



**Report of the Consultative Meeting on Regional Cooperation for
Sustainable Neritic Tuna Fisheries in Southeast Asian Waters**

Songkhla Province, Thailand

8-10 October 2013

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Southeast Asian Fisheries of Development Center

The Secretariat

Supported by the Government of Sweden

PREPARATION AND DISTRIBUTION OF THIS DOCUMENT

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BIBLIOGRAPHIC CITATION

SEAFDEC. 2014. Report of the Consultative Meeting on Regional Cooperation for Sustainable Neritic Tuna Fisheries in Southeast Asian Waters, Songkhla Province, Thailand, 8-10 October 2013, Southeast Asian Fisheries Development Center. 82 pp.

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I. INTRODUCTION

1. The Consultative Meeting on Regional Cooperation for Sustainable Neritic Tuna Fisheries in Southeast Asian Waters was convened in Songkhla Province, Thailand from 8 to 10 October 2013. The Meeting was attended by representatives from the ASEAN countries, namely: Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand, and Vietnam. Representatives from the Food and Agriculture Organization/Regional Office for Asia and the Pacific (FAO/RAP), Embassy of Sweden, ASEAN Tuna Working Group, and the Secretariat of the Regional Plan of Action to Promote Responsible Fishing Practices including Combating Illegal, Unreported and Unregulated Fishing in South East Asia (RPOA-IUU); representatives from the private sector, such as the Thai Union Manufacturing Co., Ltd and Thai-Abba Tonggol Project; and officials from SEAFDEC and members of the Regional Fisheries Policy Network, also attended the Meeting. The list of participants appears as **Annex 1**.

2. As part of the Meeting activities, a half-day study visit of tuna canneries in Songkhla Province was organized on 9 October 2013. Taking heed of the requirements of the concerned tuna canneries, the participants were grouped into two, where one group visited the Chotiwat Manufacturing Co., Ltd. while the other group went to visit the Tropical Canning (Thailand) Public Co., Ltd. Based on feedback from the participants, the study visit provided them the opportunity to experience and to observe the processes in canned tuna production from sea to factories, and also to learn the products distribution system in the world market.

3. On behalf of the Secretary-General of SEAFDEC, the Senior Advisor to SEAFDEC, *Dr. Magnus Torell* welcomed the participants to the Meeting. He emphasized on the challenges that could be encountered in developing an appropriate neritic tuna management for the Southeast Asia region. Nevertheless, as the Meeting would comprise the first step to seek for regional cooperation in order to sustain the neritic tuna resources in the region, he urged the participants to maximize their involvement in the very important meeting. He looked forward to see the outcome of this activity believing that an appropriate and effective neritic tuna management will be even more important in the years to come. With that note, he then declared the meeting open. His Opening Speech appears in **Annex 2**.

II. BACKGROUND AND AGENDA OF THE MEETING

4. The SEAFDEC-Sweden Project Manager, *Ms. Pattaratjit Kaewnuratchadasorn* explained the background of the Meeting, especially highlighting on the need to ascertain the importance of neritic tuna resources in the Southeast Asian region. She added that the 45th Meeting of the SEAFDEC Council in April 2013 also acknowledged such requirements and subsequently recommended that SEAFDEC should consider working on the development of a plan of action for regional cooperation for the sustainable neritic tuna fisheries but should

avoid any possible duplication of efforts of other regional organizations, and relevant national and regional agencies. The Meeting Prospectus appears as **Annex 3**.

5. Consequently, the representative from Malaysia suggested that a road map should be developed for the management of neritic tuna resources in the Southeast Asian waters. This is considering the significant contribution of neritic tuna to the economies and livelihoods of the Southeast Asian countries.

6. With that suggestion, the Agenda which appears as **Annex 4** was then adopted.

III. CURRENT SITUATION OF NERITIC TUNA IN THE SOUTHEAST ASIAN REGION: FISHERIES, IMPORTS, EXPORTS, AND PROCESSING (CHAIRMAN BY MR. SAMSUDIN BIN BASIR)

7. Representatives from the Member Countries provided information on the status of neritic tuna fisheries in their respective countries. The summary of the presentations follows:

Cambodia

8. The representative from Cambodia, *Mr. Uy Ching* presented the status and issues on neritic tuna fisheries in Cambodia, the details of which are shown in **Annex 5**. He stated that coastal fisheries management is a relatively new field of activity for the Fisheries Administration (FiA) of Cambodia, and added that since Cambodia has presently no direct communications with fishing vessels from neighboring countries, therefore FiA could not assess the quantities of catch of these vessels. He explained that Cambodia is not very much concerned with neritic tuna since the average depth of the country's marine waters is only 50-80 meters, and neritic tuna is not considered as "target species". Nevertheless, it was suggested that Cambodia could propose a research project under the SEAFDEC-Sweden Project for the conduct of a tuna survey in its territorial waters in order to establish the information on tuna resources of the country.

Indonesia

9. The representative from Indonesia, *Mr. Tegoeh Noegroho* presented the results of the two (2) research studies conducted in Indonesia, namely: 1) Review of Fishery, Biology, and Population Dynamics of Neritic Tuna Species in Indonesia: Case Study in West Coast Sumatera Eastern Indian Ocean and Sulawesi Sea, and Reproductive Biology of Spanish Mackerel (*Scomberomorus commerson*) in Kwandang Bay, Sulawesi Sea. The results appear in **Annex 6**.

10. While explaining that the results of the study in west coast of Sumatera in the Eastern Indian Ocean indicated over-exploitation of kawakawa (*Euthynnus affinis*), he suggested that further studies for this species should be conducted in order to understand the dynamics and status of the fisheries. Meanwhile, the result of the research in Kwandang Bay, Sulawesi Sea indicated that undersized Spanish mackerel (*Scomberomorus commerson*) had been caught therefore the fishing activity should be controlled using appropriate fishing gear and mesh size of nets in order to sustain the stocks in the future.

Malaysia (Peninsular West)

11. The representative from Peninsular West Malaysia, *Ms. Effarina Mohd Faizal* presented the status of neritic tuna in Peninsular Malaysia (**Annex 7**). She reported that neritic tuna are among the important pelagic fish species caught by commercial and traditional fishing gears. The main species of neritic tuna found in Malaysian waters include the longtail (*Thunnus tonggol*) and kawakawa (*Euthynnus affinis*) while frigate tuna (*Auxis thazard*) is rarely caught being mostly found towards the offshore areas. There is a growing trend in the annual catch of neritic tuna from 1997 to 2011 where the production data recorded had increased from 40,000 metric tons to 65,000 metric tons.

12. While most tuna caught are consumed fresh, production for the tuna processing industry is relatively small. She also pointed out that there are certain issues that constrain the conduct of research work on these resources. These include insufficient data collected, lack of staff/human capacity, inadequate financial resources to conduct a tuna survey, and lack of coordination among relevant agencies. She concluded by stating that since neritic tuna are shared stocks, a systematic cooperation and shared management among bordering countries such as Malaysia, Thailand and Indonesia, is strongly needed.

Malaysia (Sabah-Sarawak)

13. The representative from Sabah-Sarawak Malaysia, *Mr. Salehudin bin Jamon* presented the Overview of Neritic Tuna in Sabah and Sarawak Waters (**Annex 8**). He stated that neritic tuna species, namely: *Thunnus tonggol*, *Euthynnus affinis*, *Auxis thazard*, and *Auxis rochei* are found in tropical waters such as in the South China Sea (SCS) and Sulu & Celebes Seas. The total annual production of neritic tunas in these areas could range between 26,839 metric tons and 10,757 metric tons. In 1991-2011, neritic tuna production showed a decreasing trend due to the inconsistent production from F.T Labuan while the annual production from Sarawak and Sabah showed moderate increasing and decreasing trends, respectively. Most neritic tuna in these areas are caught by purse seines and drift nets with fish aggregating devices or FADs to enhance the catch.

14. Nevertheless, he also pointed out that there is a need to improve the quality of catch and effort data, since good data quality will provide good information for scientists to estimate the status of small pelagic fish stocks. He argued that in the end, this would assist the fisheries managers in planning for the sustainable development of the purse seine fishery in the country.

15. In response to the query of the representative from Thailand *Ms. Praulai Nootmorn* about the mechanism of data collection and implementation of Vessel Monitoring System (VMS) in Malaysia, *Mr. Sallehudin bin Jamon* explained that in Peninsular Malaysia it is compulsory for all C2 vessels (> 70 GRT) to be installed with VMS. In addition, the installation of Mobile Transceiver Units (MTU) is mandatory under the country's vessel licensing regulation. Failure to do so will cause the license of vessels to be revoked or suspended as provided for under the Fisheries Act 1985. However, the case of Sabah and Sarawak is different from that of Peninsular Malaysia since their fishing areas are not too far from the coastline, hence, VMS is not installed in most of the vessels. Acquiring VMS for installation in vessels is the responsibility of the fishers, but for every 2 hours of data submitted by vessels with VMS, the government will pay a corresponding amount of RM 0.50. He added that an on-going study is conducted in Sabah for the compilation of data measurements of neritic and oceanic tunas.

Myanmar

16. The representative from Myanmar *Mr. Hlwan Moe Zaw* reported that from the results of the joint research survey conducted in 2007 in Myanmar waters which aimed to determine the relative abundance and size composition of important commercial fish species in these waters, swordfish was the most dominant species in the offshore waters of Myanmar. However, there was no record on the catch of neritic tuna, may be because most tuna catches of foreign longline fishing vessels have not been landed in Myanmar ports. His presentation appears as **Annex 9**.

Philippines

17. The representative from the Philippines, *Mr. Ruben J. Jardin* presented the status of tuna fisheries in the Philippines (**Annex 10**). He stated that although tunas are caught throughout the Philippines, the most productive fishing grounds are Sulu Sea, Moro Gulf and the waters extending to the north Celebes Sea. Annual neritic tuna catch estimates for 2012 were recorded at 167 and 182 tons sharing 33% of the total tuna catch estimates (oceanic and neritic). In this connection, the Meeting expressed the need for: continued support and cooperation from industry stakeholders, the conduct of annual tuna catch estimates review workshop, increased coverage of data collection, and for various agencies to conduct data sharing and integration to improve the tuna statistics of the Philippines.

Thailand

18. The representative from Thailand, *Mr. Chalit Sa-Nga-Ngam* presented the status of neritic tuna resources in Thailand. He explained that neritic tuna species commonly found all year round in the Andaman Sea include the bullet tuna (*Auxis rochei*), kawakawa (*Euthunnus affinis*), longtail tuna (*Thunnus tonggol*), and frigate tuna (*Auxis thazard*), which are also found in the Gulf of Thailand except the bullet tuna. Furthermore, he stated that the main fishing gears used are classified into regular purse seines (TPS, FAD, LPS) and neritic tuna purse seine (TUN). However, the annual production indicated a decreasing trend from 2005 to 2010.

19. The Meeting was also informed that the Department of Fisheries of Thailand had initiated research programs on neritic tunas in 2011-2013, namely: (a) status of neritic tunas in Andaman Sea Coast of Thailand, (b) fisheries and status of neritic tunas in Gulf of Thailand, (c) reproductive biology of kawakawa, frigate, and longtail in Andaman Sea Coast of Thailand, and (d) reproductive biology of kawakawa, frigate, and longtail in Gulf of Thailand. These studies aim to determine the existing fishery biology and stock assessment of neritic tuna and provide updated information necessary for the management of neritic tuna resources in Thailand waters. His presentation appears as **Annex 11**.

Vietnam

20. The representative from Vietnam, *Ms. Nguyen Thi Hong Nhung* presented the current situation of neritic tuna fisheries in the waters of Vietnam (**Annex 12**), where five (5) neritic tuna species are found in the country's waters, namely: bullet tuna, frigate tuna, kawakawa, striped bonito, and longtail tuna. Although specific surveys for stock assessment of the neritic tunas have not been conducted in Vietnam, the biomass estimation of neritic tuna species in

the national waters was shown to be approximately 90,000 MT accounting for about 7.9% of the total biomass of large pelagic fishes. Of which, bullet tuna indicated the largest stock biomass of about 47,000 MT accounting for 51.0% of the total biomass of neritic tunas, followed by frigate tuna at 16,000 MT (18.0%). The biomass of the three other neritic tunas including kawakawa, striped bonito and longtail tuna was estimated at about 28,000 MT.

21. In Vietnam, neritic tuna is often caught by purse seine and gillnet, especially in fishing grounds that spread across the coastal waters of Vietnam which are mainly located near the coastal areas of Thai Binh to Thanh Hoa, and Quang Binh to Da Nang Provinces; northeastern and southwestern of Con Son Island; and southern and south western of Ca Mau Province. Fishing season is usually the whole year but the main fishing season is from the months of April to September.

IV. STATUS AND PATTERNS OF UTILIZATION OF NERITIC TUNA BY SUB-REGIONS OF SOUTHEAST ASIAN AND ADJACENT WATERS (CHAIRERD BY MS. PRAULAI NOOTMORN)

22. Representatives from other organizations/agencies attending the Meeting shared their experiences on the status and patterns of utilization of neritic tuna in the waters of the Southeast Asian region and adjacent areas.

Gulf of Thailand

23. From the information on the status of neritic tunas in the Gulf of Thailand provided by the representative from the Department of Fisheries of Thailand *Ms. Praulai Nootmorn*, three major species of neritic tuna are found in the Gulf of Thailand. These are the frigate tuna (*Auxis thazard*), kawakawa (*Euthynnus affinis*), and longtail tuna (*Thunnus tonggol*), with purse seine and drift gillnets as the main fishing gears used. While the production of neritic tunas from 1995 to 2012 showed a continuous increasing trend during the period from 1995 to 2007, a steady decrease was noted from 2008 to 2012. Her presentation appears as **Annex 13**.

24. In this regard, the Meeting was informed that Thai fishing vessels operate both within the EEZ of Thailand as well as in the EEZs of neighboring countries, especially Indonesia. Therefore, such decreasing trend in the country's neritic tuna production could be due to the practice of Thai fishing vessels of reporting only the total catch from Thai waters, in accordance with the regulation on reporting of production which is based only on the flag state.

25. In addition, the representative from Vietnam, *Mr. Nguyen Ba Thong* presented the result of a case study conducted in 2012 on neritic tuna fishery in Vietnam (**Annex 14**), showing that Vietnam's tuna fisheries focus on both the oceanic and neritic tuna resources. While neritic tuna catch is mostly consumed locally, oceanic tuna production is targeted for the export market. Furthermore, he shared the information that Vietnam is now developing the framework for the compilation of the country's fisheries statistics including all kinds of tuna species. He highlighted that routine data collection on tuna must be implemented for all countries in the region.

Andaman Sea

26. The representative from the Department of Fisheries Malaysia, *Mr. Samsudin bin Basir* presented the results of a project on “*Sustainable and Conservation of Neritic Tuna Fisheries: Sharing Experiences from Indian Ocean Tuna Commission (IOTC)*” and shared his experiences with the IOTC (**Annex 15**). He stated that one of the objectives of the IOTC is to promote cooperation among its members with a view to ensure through appropriate management, the conservation and optimum utilization of stocks and encourage sustainable development of fisheries.

27. In explaining the various interpretation of optimum utilization, he also cited that IOTC is using the Maximum Sustainable Yield (MSY) and Maximum Economic Yield (MEY) to describe the status of the stock. He also described the current conservation and management measures being implemented by IOTC relating to neritic tuna and tuna-like species.

Sulu-Sulawesi Sea

28. The representative from SEAFDEC/TD, *Ms. Penchan Laongmanee* presented the framework of Joint Research Program for Tuna Research Survey in Sulu-Sulawesi Sea (SSS). She referred to the advice given by the 44th Meeting of SEAFDEC Council for SEAFDEC to consider developing a framework for a joint research program in Sulu-Sulawesi Sea (SSS). In response, TD organized the *Sub-Regional Technical Meeting for Development of Joint Research Program for Tuna Research Survey in Sulu-Sulawesi Sea* in August 2013 in Malaysia. She added that the participating countries for this joint research program are the Philippines, Malaysia and Indonesia. Under this program, joint research would be conducted to provide updated scientific findings on the status and trends of selected tuna species found in the SSS. Several program activities include stock assessment, determination of spawning grounds, data collection, and assessment of the use of FADs in these areas. The presentation appears in **Annex 16**.

V. OTHER INITIATIVES IN THE REGION TO VERIFY SUSTAINABILITY OF NERITIC TUNA RESOURCES (CHAIRD BY MR. NGUYEN BA THONG)

29. The experiences of other agencies were also shared during the Meeting by their representatives, especially regarding the sustainability of neritic tuna resources. The summary of the presentations follows:

30. The representative from the Department of Fisheries of Thailand, *Ms. Praulai Nootmorn* presented the plan for tuna management in Thai waters (**Annex 17**), which emphasized on increasing awareness on the importance of tuna resources. The report included a technical document review indicating the annual tuna fisheries statistics. During the discussion, it was recommended that Monitoring, Control, and Surveillance (MCS) system be strengthened and that an Action Plan for the suitable management of tonggol tuna be considered for managing the resources of tonggol tuna.

31. The representative from Thai Union Company, *Mr. Narin Niruttinanon* presented a long-term plan for longtail tuna as shown in **Annex 18**. He expressed the concern on the red-listing of tonggol tuna being proposed by WWF Denmark due to insufficiency of information on its stock status and lack of knowledge on effective management of this fishery resource. In

this connection, Abba Seafood (Sweden) made a corporate commitment to assist in managing the tonggol tuna resources to ensure the industry's viability. This project will aim to make available all relevant information gathered and to forge a strong collaboration among partners and stakeholders to ensure the effective utilization of neritic tunas in the years to come.

ASEAN Tuna Working Group

32. The representative from the ASEAN Tuna Working Group (ATWG), *Mr. Machmud*, presented the "Status, Issues and Way Forward of the ATWG" (**Annex 19**). He stated that the objective of establishing the ATWG is mainly to strengthen cooperation of the ASEAN to increase bargaining position of ASEAN tuna products in international market through product diversification, value added products, and upgrading the quality and food safety. He informed the meeting that ATWG had already conducted four (4) annual meetings since 2010, and the next meeting is scheduled in June 2014. The results of these four meetings indicated mainly the progress of implementation of the Strategic Plan of Action 2011-2014. As also mentioned in the report, technical assistance is needed by the Member States, especially on stock assessment and capacity building and the development of ASEAN Tuna Eco-labeling is now on-going. In the coming years, ATWG will focus on enhancing regional alliance among ASEAN countries in order to support the shortages of tuna raw materials in some ASEAN member countries.

SEAFDEC Marine Fishery Resources Development and Management Department

33. The representative from SEAFDEC/MFRDMD, *Ms Noorul Azliana Jamaludin* presented information on the project on "*The Use of Genetic Study in Fishery Resource Management*" (**Annex 20**). She expounded on how population genetics analysis can be used in effective neritic tuna management, and pointed out that neritic tuna is a highly migratory species, which occur together in small or large aggregations and thus may lead to genetic variations. However, DNA marker technique is used as a tool to reveal the genetic variation in fish.

34. The uses of genetics in fishery management were also explained, specifically to: (a) differentiate stock discrimination (single stock/sub population/different stock), (b) determine migration pattern, (c) assess individual mixed stock fisheries, and (d) evaluate the response of stocks to fishing exploitation. Finally, she stated that the findings from the said population genetics study could provide important initial information on stock assessment and useful in the development of a management strategy for these species.

35. The representative from FAO/RAP, *Dr. Simon Funge-Smith* informed the meeting that the Bay of Bengal Large Marine Ecosystem (BOBLME) project based in Phuket, Thailand had indicated strong interest to support the study of genetics of tonggol tuna (*Thunnus tonggol*) and possibly other neritic tuna species in Bay of Bengal area, particularly in areas of Malaysia, Thailand and Indonesia. He also stated that BOBLME would like to provide some funding and expressed the hope that Malaysia, Indonesia and Thailand would make a joint proposal with MFRDMD using the mitochondrial DNA (mtDNA) approach for this study. He emphasized this would be a good platform for SEAFDEC to help its Member Countries in this research area, considering the strong capacity of SEAFDEC/MFRDMD to conduct this kind of research. He further commented that this collaboration would be the first step to promote co-management or joint management measures for fish stocks at regional level.

36. The representative from the Department of Fisheries Malaysia, *Mr. Samsudin bin Basir* commented that genetic study is a very important approach in fishery management, and explained that two proposals had been sent to DOF Malaysia, one for the Andaman Sea areas under BOBLME and IOTC projects, and the second from the private sector. He also stated the limitations of Malaysia regarding this matter, as there are only two research officers to carry out genetic study research. However, he indicated that there is a need to discuss the proposals regarding fund availability and coordination between Thailand and Indonesia. With regards to Sulu-Sulawesi Sea areas, there is also a possibility for good collaboration with Philippines and Indonesia under the CTI-CFF Program.

VI. OVERVIEW OF THE STATUS OF NERITIC TUNA RESOURCES AND EXPLOITATION IN THE SOUTHEAST ASIAN WATERS

37. The SEAFDEC Policy and Program Coordinator, *Dr. Somboon Siriraksophon* presented the status of neritic tuna production in Southeast Asian Waters, specifically pointing out that the region's National Focal Points had been compiling information on the exploitation of tuna resources in Southeast Asian waters. However, by the very nature of the data provided by various sources, the origin of tuna landings in the Southeast Asian countries remains unclear.

38. During the discussion, the representative from Thailand, *Ms. Praulai Nootmorn* inquired about the absence of tuna production data for Thailand in 2006-2008, even if such data is surely available in the country's national statistics. In response, it was explained that the information shown in the presentation would be updated with the cooperation of the National Focal Point for Thailand.

39. While informing the Meeting that the quantity of by-catch of some gears with respect to the catch of neritic tuna is below 10%, the representative from Malaysia, *Mr. Samsudin bin Basir* cited that it might be difficult to proceed with the management of this shared stock. He therefore suggested that in collecting data, information on both management and production must be compiled. He mentioned that the experience of regional organizations on the management of oceanic tuna as well as efforts carried out by SEAFDEC could be compiled to be used as reference for the proposed management of neritic tuna fisheries. Furthermore, it was also clarified that in some countries, tunas are not target species so that tuna species comprises only about less than 10% of total production from marine capture fisheries.

40. The representative from the Philippines, *Ms. Elaine G. Garvilles* confirmed that in view of the effective identification of tuna species composition in the country, the Philippine production data in 2010 was more than that of 2004, in spite of the fact that the method used to collect the data is the same. Moreover, the representative from Thailand, *Ms. Praulai Nootmorn* suggested that starting with this Meeting, neritic tuna should not be considered as by-catch but should instead be classified as retained catch.

41. With regards to the request of the representative from Vietnam *Mr. Nguyen Ba Thong* for SEAFDEC to establish a database for neritic tuna species in the region, it was suggested that since databases already exist in some countries, these could be streamlined and analyzed in such way that data on neritic tunas could be established at the national level. Therefore, by making use of these national databases, the sub-regional neritic tuna database could then be established.

42. In response to the query of the representative from Indonesia *Mr. Tegoeh Noegroho* about the production data of Indonesia which had been analyzed using 10 coastal areas when in fact Indonesia is separated into management areas, it was explained that the data analysis made use of fishing grounds instead of management areas. In this way, production from the Straits of Malacca could be incorporated in the said data analysis.

VII. BREAKOUT GROUP DISCUSSION

43. In order to proceed with the development of action plans for the management of tuna resources in the Southeast Asian waters, the participants were divided into three (3) sub-regional groups representing the relevant three (3) sub-regions, namely: South China Sea, Gulf of Thailand and Andaman Sea, and Sulu-Sulawesi Sea. The sub-regional groups were tasked to brainstorm and discuss the existing issues and concerns, the possible management needs, and plans of action for the specific sub-regions.

South China Sea (Indonesia, East Malaysia (Sabah-Sarawak), Philippines, Vietnam)

44. The representative from Vietnam, *Mr. Nguyen Ba Thong* presented the results of the sub-regional group which discussed the issues and management measures of neritic tuna in the South China Sea (**Annex 21**). He informed the Meeting that this sub-regional group identified eight (8) issues at national level and four (4) major sub-regional issues that include the status and trend of neritic tuna, regional management, trade, and resources enhancement.

45. During the discussion, the representative from the Philippines suggested that expansion of the coverage area for data collection on stock assessment should be added at the national level.

46. The representative of Malaysia shared the view that Indonesia should be the lead country with respect to trade as indicated in the sub-regional issues and concerns, since trade issue is a concern under the ASEAN Sectoral Working Group on Fisheries (ASWGF_i) with the ASEAN Tuna Working Group (ATWG) as coordinating body, thus, duplication of work could be avoided. However, it was clarified that this issue should be discussed further since currently the terms of reference of ATWG are specific wherein the expansion of trade in ASEAN tuna products for the international market focuses on oceanic tuna.

47. The representative from FAO/RAP, *Dr. Simon Fung-Smith* suggested that in order to enhance intra-regional trade, the countries should focus on the harmonization of regional catch documentation with the support from SEAFDEC. The Meeting was informed that the Council Directors of SEAFDEC already endorsed the development of the regional catch documentation, where tuna has been given a priority and that Singapore was proposed to be the lead country.

Gulf of Thailand and Andaman Sea (Thailand, Cambodia, Peninsular Malaysia, Myanmar, Vietnam, Indonesia)

48. The Meeting took note of the presentation of the second group for the Gulf of Thailand and Andaman Sea (**Annex 22**). The priority issues identified from their discussions included:

(a) inadequate data collection, (b) IUU fishing, (c) port state measures, (d) vessels registration, and (e) improvement of fishing technology, and post-harvest and preservation.

49. The representative from FAO/RAP informed the Meeting that a training course on port state measures would be conducted by FAO as soon as the target group of port inspectors at fishing ports is identified. The training aims to enhance the knowledge of the target group on port state measures and will emphasize on methodologies and techniques of recording and reporting procedures as well as promoting collaboration among other agencies and organizations.

50. In this connection, the Meeting requested FAO/RAP to support the local translation of the handbook on port state measures to provide the national officers who will be involved in the training with better understanding on the issues. However, FAO stated that the cost of local translation is very high and the translation usually can be shouldered by the national plan/program of each country.

51. The Meeting was also informed that several training courses on port state measures are being conducted by other international organizations. In this regard, SEAFDEC was requested to coordinate with its Member Countries regarding this training.

