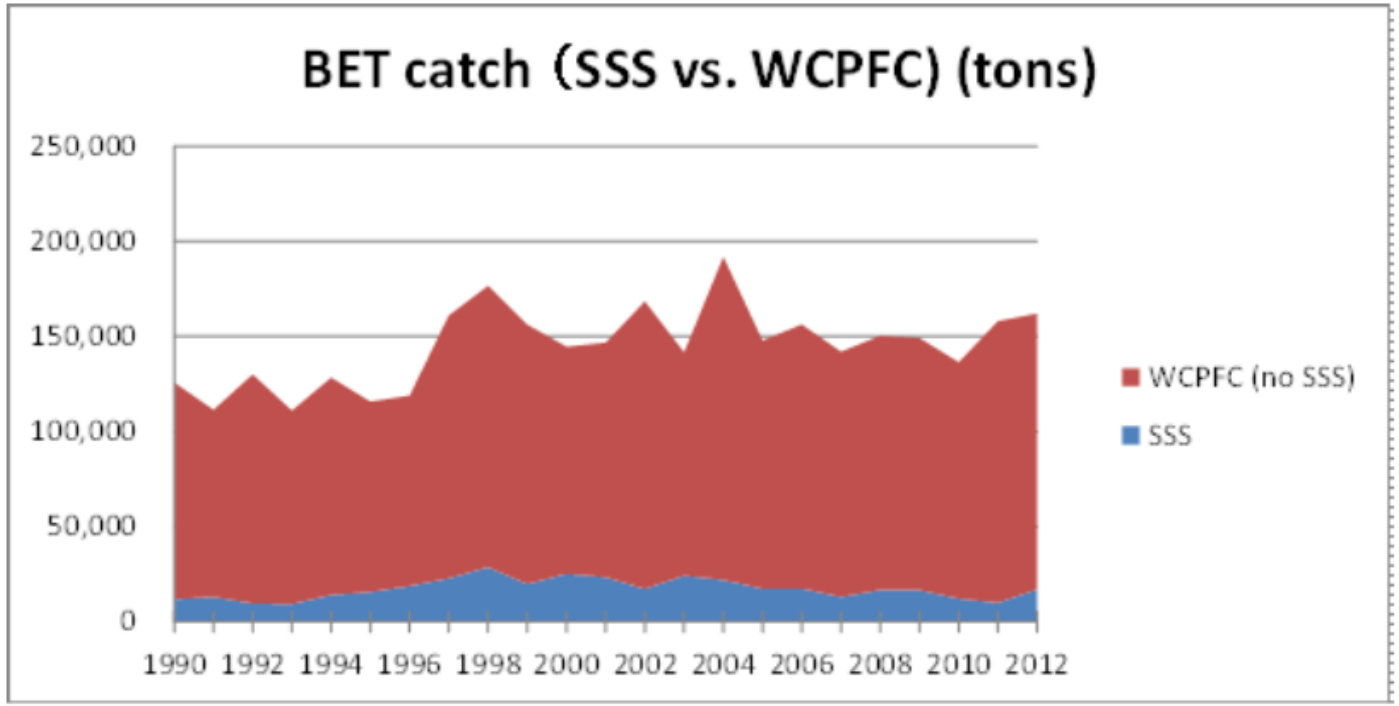


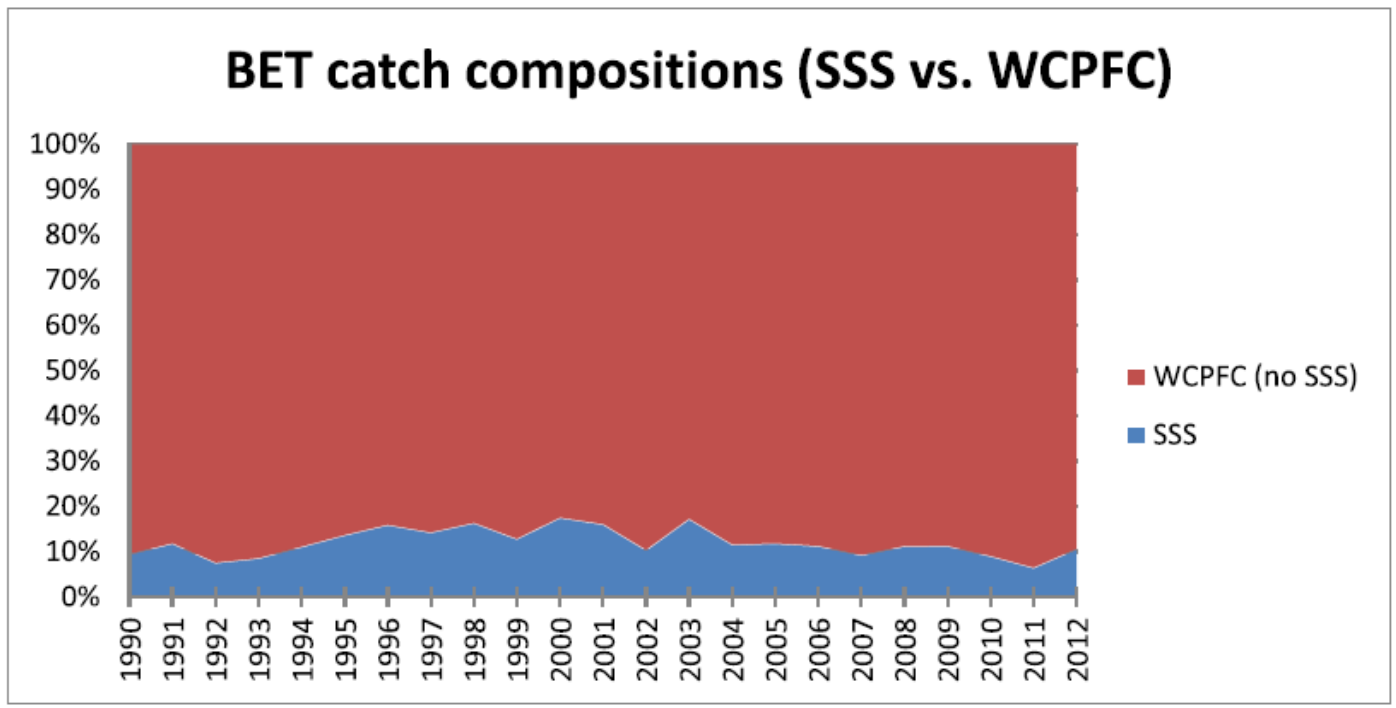

YFT Catch (SSS vs WCPFC) (tons)
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012
WCPFC (no SSS)
SSS


YFT catch compositions (SSS vs. WCPFC)
100%
80%
60%
40%
20%
0%
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012
WCPFC (no SSS)
SSS

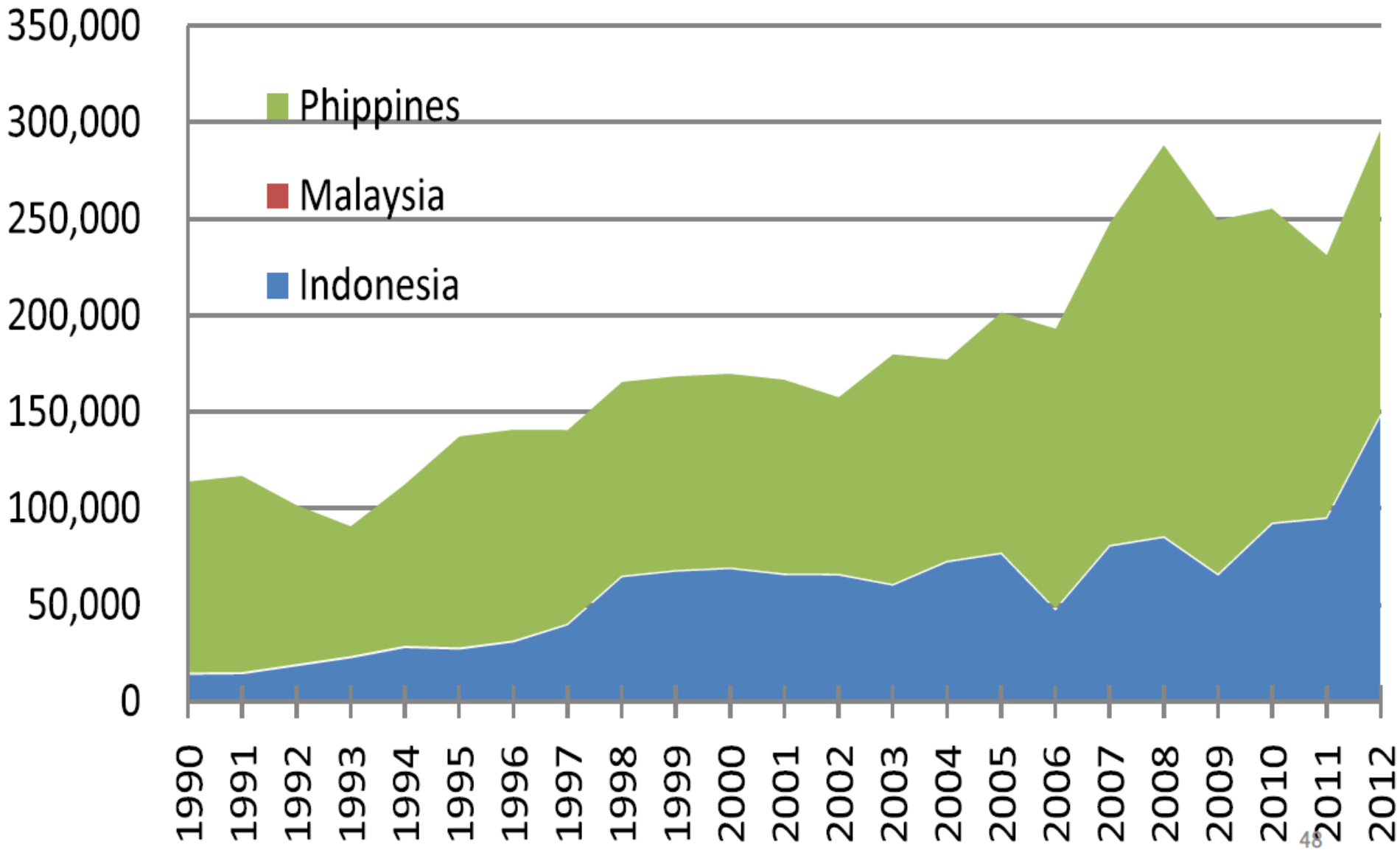
BET catch (SSS) (1990-2012) (tons)

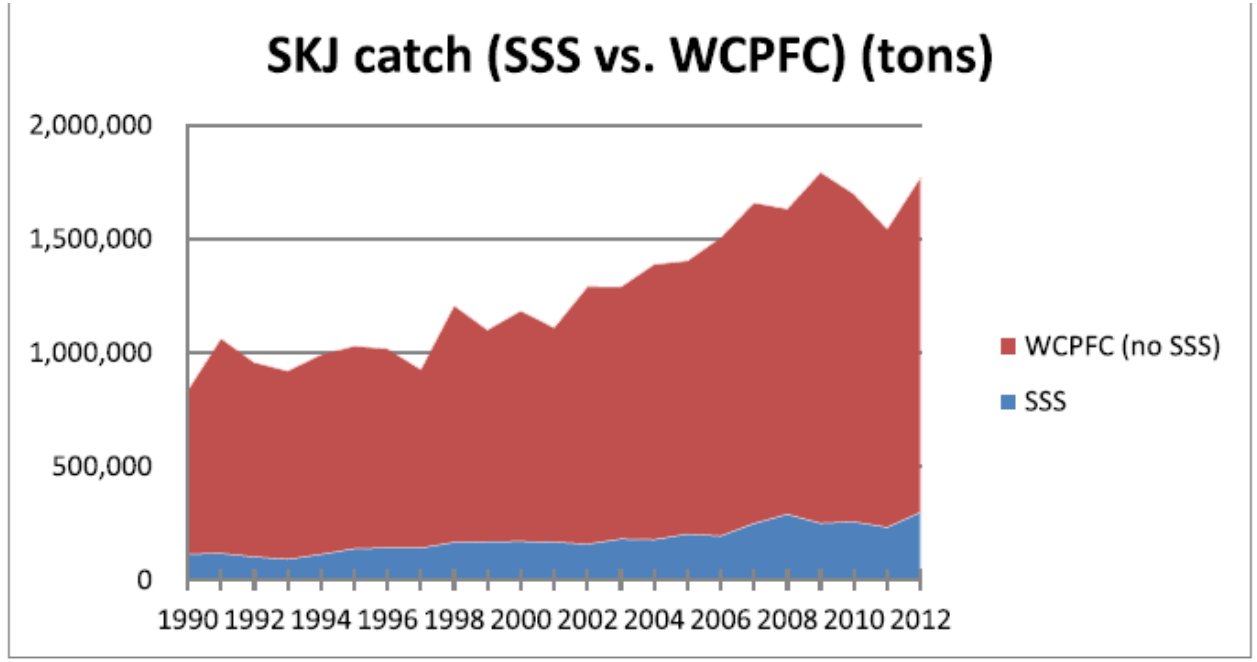


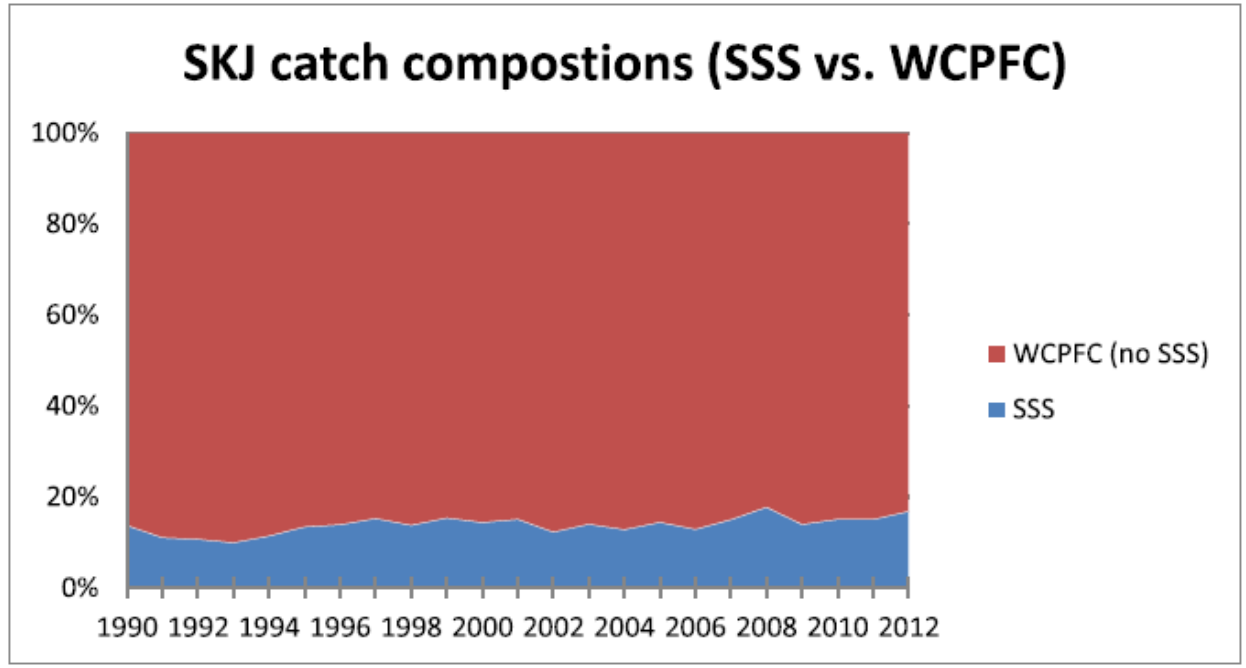

BET catch（SSS vs. WCPFC) (tons)
250,000
200,000
150,000
100,000
50,000
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012
WCPFC (no SSS)
SSS


BET catch compositions (SSS vs. WCPFC)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012
WCPFC (no SSS)
SSS

SKJ catch (SSS) (1990-2012) (tons)




SKJ catch (SSS vs. WCPFC) (tons)
2,000,000
1,500,000
1,000,000
500,000
0
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012
WCPFC (no SSS)
SSS


SKJ catch compostions (SSS vs. WCPFC)
100%
80%
60%
40%
20%
0%
1990 1992 1994 1996 1998 2000 2002 2004 2006 2008 2010 2012
WCPFC (no SSS)
SSS

	Average annual composition of SS catch In the WCPFC catch
YFT	19%
BET	12%
SKJ	14%

Estimated catch in SSS are reasonable and realistic

PRELIMINARY RESULTS

With precautions:

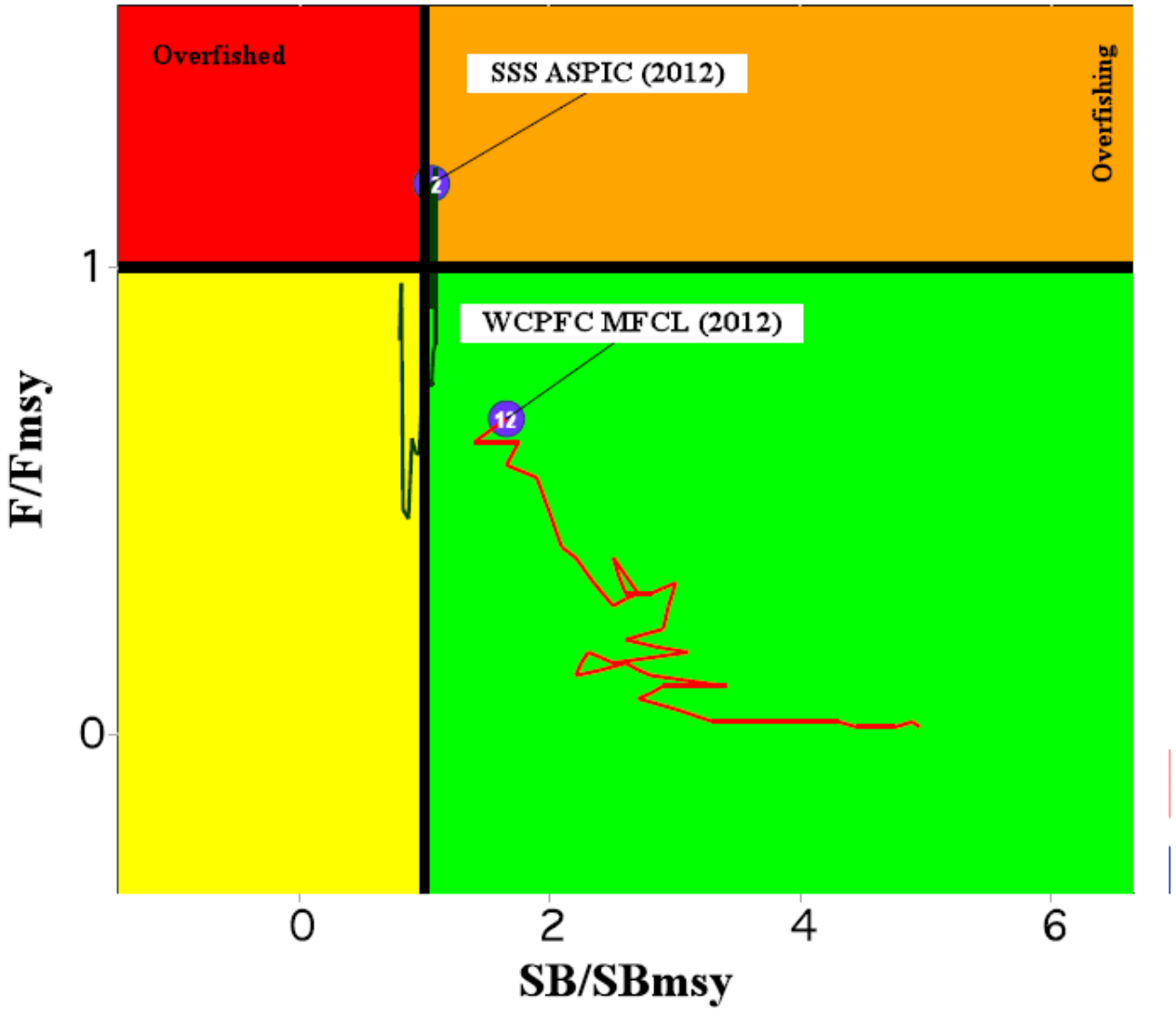
1.Most catches data in aggregated form, disaggregated using average species composition. This may subject to highly biased in estimation of catch.

2.Without biological and stock recruitment relationship – misled a kobe plot trajectories.

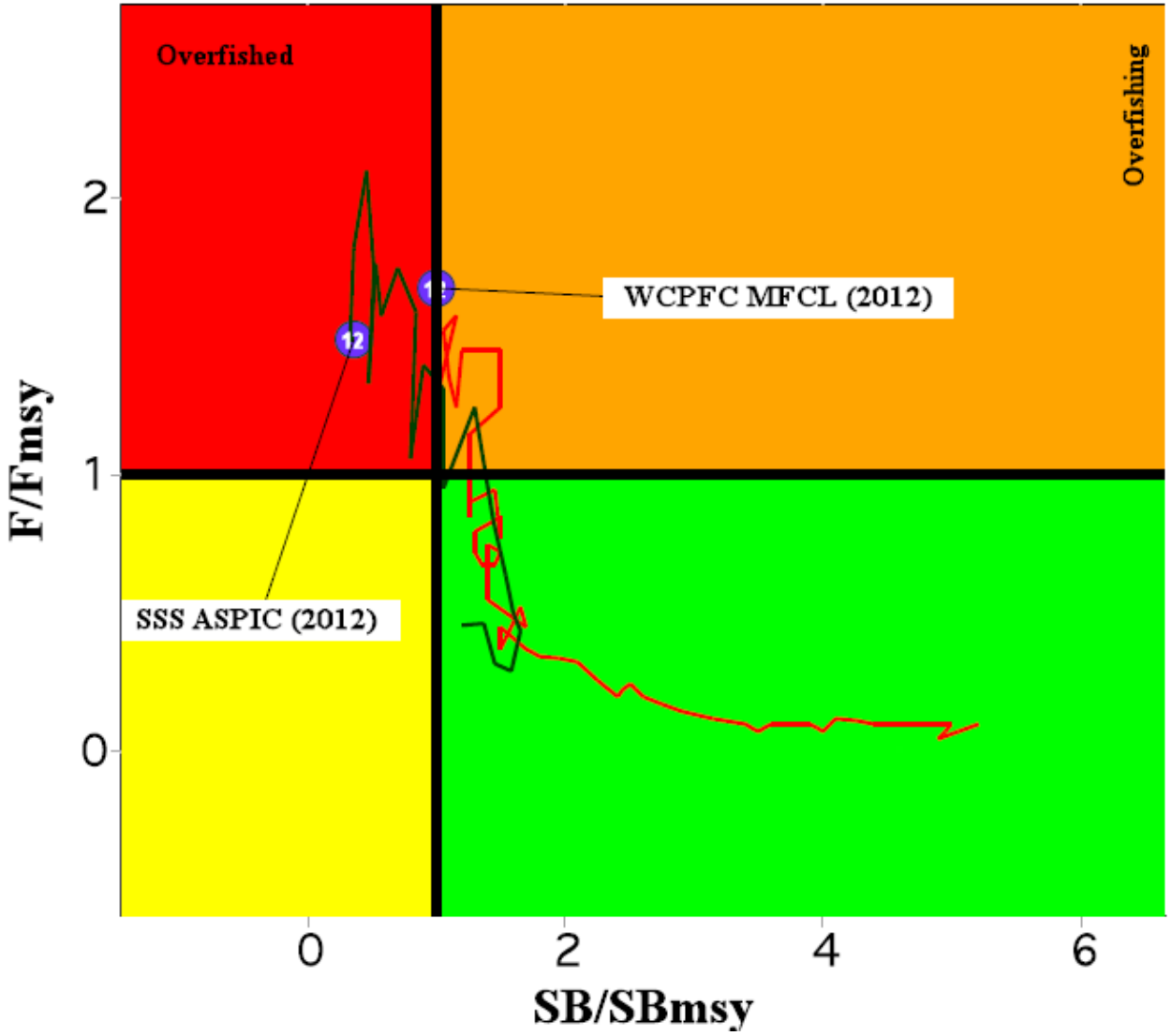
3.Highly rely on 10 years CPUE, subject to jump and trend

4.No clear negative correlation between catch and CPUE: which may not imply to real situation.

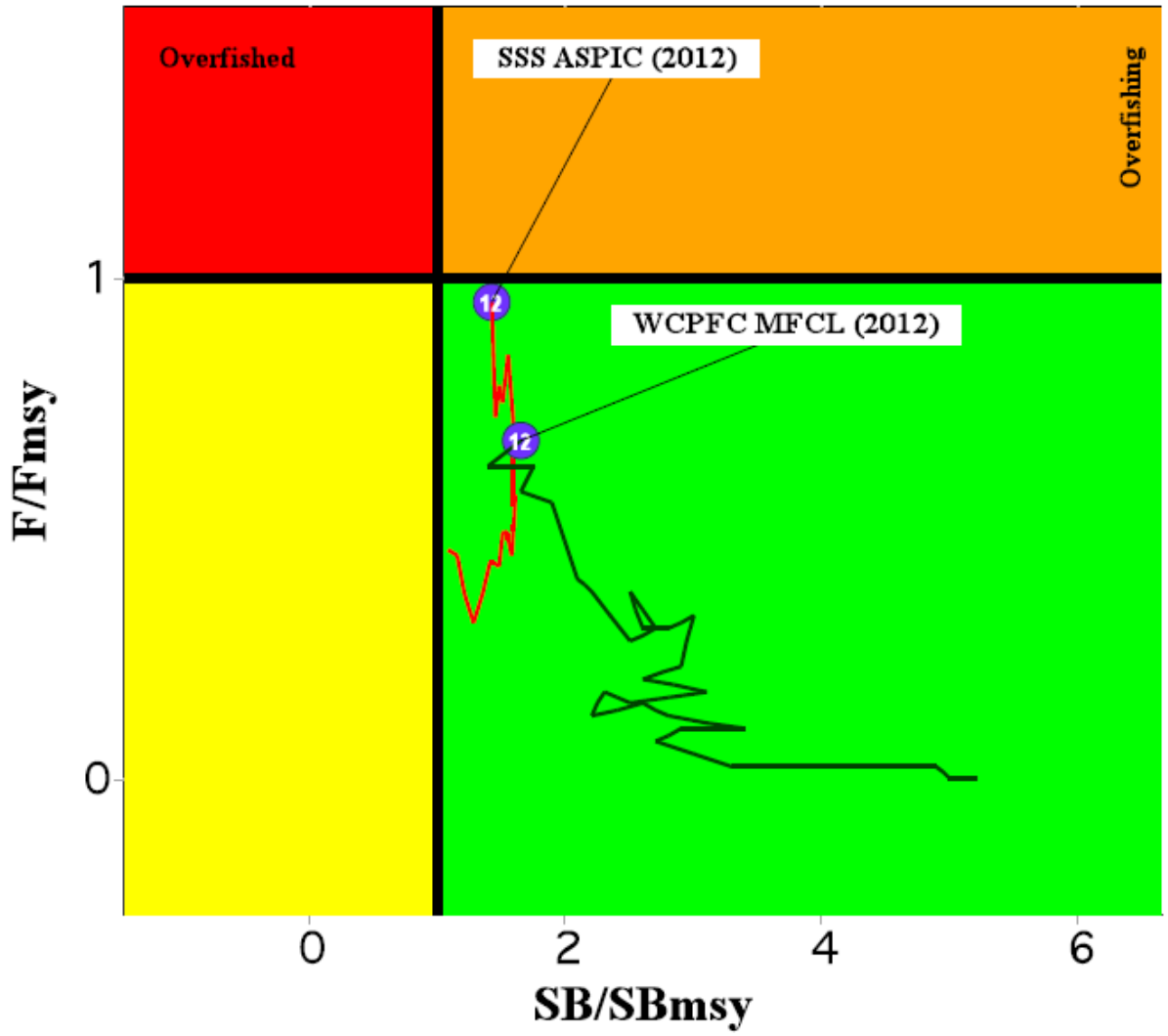
YELLOWFIN(draft)



BIGEYE(Draft)



SKIPJACK(Draft)



ISSUES

- Aggregated species composition
- Aggregated cpue
- Short period of CE Data
- Lack of biological info

Way Forward

- Improve present data collection system.
- Possible extend the purview of SWG- neritic tuna to cover oceanic tuna
- Capacity building in improving data collection for member countries

Attachment K

FISHERIES IMPROVEMENT PROJECT

TUNA LONG LINE AND HAND LINE

WWF-Viet Nam

Hai Phong Nov 2015





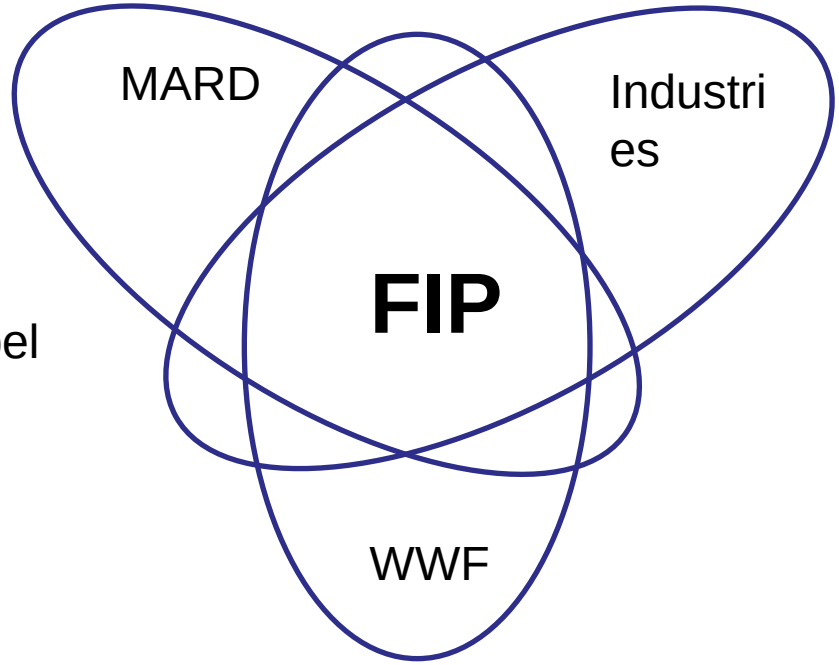
WHY?

Government (MARD):

•Sustainable development of the fisheries

•Sustainable livelihood for fishers

• Respond to WCPFC requirements



Industries 9Processors and Exporters)

• Some markets require or prioritize eco-label products or sustainable exploited product

• Maintain and access markets

WWF

• Sustainable use of marine resources, protecting the ecosystem and ETP species

• Sustainable production and consumption






WWF
JOHN WEST
DARDEN
WHOLE FOODS MARKET
Sainsbury's
Albert Heijn
AEON
MIGROS
SAFEWAY
Kroger
coles
Loblaws
HyVee
TARGET
Woolworths
the fresh food people
ALDI
COSTCO WHOLESALE
MARKS & SPENCER
McDonald's
TESCO
Walmart
Young's
YOUNG'S BLUECREST SEAFOOD LIMITED
Carrefour

HOW?

Use MSC standard as guideline:

- Sustainable stock (Govt. and WCPFC)
- Sustainable ecosystem (WWF and industries)
- Good management system (Govt.)

