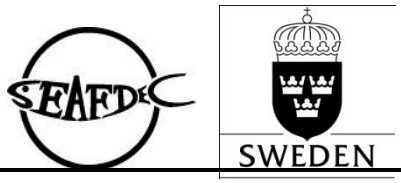

Report of the Workshop on Managements of Longtail Tuna and Kawakawa Resources in the Southeast Asian Region and Development of Ecosystem Approach to Fisheries Management (EAFM) as the Alternate Approach

Kuala Lumpur, Malaysia

19-21 December 2016

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Southeast Asian Fisheries of Development Center

The Secretariat

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I. Opening of the Meeting

1. The Workshop on Managements of Longtail Tuna and Kawakawa Resources in the Southeast Asian Region and Development of Ecosystem Approach to Fisheries Management (EAFM) As the Alternate Approach was conducted in collaboration between MFRDMD and Secretariat in Kuala Lumpur, Malaysia from 19 to 21 December 2016. The Workshop was attended by the representatives from the ASEAN-SEAFDEC Member Countries, namely: Brunei Darussalam, Cambodia, Indonesia, Malaysia, Thailand, and Viet Nam together with their delegations, as well as the SEAFDEC Secretary-General as well as the representative from SEAFDEC Secretariat, Marine Fishery Resources Development and Management Department (MFRDMD) and Training Department (TD). The List of participants appears as **Annex 1**.

2. The Chief of SEAFDEC/MFRDMD, *Mr. Raja Bidin Raja Hassan* welcomed the participants to the Workshop. He emphasized that Neritic tuna was important commodities in our region and high value species for international trade so tunas resources need to be manage to sustain exploitation in the future. He also mentioned that discussion on appropriate model of Ecosystem Approach for Neritic tunas Fisheries Management (EAFM-Neritic tunas) could guide ASEAN Member States with proper management of Neritic tunas in our region. He also expressed his gratitude to the participants for attending this workshop and sharing experience and knowledge about EAFM on Neritic tunas. His Welcome Remarks appears as **Annex 2**.

3. The Secretary-General of SEAFDEC, *Dr. Kom Silapajarn* thanked participants for sharing our time and giving effort for this important event. He recalled the different result of stock assessment of Longtail Tuna and Kawakawa in two sub-regional areas of the Southeast Asian region including the need of capacity building in stock assessment of Neritic tunas at the country level and promoting RPOA-Neritic tunas. He also mentioned that EAFM has been incorporated in our Workshop so as to balance ecological well-being and societal benefits for sustainable utilization of Neritic tuna resources in our region. He also expected that appropriate EAFM Model for the Management of the Neritic Tuna Resources could be successful means to develop for the two sub-regional areas through our learning during this workshop. His Opening Remarks appears as **Annex 3**.

II. Introduction of the Workshop/Adoption Agenda

4. The background of the Meeting was introduced by *Dr. Taweekiet Amornpiyakrit*, Senior Policy and Program Officer of SEAFDEC. While briefing on the neritic tunas milestones since 2014 **(Annex 4)**, he informed the meeting that risk assessment to Longtail tuna (LOT) and Kawakawa (KAW) in Southeast Asia and development the management measure would be discussed to find out the appropriate models and kick off of the genetic study for LOT and KAW in Southeast Asian region. He highlighted this meeting would be

focused on the using EAFM concept to handing the neritic tuna stock management in Southeast Asia region.

5. The Meeting adopted the agenda unanimously (**Annex 5**).

III. Discussion on stock and risk assessment results and management measures

6. The Resource Person, *Dr. Tsutomu Nishida* presented on the risk assessment of LOT and KAW in Pacific and Indian Ocean (**Annex 6**). He provided the reasons why we need risk assessment for management of nertic tunas and the steps to conduct the risk assessment for neritic tuna.

7. The assessment and management usually based on each stock distributed in each area, in this case, LOT and KAW could be separated into 2 stocks/area including the stock from Indian Ocean (Andaman Sea) and Pacific Ocean consisting of Sulu Sulawesi Sea, South China Sea, and Gulf of Thailand totally 4 data sets. Stock Reduction Analysis (SRA) for Catch and only Data and ASPIC Production Model (Catch and CPUE) were fit to the data poor situation in SEA region, the ASPIC was introduced. The ASPIC assessment based on regional catch of KAW and LOT together with Thai CPUE which can be the stock abundance index together with excel for data processing, the result will be shown by Kobe Plot.

8. During the discussion, the meeting was explained that the stock status of Kawakawa (2014) in Indian Ocean side is in the green zone of Kobe Plot (TB/TBmsy = 1.28 and F/Fmsy = 0.75) F is 26% lower than MSY level and TB is 29% higher than its MSY level and in the Pacific Ocean side the stock status is in the green zone (TB/TBmsy = 1.29 and F/Fmsy = 0.74) implying that TB is the 29% higher than the MSY level and F is 26% lower than the MSY level.

9. The representative from Thailand, *Mrs. Praulai Nootmorn* suggested that the results of stock status based only on Thai CPUE may could not be the representative for region due to the less ratio compared with Malaysia and Indonesia.

10. For the stock status of Longtail tuna in the Indian Ocean side (2014) is in the red zone of Kobe plot (overfished and still overfishing), i.e., TB/TBmsy=0.89 and F/Fmsy=1.11 implying that TB is the 11% lower than the MSY level and F is 11% lower than the MSY level and in the in the Pacific Side, the current stock status (2013) is in the green (safe) zone the Kobe plot, i.e., TB/TBmsy=2.22 and F/Fmsy=0.18 implying that TB is the 122% higher than the MSY level and F is 92% lower than the MSY level. The results of Longtail tuna in Indian Ocean were seriously overfished and needed to management strategies immediately. In this connection, *Dr. T. Nishida* suggested that the stock of Longtail tuna in Indian Ocean should be monitored at least 10 years for more complete CPUE data.

11. While the meeting was suggested that regional should be improved the statistic collecting, at least the collection of catch together with CPUE continuously and avoiding the error. Precautionary Approach issue was raised to using as the improving tools for data analyzing and management plan synthesizing process, if the data having high quality enough, the many sets of CPUE from many countries can be used for less uncertainties result in the future.

12. For the Risk Assessment of LOT and KAW in Pacific and Indian Ocean used to determining the future stock status from 11 simulated scenarios (reduced, increased and MSY catch situations) and the results will be provided the optimum catch level for *Total Allowable Catches* (TAC) to produce safe stock status, as the point estimations which uncertainties were avoided by 1000 times re – sampling (Bootstraps technique or Markov Chain Monte Carlo, MCMC).

13. For the Analysis using Kobe II software, the Kobe I for current catch analysis and Kobe II will be used for simulating future situations through the probability of each situation. The meeting was informed that for the other RFMOs used managing reference point at 50% (the medium risk).

14. The results of the KAW in Indian Ocean side found that the catch should be reduced 7% from MSY level and Pacific Ocean: The catch can be increased 9% from MSY level.

15. The results of the of the KAW LOT of Indian Ocean found that the catch should be reduced 13% from MSY level and Pacific Ocean side the catch should be increased till 200 – 300% is possible, but should be less than MSY level (196,700 T).

16. For the EAFM the catch could be reduced lower than result due to the bycatch issue or increased a little bit higher than this due to the fishermen's economical situations, both depends on goal of project

17. The meeting was clarified that SEAFDEC was the non-member of RFMOs and could give the recommendations but cannot making the decision for Member Countries which no biding and no obligation while ASEAN can do all. Therefore, the decision of TAC after this will be decided by each of ASEAN Member States (AMSs).

a. KAW Indian Ocean (Malaysia, Indonesia and Thailand participated the meeting)
   i. Malaysia: MSY and Kobe Plot now available yet regarding too limited data, the management will be obeyed Dr. Nishida's result
   ii. Indonesia: the catch was about 28%
   iii. Thailand: the own MSY now available with the management plan including the regulations for this

18. While *Dr. T. Nishida* suggested that the catch quota of each country should be considered the catch ration of region, for Indian Ocean, the highest catch for Indonesia, Malaysia, Thailand and Myanmar, respectively which each country have to consult with each other. In this connection, *Mrs. Praulai N.* agreed with this concept. The meeting was clarified that this just the consultation about the scientific science not the policy decision.

19. *Mrs. Praulai N.* suggested that the seasonal control should be considered and the limited of kind of fishing gear for individual fishers and should be considered. However, *Dr. Somboon S.* suggested that the catch quota of each country should come up with the reference point *e.g.* MSY and then will be converted back to optimum effort automatically.

20. *Mrs. Praulai N.* provided the information on the case of Thailand about the TAC system allowed to catch 7% less than MSY level after change from open access to limited access, therefore, the regional TAC must come up first before each country going to consult

with each other. While *Dr. Somboon S.* and *Dr. T. Nishida* suggested that the 7% reducing of catch should be considering the 7% reduce of 3 years average catch for each country.

21. The meeting was informed that the regional Catch Documentation Scheme which the logbook issue has been raised for more efficiency for Southeast Asia in the future.

IV. Introduction of EAFM and Essential EAFM

22. The Director of Resource Management Division from Department of Fisheries Malaysia, *Ms. Tan Geik Hong* presented on EAFM in Malaysia for sharing the historical decision for using an Approach to Fisheries Management (EAFM) and providing a progress report on EAFM implementation in Malaysia (**Annex 7**). She provided the meeting that during the APEC (Asia-Pacific Economic Cooperation) in August 2007 the President of Indonesia proposed a Coral Triangle Initiative *(*CTI) to leads of the other CT countries and major APEC countries in the marine and coastal resources sector to sustainable marine and coastal resources are an integral part of the carbon cycle and welcome the CTI on Coral reefs, Fisheries and Food Security which aimed at enhancing the conservation of marine biological resources. The conservation on the scale of the CTI was required the support from the Political will, Business support and Public funding.

23. Meanwhile the Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF) has gone through an impressive process of deliberation and endorsement from the 6 Member Countries namely Indonesia, Malaysia, Philippines, Timor-Leste, Solomon Island, and Papua New Guinea. Malaysia has been actively participating in the various CTI related events since its inception after the CTI Summit in May 2009.

24. She provided the meeting that CTI had 5 Goals for enhancing the conservation of marine biological resources. DOF Malaysia responsible on the Goal no. 2 on the Ecosystem Approach to Management of Fisheries (EAFM) and Other Marine Resources Fully Applied and also serve as the chairman of Goal no. 5 on the Threatened Species Status Improving. In addition, she also provided the lesson learn on EAFM for fisheries management which implemented in Malaysia.

25. During the discussion, the meeting was explained that the strong points of EAFM was the data provided by stakeholders in particular area which they have ‘measurement – like’ for every operation times for long time. However, the situations quite different from the far sea fisheries as tunas and other oceanic fish, the protocol must be modified for the different fishing ground in the future.

26. While *Dr. Somboon Siriraksophon* suggested that the stock assessment based management was the better way to the actual reference points from the assessment that can be used as the monitoring parameters for the resources status. The relation of EAFM and Harvest Control Rule, for example, TAC, and other bycatch monitoring systems should be studied and implemented together with the knowledge of local fishermen for more effective managements.

27. The Training and Extension Section Head and Special Department Coordinator from SEAFDEC/TD, *Ms. Panitnard Talad* on presented on the Ecosystem Approach Fisheries Management (EAFM) (**Annex 8**). She provided the meeting that EAFM was implemented under concept that to reaching the sustainable development of fishery resource,

the ecological well – being should be balanced together with human well – being under the good governance (3 components concept). She also provided the 5 steps of EAFM would be started with *Planning steps 1-3* including Define and scope, Issues and Goals, and Objectives, indicators, management actions & compliance, financing; *Doing - Step 4* Implementation; and *Checking & improving - Step 5* Monitor, evaluate and adapt.

28. The Fishing Gear Technology Section Head, Capture Fisheries Technology Division from SEAFDEC/TD, *Mr. Isara Chanrachkij* presented on the Apply EAFM for the Fisheries Management of Neritic Tunas (**Annex 9**). He provided the meeting that on the details of steps to developing the EAFM plan and the source of more information of EAFM *www.eafmlearn.org*.

29. During the discussion, *Dr. Somboon S.* suggested that meeting that the EAFM approach for neritic tuna was considering objective 3 about to balancing between the ecological and economical approach. In response, *Mr. Isara C.* provided the personal views that the stock implementation activities may goes to problem soon, regarding to the losing the objectives, which should be concerned and be monitored and the goal should be though about the future generations.

30. While *Mrs. Praulai N.* suggested that the possibility of EAFM adapted for the neritic tuna issue, the word sustainable should be clarified that it's also including both well – being and economical management.

31. Meanwhile *Dr. Somboon S.* suggested that the identifying issue should be put the effort and should be concentrated for more efficiency EAFM.

32. The representative from Cambodia, *Mr. Suy Serywath* suggested that the consultation with the stakeholders should be revised regarding to the national situation, including the illegal purse seine from both Cambodian and Thai fishers, the activities for real situations should be clarified.

33. The representative from Viet Nam, *Dr. Vu Viet Ha* suggested that there are limited data for LOT and KAW in Viet Nam water also with time series data, that's make stock management and scientific based management now not available yet.

34. In response *Mr. Isara C.* informed the meeting that for regional level, EAFM isn't a new issue, even Marine Stewardship Council (MSC) the concept still be EAFM. Many times that the consultative meeting was invited the private sectors to join but the representatives aren't the decision making persons.