Sulu-Sulawesi Sea (Philippines, Indonesia, Malaysia)

52. The representative from Indonesia, *Mr Irwan Jatmiko* presented the results of the third discussion group on the Sulu-Sulawesi Sea (**Annex 23**) area. The representatives from Malaysia, Indonesia and Philippines presented the common issues of the three (3) concerned countries at national level. The main issue discussed at the national level was the insufficiency of data collection for significant neritic tuna landing areas. The other issues raised in the discussion included inadequate capacity building programs, especially for: (a) fish data collection, (b) stock assessment, (c) fish identification, (d) compliance with international regulations such as Port State Measures (PSM), and (e) genetics study. Lastly, the common issues for each country were also discussed, such as lack of funding in terms of infrastructures, capacity building, and research and development. Several recommendations were laid out during the Meeting such as the harmonization of data collection method/mechanism, and proposals for collaborative research program in Sulu-Sulawesi Sea were also mentioned.

53. The representative from Malaysia, *Mr Samsudin Basir* suggested that the project proposal on data collection could be made under the CTI-CFF as it has already an existing forum and platform for this type of study. It is now up to each respective country whether or not to include neritic tuna as part of their priority project.

54. The Secretary-General of SEAFDEC, *Dr. Chumnarn Pongsri* explained that there is a possibility of developing collaboration between CTI-CFF and SEAFDEC, and added that harmonization of data collection is a good practice and should be extended to other sub-regions such as South China Sea, Gulf of Thailand, and Andaman Sea. In this connection, he suggested that there should be a single or common template for all the sub-regions which should be created to facilitate easier reporting of data.

VIII. WAY FORWARD FOR THE DEVELOPMENT OF REGIONAL PLAN OF ACTION FOR RESPONSIBLE NERITIC TUNA FISHERIES

55. Based on the discussions on the issues and concerns about neritic tuna fisheries by the three sub-regional groups focusing on the important tuna fishing grounds in the region, the prioritized issues to be addressed in the development of the Regional Plan of Action for Responsible Neritic Tuna Fisheries, were identified which include the following:

National Level

1. Open access, management of fishing capacity
2. Resources, status and trend of neritic tuna
3. Insufficient data/information, inadequate data collection system
4. IUU Fishing including transshipment, double flagging, poaching
5. Post-harvest losses
6. Appropriate fishing gears and practices
7. Infrastructure of fishing ports/landing sites
8. Working conditions, labor issues
9. Capacity building

Sub-regional Level

1. Sub-regional management of neritic tuna
2. Assessment of the status and trend of neritic tuna at sub-regional level through the establishment of Working Group
3. Intra-regional trade
4. Sharing of data and information
5. Cooperation with other sub-regional, regional, international organizations

56. In order to proceed forward, the Meeting proposed that drafting of the Regional Plan of Action for Sustainable Neritic Tuna Fisheries (RPOA-Neritic Tuna) should be a priority. This could be done through the conduct of Regional Technical Consultation to finalize the RPOA-Neritic Tuna, and awareness campaign to enable the countries to adopt the RPOA-Neritic Tuna which could be used as reference for the concerned countries in developing their corresponding National Plans of Action (NPOA-Neritic Tuna), **Annex 24**.

57. For the development of the RPOA-Neritic Tuna, the Meeting agreed with the establishment of four working groups representing the South China Sea, Sulu-Sulawesi Sea, Gulf of Thailand, and Andaman Sea, and that the Strategic Plan and TOR of the Working Groups should be developed. Moreover, to be able to carry out these activities, funding could be sourced from donors as well as support from the participating countries through a cost-sharing policy.

58. In order to help the countries in the development of the plan of action for regional cooperation on Neritic Tuna, the Meeting considered it necessary to develop capacity building/training programs. Moreover, the process could also include the development of standard operating procedures (SOPs), tools and standardized data collection system, which is crucial for the stock assessment of neritic tuna species. In addition, biological study on the neritic tuna could be carried out to support the development of management plan for sustainable neritic tuna fisheries in the Southeast Asian region.

59. In the discussion, it was also agreed that a roadmap or an annotated plan with corresponding timelines, should be prepared taking into consideration the results of this Meeting. In addition, cross-cutting issues should also be included in the plan. The said plan will be submitted for review during the forthcoming meeting of the SEAFDEC Program Committee for consideration and endorsement to the SEAFDEC Council.

IX. INTERNATIONAL AND REGIONAL ORGANIZATIONS RESPONSES

60. After the presentation of the sub-groups' outputs and a summary of the way forward for the development of the Regional Plan of Action for Responsible Neritic Tuna Fisheries, representatives from the organizations and projects were invited to express their views regarding the proposed cooperation.

61. The representative from the ASEAN Tuna Working Group commended SEAFDEC for the conduct of this Meeting and assured that the results of the Meeting would be used as basis for possible cooperation with the Working Group. The representative from FAO/RAP complimented SEAFDEC for the conduct of the Workshop since neritic tuna resources have not been given attention by regional fisheries organizations that focus mainly on the oceanic tuna. SEAFDEC therefore is in a better position to work on the management of the neritic tuna resources considering that neritic tuna is a very important trans-boundary economic commodity.

62. The private sector representatives expressed their gratitude to SEAFDEC and the Member Countries for the invitation to attend this Meeting. They shared the information that private funds could be made available to support some activities, especially in the Andaman Gulf. They assured the Meeting that communication with SEAFDEC and the Member Countries would be maintained. The RPOA-IUU representative also conveyed their appreciation for the invitation and indicated that the results of the Meeting would be very useful for managing the fisheries resources in the region.

X. CLOSING OF THE MEETING

63. In his closing remarks, the Secretary-General of SEAFDEC, *Dr. Chumnarn Pongsri* thanked the participants for their active participation that enabled the Meeting to clarify many issues with regards to neritic tuna fisheries in the region. He also expressed the gratitude to the participants for discussing the issues and concerns on neritic tuna fisheries, the results of which are necessary for the development of the draft RPOA for sustainable Neritic Tuna Fisheries in Southeast Asian Waters. After wishing the participants safe journey for their respective home countries, he declared the Meeting closed.

LIST OF PARTICIPANTS

Cambodia**UY Ching**

Acting Chief of Freshwater Fisheries Div.

Department of Fisheries Affairs
 Fisheries Administration
 #186, Pheah Norodom Blvd.
 P.O. Box. 582 Chamkamon
 Phnom Penh, Cambodia
 Tel:(855)89 81 99 66 / 88 5565 888
 E-mail: chinguydof@yahoo.com

Indonesia**Tegoeh Noegroho**

Researcher,
 Research Institute of Marine Fisheries

Agency of Marine and Fisheries Research Institute
 MMAF Republic of Indonesia
 Jl. Muara Baru Ujung, Komp Pelabuhan Perikanan
 Samudera Nizam Zachman, Jakarta 14440
 Tel : +62 856 8020 606
 Fax : +62 21 6605912
 E-mail : tegoeh_brtehnik@yahoo.com

Irwan Jatmiko

Researcher,
 Research Institute for Tuna Fisheries

Research Institute for Tuna Fisheries
 Jalan Raya Pelabuhan Benoa,
 Denpasar, Bali, Indonesia 80223
 Tel : +62 361 726 201
 Fax : +62 361 726 201
 E-mail : irwan.jatmiko@gmail.com

Muhammad Anas

Officer,
 Directorate of Fisheries
 Resources Management

Directorate General of Capture Fisheries
 MMAF Republic of Indonesia,
 Jl Merdeka Timur No.16 Gedung
 Mina Bahari II 10th Floor, Jakarta
 Tel : +62 21 351 9074
 Fax : +62 21 351 9074
 Email : statistiktangkap@yahoo.co.id
mykalambe@yahoo.com

Malaysia**Samsudin bin Basir**

Senior Research Officer,
 Fisheries Research Institute Kg Acheh

Department of Fisheries Malaysia
 Kompleks Perikanan Kg Acheh
 32000 Sitiawan, Perak, Malaysia
 Tel : +605-691 4752
 Fax : +605-691 4742
 Mobile :+6019-4572978
 Email : samsudin@dof.gov.my
s_basir@yahoo.com

Effarina binti Mohd Faizal (Ms.)
Research Officer,
Fisheries Research Institute Kg Acheh

Department of Fisheries Malaysia
Kompleks Perikanan Kg Acheh
32000 Sitiawan, Perak, Malaysia
Tel : +605-691 4752
Fax : +605-691 4742
Mobile :+6012-5166570
Email : effarinamohdfaizal@yahoo.com

Yazeereen binti A Bakar (Ms.)
Fisheries Officer
Planning and Development Div.

Department of Fisheries Malaysia
2nd Floor, Tower Block 4G2
Wisma Tani, Precint 4
Federal Government Administrative Centre
62628, Putrajaya, Malaysia
Tel : +603 8870 4324, Mobile: +601 2356 9344
Fax : +603 8889 1195
Email : yazeereen@dof.gov.my

Myanmar

Hlwan Moe Zaw
Fisheries Officer

Department of Fisheries
Ministry of Livestock
Fisheries and Rural Development
Myanmar
Tel : +95 9 4959 9400
Email : irnp.dof@gmail.com
dof.kawthaung@gmail.com

Philippines

Ruben J. Jardin
Regional Director

BFAR-IV-B
3rd Floor, Conception Bldg.
Rizal St. San Vicente, Calapan City
Oriental Mindanao
Tel : +6343 288 1392
Fax : +6343 288 1392
Email : ordbfar4b@gmail.com

Elaine G. Garvilles (Ms.)
Aquaculturist I

Marine Fisheries Research Department
BFAR-NFRDI (National Fisheries Research and
Development Institute)
5 F Corporate 101 Bldg, Mother Ignacia Ave.
Quezon City, Philippines
Tel: +632 372 5063
Fax : +632 372 5063
Email : egarvilles@yahoo.com

Thailand

Praulai Nootmorn (Ms.)
Director of the Fisheries Research and
Development Bureau

Department of Fisheries
Kaset-Klang, Chatuchak
Bangkok 10900, Thailand
Tel : +662 940 6559
Fax : + 662 940 6559
Mobile : + 668 1 273 5837
Email : nootmorn@yahoo.com

Chalit Sa-nga-ngam
Fishery Biologist

Department of Fisheries
77 Moo 7 Vichit Sub-district
Maung Distric, Phuket 83000
Tel: +66 76 391138
Mobile : +66 84 304 7792
Fax : + 667 639 1139
E-mail: chalitster@gmail.com

Suwantana Tossapornpitakkul (Ms)
Fishery Biologist

Department of Fisheries
Southern Marine Fisheries Research and
Development
79/1 Wichienchop Rd., Muang
Songkhla 90000, Thailand
Tel: +66 74 312 595
Fax: +66 74 312 495
E-mail: tsuwantana@yahoo.com

Vietnam

Nguyen Ba Thong
Researcher

Fisheries Information Center
Directorate of Fisheries (D-fish)
Ministry of Agriculture and Rural Development
No. 10 Nguyen Cong Hoan Street
Ba Dinh District, Ha Noi, Vietnam.
Mobile: +84 983 992 633
Fax: +84 43 7245 410
Email: nguyenbathong@gmail.com

Tran Van Cuong
Researcher

Research Institute of Marine Fisheries
Ministry of Agriculture and Rural Development
224 Le Lai St., Ngo Quyen District
Hai Phong City, Vietnam
Tel : +84 31 382 6986
Mobile:+84 9 8636 4684
Fax : +84 31 383 6812
Email : cuongrimf@gmail.com

Nguyen Van Do
Fishery Officer

Department Capture Fisheries and
Protection of Fisheries Resources
Fisheries Administration
Ministry of Agriculture and Rural Development
No 10 Nguyen Cong Hoan Street, Ba Dinh District
Ha Noi, Vietnam
Mobile: +84 91 7084979
Email : vando59@gmail.com

Nguyen Thi Hong Nhung (Ms.)
Fishery Officer

Department of Science
Technology and International Cooperation
Fisheries Administration
Ministry of Agriculture and Rural Development
No. 10 Nguyen Cong Hoan Street, Ba Dinh District
Ha Noi, Vietnam
Mobile: +84 91 5977227
Email: nhung.doa@gmail.com

ORGANIZATIONS

ASEAN Tuna Working Group

Machmud
Deputy Director,
Foreign Market Information and Analysis
Directorate of Foreign Market Development

Directorate General of Fish Product Processing and
Marketing,
MMAF Republic of Indonesia
Jl Medan Merdeka Timur No.16
Gedung Mina Bahari III
13th Floor, Jakarta
Tel : +62 21 3513300 ext. 6302
Fax : +62 21 352 1977
Email : machmudsutedja@gmail.com

Embassy of Sweden

Maja Forslind (Ms.)
Second Secretary,
Programme Manager-Private Sector
Collaboration,
Development Cooperation Section

20th Floor, One Pacific Place
140 Sukhumwit Rd. (between Soi 4-6)
Bangkok 10110
Tel: +66 2 263 7290, 263 7200
Mobile: +66 87 8314439
Fax: +66 2 263 7255
E-mail: maja.forslind@gov.se

FAO/RAP

Dr. Simon Funge- Smith
Senior Fishery Officer

Regional Office for Asia and the Pacific
Maliwan Mansion, 39 Phra Atit Road
Bangkok 10200, Thailand
Tel : (662) 697-4149
Fax : (662) 697-4445
Email : simon.fungesmith@fao.org

RPOA-IUU

Turman Hardianto Maha
Deputy Director,
Fishing Surveillance for the Western Part
of Indonesia

DG. Marine and Fisheries Resources Surveillance
JI Medan Merdeka Timur No.16
Gedung Mina Bahari II, Jakarta
Tel : +62 21 3519070 ext 1728, +62 81 18604419
Fax : +62 21 3520346
Email : turmanmh_999@yahoo.com

Slamet, S.Pi
Deputy Director of Fishing Surveillance
for The Eastern Part of Indonesia

DG. Marine and Fisheries Resources Surveillance
JI Medan Merdeka Timur No.16
Gedung Mina Bahari II, Jakarta
Tel : +62 81376691244
Fax : +62 21 3520346
Email : slametpsdkp@ymail.com

Thai Union Manufacturing Co.,Ltd

Narin Niruttinanon
General Manager

979/13-16, M Floor, SM Tower
Phaholyothin Road
Samsenei, Phayathai
Bangkok 10400, Thailand
Tel : +662 298 0025
Fax : +662 298 0027-8
Email : narin@thaiunion.co.th

OBSERVERS

Dr. Siri Ekmaharaj
Consultant,
Abba Tonggol Project

71/26 Parichart 345
Muang District
Pathumtanee 12000, Thailand
Tel : +66 85 0074 1919
Email : ekmaharajsiri733@gmail.com

Payap Chumanee
Assist General Manager Management

Songkla Canning Public Company Limited
333 Moo 2, Karnjanavanich Rd.
Tumbol Pavong, Amphur Muang
Songkhla 90100, Thailand
Tel : +66 74 334005-8, 74 447 093-100
Fax : +66 74 33 4009, 74 447 101
Email : payap_cm@thaiunion.co.th

Kanlayanee Jangjit (Ms.)
Senior Supervisor,
Local Fish Procurement Department

Songkla Canning Public Company Limited
333 Moo 2, Karnjanavanich Rd.
Tumbol Pavong, Amphur Muang
Songkhla 90100, Thailand
Tel : +66 74 334005-8, 74 447 093-100
Fax : +66 74 33 4009, 74 447 101
Email : kanlayanee_jo@thaiunion.co.th

SEAFDEC

SEAFDEC Training Department (TD)

Dr. Worawit Wanchana
Head, Capture Fishery Technology Div.

SEAFDEC Training Department
P.O. Box 97 Phrasamutchedi
Samut Prakan 10290, Thailand
Tel: +66 24256100
Fax: +66 24256110 to 11
E-mail: worawit@seafdec.org

Penchan Laongmanee (Ms.)
Fishing Ground and Fishery Oceanography
Section head

E-mail: penchan@seafdec.org

Sayan Promjinda
Fishing Gear Technologist

E-mail: sayan@seafdec.org

SEAFDEC Marine Fishery Resources Development and Management Department (MFRDMD)

Sallehudin bin Jamon
Senior Research Officer
Fisheries Research Institute Kg Acheh

Department of Fisheries Malaysia
Kompleks Perikanan Kg Acheh
32000 Sitiawan, Perak, Malaysia
Tel : +605-691 4752
Fax : +605-691 4742
Mobile :+6019-9846408
Email : sallehudin_jamon@dof.gov.my

Noorul Azliana Jamaludin (Ms.)
Research Officer

Chendering Fishery Garden
21080 Kuala Terengganu
Terengganu, Malaysia
Tel : +609 617 5140
Fax : +609 6175136
Email : noorul@saefdec.org.my

SEAFDEC Secretariat

Dr. Chumnarn Pongsri
Secretary-General

SEAFDEC Secretariat
P.O. Box 1046, Kasetsart Post Office
Bangkok 10903, Thailand
Tel: +66 29406326
Fax: +66 29406336
E-mail: sg@seafdec.org

Dr. Magnus Torell
Senior Advisor

E-mail: magnus@seafdec.org

Dr. Somboon Siriraksophon
Policy and Program Coordinator

E-mail: somboon@seafdec.org

Tadahiro Kawata
Technical Coordinator

E-mail: kawata@seafdec.org

Pattaratjit Kaewnuratchadasorn (Ms.)
Program Manager

E-mail: pattaratjit@seafdec.org

Virgilia T. Sulit (Ms.)
Fisheries Technical Officer

E-mail: sulit@seafdec.org

Sawitree Chamsai (Ms.)
Policy and Program Officer I

E-mail: sawitree@seafdec.org

Suwanee Sayan (Ms.)
Policy and Program Officer II

E-mail: suwanee@seafdec.org

Saivason Klinsukhon (Ms.)
Information Officer I

E-mail: saivason@seafdec.org

Matinee Boonyintu (Ms.)
Secretariat of the Meeting

E-mail: matinee@seafdec.org

Julasak Markawat
Secretariat of the Meeting

E-mail: julasak@seafdec.org

SEAFDEC RFPN Member

Leng Sam Ath
RFPN Member for Cambodia

SEAFDEC Secretariat
P.O. Box 1046, Kasetsart Post Office
Bangkok 10903, Thailand
Tel: +66 2 940 6326
Fax: +66 2 940 6336
E-mail: samath@seafdec.org

Hotmaida Purba (Ms.)
RFPN Member for Indonesia

E-mail: hotmaida@seafdec.org

Vankham Keophimphone
RFPN Member for Lao PDR

E-mail: vankham@seafdec.org

Imelda Riti Anak Rantty (Ms.)
RFPN Member for Malaysia

E-mail: imelda@seafdec.org

Aung Toe
RFPN Member for Myanmar

E-mail: aung@seafdec.org

Neil P. Catibog
RFPN Member for Philippine

E-mail: neil@seafdec.org

Sarayoot Boonkumjad
RFPN Member for Thailand

E-mail: sarayoot@seafdec.org

Tran Van Hao
RFPN Member for Vietnam

E-mail: tranhao@seafdec.org

Opening Remarks

By Dr. Magnus Torell, Senior Advisor of SEAFDEC

To all our distinguished guests, participants, Ladies and Gentlemen....Good Morning!

First of all, our Secretary-General, Dr. Chumnarn Pongsri would like to convey his apologize for not being here today due to another conflicting schedule; however, he will be able to join us tomorrow.

Thus, on behalf of the SEAFDEC Secretary-General, I would like to warmly welcome everyone to the city of Songkhla here in Songkhla Province, Thailand for this Consultative Meeting on Regional Cooperation on Sustainable Neritic Tuna Fisheries in the Southeast Asian Waters.

As part of our role to assist member countries and the region as a whole in addressing technical issues that are of priority for the countries in the region, this meeting will try to address the challenge of developing an action plan, or a set of action plans, for the sustainable management of neritic tuna fisheries, processing and trade at national, sub-regional and regional levels. We will start by gathering all the available data and information on the harvesting, landings processing and trade including information on the migration and status of neritic tuna stocks in the region.

All of the guests here including policy makers, researchers and private sector are encouraged to participate in the activities, and with particular attention on the development of an action plan for regional cooperation on neritic tuna. Hence, let us maximize our involvement in this meeting, and use this as a forum for sharing information and fostering a shared sense of purpose and direction.

Also, we are very fortunate to be offered support through the SEAFDEC-Sida Cooperation in order for us to reinforce the importance of having updated information on the various stages of the supply chain of neritic tuna and tuna like species as a basis for recommendations on some actions that we might wish to undertake in order to have a more complete picture of these species and the pattern of utilization.

With these targets in mind, your utmost participation in this gathering is needed. We all look forward to see the outcome of this meeting as I believe that an appropriate and effective neritic tuna management at the national and sub-regional levels will be even more important in the years to come.

Let me conclude by again wishing our guests and participants a nice stay here in Songkla.

On behalf of SEAFDEC, allow me to thank you all in advance for coming here.

Annex 3

Provisional Prospectus

I. Background

Throughout the Southeast Asian region, tunas are commonly found and abundant, including several species of oceanic and neritic tunas. While the oceanic tunas migrate over larger areas, the neritic tunas such as longtail tuna (*Thunnus tonggol*), kawakawa or eastern little tuna (*Euthynnus affinis*), frigate tuna (*Auxis thazard*) and bullet tuna (*Auxis rochei*) are more common within the economic zones and sub-regional seas of Southeast Asia. In common, all tuna resources have a high economically importance generating export revenues for the countries of the region as well as to provide important protein sources for domestic consumption. While availability of oceanic tuna has been declining, neritic tuna species are gaining more economic importance. Neritic tuna species have increasingly become the target for commercial and local fisheries as attractive prices are offered by processing companies. However, there are still uncertainties on the distribution, migration utilization of tuna stocks in the waters and sub-regions of Southeast Asia. Without further clarification and dialogue, it would be difficult to develop appropriate tuna management plans at national and sub-regional levels.

While management efforts with regards to the exploitation of oceanic tunas is covered by recommendations provided by the Tuna Regional Fisheries Management Organizations, such as the Indian Ocean Tuna Commission (IOTC) and the West Central Pacific Fisheries Commission (WCPFC), there are important work to be done within the Southeast Asian Region to promote common approaches to management of the utilization of **neritic tunas**. To ensure the sustainable use of available regional resources and to maximize economic benefits for the Region, it is crucial to seek for collaborative management plans for neritic tuna fisheries in the region and sub-regions. Regional collaboration has been, and will continue to be, crucial for the sustainability of these rich and important trans-boundary resources. This was also emphasized by the **45th SEAFDEC Council Meeting in 2013** that called for the development of a plan of action regional cooperation on neritic tunas in the Southeast Asian Region (paragraphs 65, 66 and 70 of the SEAFDEC Council Report).

During the 45th SEAFDEC Council Meeting, the SEAFDEC Council Directors supported a proposal to strengthen regional cooperation to promote conservation and management for sustainable neritic tuna fisheries in the Southeast Asian Waters as proposed by SEAFDEC Secretariat. Through regional and sub-regional cooperation the countries – and producers – need to be able to show and verify the sustainability of targeted neritic tuna fisheries.

The Council Directors agreed that SEAFDEC Secretariat should develop a (draft) plan of action, which could include aspects such as efforts to enhance traceability, tuna catch certification, the conduct of joint stock assessments of tuna resources, etc. (paragraph 66 and 70 Council Report). Successful implementation would help combating illegal and destructive (IUU) fishing on neritic tuna resources in the Southeast Asian Region. However, the focus for the regional plan of action on neritic tunas should, as mentioned above, be seen in the perspective of oceanic tunas already being covered by RFMOs and the existing “ASEAN Tuna Working Group”

II. Rationale of the Meeting

To accommodate the recommendations and request by the SEAFDEC Council, the SEAFDEC Secretariat is organizing this event to build upon experiences available at SEAFDEC and partner organizations at regional and sub-regional level and to build a platform to coordinate a process to facilitate improved dialogue and cooperation on “regional” (neritic) tuna resources. Available information and data on the use, migration and status of neritic tuna in the region and sub-regions is available in a range of rather scattered sources and project documents. The event will attempt to have some of the information available to the meeting. Given the information provided a set of working groups will be established to provide an update on what is actually known with regards to status and mobility of targeted neritic resources (such long tail/tonggol tuna) in the region as a whole and/or identified sub-regions.

With an aim to build a solid basis for the development of an **action plan for regional cooperation on neritic tuna** in the Southeast Asian Region, and parallel to the establishment of working groups, closer cooperation will be worked out with countries and partners at sub-regions, such as the Andaman Sea, the Gulf of Thailand, the Sulu-Sulawesi Seas and the Arafura-Timor Seas. In the ASEAN/Southeast Asia region dialogue will be maintained with the ASEAN Secretariat (and relevant ASEAN Working Groups and initiatives), the RPOA-IUU as well as FAO/APFIC.

The event will primarily be facilitated with support from the SEAFDEC-Sida cooperation.