=> Develop the Action Plan for a FIP 2014-2018 with annual reviews

Principle	Component	Performance Indicator	Actual Year 1	Expected Year 3	Expected Year 4	Expected Year 5	Actual Year 2	Status	Actual Year 3	Status
1	Outcome/Kết quả đầu ra	1.1.1 Stock status	≥80	≥80	≥80	≥80	≥80	On Target	60-79	Behind
		1.1.2 Stock rebuilding	---	---	---	---	---		---	
	Management/Quản lý	1.2.1 Harvest Strategy	<60	60-79	60-79	≥80	<60	On Target	<60	Behind
		1.2.2 Harvest control rules and tools	<60	60-79	60-79	≥80	<60	On Target	<60	Behind
		1.2.3 Information and monitoring	60-79	60-79	60-79	≥80	60-79	On Target	60-79	On Target
		1.2.4 Assessment of stock status	≥80	≥80	≥80	≥80	≥80	On Target	≥80	On Target
2	Primary species/ Các loài chính	2.1.1 Outcome	<60	60-79	60-79	≥80	60-79	Ahead	60-79	On Target
		2.1.2 Management	60-79	60-79	60-79	≥80	<60	Behind	<60	Behind
		2.1.3 Information	60-79	60-79	≥80	≥80	60-79	On Target	60-79	On Target
	Secondary species/ Các loài thứ cấp	2.2.1 Outcome	<60	60-79	≥80	≥80	<60	On Target	<60	Behind
		2.2.2 Management	<60	60-79	60-79	≥80	<60	On Target	<60	Behind
		2.2.3 Information	<60	<60	≥80	≥80	<60	On Target	<60	On Target
	ETP species/Các loài nguy cấp hoặc được bảo tồn, bảo vệ	2.3.1 Outcome	<60	60-79	≥80	≥80	<60	On Target	<60	Behind
		2.3.2 Management	<60	60-79	≥80	≥80	<60	On Target	<60	Behind
		2.3.3 Information	60-79	60-79	≥80	≥80	<60	Behind	<60	Behind
	Habitats/ Sinh cảnh	2.4.1 Outcome	≥80	≥80	≥80	≥80	≥80	On Target	≥80	On Target
		2.4.2 Management	≥80	≥80	≥80	≥80	≥80	On Target	≥80	On Target
		2.4.3 Information	<60	≥80	≥80	≥80	<60	On Target	<60	Behind
	Ecosystem/ Hệ sinh thái	2.5.1 Outcome	≥80	60-79	≥80	≥80	60-79	Behind	60-79	On Target
		2.5.2 Management	60-79	60-79	≥80	≥80	60-79	On Target	60-79	On Target
		2.5.3 Information	60-79	60-79	≥80	≥80	60-79	On Target	60-79	On Target
	Governance and Policy/ Quản	3.1.1 Legal and customary framework	60-79	60-79	≥80	≥80	60-79	On Target	60-79	On Target

Expectations

- Stock status improved and reference points (LPRs and TRPs) are applied in fisheries management
- ETP species are protected (sea turtles, sharks)
- Management system follows the requirements of the international and regional regulations,
- …

- (52 milestones)





Role of WWF

- Coordinate FIP implementation
- Facilitate the stakeholders contributions
- Awareness raising to fishers
- Support the governments:
  - In the process of joining WCPFC where possible
  - Management of ETP species
  - Capacity building





Related WWF supports

- Observer program
- Expert sharings, flow down the requirement from WCPFC to lower management levels, industries and fishers
- Support Turtles and Sharks management development toward complying with WCPFC's CMMs
- Training on Risk assessment for Ecosystem/bycatch species and Enforcement
- Link industries and local Government, fishermen to implement responsible activities (logbook, traceability, IUU, sustainable practices,…)
- Create platform for industries and fishermen to input for Govt. management (VTCC)

THANK YOU!

WWF IN SHORT

+100

WWF is in over
100 countries, on
5 continents

+5000

WWF is in over
100 countries, on
5 continents

1961

WWF was founded
In 1961

+5M

WWF has over
5 million supporters

Attachment L

Tuna Stock Assessments – WCPFC style

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA SM Project)

THREE-COUNTRY STOCK ASSESSMENT WORKSHOP

RIMF Meeting Room, Haiphong, Viet Nam
3-6 November 2015

Overview

1. Stock assessment 101
2. Tuna stock assessments with MULTIFAN-CL
3. Management evaluations
4. Management frameworks – objectives, reference points, HCRs, performance indicators

Stock Assessment – what is it?

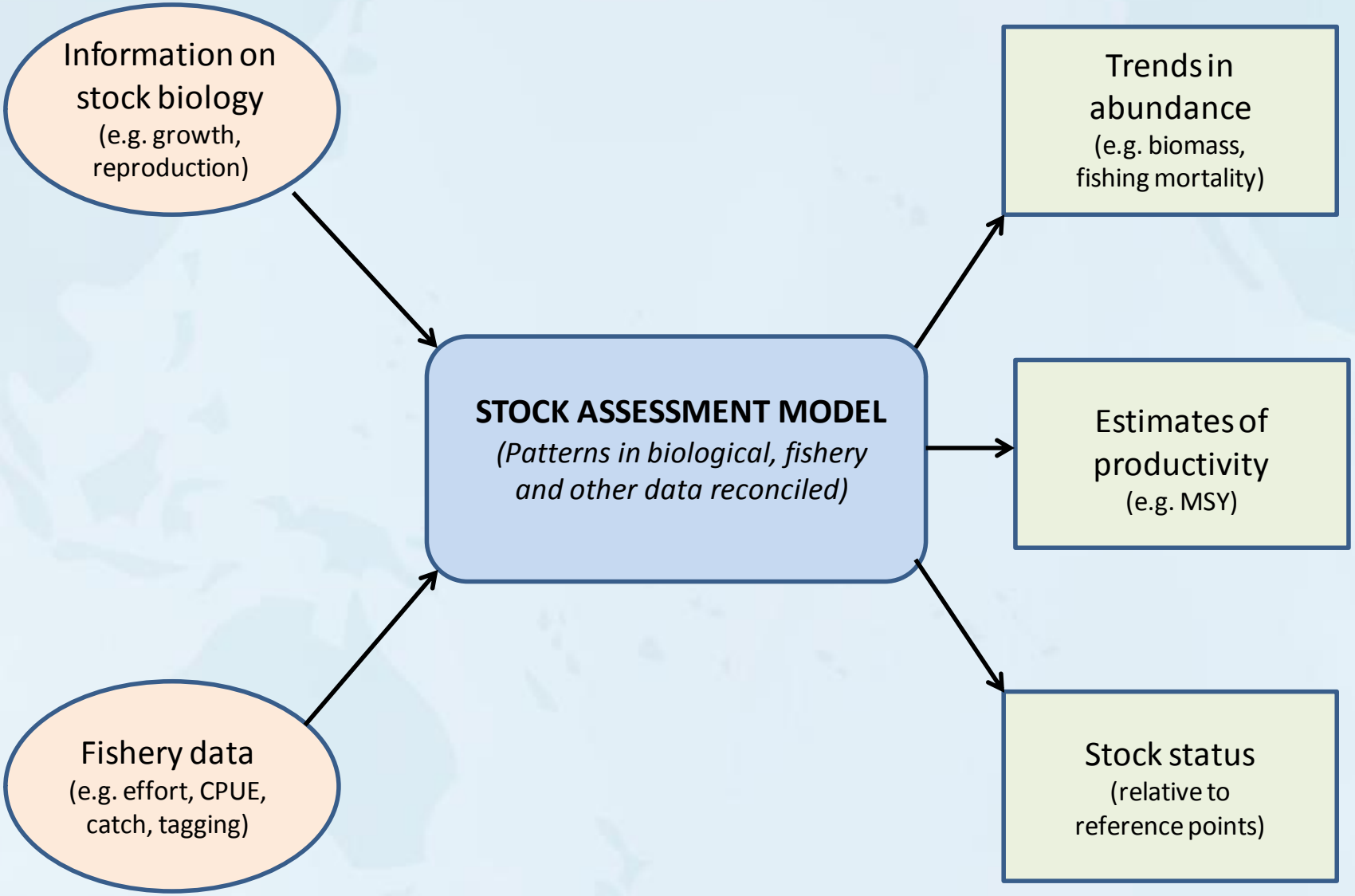
Stock assessment is a multi-step process that starts with management questions, and includes processes involved in data collection, model selection, stock assessment modelling, and subsequent advice to decision makers.

Process	Primary Responsibility
1. Determine the questions to be answered	Managers & Policy makers
2. Choose an appropriate model	Scientists
3. Design and implement an appropriate data collection system	Scientists, managers, fishers
4. Collect the required data:	Fishers, scientists, managers
5. Build the model	Scientists
6. Run the assessment	Scientists
7. Interpret the assessment Results	Scientists, managers, policy makers
8. Scientific advice to decision makers	Scientists
9. Decision makers make decisions	Managers & Policy makers

Stock Assessment Modelling

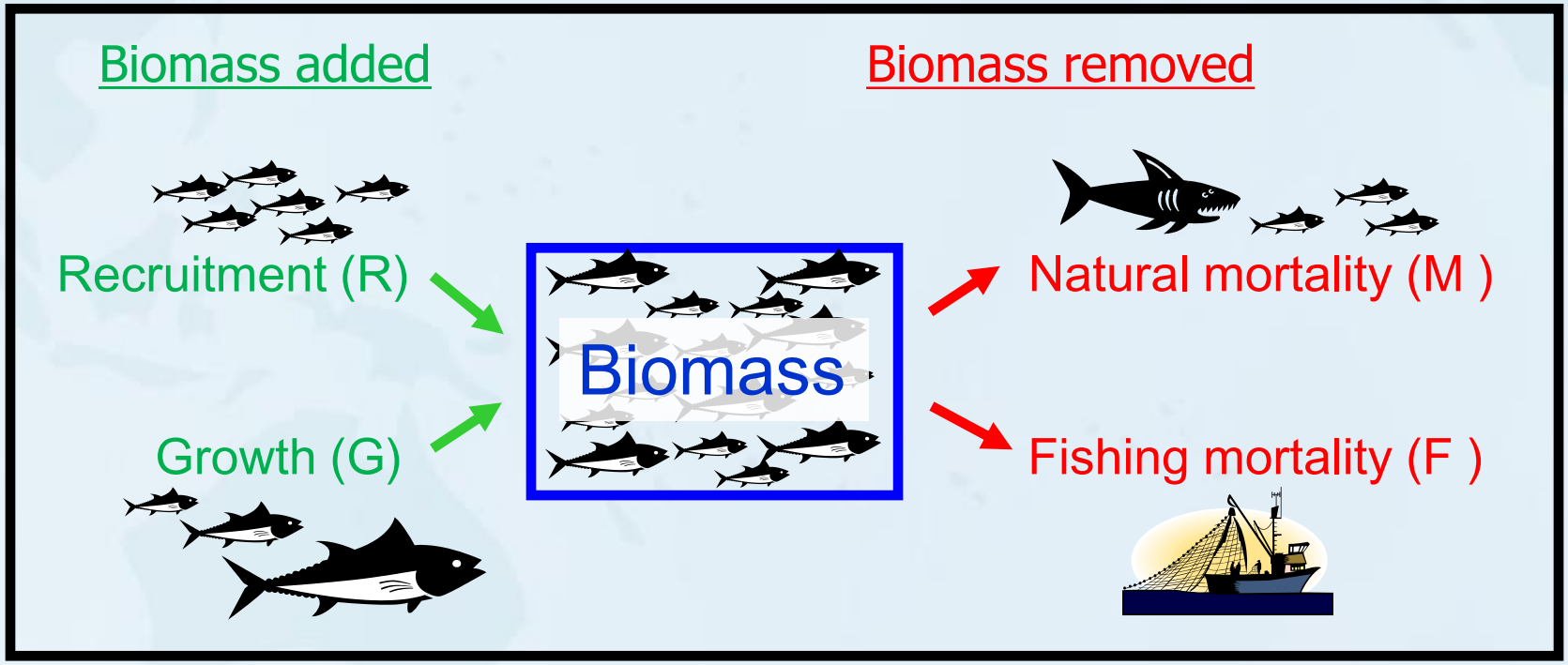
A stock assessment model provides a mathematical simplification of a very complex system (fish and fishery), to help us estimate population changes over time in response to fishing

Stock Assessment Modelling



Stock Assessment Model

Must take into account (at the very least) four key processes: Recruitment, Growth, Natural Mortality and Fishing Mortality, conceptually expressed as:



Stock Assessment Model – Mathematical Specification

Age Structured Model

$$N_{t+1,a+1} = N_{t,a}e^{-(M_a + F_{t,a})}$$

$$F_{t,a} = q_t E_t s_a$$

$$C_{t,a} = N_{t,a}F_{t,a}w_a$$

$$R_t = (AS_t)/(b+S_t)$$

$$N_{t+1,1} = R_t$$

$$B_t = \Sigma N_{t,a}w_a$$

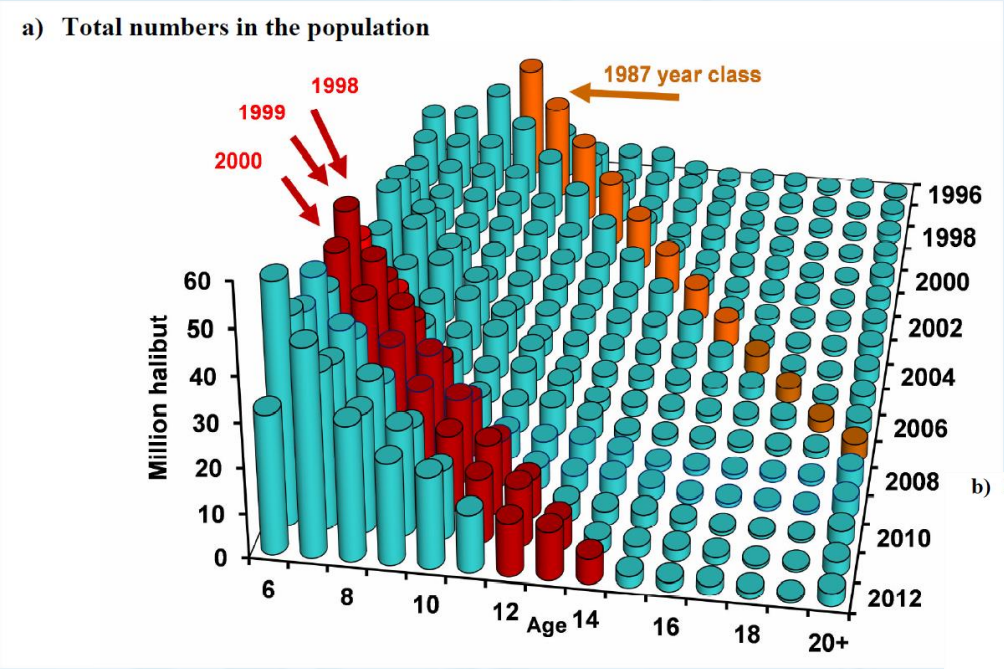
$$S_t = \Sigma N_{t,a}w_a o_a$$

$$VB_t = \Sigma N_{t,a}w_a s_a$$

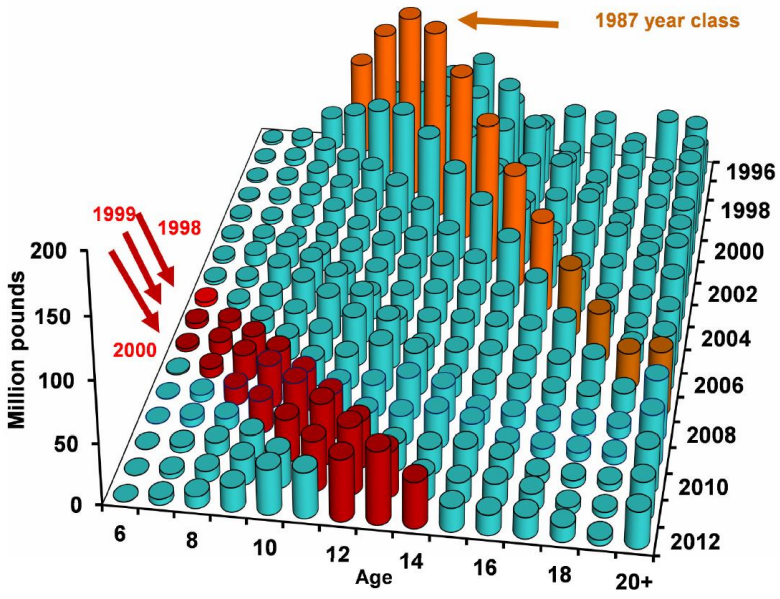
$N_{t+1,a+1}$ = Number of fish of age+1 at time+1
M_a = natural mortality rate at age *a*
F_a = fishing mortality rate at age *a*
q = catchability
E = fishing effort (units)
s = age specific vulnerability to the gear (selectivity of the gear)
$C_{t,a}$ = Catch at time t and age *a*
w_a = Mean weight at age *a* *<< (Growth)*
R_t = Recruitment at time t
A = maximum recruitment
b = Stock size when recruitment is half the maximum recruitment
w_a = weight at age a
o_a = proportion mature at age a
B_t = population biomass at time t
S_t = spawning stock biomass at time t
VB = vulnerable biomass at time t

Illustration of Age-Structure

a) Total numbers in the population



b) Exploitable biomass in the population



Key Stock Assessment Outputs

- Time series of recruitment
- Time series of biomass (total and spawning)
- Time series of fishing mortality and fishery impact
- Stock status indicators

<u>Other</u>

- Estimates of biological parameters – growth, movements, natural mortality, etc

What is MULTIFAN-CL?

- Statistical age-structured model
- Separable fishing mortality – selectivity and catchability
- Spatial structure and movement
- Fit to catch, size (length and weight frequency) and tagging data, effort data also required
- Estimated parameters – selectivity, catchability, movement, recruitment , growth, natural mortality, SRR steepness
- Fixed parameters – length-weight, maturity-at-age
- Stock status determination – MSY-based reference points, fishery impact

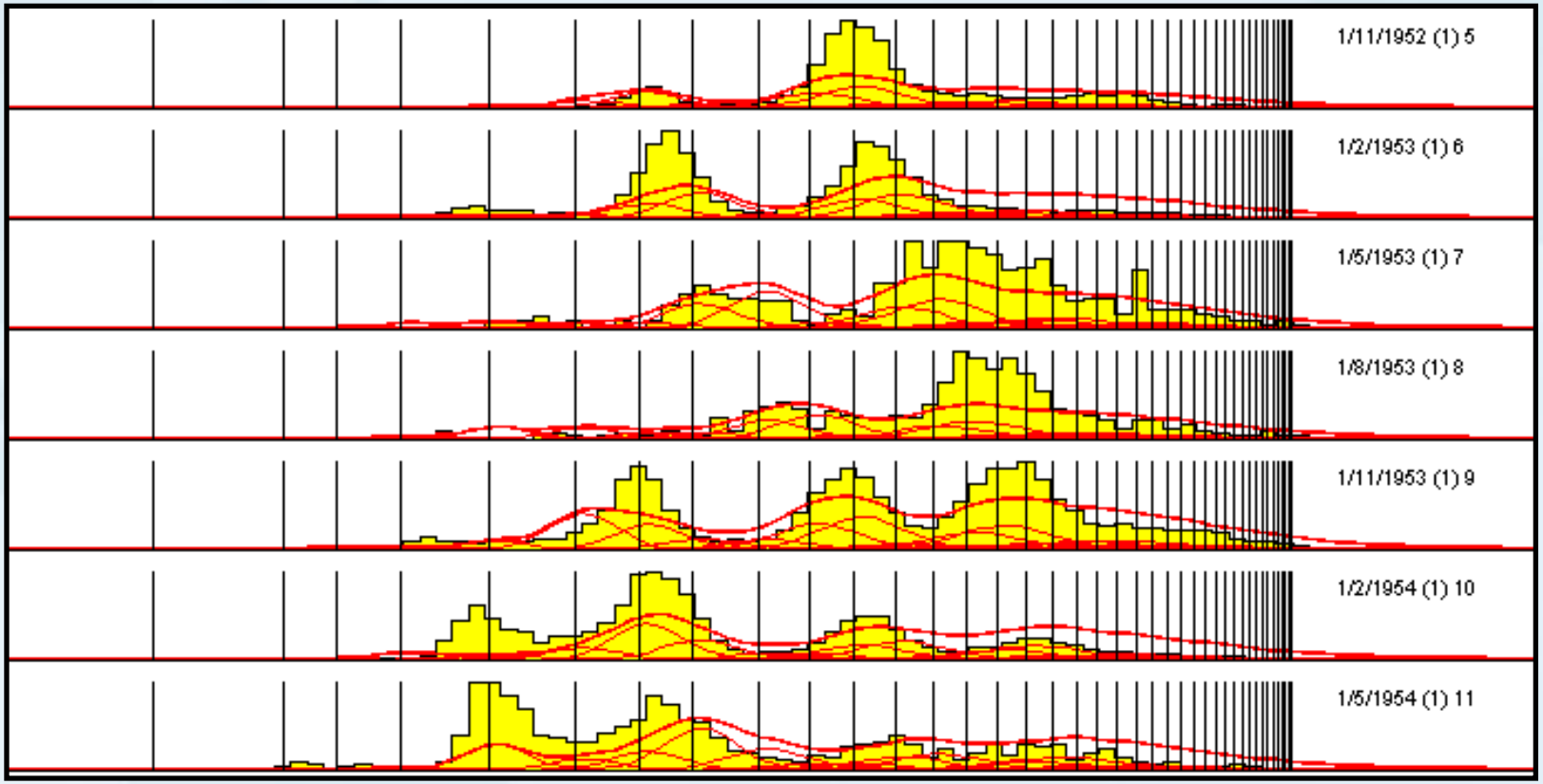
General Requirements

- Regularity in the temporal exploitation dynamics
- Size selectivity is (more or less) constant
- Some fisheries have monotonically increasing selectivity with age-class
- Catch is assumed to be known with relative certainty
- There are some fisheries for which catchability is (more or less) constant, i.e. we have one or more indices of “exploitable” abundance
- If spatially structured, there are some fisheries that index relative abundance among regions

Data Sources

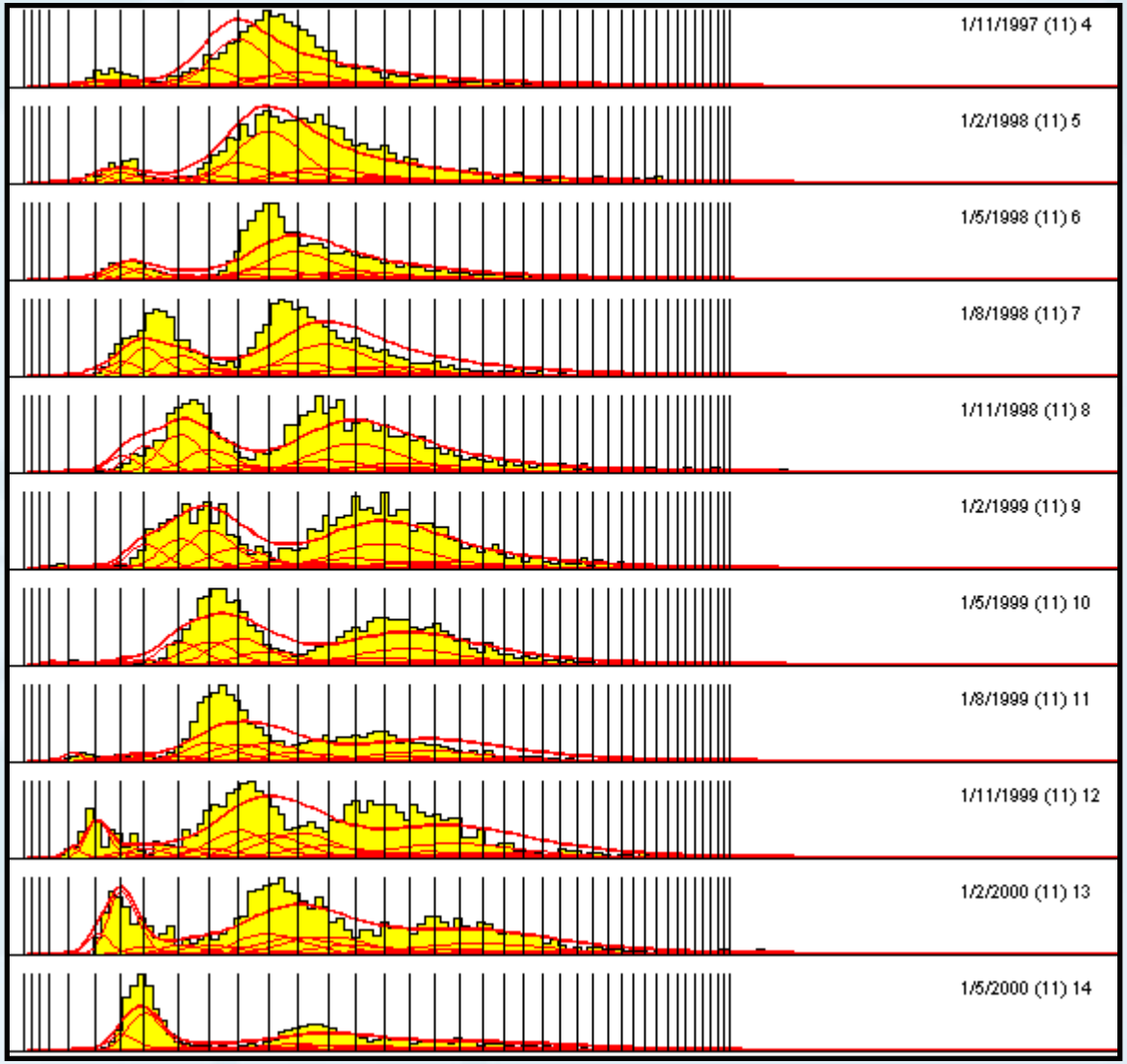
- Catch (number of fish, weight)
- Effort – standardised (LL), nominal
- Length frequency
- Weight frequency (whole weights)
- Tag releases and recoveries.
- Auxiliary information used to formulate priors, e.g. estimates of tag reporting rates.

Informative Size Data
Length-frequency



Informative Size Data

Weight-frequency



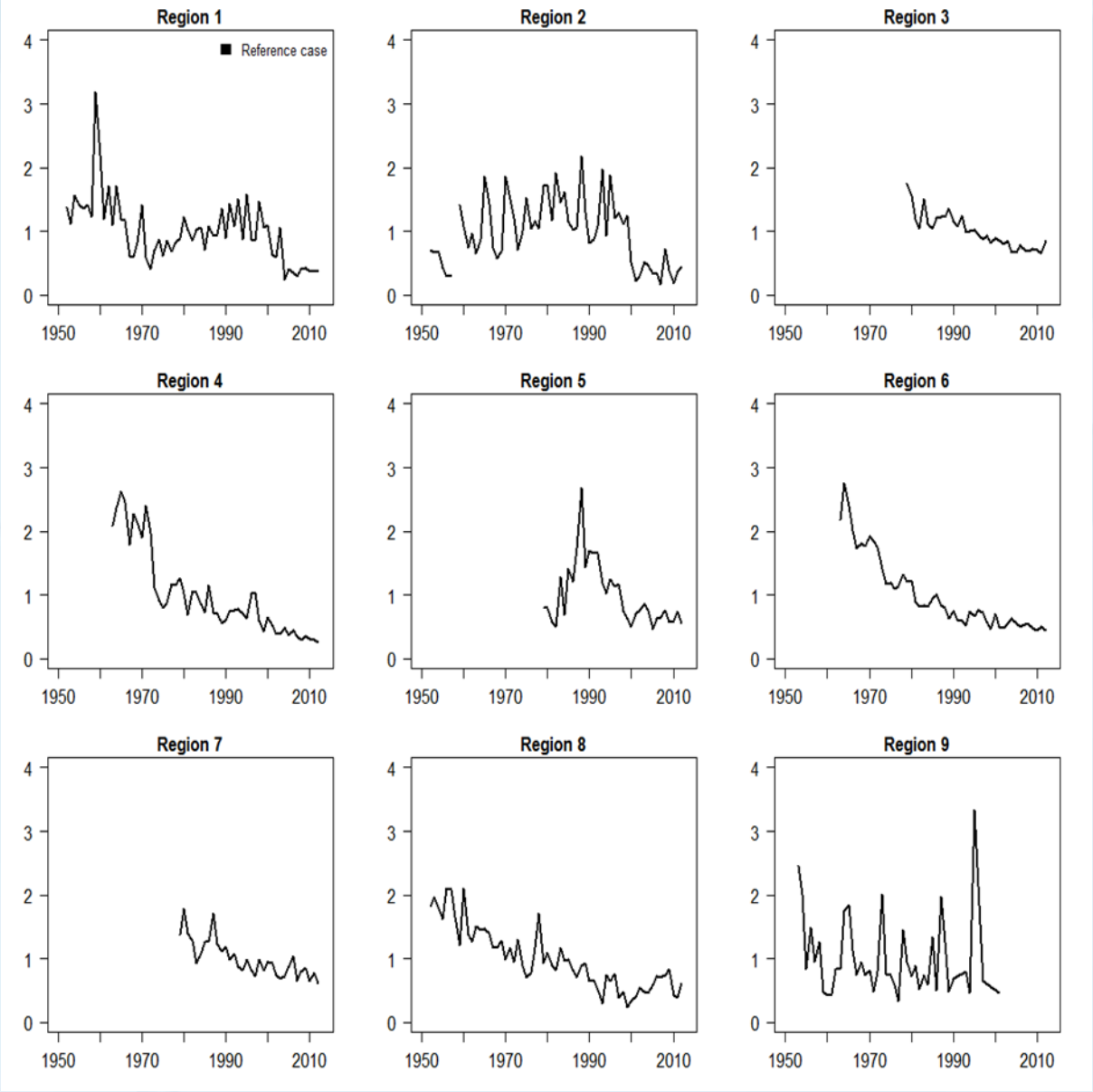
CPUE

Standardised LL indices principal index for monitoring LL exploitable biomass.

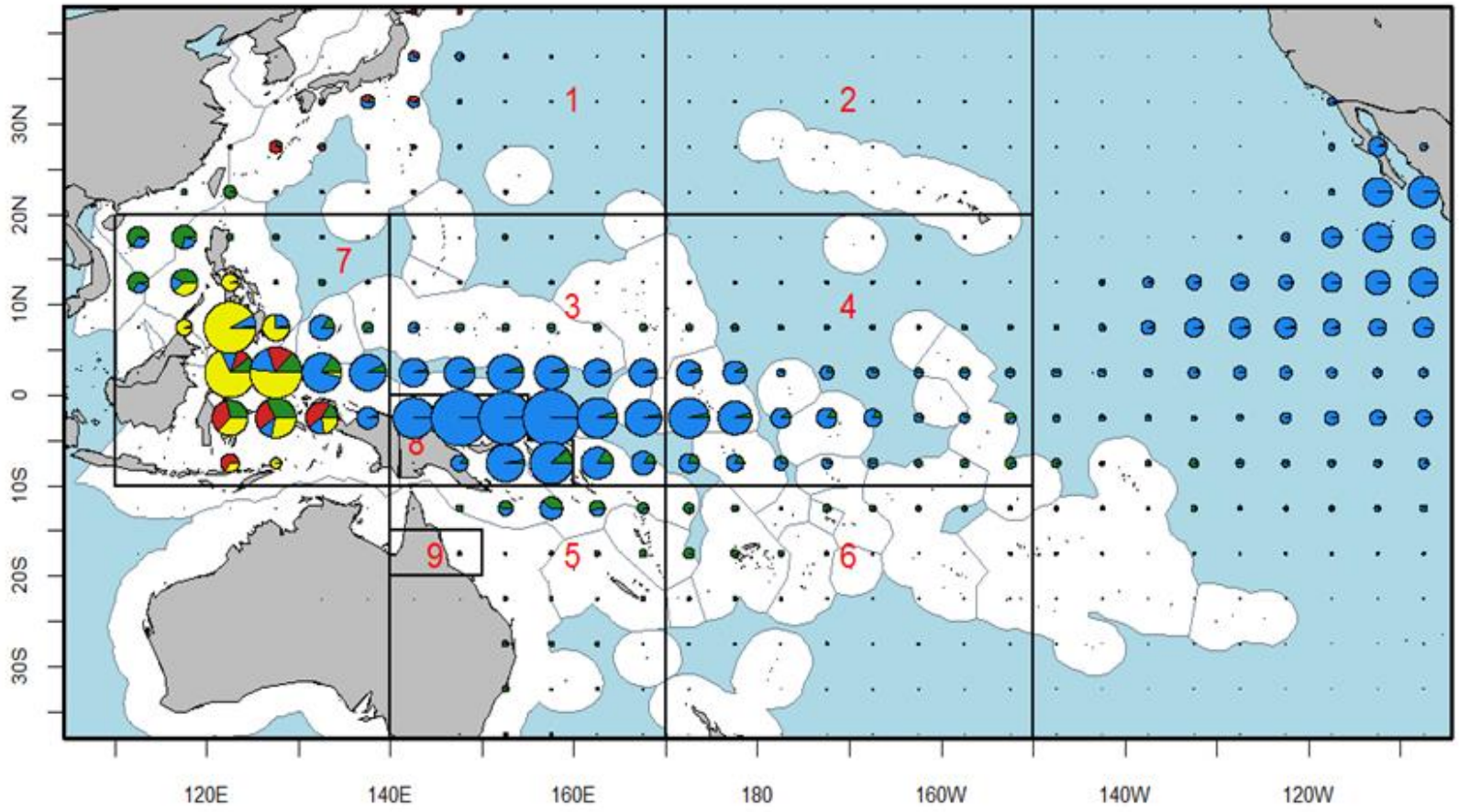
Standardised effort series.

Scaled by area weighting factors.

Constant catchability.