V. Discussion on EAFM model/Structure for management of LOT and KAW

35. The Policy and Program Coordinator from SEAFDEC Secretariat, *Dr. Somboon S.* presented on the Promotion of Sustainable Fisheries Development through the EAFM concept (**Annex 10**). He provided the meeting on the integrated Workplan and Cooperation among AMSs. And among the partners are needed to meet the required EAFM Concept for Sustainable Development of Fisheries and ensures the food security.

36. The participants were divided into two (2) groups namely Andaman Sea and gulf of Thailand (Pacific Ocean) for discussion on the EAFM to handle the neritic tuna for more

understanding through SEAFDEC/TD staff who has an experience on REBYC – CTI to guide participants. This session aimed at providing more understanding in the regional fisheries problem on neritic tuna through brain storming and to prioritizing the problem together with the possibility way to managing these kinds of situations based on existing data and problem.

37. The results of EAFM brainstorm of Andaman Sea group (**Annex 11**).

- The results could be prioritized into 3 topics namely
    i. Ecological aspect such as the lack of fishing data collection system, the overfishing issue and the insufficient of some biological data
    ii. Social and human well – being, the responsible fishing, safety at sea and the foreign workers *e.g.* labor
    iii. Governance which mostly focused on IUU fishing and transboundary species management
- Andaman Group has already identified stake holders and prioritized by the scientists and governments's view. For the first priority were funding agencies, DoF including ministry of agriculture and their researchers, fisheries patrol, coast guard, fisheries associations (for example, FA and TTFA) and processing factories
- Which SEAFDEC has been categorized to the 2nd priority together with FAO, university, other researchers, bank, ministry of labor and customs

38. The result of EAFM brainstorm of Gulf of Thailand group (**Annex 12**) are as follows:

- The prioritization of all 3 topics namely
    i. Ecological aspect, regarding to the unsustainable of neritic tuna resources which the multi species, multi gear, data insufficient and the bycatch issue were raised
    ii. Governance aspect which the problem was the poor governance, the problem was about the inadequate to control the fishing capacity and the lack of coordination and cooperation between government and private sectors in both national and regional level
    iii. Human aspect which focused on the poverty mainly on the low income from fishers, the needed of the right for fishers and the lack if harvesting technology were raised

39. During the discussion, *Dr. T. Nishida* suggested that the data collection system could be continued data collection project related to the prioritization and could be improved for regional level step by step.

40. While *Dr. Somboon S.* clarified that the results from this EAFM was from the scientist and government representatives should be discussed with the other stakeholders for more complete issue and also all issues would be led to SEAFDEC Council Meeting to inform the Member Countries, SEAFDEC just provide the methods and organizing the meeting.

VI. Data preparation for seer fish stock assessments (Indo-Pacific king mackerel and narrow-barred Spanish mackerel)

41. The Resource Person, *Dr. T. Nishida* presented on the Data preparation for seer fish stock assessments of Indo-Pacific king mackerel and narrow-barred Spanish mackerel **(Annex 13**). He provided the information on the consideration of the software for stock assessment method and data requirement. He emphasized that the analysis process must be selected based on the existing available data, such as the case that only catch data available the Stock Reduction Analysis (SRA) must be selected, however the production model as ASPIC (in case that catch and CPUE available) seems to be the most possible methods for SEA region to be used. He informed the meeting that the possible models as non – linear, negative binominal, delta log normal model, etc., should be observed and the Kobe plot software was available but the Kobe II for risk assessment still needed to be developed.

42. For the data preparations, the historical data still needed considering stock distribution of South China Sea for Pacific and Andaman Sea for Indian Ocean. o conduct the Stock Reduction Analysis (SRA) and ASPIC, the global catch was required for both while Nominal CPUE was required only for ASPIC but, the new required was the species composition. The nominal CPUE should be provided by country, gear, area, month, day and set (for example, boat name). The extra data as species composition should be provided by year, season, area and gear. The meeting was informed that the Stock Risk Assessment Training will be conducted in March or April 2017.

VII. Kick off the Genetic work for LOT and KAW

43. The Head of Biology and Genetic Unit from SEAFDEC/MFRDMD, *Ms. Wahidah Mohd Arshaad* presented on the Kick Off Genetic work for LOT and KAW (**Annex 14**). She provided the information on the country workplan, timeframe for tissues sampling of LOT and KAW including the budget for supporting/in-kind co finance plan (if appropriate), tissue sampling transferring and data analysis work plan. This project aimed to identify the level of genetic diversity of *Thunnus tonggol* (Longtail tuna) in the South China Sea and Andaman Sea and identify the genetic structure of *Thunnus tonggol* (Longtail tuna) in the South China Sea and Andaman Sea waters by using mitochondrial DNA (mtDNA) displacement loop (D-loop) marker.

44. While the Deputy Chief of SEAFDEC/MFRDMD, *Dr. Osamu Abe* explained the meeting that this study was also aimed to test the hypothesis that the LOT and KAW have only 2 stocks from Pacific and Andaman sides or not for more further efficiency stock assessment research.

45. After the deliberation, this study 25 sampling sites including 5 sites from Andaman Sea and 17 sites from Gulf of Thailand and 3 sites for out ranges. The work plan until Sep 2018 was provided together with the work plan presented from the participated countries to come up with the final plan, including the detail of supporting budget. The laboratory equipment will be separated to the country's representatives before the end of meeting together with the Standard Operation Practice (SOP) with the field sampling suggestions.

46. During the discussion, *Dr. Somboon S.* requested Member of SWG to collect the correct species because the species identification was the important process. For the absented countries (Myanmar and Philippines) needed the close contact from the project team. The landing site information also required to collected carefully and avoid of the incorrect landing sites from the IUU fishing regarding to the size and the period of fish movement can be observed from the size of fish landed in each country landing sites.

47. The meeting agreed on the study plan which proposed by SEAFDEC/MFRDMD. Regarding the different distribution of LOT and KAW, therefore some sampling sites have to be moved, regarding to the sampling season also, and needed the cooperation from other countries, if possible, or change to nearby area.

48. The meeting raised the issue on the budget for buying the sample. In response *Dr. Somboon S.* suggested that the budget and the sampling sites of this study needed to be reduced.

49. Meanwhile *Mrs. Praulai N.* suggested that in the case that Cambodia and Myanmar cannot collect the sample, the 2 areas from border of Thailand in Trat and Ranong province, should be prepared. In response, *Mrs. Wanidah* clarified that if the sample was got from buying, the all necessary biological data should be collected as much as possible as the recording and further utilizations.

50. *Dr. T. Nishida* provided the information of the genetic project from (*Indian Ocean Tuna Commission*) IOTC which SEAFDEC and Member Countries also could be asked the cooperation for more understanding in Indian Ocean. Meanwhile, the pacific side even though the neritic tuna project of WCPFC not implemented yet but SEAFDEC and member countries can contact the genetic expert from *Western and Central Pacific Fisheries Commission* (WCPFC) for some advice and further cooperation.

VIII. Proposed schedule and issues to be discussed at the 4th SWG neritic tuna

51. *Dr. Somboon S.* presented on the proposed schedule and issues to be discussed at the 4th SWG neritic tuna (**Annex 13**). He informed the meeting that since the genetic study have been kicked off and come up with some result, the result should be finished within 2018 and in the same periods, the complication of seer fish data should be sent to *Dr. T. Nishida* for the analysis. He also informed the meeting that the risk assessment program development and the training on the stock assessment and risk assessment for seer fish in 2017 before the 4th SWG meeting in Philippines.

52. After that there are the project on development of GLM and other models which will be used for seer fish stock assessment project and the tentative agenda for 4th SWG meeting was provided and clarified for the objective and activities which will preparing for the 5th SWG meeting.

53. While *Mrs. Praulai N.* provided the meeting that Department of Fisheries Thailand preparing the data of king mackerel for more update. In this connection, she invited *Dr. T. Nishida* to train DoF staff at Thailand in 2017.

IX. Wrap–up

54. *Dr. Somboon S.* presented on the results from the catch of KAW in Indian Ocean should be decreased by 7% and increased 9% for Pacific Ocean and LOT in Indian Ocean should be decreased by 13% and there is no limit for Pacific Ocean catch. The result of SA, RA and Recommendations will be raised in 49th Meeting of SEAFDEC Council for endorsed to the 25th Meeting of ASEAN Sectoral Working Group in June 2017.

55. Meanwhile *Mrs. Praulai N.* provided the information of the International Council for the Exploration of the Sea (ICES) for the non-RFMOs Organizations. In this connection, she suggested SEAFDEC should observe to the similar scope of work that ICES was implemented.

X. Closing the Meeting

56. The Chief of SEAFDEC/MFRDMD, *Mr. Raja Bidin Raja Hassan* mentioned that ASEAN-SEAFDEC Member Countries need a close cooperation and effective communication to share available information for enhancing management in our resources. He hoped that recommendation during the workshop could conduct to discuss further at national level during the next scientific working group meeting. He also expressed his appreciation to the participants for making the 3-day workshop success. With that note, he declared the Meeting closed. His Closing Remarks appears as **Annex 14**.

Annex 1

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Annex 2

Welcome Remarks

By Mr. Raja Bidin Raja Hassan
Chief of SEAFDEC/MFRDMD

Assalamualaikum w.r.a and very good morning.

Dr. Kom Silapanjan, Secretary General of SEAFDDEC;
Dr. Abe, Deputy Chief of SEAFDEC/MFRDMD;
Dr. Somboon, Program and Policy Coordinator for SEAFDEC;
Our Resource Persons, *Dr. Tom Nishida* and *Ms. Tan Geikh Hong;*
Distinguish delegates from SEAFDEC Member Countries;
SEAFDEC Senior officers;

Ladies and gentlemen,

Welcome to Kuala Lumpur, our beautiful city of Malaysia.
On behalf of the organizing committee, I would like to extend our warm welcome to everyone to our "Workshop on Managements of Longtail Tuna and Kawakawa Resources in the Southeast Asian Region and Development of Ecosystem Approach to Fisheries Management (EAFM) as an Alternate Approach.

Neritic tuna is one of the important commodities in the Southeast Asian region and considered as high value species due to tremendous demand not only for local market but also for international trade. Due to these circumstances, tuna resources need to be managed properly in order to sustain their exploitation as well as their resources for future generation.

During this 3-day workshop, we are going to discuss on appropriate model of Ecosystem Approach for neritic tunas Fisheries Management (EAFM-neritic tunas) which could guide ASEAN Member States with proper management of neritic tunas in the Southeast Asian Region.

In addition, we are going to conduct the risk assessments of the LOT and KAW for 2 sub-regional areas, Pacific Ocean side and Indian Ocean side in the Southeast Asian region.

Therefore on behalf of the organizing committee, I would extend our gratitude and appreciation to all of you, who are able to attend our workshop and share experience and knowledge about EAFM on neritic tuna.

We are indeed very lucky, because our resource persons from Japan, Dr. Tom Nishida and from Malaysia, Ms. Tan are able to join our workshop.

I am also hope that everybody has an enjoyable stay in Kuala Lumpur and we have a fruitful workshop at the end.

I'm also would like to thank our meeting secretariat for their dedicated effort to ensure the meeting run smoothly.

With that, I just conclude my welcome remark and hope everybody happy.

Thank you.

Annex 3

Opening Remarks

By *Dr. Kom Silapajarn*
SEAFDEC Secretary-General

Distinguished delegates from the SEAFDEC Member Countries;
Our Resource Person on Tuna Stock Assessment, *Dr. Tsutomu Nishida* from the National Research Institute of Far Seas Fisheries of Japan;
Expert on Ecosystem Approach to Fisheries Management, *Ms. Tan Geikh Hong* from the Department of Fisheries-Malaysia;
My colleagues from SEAFDEC;
Ladies and Gentlemen, Good morning.

First and foremost, please allow me on behalf of the Southeast Asian Countries, to express our congratulations to the Sultan of Kelantan, who has been recently sworn in as the 15th King of Malaysia. Being one of the country's youngest enthroned monarchs, ***King Sultan Muhammad V's*** rule would surely enhance the development of our future generations.

Going back to our three-day activity, I am indeed very pleased to welcome you all to the "**Workshop on Managements of Longtail Tuna and Kawakawa Resources in the Southeast Asian Region and Development of Ecosystem Approach to Fisheries Management (EAFM) as the Alternate Approach**" which is organized by SEAFDEC-MFRDMD in collaboration with the Secretariat with support from the Government of Sweden through the SEAFDEC-Sweden Project. On behalf therefore of SEAFDEC, I would wish to express my sincerest thanks to everyone for sharing your time and giving your effort for this important event.

As we are all aware of, neritic tuna resources specifically the longtail tuna and kawakawa is very important in the Southeast Asian region, as they play crucial role in the region's economies, being among the most commercially important species. Through the efforts exerted by the ASEAN Member States, the stock assessment of longtail tuna and kawakawa was made possible, and the data collection systems on neritic tunas had been enhanced.

We must recall that the results of the stock assessment of the long tail tuna and kawakawa in two sub-regional areas of the Southeast Asian region showed that longtail tuna in the Indian Ocean side is overfished but still overfishing continues. While in the Pacific Ocean side, such resources are under exploited but management measures are still required to ensure that such stock status will not shift to overfished or over-exploited in the future. Moreover, a series of training courses such as *the Basic Stock Assessment Training Courses* and *the Advance Stock Assessment Training Course* for neritic tunas have been organized by TD and MFRDMD in 2016. However, capacity buiding in stock assessment of neritic tunas at the country level, is still needed to ensure that stock assessment is pursued by the countries as the results could serve as basis for the sustainable utilization of neritic tunas in the region. Meanwhile, the Regional Plan of Action for Sustainable Utilization of Neritic Tunas in the ASEAN Region or RPOA-Neritic Tunas, had been promoted in the Southeast Asian region with the objective of improving the sustainable management of neritic tunas based on results of the stock assessment carried out by the countries.