The initiative will also seek to here from and coordinate with specific projects aiming towards the (documented) sustainability of targeted *neritic* tuna species such as the tonggol project (Sida, Sustainable Fisheries Partnership, Abba Seafood, DOF Thailand, and other DOFs in the region). Aspects of the need to strengthen national and regional initiatives were emphasized by the 45th SEAFDEC and a range of cooperating entities and collaborating partners were mentioned, such as:

Cooperating entities (national):

Indonesia:

- Tuna Observation Institute in Bali (since 1990)
- Tuna Center in Bindung for the Sulu-Sulawesi Seas,

Philippines”

- Working Group on tuna stock assessment ((Philippines paragraph 67 Council Report)

In support of the need to link with national initiatives Brunei Darussalam stressed the importance to avoid duplication of efforts with tuna management working groups at national level (Brunei – paragraph 68 Council Report)

Collaborating partners (national, international and ASEAN Region)

- Tuna Fisheries Associations (paragraph 64 Council Report)
- Capture and Processing Sectors (paragraph 64 Council Report)
- Exporters (paragraph 64 Council Report)
- Government Offices (paragraph 64 Council Report)

Cooperating regional entities (ASEAN Region and sub-regions):

- ASEAN Secretariat

- ASEAN Tuna Working Group
- CTI-CFF
- RPOA-IUU
- BOBLME

III. Objective of the Meeting

1. To provide an update on available information on neritic tunas in the region and sub-regions as well as to establish working groups to provide a more complete picture on neritic tunas in the region and sub-regions (availability, utilization, landings, processing and trade)
2. To establish steps to be taken on the development of a “Regional Plan of Action on Regional Cooperation on Sustainable Neritic Tuna Fisheries in the Southeast Asian Waters”
3. To identify focal points and resource persons for the establishment of a taskforce on the development of a Regional Plan of Action
4. Indicate of sub-regions of specific importance to neritic tuna fisheries (including landing, processing and trade)
5. To provide recommendations on the continued involvement of the private sector (producers, processing industry and traders) including small-scale operators

IV. Expected outputs of the Meeting

1. Updates provided on neritic tunas in the region and sub-regions (resources, utilization, landings, processing and trade) and gaps in available information indicated
2. Working Groups (regional and/or sub-regional) established to further generate a more complete picture on the importance and status of neritic tunas
3. Recommendations provided on the developments of a “Regional Plan of Action on Regional Cooperation on Sustainable Neritic Tuna Fisheries in the Southeast Asian Waters”.
4. Focal points and resource persons identified (national and regional) for the establishment of a taskforce/working groups
6. Sub-regions of specific importance to neritic tuna fisheries (including landing, processing and trade) identified
7. Recommendations provided on the continued involvement of the private sector (producers, processing industry and traders) including small-scale operators

V. Expected participants

1. Two Participants from each ASEAN/SEAFDEC Member Countries (Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam): one from policy maker, management, another one from researchers Japan on their own cost (observer)
2. Timor-Leste and Papua New Guinea
3. FAO/APFIC, ASEAN Sec (ASEAN Tuna Working Group), CTI-CFF, RPOA-IUU, BOBLME, IOTC
4. SEAFDEC officials from SEC, TD, MFRDMD
5. Private sector (producers, processing industry and traders) and national centers
6. Others (JTF, Sida, SwAM, USAID, etc)

Agenda

- Agenda 1 Opening of the Meeting
- Agenda 2 Background of the Meeting, objectives of the Meeting and Adoption of the Agenda and Meeting Arrangement
- Agenda 3 Current Situation of Neritic Tuna in the Southeast Asian region: Fisheries, Imports, Exports and Processing
- Agenda 4 Status and Patterns of Utilization of Neritic Tuna by Sub-region of Southeast Asian and adjacent waters
- Agenda 5 Other Initiatives in the Region to Verify Sustainability of Neritic Tuna Resources
- Agenda 6 Overview of the Status of Neritic Tuna Resources and Exploitation in the Southeast Asian Waters
- Agenda 7 Breakout group discussion
- Agenda 8 Way Forward for the Development of Regional Plan of Action for Responsible neritic Tuna Fisheries
- Agenda 9 International and Regional Organizations Responses
- Agenda 10 Closing of the meeting

Annex 5

Country Review in Cambodia

UY Ching

Acting Chief of Freshwater Fisheries Division, Department of Fisheries Affairs of Fisheries Administration, Ministry of Agriculture Forestry and Fisheries, Cambodia.

Fisheries in Cambodia constitute both an integral part of rural livelihoods and a major contributor to the national economy and food security. Fish provide more than 75 % of the total animal protein intake in people's diets and the fishery includes more than 1.5 million full time jobs and involves at least 6 million people in fishing activities.

The goal of the fisheries sector in Cambodia is to maximize the contribution of fisheries to the achievement of national development objectives. While Cambodia is the fourth nation for the inland fisheries production in the world, coastal fisheries management is a relatively new subject for the Fisheries Administration. The Fisheries Administration (FiA) already took action to promote inland and marine aquaculture in order to reduce the fishing effort, and ensure people's livelihoods, income and food security.

Cambodia has no adequate statistics system for marine fisheries, and there is also direct trading on the sea with the vessels from neighboring countries. As such the FiA could not assess the quantities of catch by vessel fisheries and small scale fisheries. Fisheries Law Enforcement by the FiA inspector cannot work well due to lack of budget and equipment. The coastline is short, 435km and the EEZ boundary is not yet agreed with neighboring countries. Cambodia doesn't have resource management system for vessel fisheries. In an effort to meet these challenges Cambodia has launched the Marine Fisheries Research and Development Institute. Cambodia needs to start monitoring systems for objective fisheries resource management. There is no experience to monitor marine species so far. Indian mackerel or short body mackerel can be a candidate species to monitor their resource status as there are some restrictions on Indian Mackerel, which is restricted to catch from March 15th to April 15th. Cambodia needs adequate resources to support the operation of the institute.

In regards to fishing gear for the marine sector a trawler is categorized as large and middle scale to operate the EEZ deeper than 20m with more than 50HP engine. Small scale: includes gill-nets, and unlicensed fisheries vessels with less than 33 HP or non- power boat or less than 5 tone operating in shallower than 20m. All marine fishing ports are private, the major fishing ports are Koh Kong , Kampongsom and Kampot. There is no wholesale fish market in Cambodia. The transportation and distribution system relies on private small transporters connecting coastal and inland provinces or with neighboring countries. There are no existing fishery related associations or cooperatives, but traditional fishing groups exist.

Cambodia is not typically associated with Tuna because the marine areas around Cambodia are around 50 to 80 meters, and the higher temperature is not suitable for Tuna. In Cambodia Tuna is not a target species. Tuna landing, processing and trade are not currently reported on. As Cambodia's sea connects with the Gulf of Thailand, which does have a tuna fishery and Cambodia is member of Asian country so that Cambodia needs to manage and follow up Tuna deal and Tuna processes.

Cambodia has a policy to promote and encourage fishing activities in the EEZ and in the international fishing grounds by strictly implementing the regional code of conduct for responsible fisheries and the laws of kingdom of Cambodia, and looks forward to enhancing marine fisheries management including Tuna Fisheries as part of this process.

Review of Fishery, Biology, and Population Dynamic of Several neritic Tuna Species in Indonesia (Case Study in West Coast Sumatera Eastern Indian Ocean and Sulawesi Sea)

Tegoeh Noegroho

Researcher, Research Institute of Marine Fisheries, Agency of Marine and Fisheries Research Institute, MMAF Republic of Indonesia, Jl. Muara Baru Ujung, Komp Pelabuhan Perikanan Samudera Nizam Zachman, Jakarta 14440

Ministry of Marine Affairs and Fisheries Republic of Indonesia

REVIEW OF FISHERY, BIOLOGY, AND POPULATION DYNAMIC OF SEVERAL NERITIC TUNA SPECIES IN INDONESIA
(Case Study in West Coast Sumatera Eastern Indian Ocean and Sulawesi Sea)

T. Noegroho, I. Jatmiko, M. Anas, T. Hidayat, R. K. Sulistyaniingsih, K.H. Amri, and B. Setyadjati

Ministry of Marine and Fisheries, Indonesia
Research Institute for Marine Fisheries
Email: tegoeh_brtehnik@yahoo.com
irwan.jatmiko@gmail.com

Consultative Meeting on Regional Cooperation on Sustainable Neritic Tuna Fisheries in Southeast Asian Water
8-10 October 2013
Songkhla Province, Thailand

Ministry of Marine Affairs and Fisheries Republic of Indonesia

OUTLINE

A. Fishery, Biology, and Population Dynamic of Neritic Tuna in West Coast Sumatera Eastern Indian Ocean.

B. Reproductive Biology of Spanish Mackerel (*Scomberomorus commerson*) in Kwandang Bay, Sulawesi Sea.

Ministry of Marine Affairs and Fisheries Republic of Indonesia

Neritic tuna production in Indonesia from 2004–2012.

Ministry of Marine Affairs and Fisheries Republic of Indonesia

A. Fishery, Biology, and Population Dynamic of Neritic Tuna in West Coast Sumatera Eastern Indian Ocean.

INTRODUCTION

- Neritic tuna is an important commodities West Coast of Sumatra in the Eastern Indian Ocean.
- Observations on biological aspects of neritic tuna in Indonesia is still need to be carried out as a base line of population study.
- This paper describes some biological aspects include size distributions, sex ratio, and food habits of *Auxis thazard*, *Auxis rochei*, and *Euthynnus affinis* caught by purse seine landed in West Coast of Sumatra, Indian Ocean and population dynamic of kawakawa (*Euthynnus affinis*)

Ministry of Marine Affairs and Fisheries Republic of Indonesia

METHODS

Study Site and Sampling

- *Samples of three species of neritic tuna *Auxis thazard*, *Auxis rochei*, and *Euthynnus affinis* were collected between January to April 2013 from several landing sites.
- *Sampel for Population dynamic analysis was covered a period of 8 months from July 2012 to February 2013. A total of 1,325 kawakawa were examined with fork lengths (FL) ranging from 30 to 60 cm.
- *Sample were measured from purse seiner that landed in Banda Aceh, Meulaboh, Sibolga, and Padang

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RESULT

Fluctuation Production of Neritic Tuna in West Coast Sumatera

Catch Composition of Purse Seiner

Length Frequency Distribution

No	Month	Species	n	Size Range (cm)	Mode (cm)
1	Jan	<i>E. affinis</i>	125	19-45	19-21
2	Feb	<i>A. thazard</i>	78	22-40	30-32
		<i>A. tochei</i>	206	18-26	23-24
3	Mar	<i>E. affinis</i>	440	18-54	22-26
		<i>A. tochei</i>	805	15-32	19-20
4	Apr	<i>E. affinis</i>	252	21-37	23-25
		<i>A. thazard</i>	93	21-39	22-23
		<i>A. tochei</i>	280	16-30	23-24

Sex ratio of male and female obtained by dissecting fish samples. The sum of all sex then compared by dividing the number of male and female. *Auxis thazard* obtained for a ratio of 1:1, *Auxis rochei* 1.3:1, and *Euthynnus affinis* 1.2:1

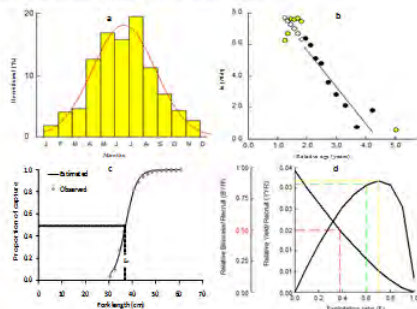
Area	Species	Sex Ratio		n
		Male	Female	
West Coast Sumatera	<i>Auxis thazard</i>	1	1	65
	<i>Auxis rochei</i>	1.3	1	175
	<i>Euthynnus affinis</i>	1.2	1	54



Food Habits

- Frigate tuna (*Auxis thazard*) by the number of samples 65 obtained stomach contents are dominant species unidentified fish (fish ruined) 41%, empty stomach 32%, and some material were can be identified are as sardines (*Sardinella* sp) 14%, crustaceans (*Acetes* spp) 10%, Anchovies (*Stolephorus* sp.) 2% and Squids (Lolingidae) 1%
- Bullet tuna (*Auxis rochei*) with a sample of 175 predominantly found an empty stomach (61%), contains anchovy (*Stolephorus* sp) 28%, and unidentified fish (fish ruined) 12%
- Kawakawa (*Euthynnus affinis*) with a sample size of 54 was found to be empty stomach dominant (83%), unidentified fish (fish ruined) 12%, and scads (*Decapterus* sp) 5%

The current observed exploitation rate (*E*) of *E. affinis* is 0.55. This value is bigger than exploitation rate at optimum yield (*E_{opt}*) at 0.5. This result indicates that kawakawa is was over exploited in Indian Ocean



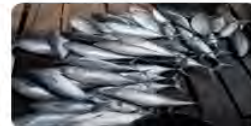
Length Weight Relationship

Month	Species	n	Length-Weight Relationship	r ²
January	<i>Euthynnus affinis</i>	125	W=0.017FL ^{3.012}	0.961
	<i>Auxis thazard</i>	78	W=0.028FL ^{2.805}	0.955
February	<i>Auxis rochei</i>	206	W=0.009FL ^{3.089}	0.740
	<i>Euthynnus affinis</i>	440	W=0.011FL ^{3.130}	0.931
March	<i>Auxis rochei</i>	805	W=0.014FL ^{2.904}	0.891
	<i>Euthynnus affinis</i>	252	W=0.016FL ^{3.042}	0.914
April	<i>Auxis thazard</i>	93	W=0.022FL ^{2.827}	0.879
	<i>Auxis rochei</i>	280	W=0.030FL ^{2.727}	0.896



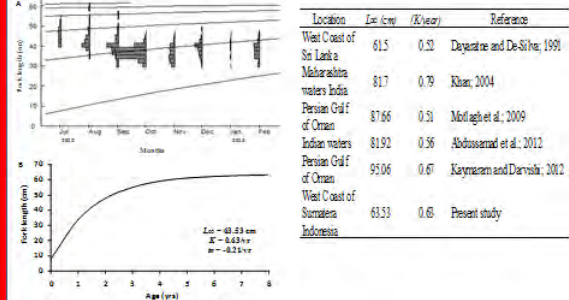
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POPULATION DYNAMIC

The estimated von Bertalanffy growth parameters for this species are *L_∞* = 63.53 cm, *K* = 0.63 yr⁻¹ and *t₀* = -0.21 yr⁻¹. Exploitation rate was indicated that kawakawa in Indian Ocean was over exploited

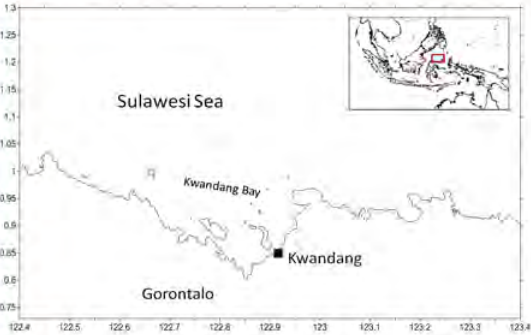


CONCLUSION

- This study specifically examined the major species of the purse seine catches. Of samples obtained starting January-April 2013, *Auxis thazard* found that size range is 21-40 cm, *Auxis rochei* 15-32 cm, and *Euthynnus affinis* 18-54 cm. The result of t test on the value of b from three species known is isometric growth. The result of chi-square test shows that male and female ratio for three species are significant difference (*p* > 0.05).
- Food habits of *Auxis thazard* are *Sardinella* sp, Crustaceans, *Stolephorus* sp, and Lolingidae. Most of the stomach was found containing destroyed fish. Food item of *Auxis rochei* is *Stolephorus* sp, an empty stomach dominant up to 61%, Food item of *Euthynnus affinis* is scads (*Decapterus* sp), an empty stomach condition predominantly found (80%) Most of the stomach of kawakawa was found c containing destroyed fish and so difficult to identify.
- The estimated von Bertalanffy growth parameters for this species are *L_∞* = 63.53 cm, *K* = 0.63 yr⁻¹ and *t₀* = -0.21 yr⁻¹. The current observed exploitation rate (*E*) of *E. affinis* is 0.55. This value is bigger than exploitation rate at optimum yield (*E_{opt}*) at 0.5. This result indicates that kawakawa is was over exploited in Indian Ocean.

Reproductive Biology of Spanish Mackerel (*Scomberomorus commerson*) in Kwandang Bay, Sulawesi Sea.

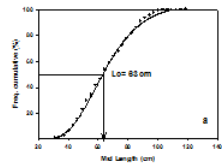
Study Site and Sampling



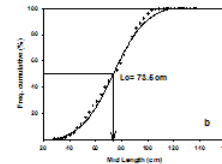
Result and Discussion Length Frequency Distribution

Month	n	Fork Length (cm)	
		Range	Mode
Feb	212	39-107	49.5
Mar	156	42-115	88.5
Apr	229	40-115	52.5
May	342	42-110	58.5
Jun	1062	27-110	64.5
Jul	893	25-138	58.5
Aug	604	29-122	88.5
Sept	305	37-107	46.5
Oct	195	36-131	52.5
Nov	192	41-114	55.5
Dec	391	34-119	61.5

Length at First Captures by Purse Seine



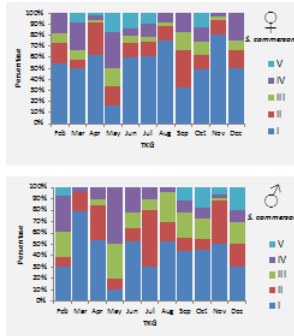
By Handline



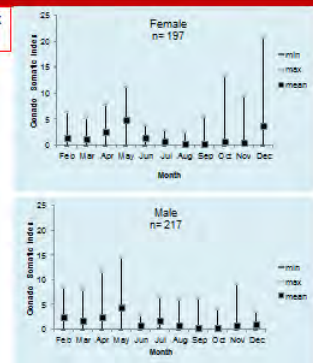
Length Weight Relationship

No	Month	n	W=aL ^b	R ²	T test		Growth
					t Catch	t table (0.05)	
1	February	212	W=1E-05L ^{2.988}	0.980	0.3025	1.96	Isometric
2	March	156	W=7E-06L ^{3.029}	0.981	0.8707	1.96	Isometric
3	April	229	W=8E-06L ^{3.019}	0.987	0.8321	1.96	Isometric
4	May	342	W=9E-06L ^{2.999}	0.973	2.6261	1.96	Alometric negatif
5	June	1062	W=1E-05L ^{2.936}	0.975	5.2164	1.96	Alometric negatif
6	July	893	W=1E-05L ^{2.874}	0.955	1.2797	1.96	Isometric
7	August	604	W=8E-06L ^{3.012}	0.984	0.1130	1.96	Isometric
8	September	305	W=8E-06L ^{3.011}	0.978	58.337	1.96	Alometric positif
9	October	195	W=6E-06L ^{3.084}	0.980	0.1623	1.96	Isometric
10	November	192	W=2E-05L ^{2.811}	0.960	17.939	1.96	Alometric negatif
11	December	391	W=1E-05L ^{2.960}	0.969	53.538	1.96	Alometric negatif

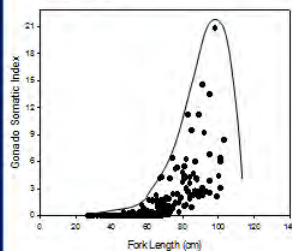
RESULT Gonad Maturity Stage



Gonado Somatic Index (GSI)



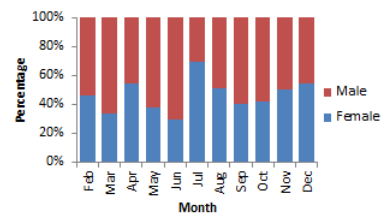
Relationship of Gonado Somatic Index and Fork Length.



GSI of Spanish mackerel in different gonads maturity stage

Sex	stage	Gonado Somatic Index	
		Range	Average
Female	I	0.008-0.659	0.138
	II	0.174-1.042	0.409
	III	1.026-2.030	1.482
	IV	2.364-6.423	3.886
	V	1.868-3.729	2.409
Male	I	0.011-1.095	0.145
	II	0.050-1.971	0.510
	III	0.885-3.014	1.602
	IV	1.623-6.669	3.469
	V	1.950-5.550	2.946

Sex Ratio



There was significant difference between the male and female of spanish mackerel.



Length at First Maturity

Combining male and female together it was obtained that the average value of Lm of spanish mackerel was 80.4 cm, which the range of 79.3-81.6 cm



No	Lokasi	Lm	Sex	Referensi
1	West Coast Australia	80.9 cm	M	Hicks et al., 2004
2	Arab Sea	76.1 cm	F	Clarebout et al., 2005
		70.7 cm	M	
3	Oman	84.6 cm	M	Clarebout et al., 2005
		80.7 cm	F	
4	Persia and Oman	83.6 cm	M	Kajmazin et al., 2010
5	South Arab	72.8 cm	M	Grandcourt et al., 2005
		86.3 cm	F	
6	Peninsula, India	70.1 cm	F =	Dobal, 1993
		80 cm	M	
7	Madagascar		F =	McPherson, 1993
	Papua New Guinea		M	
	Fiji	70-80 cm		
	Australia Tenggara			
8	South Africa	80 cm	F =	Gouvier, 1994
		81 cm	M	
9	Raman Coast, Persia, Oman	81.6 cm	F =	Davishi et al., 2011



CONCLUSION

- In general the spanish mackerel was caught under the length of first maturity.
- The spanish fishing activity should be controlled mainly mesh size and number of hook.
- Growth of spanish mackerel in the Kwandang Bay was isometric. This indicated that the amount of food availability was enough. The fish could grow longer ideal or comparable growth of weight.
- Stage of maturity and Gonado Somatic Index informed that Spanish mackerel in the Kwandang Bay spawned more than once in a spawning cycle, and peak spawning season occurred in June July.
- There was a significant difference between the number of male and female spanish mackerel. This meant that the population of male was higher than that of female.
- Length at first maturity of *Scomberomorus commerson* was 80.4 cm, in the range of 79.3-81.6 cm



Neritic Tuna in Peninsular Malaysia

Effarina Mohd Faizal

Research Officer, Fisheries Research Institute Kg Aceh, Department of Fisheries Malaysia
Kompleks Perikanan Kg Aceh, 32000 Sitiawan, Perak, Malaysia

»»»

NERITIC TUNA IN PENINSULAR MALAYSIA

BY :
EFFARINA MOHD FAIZAL

Capture Fisheries Division, FRI Kg Aceh,
Department of Fisheries, 32000 Sitiawan, Perak,
MALAYSIA



INTRODUCTION

- » Marine capture fisheries (inshore & deep sea) contribute 82% (RM 6,939.47 million) of total national fish production.
- » Neritic tuna fisheries start to increase after purse seines were introduced in 1987.
- » Neritic tuna catches increase in line with the growth of the processing industry (canning fish) locally & in Thailand.

»

**1 USD = RM 3.23

INTRODUCTION



Figure 1: Malaysian fishing areas

»

MAJOR LANDING SITES



- » Perlis
- » Perak
- » Kelantan
- » Terengganu
- » Pahang

»

ANNUAL CATCHES OF NERITIC TUNA IN PENINSULAR MALAYSIA

- In Malaysia, neritic tuna consists of longtail tuna, kawakawa and frigate tuna.

Neritic tuna landings	Contribution* (%)
Quantity—58,210 mt	4.24
Value—RM 332.46 million	4.79

* from total marine fish landings
** 1 USD = RM 3.23
Figure 2: Tuna landing, Malaysia, 2011.

»

ANNUAL CATCHES OF NERITIC TUNA IN PENINSULAR MALAYSIA

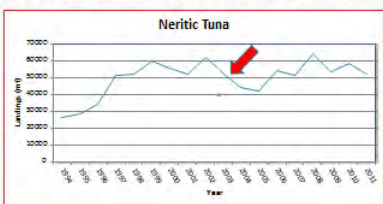


Figure 3 : Annual landings of neritic tuna in Peninsular Malaysia 1994-2011

- Annual catch from 1997-2011 → 40,000 to 65,000 mt.
- The highest catch → 2008 (65,000 mt) and 2002 (62,000 mt)

»

ANNUAL CATCHES OF NERITIC TUNA IN PENINSULAR MALAYSIA

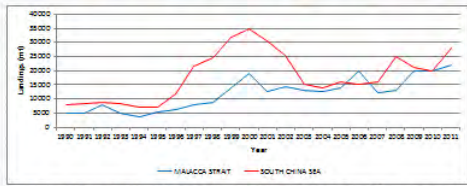


Figure 4 : Landing trends of neritic tuna in the west coast (Malacca Straits) and the east coast (South China Sea) of Peninsular Malaysia.

In 2011, catch of neritic tuna

- 45 % from Malacca Straits
- 28 % from South China Sea

PURSE SEINE CATCH COMPOSITION

» In 2011, 95% of the neritic tuna catch in the Malacca Straits are caught by the purse seines.

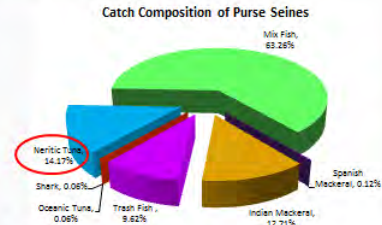
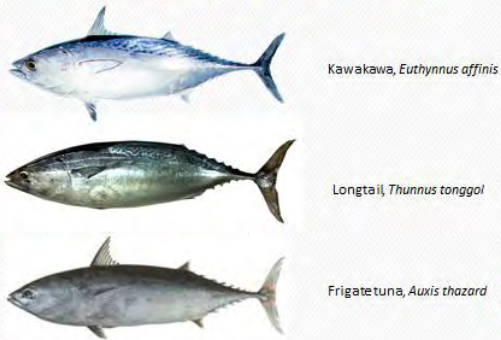
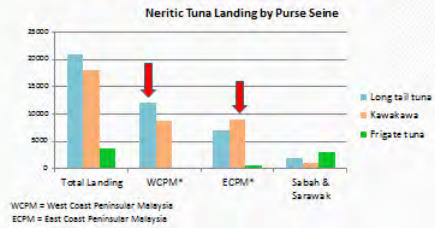


Figure 5 : Fish composition by purse seine on the West Coast of Peninsular Malaysia.

NERITIC TUNA SPECIES



NERITIC TUNA SPECIES

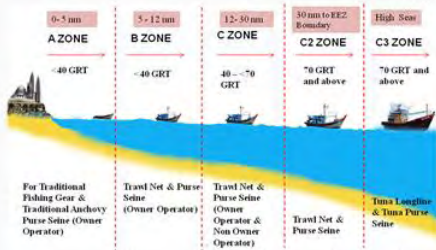


WCPM = West Coast Peninsular Malaysia
ECPM = East Coast Peninsular Malaysia

Figure 6 : Composition of neritic tuna caught by purse seines.

- ❖ Dominant species in West Coast PM : **Longtail**
- ❖ Dominant species in East Coast PM : **Kawakawa**

FISHING ZONES



CATCH BY VESSELS TONNAGE

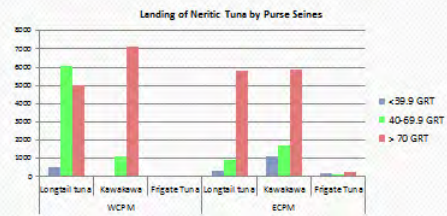


Figure 7 : Landings by species landed by purse seine vessels with different GRT.