Spatial Structure

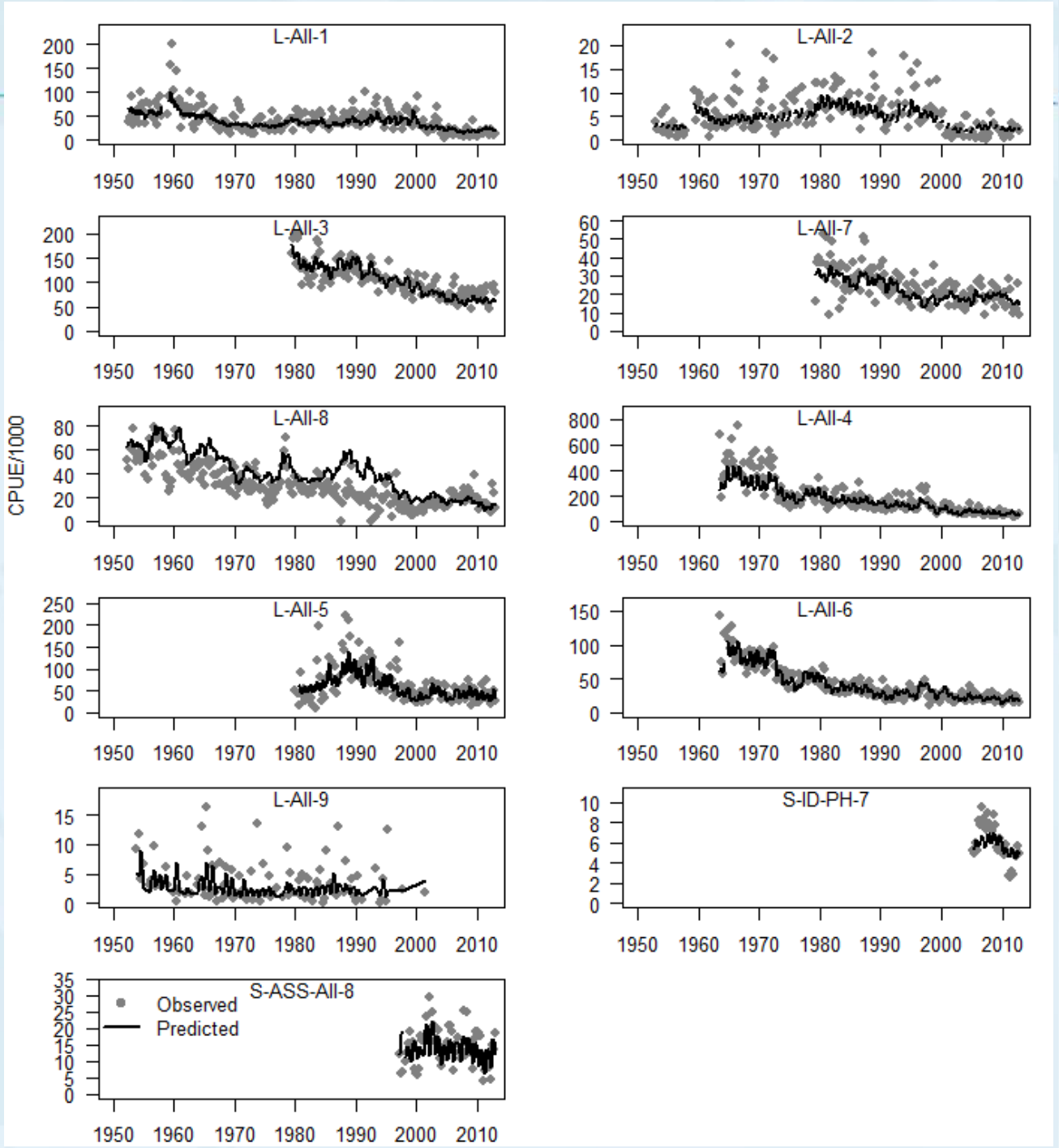


Fishery Definitions

Fishery	Nationality	Gear	Regi
1. L ALL 1	All	Longline	1
2. L ALL 2	All, except US	Longline	2
3. L US 2	United States	Longline	2
4. L All 3	All, except CT-Offshore, CN, FSM, MH, PH, ID, and PW	Longline	3
5. L OS-E 3	Eastern LL region 3: CT-Offshore, CN, FSM, MH, PH, PW, and ID	Longline	3
6. L OS-W 7	Western LL region 7: CT-Offshore, CN, FSM, MH, PH, PW, VN, and ID	Longline	7
7. L All 7	All, except CT-Offshore, CN, FSM, MH, PH, ID, and PW	Longline	7
8. L All 8	All	Longline	8
9. L All 4	All, except US	Longline	4
10. L US 4	United States	Longline	4
11. L AU 5	Australia	Longline	5
12. L All 5	All excl. Australia	Longline	5
13. L All 6	All	Longline	6
14. S-ASS All 3	All, except ID and PH dom	Purse seine, log/FAD sets	3
15. S-UNS All 3	All, except ID and PH dom	Purse seine, school sets	3
16. S-ASS All 4	All	Purse seine, log/FAD sets	4
17. S-UNS All 4	All	Purse seine, school sets	4
18. Misc PH 7	Philippines	Miscellaneous (small fish), including purse seine within PH archipelagic waters.	7
19. HL ID-PH 7	Philippines, Indonesia	Handline (large fish)	7
20. S JP 1	Japan	Purse seine, all sets	1
21. P JP 1	Japan	Pole-and-line	1
22. P All 3	All, except Indonesia	Pole-and-line	3
23. P All 8	All	Pole-and-line	8
24. Misc ID 7	Indonesia	Miscellaneous (small fish), including purse seine within ID archipelagic waters.	7
25. S PHID 7	Philippines and Indonesia	Offshore purse seine in waters east of about 125°E (and outside of PH and ID archipelagic waters).	7
26. S-ASS All 8	All	Purse seine, log/FAD sets	8
27. S-UNS All 8	All	Purse seine, school sets	8
28. L AU 9	Australia	Longline	9
29. P All 7	All	Pole-and-line	7
30. L All 9	All	Longline	9
31. S-ASS All 7	All, except ID and PH dom	Purse seine, log/FAD sets	7
32. S-UNS All 7	All, except ID and PH dom	Purse seine, school sets	7
33. Misc VN 7	VN	Miscellaneous including purse seine and gillnet within VN waters	7