Ladies and Gentlemen,

In order for us to move forward, the Ecosystem Approach to Fisheries Management or EAFM has been selected as an alternative management measure to effectively and equitably manage the utilization of neritic tuna resources in our region. Thus, EAFM has been incorporated in this Workshop as means of balancing ecological well-being and societal benefits that could be obtained from the sustainable utilization of neritic tuna resources in our region, specifically, the longtail tuna and kawakawa. This could be achieved through good governance and ecosystem dynamics of which people form an important part.

One of the expected outputs of this Workshop, therefore, is an appropriate EAFM Model for the Management of the Neritic Tuna Resources developed for the two sub-regional areas in the Southeast Asian region. This could only be achieved with your kind contributions during the deliberations based on your valuable experiences, expertise and lessons learned in the field.

Last but not least, I would wish to thank you once again and welcome you all to this Workshop. I do hope that, apart from learning more about our neritic tuna resources during this Workshop, the successful outputs from our deliberations are a must. Without further ado, I now declare the "Workshop on Managements of Longtail Tuna and Kawakawa Resources in the Southeast Asian Region and Development of Ecosystem Approach to Fisheries Management (EAFM) As the Alternate Approach open.

Thank you and have a good day.

Annex 4

Introduction and back ground of the Workshop by *Dr. Taweekiet Amornpiyakrit*, Senior Policy and Program Officer of SEAFDEC Secretariat

Workshop on Management of Longtail Tuna and Kawakawa Resources in the Southeast Asian Region and Development of Ecosystem Approach to Fisheries Management (EAFM) as the Alternate Approach

MFRDMD in Collaboration with Secretariat

19-21 December 2016

FURAMA Hotel, Kuala Lumpur, Malaysia

Introduction

- 2014, the SWG-Neritic Tunas was established by SEAFDEC Council Directors
- 2014, 1st Meeting SWG-Neritic Tunas, SEAFDEC in collaboration with DOF-Malaysia
- 2015, 2nd Meeting SWG-Neritic Tunas, SEAFDEC in collaboration with the Directorate of Fisheries-Viet Nam
- 2015, RPOA-Neritic Tunas was finalized by AMSs and endorsed by 47th SEAFDEC Council Meeting and 23rd ASWGFi, supported by S-SOM 36th AMAF in late 2015
- 2016, January and March, SEAFDEC Secretariat in collaboration with TD, organized the basic and advance Stock Assessment Training Courses under support from SEAFDEC-Sweden Project
- 2016-June, 3rd Meeting SWG-Neritic Tunas Meeting has come up with some Policy recommendation for improvement of Fisheries Management for Neritic Tunas and for improvement of Fisheries Information to understand stock status of Neritic Tuna Resources in the region
- **2016-Present**, Workshop on Management of Longtail Tuna and Kawakawa Resources in the Southeast Asian Region and Development of Ecosystem Approach to Fisheries Management (EAFM) as the Alternate Approach

Objectives

- To conduct the risk assessments of the LOT and KAW for 2 sub-regional areas, Pacific Ocean side and Indian Ocean side in the Southeast Asian region;
- To discuss and develop the management measures for LOT and KAW;
- To discuss and develop the appropriate model for EAFM-Neritic tunas as an alternate management measure of b); and
- To discuss other matters related to the preparation of future activities such as:

  i. Kick-off the genetic study of the LOT and KAW in 2017-2018

  ii.Data preparation for seer fish stock assessments (Indo-Pacific king mackerel and narrow-barred Spanish mackerel) (2017-2018).

Expected outputs

- a) Risk assessments of the LOT and KAW in 2 sub-regional areas of the Southeast Asian region;
- b) A draft management measures of LOT and KAW in 2 sub-regional areas;
- c) EAFM Model for Neritic tunas;
- d) Detailed work plan on Genetic Study of LOT and KAW including timetable of tissues samplings;
- e) Work plan for data preparation and stock assessments (Indo-Pacific king Mackerel and Narrow-barred Spanish Mackerel)

PROVISIONAL AGENDA AND TIMETABLE (1/3)

Time	Agenda and Responsible Person	
19 December 2016 (Monday)		
08:30-09:00h	Registration	
09:00-09:20h	**Agenda 1:**	Opening Ceremony ➢ Welcome Address *(Mr. Raja Bidin Raja Hassan-Chief of MFRDMD)* ➢ Opening Address *(Dr. Kom Silapajarn-Secretary General of SEAFDEC)*
Chairperson: *Mr. Raja Bidin Raja Hassan*		
09:20-09:40h	**Agenda 2:**	Introduction of the Workshop/Adoption of the Agenda *(Taweekiet A. SEAFDEC/Secretariat)*
09:40-10:30h	**Agenda 3:**	Discussion on Stock and Risk Assessment Results and Management Measures for Longtail tuna and Kawakawa *(Dr. Tsutomu Nishida)*
10:30-10:50h	Coffee/Tea Break	
10:50-12:30h	**Agenda 3:**	Continued
12:30-14:00h	Lunch break	
14:00-15:30h	**Agenda 4:**	Introduction to EAFM and Essential EAFM ➢ Lessons learned on EAFM for fisheries resources management in Malaysia *(Ms. Nor Azlin Binti Mokhtar-Expert from DOF/MY)* ➢ Understanding the EAFM Concept *(SEAFDEC/TD-EAFM Team)* •EAFM *(Ms. Panitnard -SEAFDEC/TD)* •Apply *EAFM for fisheries management of Neritic Tunas (Mr. Isara C.-SEAFDEC/TD)*
15:30-15:50h		*Coffee/Tea Break*
15:50-16:30h	**Agenda 4:**	Continued

PROVISIONAL AGENDA AND TIMETABLE (2/3)

Time	Agenda and Responsible Person	
20 December 2016 (Tuesday)		
Chairperson: *Dr. Kom Silapajarn-Secretary General of SEAFDEC*		
09:00-10:30h	**Agenda 5:**	Discussion on EAFM Model/Structure for management of Longtail tuna and Kawakawa *(Facilitated by Dr. Somboon S. and EAFM Experts)*
10:30-10:50h	Coffee/Tea Break	
10:50-12:30h	**Agenda 5:**	Continued
12:30-14:00h	Lunch break	
14:00-15:30h	**Agenda : 5**	Continued
15:30-15:50h	Coffee/Tea Break	
15:50-17:00h	**Agenda 6:**	Data preparation for seer fish stock assessments (Indo-Pacific king mackerel and narrow-barred Spanish mackerel) *(Facilitate by Dr. Tom NISHIDA)*

PROVISIONAL AGENDA AND TIMETABLE (3/3)

Time	Agenda and Responsible Person	
21 December 2016 (Wednesday)		
Chairperson: *Dr. Abe-Deputy Chief of MFRDMD*		
09:00-10:30h	**Agenda 7:**	Kick off the Genetic work for LOT and KAW (by Ms. Wahidah) ➢Country work plan, timeframe for tissues sampling for LOT ➢Country work plan, timeframe for tissues sampling for KAW ➢Budget support/in-kind co finance plan (if appropriate) ➢Tissue samplings transferring ➢Data analysis work plan ➢Others (*Ms. Wahidah-MFRDMD*)
10:30-10:50h	Coffee/Tea Break	
10:50-11:40h	**Agenda 7:**	Continued
11:40-12:00h	**Agenda 8:**	Proposed schedule and issues to be discussed at the 4th SWG-Neritic Tunas (*Dr. Somboon S.*)
12:00-12:20h	**Agenda 9:**	Wrap-up (*Dr. Somboon S.*)
12:20-12:30h	**Agenda 10:**	Closing of the Meeting Closing Remarks (*Mr. Raja Bidin Raja Hassan, Chief of MFRDMD*)
12:30-14:00h	Lunch Break	

Thank you very much for your kind attention

Annex 5

Risk assessment of LOT and KAW in Pacific and Indian Ocean by *Dr. Tsutomu Nishida,* Resource Person

Risk assessment
LOT+KAW
Pacific + Indian Ocean sides
(SEAFDEC waters)

Tom Nishida
Resource Person
National Research Institute of Far Seas Fisheries (NRIFSF)
Japan

Why we need Risk assessment?

Stock assessments not enough ?

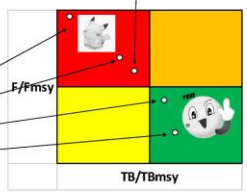
Why we need Risk assessment? Stock assessments not enough ?

Stock assessments → Current stock status (MSY)
We don't know the **future stock status**
⇕
Depending upon **catch levels**
⇩
Risk assessment will provide **future stock status**
(by various catch levels)
⇩
We will find out Optimum catch level (TAC)
to produce SAFE stock status

What is the future stock status?

For example stock assessments → current stock status (red zone)
what happens the stock status
10 years later ?

If following catch continued
Higher catch (20,000 t)
Current catch (10,000 t)
MSY (80,000 t)
Lower catch (5,000)



How to conduct the Risk assessment?

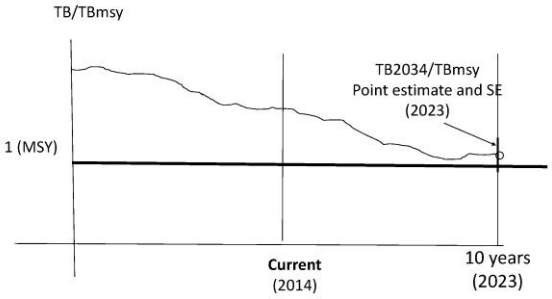
Use stock assessments results

Set up the catch scenarios

Tuna RFMOs (10 scenarios)
-40%, -30%, -20%, -10%, 0% (status quo), 10%, 20%, 30%, 40%
+
MSY

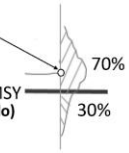
We make future projections
TB/TBmsy (Total biomass) and F/Fmsy
→ What does it mean?

For example
If the current catch (2015) were continued next 10 years,
What happen TB/TBmsy and F/Fmsy
next 10 years ?



How to get Uncertainties and compute Pr?

Uncertainties : re-sampling point (1000 times…)



Methods

Bootstrap or **MCMC (Markov Chain Monte Carlo)**

Don't worry ➔ Software will do it for you

In 1,000 times trials then if 300 points are below MSY

Then Pr (violating MSY for TB2023/TBmsy) =0.3

METHODS Kobe II strategy management matrix (Kobe II).

10 different catch scenarios

(**current catch levels**, MSY levels, ± 10%, ± 20%, ± 30% and ± 40%).

⇩

If 10 different catch levels (scenarios) were continued to next 10 years

⇩

Probabilities violating (not sustaining) TBmsy Fmsy (10 years)

How to define current catch levels (Status quo)

If your stock assessments end in 2015 for example

Normally ➔Catch in 2015 can be used for Risk assessment

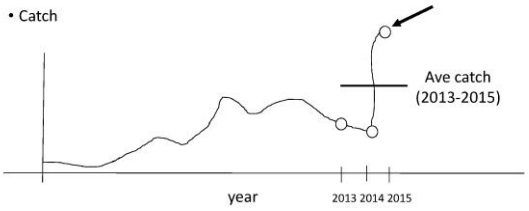
But we **use average catch** (2013-2015)➔ why??

Because the 2015 catch may extraordinary large or small values

What does it mean???

For example

If we have an extraordinary catch value in 2015 and If we use this value for risk assessment, then we will have BIASED results ➔ miss-managements



METHODS HOW TO DETERMINE THE TAC (OPTIMUM CATCH)

Catch level can sustain TBmsy and Fmsy (10 years later)

with 50% (threshold value)

Normally close to MSY (as TAC)

⇩

Managers can choose different threshold values

Pr. (MSY)

For **conservative** measure (low TAC)➔ 30% (**lower risk**)

Trade-off

For **optimistic** measure (high TAC) ➔ 70% (**higher risk**)

Options of catch limit (TAC) and trade-off

	Options		
management measure	Conservative	Fair	Less conservative
Current catch	reduce	MSY	increase
TAC	lower	MSY	higher
Pr (keep MSY)	30%	50%	70%
Risk	lower	average	higher
Fishers	UN HAPPY ==> later happy	OK	HAPPY ==> later unhappy
Resources (managers)	GOOD (for ever)	OK	NOT GOOD (for ever)

Results Risk assessment

KAWAKAWA
(INDIAN OCEAN SIDE OF THE SEAFDEC WATERS)

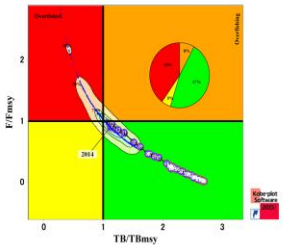


Table 1 Probabilities (%) violating TBmsy and Fmsy in 3 years (2017) and 10 years (2024) (Kawakawa, Indian Ocean side of the SEAFDEC water)

Color legend				
Risk levels	Low risk	Medium low risk	Medium high risk	High risk
Prcbably	0-20%	20-50%	50-80%	80-100%

Catch level	60%	70%	80%	90%	93%	100%	110%	120%	130%	140%
					MSY level	Current catch (*)				
10 catch scenarios (tons)	35,854	41,829	47,805	53,780	55,380	59,756	65,732	71,707	77,683	83,658
$B_{2017} < B_{MSY}$	20	24	30	39	41	46	57	64	73	80
$F_{2017} > F_{MSY}$	9	14	20	36	42	59	80	95	100	100
$B_{2024} < B_{MSY}$	7	10	17	36	44	67	97	99	100	100
$F_{2024} > F_{MSY}$	7	9	16	35	45	71	95	100	100	100

(*) The current catch level is the average catch in 3 recent years (2012-2014).