UTILIZATION



Local delicacy 'nasi dagang'

Canning industry



ISSUES

- Insufficient data collection
- Lack of staff / human capacity
- Lack of financial resources to conduct a tuna survey
- Lack of coordination between relevant agencies

RECOMMENDATIONS

- The development of comprehensive & standardized data collection system
- Well trained and skilled manpower
- Sufficient fund to conduct survey
- Full commitment and coordination with relevant agencies

Annex 8

Overview of Neritic Tuna in Sabah and Sarawak Water

Salehudin bin Jamon

Senior Research Officer, Fisheries Research Institute Kg Aceh, Department of Fisheries Malaysia, Kompleks Perikanan Kg Aceh, 32000 Sitiawan, Perak, Malaysia

Overview of Neritic Tuna in Sabah and Sarawak Water

¹ SALLEHUDIN JAMON
¹ SAMSUDIN BASIR
¹ EFFARINA MOHD FAIZAL
² NOORUL AZLIANA JAMALUDIN
² YAZEEREN A. BAKAR

1. FRI Kg Aceh Sitiawan Perak, Malaysia
 2. SEAFDEC/MFRDMD Kuala Terengganu Terengganu, Malaysia
 3. Department of Fisheries Malaysia, Putrajaya Malaysia



Consultative Meeting on Regional Cooperation on Neritic Tuna Resources in Southeast Asian Waters
 8-10 October 2013
 BP Samila Beach Hotel, Songkhla province, Thailand

INTRODUCTION

- Marine fishing areas in Malaysia
 Pen Malaysia,
 Sarawak and
 Sabah.



South China Sea :
 Sarawak
 WC Sabah and
 Federal Territory Labuan (F.T Labuan)

Sulu & Celebes Sea.
 EC Sabah

Total EEZ Malaysian waters – 548,800 km²
 Sarawak – 160,000km²
 Sabah & Labuan – 90,000km²

- Four main species of neritic or coastal tuna found in the Malaysian waters



Thunnus tonggol



Euthunnus affinis



Auxis thazard



Auxis rocheei

VESSELS AND GEARS

- Neritic tunas caught by
 purse seine,
 trawl,
 hand line
 drift net.
- In 1987–purse seiner were introduced
- At present –
 - Fish Aggregating Device (FADs)
 - Light luring techniques



Fish Aggregating Devices



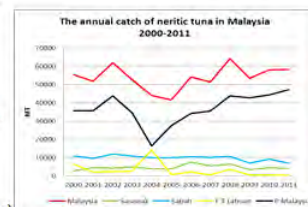
- FADs :-
 - floating object (bamboo, pontoon and Styrofoam),
 - main line,
 - coconut fronds and
 - weight (concrete block).



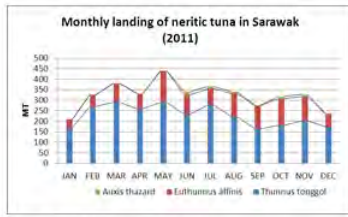
- Fishing ground along coastline:-
 Sarawak (Miri and Mukah)
 Sabah (Sipadan dan Ligitan Island (56 FADs).

Annual landing

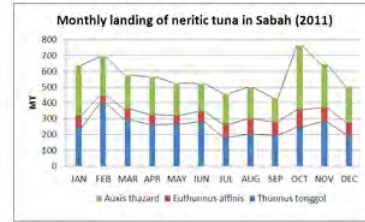
- 2011: Total marine fish
- 1,373,107 MT Malaysia
 - Sarawak (9%),
 - Sabah (12%) and
 - F.T Labuan (2%)



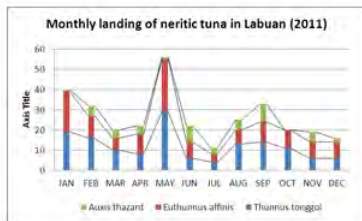
- 2000 – 2011 (tuna neritic)
 - Sabah (12%–24%)
 - Sarawak (5%–14%),
 - F.T Labuan (1%–12%).
- 2011– Percentage of total landings of neritic tuna decreasing compared to the previous year.



- Fishing throughout the year
- Fish abundance varies with season for different species and area and is influenced by the monsoon.
- Landing
 - = Dominated by *Thunnus tonggol*
 - = TT - 169-291 MT
 - = EA - 40-149 MT
 - = AT - 0 - 16 MT

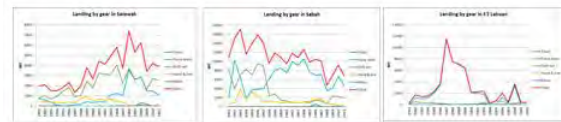


- Fishing throughout the year
- Landing
 - = Dominated by *T. tonggol* & *A. thazard* (ratio 1:1)
 - = TT - 182 - 386 MT
 - = AT - 152 - 402 MT
 - = EA - 50 - 111 MT



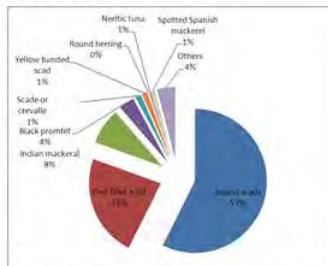
- Fishing throughout the year
- Landing
 - = Dominated by *T. tonggol* & *E. affinis* (ratio 1:1)
 - = TT - 4 - 29 MT
 - = EA - 4 - 26 MT
 - = AT - 0 - 9 MT

Landing by Gear

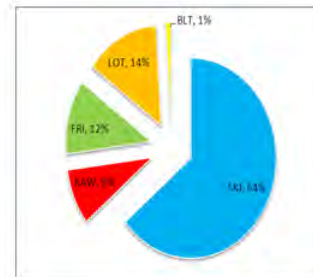


- Tunas were caught by a variety of gears:-
 - purse seine, drift net, hand & lines and trawl.
- Sarawak
 - Drift net, purse seine and hand & line.
- Sabah and F.T Labuan
 - Purse seiner ,drift net and hand & line

Fish Composition



Fish caught by purse seiner around the FADs in the Sarawak water

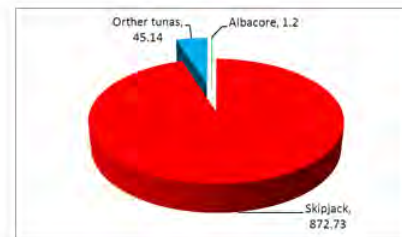


- Species composition of tunas caught in Sabah by purse seine.
- Skipjack a group of oceanic tuna remain the most abundant species (64%)
- Neritic tuna - Longtail tuna (14%), Frigate tuna (12%), Kawakawa (9%) and Bullet tuna (1%).

FISH PROCESSING

- The main emphasis of the National Agriculture Policy of Malaysia is to increase food production.
- At the same time, the importance of managing the fishery resources on a sustainable basis is fully recognized.
- In fisheries sector the policy focused on offshore fishing, aquaculture and downstream value-added activities.
- At present fish post harvest and fish processing industries are not adequate to meet the necessity.
- Sabah fisheries commodities of export and imports consist of live fish, live crab, fresh/ chilled and frozen fish, crabs and shrimp, fishmeal, fish fillets, and dried, salted or in brine fish products.
- Neritic tuna for domestic market or local consumption

EXPORT -Sabah 2011



- Export Value - USD million
- Export products - Fresh & Chilled/ Frozen
- Tuna Fresh & Chilled (Hong Kong, Singapore & Pen. Malaysia);
- Albacore - Chilled/Frozen (Pen Malaysia & Sarawak);
- Skipjack Chilled /Frozen (Thailand)



- To oceanic tuna, market fish most exported to neighboring country like to Philippine
- Some of the oceanic tuna was processed as a value added product such as tuna floss



- Company- Labuan SeaFood Industry
- Species:
 - Yellowfin, skipjack, mahi mahi, longtail tuna
- Product -Loin, Steak,
- Export to USA.

- There is no processing tuna industry activities in Sarawak
- Most of neritic tuna for domestic market for local consumption

ISSUES AND RECOMMENDATIONS

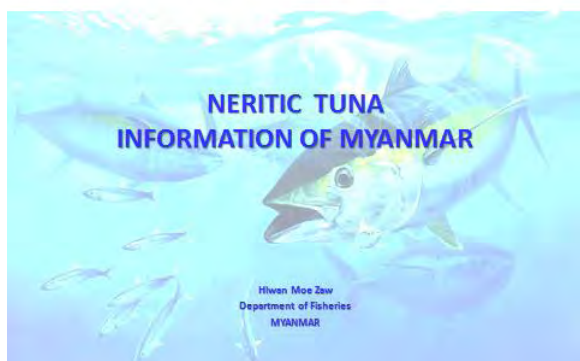
- i. Lack of data and information (S ASS, Biological, Migration,)
 - ii. Insufficient fund
 - iii. Lack of coordination
 - iv. IUU – illegal transshipment,
- i. The implementation of "vessels operation records (VOR)" which resemble the logbooks, for vessels >70GRT is a good start but still not sufficient as there are lack of cooperation from the fishermen. In most cases, the data from the VOR were of rough estimate, not based on actual catches.
 - ii. Insufficient fund to conduct study on catch and effort data of the purse seiners and , collecting information biological data of neritic tuna. The analysis of these data is required to determine the distribution and productivity level of pelagic fish resources.
 - iii. Cross boundary fishing and landings by larger purse seine vessels. Can category as IUU activities and undermining accuracy of catch and effort data recording from the countries involved.

Neritic Tuna Information of Myanmar

Hlwan Moe Zaw

Fisheries officer, Department of Fisheries, Ministry of Livestock Fisheries and Rural Development, Myanmar

The Consultative Meeting of Cooperation on Sustainable Neritic Tuna Fisheries in Southeast Asia Water. 8 - 10 Oct 2013, Songkhla, Thailand.



Introduction



Marine Fishery

a. In-shore Fishery

- * In the inshore fisheries, within from shoreline to 10 nautical.
- * In this area, the fishing boat which is not more than 30 feet long or using less than a 25HP engine power operates for fishing.
- * The fishing gears for using are driftnet, gillnet, beachseine and long line.

b. Off-shore Fishery

- * Outer area of inshore to end of EEZ
- * More than 25 HP engine boat
- * Bottom trawl, Purse seine, Drift net & Long line.

Status of marine fisheries resources

Estimate of Biomass within 200-meter depth

- Based on marine resource surveys undertaken, biomass of pelagic fish is 1.0 million MT while demersal fish is 0.8 million MT.
- Standing stock is assumed as 1.8 mmt.
- Out of this, 0.5 mmt of pelagic fish and 0.55 million MT of demersal fish totalling 1.05 million MT has been recognized as MSY.

Number of off-shore fishing vessels in Myanmar (2012-13)

No	Type of Gear	Number
1	Trawl	1118
2	Purse seine	278
3	Drift net (Gill net)	708
4	Long line	35
5	Squid cast net	356
6	Trap	84
Total		2579

Research surveys and experimental fishing

- * Since the right of ownership of Andaman Sea belongs to 4 countries namely Indonesia, Malaysia, Myanmar and Thailand, the joint survey was conducted by scientists.
- * This survey aims to investigate potential of large pelagic fish by using pelagic long line gear together with proper fishing technique and oceanographic parameters consideration.
- * Determine the relative abundance and size composition of the commercially important species.

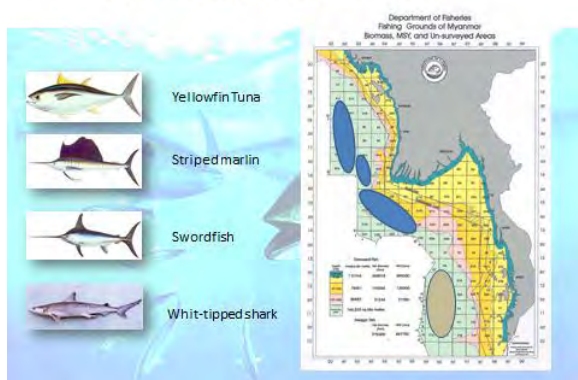
Research surveys and experimental fishing

- The similar survey results were also found in 2007 when "The Collaborative Marine Fishery Resources Survey in Myanmar Water" was jointly conducted by scientists from SEAFDEC and Myanmar.
- From these two survey results, Swordfish is the most dominant species in Myanmar-Offshore waters and it can be considered as one of the commercial fishes for offshore fisheries in future.
- The results from this survey indicated that some commercially important species, such as **Swordfish** (*Xiphias gladius*), **Yellowfin Tuna** (*Thunnus albacares*), **Striped marlin** (*Tetrapturus audax*) and **Sailfish** (*Istiophorus platypus*) are inhabiting in Myanmar offshore waters.
- **Bigeye Thresher** (*Alopias pelagicus*), **Whit-tipped shark** (*Carcharhinus longimanus*), Common **dolphin** (*Coryphaena bipinnulata*) and **Spanish mackerel** (*Gymnys surpens*) were also found as by-catch in this survey.

NERITIC TUNA SPECIES FOUND IN MYANMAR



TUNA Fishing Ground in Myanmar



Pelagic Resource characteristics

Pelagic resources

- Since there is no research works on this, the requested information is not available.
- Potential of some Yellow fin tuna fishes are already recorded.
- But Tuna fisheries is not develop yet.

Commercial Tuna Fishing

- The offshore fishery for large pelagic in Myanmar has initiated and developed gradually during the last decade, and is currently producing nearly 200 tons of fish per annum.
- Long lining in the Myanmar EEZ started with the issuing of experimental licenses to 12 foreign fishing vessels in 1999-2000.
- Initially the catch rates were good and in 2010-2011 the number of licensed vessels rise up to 109.



Commercial Tuna Fishing

- The license fee collected for this fisheries is 30 US \$ / GRT / Month.
- Currently, 56 vessels from two foreign fishing companies were still operating for tuna in the EEZ of Myanmar and India.
- According to "Law Relating to Fishing Rights for Foreign Fishing Vessels" tuna long-lining fishing operation is permitted only in the outside of the territorial sea in Myanmar EEZ to all fishing vessels.
- The target species for this fishery is Yellowfin tuna, even sword fish, marlin and sharks are caught as by catch.

Number of Foreign Tuna Long-line Fishing Vessel Engage in Myanmar Water and production (2003 to 2012)

Sr.No	Year	Number of Vessels	Production		
			Tuna(YF)	Other	Total
1.	2003-2004	4	39.50	16.5	56.00
2.	2004-2005	15	87.50	30.50	118.00
3.	2005-2006	34	310.15	103.00	413.15
4.	2006-2007	47	195.78	65.26	261.04
5.	2007-2008	11	47.48	15.80	63.28
6.	2008-2009	36	91.60	25.50	117.10
7.	2009-2010	49	561.75	150.00	711.75
8.	2010-2011	109	1123.50	648.50	1772.00
9.	2011-2012	56	514.60	231.00	745.60



Technological feasibility

- Since only foreign fishing vessels is operating in the offshore zones of Myanmar, there is no fishing vessels and fishing gears which are suitable for offshore or deep-sea fishing in Myanmar yet.
- Currently, most of the fishing vessels are operating in the waters less than 100-meter depth, due to lack of technology, lack of suitable fishing gear, and lack of fisheries resources information.
- In this regards, appropriate fishing technology, fishing gear and fishing vessels are the major constraints for the development of offshore fisheries or deep-sea fisheries in Myanmar.

Tuna Landing Site

- All of the Tuna catch by foreign long line fishing vessel, they are not landing at Myanmar ports.
- According to the size of Tuna, they are landed/ sale at as follow;

Size of Tuna	Exported Country
15 – 20 Kg	Phuket, Thailand.
	Penang, Malaysia
21 – 28 Kg	Phuket, Thailand.
	Penang, Malaysia
28 – 30 Kg	Phuket, Thailand.
	Penang, Malaysia
Over 30 Kg	Japan

There are no market in Myanmar

Conclusion

- Even offshore fisheries/deep-sea fisheries is not developed yet, results from series of fishery resources survey and experimental fishing indicated that Myanmar is rich in some commercially important big pelagic species such as sword fish and deep-sea lobster and deep-sea shrimp.
- Since offshore / deep-sea fisheries areas are away from the shore, more advanced fishing technologies, modernized fishing gears, latest post harvest technologies, skillful fishers and more investments are needed.
- All these requirements are great challenges to all developing countries like Myanmar.
- To exploit underutilized fishery resources from offshore / deep-sea for sustainable fisheries development and food security for the people in this region, Myanmar would like to make good coordination and cooperation with international / regional organizations.

Annex 10

Current Situation of Neritic Tuna Resource in the Philippines

Ruben J. Jardin

Regional Director, BFAR-IV-B, 3rd Floor, Conception Bldg. , Rizal St. San Vicente, Calapan City, Oriental Mindanao



Outline

1. Introduction and Background
2. Tuna Fisheries
 - 2.1. Neritic tuna species
 - 2.2. Tuna Fishing Gears
 - 2.3. Tuna Catches / Landings
 - Marketing / Trade
3. Fisheries infrastructure
 - 3.1. Fish Ports
 - 3.2. Processing plants



Outline

4. Fisheries management
 - 4.1. Institutional arrangements
 - 4.2. Legal framework: FAOs
 - 4.3. Management Plans
5. National mechanism and responsible agency for collecting tuna data/information
6. Conclusion and recommendations



Introduction

- Fishery is a key component of the Philippine economy
- Over 1.6M people of the country's labor force depend on fishery for livelihood
- Fisheries contribution to Philippine economy:
 - an average of 1.9% to GDP
 - 14.7% to gross value added in agriculture, fishery and forestry

Source: Philippine Fisheries Profile, 2011



Introduction

- Philippine exports:
 - Net surplus of 654 million US dollars
 - Total exports - 871 million US dollars
 - Total imports - 217 million US dollars
- Tuna – top export commodity
 - Collective volume: 76,888 MT (fresh/chilled/frozen, smoked/dried and canned)
 - Valued at US \$ 294.114 million
 - major markets: USA, Japan & Thailand

Source: Philippine Fisheries Profile, 2011



Background Information

PHILIPPINES PROJECTED MARITIME REGIMES

- The Philippine marine fisheries is conventionally subdivided into municipal (small-scale) and commercial fisheries on the basis of vessel gross tonnage.



Background Information

- **Municipal fisheries**
 - include capture operations using boats less than 3 GT
 - under the jurisdiction of the Local Government Units (LGUs)
- **Commercial fisheries**
 - include capture fishing operations using vessels of 3 GT and above.
 - are required to fish outside municipal waters, beyond 15km off the shoreline
 - required to secure commercial fishing vessel and gear license (CFVGL) at the Bureau of Fisheries and Aquatic Resources which is subject to renewal every three (3) years



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.



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*)



Tuna Fisheries

Neritic Tuna Species

- **Longtail tuna**
 - *Thunnus tonggol*
 - tambakol/bariles
- **Eastern Little tuna**
 - *Euthynnus affinis*
 - katchorita/kawa-kawa



Tuna Fisheries

Neritic Tuna Species

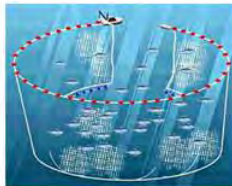
- **Frigate tuna**
 - *Auxis thazard*
 - tulingan
- **Bullet tuna**
 - *Auxis rochei*
 - tulingan



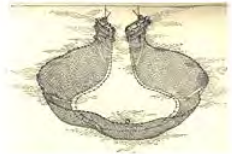
Tuna Fisheries

Major Tuna Fishing Gears

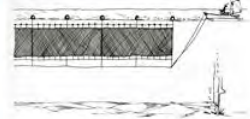
• Purse Seine



• Ringnet



• Gillnet



Tuna Fisheries

Major Tuna Fishing Gears

• Multiple Hook & Line

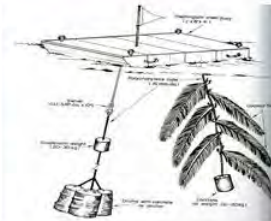
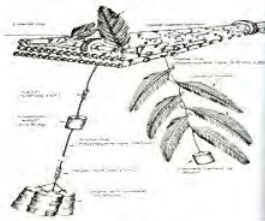
• Hook & Line



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)

Tuna Fisheries

Major Tuna Fishing Gears

• FADs or *payao*



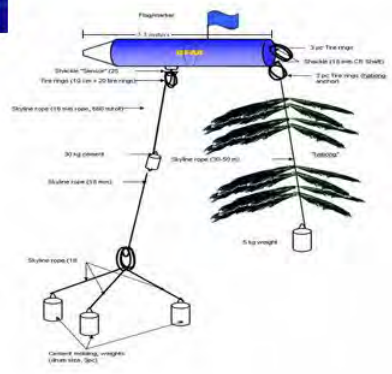
Source: BFAR, NMFDC

Tuna Fisheries

Major Tuna Fishing Gears

• FADs or *payao*

SHALLOW WATER PAYAO



Source: BFAR, NMFDC

Tuna Fisheries

Major Tuna Fishing Grounds

• Tunas are caught throughout the Philippine waters but the most productive fishing grounds are the **Sulu Sea, Moro Gulf** and waters extending to the **north Celebes Sea**.



Tuna Fisheries

Catch unloadings

- **Municipal tuna catch**
 - is landed as wet fish in thousands of landing sites all over the Philippines.
 - is processed by drying, salting, smoking etc.
 - some would enter large scale commercial processing



Tuna Fisheries

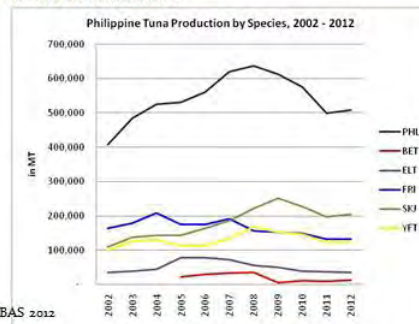
Catch unloadings

- **Commercial tuna catch**
 - directed towards processing by domestic canneries, based in the Philippines and elsewhere
 - sold fresh in domestic market
 - lesser amounts to smoked operations or processed as "katsubushi"



Tuna Fisheries

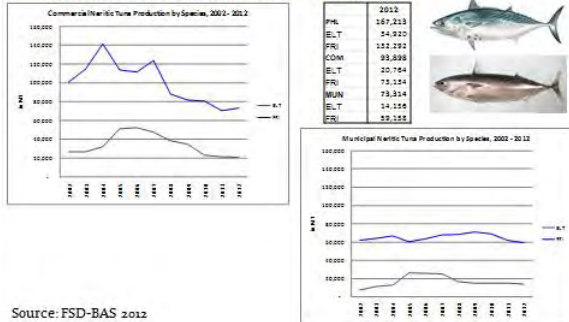
Annual Catch Estimates



Source: FSD-BAS 2012

Tuna Fisheries

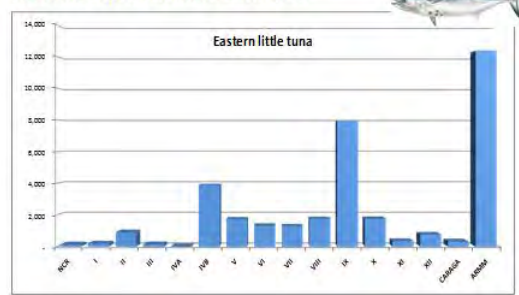
Annual Neritic Tuna Catch Estimates



Source: FSD-BAS 2012

Tuna Fisheries

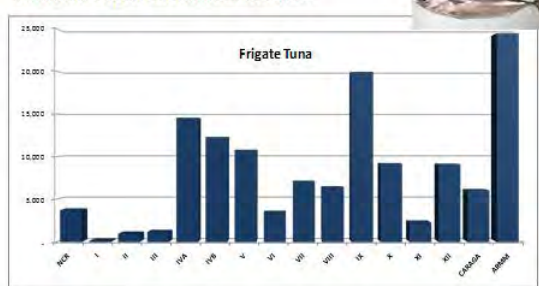
Annual catch estimates for 2012



Source: FSD-BAS 2012

Tuna Fisheries

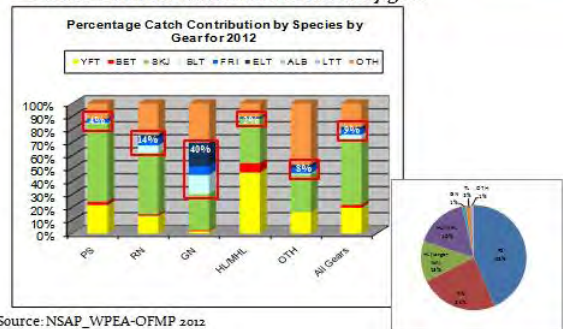
Annual catch estimates for 2012



Source: FSD-BAS 2012

Tuna Fisheries

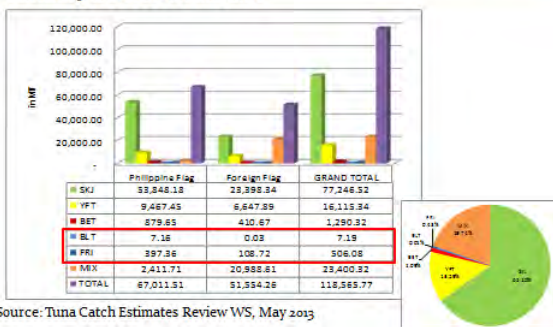
Catch contribution of neritic tunas by gear



Source: NSAP_WPEA-OFMP 2012

Tuna Fisheries

Cannery Deliveries for 2012



Source: Tuna Catch Estimates Review WS, May 2013

Tuna exports by commodity, 2008 - 2012

Source: NSO data, in BAS Fisheries Statistics for 2008 - 2012

Tuna commodity, by volume (MT)	2008	2009	2010	2011	2012
Fresh/chilled/frozen	32,365	23,504	33,688	22,027	22,910
Dried/smoked	17			13,933	8,000*
Canned	76,910	83,604	76,801	58,071	38,796
TOTAL VALUE (million USD)	395.94	346.40	359.38	314.507	455.10

* provisional data from industry

Fisheries Infrastructure

Fish Ports

- General Santos Fish Port Complex (GSFPC), the country's major tuna unloading port
 - six -35°C cold storage freezers, each with a 300MT capacity
 - a 4 MT/day brine freezer;
 - a 60 MT/day ice plant; and
 - 758 meters of landing or preparation area
 - 4 market halls, fish container storage yard and maintenance shop
- Navotas Fish Port Complex (NFPC), in Metro Manila is the second largest tuna landings
- Davao Fish Port - only transhipment port



Fisheries Infrastructure

Processing Plants

- eight (8) tuna canneries operational in the Philippines,
 - six (6) in General Santos City: (Alliance, Celebes, GenTuna, Ocean, Philbest and Seatrade) and
 - two (2) in Zamboanga (Permex)
- two (2) Philippine-owned and operated canneries in Papua New Guinea (Madang and Lae)
- There are more than 15 frozen tuna processors in the Philippines, 70% of which are located in General Santos City
- Majority of its production is exported to US and European countries.