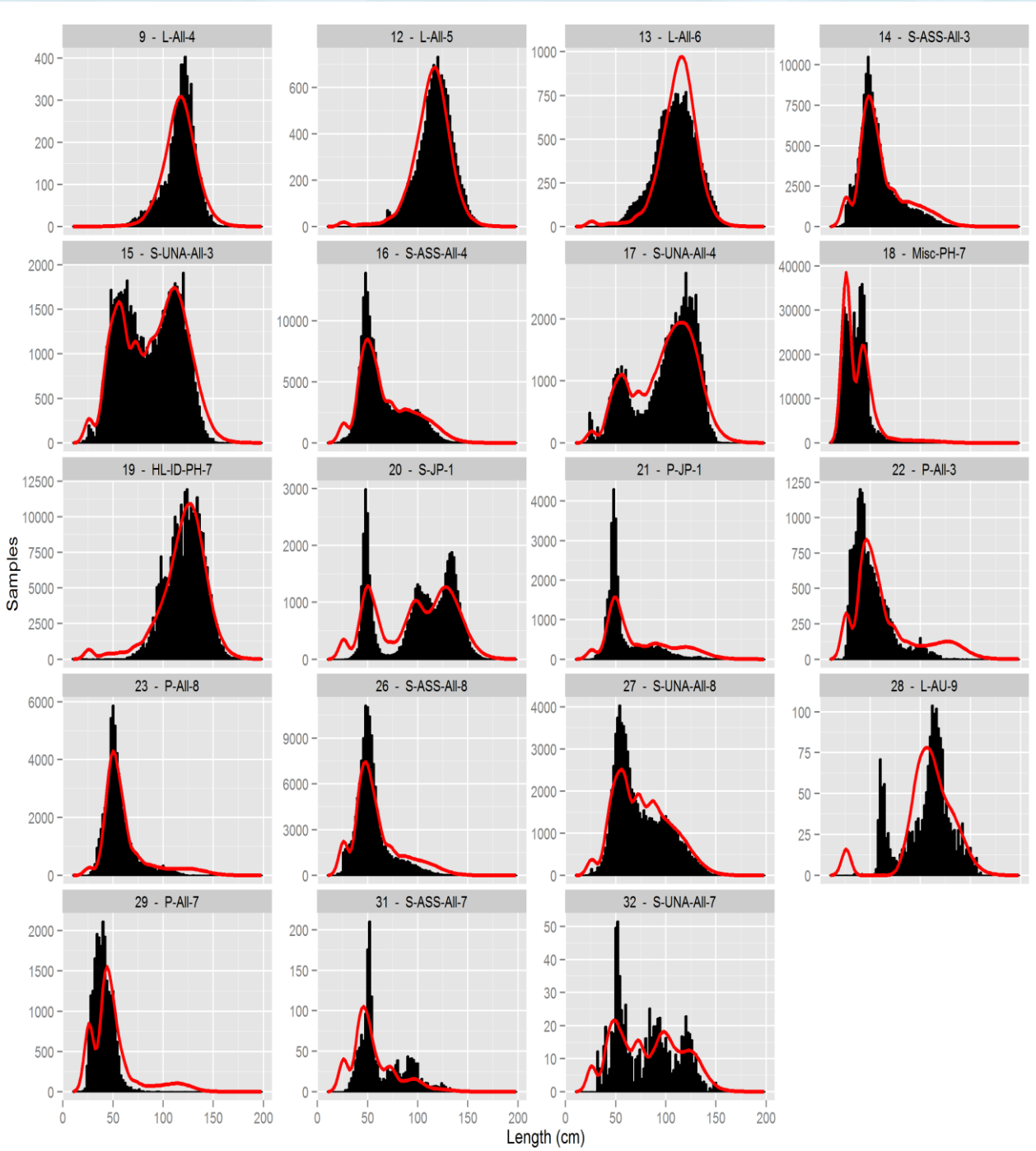
Model Diagnostics

1. CPUE fits



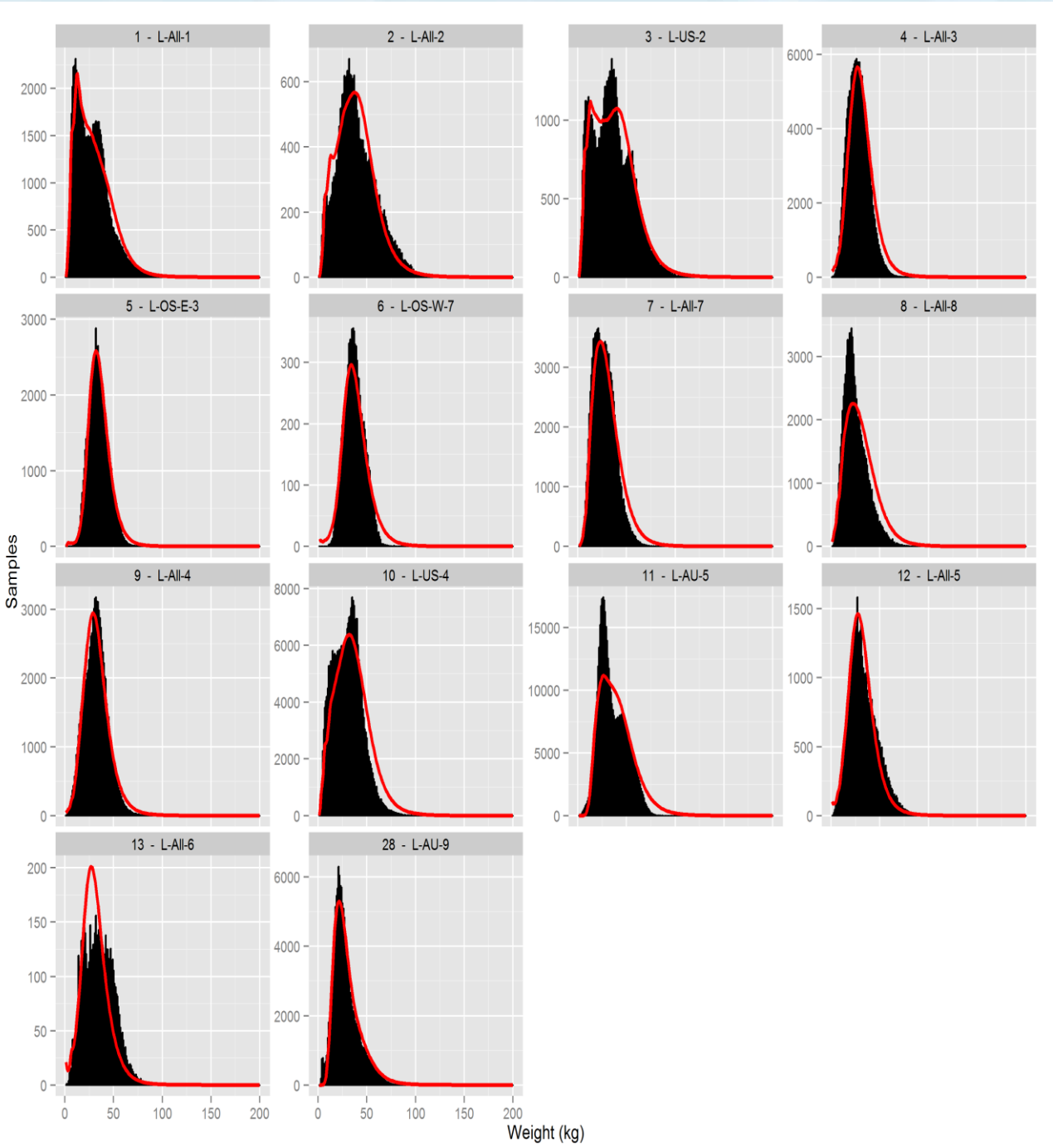
Model Diagnostics

2. Length Data Fits



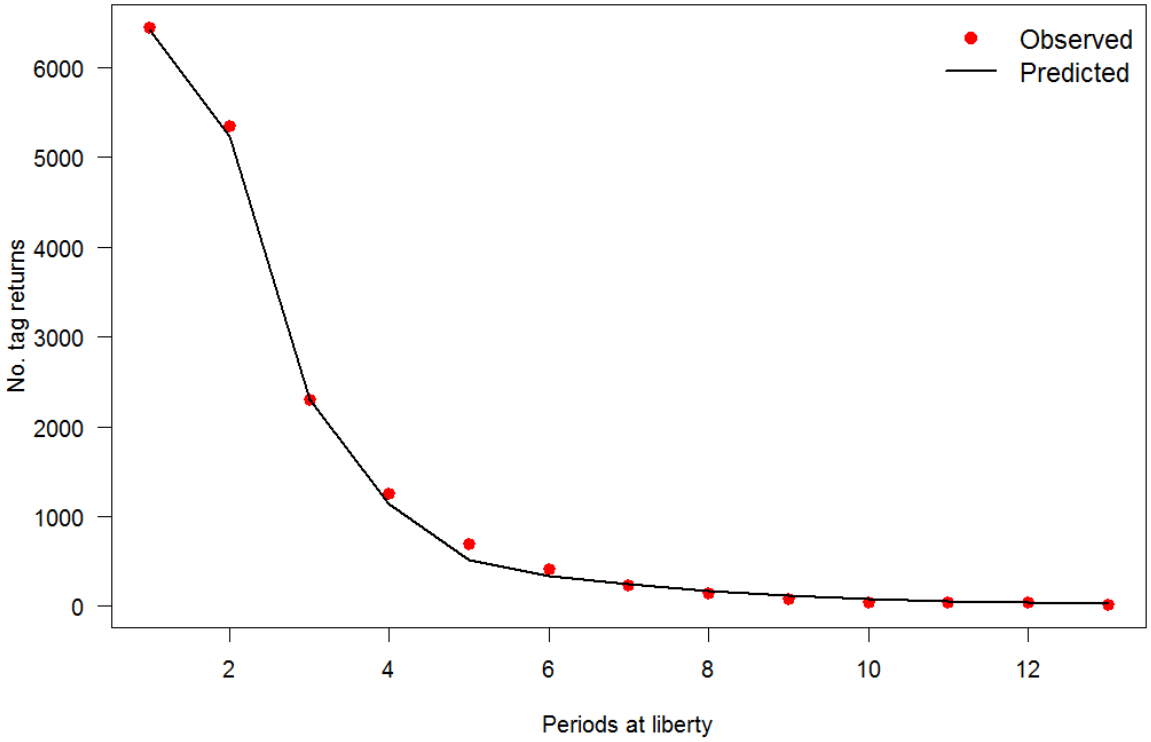
Model Diagnostics

3. Weight Data Fits



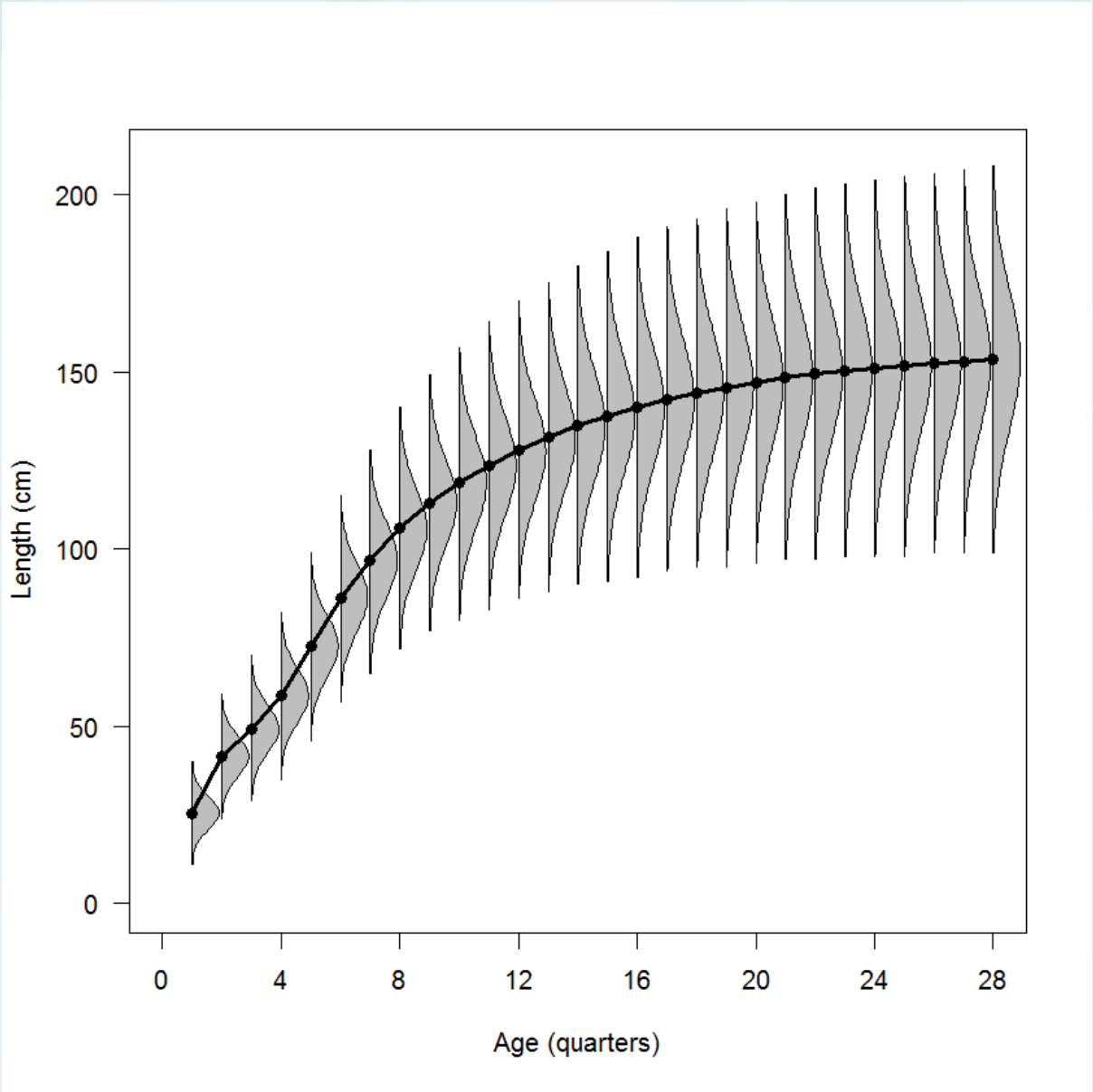
Model Diagnostics

4. Tag Data Fits



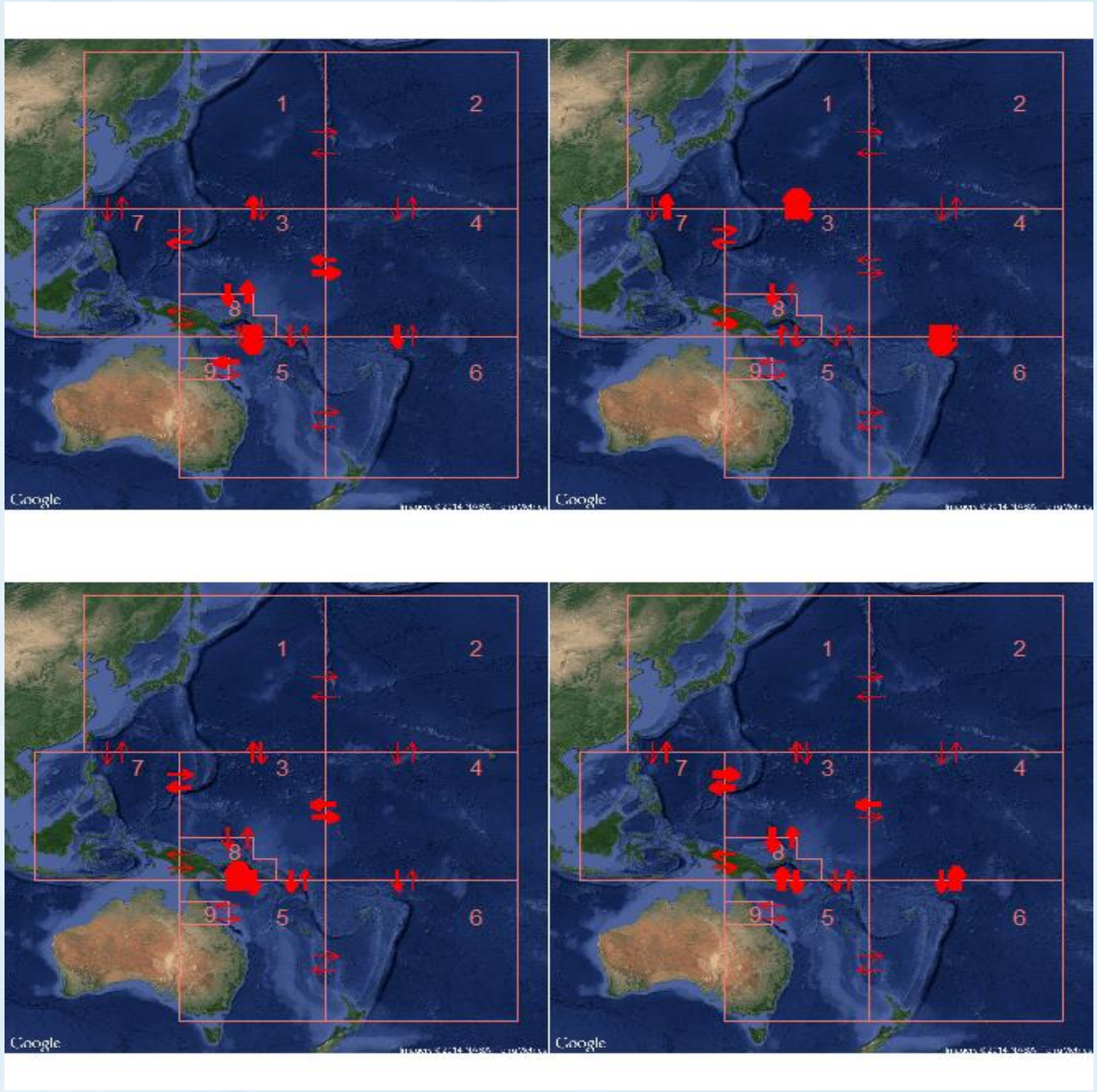
Parameter estimates

Growth



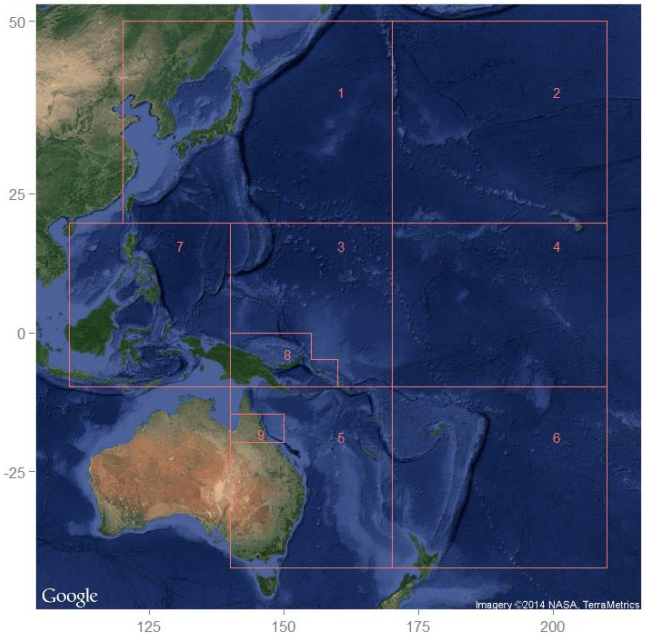
Parameter estimates

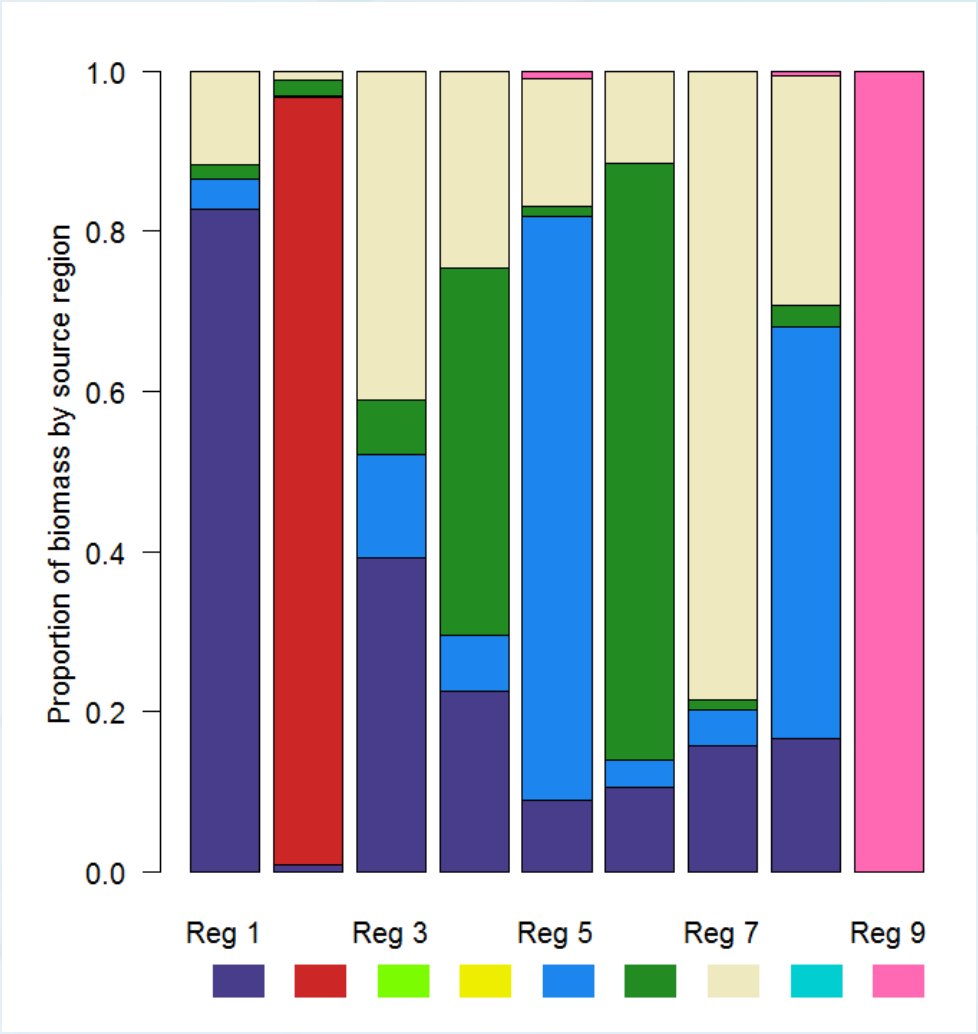
Movement coefficients



Parameter estimates

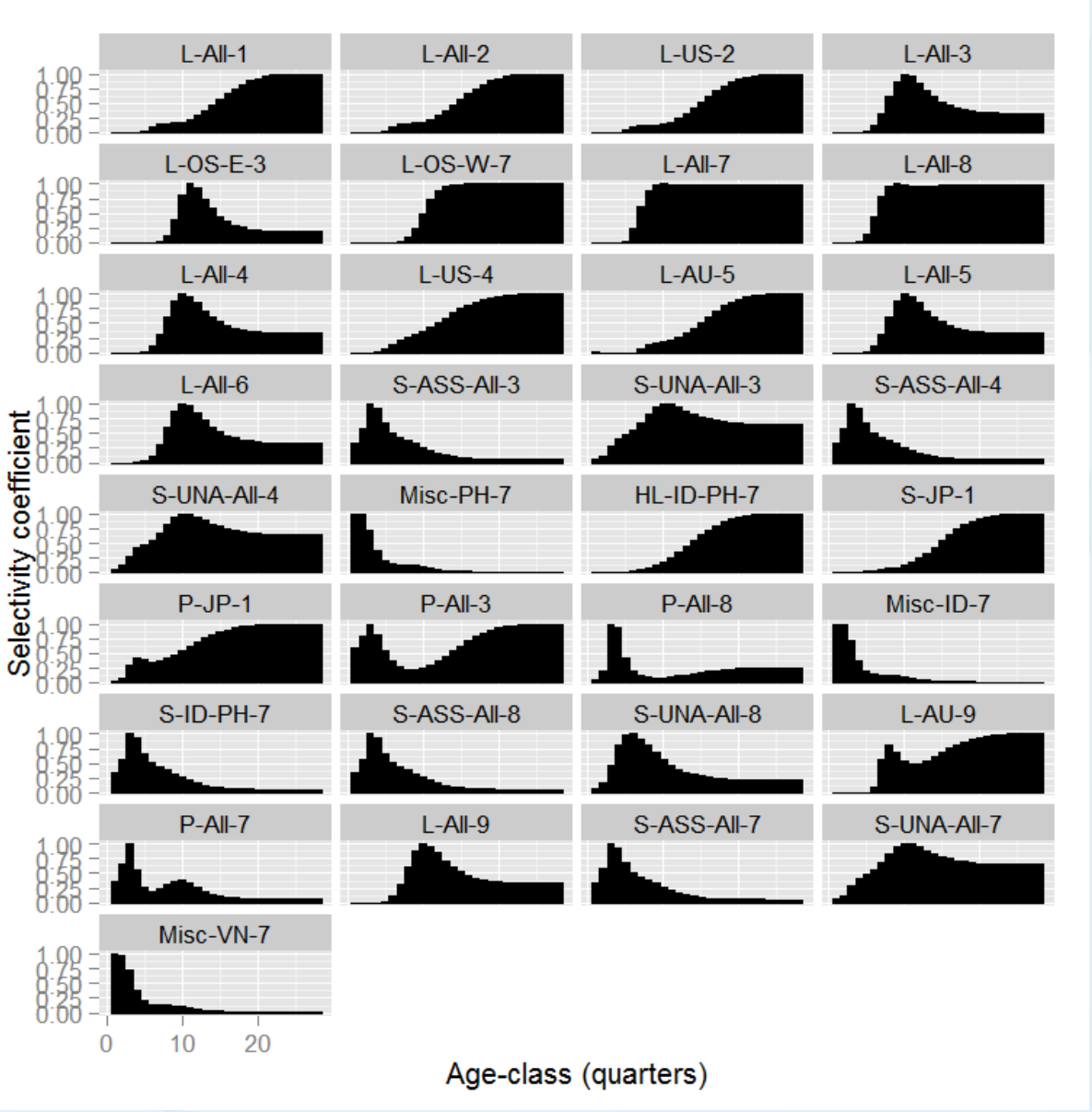
Movement coefficients





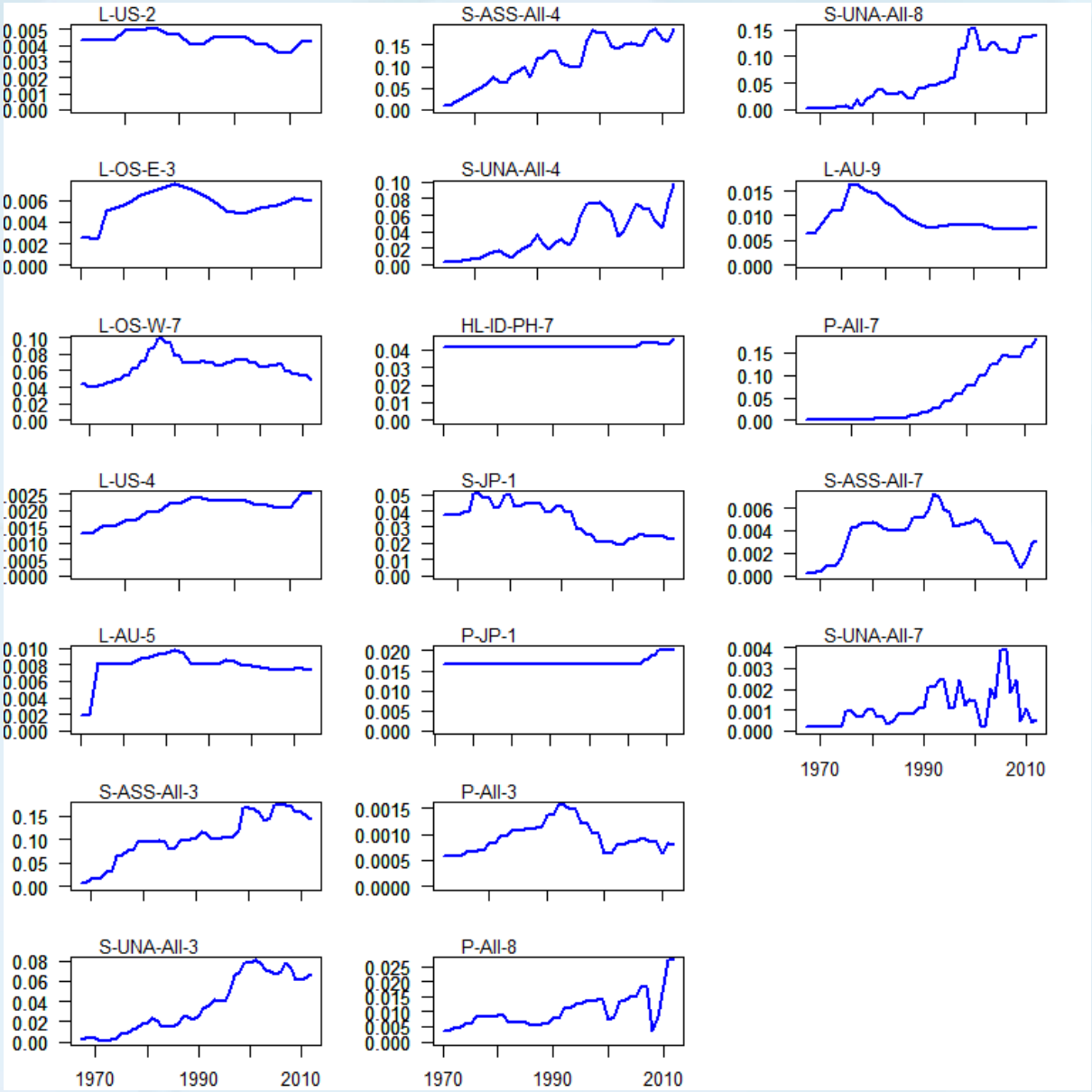
Parameter estimates

Selectivity

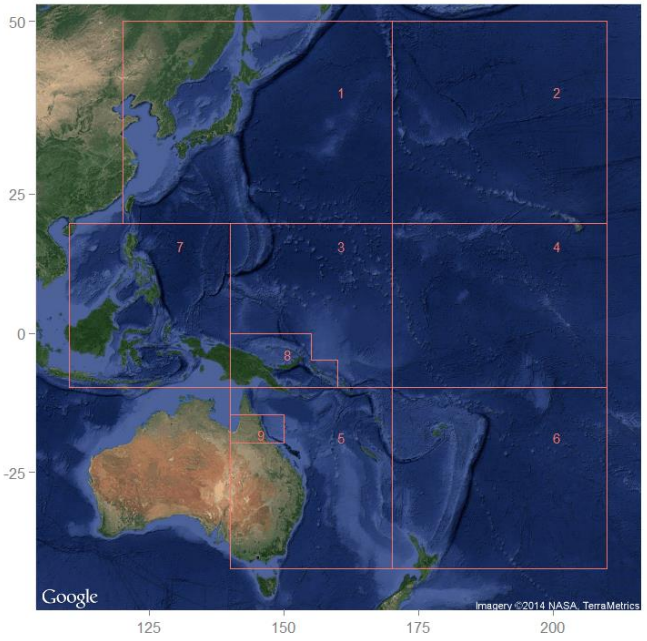


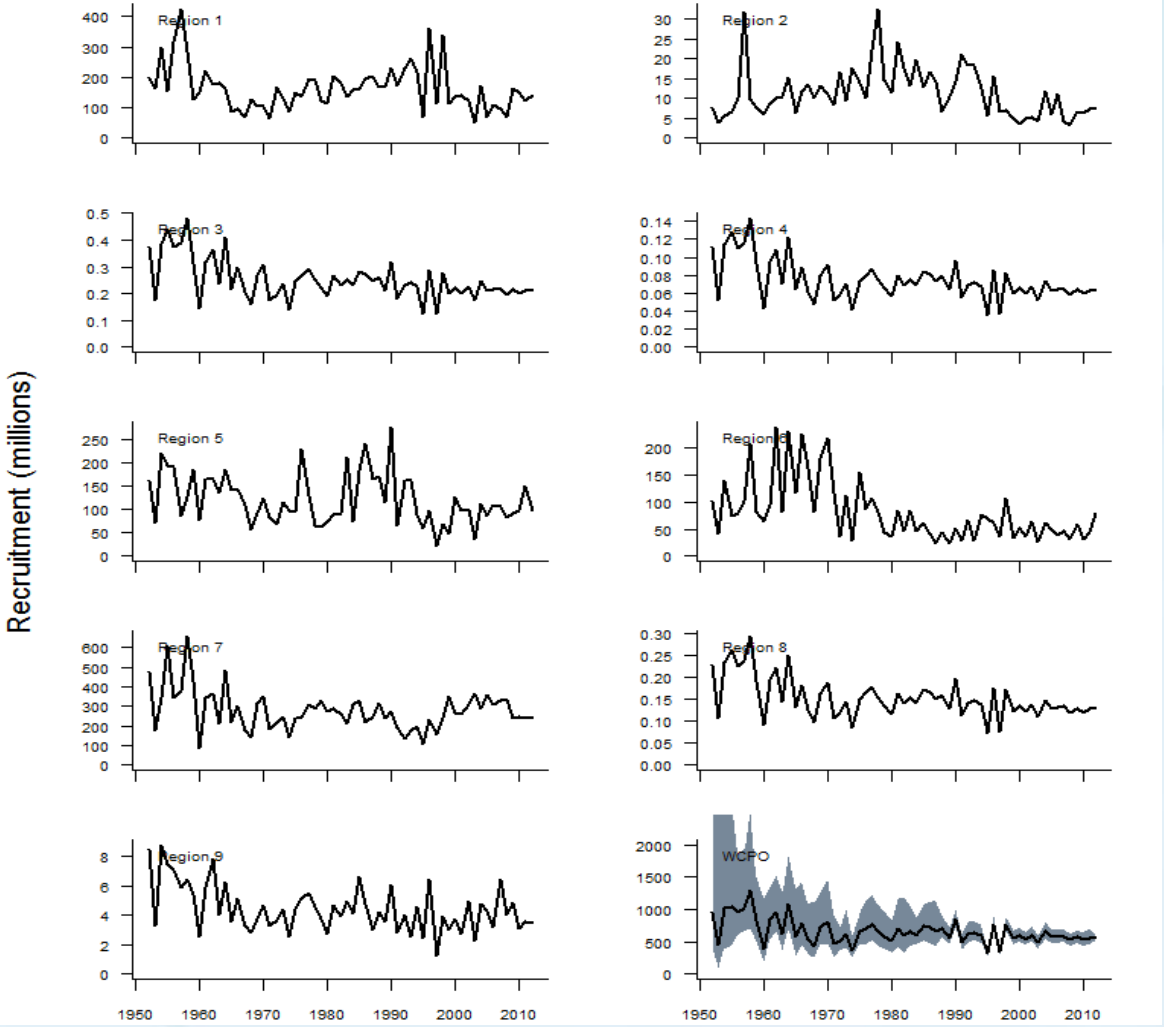
Parameter estimates

Catchability (time-varying)