TB

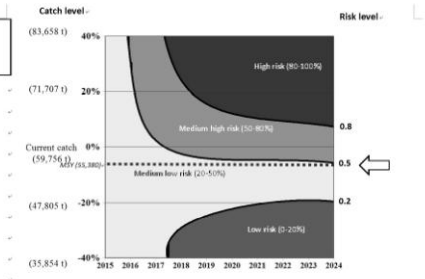


Fig. 2 Risk level (probably) (%) violating TBmsy next 10 years (2015-2024) by different catch levels (Kawakawa, Indian Ocean side in the SEAFDEC water)

F

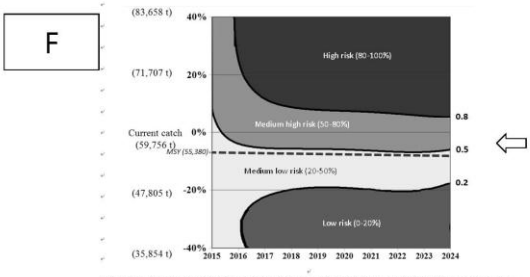


Fig. 3 Risk level (probably) (%) violating Fmsy next 10 years (2015-2024) by different catch levels (Kawakawa, Indian Ocean in the SEAFDEC water)

Recommendation :Management Measure (catch limit)

if MSY level (55,380 t) were continued in 10 years

⇩

Probabilities (risk) violating TBmsy and Fmsy are about 45%.

⇩

Recommendation : total catch
(kawakawa, Indian Ocean side of the SEAFDEC area)
should be less than its MSY level (55,380 t).

The current catch level (59,800 t) (Average of 2012-2014)
should be decreased by 7%.

3.2 KAWAKAWA (PACIFIC OCEAN SIDE OF THE SEAFDEC WATERS)

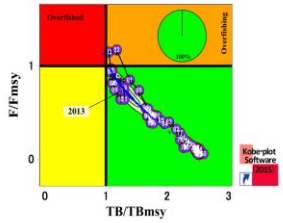


Fig. 4 Kobe plot: results of stock assessments (Kawakawa, Pacific Ocean side in the SEAFDEC water)

Table 2 Probabilities (%) violating TBmsy and Fmsy in 3 years (2016) and 10 years (2023) (Kawakawa, Pacific Ocean side of the SEAFDEC water)

Color legend				
Risk levels	Low risk	Medium low risk	Medium high risk	High risk
Probably	0-20%	20-50%	50-80%	80-100%

Catch level	60%	70%	80%	90%	100%	109%	110%	120%	130%	140%
10 catch scenarios (tons)					Current catch (*)	MSY level				
Projected catch (tons)	102,571	119,666	136,762	153,857	170,952	185,400	188,047	205,142	222,238	239,333
$B_{2016} < B_{MSY}$	5	12	17	26	32	39	40	50	58	65
$F_{2016} > F_{MSY}$	0	0	0	0	16	41	46	73	86	96
$B_{2023} < B_{MSY}$	0	0	0	1	18	56	63	88	96	99
$F_{2023} > F_{MSY}$	0	0	0	0	3	56	66	93	99	100

(*) The current catch level is the average catch in 3 recent years (2011-2013)

TB

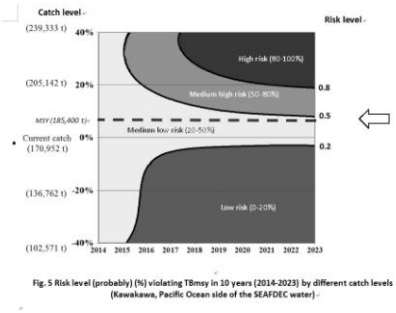


Fig. 5 Risk level (probably) (%) violating TBmsy in 10 years (2014-2023) by different catch levels (Kawakawa, Pacific Ocean side of the SEAFDEC water)

F

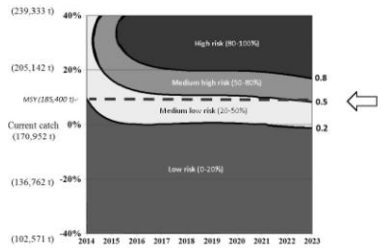


Fig. 6 Risk level (probably) (%) violating Fmsy in 10 years (2014-2023) by different catch levels (Kawakawa, Pacific Ocean side of the SEAFDEC water)

Recommendation :Management Measure (catch limit)

if MSY level (185,400 t) were continued in 10 years

⇩

Probabilities (risk) violating TBmsy and Fmsy are about 56%.

⇩

Recommendation : total catch
(kawakawa, Pacific Ocean side of the SEAFDEC area)
should be less than its MSY level (185,400 t).

The current catch level (171,000 t) (Average of 2011-2013)
can be increased by 9%.

LONGTAIL TUNA (INDIAN OCEAN SIDE IN THE SEAFDEC WATERS)

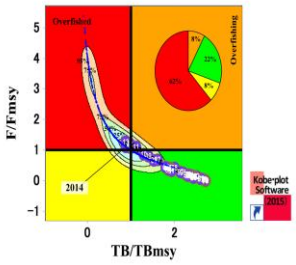


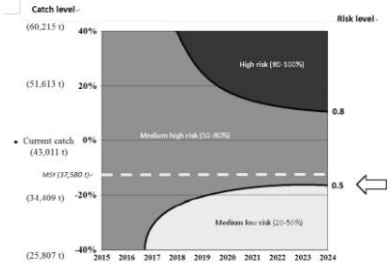
Table 3 Probabilities (%) violating TBmsy and Fmsy in 3 years (2017) and 10 years (2024) (Longtail tuna, Indian Ocean side of the SEAFDEC water)

Color legend				
Risk levels	Low risk	Medium low risk	Medium high risk	High risk
Probably	0-20%	20-50%	50-80%	80-100%

Catch level	60%	70%	80%	87%	90%	100%	110%	120%	130%	140%
				MSY level		Current catch (*)				
10 catch scenarios (tons)	25,807	30,108	34,409	37,580	38,710	43,011	47,312	51,613	55,014	60,215
$B_{2017} < B_{MSY}$	48	51	55	57	58	61	64	68	71	74
$F_{2017} > F_{MSY}$	35	41	49	56	59	71	79	87	93	98
$B_{2024} < B_{MSY}$	31	36	45	54	57	71	80	87	96	98
$F_{2024} > F_{MSY}$	31	35	42	53	57	75	87	92	96	98

(*) The current catch level is the average catch in 3 recent years (2012-2014)

TB



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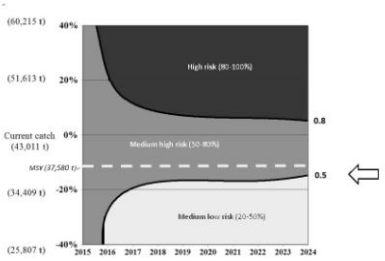

Fig. 9 Risk level (probably) (%) violating Fmsy in 10 years (2015-2024) by different catch levels (Longtail tuna, Indian Ocean side of the SEAFDEC water)

Recommendation :Management Measure (catch limit)

if MSY level (37,580 t) were continued in 10 years

⇩

Probabilities (risk) violating TBmsy and Fmsy are about 53%.

⇩

<u>Recommendation : total catch</u>
<u>(Longtail tuna, Indian Ocean side of the SEAFDEC area)</u>
<u>should be less than its MSY level (37,580 t).</u>

The current catch level (43,000 t) (Average of 2012-2014) should be decreased by 13%.

3.4 LONGTAIL TUNA (PACIFIC OCEAN SIDE OF THE SEAFDEC WATERS)

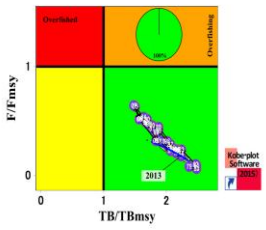

Table 4 Probabilities (%) violating TBmsy and Fmsy in 3 years (2016) and 10 years (2023) (Longtail tuna, Pacific Ocean side of the SEAFDEC water)

Color legend				
Risk levels	Low risk	Medium low risk	Medium high risk	High risk
Probably	0-20%	20-50%	50-80%	80-100%

Catch level	60%	70%	80%	90%	100%	110%	120%	130%	140%	223%
					Current catch(*)					MSY
10 catch scenarios (tons)	52,894	61,710	70,526	79,341	88,157	96,973	105,788	114,604	123,420	196,700
$B_{2016} < B_{MSY}$	0	0	0	0	0	0	0	0	0	0
$F_{2016} > F_{MSY}$	0	0	0	0	0	0	0	0	0	0
$B_{2023} < B_{MSY}$	0	0	0	0	0	0	0	0	0	52
$F_{2023} > F_{MSY}$	0	0	0	0	0	0	0	0	0	53

(*) The current catch level is the average catch in 3 recent years (2011-2013)

TB

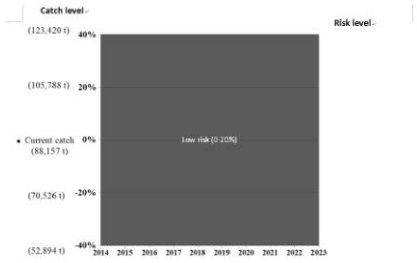

Fig. 11 Risk level (probably) (%) violating TBmsy in next 10 years (2014-2023) by different catch levels (Longtail tuna, Pacific Ocean side of the SEAFDEC water)

F

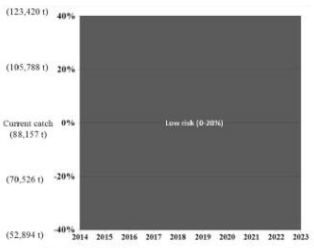

Fig. 12 Risk level (probably) (%) violating Fmsy in next 10 years (2014-2023) by different catch levels (Longtail tuna, Pacific Ocean side of the SEAFDEC water)

Table 5 Probabilities (%) violating TBmsy and Fmsy in 3 years (2016) and 10 years (2023) if the current catch were increased by 150%, 200%, 250% and 300% (Longtail tuna, Pacific Ocean side of the SEAFDEC water)

Reference point and projection timeframe	Alternative catch projections (relative to the average catch level from 2011–13) and probability (%) of violating MSY-based target reference points ($B_{MSY} = B_{MSY}$; $F_{MSY} = F_{MSY}$)					
	Current catch (*)			MSY		
Catch level	100%	150%	200%	223%	250%	300%
Projected catch (tons)	88,157	132,236	176,314	196,700	220,392	264,471
$B_{2016} < B_{MSY}$	0	0	0	0	0	0
$F_{2016} > F_{MSY}$	0	0	0	0	0	78
$B_{2023} < B_{MSY}$	0	0	24	52	84	100
$F_{2023} > F_{MSY}$	0	0	19	53	88	100

TB

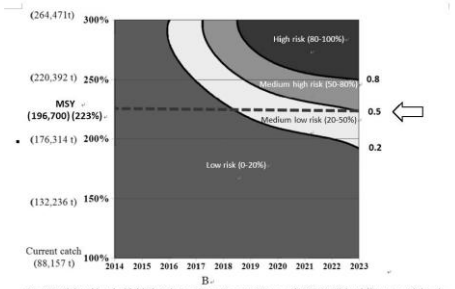

Fig. 13 Risk level (probably) (%) violating TBmsy in next 10 years (2014-2023) by different catch levels (100%, 150%, 200%, 250 and 300%) (Longtail tuna, Pacific Ocean side of the SEAFDEC water)

F

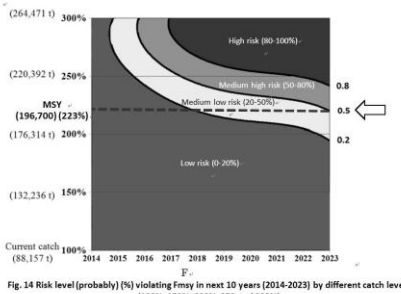

Fig. 14 Risk level (probably) (%) violating Fmsy in next 10 years (2014-2023) by different catch levels (100%, 150%, 200%, 250 and 300%) (Longtail tuna, Pacific Ocean side of the SEAFDEC water)

Recommendation :Management Measure (catch limit)

Even if the current catch were increased to the MSY level (196,700 t)
(223% higher than the current catch level (88,200 t) (Ave of 2011-2013)

⇩

Probabilities (risk) violating TBmsy and Fmsy are about 50%.

⇩

Recommendation

No catch limit but should be less than its MSY level (196,700 t)
(Longtail tuna, Pacific Ocean side of the SEAFDEC area)

How to conduct the Risk assessment?