Fisheries Management

Institutional arrangements

Agencies	Key function/s related to tuna fisheries management
DA-BFAR	manage, conserve, develop, protect, utilize, and dispose of all fisheries and aquatic resources beyond municipal waters
DENR	protection of fish habitat
DTI	regulation of fish trade
DFA	fisheries negotiations
MARINA	registration of fishing vessels
PFDA, PPA	management of fish ports
NFRDI, BAS	research and policy support agencies
LGUs	manage, conserve, develop, protect, and utilize all fish and fishery resources within their respective municipal waters
Philippine Coast Guard, Navy, National Police Maritime Group, and Air Force	enforce fisheries laws
NAFC, FARMCs, PCAMRD, NCIE, MSCOCs, Sea Watch, NTIC	coordinating bodies have been established to facilitate the implementation of fisheries management measures

Fisheries Management

Fisheries Administrative Orders

FAO 226, s. 2008	Regulation on the Mesh Size of Tuna Purse Seine Nets and Trading of Small Tuna
FAO 227, s. 2009	Rules and Regulations Governing the Export of Fish and Aquatic Products to European Union Member Countries
FAO 228, s. 2009	Rules governing the organization and implementation of official controls on fishery and aquatic products intended for export to the EU market for human consumption
FAO 236 s.2010	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 as Compatible Measures to WCPFC CMM 2008-01
FAO 238 s.2012	Rules and Regulations Governing the Implementation of Council Regulation (EC) No. 1005/2008 on the Catch Certification Scheme
FAO 240 s.2012	Rules and Regulations in the Implementation of Fisheries Observer Program in the High Seas
FAO 241 s.2012	Regulation and Implementation of the Vessel Monitoring System (VMS) in the High Seas

Fisheries Management

Management Plans

- National Tuna Management Plan
- National Plan of Action for the Conservation and Management of sharks (NPOA-Sharks)
- National Plan of Action to Deter Illegal, Unreported and Unregulated Fishing (NPOA-IUUF)
- National Tuna Fish Aggregating Device (FAD) Management Policy



National mechanism and responsible agency for collecting tuna data/information

- **Philippine Fisheries Development Authority (PFDA)**
 - has been mandated to support fishing industry development by providing fish ports, post-harvest facilities, ice plants, cold storage and other facilities, in support to handling and distribution of fishery products.
 - At present, there are seven major ports managed by PFDA (Navotas, Iloilo, Zamboanga, Lucena, Sual, Davao and General Santos)
 - Data on the volume of catch by species and value are also collected in the PFDA managed ports.



Fisheries Management

Fisheries Administrative Orders

FAO 144, s. 1983	Rules and regulations on commercial fishing
FAO 183, s. 1992	Prohibiting the importation of yellow-fin tuna and tuna products from certain countries
FAO 188, s. 1993	Regulations governing the operating of commercial fishing boats in Philippine waters using tuna purse seine nets.
FAO 198, s. 2000	Rules and regulations on Commercial Fishing.
FAO 199, s. 2000	Guidelines on Fish Transshipment
FAO 217, s. 2001	Obstruction to Defined Migration Paths.
FAO 223, s. 2003	Moratorium on the issuance of new Commercial Fishing Vessel and gear License (CFVGL) as part of a precautionary approach to fisheries management
FAO 223-1, s. 2004	Amending Sections 1 and 2 of Fisheries Administrative Order No. 223, s. o 2003, re: Moratorium on the issuance of new Commercial Fishing Vessel and gear License (CFVGL)
FAO 224, s. 2004	Establishment of Tuna Productivity Project in Davao Gulf.

Fisheries Management

Fisheries Administrative Orders

FAO 244 s.2012	National Tuna Fish Aggregating Device (FAD) Management Policy
FAO 245 s.2012	Regulations and Implementing Guidelines on Group Tuna Purse Seine Operations in High Seas Pocket Number 1 as a Special Management Area



National mechanism and responsible agency for collecting tuna data/information

- **Bureau of Fisheries and Aquatic Resources (BFAR) and National Fisheries Research and Development Institute (NFRDI)**
 - NSAP - Port sampling, logsheets, observer program, catch certification, cannery receipts, licensing
- **Bureau of Agricultural Statistics (BAS)**
 - Fisheries Statistics Division within BAS has the responsibility of fisheries data collection; compilation; analysis and dissemination for all capture fisheries (marine and inland, municipal and commercial) and aquaculture.



National mechanism and responsible agency for collecting tuna data/information

- **Maritime Industry Authority (MARINA) and Philippine Coast Guard**
 - The Maritime Industry Authority under the Department of Transportation and Communication (DOTC) approves the registration of Philippine flag vessels of more than 3 GT that operates in the country.
 - MARINA maintains a list of registered Philippine fishing vessels.
 - After the approval of MARINA registration, vessels are required to secure a certificate of inspection and registration of homeport issued by the Philippine Coast Guard.



National mechanism and responsible agency for collecting tuna data/information

- **National Statistics Office (NSO)**

- maintains the official statistics on fishery exports and imports in the Philippines.

- ❖ classified by standard categories by species and value

- also provides information vital to monitoring product flows and corroborating production figures

- responsible for conducting national census every ten (10) years



National mechanism and responsible agency for collecting tuna data/information

- **Fisheries Technical Working Group (FTWG)**

- This group was formed in 2000 involving three agencies under the Department of Agriculture (DA), namely, BAS, BFAR and PFDA.

- This group was formed to look into the issues and concerns related to fisheries statistics.

- At present the group, meet on an ad hoc basis, but could play a very useful role in coordination of activities of the three agencies relating to fisheries statistics.



Conclusions and Recommendations

- **Capacity Building**

- There is a need to support activities that will develop skills of enumerators, observers and BAS key data informants on species identification and data gathering protocols.

- There is also a need to enhance capability of fisheries data coordinators to conduct data audit on port sampling data, logsheets data and observer data to improve data quality.



Conclusions and Recommendations

- **Increase Coverage of Data Collection**

- It is envisage that logsheets data provision should cover not just the purse seine and ringnet vessels but also other tuna fishing gears in the future.

- The Fisheries Observer Program (FOP) is also expected to cover more fishing operations with industry's cooperation and support even outside the prescribe closure period.



National mechanism and responsible agency for collecting tuna data/information

- **Tuna Cannery Association of the Philippines (TCAP)**

- maintains and distributes statistics on tuna cannery production



- **SOCOSKARGEN Federation of Fishing and Allied Industries, Inc. (SFFAI)**

- main mandate of the federation is to unite the diverse subsectors of the tuna industry, serve as forum to discuss problems and how to resolve them, and the key voice of the local tuna fishery in lobbying for policy reforms and other concerns that affect the industry.

- SFFAI is also helping improve tuna fisheries statistics within its area of influence.

Conclusions and Recommendations

- **Funding Support**

- There is a need to augment the budget of the Bureau of Agricultural Statistics (BAS) to introduce the improved sampling frame/questionnaires and to conduct probability surveys that will help generate better catch estimates.

- Need to increase port sampling coverage

- **Support and Cooperation from Industry Stakeholders**

- There is a need for continued coordination, support and cooperation from industry stakeholders on the

- ❖ implementation of fisheries observer activities,

- ❖ timely provision of operational logsheets and cannery unloading data to BFAR-NFRDI.



Conclusions and Recommendations

- **Annual Tuna Catch Estimates Review Workshop**

- There is a need for continued support and cooperation from various agencies (BFAR-NFRDI, BAS, PFDA, NGOs) and industry to support the conduct of annual tuna catch estimates review workshop to come-up with best possible catch estimates by species and gear type.



Conclusions and Recommendations

- **Data Sharing and Integration**

- BFAR-NFRDI and BAS in the future should collaborate to use the aggregated catch data generated from logsheets and fisheries observer program (FOP) as basis for generating better tuna catch estimates.

- Data from the National Stock Assessment Program (NSAP) should be effectively integrated in the sampling/monitoring system of the Bureau of Agriculture Statistics (BAS) to improve tuna statistics.

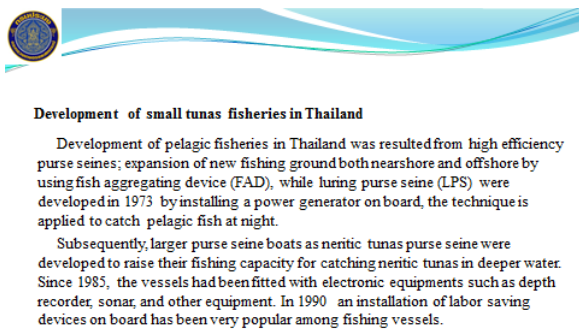
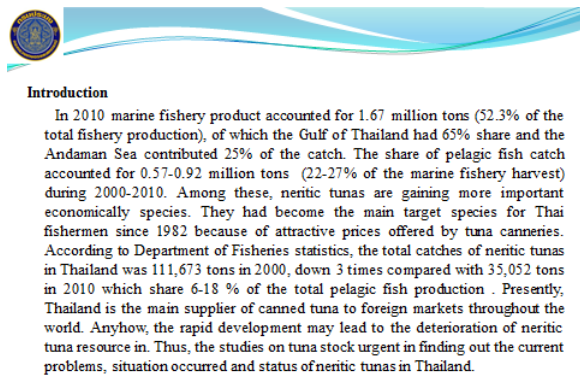
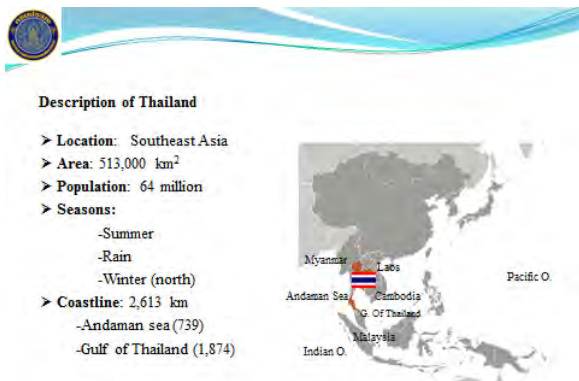
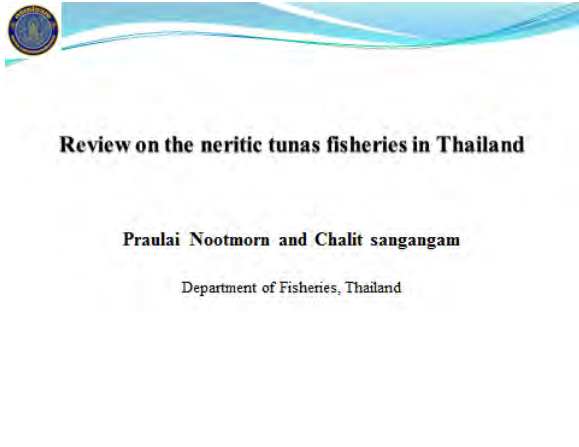


Annex 11

Review on the Neritic Tuna Fisheries in Thailand

Chalit Sa-Nga-Ngam

Fishery Biologist, Department of Fisheries, 77 Moo 7 Vichit Sub-district, Maung Distric, Phuket 83000





2) neritic tunas purse seine

Size : 28-30 m (LOA)

Engine : 300-520 Hp

Nylon net : 1,200-1,600 m (length)
120-150 m (depth)

Mesh size: 94 mm

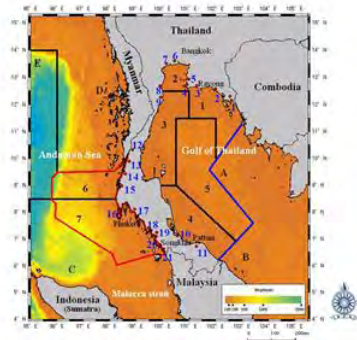


Number of purse seiners registered in 2006-2010

Places/Year	2006	2007	2008	2009	2010
Gulf of Thailand	537	548	501	210	531
Andaman Sea	627	642	681	696	840
Total	1,164	1,190	1,182	1,206	1,371



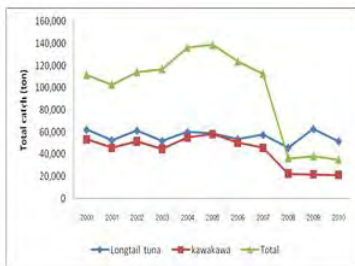
Fishing grounds of small tunas



Species composition

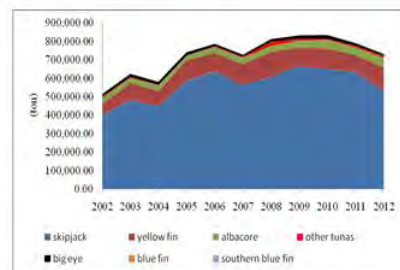


Annual production



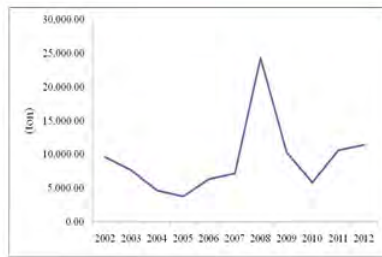
Marketing and trade

Importing

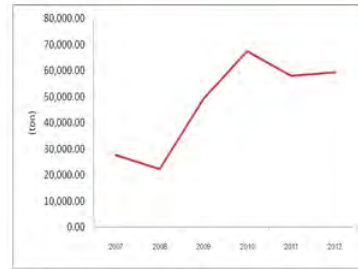




Neritic tunas imported



Exporting



Research Programme

The research programs in neritic tunas were carried out by DOF – Thailand during 2011 to 2013 as project of “Neritic Tuna Resources in Thai Waters” are 4 projects .

- Fisheries and status of neritic tunas in Andaman Sea Coast of Thailand
- Fisheries and status of neritic tunas in Gulf of Thailand
- Reproductive biology of kawakawa, frigate, and longtail in Andaman Sea Coast of Thailand
- Reproductive biology of kawakawa, frigate, and longtail in Gulf of Thailand

Situation of Neritic Tuna Fisheries in Vietnamese Waters

Nguyen Thi Hong Nhung

Fishery Officer, Department of Science Technology and International Cooperation, Fisheries Administration, Ministry of Agriculture and Rural Development, No. 10 Nguyen Cong Hoan Street, Ba Dinh District, Ha Noi, Vietnam

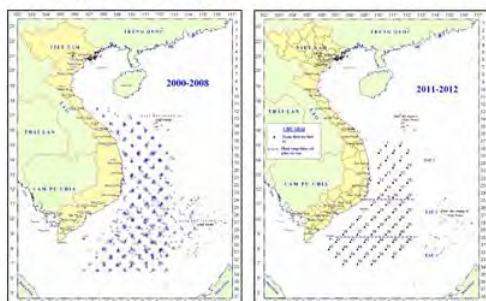


INTRODUCTION

- In Vietnam, neritic tunas distribute mainly in the Central and the Southeast areas.
- There are no specific surveys conducted for stock assessment of the neritic tunas in the national water.
- Some certain programs were conducted primarily for assessment of large pelagic fish resources, including oceanic tuna, other tunas which is so called neritic tunas and other pelagic fishes.
- This paper presents some outputs related to stock assessment, biological study of some neritic tunas based on the gillnet surveys implemented during the period 1996-2012. All the surveys mentioned were performed following sampling fixed station system.

INTRODUCTION

The sampling fixed station system



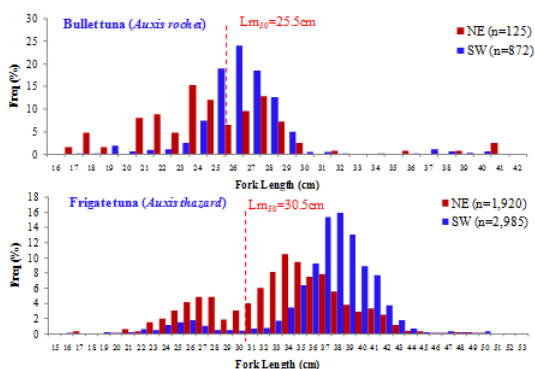
NERITIC TUNA SPECIES

- Totally, 16 species identified belonging to the family of scombrids (Scombridae), including five neritic tuna species such as longtail tuna, bullet tuna, frigate tuna, kawakawa and striped bonito.

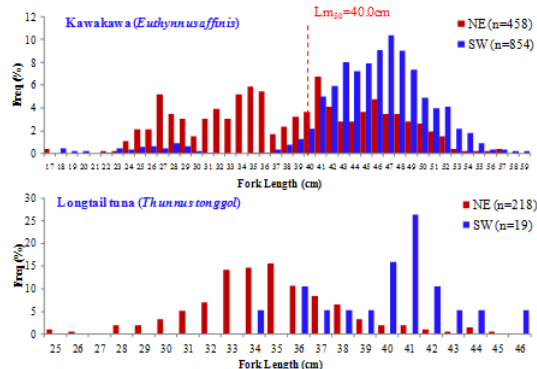
Scientific name	English name	Local name
<i>Thunnus tonggol</i> (Bleeker, 1851)	Longtail tuna	Cá ngừ bò
<i>Auxis rochei</i> (Risso, 1810)	Bullet tuna	Cá ngừ ò
<i>Auxis thazard</i> (Lacepède, 1800)	Frigate tuna	Cá ngừ chù
<i>Euthynnus affinis</i> (Cantor, 1849)	Kawakawa	Cá ngừ chám
<i>Sarda orientalis</i> (Tem. & Schl., 1844)	Striped bonito	Cá ngừ phương đông

- The catch proportion of fish which is smaller than mature length in gillnet accounted for 37.3% for total sampled catch of bullet tuna, 15.2% (frigate tuna) and 26.9% (kawakawa) respectively.

LENGTH FREQUENCY OF NERITIC TUNAS

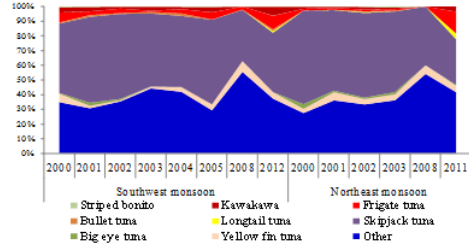


LENGTH FREQUENCY OF NERITIC TUNAS



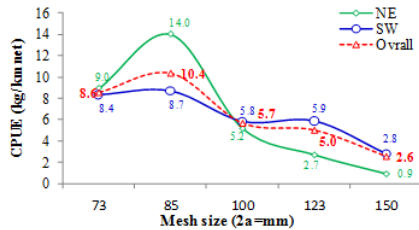
CATCH COMPOSITION

- The total sampled catches of neritic tunas in gillnet surveys were normally low compared with some other species. Catch proportion of neritic tuna ranged from 2.3 to 17.7%, the average 7.9% of total sampled catches in the southwest monsoon and ranged from 0 to 22.2%, the average was 5.8% in the northeast monsoon



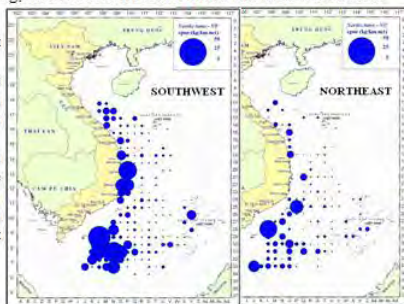
CATCH RATE (CPUE)

- The sampled gillnets were designed to have 5 different mesh sizes (stretched mesh size (2a) as follows: 2a = 73mm, 85mm, 100mm, 123mm, 150mm). The sampled gear of 85 mm mesh size provided the highest value of CPUE of neritic tuna, (10.4 kg/km), followed by sampled gear of 2a = 73mm (8.6 kg/km). Average CPUEs tended to decrease when the mesh size (2a) larger than 100 mm



DISTRIBUTION OF NERITIC TUNAS

- Spatial distribution of the neritic tuna shows clearly seasonal changes. In the southwest monsoon, the highest sampled CPUE was found in the area from Quang Tri to Da Nang; from Binh Dinh to Ninh Thuan and south-eastern areas of Con Son Island.
- In the northeast monsoon, distribution is sparse, lower catch rates occurred in southwest monsoon, which mainly concentrate in areas from Da Nang to Binh Dinh and east-southeast Con Son Island

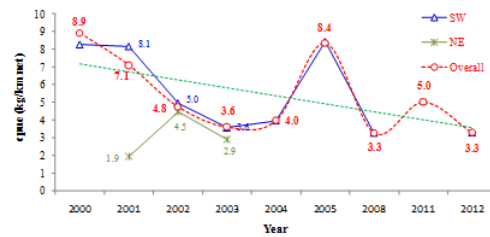


CATCH COMPOSITION

- Frigate tuna and kawakawa are the two main species of the neritic tunas in Vietnam waters.
- Frigate tuna accounts for the highest catch composition, average 4.0% total catches of surveys conducted in the southwest monsoon and 3.2% total catches of surveys done in the northeast monsoon.
- Similarly, kawakawa accounted for about 2.8% total surveyed catches in the southwest monsoon and 1.8% in northeast monsoon, respectively.
- Normally, catches of bullet tuna accounted for below 1% of total surveyed catches.

CATCH RATE

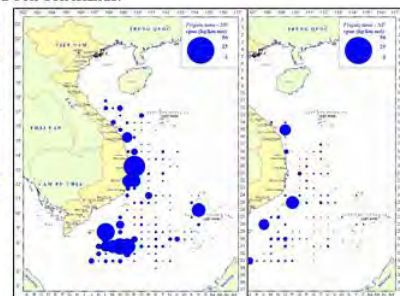
- The average CPUE of the group of neritic tunas regardless of sampled gears varied from 3.3 to 8.4 kg/km, mean value of 5.5 kg/km in the southwest monsoon. Similarly, it varied from 1.9 to 5.0 kg/km, average of 3.6 kg/km in the northeast monsoon.
- The seasonal and annual variations in CPUE of the neritic tunas caught in the surveys mentioned were described in this figure.



DISTRIBUTION OF NERITIC TUNAS

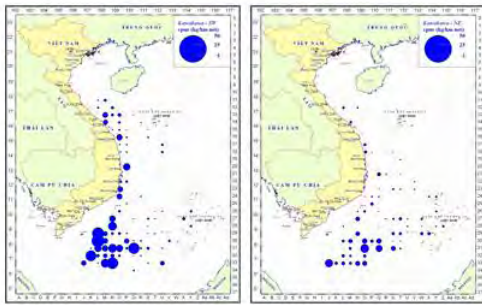
- A commonly spatial distribution of the neritic tunas which kawakawa, bullet tuna and frigate tuna are considered as dominant species. Bullet tuna and striped bonito mostly distribute in the area from Binh Dinh to Phu Yen, south-eastern Phu Quy and Con Son islands.
- Longtail tuna appeared very few in the surveys and distributed sparsely in the waters of Vietnam.

Distribution of frigate tuna in Vietnam waters



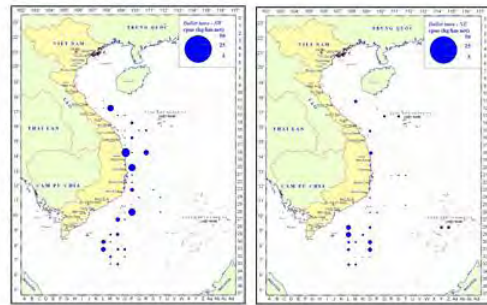
DISTRIBUTION OF NERITIC TUNAS

Spatial distribution of Kawakawa in Vietnam waters



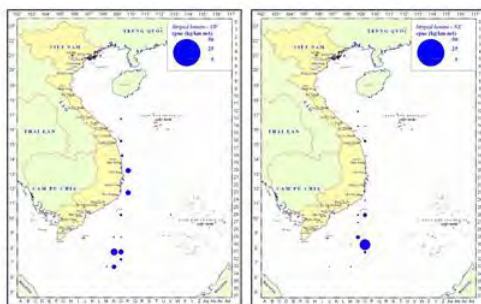
DISTRIBUTION OF NERITIC TUNAS

Spatial distribution of Bullet tuna in Vietnam waters



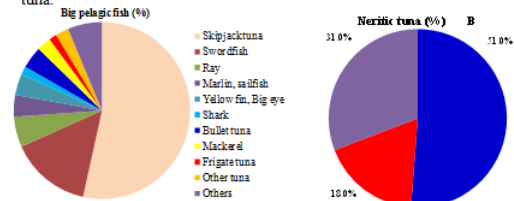
DISTRIBUTION OF NERITIC TUNA

Spatial distribution of Striped bonito in Vietnam waters



STOCKS BIOMASS

- Resource of large pelagic fish in Vietnam offshore waters was estimated at 1.1 mill. MT. Biomass estimated of the neritic tunas in the national water was approximately 90,000 MT, accounted for about 7.9% total biomass of the large pelagic fishes. Of which, the bullet tuna was the largest stock biomass about 47,000 MT, accounted for 51.0% total biomass of neritic tunas, followed by frigate tuna, stock biomass estimated of about 16,000 MT (18.0%). The three other neritic tunas including kawakawa, striped bonito and longtail tuna was estimated about 28,000 MT, accounted for 31.0 % of total biomass of neritic tuna.

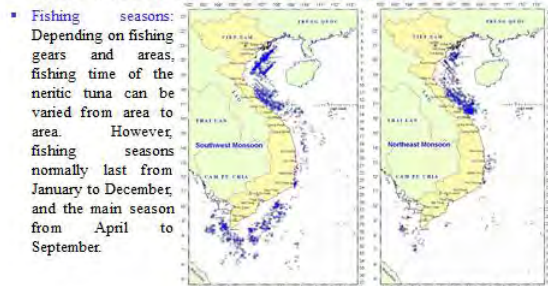


FISHING VESSELS

- According to DECAFIREP (2013), there are about 4,700 purse seiners, in which fishing fleets are categorized by engine capacity (HP).
- The fleet of purse seiner of 20 - <90 HP of 2,850 units (about 61%), mainly fishing in the coastal and near shore waters, main target species are striped bonito, mackerel ...
- Purse seine fleet of above 90HP comprised of 1,850 units (about 39%), mainly operate fishing activities in offshore areas.
- There are approximately 47,000 gillnetters, in which:
 - There are about 39,500 units (about 84%) of 20 - <90 HP, mainly fishing in coastal and near-shore waters, target on neritic tunas, mackerel, sailfish ...
 - Fleet of above 90 HP of 6,700 units, mainly operating in offshore areas, of which about 2,000 units target on tunas (about 30% gillnet vessels offshore).