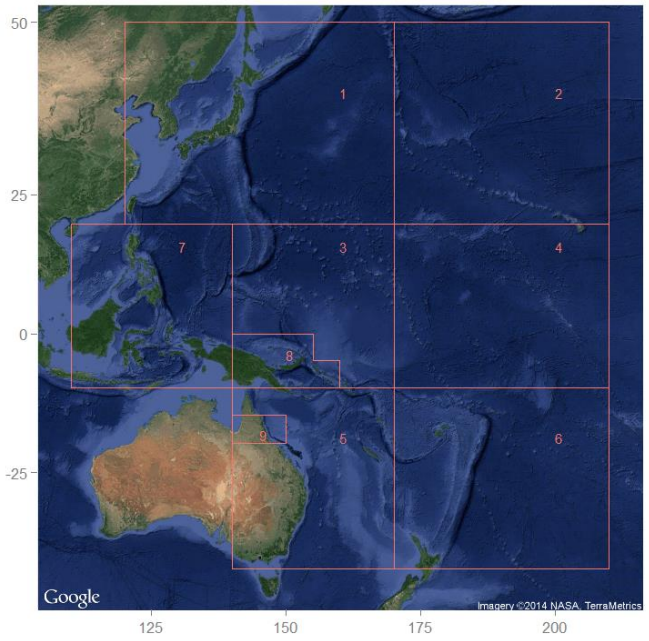


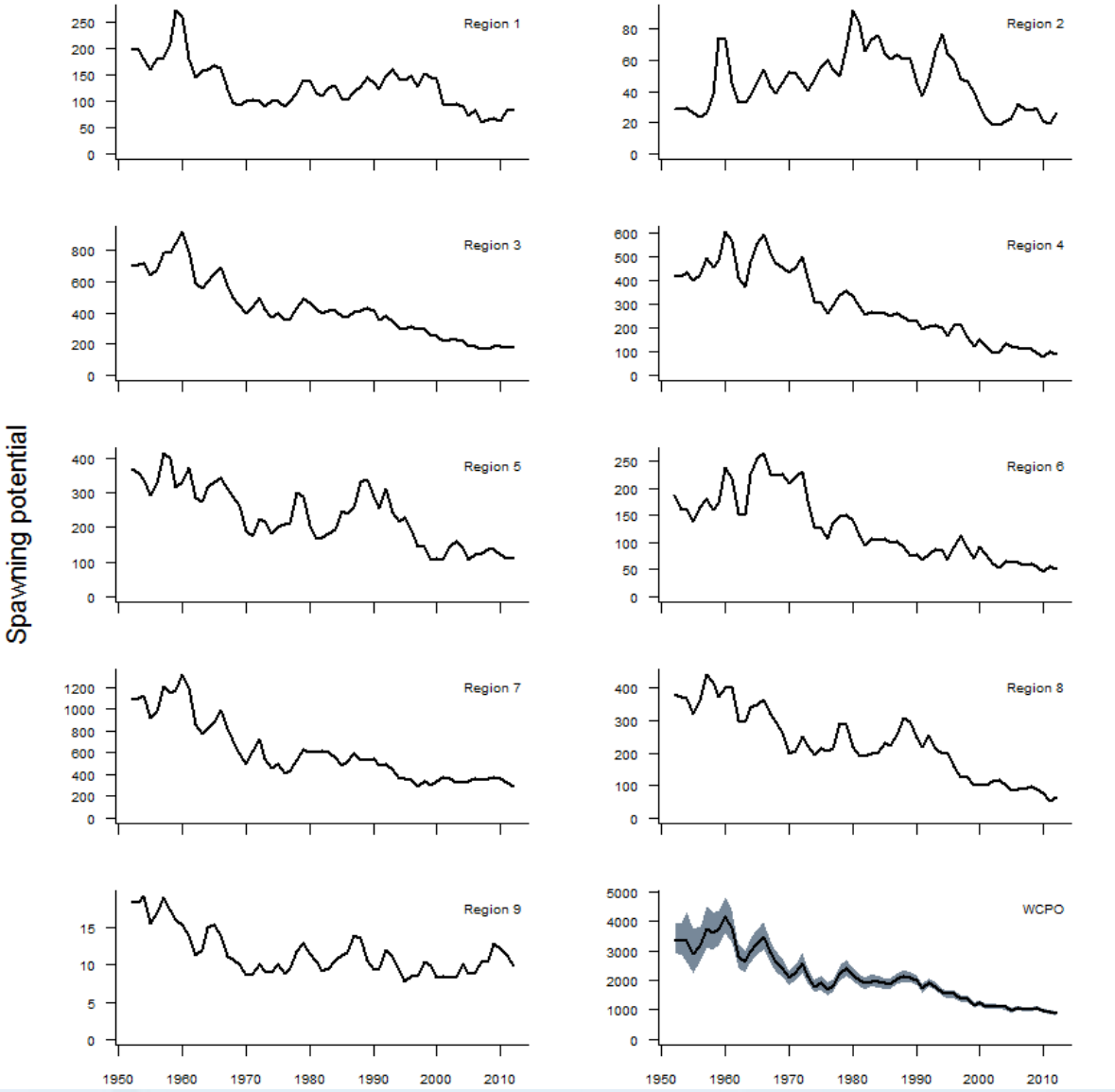
Assessment Results – Recruitment



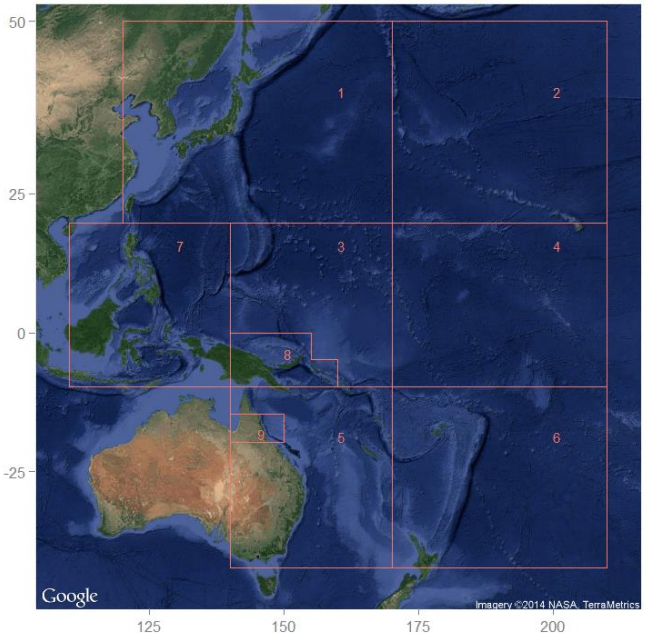


Assessment Results – Biomass

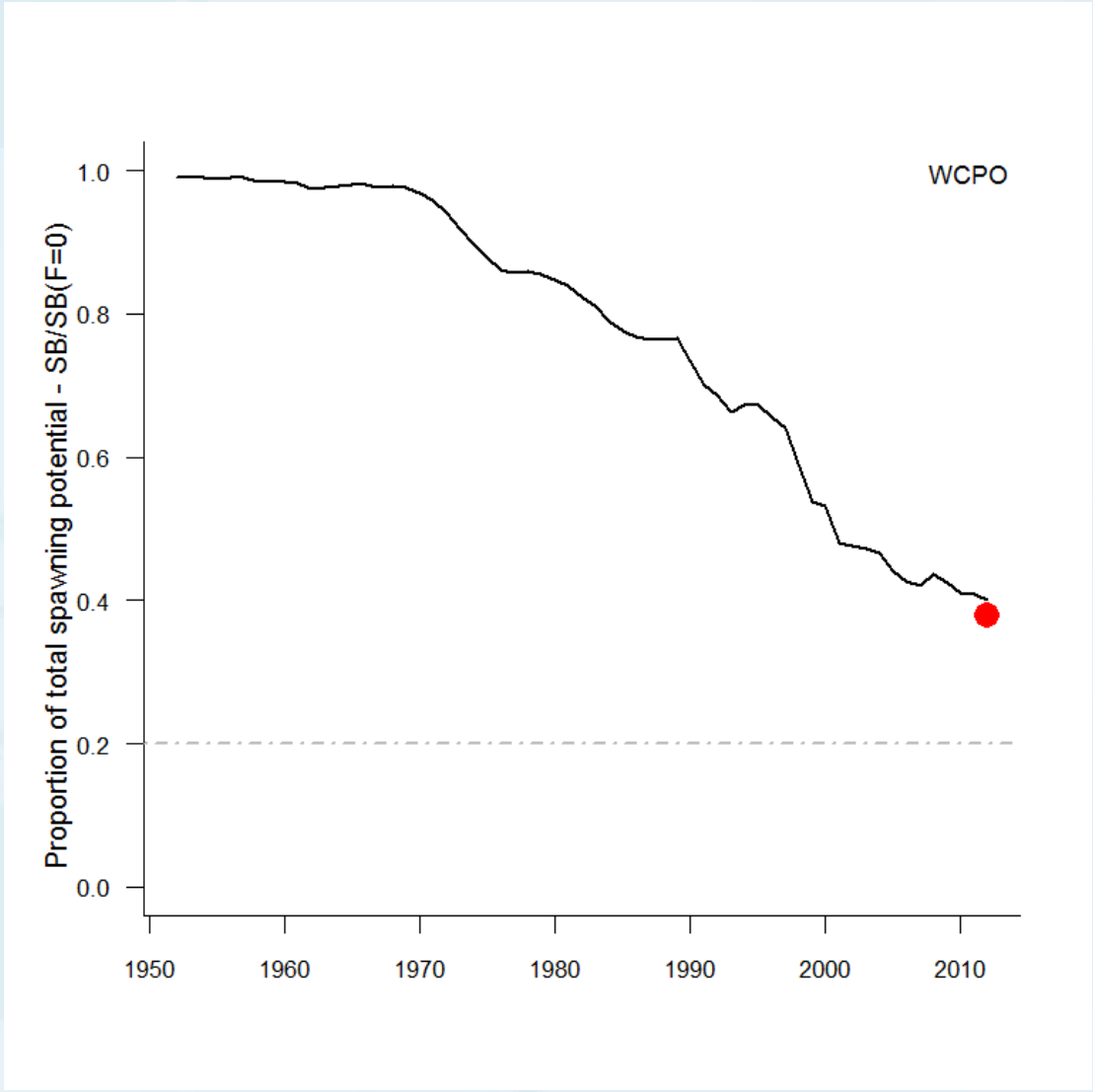




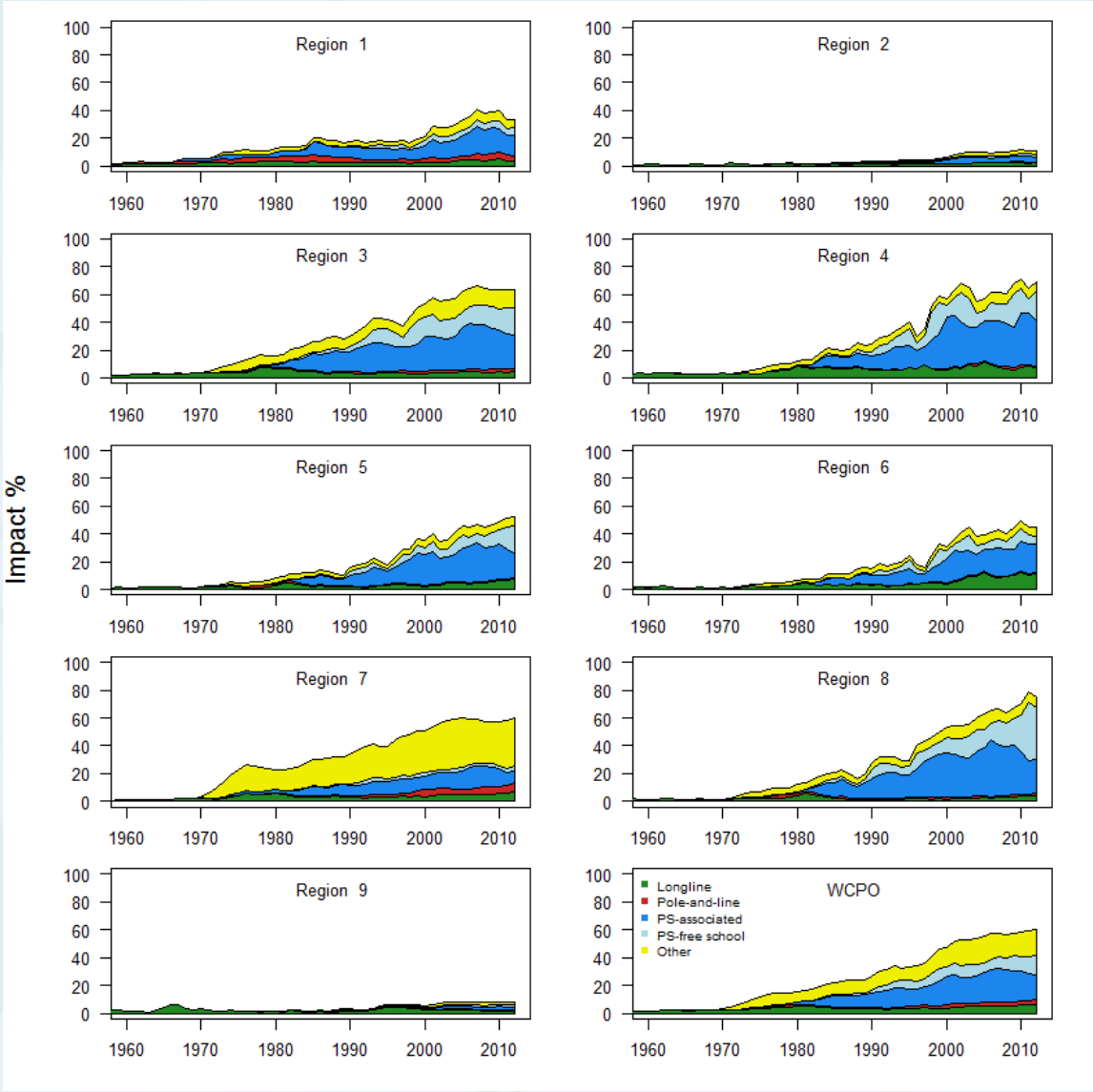
Assessment Results – Fishery Impact



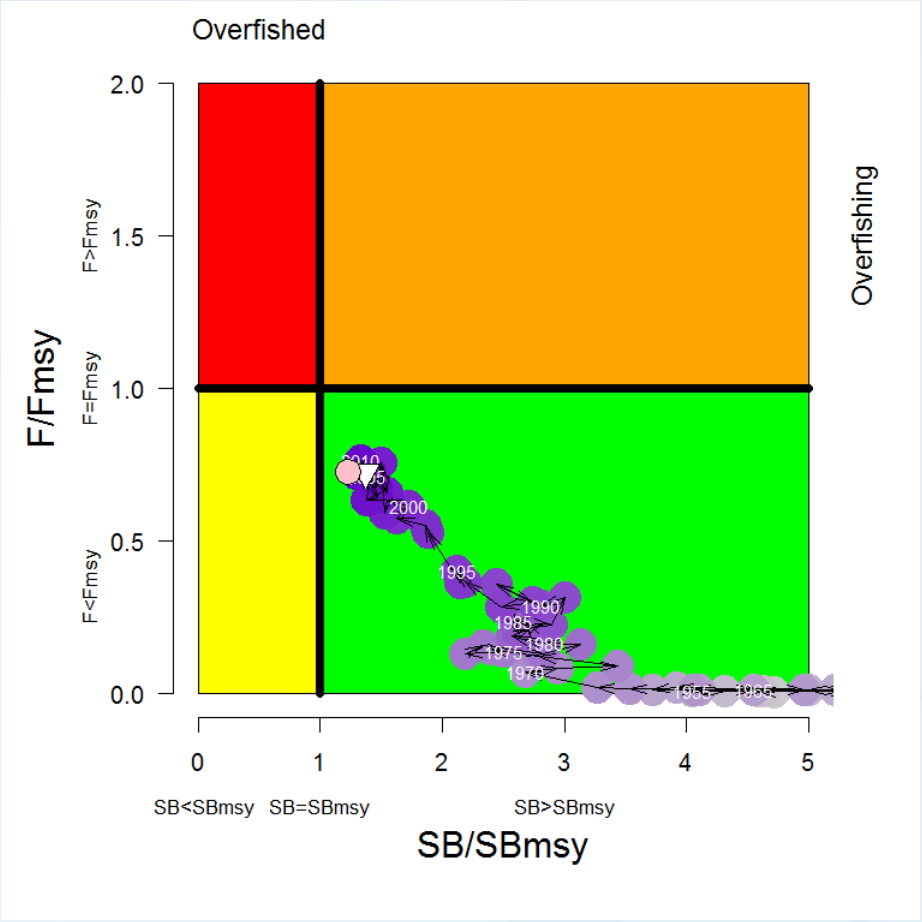
Assessment Results – Depletion

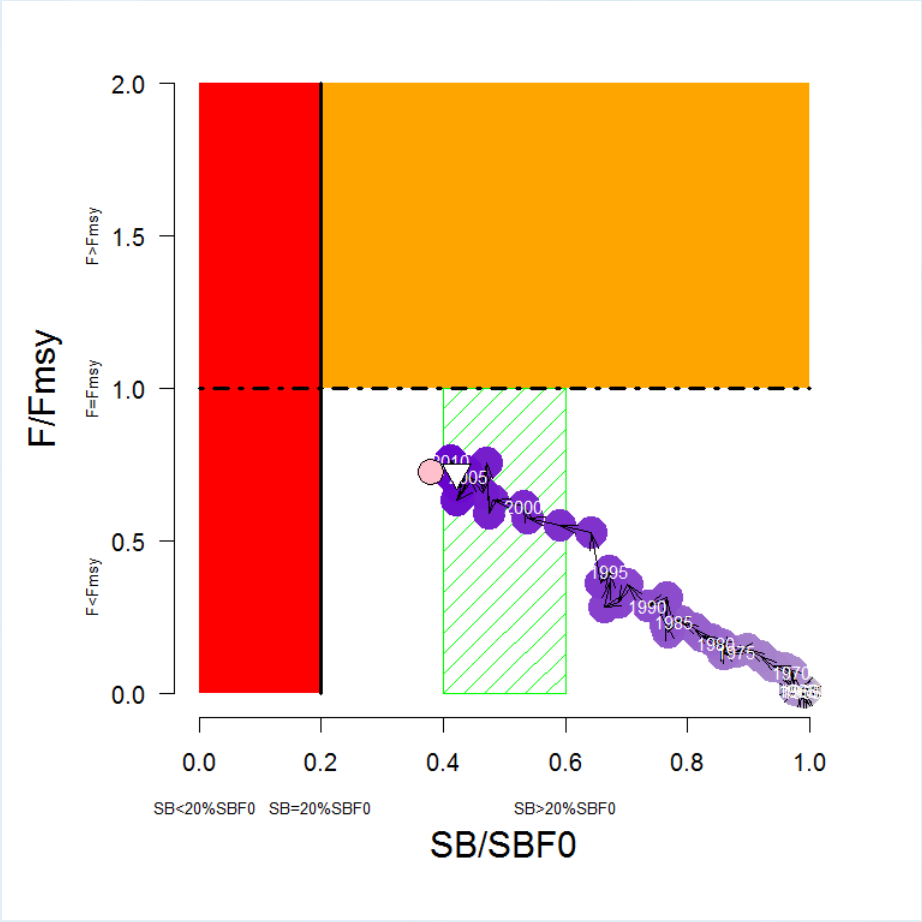


Assessment Results – Fishery Impact

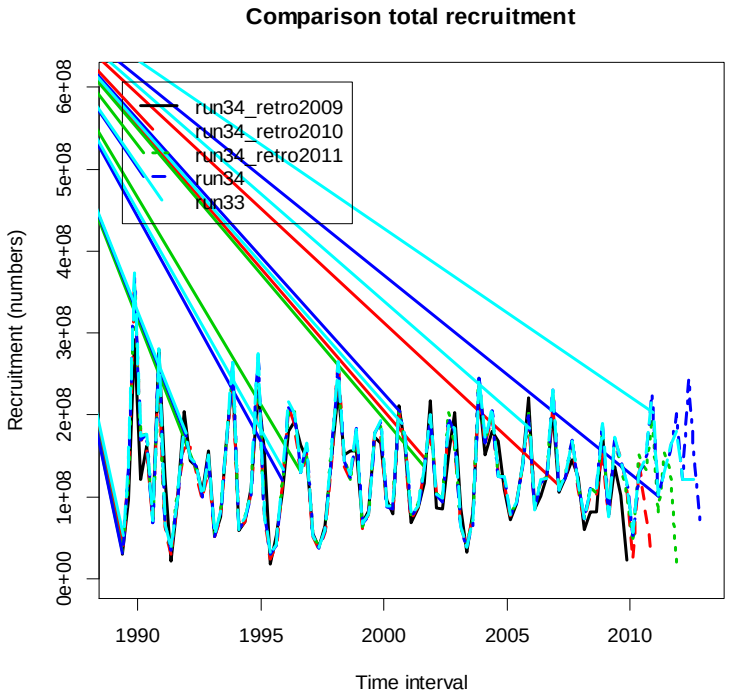


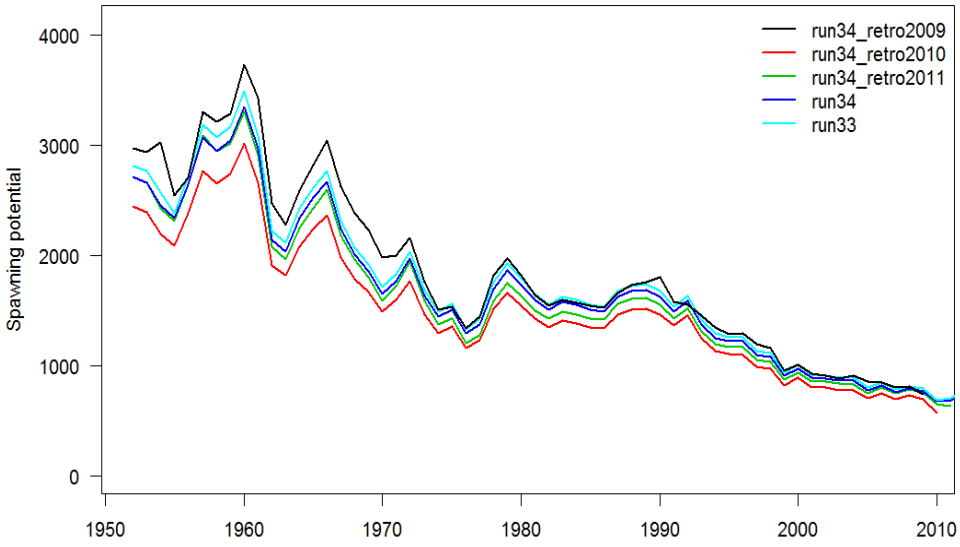
Assessment Results – Reference Points





Retrospective Analysis

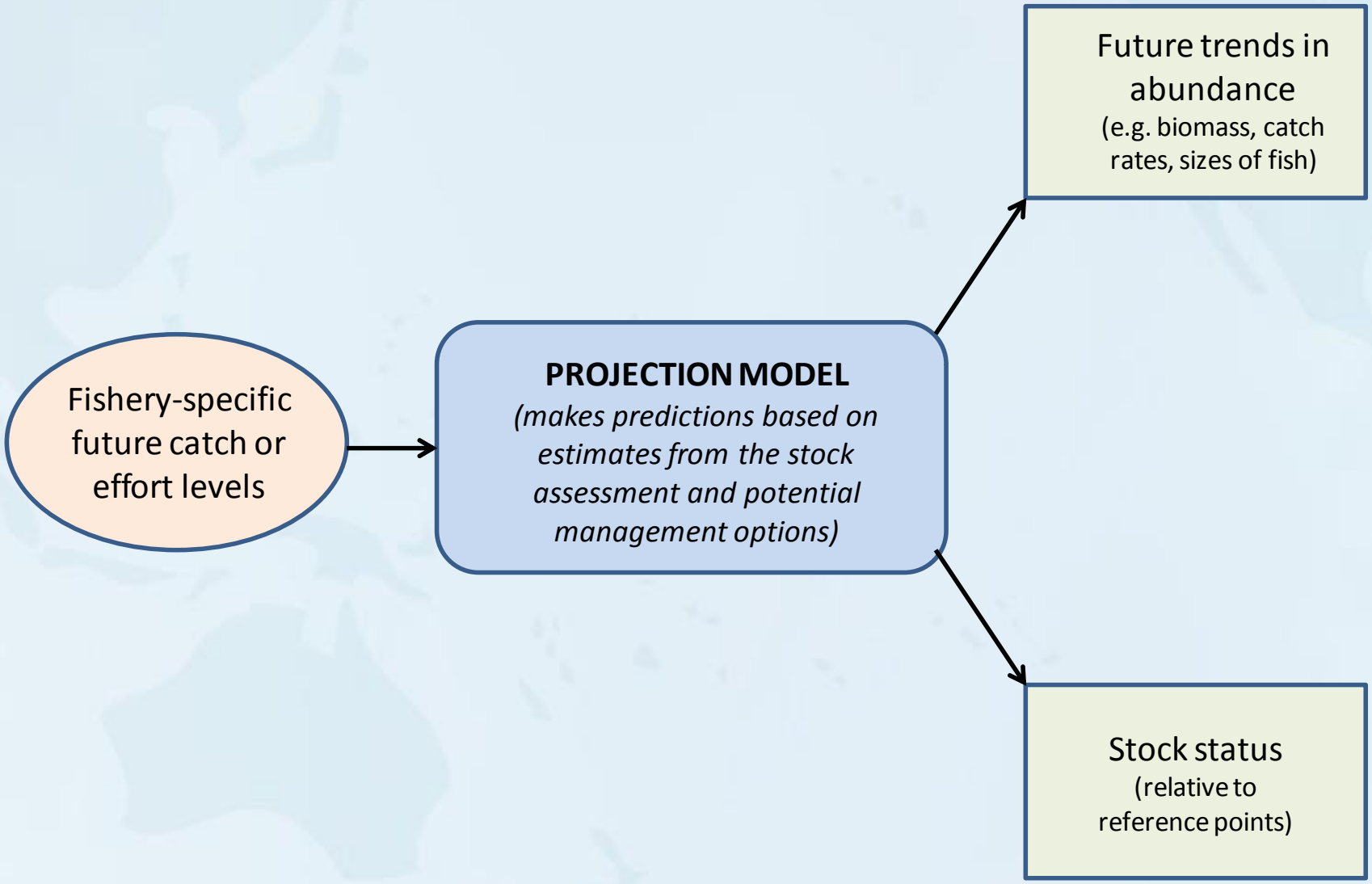




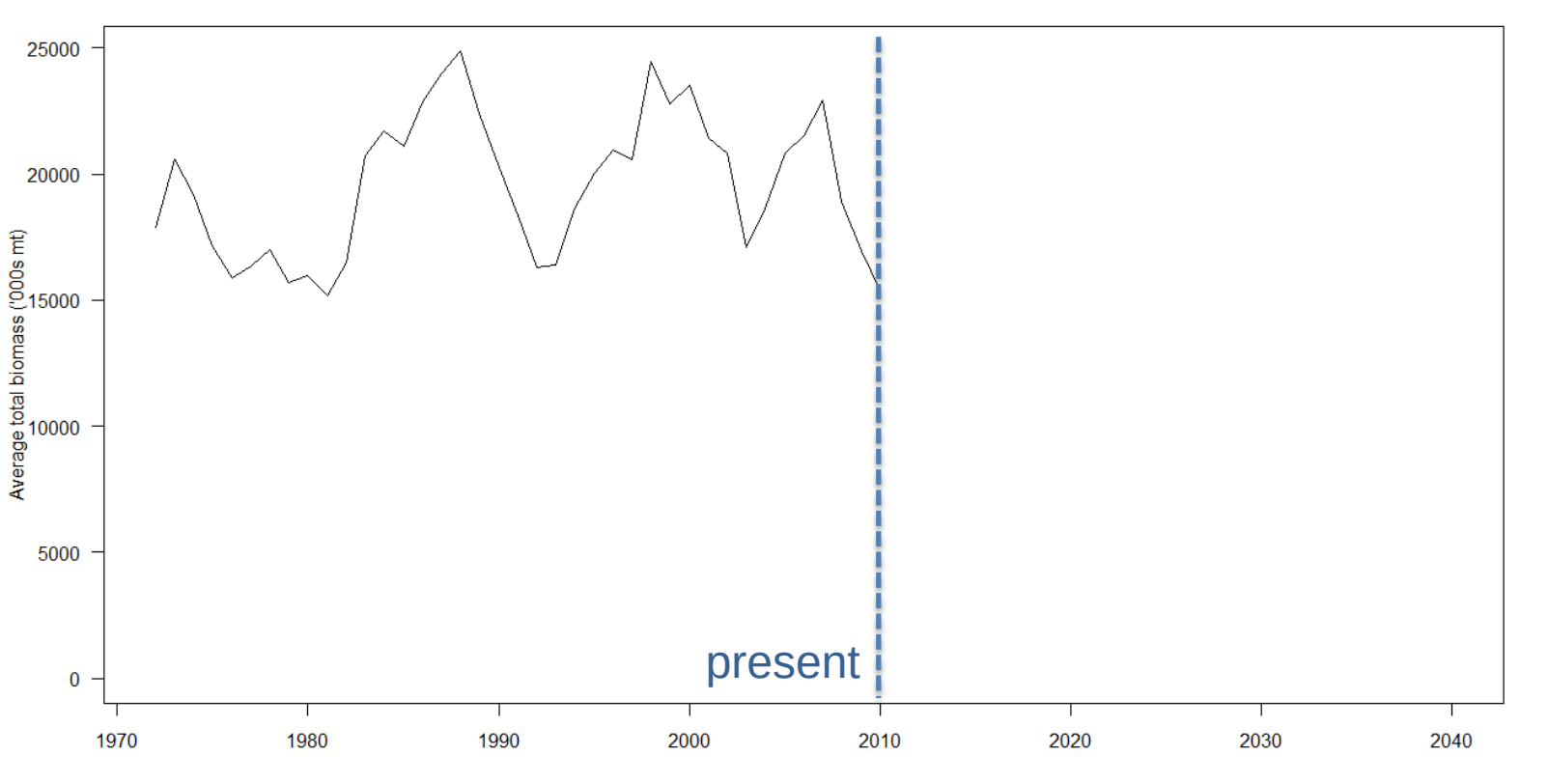
Management Evaluations

- Projection mode
- Uncertainty framework
- Example: evaluation of CMM 2014-01

Projections



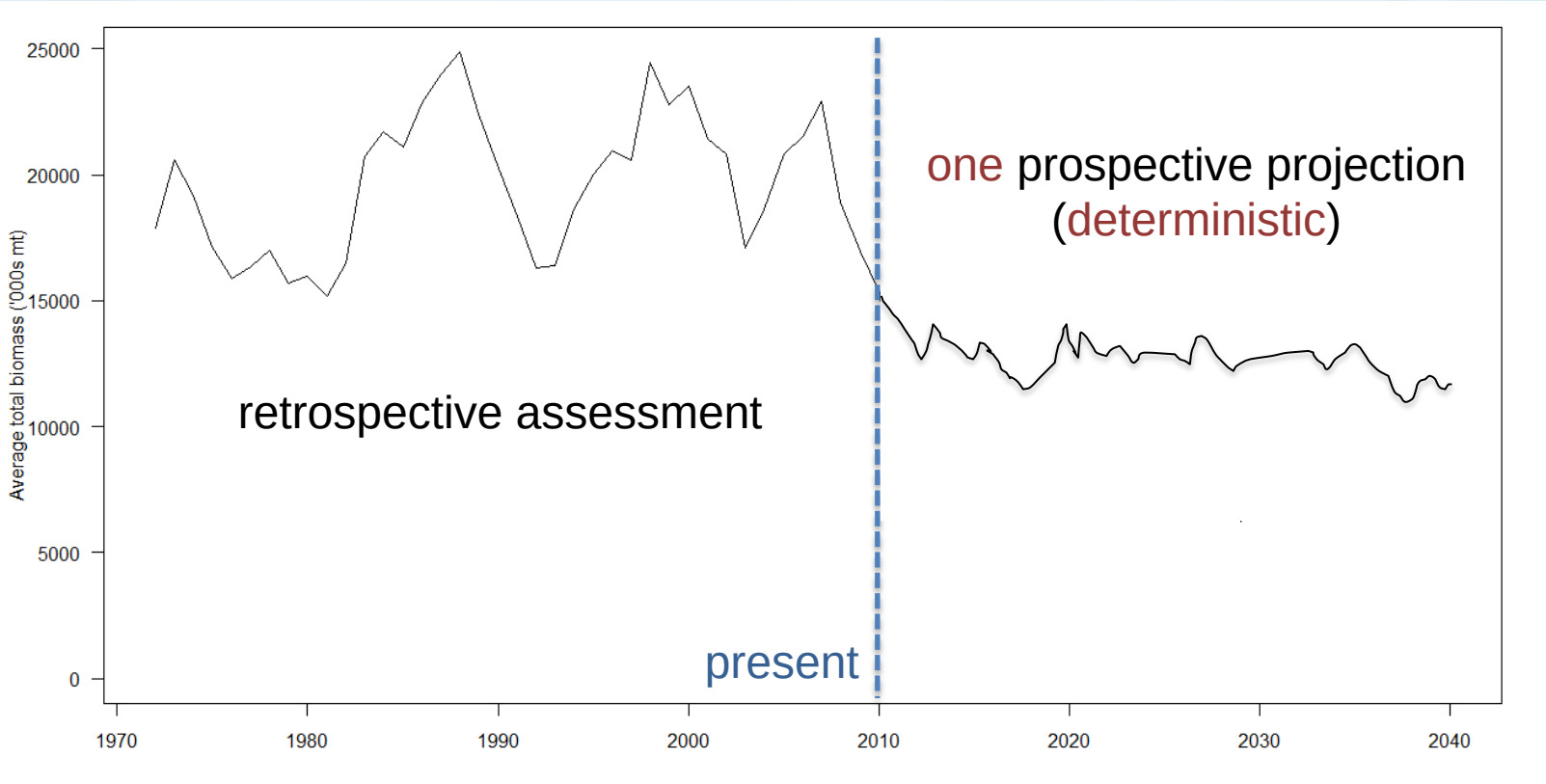
Projections



Projections

Assumptions:

- Future recruitment
- Fishery conditions (catch, effort)
- Catchability, selectivity constant
- Population characteristics constant

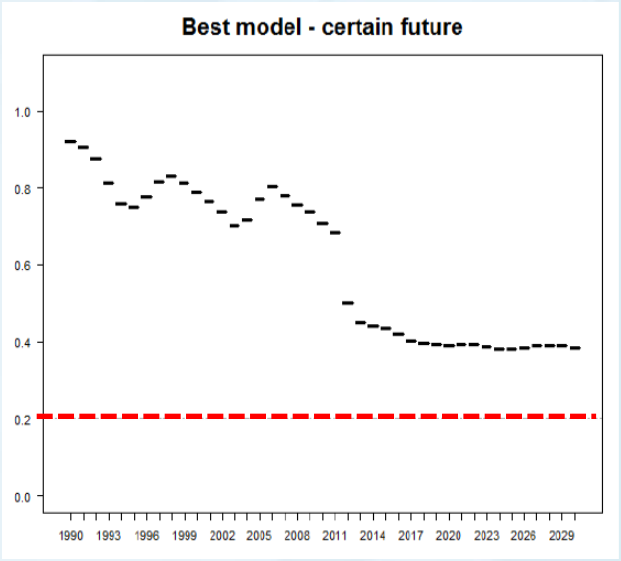


Main Sources of Uncertainty

- Natural variability in future recruitment and catchability
  - Multiple projections, sampling from historical distributions
- Current status of the stock
  - Use multiple models, e.g. as chosen by SC
- Future levels of fishing (implementation uncertainty)
  - Develop alternative scenarios to envelope uncertainty

Uncertainty in Projections

- Our knowledge is imperfect
  - We don't know what recruitment (and other things!) will be in the future
  - We're not 100% certain of where we are now!



Example: Evaluating CMM 2014-01

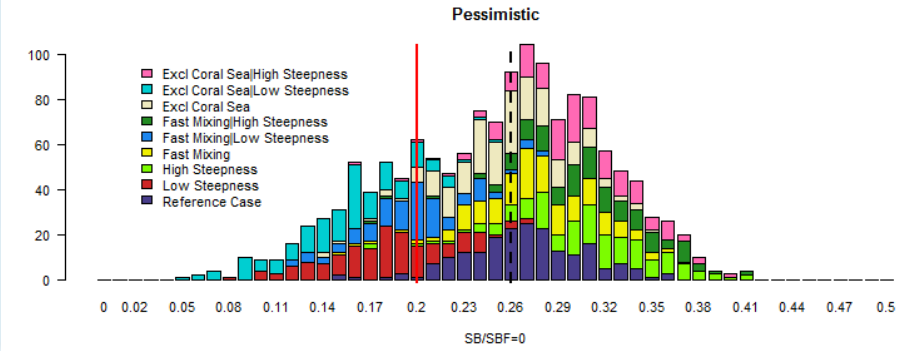
Objectives

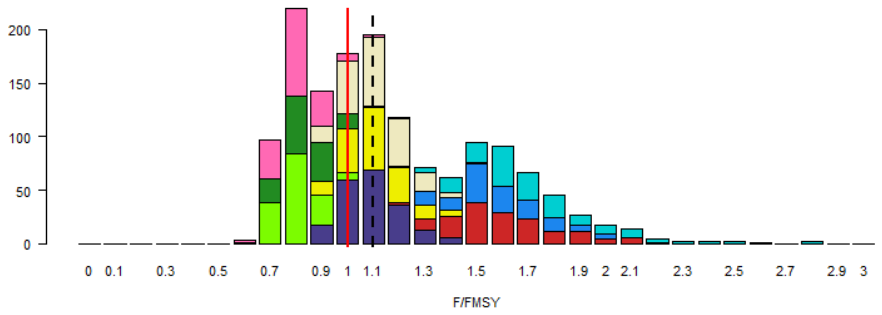
- Fishing mortality rate for BET … reduced to a level no greater than F_{msy}, i.e. $F/F_{msy} \leq 1$.
- …shall be achieved through step by step approach through 2017 in accordance with this Measure".
- What is that approach?
  - Purse seine FAD closures/set limits, fishing day limits, HS FAD ban
  - Flag-based longline bigeye catch limits
  - Other fisheries remain constant levels

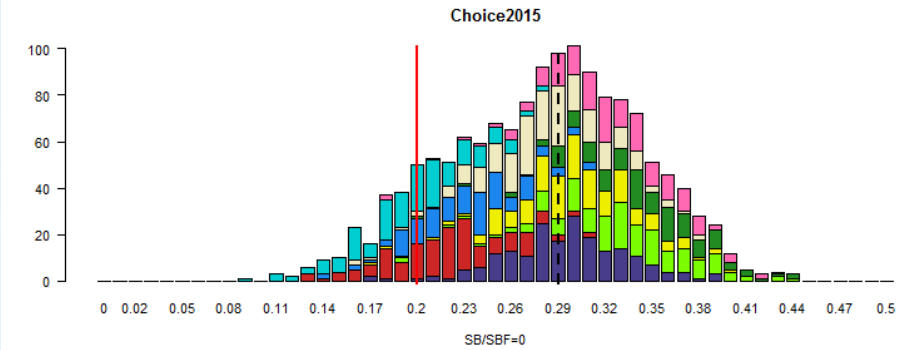
Evaluation Approach

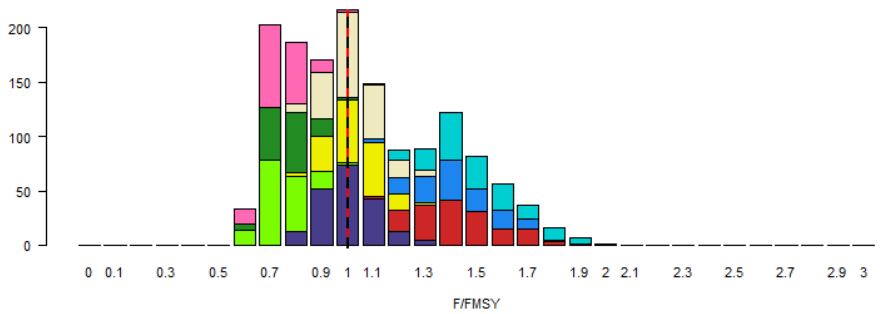
- Multiple projections
  - With variable future recruitment
  - Using multiple models, weighted for plausibility
  - Developed ‘optimistic’, ‘pessimistic’ and ‘current choices’ scenarios in terms of implementation
- Compile the results to look at median outcomes
- And the risk that objectives will not be achieved

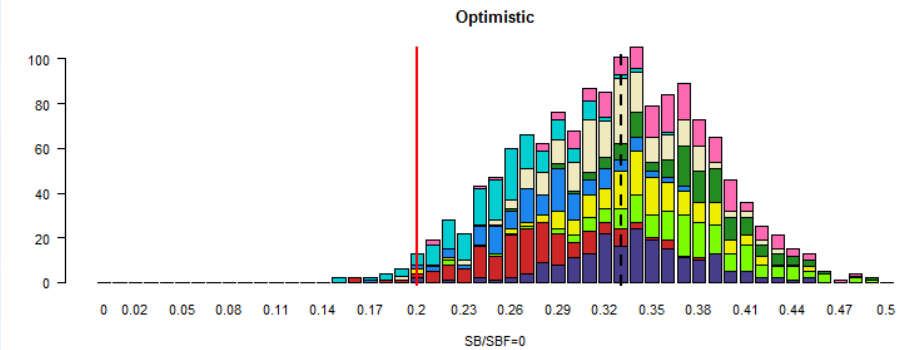
Results

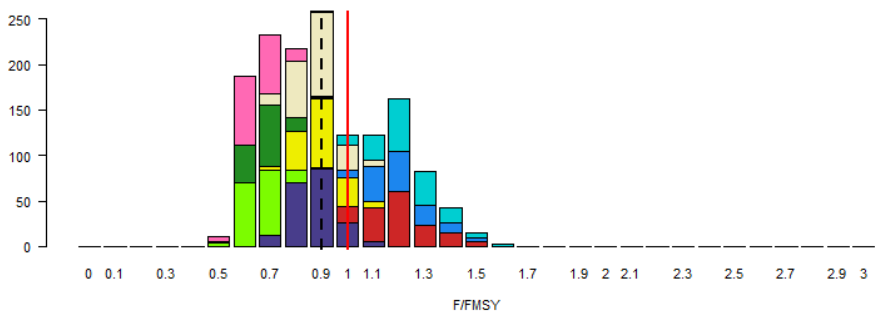

Pessimistic
Excl Coral Sea|High Steepness
Excl Coral Sea|Low Steepness
Excl Coral Sea
Fast Mixing|High Steepness
Fast Mixing|Low Steepness
Fast Mixing
High Steepness
Low Steepness
Reference Case
SB/SBF=0


F/FMSY


Choice2015
SB/SBF=0


F/FMSY


Optimistic
SB/SBF=0

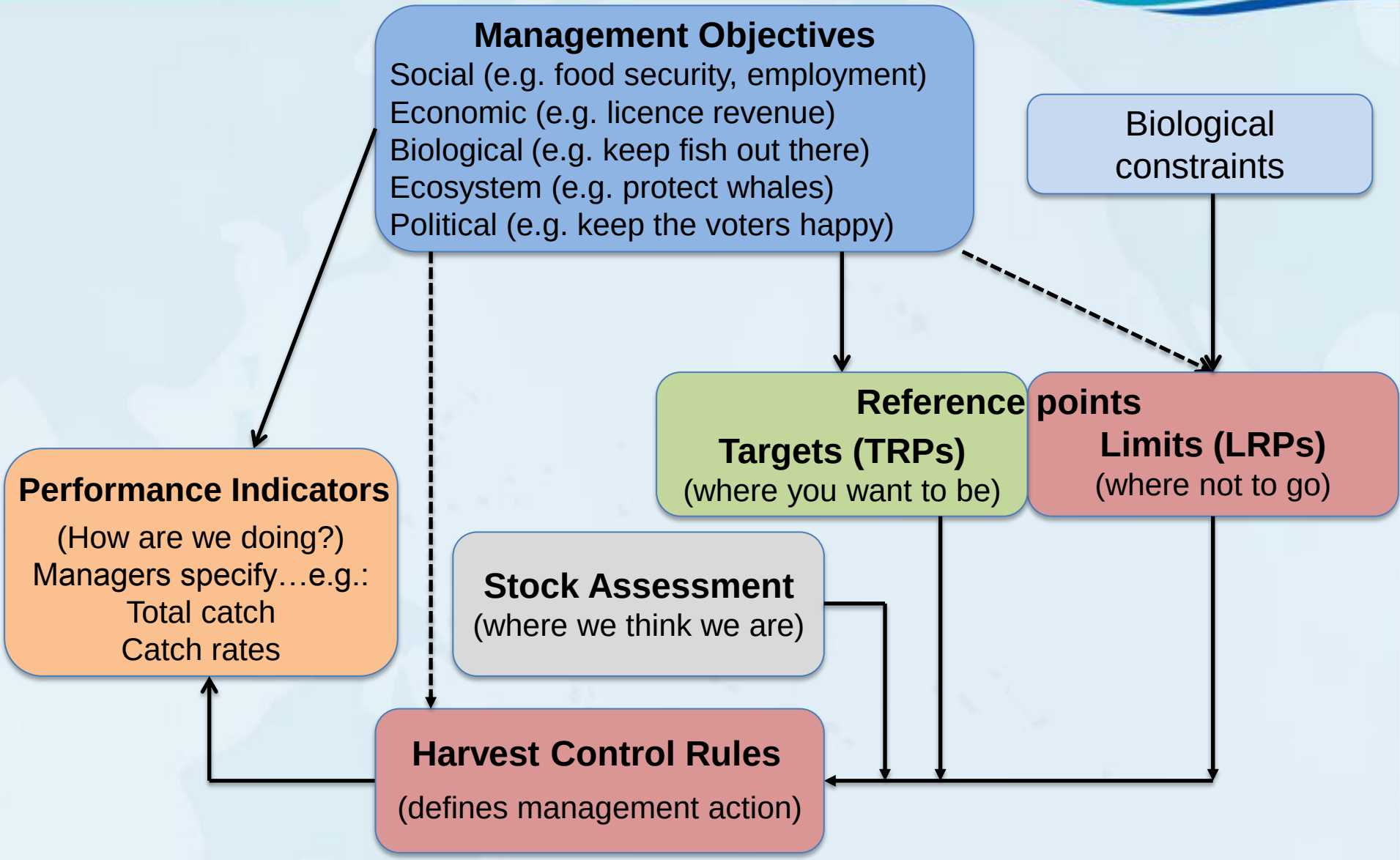

F/FMSY

Results

Fishery	Status quo	Pessimistic	2015 choices	Optimistic
Purse seine	1	1.02	0.95	0.76
Longline	1	0.90	0.83	0.83
F_{2033}/F_{MSY}	1.21	1.14	1.06	0.93
$SB/SB_{F=0}$	0.24	0.26	0.29	0.33
Risk SB_{2033} < LRP	32%	21%	9%	1%

Management Frameworks

- The management framework encompasses all key processes in managing a fishery
- Many elements are defined by Management Objectives
- Fisheries science contains uncertainty, and the Framework must take that into account


Management Objectives
Social (e.g. food security, employment)
Economic (e.g. licence revenue)
Biological (e.g. keep fish out there)
Ecosystem (e.g. protect whales)
Political (e.g. keep the voters happy)
Biological constraints
Reference points
Targets (TRPs)
(where you want to be)
Limits (LRPs)
(where not to go)
Performance Indicators
(How are we doing?)
Managers specify…e.g.:
Total catch
Catch rates
Stock Assessment
(where we think we are)
Harvest Control Rules
(defines management action)

Attachment M

Information on Tropical Tuna Stocks in the WPEA Region based on SPC Stock Assessments

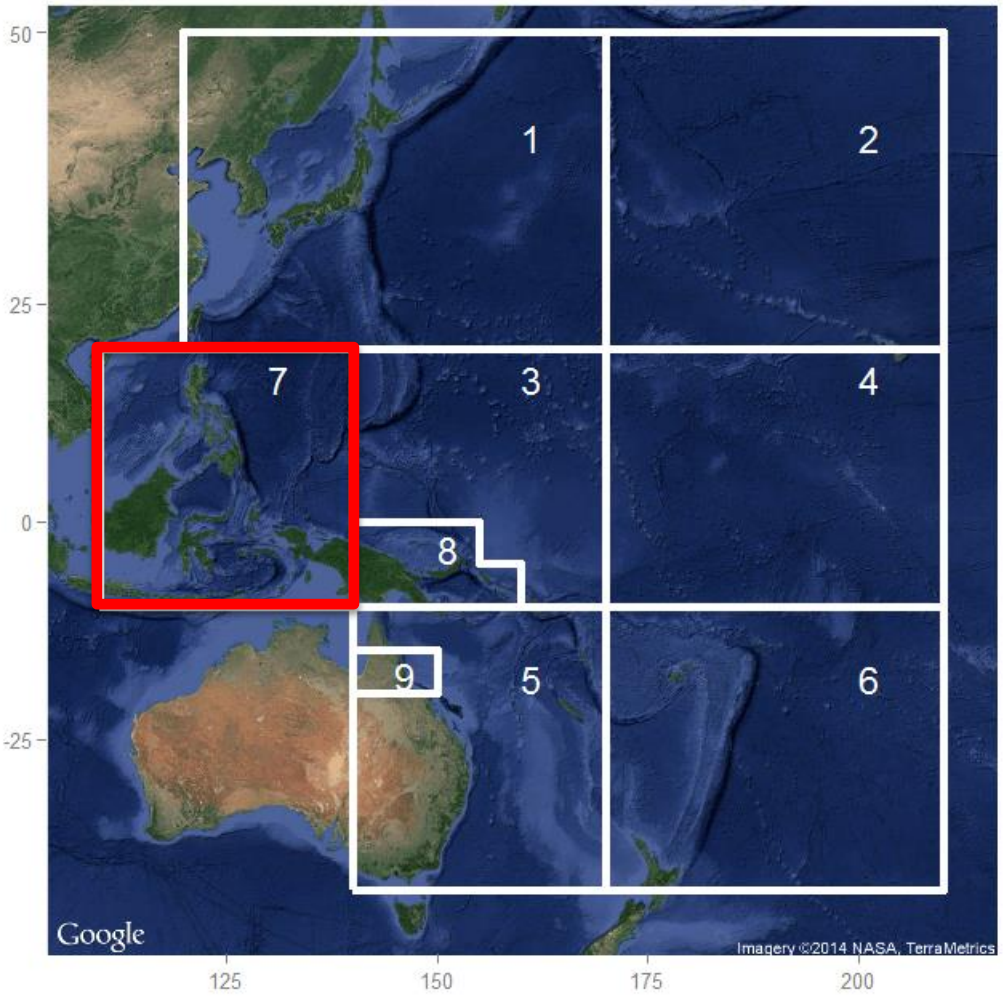
Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA SM Project)

THREE-COUNTRY STOCK ASSESSMENT WORKSHOP

RIMF Meeting Room, Haiphong, Viet Nam
3-6 November 2015

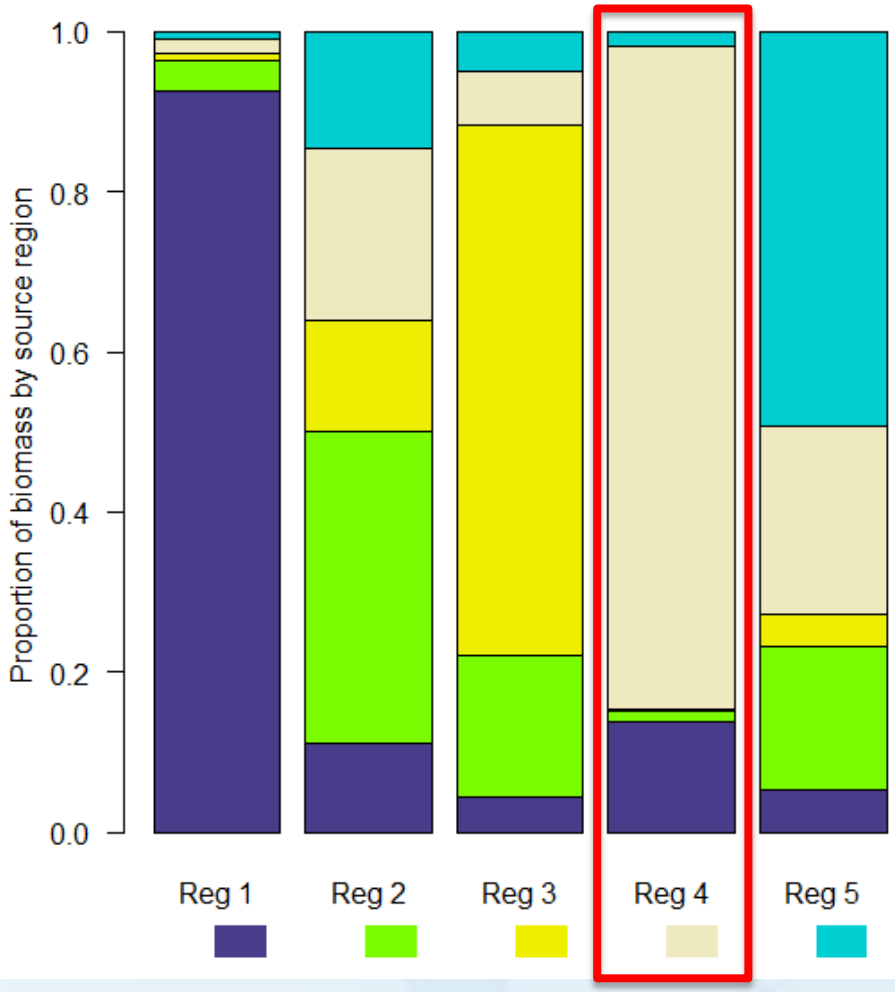
WPEA Region in the WCPFC

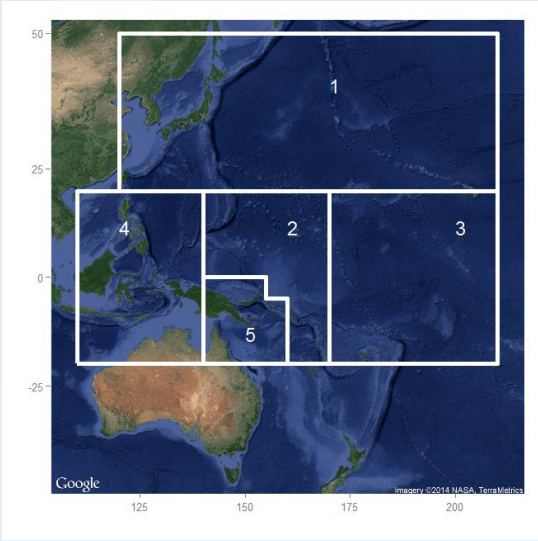
Yellowfin and Bigeye Assessment Regions



Stock Structure (MFCL)

Skipjack

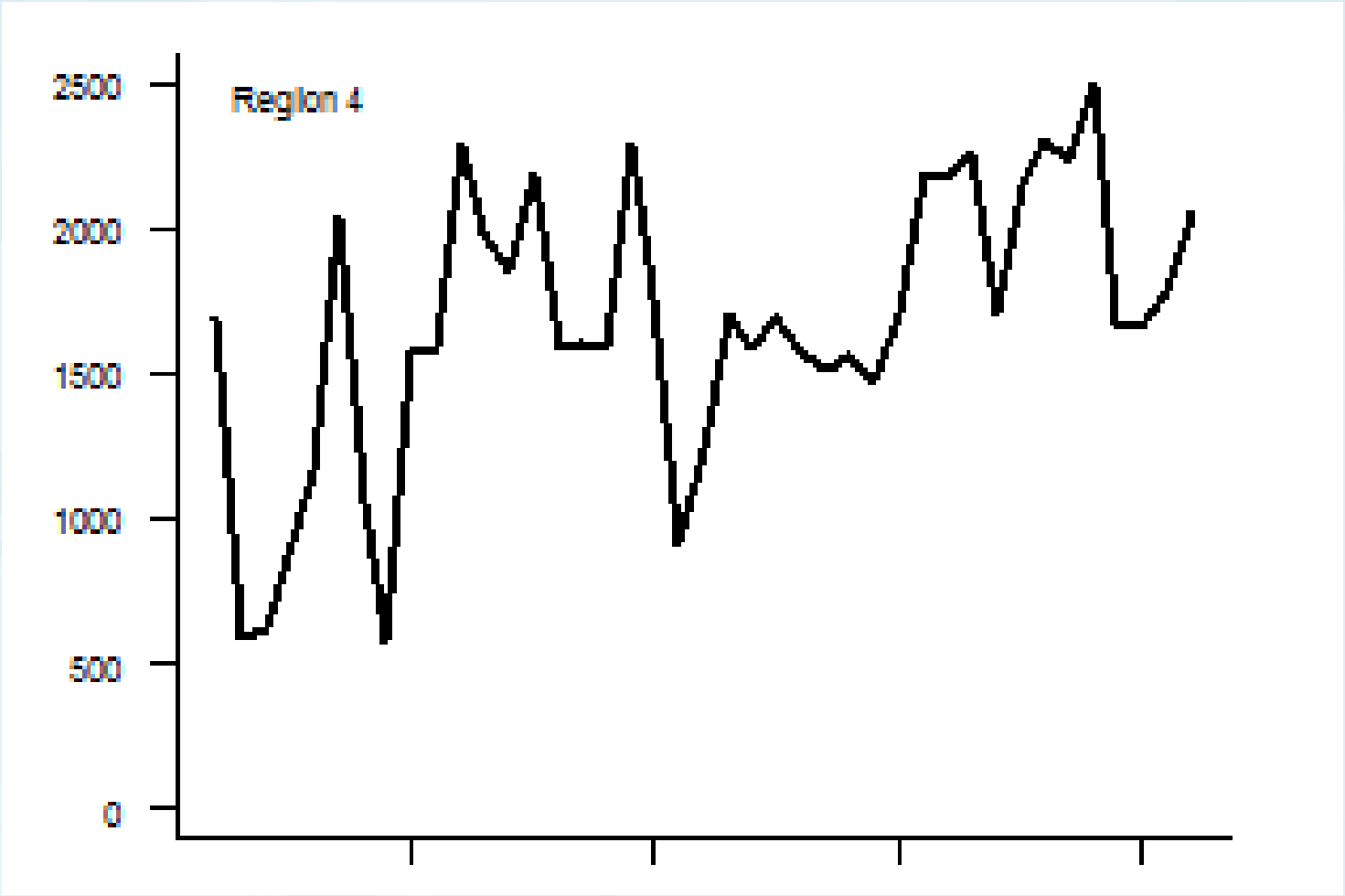




Proportional distribution of total biomass (by weight) in each region apportioned by the source region of the fish for the reference case.