- We plan to do the training course on the Risk assessment next year

Annex 6

Risk assessment of LOT and KAW in Pacific and Indian Ocean by *Dr. Tsutomu Nishida,* Resource Person

WP05 (LOT stock assessments) and WP06 (KAW stock assessments)
3rd Meeting of the Scientific Working Group on Neritic Tunas Stock Assessment in the SE Asian Waters, 27-29 June 2016, Chonburi, Thailand

Review

SWEDEN

STOCK ASSESSMENTS ON KAWAKAWA (*EUTHYNNUS AFFINIS*) AND LONGTAIL TUNA (*THUNNUS TONGGOL*) RESOURCES IN THE SE ASIA (SEAFDEC) WATERS

Authors (1 resource person+9 scientists)

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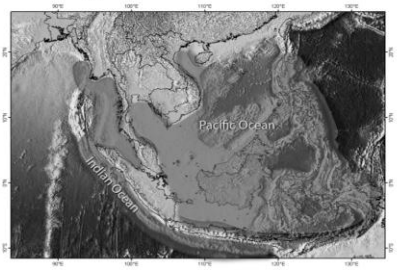
Pham Quoc **Huy** (Viet Nam)
Sallehudin Bin **Jamon** (Malaysia)
Sheryll **Mesa** (Philippines)
Supapong **Pattarapongpan** (SEAFDEC/TD)
Muhammad Adam bin **Ramlee** (Brunei)
Mohammad Faisal bin Md **Saleh** (SEAFDEC/MFRDMD)
Chalit **Sa-nga-ngam** (Thailand)

2 stock hypothesis (Pacific and Indian Ocean)



4 stock assessments

- LOT (Indian Ocean side)
- LOT (Pacific Ocean side)
- KAW (Indian Ocean side)
- KAW (Pacific Ocean side)

Data required by stock assessment models

	Structure	Model (example)	Data				
			Catch	CPUE	size	biology	space/tag
(1)	Catch (datapoor)	SRA					
(2)	Production model	ASPIC					
(3)	Age/size	VPA					
(4)	Integrated	SCAA/SCAS					
		SS3					

As the 1st step, we attempted the simple model (2) ASPIC

Input data

Historical nominal Catch (1950-2014) (Max period)

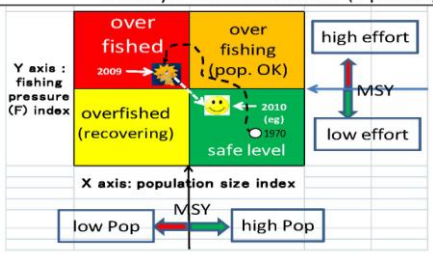
Published data **(IOTC, FAO and SEAFDEC)**
+ Report from member countries

Thai PS CPUE (1990-2013)
Thailand (Gulf of Thailand and Andaman Sea)

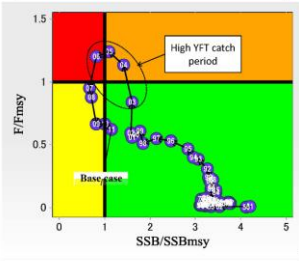
3 menu driven software
+ ASPIC original software (Prager, 2004)

What is the Kobe plot for those who hear the 1st time

Results of stock assessments
History of the stock status (4 phases)



Good example Indian Ocean YFT
(Nishida et al, 2011)



MSY =308,000 t

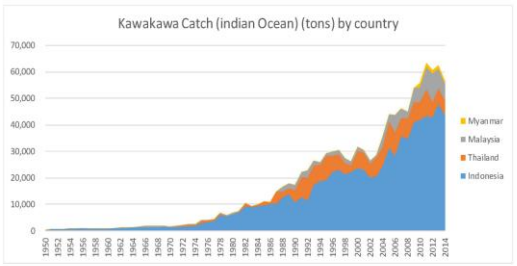
Catch(2011) =303,000 t

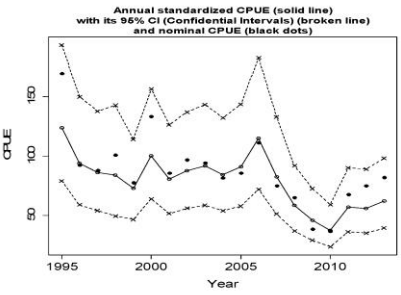
Fratio=0.62

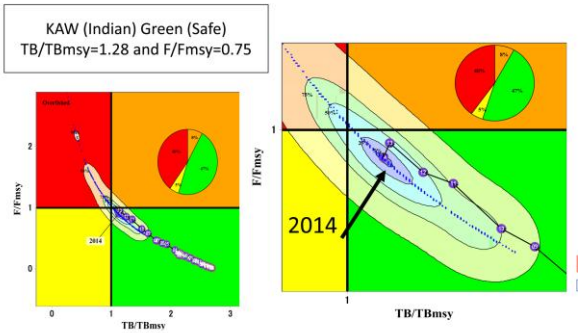
SSBratio=1.15

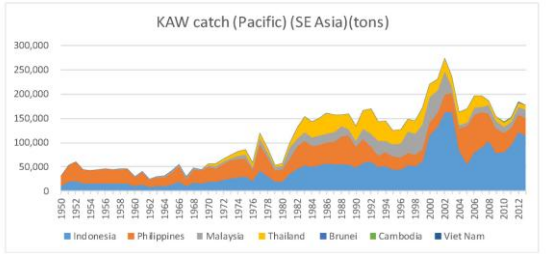
Entering Green zone

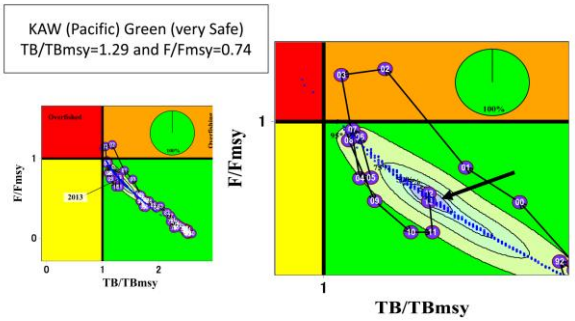
Contents





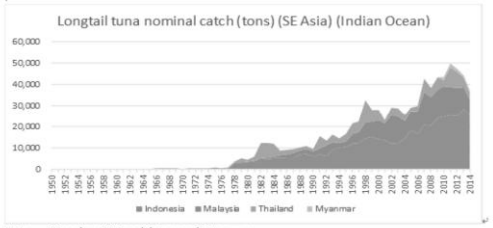






Contents

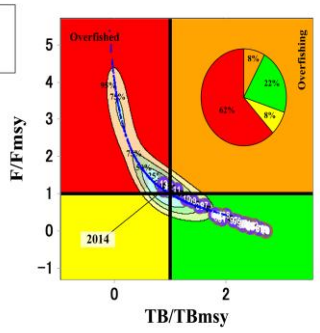
(1) Catch



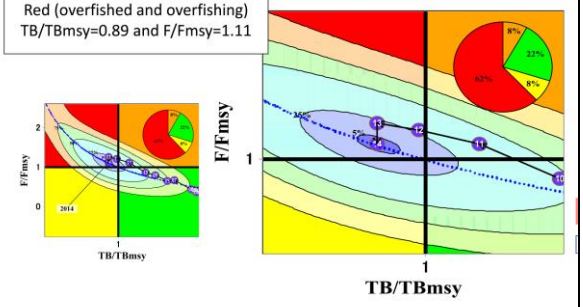
Note: *Based on IOTC and data coordinators.*
We used the data from 1970 for stock assessments as the data before 1970 is nil.

Fig. 17 Longtail tuna catch trend by country
(SEAFDEC SE Asia water in the Indian Ocean)

LOT (Indian)
Red (overfished and overfishing)
TB/TBmsy=0.89 and F/Fmsy=1.11

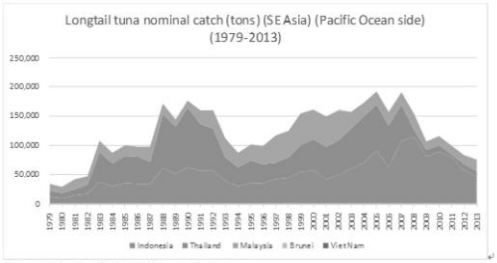


Red (overfished and overfishing)
TB/TBmsy=0.89 and F/Fmsy=1.11

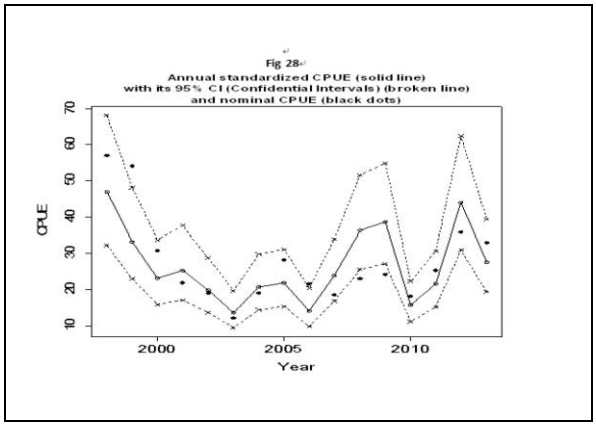


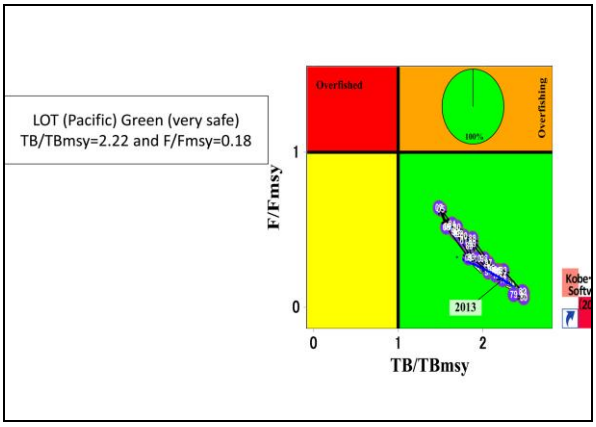
Contents

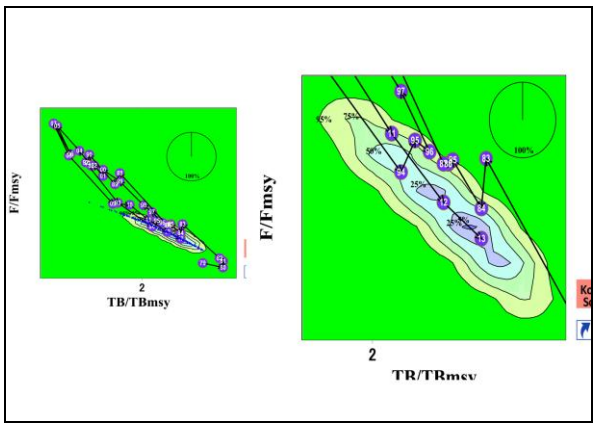
(1) CATCH

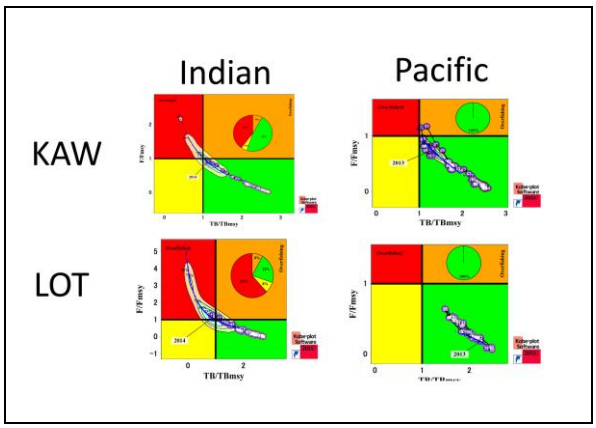


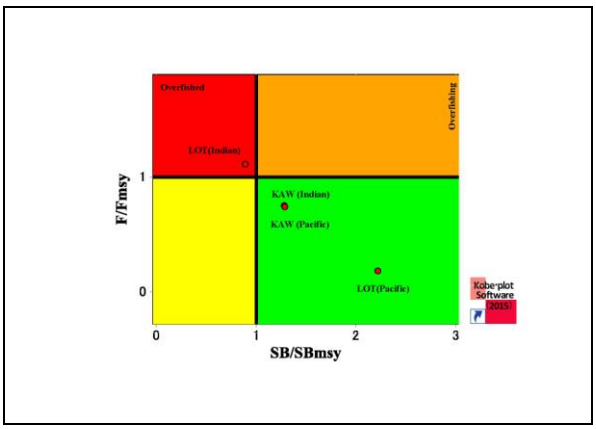
Note: *Based on FAO and data coordinators.*
We used the data from 1979 as the data before 1970 are incomplete







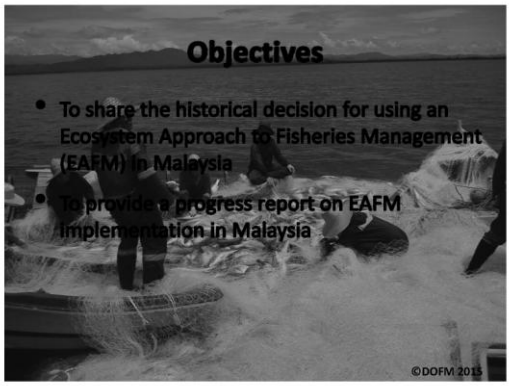


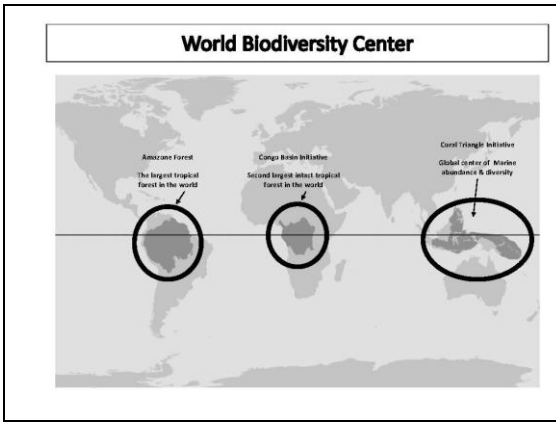


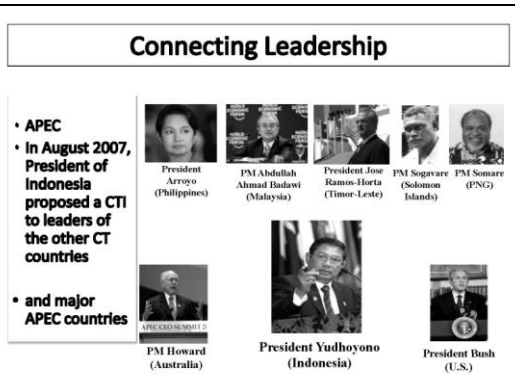
Thank you….