FISHING GROUNDS AND FISHING SEASONS

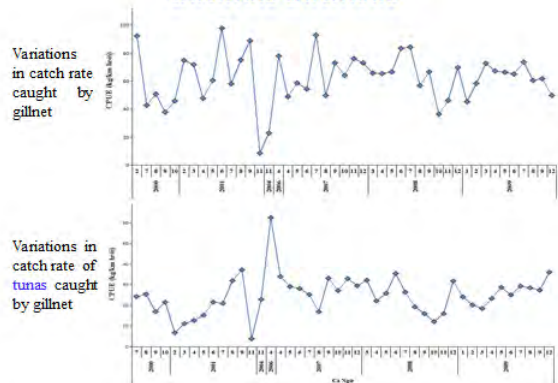
- Fishing grounds (based on logbook data) spread across coastal waters of Vietnam. Main Fishing grounds including: offshore waters from Thai Binh to Thanh Hoa, the waters from Quang Binh to Da Nang; northeastern and southwestern of Con Son Island; southern and south western of Ca Mau



CATCH AND CATCH RATE

- There are no available data on catches of the neritic tunas in Vietnam due to the insufficient information, implementation of data collection. The weak MCS system and poor/inadequate institutional arrangement of the fisheries sector lead to poor currently available data.
- Data analysis of gillnet observer and logbooks carried out during 2000 - 2009 shown a clearly annual periodic variations. The peak CPUEs were observed in June and July and lowest in November and December. Overall average CPUE (all species) of gillnetters was fluctuated around 60 kg per km of net. Tunas accounted for the major proportion of the gillnet catches. Besides, there are some other fishes such as mackerels, sharks, common dolphin fish etc.
- The mean CPUE of all tunas is about 20 kg per km of net, highest CPUE was observed at 60 kg per km of net (April, 2006) and the lowest values was 10 kg per km of net. Annually, peak CPUEs were found in July, August and lowest CPUEs were observed in November and December.

CATCH AND CATCH RATE



THE NATIONAL STRATEGIC AND MANAGEMENT PLAN

- For tuna management, Vietnam has issued legal documents such as Fisheries Law and Decrees, Circulars specified: production, business conditions including fisheries; ensuring safety for fisher and fishing vessels; the management of fishing activities of organizations/individuals in Vietnam waters; administrative sanctions regulations in the fisheries sector.
- Recently, Vietnam Government has issued the Decisions on the restructuring agricultural, fishing ports and landing sites system to 2020, orientation to 2030 and implement the scheme on "reorganize production in fisheries".
- Fisheries Directory has drafted and submitted the Minister of Agriculture and Rural Development (MARD) for approval NPOA-JUU. Schemes on "Piloting the organization, exploitation, acquisition and consumption of tuna by chain" are under construction by D-Fish.
- In addition, Vietnam Government has acceded to the provisions of the agreement, international agreements such as the UNCLOS – 1982, CoC – 1995, CITES, Catch Certificate with EU 2010 etc.

PROPOSALS AND RECOMMENDATIONS

- Developing management mechanism and policy and develop neritic tuna production, enhancing capacity through training course for neritic tuna manager at both central and local level.
- Experience, neritic tuna management methods; transfer scientific technical advances, training, provide exploitation technical guidance; tuna preservation after harvesting.
- Collaboration in resources surveys, forecasting tuna fisheries grounds; data collection and database development for management of neritic tuna fisheries.

THE NATIONAL STRATEGIC AND MANAGEMENT PLAN

- Currently, Vietnam still lack of the conditions for the investigation, data statistics, resources database, vessels and tuna catches; difficulties in management capacity, human resources, finance, facilities and lack of in-depth research on fisheries forecasting, resource, harvesting techniques and tuna products post-harvest preservation.
- In the coming years, the MARD will focus on implementing the scheme "Re-organize production in fisheries", in which concentrating on reviewing, amendment and development promulgating mechanisms and policies, completing the legal documents to strengthen fisheries management and development forwards sustainability; enhancing the management, resources investigation, fisheries forecasting, science - technology application, trade promotion and international cooperation; improving the quality, value added and reduce post-harvest losses;

Status of Neritic Tunas in the Gulf of Thailand

Praulai Nootmorn

Director of the Fisheries Research and Development Bureau, Department of Fisheries, Kaset-Klang, Chatuchak, Bangkok 10900, Thailand

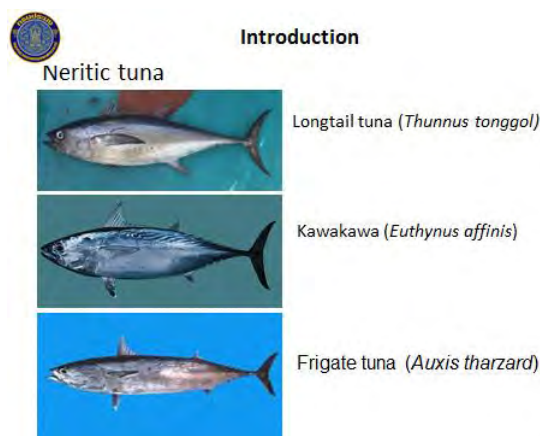
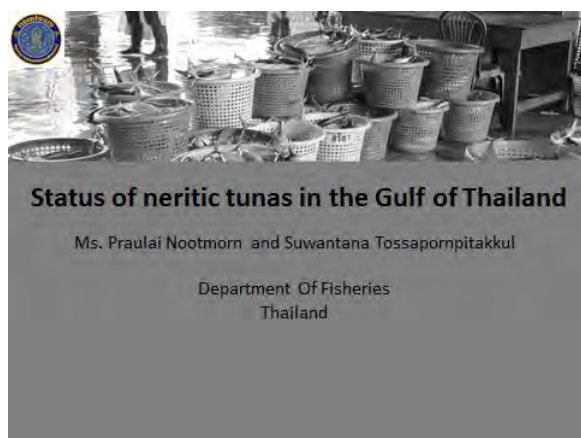
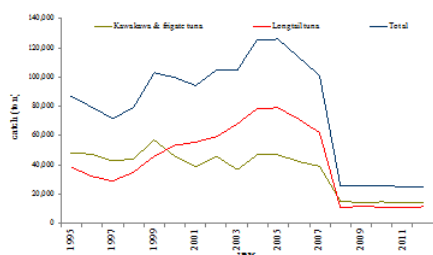
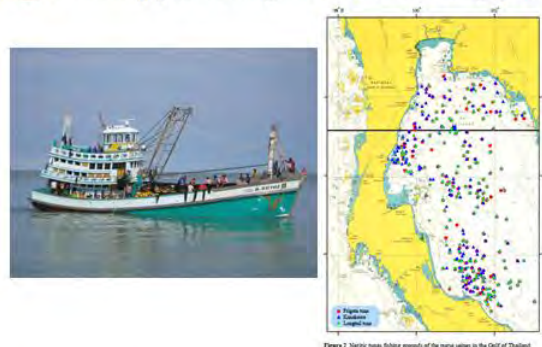


Figure 1 Catch of neritic tunas in the Gulf of Thailand during 1995-2012



Fishing gear fishing method and fishing ground



Catch per unit effort (CPUE) and species composition

Table 1 CPUE (kg/day) of neritic tunas caught by purse seines along the Gulf of Thailand in 2012.

Species/group	FADs	LPS	TPS	TUN
Frigate tuna	235.00	177.57	5.11	232.56
Kawakawa	91.26	76.79	2.10	257.29
Longtail tuna	6.56	19.73	0.30	982.06
Other pelagic fishes	2,241.47	1,826.14	2,908.69	
Demersal fishes	360.55	531.92	70.04	
Others	47.42	34.13	19.54	
Total	2,982.26	2,666.28	3,005.78	1,471.91

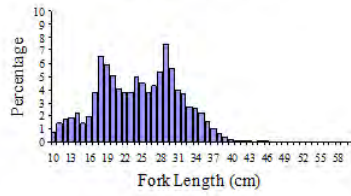
Size distribution

Table 2 Length of neritic tunas caught by purse seine in the Gulf of Thailand in 2012

Species	gear	number	Size length (cm)		
			Size range	Mean	SD
Frigate tuna	FADs	5,335	10.0-44.0	23.07	6.08
	LPS	1,577	10.0-46.0	26.23	7.36
	TPS	1,129	17.0-59.0	31.50	3.38
	TUN	197	27.0-41.0	30.66	3.90
Total	8,238	10.0-48.0	24.97	6.69	
Kawakawa	FADs	9,745	10.0-49.0	24.42	7.47
	LPS	1,896	10.0-41.0	26.18	7.31
	TPS	3,025	10.0-60.0	32.86	6.75
	TUN	177	20.0-49.0	38.53	6.08
Total	14,823	10.0-60.0	26.64	6.10	
Longtail tuna	FADs	2,801	10.0-48.0	25.02	6.18
	LPS	341	10.0-44.0	22.93	6.47
	TPS	2,270	15.0-54.0	37.90	5.11
	TUN	641	23.0-46.0	31.74	4.14
Total	5,860	10.0-54.0	30.66	6.94	



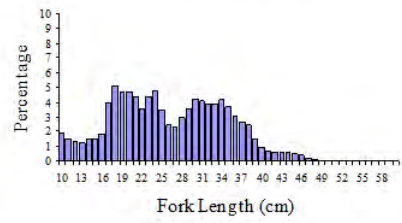
Size distribution



Frigate tuna (*Auxis thazard*)



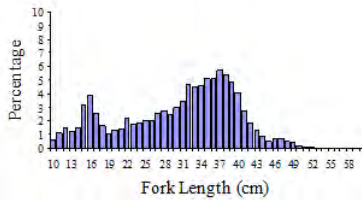
Size distribution



Kawakawa (*Euthynus affinis*)



Size distribution



Longtail tuna (*Thunnus tonggol*)



Neritic tuna production

Year	Landing catch (kg)			Changed rate (%)		
	Tonggol	Kawakawa	Total	Tonggol	Kawakawa	Total
2009	3,907,760	2,425,028	6,332,788			
2010	6,137,042	4,067,828	10,204,870	+57.0	+67.7	+61.1
2011	6,454,833	4,303,222	10,758,055	+5.2	+5.8	+5.4
2012	7,594,338	5,062,893	12,657,231	+17.7	+17.7	+17.7

Source: Pattani Fish Marketing Organization

Introduction to Neritic Tuna Fishery in Vietnam: Case study conducted in 2012

Nguyen Ba Thong

Researcher, Fisheries Information Center, Directorate of Fisheries (D-fish), Ministry of Agriculture and Rural Development, No. 10 Nguyen Cong Hoan Street, Ba Dinh District, Ha Noi, Vietnam.

Regional Cooperation on Sustainable Neritic Tuna Fisheries in the Southeast Asian Waters

Introduction to neritic tuna fishery in Vietnam, case study conducted in 2012



Prepared by Nguyen Ba Thong
nguyenbathong@gmail.com



BP Samila Beach, Songkhla, October 2013

General introduction

- 28 coastal provinces;
- Total fishing vessels: approximately 123,000 units in which <90 CV accounts for 81%, >90 CV (19%);
- Main gears: gillnet (35%), trawl (20%), pure seine (4%), hooks and line (20%), others (21%), small scale, multispecies;
- Oceanic tuna fishery: mainly in Binh Dinh, Phu Yen, Khanh Hoa;
- Neritic tuna fishery: from the North to the South;



I. Fisheries resources

- Oceanic tunas:

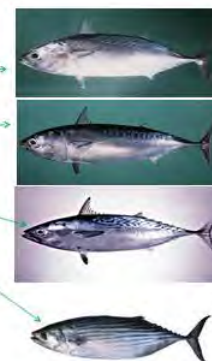
- + Yellow fin tuna (*Thunnus albacares*)
- + Big eye tuna (*Th. obesus*)
- + Skipjack tuna (*Katsuwonus pelamis*)
- + Albacore (*Th. alalunga*) – very few



I. Fisheries resources

- Neritic tunas:

- + Frigate tuna – *Auxis thazard*
- + Bullet tuna – *Auxis rochei*
- + Kawakawa – *Euthynnus affinis*
- + Stripped bonito – *Sarda orientalis*
- + Long tail tuna – *Thunnus tongol*



I. Fisheries resources

- **Stock assessment:**
- Accordingly, Dao Manh Son (2004) and researches conducted of RIMF (2000 – 2012), biomass estimated of some tunas as follows:
 - Skipjack: about 800,000 MT;
 - Yellow fin tuna: 45,000 MT;
 - Big eye tuna: 28,000 MT;
- **No estimates done for other tunas** (neritic tunas);
- Mostly, abundance of tuna fisheries resources is described as CPUE (kg/1 km of net or kg per 1000 hooks, kg per boat day);
- Tuna stock assessments contain high level of uncertainty;

II. Fishing operations

2.1. Fishing effort

- **Gillnet fisheries:** nationally, total about 29,600 units (DECAFIREP 2013);
 - In which, below 90 CV of 28,300 units; above 90 CV of approximately 1,300 units;
 - Main provinces: Kien Giang (318 units), Khanh Hoa (231 units), Ca Mau (156 units), Ba Ria – Vung Tau (127 units), Thanh Hoa (108 units), Da Nang (76 units)... **few vessels solely target on tunas.**
- **Purse seine fisheries:** total the whole country, about 3,900 units, in which 2,680 units of > 90CV;
- Purse seine mainly target on small pelagic fishes, **and also neritic tunas**, some demersal and reef associated fishes;

Fishing grounds, seasons and target species, catch estimated of the gillnet and purse seine fisheries in the 12 provinces surveyed under case study implemented in the period of May – June 2012, detailed as follows:

- Case study for tuna catch estimation conducted in 2012:
- 12 provinces only (see beside map);
- Not covered 3 provinces under the WPEA project, namely Binh Dinh, Phu Yen and Khanh Hoa;
- Survey time: 1 month (May 5th – 2nd June 2012);
- Interviews (fishers, FAs, local fisheries managers/relevant authorities...);
- Estimates based on guidelines of FAO (2002) which BAC is taken into account;



II. Fishing operations

2.2. Fishing effort (case study in 12 provinces, 2012)

Rank	Province/City	Purse seine (unit)	Gillnet (unit)
1	Da Nang	39	77
2	Quang Nam	131	1
3	Quang Ngai	107	140
4	Ninh Thuan	84	52
5	Binh Thuan	382	43
6	Ba Ria – Vung Tau	186	108
7	Ho Chi Minh City	4	9
8	Tien Giang	121	35
9	Ben Tre	79	64
10	Soc Trang	48	0
11	Ca Mau	108	123
12	Kien Giang	329	355
	Total:	1,618	1,007

II. Fishing operations

- There are no specific neritic tuna fishing fleets;
- Gillnet and purse seine catch different pelagic species;
- Neritic tunas seasonally occur and varies in catches of purse seine and gillnet;
- Normally, “offshore fishing vessels” of above 90 CV can fish neritic tunas;
- Minor catch of neritic tunas can be harvested by some other coastal gears (liftnets...);

Rank	Province	Fisheries	Fishing ground	Fishing time	Target species
1	Da Nang	Purse seine	Offshore	Jan-Sep.	Skipjack, frigate tuna, YF, BE
		Gillnet	Paracel island, Spratly archipelago, Hainan island	Mar.-Aug.	Skipjack, frigate tuna, YF, BE
2	Quang Nam	Gillnet	Cu Lao Cham –north Da Nang	Jan-Dec.	Skipjack, frigate tuna
		Purse seine	Nearshore	Jan.-Dec.	Frigate tuna, bullet tna
3	Quang Ngai	Gillnet	Paracel island, Spratly archipelago, Tonking Gulf (NE monsoon)	Jan.-Dec.	Skipjack, frigate tuna, YF, BE
		Purse seine	Offshore	Jan.-Dec.	Skipjack
4	Ninh Thuan	Gillnet	Offshore Ninh Thuan, Binh Thuan to western Spratly archipelago	Feb.-Apr. (fishing mackerels); other months (fishing tuna)	Skipjack, longtail tuna, frigate tuna
		Purse seine	Offshore southeast, from Phu Quy to Vung Ro	Jun.- Sep.	

Rank	Province	Fisheries	Fishing ground	Fishing time	Target species
5	Binh Thuan	Gillnet	Offshore southeast (Con Dao, Phu Quy)	Jan.-Dec.	Kawakawa, Skipjack, frigate tuna, YF, BE
		Purse seine	Area from Dai Hung – Phu Quy island	Feb.-Oct.	Kawakawa, Skipjack, frigate tuna, YF, BE
6	Ho Chi Minh City	Gillnet	South Con Dao island	Jan.-Dec.	Skipjack, BE, YF, kawakawa
		Purse seine	Southeast	Jan.-Dec.	Seads, mackerels, small tunas
7	Ba Ria – Vung Tau	Gillnet	Offshore southeast, Southeast Con Son, Southwest	Jan.-Dec.	Kawakawa, Skipjack, frigate tuna, YF, BE
		Purse seine	Offshore, South-east Con Son, South-Western	Jan.-Dec.	Kawakawa, Skipjack, frigate tuna, YF, BE
8	Tien Giang	Purse seine	Offshore southeast	Jan.-Dec.	Frigate tuna, bullet

Rank	Province	Fisheries	Fishing ground	Fishing time	Target species
9	Ben Tre	Purse seine	Offshore southeast	Jan.-Dec.	Long tail tuna, kawakawa, Skipjack
		Gillnet	Offshore southeast	Jan.-Dec.	Long tail tuna, kawakawa, Skipjack
10	Soc Trang	Purse seine	Offshore southeast, Con Dao island	Jan.-Dec.	Longtail tuna, kawakawa
11	Ca Mau	Purse seine	Southeast, gulf of Thailand	Jan.-Dec.	Kawakawa, longtail
12	Kien Giang	Gillnet	Offshore southeast and southwest	Jan.-Dec.	Kawakawa, longtail tuna
		Purse seine	Offshore southeast and southwest	Jan.-Dec.	Kawakawa, long tail tuna

Total annually neritic tuna catches by gear types, rough estimated based on case study in 2012

Rank	Province	Gillnet Total catch (MT)	Purse seine Total Catch (MT)	Gillnet neritic (tuna catch) (MT)	Purse seine total neritic catch (MT)
1	Ba Ria – Vũng Tàu	15,552	32,141	4,977	6,428
2	Ben Tre		15,926	-	3,185
3	Binh Thuan	3,130	30,618	1,002	6,124
4	Ca Mau		19,440	-	3,888
5	Da Nang	1,721	4,896	551	979
6	Kien Giang	42,210	72,545	13,507	14,509
7	Ninh Thuan	15,473	8,148	4,951	1,630
8	Quang Nam	34	10,729	11	2,146
9	Quang Ngãi	3,528	4,213	1,129	843
10	Soc Trang		2,419	-	484
11	Tien Giang		29,621	-	5,924
12	Ho Chi Minh City	882	504	282	101
	Total:	82,530	231,200	26,410	46,240

III. Tuna processing and trade

Source: VASEP (2013)

Market	Exported value (mill. USD)	Proportion (%)	Growth rate (%)
US	244,734	43	+42
EU	113,831	20	+43
Germany	32,678	5.7	+68
Italy	26,590	4.7	+60
Spain	14,698	3.6	+125
Japan	54,238	9.5	+23
Israel	12,868	2.3	+130
Canada	10,132	1.8	+25
Tunisia	10,116	1.8	+125
Iran	9,099	1.6	-6
S. Korea	7,449	1.3	+1,274
Mexico	6,662	1.2	+342
Others	100,285	17.6	+84
Total	569,406	100	+50

III. Tuna processing and trade

Exported all tuna products in 2012, VASEP (2013);

Tuna Products	Volume (MT)	Value (mill. USD)
Cannery (HS Code16)	75,556	185,112
Other processed tuna products (HS code16)	8,315	29,974
Fresh, freeze, frozen (HS Code 03) (except HS code 0304)	34,914	158,965
HS code 0304 (except surimi)	40,843	195,354
Total	159,628	569,406

II. Fishing operations

3. Catches

- No catch statistics for neritic tuna, normally all tunas are considered as one tuna category or commercial group "tuna";
- Port sampling is inconsistent in spatial and time, nor in data collection protocol;
- Rough estimate done by the WCPFC experts, annual catch of neritic tuna catch in Vietnam around 40,000 MT (no survey conducted);
- Rough estimation of neritic tuna catches based on information from the case study carried out in 2012 was about 72,650 MT; in which gillnet accounted for 26,400 MT, purse seine accounted for 46,200 MT;
- This study did not cover Binh Dinh, Phu Yen, Khanh Hoa (under WPEA project) and some provinces possibly have some neritic tuna fishing fleets (Thanh Hoa, Quang Binh, Quang Tri, Thue Thien Hue).

III. Tuna processing and trade

- Tuna markets and products... (VASEP, 2013);



Year	No of markets imported tuna products from VN
2008	82
2009	94
2010	92
2011	96
2012	96

III. Tuna processing and trade

Growth in all tunas exported (VASEP 2013)

Year	Volume (MT)	Value (mill. USD)	Proportion in total exported turnover (%)
2008	52,818	188,694	4.2%
2009	55,814	180,906	4.3%
2010	83,863	293,119	5.8%
2011	107,807*	379,364	6.3%
2012	159,628*	569,406	9.3%

* Data were estimated, insufficient information from Custom Office.

III. Tuna processing and trade

- There are no detailed information of exported volume and turnover by species;
- However, mainly oceanic tunas (YF, BE for sashimi and skipjack for cannery);
- Two main categories as fresh, freeze and frozen tunas (HS 03) and processed tuna products (HS 16);
 - + HS 03: 354 mill. USD;
 - + HS 16: 215 mill. USD;
- Estimates of imported all tunas in 2012: about 103,700 MT, equaled to 188,5 mill. USD (described as the following table);

III. Tuna processing and trade

Year	Tuna Imported Volume (MT)	Tuna Imported Value (mill.USD)
2008	37,234	81.717
2009	42,653	66.193
2010	52,217	94.908
2011	67,329	122.377
2012	103,762	188.536

IV. Fisheries management measures and issues

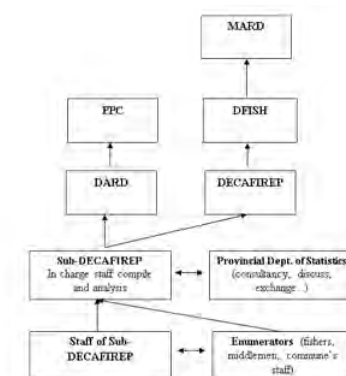
- Overfishing capacity;
- Mostly, fisheries resources are being overfished;
- Logbook applied but poor coverage and unreliable information received;
- Port sampling (ALMRV, 1996 to 2005), uncontinuous after project ended;
- On boat observers not implemented as routine works;
- Database is not updated;
- "Top down" approach in data collection;
- Stock assessments with high variation and uncertainty;

V. Recommendations

- Need to collect data, gather information as routine tasks;
- Promote port sampling and biological sampling for better fish stock assessments and monitoring purposes;
- Strengthening the collaboration between countries in stock assessment, data collection and experiences shared in relevant areas;
- A handbook of data collection for neritic tunas can be developed by SEAFDEC;
- Pilot study for data collection, stock assessment for neritic tunas should be implemented;
- Empower FAs in neritic tuna fisheries in each member country via training, workshop, study tour etc;

IV. Fisheries management measures and issues

- Lack of specific legal framework for tuna fisheries management;
- Weak and poor essential resources, minor role/power and involvement of FAs;
- VMS, under MOVIMAR project, 3000 units of offshore fishing vessels installed VMS, not all fishers comply and willingly to use;
- Poor handling practices and high proportion of post harvest lost;
- Poor infrastructure for fishery;
- Middlemen play an important role and take the most benefit while fishermen normally fishing with loss or marginal benefit;
- Weak enforcement of current regulations;
- IUU fishing increased;



Current data collection flow in tuna fisheries in VN

V. Recommendations

- SEAFDEC and member countries should convene training activities, workshops for promotion of good practices in fishing operation, post harvest handling and management;
- SEAFDEC should provide training cum workshops, training on safety at sea for neritic tuna fishing vessels in the member countries;
- Annual meeting on tuna fisheries management should be alternatively organized in member countries;
- A common database for neritic tuna fisheries should be developed which is user friendly and easily synchronized;
- A task force of neritic tuna must be formulated in each member country;
- A network of neritic tuna fishery managers in the region should be established;

Sustainable and Conservation of neritic Tuna Fisheries: Sharing Experience from IOTC

Samsudin bin Basir

Senior Research Officer, Fisheries Research Institute Kg Aceh, Department of Fisheries Malaysia, Kompleks Perikanan Kg Aceh, 32000 Sitiawan, Perak, Malaysia

“SUSTAINABLE AND CONSERVATION OF NERITIC TUNA FISHERIES: SHARING EXPERIENCE FROM IOTC.”

SAMSUDIN BASIR
DEPARTMENT OF FISHERIES
MALAYSIA

INTRODUCTION:
THE ESTABLISHMENT OF IOTC

- Under FAO, but full functional and financial autonomy:
 - FAO does not make any contributions to the budget
 - FAO has no say in the decisions of the IOTC Members
 - FAO has no technical contribution
 - The link with FAO prevents possible memberships with Taiwan
- Secretariat - Seychelles in 1998
 - Facilitates the exchange of information between Members
 - Facilitates the scientific process
 - Organizes meetings
 - Research activities and improve statistics;
 - Stock assessment research and training

OBJECTIVES OF IOTC...

From the IOTC Agreement (Article V.1):

The Commission shall promote cooperation amongst its Members with a view to ensuring, through appropriate management, the conservation and optimum utilization of stocks covered by this Agreement and encouraging sustainable development of fisheries based on such stocks.

And in Article V.2.d:

- to adopt, in accordance with Article IX and on the basis of scientific evidence, conservation and management measures, to ensure the conservation of the stocks covered by this Agreement and to promote the objective of their optimum utilization throughout the Area;

But, what is optimum utilization?