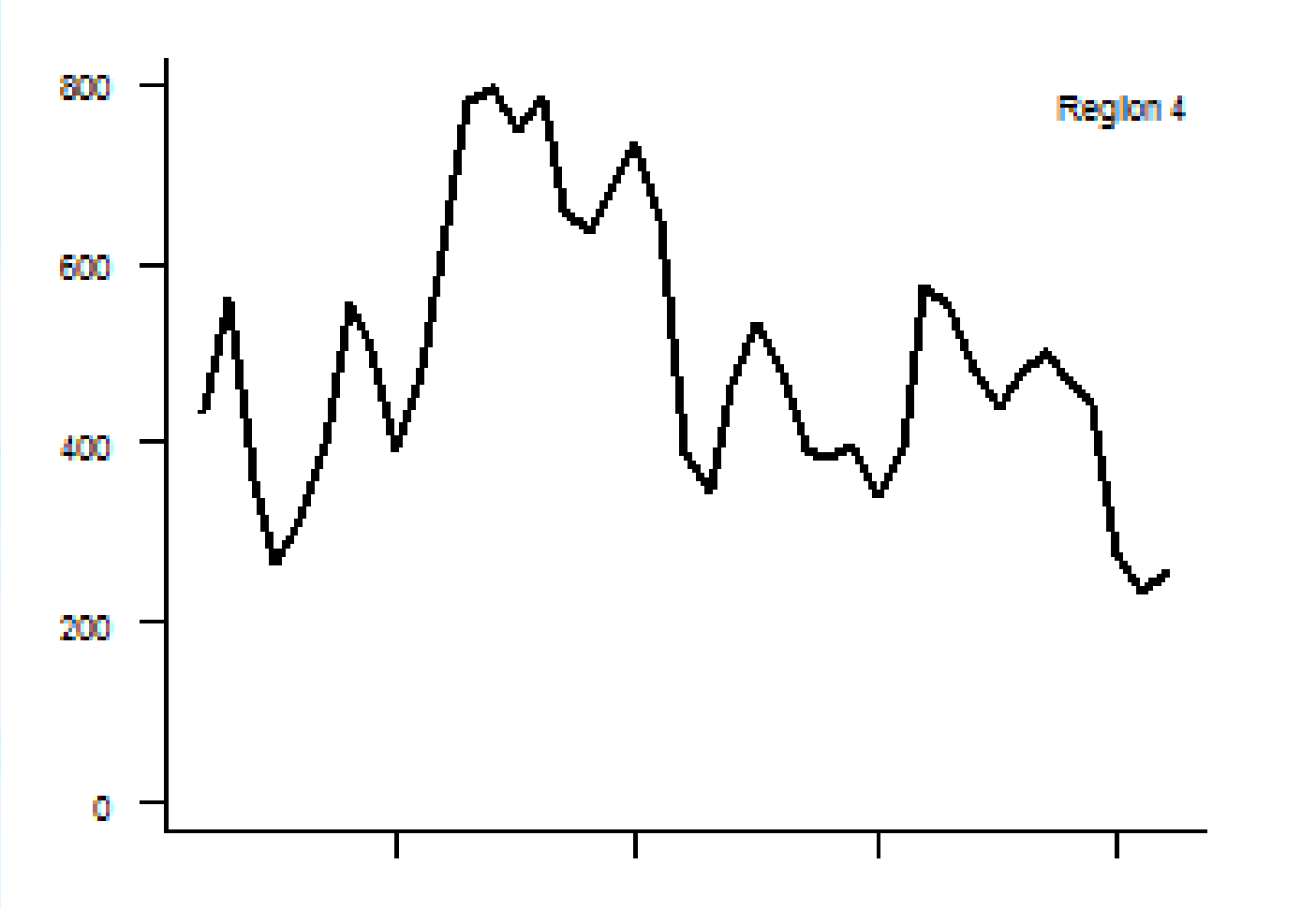
Recruitment Estimates

Skipjack



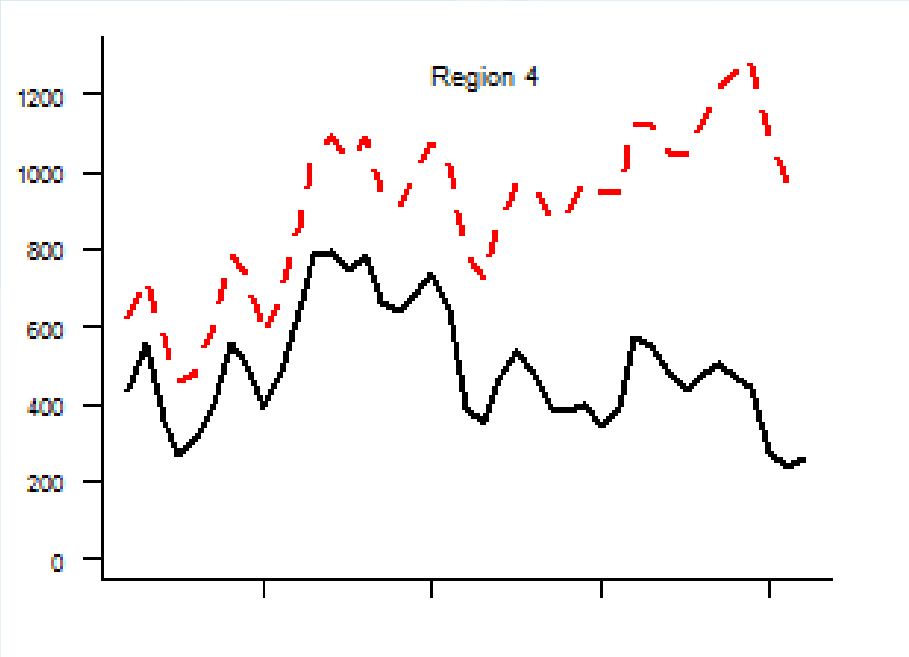
Spawning Biomass Estimates

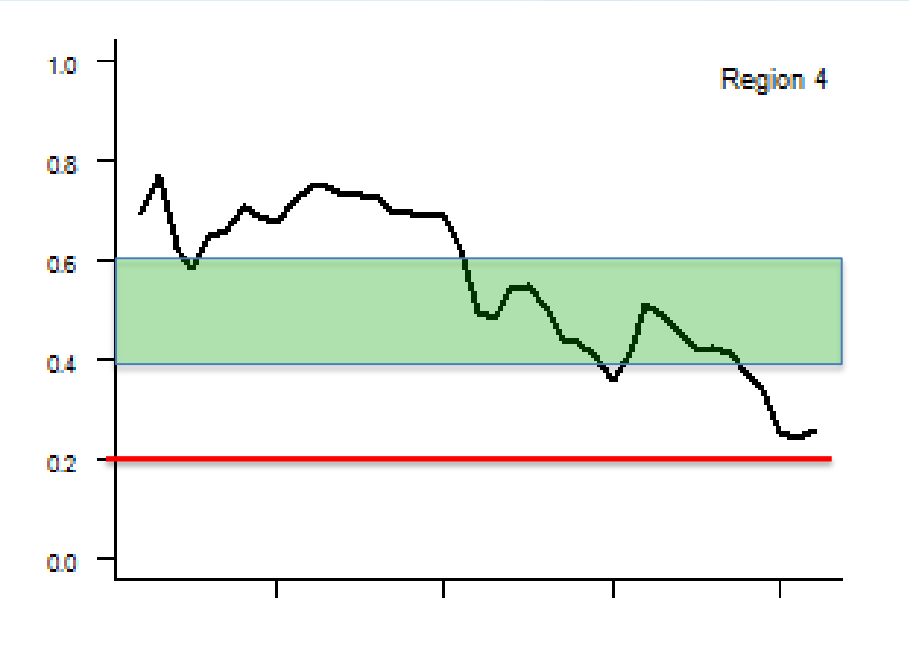
Skipjack



Fishery Impact Estimates

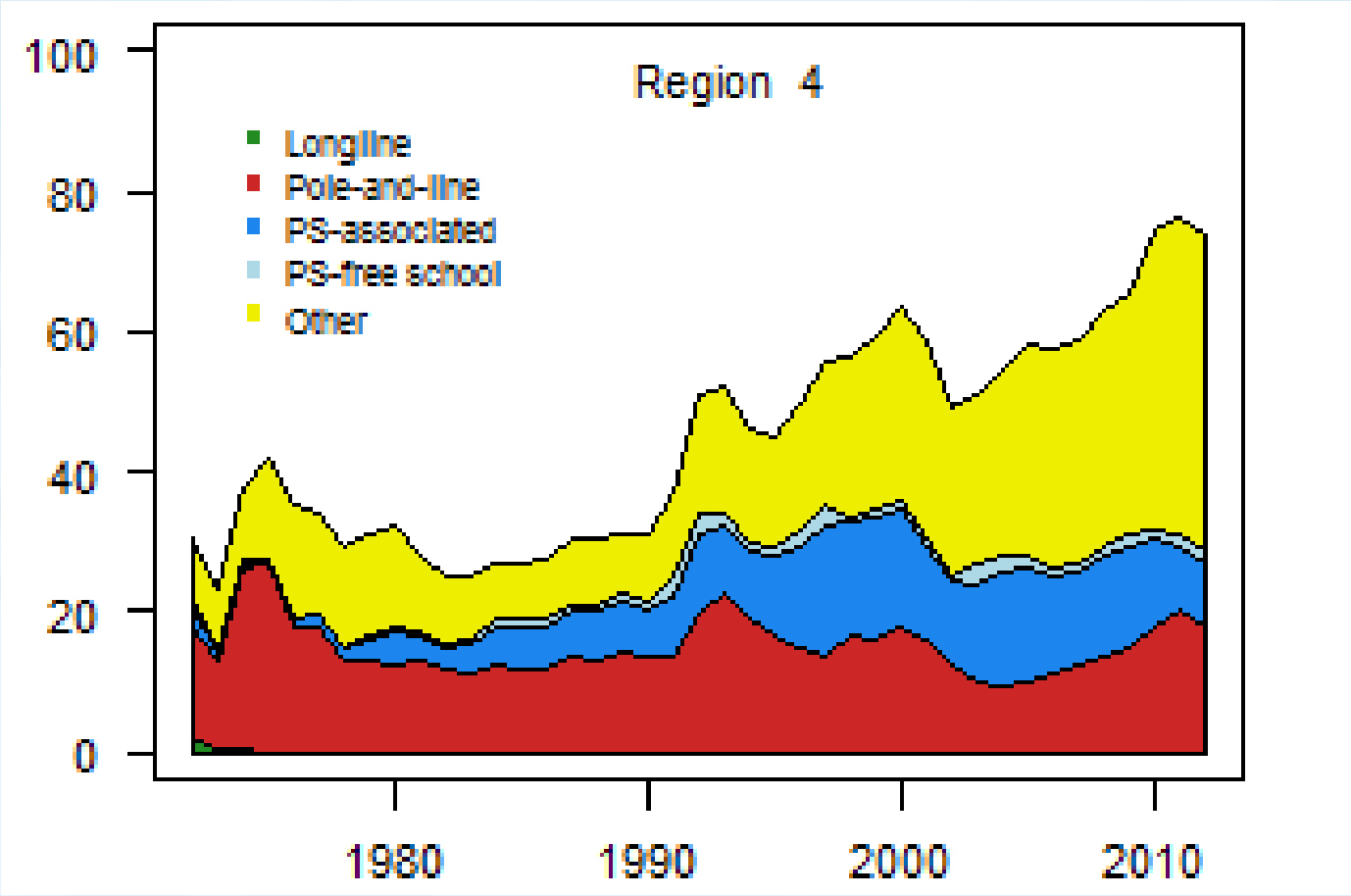
Skipjack





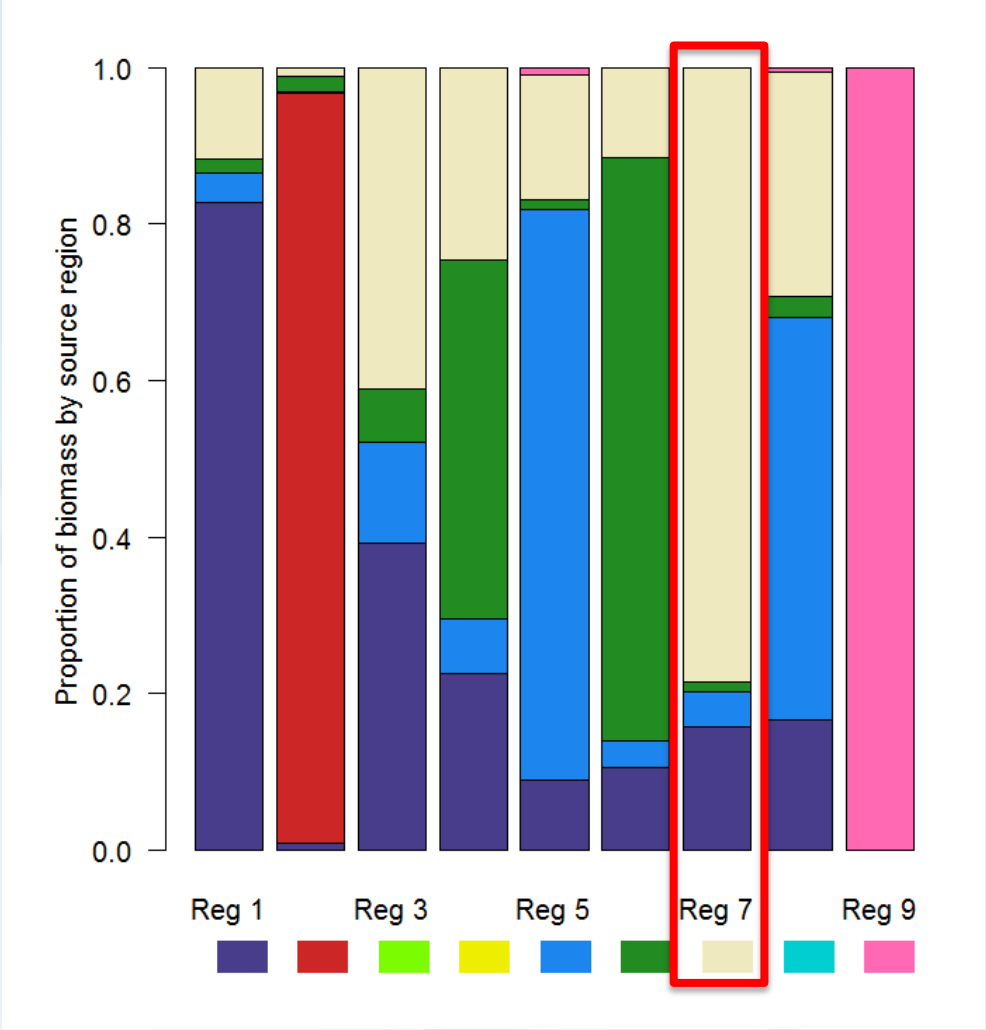
Fishery Impact Estimates

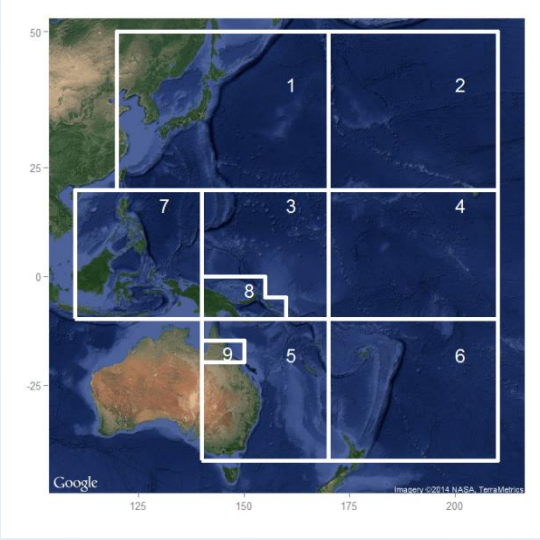
Skipjack



Stock Structure (MFCL)

Yellowfin

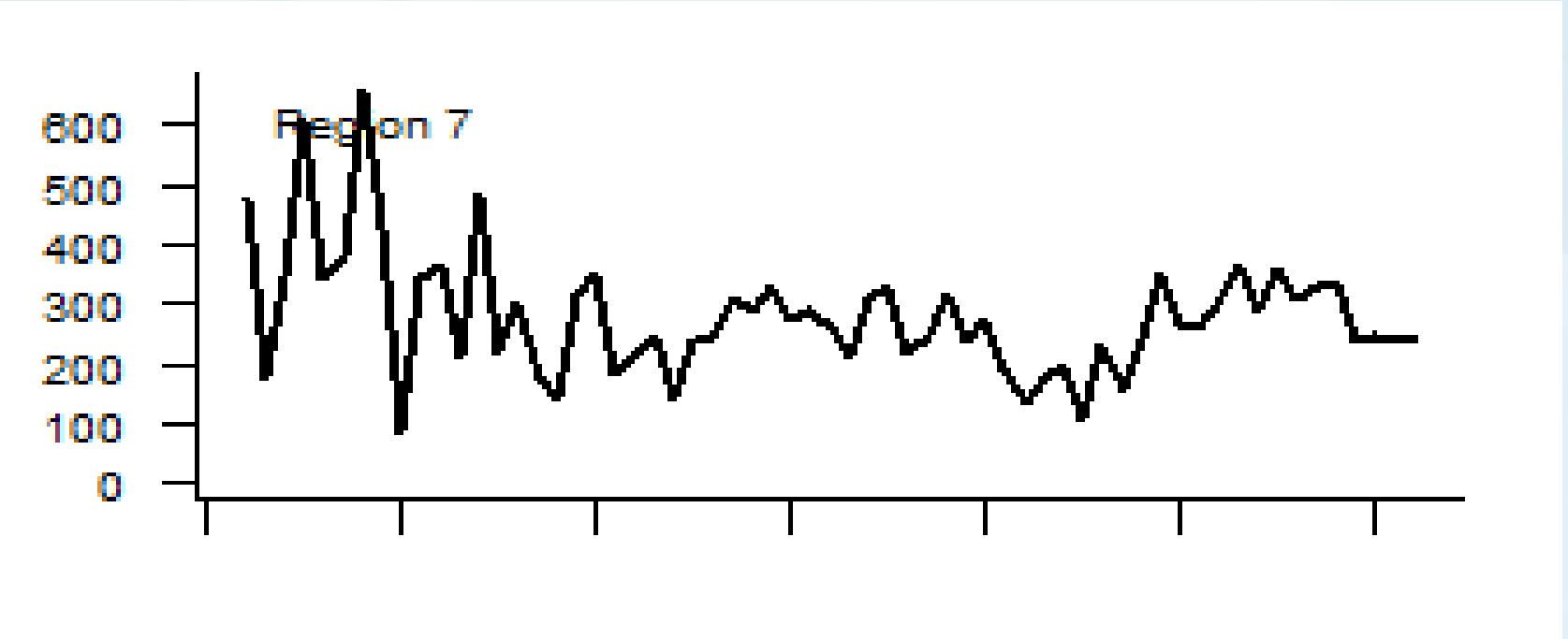




Proportional distribution of total biomass (by weight) in each region apportioned by the source region of the fish for the reference case.

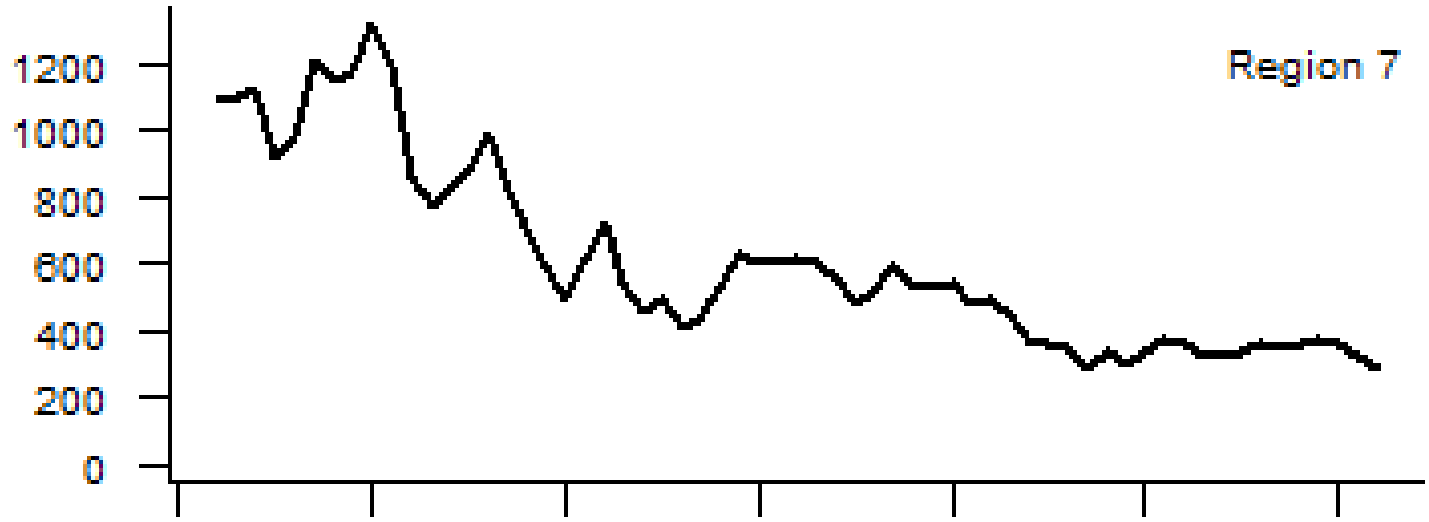
Recruitment Estimates

Yellowfin



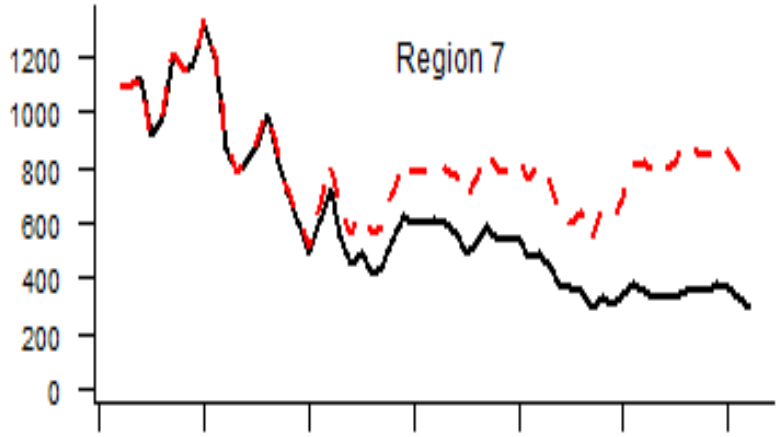
Spawning Biomass Estimates

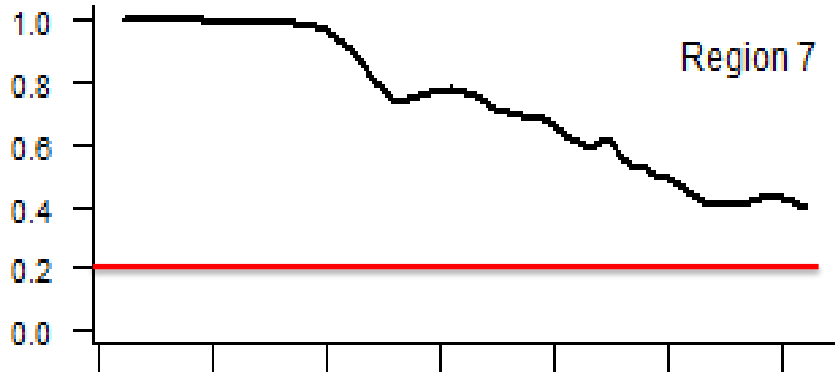
Yellowfin



Fishery Impact Estimates

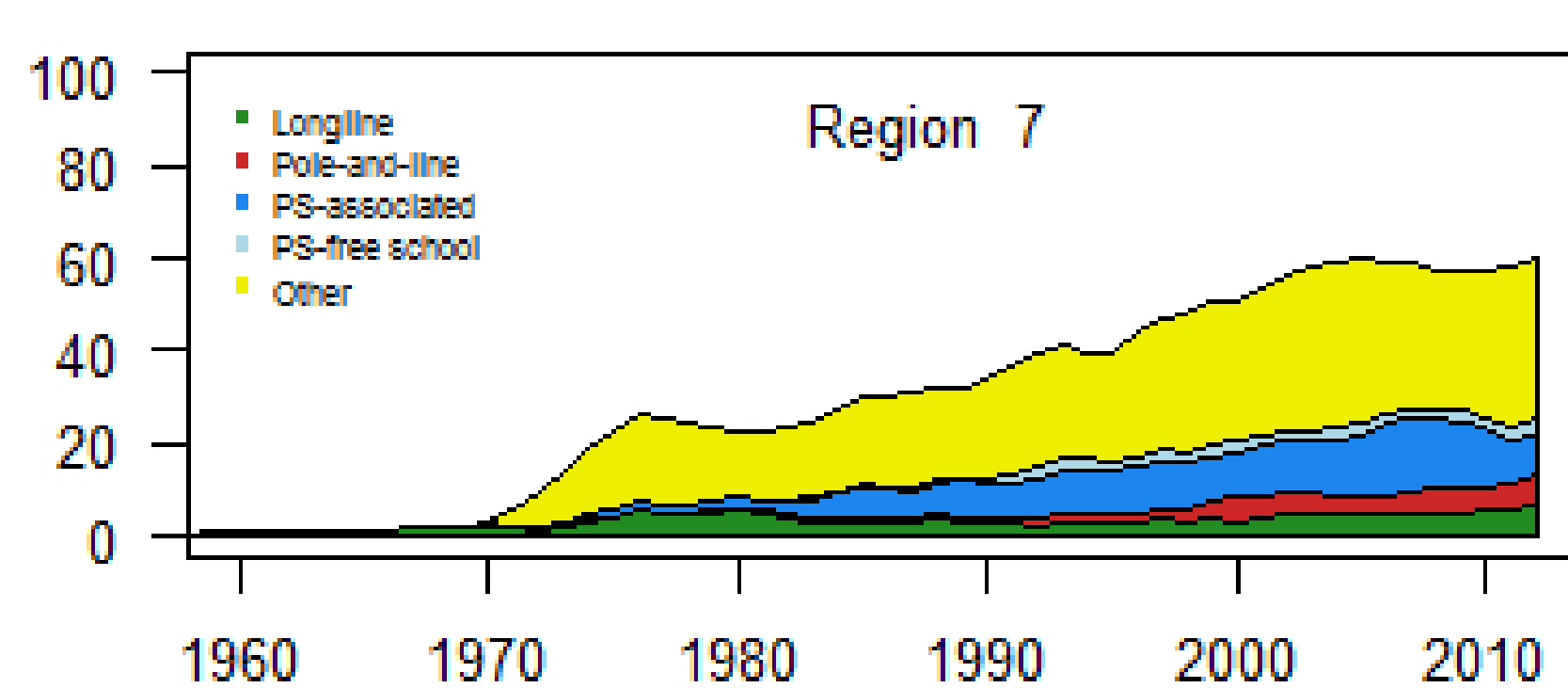
Yellowfin





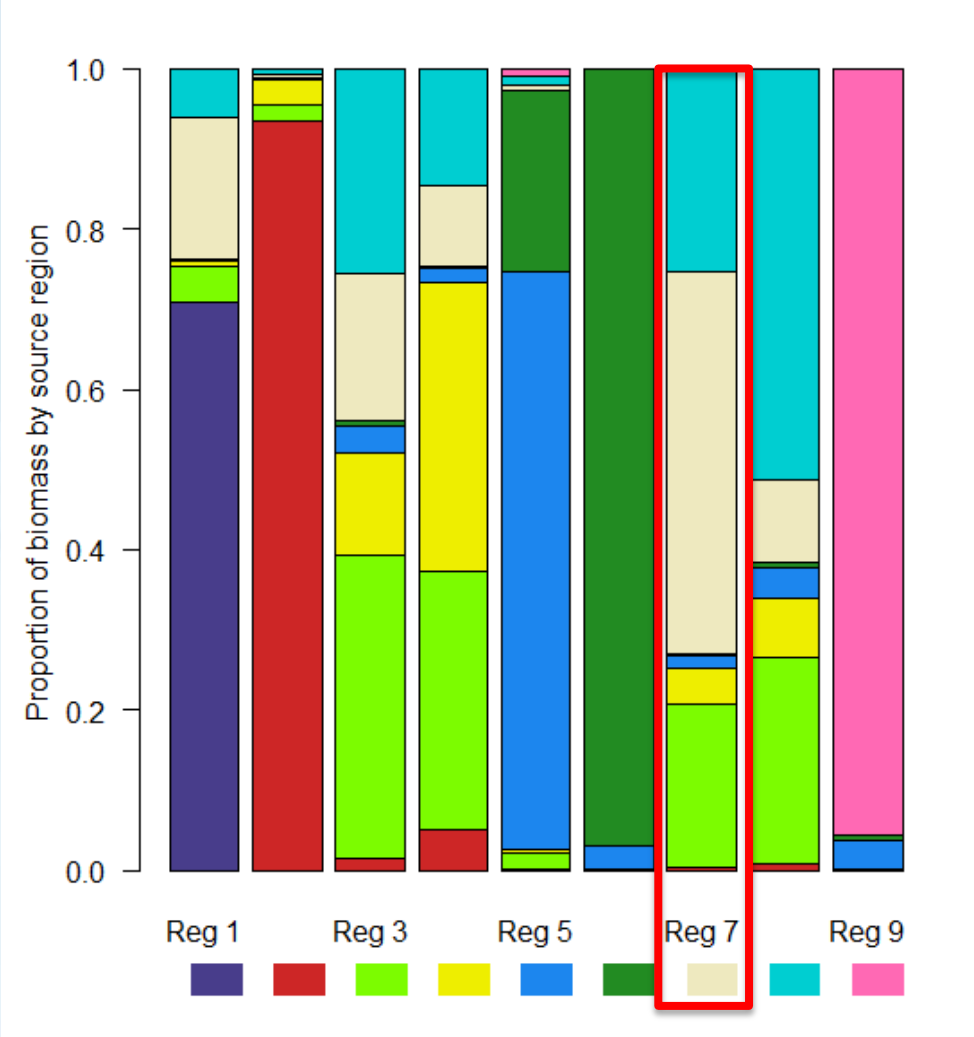
Fishery Impact Estimates

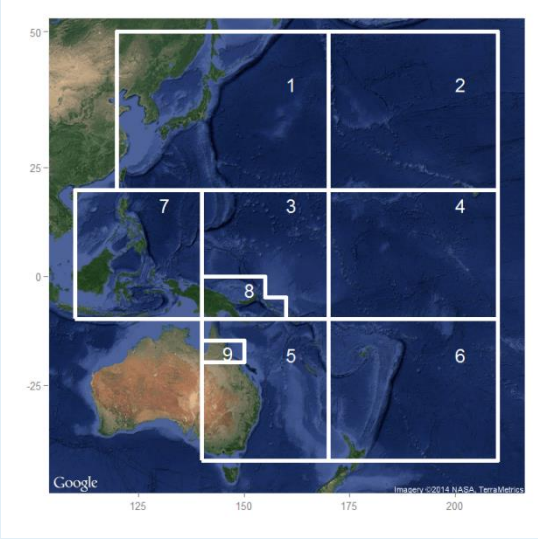
Yellowfin



Stock Structure (MFCL)

Bigeye

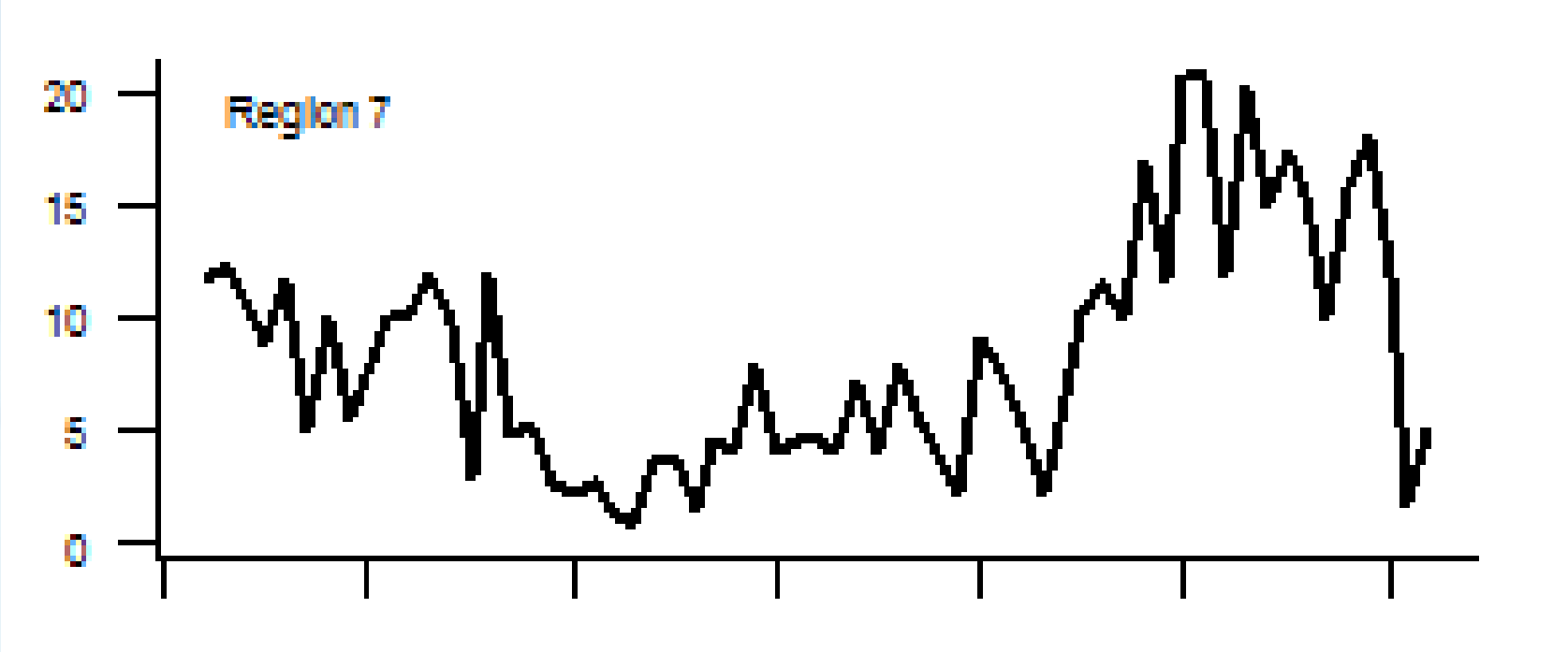




Proportional distribution of total biomass (by weight) in each region apportioned by the source region of the fish for the reference case.