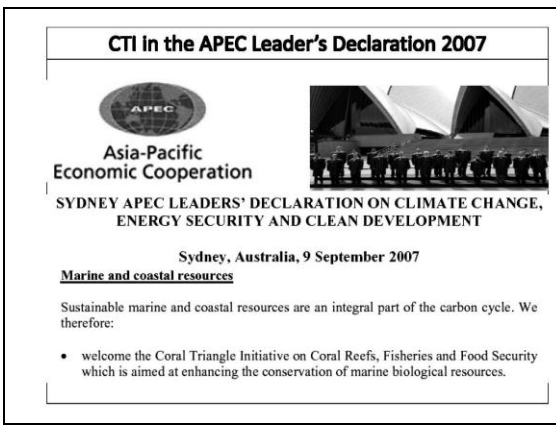
Annex 7

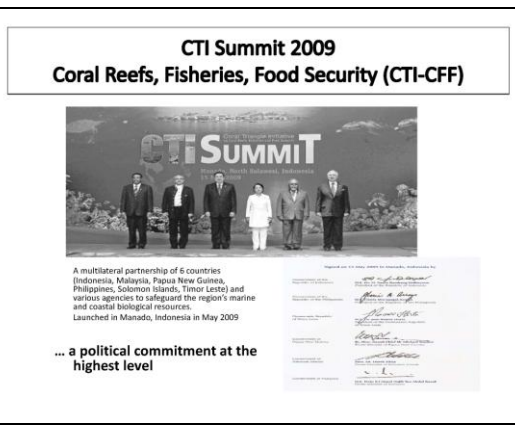
EAFM in Malaysia by *Ms. Tan Geik Hong*, Director of Resource Management Division from Department of Fisheries Malaysia









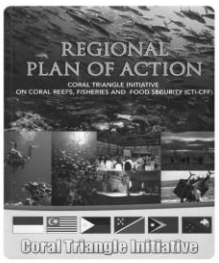


Coral Triangle

Coral Triangle Initiative (CTI) Plan of Action

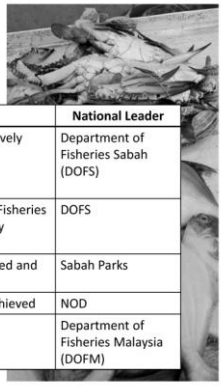
Oct 2009

Jan 2012



May 2009

CTI Goals



	Goal	National Leader
1	Priority Seascapes Designated and Effectively Managed	Department of Fisheries Sabah (DOFS)
2	Ecosystem Approach to Management of Fisheries (EAFM) and Other Marine Resources Fully Applied	DOFS
3	Marine Protected Areas (MPAs) Established and Effectively Managed	Sabah Parks
4	Climate Change Adaptation Measures Achieved	NOD
5	Threatened Species Status Improving	Department of Fisheries Malaysia (DOFM)

Our Commitment

- DOFS – chairman of Goal 2 EAFM
- DOFM – actively involved in Goal 2 at national level and chairman of Goal 5

Goal 2
EAFM and Other Marine Resources Fully Applied

...s on National and Regional EAFM Initiatives

- CTI Summit (2009)
- Three Regional Exchange for EAFM 2009 (Cebu), 2011 (Kota Kinabalu), 2012 (Putrajaya)
- CTI National Plan of Action (NPOA) (2009, 2012)
- National EAFM Steering Committee (2012)
- EAFM for Leadership, Executives and Decision Makers (LEAD) Course (2012)
- National EAFM Technical Working Group (Scientific and Finance) (2013)
- National EAFM Training Course (2013-2016)
- National EAFM Project (RMK10-RMK11) (2014-2020)
- EAFM Implementation at Semporna Demonstration site (2011-2014)
- Regional EAFM Training of Trainees and Trainers (Malaysia, Indonesia, Philipplines) 2013
- Regional CTI ADB RETA (EAFM) – implementation at national level in Semporna and Kudat (2013-2015)

National EAFM Course for Leaders, Executives and Decision Makers (LEAD) 10-11 December 2012, Putrajaya

Regional EAFM Training of Trainees and Trainers (Malaysia, Indonesia, Philippines) 2013

National EEAFM Training Course (2013-2016)

National Stakeholder EEAFM Training Course (2014-2016)

Progress on Promoting EAFM

National EAFM Workshop, 19 -20 February 2013, Putrajaya

17

Progress on Promoting EAFM

National EAFM Stakeholder's Consultation Programme, 22-23 April 2014, Putrajaya

Progress on Promoting EAFM

National EAFM Training of Trainers (ToT) Course, Sandakan, Sabah (24-26 August 2015)

Progress on Promoting EAFM

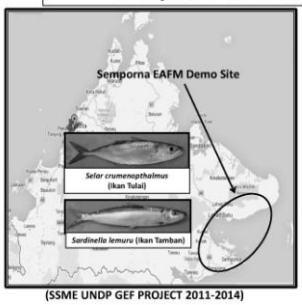
1st National EAFM Seminar, Sandakan, Sabah (14-15 April 2016)

Progress on Promoting EAFM

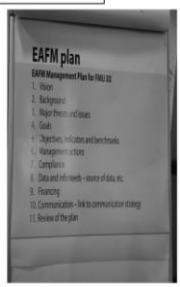
2nd National EAFM Seminar, Langkawi, Kedah (24-27 October 2016)

EAFM Project Sites

EAFM Implementation at Semporna Demo site

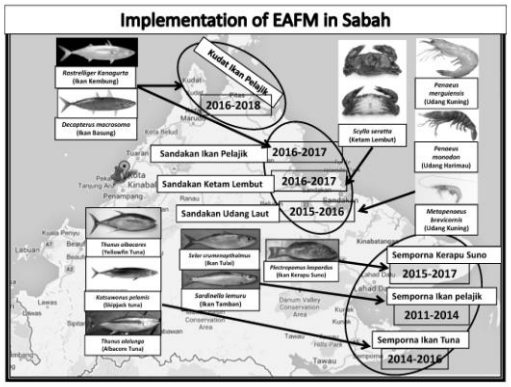


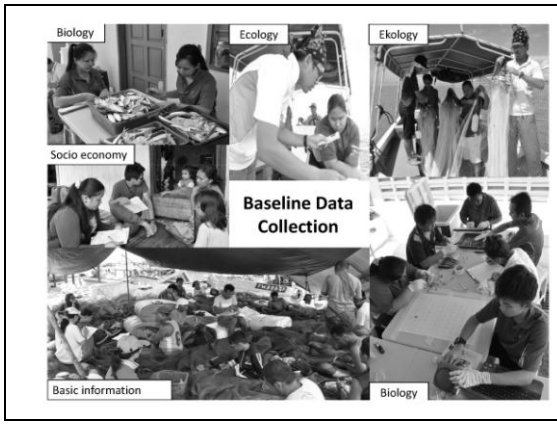
(SSME UNDP GEF PROJECT 2011-2014)

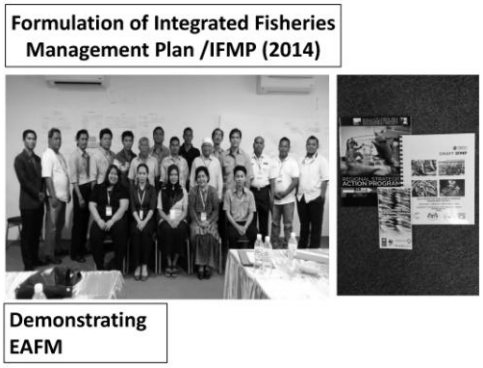


(FAO, 2003)

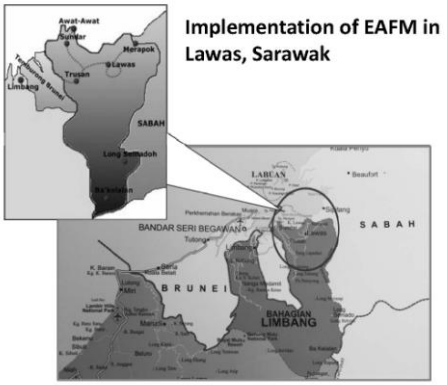
Implementation of EAFM in Sabah

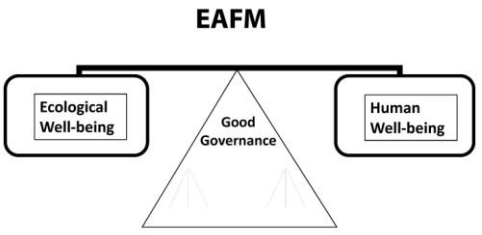


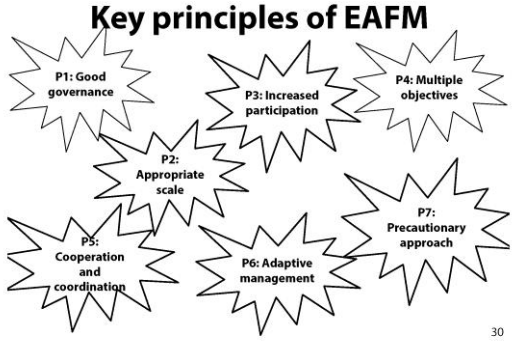

Biology
Ecology
Ekology
Socio economy
Baseline Data Collection
Basic information
Biology


Formulation of Integrated Fisheries Management Plan /IFMP (2014)
Demonstrating EAFM

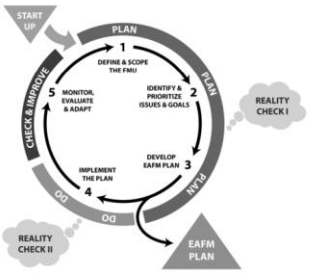

EAFM Stakeholder Consultation in Sandakan


Implementation of EAFM in Lawas, Sarawak
Awat-Awat
Merapok
Lawas
Trusan
Limbang
SABAH
LABUAN
Beaufort
BANDAR SERI BEGAWAN
SABAH
BRUNEI
BAHAGIAN LIMBANG


EAFM
Ecological Well-being
Good Governance
Human Well-being
for future generations
29


Key principles of EAFM
P1: Good governance
P3: Increased participation
P4: Multiple objectives
P2: Appropriate scale
P7: Precautionary approach
P5: Cooperation and coordination
P6: Adaptive management
30

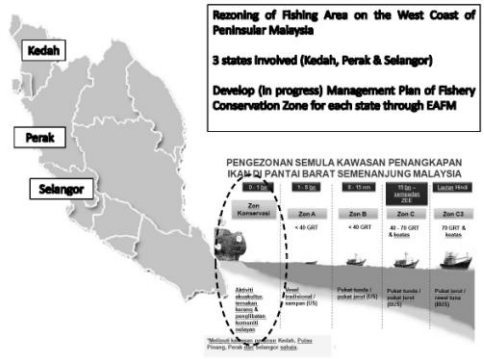
The 5 steps of EAFM



7. EAFM PROCESS OVERVIEW 31

Launching of Lawas EAFM Plan, 28 November 2015

PELAN PENGURUSAN PERIKANAN MELALUI PENDEKATAN EKOSISTEM LAWAS, SARAWAK



Challenges in National EAFM Implementation

Translation of information/principles of EAFM

Breakdown in information flow from Regional Exchanges (REX) to national/state/district levels

Translation of EAFM regional/national objectives into national operational policy

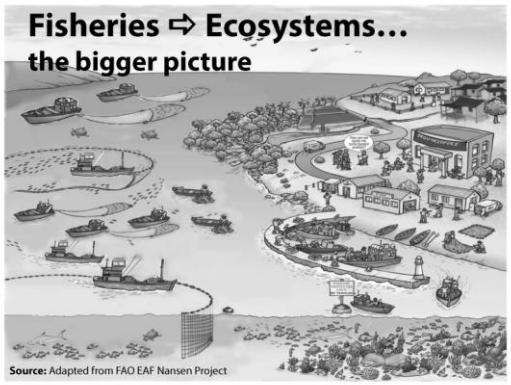
Limited examples of complete implementation of EAFM projects/programmes

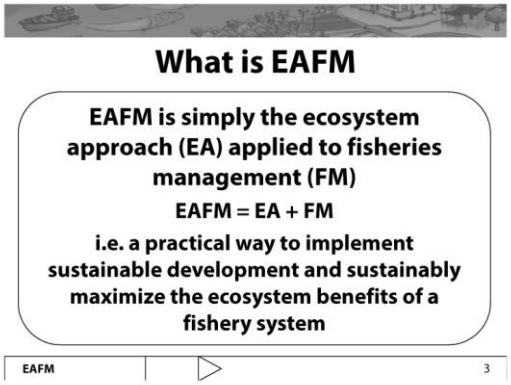
The Way Forward

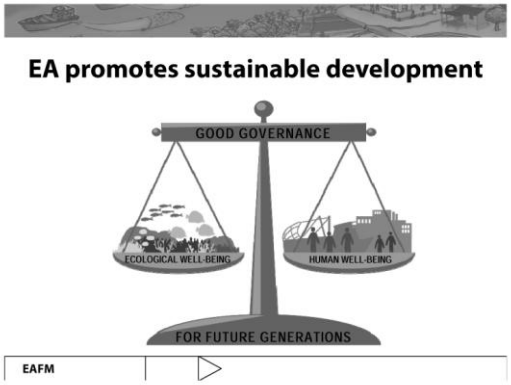
- Awareness of the concept of EAFM
- Structured EAFM training based on FAO module
- Increase stakeholders participation
- Funding of EAFM (RMK11, other resources – CSR)
- Build local capacity – establish more 'EAFM comrades'