THE VARIOUS INTERPRETATIONS OF OPTIMUM UTILIZATION

- MSY = Maximum Sustainable Yield**
 - Biological focus on maximizing catch
 - But ignores economic considerations
 - Heavily criticized for more than 35 years
- MEY = Maximum Economic Yield**
 - Focus on maximizing sustainable revenue
 - Incorporates a simple function of cost
 - Lower than MSY, depending on cost structure
 - But leaves out questions of distribution of the sustainable revenues

THE VARIOUS INTERPRETATIONS OF OPTIMUM UTILIZATION: OTHER OBJECTIVES

- Stability in catches
 - Aids in long-term planning, but at expense of lower revenue
- Maximizing total revenue for the economy
 - Considers secondary revenues from fleet activity
- Maintaining high degree of employment in the fisheries sector
 - Favoring sustainable production from the resource
- Maximizing distribution of the rent amongst coastal communities
 - Ensuring sufficient supply of fish for coastal communities
- Ensuring food security

IOTC is one of five tuna RFMOs

- Promote conservation and optimum utilization of tuna stocks
- Promote sustainable development of fisheries

Current Members of IOTC

- | | | |
|---------------|-----------------|-------------------------------|
| •• Australia | •• Maldives | <u>Cooperating Countries:</u> |
| •• Belize | •• Malaysia | |
| •• China | •• Mauritius | • South Africa |
| •• Comoros | •• Oman | • Senegal |
| •• Eritrea | •• Pakistan | |
| •• EC | •• Philippines | |
| •• France | •• Seychelles | |
| •• Guinea | •• Sierra Leone | |
| •• Iran | •• Sri Lanka | |
| •• India | •• Sudan | |
| •• Indonesia | •• Tanzania | |
| •• Japan | •• Thailand | |
| •• Kenya | •• UK | |
| •• Korea | •• Vanuatu | |
| •• Madagascar | •• Mozambique | |

The structure of IOTC



THE IOTC PROCESS

•• I : generating advice based on best available science

- Information centralized and prepared at the Secretariat
- Scientists as individuals gathered at Working Parties to conduct stock assessment and review analyses of the data
- Working Parties issue recommendation to the Scientific Committee
- Scientific Committee (with representatives of countries) review every report from each Working Party
- Scientific Committee issues management advice to the Commission about the status of the stocks
- Scientific Committee also addresses questions from the Commission on technical matters

THE IOTC PROCESS

•• II : The decision making process

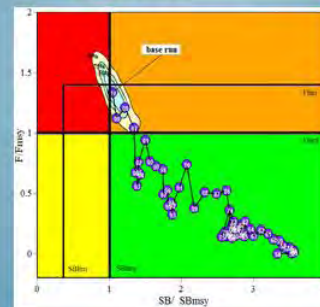
- Report of the Scientific Committee is circulated to all members, who initiate a period of internal consultation with their scientists
- Recommendations are considered and translated, when necessary, to proposals for conservation and management measures
- Briefings are prepared by national administration, following internal consultation with various stakeholders, to define the position of the delegations on various matters
- Necessity for action on other areas (e.g. Compliance, combat of IUU fishing) are also included in the briefings consolidating the position of the national delegations
- At the Annual Session, matters are raised and negotiated seeking, when possible, consensus in the action
- Binding resolutions are adopted at the end of the Session

THE IOTC PROCESS

□ III : implementation and compliance

- Delegation to briefs higher authorities on the outcomes.
- The need for changes in the domestic legislation arising from any agreed measure is evaluated, and action is taken to modify legislation as necessary
- Contacts are established with other agencies and institutions that could be responsible for implementation of some of the actions (e.g. Port Authority, provincial authorities)
- Meeting with stakeholders are scheduled to brief them on the outcomes of the Commission Session and their consequences at the domestic level
- Monitoring and reporting of activities to the Secretariat proceeds inter-sessionally according to the agreed schedule of reporting

The Kobe plot: a simple way to look at stock status



NERITIC TUNA RESOURCES

- Distribution map of neritic tuna (fishbase)
- Most aggregate in the ASIAN region.
- Shared by all the SEAFDEC Member countries.
- Management based on regional cooperation and shared responsibility.
- RFMO for neritic tuna management.



WORKING PARTY ON NERITIC TUNA

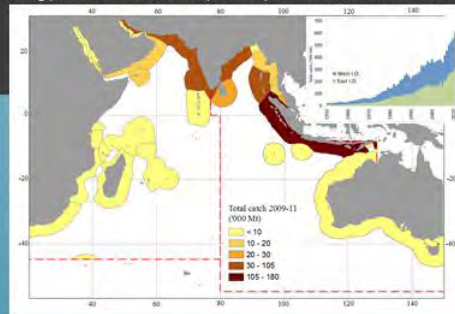
- OBJECTIVE:
 - To review and analyze the neritic tuna statistic data from all member countries

WORKING PARTY	YEAR	DATE	PLACE
WPNT01	2011	14-16 NOV 2011	CHENNAI, INDIA
WPNT02	2012	19-21 NOV 2012	PENANG, MALAYSIA
WPNT03	2013	2-5 JUL 2013	BALI, INDONESIA

- NERITIC TUNA UNDER IOTC MANAGEMENT
 - Longtail (*Thunnus tonggol*)
 - Kawakawa (*Euthynnus affinis*)
 - Frigate (*Auxis thazard*)
 - Bullet (*Auxis rochei*)
 - Narrow-banded Spanish Mackerel (*S. commerson*)
 - Indo Pacific King Mackerel (*S. guttatus*)

ALL IOTC NERITIC SPECIES: DISTRIBUTION OF TOTAL CATCH

- The total catch of neritic species are generally split equally between the east and west Indian Ocean – although, there are differences in the species composition associated with each area.



SUMMARY OF NERITIC TUNA STOCKS BY SPECIES BASED ON THE WPNT03 REPORT

Stock	INDICATORS	ADVICE
Bullet tuna <i>Auxis rochei</i>	Catch 2011 Av. Catch 2007-2011 MSY	8,547 t 7,763 t Unknown
Frigate tuna <i>Auxis thazard</i>	Catch 2011 Av. Catch 2007-2011 MSY	102,194 t 91,155 t Unknown
Kawakawa <i>Euthynnus affinis</i>	Catch 2011 Av. Catch 2007-2011 MSY	145,001 t 130,758 t 126,000-132,000
Longtail <i>Thunnus tonggol</i>	Catch 2011 Av. Catch 2007-2011 MSY	164,537 t 121,061 t 110,000-123,000

CURRENT CONSERVATION AND MANAGEMENT MEASURES RELATING TO NERITIC TUNA AND TUNA-LIKE SPECIES

- Resolution 10/02: mandatory statistical requirements for IOTC Members and Cooperating non-Contracting Parties (CPCs). This resolution sets out mandatory minimum requirements for the annual submission of fisheries statistics to the IOTC Secretariat. This resolution applies to all tuna and tuna-like species.
- Resolution 10/03: concerning the recording of catch by fishing vessels in the IOTC area. This resolution sets out minimum logbook requirements for all purse-seine vessels 24 metres length overall or greater and those under 24 metres if they fish outside the EEZs of their flag States.

CURRENT CCM cont

- Resolution 10/07: concerning a record of licensed foreign vessels fishing for tunas and swordfish in the IOTC area. This resolution makes provisions for a mandatory annual submission to the IOTC Secretariat of a list of all licensed foreign flag vessels by all CPCs which issue fishing licenses to foreign flag vessels to fish for tunas and swordfish in the portion of their EEZ that falls within the IOTC Area of Competence.
- Resolution 10/08: concerning a record of active vessels fishing for tunas and swordfish in the IOTC area. This resolution makes provision for a mandatory annual submission by all CPCs to the IOTC Secretariat of a list of their respective vessels fishing for tunas and swordfish in the IOTC area that were active during the previous year. The resolution applies to vessel larger than 24 metres in length overall or vessel under 24 metres fishing outside the EEZ of their flag State.

RESEARCH PRIORITY 2013-2014

Table 1. Priority research projects for obtaining the information necessary to develop stock status indicators for neritic tuna species in the Indian Ocean

Research project	Sub-projects	Priority
Stock structure (connectivity)	Genetic research to determine the connectivity of neritic tunas throughout their distributions	High
	Tagging research to better understand the movement dynamics, possible spawning locations, natural mortality, fishing mortality and post-release mortality of neritic tunas from various fisheries in the Indian Ocean.	Med
	Gen-Tag methodology	Med
	Otolith microchemical isotope research	Low
Biological information (parameters for stock assessment)	Age and growth research	High
	Age-at-Maturity	High
	Fecundity-at-age/length relationships	Medium
Ecological information	Review of literature on life history parameters to assess stock structure on an oceanic data	High
	Feeding ecology	Low
	Life history research	Low
CPUE standardisation	Develop standardised CPUE series for each neritic tuna species for the Indian Ocean	High

MAIN ISSUES RELATING TO STATISTICS OF NERITIC TUNAS

Issues which the IOTC Secretariat considers affect the quality of the statistics available at the IOTC, by type of dataset and type of fishery.

- Catch-and-Effort data from Coastal Fisheries:
- Size data from All Fisheries:

– Biological data for all tropical tuna species:

- There is a generalised lack of biological data for most neritic tuna species, in particular the basic data that would be used to establish length-weight-age keys, non-standard measurements-for length keys and processed weight-live weight keys for these species

ISSUES TO DISCUSS

- Possible adaption of the same process
- Part of the Action Plan Framework – others include issues on trade and marketing
- Apply to all issues of concern in fisheries resources for ASEAN countries

FISHERIES MANAGEMENT

- *The integrated process of information gathering, analysis, planning, consultation, decision-making, allocation of resources and formulation and implementation, with enforcement as necessary, of regulations or rules which govern fisheries activities in order to ensure the continued productivity of the resources and the accomplishment of other fisheries objectives.*

Framework of Joint Research Program on Tuna Resources in Sulu-Sulawesi Sea

Penchan Laongmanee

Head of Fishing Ground and Fishery Oceanography Section, SEAFDEC Training Department, Samut Prakan, Thailand

Framework of “Joint Research Program on Tuna Resources in Sulu-Sulawesi Sea”



Agenda 4: Sulu-Sulawesi Sea

Background

- Requested SEAFDEC to develop a mechanism to facilitate the conduct of joint-survey in SSS;
- The framework was finalized at the Sub-Regional Technical Meeting held on 20 to 21 August 2013 in Kuala Lumpur, Malaysia supported by JTF program for SEAFDEC

Background

- Recognizing the significant contribution of tuna fisheries to food security in the Southeast Asian region;
- 44th Meeting of SEAFDEC Council in April 2012, Council Directors for the Philippines, Malaysia and Indonesia agreed in principle to collaborate in the conduct of a joint research on the maximum sustainable yield of tuna catch in the Sulu-Sulawesi Sea.;



Joint Research Program on Tuna Resources in SSS

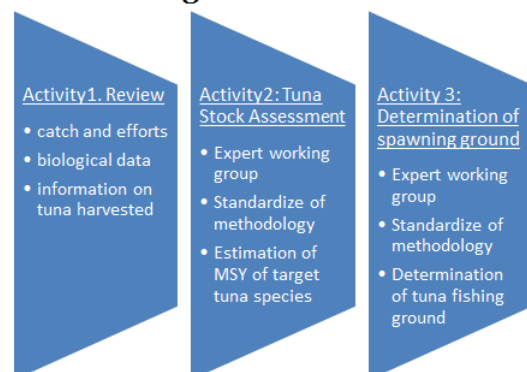
overall goal

to provide updated scientific findings on the status and trends of Yellowfin, Bigeye, and Skipjack tunas in the Sulu-Sulawesi Sea.

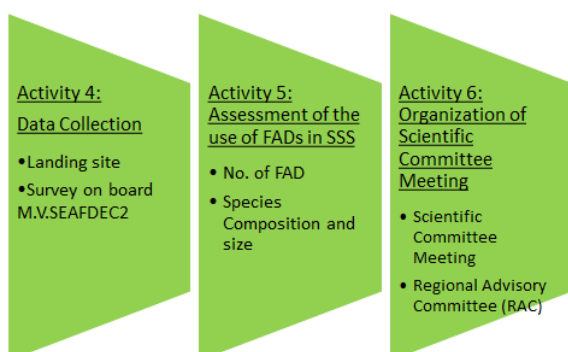
Areas of Cooperation



Program Activities



Program Activities



Responsibility--Participating Countries

- Co-finance the use of the M.V. SEAFDEC 2 under the Cost-Sharing Policy of SEAFDEC
- Designate technical staff to participate in relevant cruise of the M.V. SEAFDEC 2 and undertake the first level data analysis
- Should all travel costs of country experts joining the Working Group meetings
- Participate in the sub-regional working group in analyzing the specific issues such as stock assessment and determination of the spawning grounds

Workplan-1st year (2013)

- 1st Working Group Meeting to finalize the Collaborative Research Work Plan: set standardized methodology for the collaborative program
- Finalize the Collaborative Research Work Plan
- Secure financial support from the respective national governments

Responsibility--Participating Countries

- Identify and nominate the Country Expert(s) responsible for Regional Tuna Stock Assessment and Larval Fish Identification in the SSS
- Collect catch and effort data from landing sites and undertake the first level data analysis
- Share information/data on the findings from the survey for regional analysis through the Working Group Meeting

Responsibility--SEAFDEC /SEC,TD,MFRDMD

- Develop the overall work plan in consultation with participating countries
- Provide platform for the sub-regional Scientific Committee Meeting to discuss the findings from the Collaborative Research Program
- Invite regional expert (s) to support the sub-regional analysis of the program
- Develop and disseminate information and educational campaign (IEC) materials

Workplan-2nd year (2014)

- Working Group Meetings: for sub-regional analysis
- Review/collect data/information from landing sites and/or observers program
- 1st Collaborative Survey using the M.V. SEAFDEC 2 (Mid October until November) post SW monsoon
- First data analysis at country level

Workplan-3rd year (2015)

- 2nd Collaborative Survey using the M.V. SEAFDEC 2 (March to May) pre- SW monsoon.
- Working Group Meetings: for sub-regional analysis
- Develop working papers
- Sub-regional Scientific Committee Meeting on findings from the Collaborative Research Program in the SSS

Sub-regional Working Group and Lead Countries -Stock Assessment

SR-Working Group	Lead Country/ Chief Scientist	SRWG Members/Country
Bigeye tuna	Philippines: <Mr. Noel Barut>	1. Mudjekeewis Santos (P) 2. Ronnie Romero (P) 3. Ellaine Garvilles (P) 4. Sallehuddin Jamon (M) 5. Anung Widodo (I)
Yellow fin tuna	Indonesia < Dr. Fayakun Satria>	1. Richard Rumpet (M) 2. Lilis Sadiyah Dr (I) 3. Mudjekeewis Santos (P) 4. Ronnie Romero (P) 5. Ellaine Garvilles (P)
Skipjack	Malaysia <Mr. Samsudin Basir>	1. Jamil Musel (M) 2. Khairul Amri Dr. (I) 3. Mudjekeewis Santos (P) 4. Ronnie Romero (P) 5. Ellaine Garvilles (P)

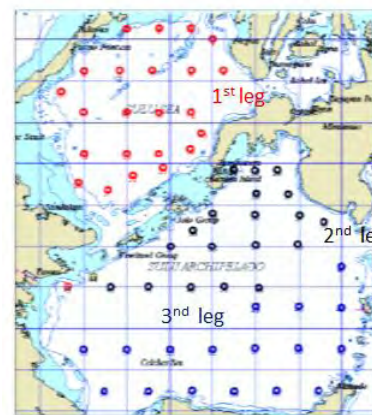
Sub-regional Working Group and Lead Countries

SR-Working Group	Lead Country/ Chief Scientist	SRWG Members/Country
Genetic Study	BFAR, Philippines	Dr. Mudjekeewis Santos
Oceanographic Data	TD	Penchan Laongmanee
Hydro-Acoustic and sonar data	MFRDMD	Mr. Raja Bidin Raja Hassan



Sub-regional Working Group and Lead Countries

SR-Working Group	Lead Country/ Chief Scientist	SRWG Members/Country
Tuna Spawning Grounds Study	DOF/ Malaysia <Mr. Zulkifli Talib>	1. Rosdi Md. Nor (M) 2. Renny Puspasari Dr (I) 3. Alma C. Dickson (P) 4. Rafael Ramiscal (P) 5. Rhoda Bacordo (P) 6. Valeriano Borja (P)
FADs for Tuna Fisheries Study	Philippines <Dr. Jonathan Dickson>	1. Alma C. Dickson (P) 2. Rafael Ramiscal (P) 3. Joeren Yleana (P) 4. Lawrence Kissol (M) 5. Mahiswara (I) 6. Raja Bidin Raja Hassan (M)



Tentative Cruise Plan of M.V. SEAFDEC 2 in Sulu-Sulawesi Seas

Annex 17

Tuna Management in Thai Waters

Praulai Nootmorn

Director of the Fisheries Research and Development Bureau, Department of Fisheries, Kaset-Klang, Chatuchak, Bangkok 10900, Thailand



Awareness the important of tuna resources

- 1. Technical paper studied
 - Size distribution and length-weight relationship of neritic tuna in the Gulf of Thailand (Hiran, 1981)
 - Study on reproductive and spawning season of neritic tuna in the Gulf of Thailand (1984)
 - Neritic tuna fishery from purse seine with fish aggregating devices and sonar in the Gulf of Thailand (1998)
 - Status of Indo-Pacific mackerel and neritic tuna in the Andaman Sea (1998)
 - Reproductive biology of neritic tuna in the southern part of Gulf of Thailand (1997)
 - Status and assessment of small pelagic fish in the Gulf of Thailand (1997)
 - Neritic tuna fishery in Myanmar water (2007)
 - Project “Nertic Tuna Resources in Thai Waters” 2012-2015



Awareness the important of tuna resources

2. Fisheries Statistic of Thailand
 - Classified neritic tuna as a important pelagic fish. To record and report in Fisheries Statistic of Thailand annually
3. Monitor the utilization
 - MFRB and Information Technological Center assigned to the monitoring of purse seine fisheries monthly. To monitor the catch of small pelagic fish, particularly neritic tuna is main species



Monitoring, Control, and Surveillance; MCS

- Notification of Ministry of Agriculture and Cooperatives
 - Notification of Area and Seasonal closed in the Gulf of Thailand on 24 January 2007
 - Notification of Area and Seasonal closed in the Phang-nga Bay on 24 October 2008
 - Notification of Prohibited the mesh size of purse seine less than 2.5 cm operated in the night time on 14 November 1991
 - Provision of Fishing Right in Myanmar water: not allowed mesh size of purse seine less than 4 cm operated



Action plan of the sustainable management of Tonggol

- Objective
 - For management and administrative of sustainable resource of Tonggol: the expect the outcome from 5 goals and 21 activities

 1. To support the development of the management decision making process (4 activities)
 2. To strengthen the capacity and efficiency of development fisheries activities (5 activities)
 3. To develop and promote responsible and sustainable fisheries practices (7 activities)
 4. To establish ecosystem and fishing ground rehabilitation to safeguard biodiversity and marine environmental quality (3 activities)
 5. To implement a monitoring and evaluation system



The activity is divided into three periods

- A: Short term, action plan during 1-2 years
1. Establishment of the Advisory Board and to contribute shared holistic management
 2. Risk assessment of Tonggol fisheries
 3. Prepare the action plan for sustainable utilization of Tonggol
 4. Training to build capacity and awareness for the fisher community and tuna entrepreneurs.
 5. To information and display the appropriate information with management system.
 6. Collaboration of researchers from various organization with notable works such as Malaysia, Indonesia, Vietnam, Myanmar and India.



The activity is divided into three periods

B: medium-term, action plan 3-5 years

1. Established local fisher/ purse seine fisher groups each coastal provinces.
2. Strengthen capacity building of fisher to participation on neritic tuna management and assessment resources.
3. Set up the goals and criteria for the utilization of neritic tuna resources. All stakeholders should agreed for ecological, economic, social.
4. Develop fishing technology of neritic tuna that can be used appropriately



The activity is divided into three periods

C: long-term, action plan for >5 years

1. The clear on neritic tuna resources management policy, such as the conservation zone, measures to limit fishing in the nation and regional



Standard rules for neritic tuna fishing

1. Need to be registered tuna fishing vessel and installed Vessel Monitoring System (VMS).
2. Fisher should be a member of the local fisher association/ international organization
3. Good practice followed illegal unreported and unregulated (IUU) fishing measures
4. Stipulation for neritic tuna utilization on a minimum size for processing must larger than the first size at mature

Annex 18

A Long Term Future for Longtail Tuna – A Private Sector Initiative

Narin Niruttinanon

General Manager, 979/13-16, M Floor, SM Tower, Phaholyothin Road, Samsennoi, Phayathai, Bangkok 10400, Thailand


A long term future for longtail tuna – a private sector initiative

Mr Narin Niruttinanon
SEAFDEC Neritic Tuna Meeting
Songkla, 8-10 October 2013



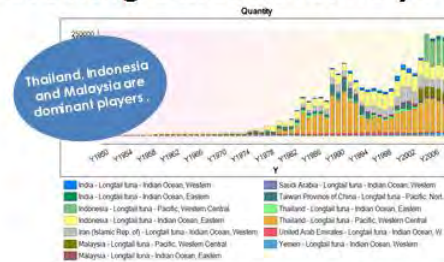
Outline

- Background to the project – who is involved and why
- General principles that guide us
- Achievements and activities to date
- Looking ahead – expanding our horizon
- Can you help our work?




An important species in Asia for local consumption, business and export

Growing catches for 40 years



But, growing concern over the consequences of these catches

Abba – tuna history



- Orkla Foods Sweden (Abba Seafood) – a buyer of tonggol from Thai packers, for 30 years.
- Abba is the only premium tuna brand in Sweden.
- Tonggol provides uniqueness.
- Tonggol is appreciated, as premium tuna in Scandinavia, and it is good business for Orkla.



Orkla Foods Sweden

- 1400 employees
- Annual turnover: 700 million USD
- One out of nine production plants in Kungshamn
- Seafood production – marinated herring, anchovy, cod roe spread, canned fish balls, sauces
- Importer - canned tuna, mussels, sardines



Abba product categories



Pickled herring

Anchovy

Canned fish balls

Smoked cod roe spread

Canned Tuna

Caviar

Commitment to responsible sourcing

Abba has a corporate commitment to care for the ocean environment

- information on status of stocks and good fishery management necessary for all species sold



The idea of the tonggol project

- Ensuring tonggol for the future will help ensure a viable business for the future! Commercially important species for Abba brand.
- We believe collaboration through the value chain is the best way forward to make a change.
- We hope to assist government in building up new knowledge, valuable in order to have robust management.
- Comanagement gives good opportunities for collaboration. Available information to be used or new information to be gathered within the stakeholders.



The formation of the tonggol project

- Lack of information (no stock biomass, no management plans etc.) gave tonggol an internal red light....
- Since 2008 repeated inquiries regarding status and management of tonggol in Thailand to our suppliers, Dept of Fisheries, Seafood, FAO and NGOs.
- Formation of a partnership with Sustainable Fisheries Partnerships (SFP).
- Partial funding of a one-year project from Sida, the Swedish International Development Agency.



Maria Åberg, Abba Seafood

Monterey Bay Aquarium Seafood Watch

SEAFOOD	RATING	MARKET NAMES	WHERE CAUGHT	HOW CAUGHT
Tuna, Tonggol	AVOID	Light Tuna	Worldwide	Gillnet, Purse Seine

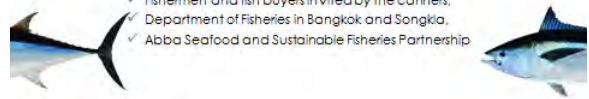
Most tonggol tuna is ranked as "Avoid" due to high levels of bycatch and poor enforcement of fisheries regulations.



Maria Åberg, Abba Seafood

Project activities to date (2011-2013):

- Establishment and regular meetings of local (Thai) stakeholder committee. Meetings in Hat Yai and Bangkok. Included are:
 - Chairman: Dr. Sir Ekmarahaj, former SG at the local research provider SEAFDEC
 - Thai Union Manufacturing,
 - Songkla Canning Company,
 - Tropical Canning,
 - Chatiwat Manufacturing,
 - Sea Value,
 - Siam International Food Company
 - Thai Food Processing Association (TFPA),
 - Fishermen and fish buyers invited by the canneries,
 - Department of Fisheries in Bangkok and Songkla,
 - Abba Seafood and Sustainable Fisheries Partnership



Project activities to date (2011-2012):

- Commissioning of a fishery sustainability assessment to document information and identify improvement needs.
- Based on the assessment a draft Fishery Management Plan was drafted together with stakeholders. The plan has been sent to the government.
- Meetings with government officials, in Thailand, Malaysia and Indonesia, with Research Institutes (Seafood), projects and FAO to discuss and seek regional involvement and collaboration.



Project activities to date (2011-2012):

- DNA sampling of tonggol from different parts of the South China Sea in order to gain better understanding of whether it is one or several different tonggol stocks.
- Increased private sector involvement- new Thai canneries, the Thai Food Processing Association and Valcorp (Australian importer) has joined the stakeholder committee during 2012.



Looking ahead (2013-2016)

- **Successfully secured 3 year funding commitment from the Swedish International Development Agency (SIDA).**

- ✓ A public-private partnership with private sector funding commitments.
- ✓ Cash contributions from some companies and interest is growing.

- **Key aspects are:**

- ✓ Expansion of the geographic scope from Thailand to neighboring countries.
- ✓ Inclusion of some social issues such as labour conditions on vessels
- ✓ Formal involvement of Seafdec and the Swedish Marine and Water Management, HaV.



Looking ahead (2013-2016)

- **Many of the core components of our work remain:**

- ✓ Improving knowledge of tonggol stocks (number, distribution and status),
- ✓ working with government to develop and implement the management plan,
- ✓ improving capacity to engage in the management process.

- **New funding enables us to:**

- ✓ Expand our engagement with the fishing sector,
- ✓ work directly with fishermen and vessels captains/owners.