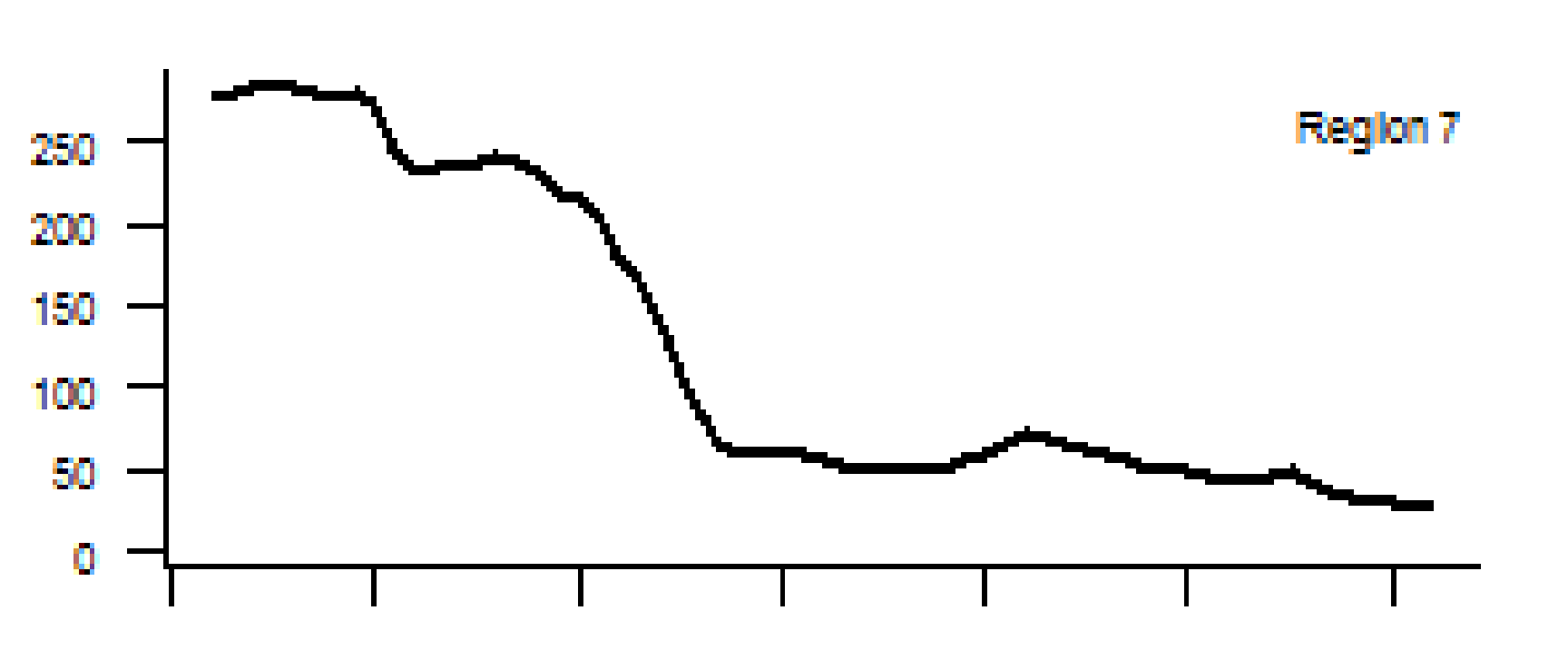
Recruitment Estimates

Bigeye



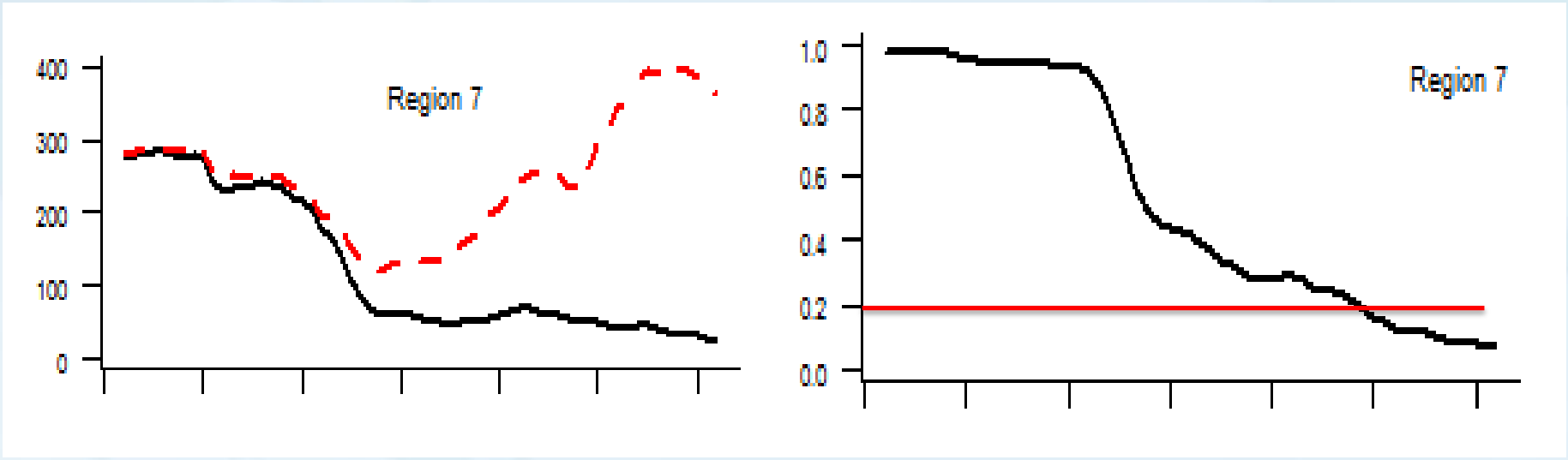
Spawning Biomass Estimates

Bigeye



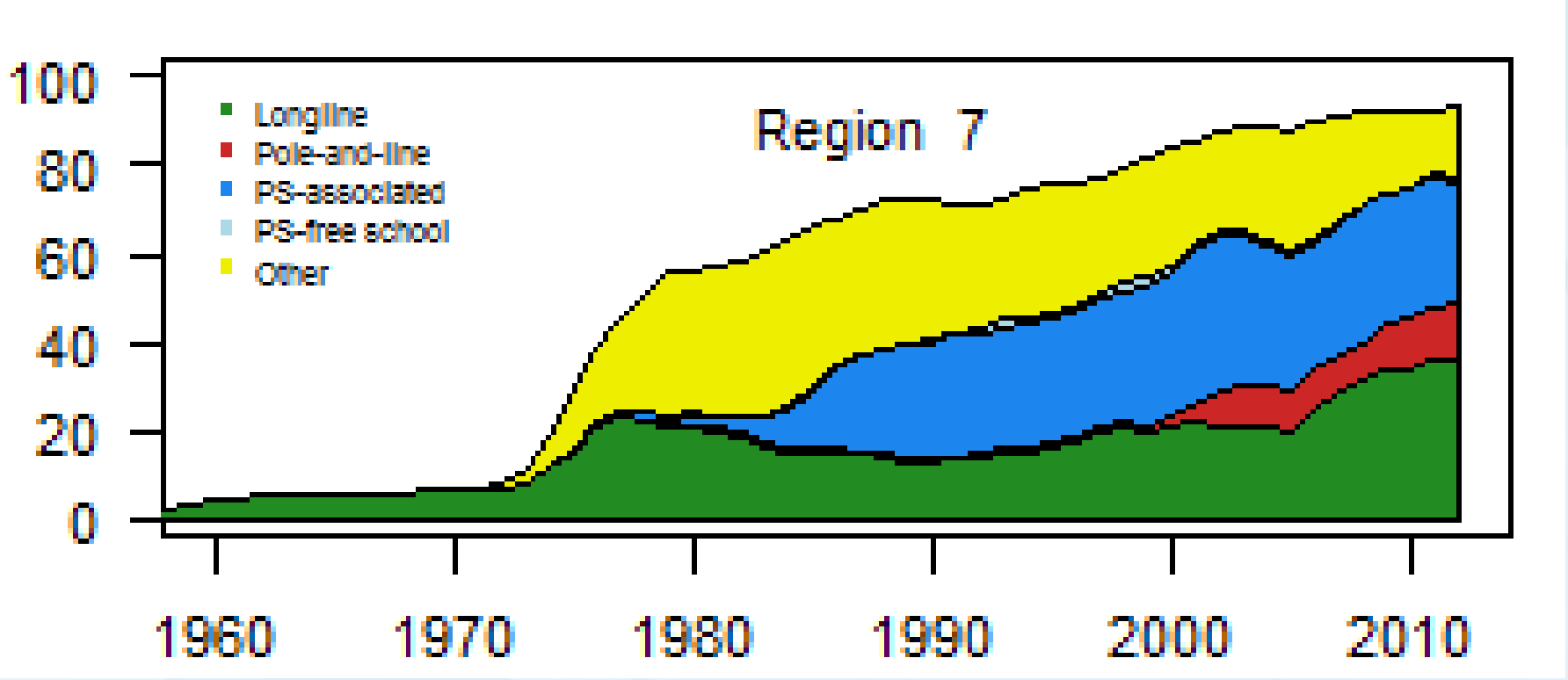
Fishery Impact Estimates

Bigeye



Fishery Impact Estimates

Bigeye



Discussion Points

- Do the WCPFC-wide assessments provide sufficient information to potentially support sub-regional management in the WPEA area?
- If not, what more would be required?
- What additional data would be required to support WPEA stand-alone assessments?

Data Issues


Catch
CPUE
Length
Weight
Misc-VN-7
S-UNA-All-7
S-ASS-All-7
L-All-9
P-All-7
L-AU-9
S-UNA-All-8
S-ASS-All-8
S-ID-PH-7
Misc-ID-7
P-All-8
P-All-3
P-JP-1
S-JP-1
HL-ID-PH-7
Misc-PH-7
S-UNA-All-4
S-ASS-All-4
S-UNA-All-3
S-ASS-All-3
L-All-6
L-All-5
L-AU-5
L-US-4
L-All-4
L-All-8
L-All-7
L-OS-7
L-OS-3
L-All-3
L-US-2
L-All-2
L-All-1
1950 1960 1970 1980 1990 2000 2010
LL
PL
PS
OT

Attachment N

Management strategies (objectives, indicators, reference points and harvest control rules): the equatorial skipjack purse seine fishery as an example (WCPFC MOW2-WP3)

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA SM Project)

THREE-COUNTRY STOCK ASSESSMENT WORKSHOP

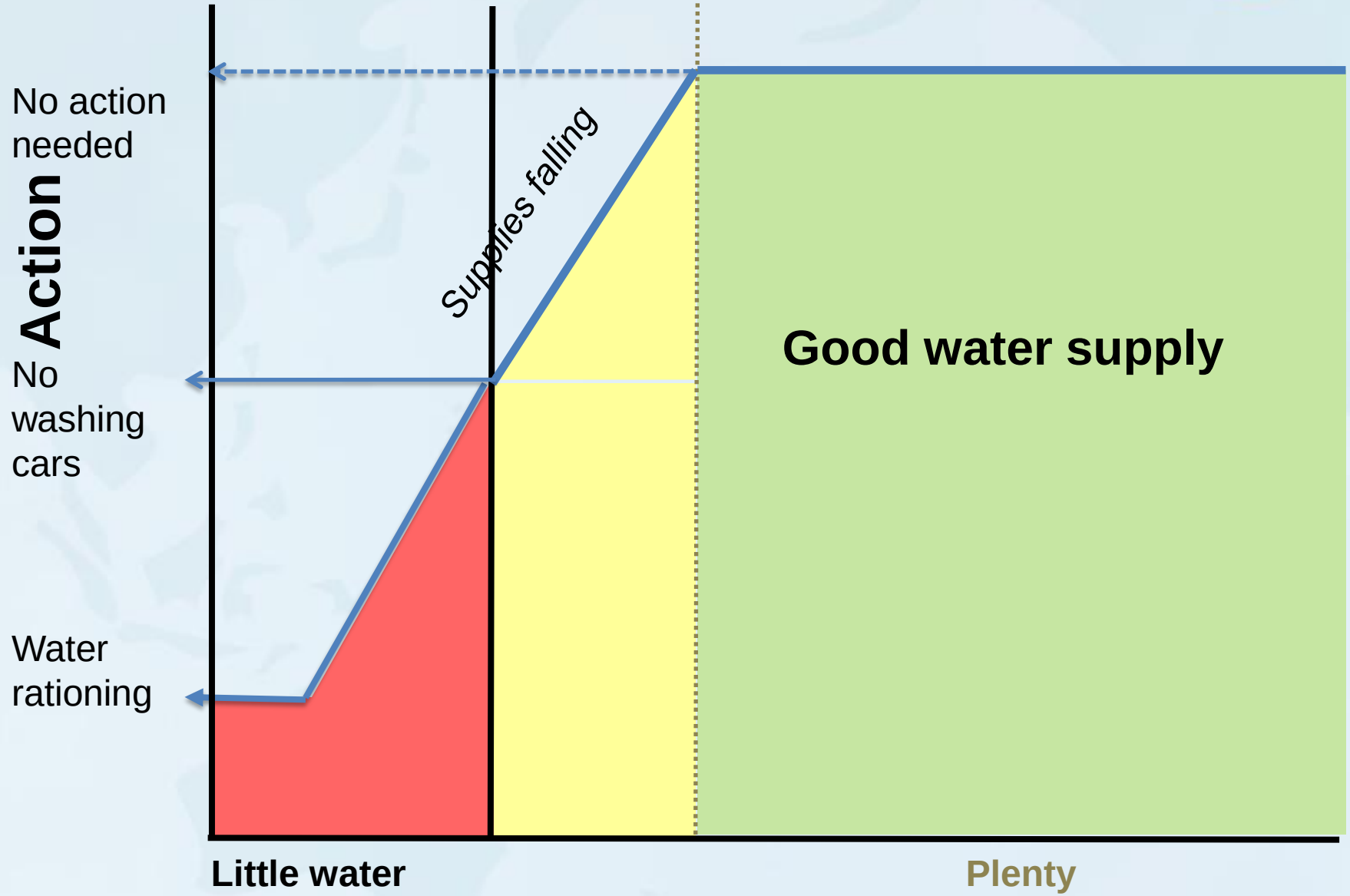
RIMF Meeting Room, Haiphong, Viet Nam
3-6 November 2015

What are harvest control rules?

- MSC definition:
  - "A set of well-defined pre-agreed rules or actions used for determining a management action in response to changes in indicators of stock status with respect to reference points"

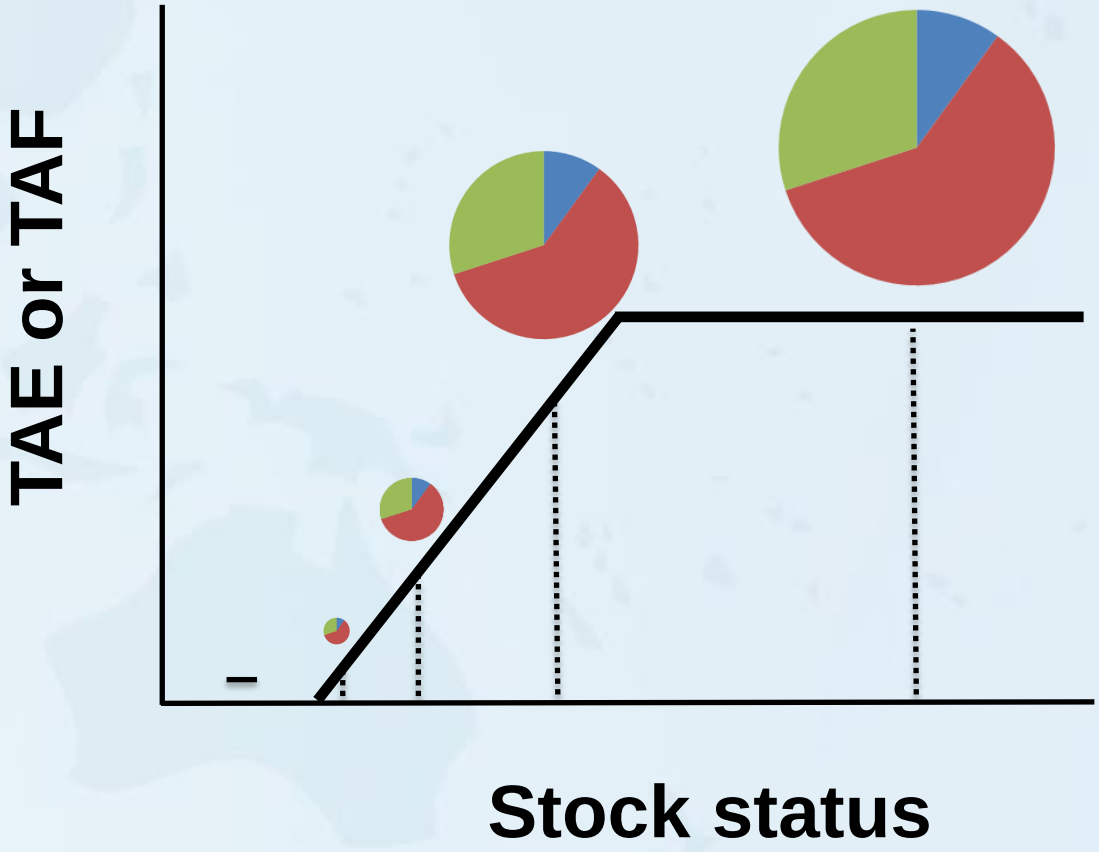
- **The annual level of fishing is defined by the HCR, not through annual negotiation simplify (simplify negotiation and quicken management response time)**

An example


No action needed
Action
No washing cars
Water rationing
Supplies falling
Good water supply
Little water
Plenty
Water level

‘Sliding’ HCR

Adjustments fishing level if stock status declines. Higher levels are permitted with improved stock status.

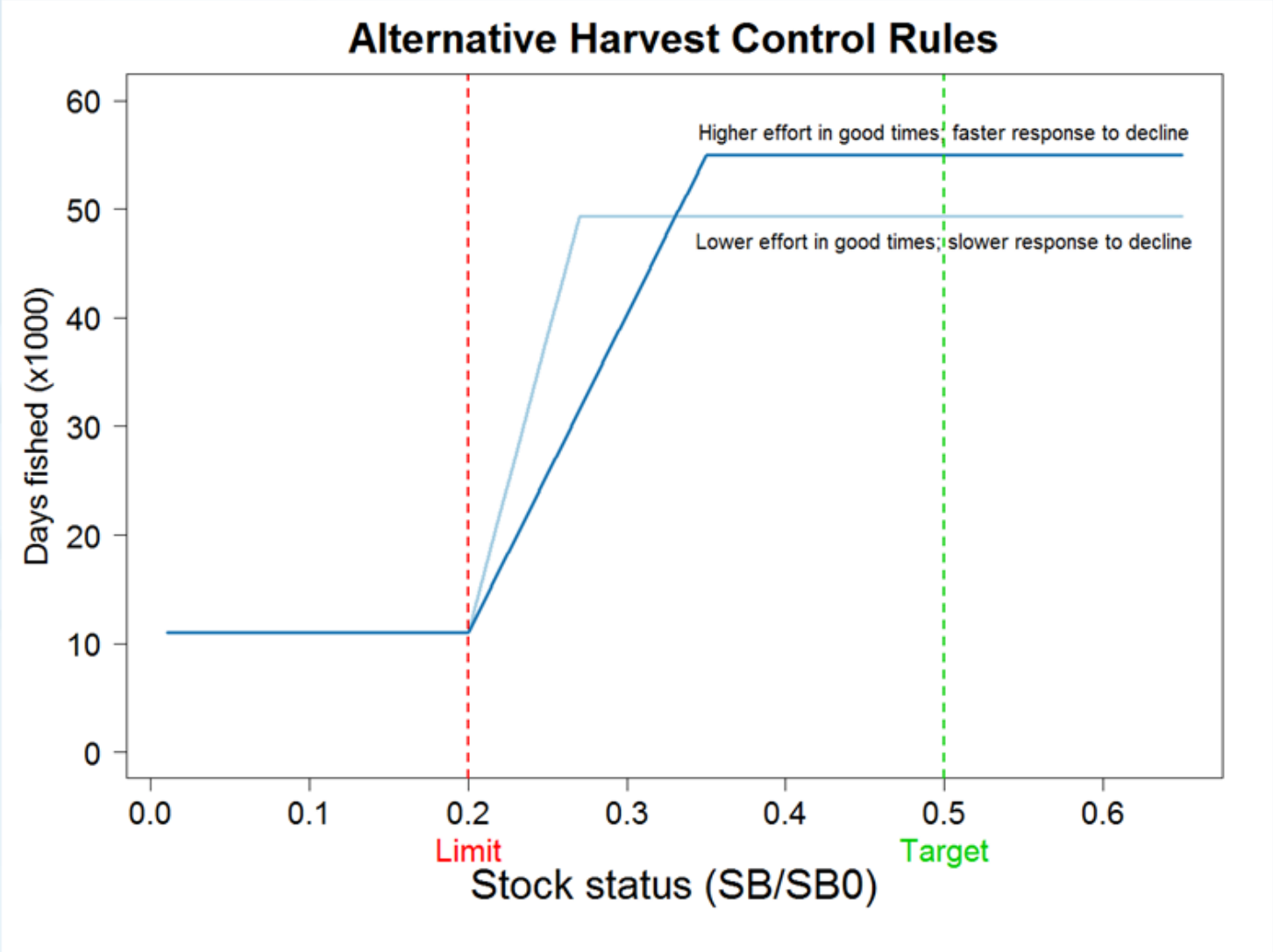


- moderate yields
- lower levels of risk
- higher variation in yield
- gradual changes

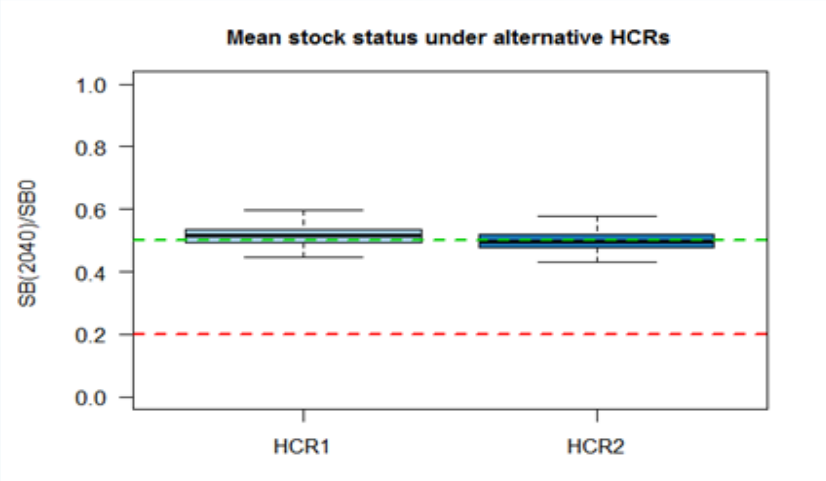
Aim of the paper

- Worked example of how fisheries management decisions in support of achieving target reference points can be put into practice through a harvest control rule.
- Stimulate discussion on a range of matters including:
  - trade-offs between maximizing catches and minimizing catch variability;
  - important features in harvest control rules for skipjack tuna;
  - designing rules for yellowfin and bigeye tuna which involve major gear interactions; and
  - how harvest control rules could assist decision making processes in the WCPFC

Design of harvest control rules



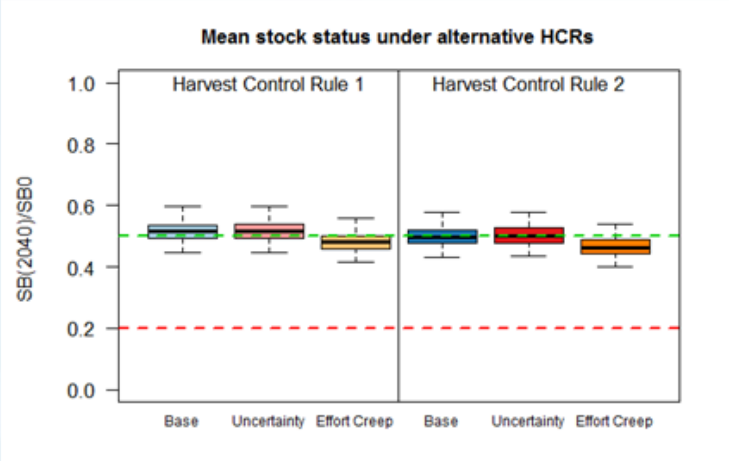
Results


Mean stock status under alternative HCRs
SB(2040)/SB0
1.0
0.8
0.6
0.4
0.2
0.0
HCR1
HCR2

Testing robustness of HCRs

- Important to test a HCR using a model to determine if decisions based on the rule, when applied to the fishery over time, achieve targets and avoid limits.
- Two example areas investigated:
  - Stock assessment uncertainty – how does the HCR perform when our assessments are uncertain?
  - Effort creep – how does the HCR perform when the ability of vessels to catch fish improve over time?

Robustness analysis



	Harvest control rule 1			*Harvest control rule 2*		
Effort change	Base	Uncertainty	Effort creep	Base	Uncertainty	Effort creep
Any change	11%	13%	61%	21%	29%	57%
> 5,000	1%	3%	1%	5%	16%	10%
>10,000	0%	2%	1%	3%	11%	6%
> 15,000	0%	1%	0%	2%	8%	3%

Discussion points

- Trading off objectives: How important is it to maximise catch and catch value versus ensuring more stability in the WCPFC tuna fisheries?
- Will the adoption of harvest control rules make decision making easier in the WCFPC?
- How might sustainability concerns over bigeye and yellowfin be incorporated into management strategies for skipjack? Will it involve specific harvest control rules?
- How might we be able to develop harvest control rules for bigeye and yellowfin given the multi-gear considerations?

Attachment O

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA SM Project)

THREE-COUNTRYSTOCK ASSESSMENT WORKSHOP

RIMF Meeting Room, Haiphong, Viet Nam
3-6 November 2015

WPEA STOCK ASSESSMENT WORKSHOP RECOMMENDATIONS FOR THE GUIDANCE OF NATIONAL-LEVEL TUNA STOCK ASSESSMENT

REQUIREMENTS FOR TUNA STOCK ASSESSMENT

1. For tuna stock assessments, the following data and information may be required subject to the population dynamics model under consideration.

- Stock structure
- Life history characteristics
- Fisheries
- Data compilation
  - catch and effort data by species and gear
  - size data
  - tagging data
- Model
  - Population dynamics models
  - Recruitment
  - Initial population
  - Growth
  - Movement
  - Natural mortality
  - Sexual maturity
  - Fishery dynamics
  - Selectivity
  - Catchability

RECOMMENDATIONS ON WPEA TUNA STOCK ASSESSMENT

INDONESIA

2. National Constitution: Article 33 in the Indonesian Constitution 1945 states that earth, waters and all resources contained therein shall be fully controlled by the State and be used for the welfare of the Indonesian people. Tuna, skipjack tuna, and neritic tuna in Indonesia Waters shall be fully controlled by Indonesia as a State. As a State, Indonesia shall develop regulations in relation to the exploitation of Tuna, Skipjack Tuna, and Neritic Tuna in Indonesia waters to ensure the sustainable use of the resources.

3. National ratification

a. Act No. 17 /1985 concerning Ratification of UNCLOS, 1982
b. Act No. 21 /2009 concerning ratification *Agreement for the implementation of the provisions of the UNCLOS of 10 Desember 1982 relating to the Conservation and Management of Straddling Fish Stock and Highly Migratory Fish Stock* as mention with*United Nations Implementing Agreement (UNIA) 1995.*
c. Act No. 31/2004 concerning Fisheries as amanded with Act No. 45/2009 :
   - Article 10 (2) : Government should actively participate in the Regional and International agency/bureau/organization for the purpose of regional and international tuna management cooperation.