Annex 8

Ecosystem Approach Fisheries Management (EAFM) by *Ms. Panitnard Talad*, Training and Extension Section Head and Special Department Coordinator from SEAFDEC/TD





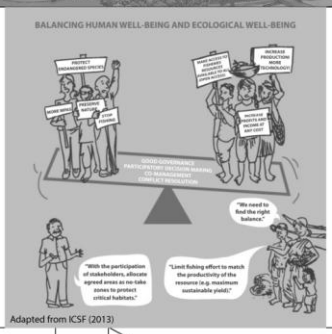


EAFM builds on existing fisheries management : "the move towards EAFM"

EXISTING	EAFM	EA/EBM
• target species • fish focused • production driven • managed through control of fishing • government driven	• target and bycatch • considers habitats • fishery impacts on the ecosystem • threats to the fishery from external factors • good governance/ participatory • socio-economic benefits	• integrated management across sectors • multiple use management

EAFM 7

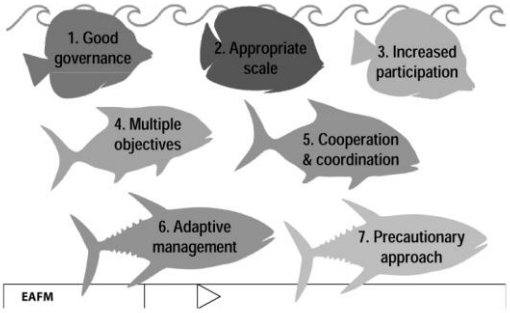
EAFM IS FINDING THE BALANCE



Adapted from ICSF (2013)

EAFM 8

Key principles of EAFM

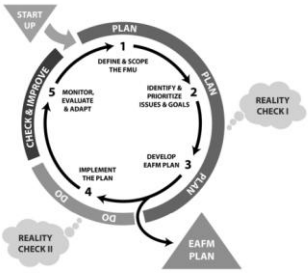


EAFM

EAFM process overview

EAFM

The 5 steps of EAFM



EAFM 11

Startup A

A. Prepare the ground

- Identify who should be involved
- What is planned to happen (plan for the process)
- Decide on the general location

EAFM 12

Startup B

B. Stakeholder engagement

Engage stakeholders for:

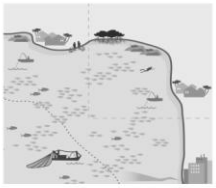
- Participatory planning
- Co-management

EAFM 13

Step 1

Define and scope the Fisheries Management Unit (FMU)

1.1 Define the FMU
1.2 Agree the FMU vision
1.3 Scope the FMU



Provides background information and a vision

EAFM 14

Step 2

Identify & prioritize issues & goals

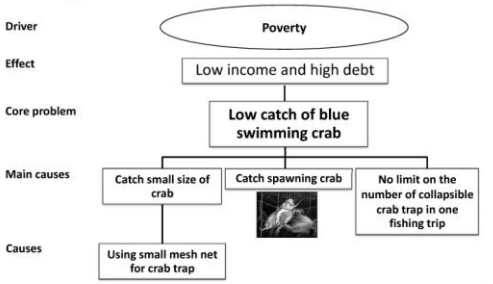
Identifies the high priority issues and sets goals

2.1 Identify threats & issues
2.2 Prioritize issues
2.3 Define goals for EAFM plan

EAFM 15

Problem tree

A diagram which traces the causes and effects of problems



EAFM 16

Problem tree (contd.)

Effects	⇨	Goals
Core problems	⇨	Objectives
Causes	⇨	Management actions

EAFM 17

Reality check I

Are the goals achievable?

Reality check I
-Constraints & opportunities
-Facilitation / skills
-Conflict management

EAFM 18

Step 3
Developing the EAFM plan

3.1 Develop operational objectives

3.2 Develop indicators & benchmarks

3.3 Management actions

3.4 Identify sustainable financing

3.5 Finalize the EAFM plan

Develops the management framework

Step 4 Implement

4.1 Formalize, communicate and engage

Implements the plan through formalizing and communicating it

Reality check II

Checks whether the governance and supporting structures are in place

Step 5
Monitor, evaluate, adapt

5.1 Monitor & evaluate (M&E) performance of management actions

5.2 Adapt the plan based on M&E

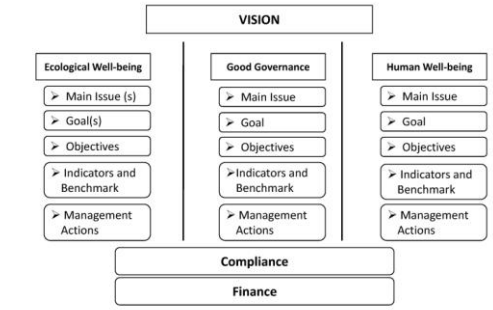
Completes the EAFM cycle with M&E and adapts the plan to start a new cycle

EAFM cycle

Planning – Steps 1-3
1. Define & scope
2. Issues & goals
3. Objectives, indicators, management actions & compliance, financing

Doing - Step 4
4. Implement

Checking & improving - Step 5
5. Monitor, evaluate and adapt



The sub-steps

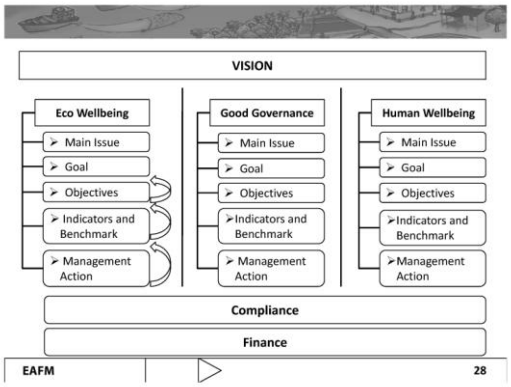
5.1 M&E

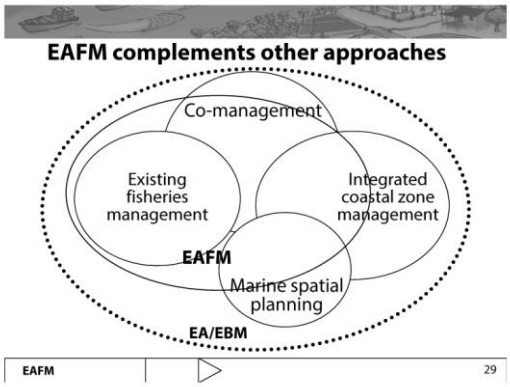
- Monitor: Collect data (focus on indicators)
- Evaluate: Collate results of monitoring and evaluate management performance against benchmarks, and report

5.2 Review and adapt the EAFM plan

- Review: Regular reviews of the plan
- Adapt: Adapt the plan as required

17. STEP 5: MONITOR, EVALUATE & ADAPT 27

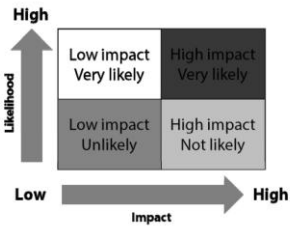




Prioritization based on risk

Impact
-how much change would occur

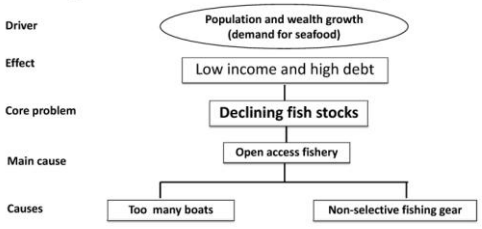
Likelihood
-probability of it occurring



11. STEP 2: IDENTIFY & PRIORITIZE ISSUES & GOALS 30

Problem tree (contd.)

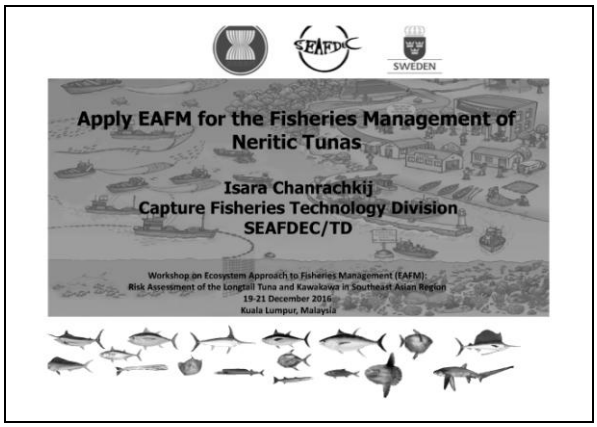
A diagram which traces the causes and effects of problems

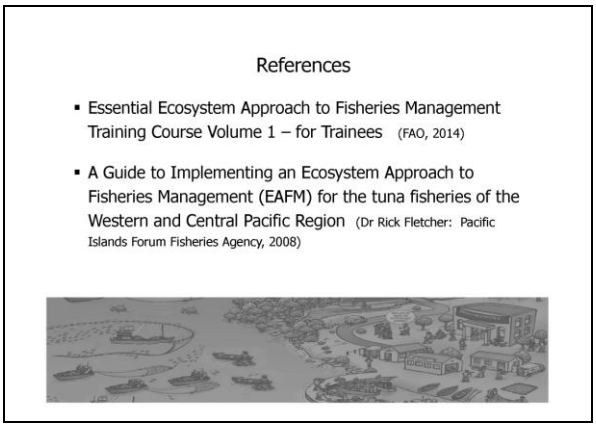


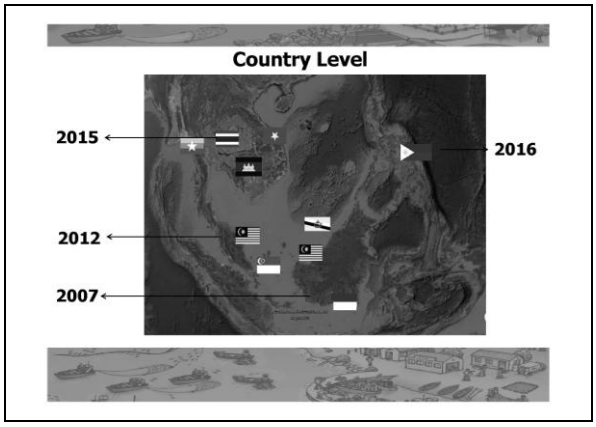
11. STEP 2: IDENTIFY & PRIORITIZE ISSUES & GOALS 31

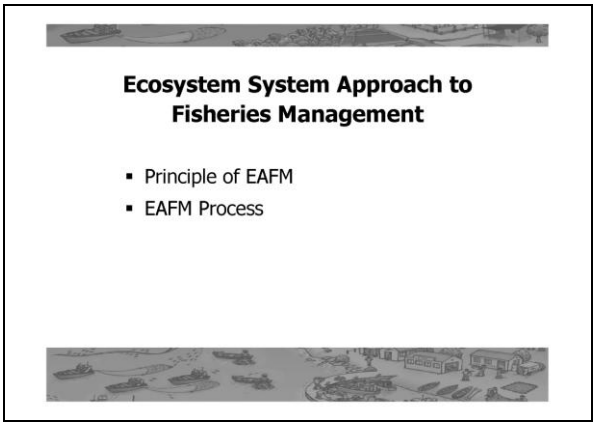
Annex 9

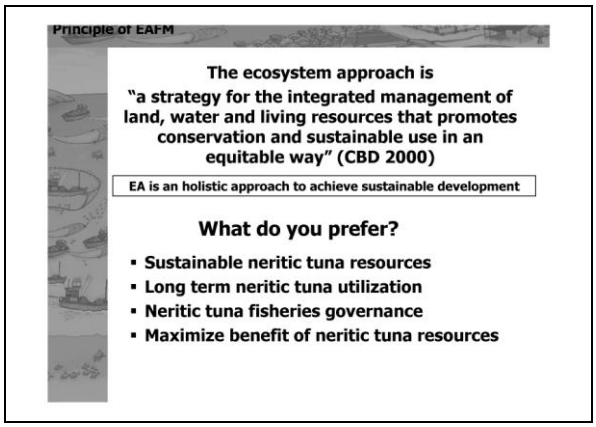
Apply EAFM for the Fisheries Management of Neritic Tunas by *Mr. Isara Chanrachki*, Fishing Gear Technology Section Head, Capture Fisheries Technology Division from SEAFDEC/TD