- **Regional engagement:**

- ✓ Will be conducted slowly and carefully,
- ✓ aim to encourage a collaborative approach to understanding tonggol amongst nations so that management can benefit all

Good fisheries management equals good business

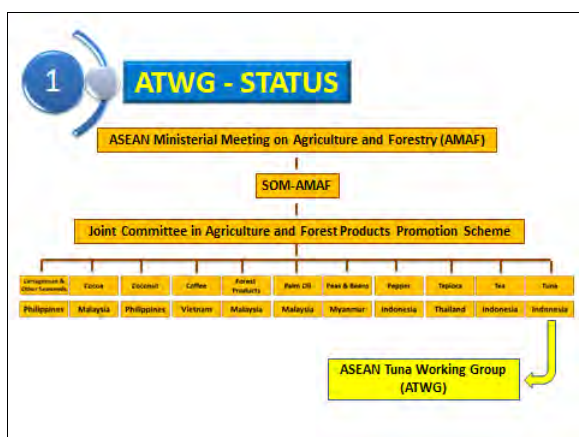
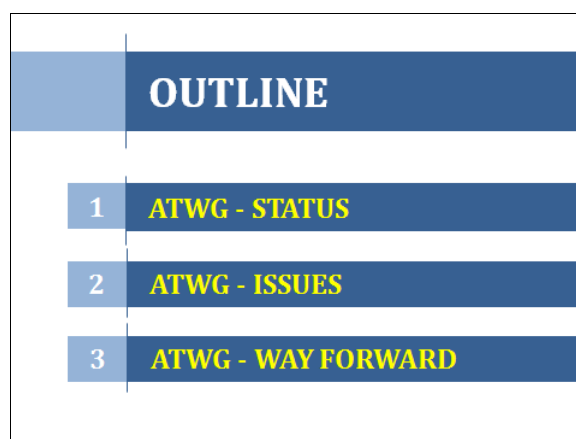
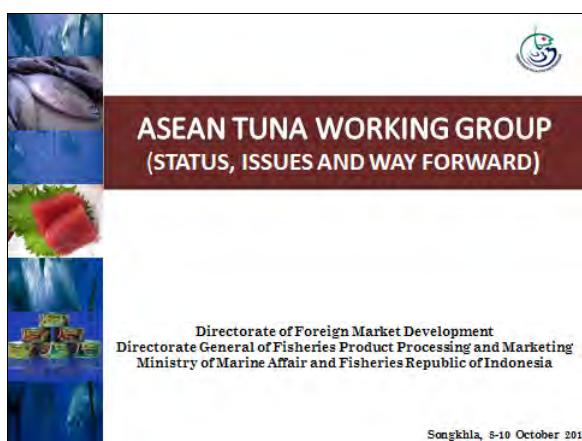
- Ensure future business - by supporting healthy fisheries for the future.
- Committed to work with partners and stakeholders - to ensure that good resource management benefits all parties.
- Positive media attention
- **We need your assistance and collaboration**



ASEAN Tuna Working Group (Status, Issues and Way Forward)

Machmud

Deputy Director, Foreign Market Information and Analysis, Directorate of Foreign Market Development, Directorate General of Fish Product Processing and Marketing, MMAF Republic of Indonesia, Jl Medan Merdeka Timur No.16 Gedung Mina Bahari III, 13th Floor, Jakarta, Indonesia



1. The Objectives:

- Strengthen the collective bargaining position of Asean tuna products in international market (increasing competitiveness) through product diversification, value added products, upgrading the quality and food safety
- Develop intra-trade of tuna products in ASEAN
- Enhancement of ASEAN cooperation and joint approach in international and regional issues
- Enhancement of public and private partnership in the tuna sector
- Encourage sustainable management of tuna fisheries

2. ATWG meetings were held 4 times:

- The 1st meeting: 25-26 May 2011 in Jakarta, Indonesia
- The 2nd meeting : 31 May – 2 June 2012 in Yogyakarta, Indonesia
- The 3rd meeting: 28-30 August 2012 in Nha Trang , Vietnam
- The 4th meeting: 19-21 June 2013 in Bangkok, Thailand

The 5th meeting will be conducted on June 2014, and be proposed Malaysia as the host

3. The results of the first meeting:

- To set-up Strategic Plan of Action (SPA) of ASEAN Cooperation in Agriculture and Forest Products Promotion Scheme 2011 – 2014 for Tuna Products including 5 Strategic Thrust:
 - Joint Product Promotion in International Market
 - Enhancement of Competitiveness of Tuna Product
 - Enhancement of Intra-ASEAN Trade
 - Enhancement of ASEAN Cooperation and Joint approach in International and Regional
 - Enhancement of Private Sector Involvement



continued

4. The results of the 2nd meeting :

- a. Implementation of Strategic Thrust 3: Introduction of Concept of ASEAN Tuna Ecolabelling and ASEAN Task Force on Tuna Fisheries (Indonesia Initiatives)
- b. ASEAN Tuna Working Group was suggested to coordinate and collaborate with the other regional initiatives related to tuna fisheries industry such as BIMP-EAGA, IMT-GT, and also Coral Triangle Initiatives

continued

5. The results of the 3rd meeting :

- a. The concern of data on Oceanic and Neritic Tuna resources in the ASEAN region in which needed to be improved to support the SPA Implementation of ATWG
- b. SEAFDEC was requested to actively involved in SPA implementation by providing technical assistance in stock assessment and capacity building
- c. Acceptance of Concept of ASEAN Tuna Ecolabelling and ASEAN Task Force on Tuna Fisheries

Both proposals have been shared in the ASEAN-SEAFDEC Strategic Partnership Fisheries Consultative Group (ASSP-FCG) Meeting on November 2012 in Chiang Mai, Thailand and these had already reported at 19th (Kuala Lumpur, Malaysia) and 20th (Puerto Princessa, Philippines) Meeting of Joint Committee on Agricultural and Forestry Products Promotion Scheme



continued

5. The results of the 4th meeting :

- a. Review the progress report of each strategic thrust and way forward in implementation of SPA for ATWG
- b. Promoting sustainable tuna fisheries management in Southeast Asian waters through regional cooperation that pointed out how important of tuna resources including both oceanic and neritic tunas in the EEZ of Southeast Asian region. This leads to the requirements for Regional/Sub-regional Cooperation among relevant tuna ASEAN Countries for managing tuna fisheries.

2 ATWG - ISSUES

1. Sustainable tuna fisheries management in the Southeast Asian waters such as:
 - a. Stock assessment at national and sub-regional areas
 - b. Impacts on environment and biodiversity
 - c. IUU fishing (including destructive fishing)
 - d. Post harvest losses
 - e. Data and information
2. Shortages of raw materials in some ASEAN countries (increasing intra ASEAN trade on tuna products)
3. Diversification products, value added products, the quality and food safety

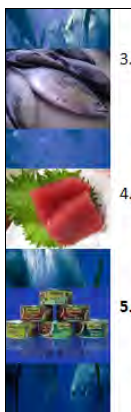


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4. Multi-actors system consists of resources owners, resources harvesters, resources processors, resources consumers - Optimum benefit for all of actors (efficiency, productivity and enhance cooperation between private and public sector)
5. Increasing global demand of tuna products, so be needed a certification of Asean tuna products which are sell in international market in order to enhance the branding products
6. Fisheries subsidies at WTO negotiations, tuna import duty and others (Tariff and Non Tariff Barrier)
7. Human resources/capacity building

3 ATWG - WAY FORWARD

1. Enhancement of regional alliance for combating the global fisheries challenges through strengthening the value of partnership of ASEAN countries with the spirit of ASEAN Economic Community
2. Enhancement intra-regional trade for tuna would be high priority for the future program of the tuna working group in order to share and support those shortages of raw materials in some ASEAN countries



continued

3. Strengthening data and information mechanism related to problems of tuna fisheries that can be shared to all of member countries, including sharing of data and information collection mechanism. These would be fundamental before implementing the policy of the strategic thrust of this working group.
4. Guidance of SEAFDEC Councils for planning and consulting with ASEAN Member Countries and fisheries private sector (including technical support to strengthening Asean Tuna Ecolabeling and other initiatives).
5. **ATWG is our commitment for our mutual benefit. In this purpose, AMS participation in each ATWG meeting is very important, so the presence of AMS will accelerate the common sense to apply those proposals with the same perception.**

The Use of Genetic Study in Fishery Resource Management

Noorul Azliana Jamaludin

Research Officer, Chendering Fishery Garden, 21080 Kuala Terengganu, Terengganu, Malaysia

THE USE OF GENETIC STUDY IN FISHERY RESOURCE MANAGEMENT

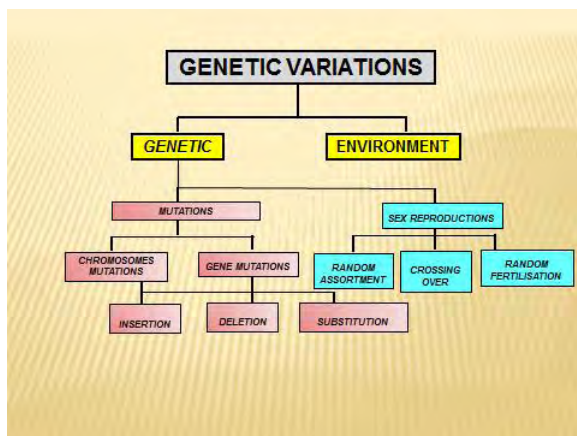
By : Noorul Azliana binti Jamaludin
SEAFDEC/MFRDMD

INTRODUCTION

- ❖ Pelagic fish:
- ❖ high migratory species
- ❖ typically schooling
- ❖ small or large aggregations
- ❖ Geographical closure, ocean circulation and spawning area

↓

complexity of the population structure.



POLYMORPHISM (GENETIC VARIATION)

GENETIC VARIATION IN FISH

DNA marker techniques can be applied to reveal these genetic variations

GENERAL CONCEPT OF STOCK AND POPULATION GENETIC

STOCK

A groups of phenotypically similar individuals whereby morphological and meristic homogeneity due to environment factor (Templeman, 1981).

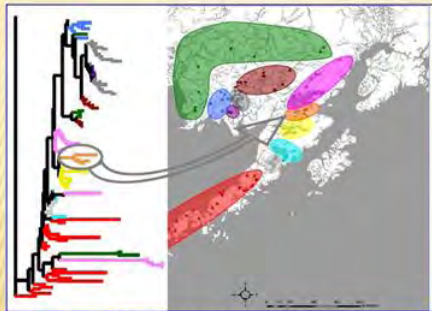
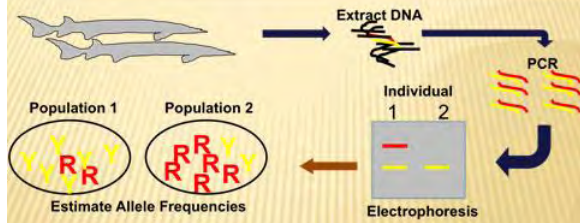
POPULATION GENETIC

Analysis of demographic and evolutionary factors affecting the genetic composition of a population (Hartl, 2000, Ewans, 2001)

WHAT GENETIC CAN DO?

- 1 • Differentiate stock discrimination (single stock/sub population/different stock)
- 2 • Migration pattern
- 3 • Asses individual mixed stock fisheries
- 4 • Evaluate the response of stocks to fishing exploitation

HOW IT WORKS?

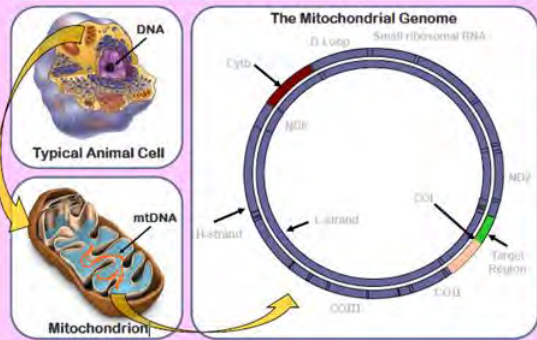


A dendrogram or phylogram shows the genetic relationships among populations are genetically similar, as for example Alagnak River populations (highlighted with arrow).

METHODS USED FOR POPULATION GENETIC STUDY OF FISH (DNA MARKER)

1. Mitochondrial DNA (mtDNA)
 - ❖ control region, cytochrome b, COI, ATP synthase, D loop and others.
 - ❖ Widely applied in systematics, population genetics, inference migration routes and conservation biology of animals.
 - ❖ Cytoplasmic inherited (predominantly maternally transmitted)

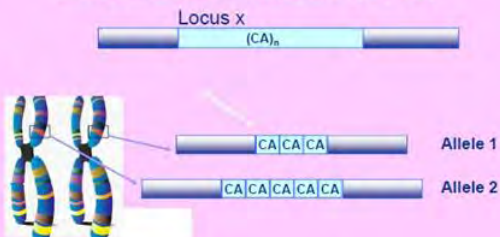
An Internal ID System for All Animals



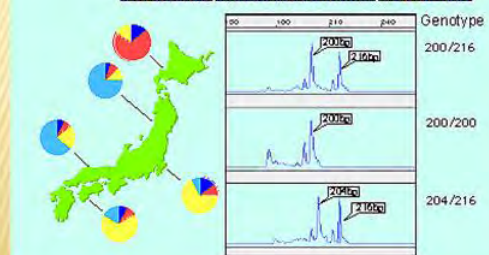
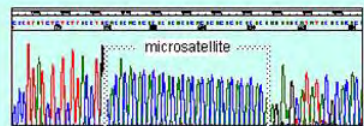
2. Nuclear DNA

- ❖ Random Amplified Polymorphic DNA (RAPD), multilocus fingerprinting, minisatellites and single locus VNTR profiling and microsatellites.
- ❖ **Microsatellites** widely used in stock identification studies
- ❖ 'Short Tandem Repeat (STR)' DNA or 'Simple Sequence Repeat (SSR)'.

Microsatellites Short Tandem Repeats (STRs)



- Alleles differs by the number of bp in the repeat unit
- STR repeat unit can be from 2 to 6 base long



Annex 21

Group A: South China Sea (Indonesia, Malaysia (Sabah, Sarawak), Philippines, Vietnam)

In South China Sea Area countries reported that status of neritic tuna resources still healthy. Except for Malaysia where neritic tuna is bycatch, the other countries indicated that neritic tuna are target species.

Prioritized Issues and Concerns	Management needs	Responsible groups of agencies		Time frame	Remarks
National Level					Required Policy Support from Government
<ul style="list-style-type: none"> Open access fisheries 	<ul style="list-style-type: none"> Fishing capacity/effort (<i>e.g.</i> adopt boat activity coefficient (BAC) data collection for fishing effort estimation) 	<ul style="list-style-type: none"> fisheries agencies of countries, research institutions 		2014-2018	<ul style="list-style-type: none"> Promotion of co-management, Capacity Building, Sustaining budgetary allocation Empowerment of fisheries associations (VN)
<ul style="list-style-type: none"> IUU Fishing/ Transshipment /Double Flagging 	<ul style="list-style-type: none"> Sharing of information (vessel registration, licensing) strengthen/increase MCS system to deter IUU fishing Improvement of licensing, vessel registration, and use of VMS system Strengthening cooperation among agencies involved in law enforcement 	<ul style="list-style-type: none"> fisheries agencies, coast guard, navy, maritime agencies 		2014-2018	<ul style="list-style-type: none"> Promotion of MCS, VMS, observer program Capacity building for fishing port authorities , Sustaining budgetary allocation Strengthening national vessel registration and licensing Improvement of national laws and regulations
<ul style="list-style-type: none"> Insufficient data/information (limited budget and human resources, inadequate legal framework) 	<ul style="list-style-type: none"> Improving the data collection system <i>e.g.</i> biological data/information on spawning and nursery areas /season, migratory routes, etc Improving data collection and compilation system Strengthening cooperation with the private sector cooperation 	<ul style="list-style-type: none"> statistics offices, fisheries agencies, research institutions 		2014-2017	<ul style="list-style-type: none"> Strengthening of biological research on neritic tuna Strengthening cooperation among offices collecting statistics data Strengthening capacity of officers in-charge of statistics data collection and compilation
<ul style="list-style-type: none"> Poor handling 	<ul style="list-style-type: none"> Capacity building 	<ul style="list-style-type: none"> fisheries 		2014-	<ul style="list-style-type: none"> Capacity building

practices on boat and post-harvest losses	for vessel crew/port personnel	agencies, extension offices, research institutions		2018	
• Labor and working conditions	• Develop/adapt guidelines on labor standards for fisheries	• national labor offices, fisheries agencies		2014-2018	• Compilation of lessons and experiences of other countries
• National management	• NPOA- neritic tuna fisheries management	• fisheries agencies		2014-2018	• Promotion of stock assessment activities
• Poor infrastructure (facilities in fishing ports/landing sites)	• Enhanced budget support	• Fisheries agencies, port authorities		2014-2018	
• Unfair benefits allocation (mainly comes to middlemen)	• Development of cooperative small market and auction facilities	• Local government units, local fisheries agencies		2014-2018	
Sub regional	Management needs	Responsible groups or agencies	Lead Countries	Time frame	Required collaborative arrangements and management cooperation
Status and trend of neritic tuna	• Establish neritic tuna working group • SOP on information /stock assessment	SEAFDEC	Philippines	2014-2018	• Policy and budgetary support
Regional Management	• Need for a RPOA Neritic Tuna Fisheries Management	ALL SCS countries in cooperation with SEAFDEC	Indonesia	2014-2018	• Sub-regional arrangements
Trade	• Adopt regional certification to enhance intra-regional trade	ALL SCS countries in cooperation with MFRDMD	Malaysia	2014-2018	• Require harmonized recording of trade data
Resources enhancement	• Promotion and establishment of fishery <i>refugia</i> for neritic tuna	All SCS countries in cooperation with UNEPSEAFDEC Project	Vietnam	2014-2018	• Require scientific data

Members of Group A:

Indonesia: Turman Hardianto Maha, Slamet
Malaysia: Noorul Azliana, Effarina Mohd Faizal
Philippines: Ruben J. Jardin
Vietnam: Nguyen Van Do, Nguyen Ba Thong (**Group Leader**),
FAO/RAP: Simon Funge-Smith
SEAFDEC Secretariat: Somboon Siriraksophon (**Facilitator**), Suwanee Sayan, Virgilia T. Sulit,
Rapporteurs: Neil Catibog, Vankham Keophimphone

Annex 22

Group B: Gulf of Thailand and Andaman Sea

Prioritized Issues and Concerns	Management needs	Responsible groups of agencies	Lead countries	Time frame	
National Level					Required Policy Support from Government
1. Lack of data collection (+ Overfishing)	<ul style="list-style-type: none"> • Manage data collection at selected landing site; • Research include scientific survey, biological data, DNA genetic • Enhance capacity building on the data collection 	Scientific Working group	Malaysia	2014-2016 2015-2017 2014	<ul style="list-style-type: none"> • Manage FADs and light rolling purse seine • Selected fishing landing sites • Establish Scientific Working Group • Fishing efforts
2. Combat IUU fishing	<ul style="list-style-type: none"> • Promote and strengthen IUU fishing 	NPOA-IUU & RPOA-IUU	Indonesia	2014-2019	<ul style="list-style-type: none"> • National Plan of Action • Coordinate with RPOA-IUU
3. Port State Measure	<ul style="list-style-type: none"> • Training for trainer to local officer 	SEAFDEC	Thailand	2014-2015	
4. Vessel registration	<ul style="list-style-type: none"> • Training for trainer to local officer 	SEAFDEC		2014-2015	
5. Develop fishing technology (bycatch nontarget species; manage of FADs)	<ul style="list-style-type: none"> • Demonstration and sea trials • Modification of nets • Reduction of manpower onboard • Training on fishing technology 	SEAFDEC	Thailand	2014-2016	
6. Post-harvest and preservation	<ul style="list-style-type: none"> • Training for trainer to local officer 	SEAFDEC	Vietnam	2014-2016	
Sub regional level					Required collaborative arrangements and management cooperation
1. Lack of data collection	<ul style="list-style-type: none"> • Improving of data collection system • Research include scientific survey, biological data, DNA genetic • Enhance capacity building on the data collection 		Malaysia	2014-2016 2015-2017 2014	
2. Combat IUU fishing	<ul style="list-style-type: none"> • Data sharing mechanism make use of tonggol initiative 	RPOA-IUU	Indonesia	2014-2019	

3. Port State Measure	<ul style="list-style-type: none"> Regional training of training for trainer 	SEAFDEC	Thailand	2014-2015	Conduct the regional training for trainer
4. Data and information sharing on vessel registration more than 70 GRT	<ul style="list-style-type: none"> Establishment of sub-regional mechanism for data sharing 	RPOA-IUU & SEAFDEC	Malaysia	2015-2016	
5. Develop fishing technology (bycatch nontarget species; manage of FADs)	<ul style="list-style-type: none"> Training for trainer to national officer 	SEAFDEC & National institutes	Thailand	2014-2016	
6. Improve Post-harvest and preservation	<ul style="list-style-type: none"> Training for trainer to national officer 	SEAFDEC	Vietnam	2014-2016	<ul style="list-style-type: none">

Annex 23

Group C: Sulu-Sulawesi Sea (Philippines, Indonesia, Malaysia)

Facilitator : Ms Penchan Laongmanee (SEAFDEC)
Leader : Mr Irwan Jatmiko (Indonesia)
Members : Mr Tegoeh Noegroho (Indonesia), Ms Yazeereen A Bakar (Malaysia), Mr Sallehudin bin Jamon (Malaysia), Ms Elaine G. Garvilles (Philippines), Ms. Sawitree Chamsai (SEAFDEC), Mr. Sayan Promjinda (SEAFDEC)
Rapporteurs : Imelda Riti Rantty (SEAFDEC), Ms Hotmaida Purba (SEAFDEC)

Prioritized Issues and Concerns	Management needs	Responsible groups of agencies	Lead countries	Time frame	Required Policy Support from Government
National Level					
1. Insufficient data collection in significant neritic tuna landings 1.1 Stock assessment 1.2 Biological data	1. National Resource survey in Sulu Sulawesi sea (MAL) 2. Improve the quality of data (improve an existing SOP) and secure management budget for data collection enumerator 3. Biological and genetic study 4. Develop a national consultation for fisheries management plan specific for SSS (INA)	• BFAR • NFRDI • MMAF • DOFM		1. 2014-2015 (DOFM) 2. 2014-2015	1. 10th Malaysian Plan (2011-2015) 2. Apply to potential donors for biological and genetic study (CTICFF, USAID) 3. Yearly operating expenditure – Ministry of Finance Malaysia (MOFM) 4. Secure fund from each respective countries
2. Insufficient capacity building 2.1 Fish data collection 2.2 Stock assessment 2.3 Fish identification 2.4 Compliance with International Regulations – Port State Measure (PSM) 2.5 Genetic study (INA)	1. Provide training on: 1.1 Fish data collection 1.2 Stock assessment 1.3 Fish identification 1.4 Compliance with International Regulations–Port State Measure (PSM) 1.5 Genetic study (INA) 2. Compile and disseminate fish identification guide/manual/card/poster (in national languages)	• BFAR • NFRDI • MMAF • DOFM		2014-2017 2014	Secure fund from each respective countries
3. Insufficient infrastructure (Port Management) –no specific port for tuna	Develop new domestic tuna port in Semporna, Sabah (MAL)	DOFM		2020	National Agriculture Plan IV (NAP4)

landing (only small jetty) (MAL & INA)					
4. Lack of funding for Research & Development (MAL)	Submit application to Ministry of Science and Technology & Innovation (MOSTI)	DOFM		2014-2017	Funding from national government
5. Poor post harvest handling – on board and jetty (insufficient ice supply) (MAL)	Submit application under Economic Transformation Program	DOFM		2014-2020	Funding from national government
Prioritized Issues and Concerns	Management needs	Responsible groups of agencies	Lead countries	Time frame	Required collaborative arrangements and management cooperation
Sub regional level					
1. Different data collection method/format between countries	Harmonization of data collection method	<ul style="list-style-type: none"> • BFAR • NFRDI • MMAF • DOFM • CTI-CFF • SEAFDEC 	Philippines (Proposed)	2014	Standardized data collection mechanism (SOP)
2. No integration of neritic data from concerned countries	1. Resource survey in Sulu Sulawesi sea (include neritic tuna in Sulu Sulawesi Research framework) 2. Sub regional working group 2.1 Annual Meeting 2.2 Set up subregional database	<ul style="list-style-type: none"> • BFAR • NFRDI • MMAF • DOFM • CTI-CFF • SEAFDEC 	Indonesia (Proposed)	2014-2017	Collaborative research program in Sulu-Sulawesi Sea

Summary

The common issues discussed concerning respected countries includes:

1. Insufficient data collection in significant neritic tuna landings
2. Insufficient capacity building such as fish data collection, stock assessment, fish identification, Compliance with International Regulations –Port State Measure (PSM) and genetic study.
3. Lack of funding (infrastructure, capacity building, research and development)

Recommendations :

1. Improve the quality of data (improve an existing SOP) and secure management budget for data collection enumerator
2. Provide relevant training needed by each countries.
3. Propose to secure funds from national government

Issues discussed in the regional level are :

1. Different data collection method/format between countries
2. No integration of neritic data from concerned countries

Recommendations :

1. Standardized data collection mechanism (SOP)
2. Collaborative research program in Sulu-Sulawesi Sea

Annex24

Prioritized Issues for Development Of The Regional Plan Of Action For Sustainable Neritic Tuna Fisheries

➤ Prioritized Issues for Development of RPoA (National concerns)

- Open Access, management of fishing capacity
- IUU Fishing
 - Transshipment
 - Double Flagging, pouching
- Resources, status and trend of neritic tuna:
 - SCS is still healthy
 - GOT and Andaman Sea is declining trends
 - Sulu-Sulawesi Sea ??
- Data collection system, Insufficient data/information
- Post-harvest losses
- Appropriated technology for fishing gears and devices
- Infrastructure of fishing port /landing sites
- Unfair benefits allocation
- Working condition, Labor issues
- Capacity building

➤ Prioritized Issues for Development of RPoA (Regional concerns)

- Assessment of neritic tuna at sub-regional level >Establishment of WG
- Sub-regional fisheries management for neritic tuna >
- Intra-regional trade: >harmonized standard catch documentation system
- Sharing of fishing vessel data

Way Forward

RPoA	Working group	Capacity building
1. Drafting of the Regional Plan of Action for Sustainable Neritic Tuna Fisheries 2. Regional Technical Consultation to finalize the RPoA 3. Country adoption 4. Awareness campaign	1. Establishing three working groups on SCS, Sulawesi Sea, and GOT-AM seas 2. Develop the Strategic Plan and TOR for WG 3. Country adoption 4. Funding support under cost shared policy	1. Develop capacity building/training program 2. Develop SOP, tools and standardize data collection system 3. Conduct Regional Training Program