4. National-level legislation for presidential regulation

a. Presidential Regulation No. 9/2007 of 5 March 2007 concerning the approval of Indonesian membership to IOTC
   a. Presidential Regulation No.109/2007 of 6 December 2007 concerning the Ratification of Convention for the Conservation of SBT
   b. Presidential Regulation No. 61/2013 of 28 August 2013 concerning the Ratification of WCPF Convention
   c. In-progress: IATTC Commission Meeting concerning the approval of Indonesia as an CNM since June 2013, and should be extend every year.

5. Indonesian National tuna management plan (NTMP no 107/KEPMEN/2015) has concern particularly in conducting assessment and management of tuna resources, especially in the archipelagic waters (FMAs 713,714,715), with the best scientific evidence available. According to the Ministerial regulation no per.16/men/2012, Indonesia has the National Stock assessment Commission (KOMNAS KAJISKAN) that mandates to conduct fish stock assessment for all fish species in all Indonesian waters of national jurisdiction, including oceanic tunas in the AW. However, the KOMNAS KAJISKAN considered that the management of oceanic tunas in FMA 716 and 717 could be managed along with the RFMO's regulations.

6. Catch and effort data have been collected through Logbook and national observer program. These data require verification and validation. Currently KOMNAS KAJISKAN determines TAC for some fish species and by some fish group (not tuna yet) using surplus production model based on the National fisheries statistic data. For oceanic tuna analysis, relevant stakeholders such as universities, research institutes and KOMNAS KAJISKAN will conduct the stock assessment and determine TAC in AW.

7. Since 2010 under WPEA Project, Indonesia has been conducting a port sampling program which collects biological data by species and by gear. Indonesia fishery is very complex characterized by multi-gears and multi-species with poor data situation with only port based data with length data are available. One Possible analysis under this condition will be a length based analysis approach (e.g. LB SPR) to develop reference points (e.g. target reference points SPR X %, limit reference point SPR Y%) for oceanic tunas in the AW, which will be presented at KOMNAS KAJISKAN for their consideration.

8. Indonesia government will work together with NGO, Private sector and international experts to implement NTMP.

PHILIPPINES

9. Philippines believes that the regional level tuna stock assessment such as the WCPFC tuna stock assessment using the MULTIFAN-CL model is the most robust approach, noting that

oceanic tunas are highly migratory species. Philippines intends to continue conducting CPUE analysis to monitor what is happening within the Philippine waters but it considers that the WCPFC stock assessments and WCPFC Conservation and Management Measures (CMMs) in managing tuna fisheries are the most appropriate approach for stock assessment and tuna management. Philippines will also continue to strengthen its data collection systems through better port sampling coverage, increase of logsheets data collection, continuation of conducting annual tuna catch estimates review workshops, cannery data collection, increase of observer data coverage and other ways that would improve quality and timely provision of data that would help reducing uncertainty in stock assessment/s.

10. Philippines will continue to review its legislation including its National Tuna Management Plan to mainstream our country's obligation to WCPFC as a member country. Philippines has recently passed Republic Act 10654 (RA 10654) "An act to prevent, deter and eliminate illegal, unreported and unregulated fishing, amending Republic Act 8550, otherwise known as " The Philippine Fisheries Code of 1998", and for other purpose. This requires Philippines to establish Reference Points and harvest control rules, which will be considered in the near future, 2016. Fisheries Administrative Orders (FAO) are also aligned to address Philippine compliance with WCPFC Conservation and Management Measures (CMMs) and this may include but not limited to the following:

Fisheries Administrative Orders:

- FAO No. 240: Rules and Regulations in the Implementation of Fisheries Observer Program in the High Seas
  - *100% observer coverage for Philippine fishing operation in HSP1*
- FAO No. 241: Regulations and Implementation of the Vessel Monitoring System in the High Seas
- FAO No. 244: FAD Management Policy that limits the number of FADs per catcher vessel (PS/RN = 40; Handline = 2)
- FAO 245-3: Regulation and Implementing Guidelines on Group Tuna Purse Seine Operations in High Seas Pocket Number 1 as a Special Management Area
- FAO 236-4: Extension of FAO 236 series of 2010 or the Rules and Regulations on the Operations of Purse Seine and Ring Net Vessels Using Fish Aggregating Devices (FADs) locally known as *Payaos* during the FAD Closure Period, and other FAOs

VIETNAM

11. The tuna fisheries have been developed since 1990s. Recently, tuna fisheries become more and more important, contributing a significant portion of total exported value of fisheries. Recognizing the importance of the tuna fisheries since 1996, Vietnam has been conducting a stock assessment of fisheries resources in general, especially for tuna resources. During 1996-2005, the data collection programme, including the port sampling, unloading and resources surveys of tuna fisheries were conducted under the ALMRV project, following the FAO guidelines.

Unfortunately, after ALMRV project terminated, data collection was interrupted due to the budget constraints. Since 2010, WPEA project has been implemented to collect tuna fisheries data following the WCPFC protocol to submit to WCPFC for stock assessments. Since 2011, the government approved a project on marine fisheries resources assessments, including tunas. This project conducted the

independent fisheries resources surveys, as well as the commercial fisheries data collection for stock assessment and management purposes. The project has been revised and will be continued until 2020.

Under Viet Nam Fishery Law (2003), the stock assessments are required as a scientific basis for sustainable fisheries management. These also has been reflect in numbers of decrees and decision, such as, the Decree No. 33 (2010), Decision 3465/QD-BNN-TCTS, 6Aug2014 on restructuring the tuna fisheries; the NTMP which was adopted by MARD in 1 September 2015 (Decision No 3562/ QD-BNN-TCTS).

12. Based on the outputs of previous SA study, we recognize that, there is lack of information on tuna resources and its fisheries (migration pattern, recruitment, etc.). Therefore, it does not seem appropriate and realistic to conduct a precise stock assessment at national level, because it may not reflect the whole stock. However, Viet Nam requires a good stock assessment results for sustainable management of tuna fisheries. We consider that SA conducted at regional (Region7) and sub-regional East Sea (South China Sea) level could be adopted together to harmonize tuna fishery management at national and regional level, which can be reflected in the NTMP. In this respect, we wish to conduct stock assessment both at Region 7 and sub-regional East Sea (SCS) separately. For the regional and sub-regional level SA, there is a need to collaborate among the relevant stakeholders to share data and information for such SA for the consideration of national-level tuna management.

ADDITIONAL QUESTIONS

Dr John Hampton responded to the following additional questions for the tuna stock assessment in the WPEA region.

1. Currently Region 7 is a part of the WCPO regional stock assessment. Can Region 7 be separated for an independent stock assessment, considering the complicated fisheries and its geographic environment?

Response: This might be feasible if there was good data support, including tagging data, for the various parts of R7. Currently, estimates of the dynamics of stocks in this region are available from the regional assessments. These estimates benefit from what in effect is information sharing from the totality of data in the assessments, e.g. growth, selectivity, etc. Also, the estimated population sizes in R7 are scaled against other regions of the assessment model. These linkages would be potentially lost in a stand-alone assessment for R7. Given the current state of data in R7, it is likely that using the assessment model will provide more reliable estimates. The countries in R7 should continue to strive to improve fisheries data, conduct standardized CPUE analysis and ideally implement tagging programmes (although the latter is expensive and logistically difficult).

2. Can SPC provide more detailed information from the results of the WCPO stock assessment including more detailed management implications on Region 7?

Response: It may be possible to run the assessment models to test harvest strategies in R7. This would necessarily be using the fisheries as currently defined in the assessment models. However, SPC does not currently have the resources to conduct such work. SPC can provide the model outputs in their detailed form, and these are available on the SPC website (http://www.spc.int/oceanfish/en/ofpsection/sam/sam).

3. Region 7 is still a vast area and can be separable into three sub-regions such as South China Sea, archipelago, and east Philippine Sea by geographic boundaries. Especially S. China Sea for example seems to be a closed area surrounded by a series of islands where tunas in the water seems to constitute a

separate stock. Can SPC conduct an independent stock assessment for tuna species in the South China Seas?

Response: It would not appear to be straightforward to conduct assessments of tuna stocks in the SCS. There is a long history of longline fishing in particular in the SCS, but currently this data is not available in a form that would support detailed analysis of standardized CPUE as a key input for YFT and BET assessments. Skipjack would likely be even more problematic. There are no tagging data available to provide information on exploitation rates or to indicate the degree of separateness of this area from the adjacent Pacific. The SEAPODYM model may offer some potential however, and this could be investigated with Patrick Lehodey at CLS.

Attachment W12-G

FOURTH VIETNAM ANNUAL TUNA CATCH ESTIMATES WORKSHOP

(VTFACE-4)

Da Nang, Vietnam

10–12 November 2015

RECOMMENDATIONS

DFISH will arrange for a translation of the final version of the Recommendations into Vietnamese and then dissemination to Sub-DFISH offices and other important stakeholders of the WPEA project in Vietnam. Responsibility for undertaking the work involved in each recommendation has been highlighted (bold/underlined).

1. **Revisions to Vietnam Tuna Fishery Data Collection forms**

   The Workshop noted several issues in the collection data under the WPEA project and recommended the following modifications to the data collection forms:

   a. **DFISH and WCPFC** include the WCPFC key shark species in WPEA logsheets for each gear type and investigate funding sources to support the printing and distribution of the new forms, and consideration for shark species identification guides;
   b. **DFISH and WCPFC** update the WPEA Longline/Handline Port sampling and Landings data collection forms to include new fields to distinguish whether a trip was either LONGLINE or HANDLINE.
   c. **DFISH and WCPFC** consider producing separate WPEA Longline and Handline logsheets to better cater for certain fields specific to each gear.

2. **Historic Annual catch estimates**

   The Workshop recommended the Vietnam Tuna Fisheries Catch estimates by GEAR and SPECIES for years prior to 2000, as provided in the relevant VTFACE-4 paper, should be submitted to **DFISH** for approval to submit to the **WCPFC**.

3. **Improving Species Identification**

   The Workshop recommended **WCPFC and DFISH** organize and fund species identification workshops as required, with a particular focus on distinguishing between juvenile yellowfin and bigeye tuna. This work will include the preparation and distribution of species identification resource materials. These workshops should be designed to be repeated as often as required in the future.

4. **Information on Vietnam tuna fishery**

   The workshop recommended **RIMF and DFISH**, with assistance from **WCPFC**, include an agenda item and a working paper on various INDICATORS of each Vietnam tuna fishery (e.g. CPUE trends from each GEAR TYPE). It was acknowledged that the initial paper prepared for VTFACE-5 would provide only basic indicators but would hopefully expand over the following years.

5. WPEA Tuna Data Management

a. The workshop recommended that **DFISH**, with assistance from **WCPFC**, consider upgrading to TUFMAN2 which will then satisfy the long-term objective for sub-DECAFIREP offices to enter, manage and report on the data that they are responsible for collecting.
b. The workshop recommended that **WCPFC/SPC**, update TUFMAN/TUFMAN2 to support the recent changes to the WPEA data collection forms, for example, distinguishing between longline and handline trips and the addition of WCPFC key shark species on WPEA logbooks.

6. Resolving major issues of uncertainty in Provincial estimates

The workshop recommended **DFISH** and **RIMF** undertake an investigation of the extent of oceanic tuna landings in Ba Ria-Vung Tau by GEAR (which is currently the main source of uncertainty in the catch estimates), including a review of the supply chain, and report the findings to the next workshop (VTFACE-5).

7. National stock assessment

The workshop recommended **DFISH** and **RIMF**, with assistance from **WCPFC/SPC**, consider the application of the SEAPODYM model for national stock assessment.

8. Administration issues

The workshop recommended **leaders of sub-DECAFIREP** should allocate suitable human resources to implement tuna data collection (e.g. Sub-DECAFIREP Phu Yen).

Attachment W12-H

Sustainable Management of Highly Migratory Fish Stocks in the West Pacific and East Asian Seas (WPEA SM Project)

TRIP REPORT
EAS CONGRESS 2015 16-21 NOVEMBER 2015

Da Nang city, Viet Nam

I. Introduction

The six Large Marine Ecosystems (LMEs) and sub-regional seas of East Asian region are experiencing physical, ecological and socio-economic changes associated with infrastructure development, urbanization, extreme climate events, land and sea-based activities, and population increase. International cooperation at regional and LME levels has facilitated in many ways collaborative responses among countries to the challenges and uncertainties with countries' adoption of ocean policies and measures in alignment with the regional action programs such as the strategic action programme (SAP) and regional sustainable development strategy.

Questions that the EAS Congress intended to address include:

- What are the drivers that have shaped the regional coast and ocean governance?
- What achievements and impact have these regional governance mechanisms made in addressing overfishing, eutrophication, loss of coastal and marine biodiversity and other transboundary issues in the last decade?
- What are the gaps in our understanding of the coasts and oceans?
- What are the innovative implementation and governance mechanisms for SAPs and the regional strategy?
- What should the collaborating countries do in terms of policy and regulatory framework and institutional arrangements to make these regional mechanisms and initiatives work more effectively?

East Asian Sea (EAS) Congress in 2015 is designed to facilitate regional and national initiatives to respond to the ocean agenda enshrined in the future ocean management.

The GEF-funded WPEA-SM Project is connected with the PEMSEA's Sustainable Development Strategy for the Seas of East Asia programme under the umbrella of Project Framework Document sharing EAS regional governance on marine resources. Therefore, this is a very good chance to share experiences with other stakeholders in order to better manage marine resources in the future.

The main objective of the participating this congress is:

1. To showcase the progress, achievements, impacts and lessons learnt from transboundary management of LMEs and regional seas governance in the EAS region and globally;
2. To learn from national initiatives in institutional, policy and legal reforms in support of implementation of LME SAPs and regional sustainable development strategies;
3. To better understand the challenges and gaps in research and education, implementation and reporting, and transboundary partnerships within the seas of East Asia and identify solutions

and respond to challenges, and opportunities for collaboration among regional mechanisms, national and local governments and donor agencies; and

4. To facilitate exchanges in regional and national policies and initiatives for coastal and ocean governance reflected in the future.

II. Congress schedules

The Congress were divided into three Workshops following:

i) Workshop 1: Managing Risks in Climate Change and Disasters in the Seas of East Asia;
ii) Workshop 2: Maritime Sector Contributions to a Blue Economy for the Seas of East Asia, and
iii) Workshop 3: Coastal and Ocean Governance in the Seas of East Asia: from Nation to Region.

Each workshop was also split into three Sections. The WPEA participant attended Section 1 of the Workshop 1 (Managing risks in climate change and disasters in the Seas of East Asia) and Section 1 of the Workshop 3 (Coastal and Ocean Governance in the Seas of East Asia: from Nation to Region).

III. Managing risks in climate change and disasters in the Seas of East Asia:

Asia is home to half of the world's urban population, with nearly 50 per cent of the region's total population currently residing in cities. Much of the urbanization that occurs is unplanned and continues to be a prime issue in many countries, as this trend will continue throughout the 21st century. Among the urban areas, there is significant growth recorded in and around the coastal zone of Asia, a considerable amount of which occurs in areas prone to natural hazards. As this growth occurs at a rapid rate and despite the fact that cities are highly vulnerable to hazards, there remains little consideration of taking efforts in mitigating the impact of coastal hazards, in particular those influenced by a changing climate.

The government of regional countries, at the same time, recognizes the potential threats to the ecological balance of its coastal areas, as a result of pollution, habitat degradation, coastal erosion and sedimentation, and Natural Disaster Risk (such as: floods, landslide, earthquake, tsunami, high tide) as environmental challenges in addition to the number of management issues such as multiple-use conflicts and the lack of integrated planning. The Workshop recommended three approaches to managing disaster, including: mitigation aspect, adaptation aspect and disaster reduction aspect.

Mitigation Aspect:

- Studies and Planning Documents
- Study of Tsunami Disaster Risk Impact
- Development of Hazard/vulnerability maps; identification of highly vulnerable coastal and watershed areas, resources, habitats, coastal communities and sectors of coastal communities
- Green City Development Program and other conservation programs
- Public Awareness

Adaptation Aspect:

- Inventory of data for traditional /local wisdom (for supporting national climate change programme);
- Development of resilience coastal village.

Disaster Risk Reduction Aspect:

- Establish evacuation zone
- Evacuation route and signs
- Simulations of Preparedness Tsunami Risk Disaster

IV. Coastal and ocean governance in the Seas of East Asia: from Nation to Region

There are several presentations in Section 1 of the Workshop 3. These consisted:

1. The CTI-CFF Regional Secretariat Executive Director presented an overview on how one regional 'Coral Triangle Initiative' has been interacting with several challenges, suggesting that to synergize multi-stakeholders cooperation is a more complex effort, therefore requires strategic approaches to address. The presentation focuses on how CTI-CFF leads the role to coordinate efforts in safeguarding the region's water through provision of 10-year Regional Plan of Action (RPOA) and how to implement the proposed framework at each national level.

2. The WCPFC Science Manager (WPEA Project Manager) presented Capacity Building in Monitoring and Assisting Management of Tuna Fisheries in the East Asian Seas. The purpose of the presentation is to share how national capacity has improved to cope with international and regional requirements in collaboratively reducing threats and stress that may impact shared fishery resources in the East Asian Seas, which is connected to the Western and Central Pacific Ocean. The WPEA project continues port sampling and data collection activities, building on the previous project that targeted two areas: i) data collection and ii) capacity building through government's awareness of the three project participating countries, Indonesia, Philippines and Viet Nam.

3. The Northwest Pacific Action Plan (NOWPAP) introduced its programme. The NOWPAP member states include China, Japan, Korea and Russia. The decision-making body of NOWPAP is an Intergovernmental Meeting (IGM) held every year, rotating among four countries. Most of NOWPAP projects are implemented by four Regional Activity Centers (RACs) and coordinated by the Regional Coordinating Unit (RCU) with two offices in Toyama (Japan) and Busan (Korea).

V. Lesson learnt from the EAS Congress 2015

- Needs to strengthen vertical integration of actions at regional, national and local levels, by incorporating local actions into national and regional management frameworks, and developing and implementing local actions in alignment with regional and national priorities and considerations.
- Policy and strategy at regional should be reflected and implemented into national legal and policy frameworks.
- Monitoring and implementation the national legislation and enforcement should consider livelihoods and economic development.
- Institutional, technical and financial sustainability must be taken into consideration in any cooperation and collaboration.

Attachment W12-I

THE 3RD WORKSHOP FOR THE DEVELOPMENT OF INDONESIA'S HARVEST STRATEGY ON TUNA FISHERIES MANAGEMENT
Bali, Indonesia
19-20 November 2015

DRAFT SCHEDULE
Overview of process and activities for tuna Harvest Strategy case study for Indonesian tuna fisheries (WPP 713,714,715)

General comments

1. WS will be hosted by the DGCF
2. Travel cost of the CSIRO experts to HS WS and Technical WS, if required, shall be supported by the WCPFC-WPEA project, the MDPI and other donors.
3. The level of budget for the development of HS software (for both case study and updated one) needs to be identified.
4. The previous workplan developed at the 2nd HS workshop is in **Attachment A**.

Date	Stakeholder's Engagement	Technical support	Targeted R&M
Oct-2014	**1st Harvest Strategy (HS) workshop** • HS text for national tuna management plan (NTMP)	National and international expertise in HS	
May 2015	**2nd HS Workshop** • adoption of LRP for HS planned but not adopted yet • 6 months work plan developed – most activities delayed • appointment of HS Steering Committee and Technical Working Group (TWG)	National and international expertise in HS	
Jun-Oct 2015	• Report on 2nd HS WS produced • Government support for HS case study process planned • Inter-departmental, NGO WG • Dr Dale Kolody was	Inter-sessional work • Several meetings between DGCF and CFRD during June-October • Data collation and preliminary analysis for use in HS framework –	• Biological data for target species for SRP ref points. - No biological data such as age, sex, maturity, etc. - Length frequency data available from port

	nominated for technical assistance	no data validation yet for the HS • Preliminary report on available data and monitoring for HS case study areas - Meta data inventory was documented (*Baseline data to develop HCR for developing NTMP in the A/W*) for HS framework but not professionally reviewed yet • Informal review by international experts – not happened yet	sampling
Nov-2015	**3rd HS Workshop** ▪ Stakeholder's perceptions of fisheries and HS process ▪ Increased understanding of HS process ▪ Review and update of schedule and work plan	• National and international experts on HS and tuna fisheries • Overview of HS development process • Questionnaire on stakeholder perception on data and understanding of case study fisheries • Review and advice on process and workplan	• Availability of social and economic data? None • Input from regional development? To be identified from SPC • Increase data on vessels – not really
Dec 2015-Feb 2016	• Report on 3rd HS WS – will be produced • Secure funding for advisory and technical support - WCPFC/WPEA Project and MDPI will support – details will be discussed among WCPFC, CSIRO, DGCF, CFRD in due course • Cost for the development of case study HS software (for education)	• Analysis of questionnaire • Review of monitoring and info requirements for HS options • Review of available modeling platforms • Initiate development of HS scenario model	
March 2016		**Technical WS-1** (Need CSIRO expert's input – funding support will be	

		made) • Review updated data and analysis for case study area (may recommend to use existing data and choose one species for example yellowfin or skipjack and one fishery (group), for example, PS or LL or PL, etc for simplification and educational purpose in the first year (PL Association expressed that skipjack and PL is preferred) • Specify scenario modeling requirements	
Mar-May 2016		**CSIRO development:** • Capacity development for HS and MSE modeling • Complete prototype HS scenario modeling platform • Preliminary analysis of WCPFC stock assessments for 713,714,715	
May 2016	**4th HS workshop** • Summary of stakeholder perceptions from 3rd WS • Initial objective elicitation from stakeholders • Initial review of feasible management measures • Preliminary consideration of HS options and performance measures for case study	• Summary of updated data and assessment of requirements for HS case study • Initial demonstration of HS scenario model • Preliminary summary of analysis of WCPFC assessments • Iillustration of example performance measures for case study area.	
Oct 2016		**Technical WS-2** (Need CSIRO expert's input – funding support will be made) • Updated of analysis of WCPFC assessments	

		• Initial review of potential HS for case study • Final review and recommendation of required monitoring series for case study HS • Summary of likely range of status and productivity of stocks in case study area from WCPFC stock assessments • Review and summary of appropriate performance measures for HS	
Nov/Dec 2016	**5th HS workshop** • Focus on a) reviewing and finalising quantitative objectives and performance measures, b) selecting small number of feasible HS for further evaluation, c) identifying key uncertainties[1] for implementing them. • An outcome will be a set of alternative, practically feasible HS for further evaluation		
March 2017		**Technical WS-3** (Need CSIRO input – funding support will be made) • Review evaluations of candidate HS • Summarise performance for presentation to 6th HS WS • Identify technical and implementation issues for further work	Identify important information gaps/ requirements
May 2017	**6th HS workshop**		Identify important

[1] These may relate to the monitoring, stock, fishery dynamics, implementation/compliance/effectiveness of the management measure.

	• Review initial evaluation of performance • Identify potential issues for implementation • Clarify/refine performance measures for HS and any necessary operational constraints • Reduce number of candidate HS based on performance (if appropriate)		information gaps/ requirements
July 2017		**Technical WS-4** (Need CSIRO input – funding support will be made) • Review most recent information and stock assessments from WCPFC • Review update evaluation of candidate HS • Summarise performance and make recommendation for HS selection for HS WS	• Identify key monitoring and information needs from evaluation that need to be addressed to improve HS performance and robustness to uncertainty • Design monitoring and/or research projects required to address key uncertainties
Nov 2017	**7th HS workshop** • Review performance of final candidates • Select preferred candidate • Identify any outstanding implementation issues • Recommendations for implementation • Agree annual and 5 year monitoring and review of HS implementation and performance		Fund and initiate required targeted research and monitoring projects

Attachment A

The Second Indonesian Harvest Strategy Workshop

18-22 May 2015, Bogor, Indonesia

Summary Report for the Reference Points, Harvest Strategies and the Precautionary approach in the management of Indonesian Tropical Tuna Fisheries

Background

1. Establish a common understanding within Ministry of Maritime Affairs and Fisheries (MMAF) and Indonesian tuna fishing industry of the role and purpose of reference points and harvest strategies in fisheries management and the steps and considerations required for their development.

- Increased understanding of reference points and their relationship with higher level objectives of fisheries management;
- Clarified relationship between reference points at RFMO (whole stock) and Indonesian domestic fisheries management (see below);
- Agreed to recommend Indonesia adopt tiered framework of reference points recommended by WCPFC SC;
- Noted it was important to approach this development in a practical and pragmatic manner that was appropriate to the particular Indonesian context and explicitly adaptive. That is, design and implement harvest strategies based on current understanding and available information and monitoring systems, with an explicit priority on identifying important uncertainties and addressing them in the 1st cycle of review and revision of the harvest strategy.

2. Review and consider alternative approaches to the development and implementation of harvest strategies, including, conceptual understanding of the fishery system, available time series data and information sources, methods of assessment and practical management measures that are appropriate to Indonesian fisheries management.

- Reviewed experience from CCSBT and Australia in development and implementation of RP and HS and the use of MSE to design and select HS that are most likely to meet objectives (reference points) and provide desired mix of trade-offs between social and economic benefits and conservation of the productivity of the stock(s) (see presentations and discussion)
- Agreed that it was important (for effectiveness of management and to meet Indonesia's international obligations) for RP and HS to be consistent (from both conceptual and process perspective) and compatible (from a fisheries management perspective) with those being considered (and/or adopted) in the WCPFC and IOTC. (Note issues identified in terms of connectivity, "complementary measures", consistency with objectives for Indonesia's domestic fisheries management and objectives for sustainable tuna production).
- Reviewed process and current status of RP and HS development in WCPFC and IOTC and recognized opportunities for support for capacity building and for advancing Indonesia's NPA for tuna resources.
- Agreed that 713, 714,715 (or some subset) were appropriate areas for a case study to develop HS, given their importance to Indonesia for continued development of their tuna fisheries and significance in the wider international tuna fisheries.

3. Identify preferred approach(es) and requirements for development and evaluation of potential harvest strategies, including, essential times series data and other information requirements, and; the actions required to make then available at the national level for the purposes of tuna harvest strategy implementation.

- Reviewed extensive range of government, NGO and industry data sources, monitoring programs and information available for tuna fisheries in 713, 714, and 715
- Agreed, in principle, that empirical (rather than model based) harvest strategies are more likely to be appropriate to the Indonesian context.
- Recognised the need for different categories of i) monitoring data and ii) information on the nature and dynamics of the fish stocks and fishing fleets.
    - Stock monitoring data: (To be completed):
        - Estimates of total removals (e.g. total catch, discards, use as bait etc)
        - The level of uncertainty in estimates of total catch
        - Estimates of total effort (and uncertainty)
        - Catch and effort data suitable for estimating CPUE for use as an index of relative abundance (by sector)
        - Size (length/weight) composition of the catch
        - Tagging data for estimating rate of fishing mortality, connectivity and growth (and potentially abundance and natural mortality)
        - Size/Age at maturity (for estimating impact of fishing on the reproductive component of the population
    - Fishery monitoring data (To be completed):
        - Fleet characteristics by sector (vessels size, operational range, target and bycatch etc)
        - Gear characteristics
        - Business/Employment profile
        - Market/value chain

4. Scope an action plan and implementation schedule to develop, evaluate and select potential harvest strategies for tuna fisheries management in areas 713, 714 and 715 of Indonesia, including a working paper for:

- Broader consideration and decision by MMAF;
- Seeking additional support and appropriate expertise for the HS development process; and
- Communication to the relevant tuna RFMOs.

5. Tentative work programme for harvest strategy case study for Indonesian tuna fisheries (WPP 713, 714, 715)is annexed below:

Work programme for harvest strategy case study for Indonesian tuna fisheries (WPP 713, 714, 715)

Scoping and preparatory analysis for workshop	1) Establish Technical Working Group (TWG) and Harvest Strategy Steering Committee a) Completion date: 29 May b) Responsibility: DGCF (SC), RCFMC (TWG) 2) Meeting for the Collation of existing data (Advice from CSIRO on collation of data for HS use) ➢ (DGCF) Data series from as presented in workshop – Responsibility: Yayan ➢ (RCFMC) Biological and other information on population biology and fisheries from regional institute/ agencies/ universities/ NGOs – Responsibility: Lilis

	➢ (Associations) Buyer/industry data – Responsibility: Wildon and Yayan a) Completion date: 3 August b) Responsibility: as above 3) Pre-workshop for data analysis (18-20 August, DGCF) ➢ CSIRO expert attend for advice on data analysis (WPEA support the expert's travel cost + time) a) Completion date: 15 August b) Responsibility: TWG, Expert, SC 4) Analysis of existing data for input to HS development (according to guidelines made from Pre-WS) ➢ Exploratory analysis for identifying and scoping case studies, see below (catch, effort and biological data) ➢ Specific analysis for designing of monitoring system for HS data series ➢ Characterizing the uncertainty in data and information input. Advice from CSIRO for: • Scoping of potential modeling approaches • Interpretation: Population dynamics, fisheries economics (supply chain and market/fisheries profile), and HS development • Summarize relevant HS literatures (Input for WS) a) Completion date: 15 August b) Responsibility: HS expert, TWG, SC
Technical Workshop 3-day WS in conjunction with RCFMC' s stock assessment training WS (23-28 August) (late September 2015 contingency) (RCFMC will host this WS)	WS convened by TWG (hosted by RCFMC) and assisted by CSIRO HS expert (WEPA support CSIRO expert's meeting time and preparation time) ➢ Reviewing analysis of available data ➢ Identifying data gaps and/or additional data sets ➢ Confirm case study (utilizing data from Kendari/Sodohoa, Sorong, Majene, Bitung and Ternate) – develop one HS ➢ Explore alternative forms of HS – input/output ➢ Form of model/platform for analysis ➢ Discussion and design for information management ➢ Develop detailed work programme a) Completion date: 28 August b) Responsibility: TWG, HS expert, SC, NGO
Intersessional analysis	TWG with advice and input from CSIRO HS expert ➢ Additional analysis and data collation (TWG) ➢ Preliminary model development (CSIRO, TWG) ➢ Draft stakeholder engagement strategy (SC) a) Completion date: 16 October b) Responsibility: as above
WS Preparation (HS SC and TWG Meeting, teleconference)	➢ Review analysis and model development ➢ Finalize detailed agenda for November WS a) Completion date: 20 October b) Responsibility: SC, NGO
HS Stakeholder WS	➢ Introduce and overview of HS work program ➢ Demonstration of the case study a) Completion date: 18 November

	b) Responsibility: SC, TWG, HS expert, NGO
HS Technical WS (DGCF will host this WS)	➢ Review intersessional work ➢ Demonstration of case study ➢ Scope activities for 2016 and 2017 a) Completion date: 19-20 November, Bali b) Responsibility: TWG, HS expert, SC

NOTE

1) Bold indicated priority
2) HS SC: Saut, Fayakun, Retno, Ibes, Wudianto, HS expert (Campbell)
3) TWG: Duto, Lilis, Bayu, Anas, Dicky, NGO, Industry, Association, HS expert (Dale?)

Attachment W12-J

WPEA-SM Project Board Meeting
11-12 December 2015
Bali, Indonesia

WPEA-SM/PB-2015-02

PROVISIONAL AGENDA

1. **OPENING OF MEETING**
   UNDP and WCPFC will provide brief opening remarks.
2. **APPOINTMENT OF CHAIRMAN AND RAPPORTEURS**
   The Executive Director will chair the meeting with one Co-chair from the project participating countries.
3. **INTRODUCTION OF WPEA PROJECT BOARD MEMBERS/PARTICIPANTS**
4. **ADOPTION OF AGENDA**
5. **FINANCE AND ADMINISTRATION**
   5.1. Review the financial arrangement between UNDP and WCPFC
   UNDP-Philippines will briefly introduce financial arrangements for this project.
   5.2. Financial status of WPEA-SM and audit requirements
   WCPFC will briefly introduce the current financial status of WPEA-SM Project.
   5.3. Mid-term project evaluation
   UNDP will introduce the process and schedule of the mid-term evaluation.
6. **REVIEW OF PROJECT MANAGEMENT**
   The WPEA Project Manager will briefly introduce any issues related with the project management, including an overview of the project progress.
7. **REVIEW OF THE FIRST YEAR ANNUAL WORK PLAN AND ACTIVITIES**
   Each country will introduce the progress of their activities and any challenges in implementing the 2015 Annual Work Plan. The Project Board will review the member's progress and provide advice and comments for future implementation.
   7.1. Indonesia
   7.2. Philippines
   7.3. Vietnam
8. **WORK PLAN AND BUDGET FOR 2016**
   The Project Board will review and endorse 2016 Annual Work Plan and budget allocation.
9. **OTHER MATTERS**
10. **ADOPTION OF REPORT**
    The Project Board will adopt any decision points and the meeting reports will be adopted in due course.
11. **CLOSE OF MEETING**