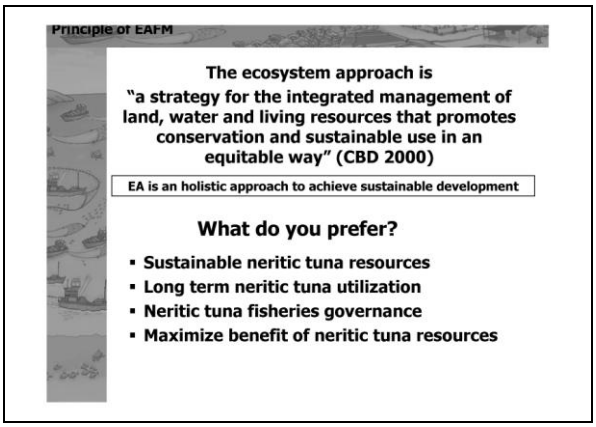


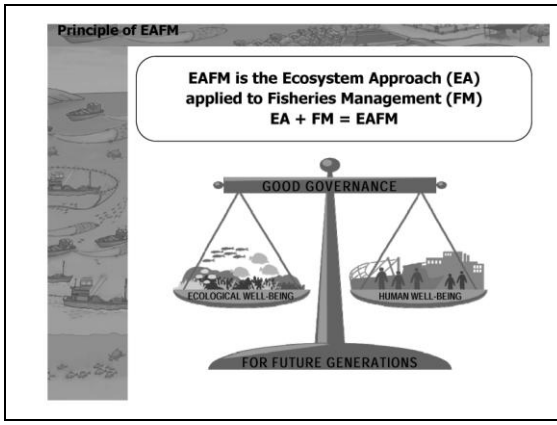


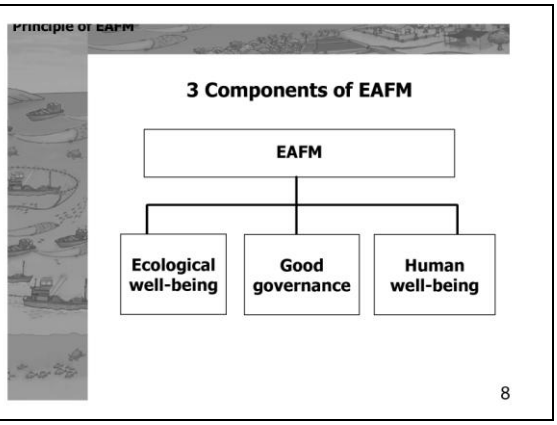


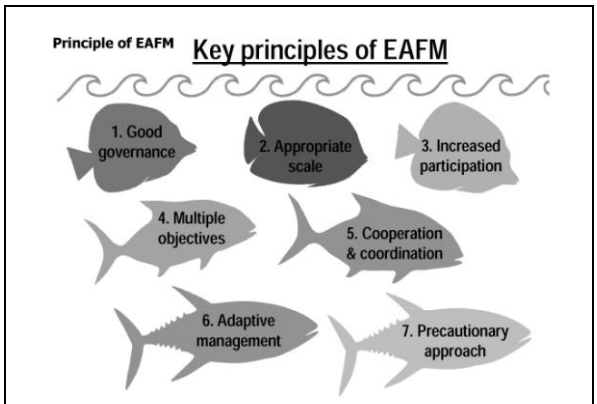


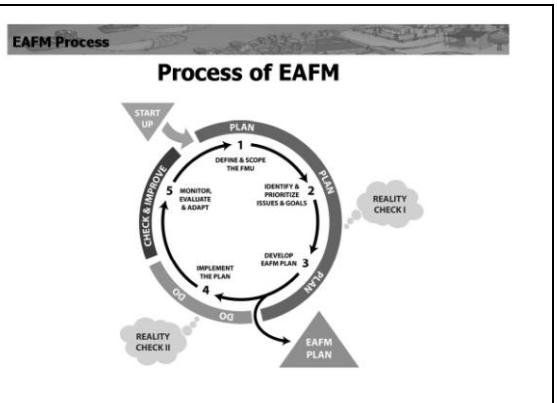


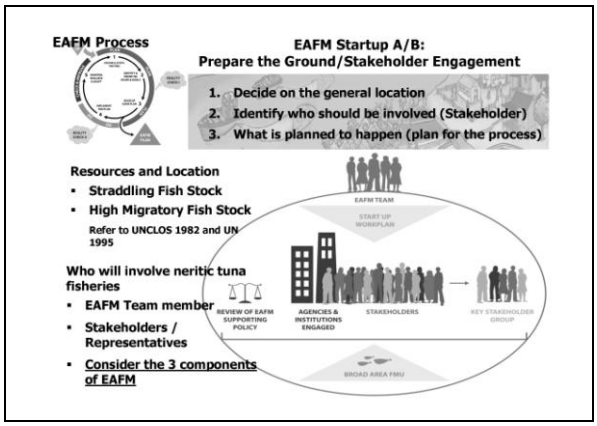


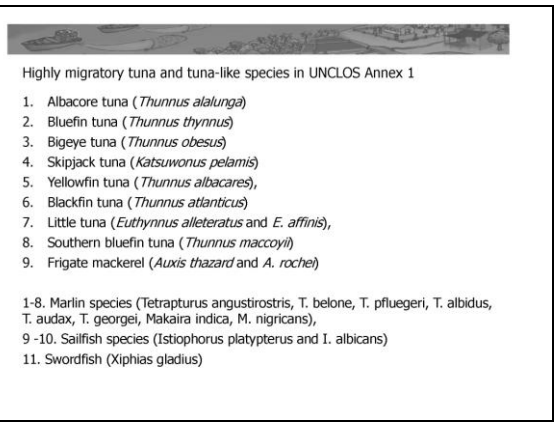

Principle of EAFM
EAFM is the Ecosystem Approach (EA) applied to Fisheries Management (FM)
EA + FM = EAFM
GOOD GOVERNANCE
ECOLOGICAL WELL-BEING
HUMAN WELL-BEING
FOR FUTURE GENERATIONS


3 Components of EAFM
EAFM
Ecological well-being
Good governance
Human well-being
8


Principle of EAFM
Key principles of EAFM
1. Good governance
2. Appropriate scale
3. Increased participation
4. Multiple objectives
5. Cooperation & coordination
6. Adaptive management
7. Precautionary approach

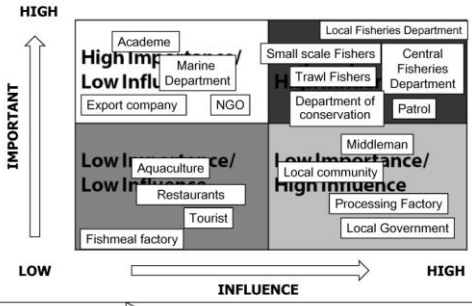

EAFM Process
Process of EAFM
START UP
PLAN
DEFINE & SCOPE THE FMU
IDENTIFY & PRIORITIZE ISSUES & GOALS
DEVELOP EAFM PLAN
IMPLEMENT THE PLAN
MONITOR, EVALUATE & ADAPT
CHECK & IMPROVE
DO
REALITY CHECK I
REALITY CHECK II
EAFM PLAN


EAFM Process
EAFM Startup A/B:
Prepare the Ground/Stakeholder Engagement
1. Decide on the general location
2. Identify who should be involved (Stakeholder)
3. What is planned to happen (plan for the process)
Resources and Location
Straddling Fish Stock
High Migratory Fish Stock
Refer to UNCLOS 1982 and UN 1995
Who will involve neritic tuna fisheries
EAFM Team member
Stakeholders / Representatives
Consider the 3 components of EAFM
EAFM TEAM
START UP WORKPLAN
REVIEW OF EAFM SUPPORTING POLICY
AGENCIES & INSTITUTIONS ENGAGED
STAKEHOLDERS
KEY STAKEHOLDER GROUP
BROAD AREA FMU

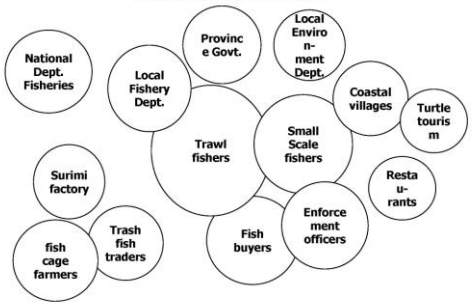

Highly migratory tuna and tuna-like species in UNCLOS Annex 1
1. Albacore tuna (Thunnus alalunga)
2. Bluefin tuna (Thunnus thynnus)
3. Bigeye tuna (Thunnus obesus)
4. Skipjack tuna (Katsuwonus pelamis)
5. Yellowfin tuna (Thunnus albacares),
6. Blackfin tuna (Thunnus atlanticus)
7. Little tuna (Euthynnus alleteratus and E. affinis),
8. Southern bluefin tuna (Thunnus maccoyii)
9. Frigate mackerel (Auxis thazard and A. rochei)
1-8. Marlin species (Tetrapturus angustirostris, T. belone, T. pfluegeri, T. albidus, T. audax, T. georgei, Makaira indica, M. nigricans),
9 -10. Sailfish species (Istiophorus platypterus and I. albicans)
11. Swordfish (Xiphias gladius)

Possible stakeholders in General Fisheries (in National Level)

Source: Adapted from FAO



Identify & engage stakeholders
Example in Trawl Fisheries



Who are stakeholders in neritic tuna fisheries?

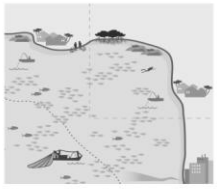
Process for stakeholders consultation - Participation Approach?

- **National Level**
- **Sub-Regional Level**

Source: Adapted from FAO

Step 1
Define and scope the Fisheries Management Unit (FMU)

1.1 Define the FMU
1.2 Agree the FMU vision
1.3 Scope the FMU



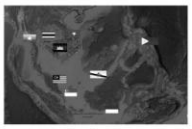
Provides background information and a vision

Step 1 Define and Scope Fisheries Management Unit (FMU)

1. **Define the FMU**
2. **Agree the FMU Vision**
3. **Scope the FMU**

Define the FMU

- **Species-based e.g. Tuna fishery**
- **Based on species group e.g. Pelagic fishery**
- **Gear-based e.g. Trawl fishery**
- **Area-based e.g. Southeast Asia, Indian Ocean**
- **Combination of all of these**



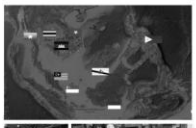
EAFM Process

Step 1 Define and Scope Fisheries Management Unit (FMU)

1. Define the FMU
2. Agree the FMU Vision
3. Scope the FMU

Agree the FMU Vision - Three components

- Increased benefits to stakeholders
- Sustainable use of the resources
- Increased ecosystem services



EAFM Process

Step 1 Define and Scope Fisheries Management Unit (FMU)

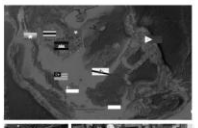
1. Define the FMU
2. Agree the FMU Vision
3. Scope the FMU

Scope the FMU

Scoped for relevant and useable information ,i.e.

- **Fishery data – catch, effort, stock assessment, economics**
- **Ecosystems** – biological/ecological, habitat, environment
- **Resource use activities** – who and how people use the resource and how they benefit (socio-economic)
- **Governance** – what the current governance arrangements are

Basis for planning and management activities and Baseline for future M&E



EAFM Process

Step 2
Identify & prioritize issues & goals

Identifies the high priority issues and sets goals

2.1 Identify threats & issues
2.2 Prioritize issues
2.3 Define goals for EAFM plan

EAFM Process

Step 2
Identify & prioritize issues & goals

2.1 Identify threats & issues
2.1 Prioritize issues
2.3 Define goals for EAFM plan

✓ **Cover 3 components**

Ecological well-being	Human well-being	Good governance

✓ **The best conduct by relevant stakeholders**

EAFM Process

Step 2
Identify & prioritize issues & goals

2.1 Identify threats & issues | **Ecological well-being**

Example of resources

- **Target**
- **Non-target**
- **Bycatch**
- **Discard**
- **ETP and**
- **etc**

Example of ecosystem effect (Impact to Environment)

- **Ecosystem Structure**
  - Ghost fishing
  - Discarding and Provisioning
  - Translocation
  - Community Structure
- **General Environment**
  - Water quality
  - Waste Disposal

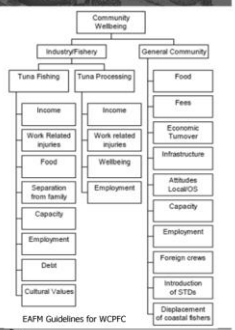
EAFM Process

Step 2 Identify & prioritize issues & goals

2.1 Identify threats & issues

Human wellbeing

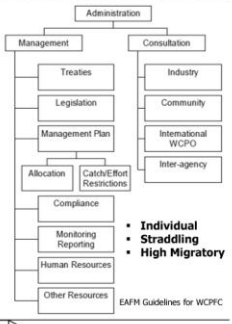
The 'Human well-being or **Community Wellbeing'** covers the potential social and economic impacts (both good and bad) of the fishery on the wellbeing of the local or regional communities associated with that fishery.



EAFM Guidelines for WCPFC

EAFM Process

Step 2 Identify & Prioritize issues & Goals



2.1 Identify threats & issues

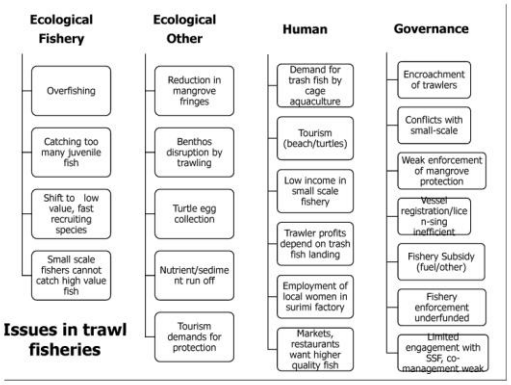
Governance

The 'Governance / Administration/ Managing' covers all the legislative, administrative and bureaucratic processes that need to be completed to enable the issues in the previous four trees to be dealt with effectively. These issues may cover a number of levels of government and the industry.

- **Individual**
- **Straddling**
- **High Migratory**

EAFM Guidelines for WCPFC

7. EAFM PROCESS OVERVIEW 25



Issues in trawl fisheries

EAFM Process

Step 2
Identify & prioritize issues & goals

2.2 Prioritize issues

- Need to prioritize these as they cannot all be managed at once
- Stakeholders will generate a long list of threats and issues
- Different stakeholders provide different threats and issues
- Lack of stakeholder >> Less holistic

Realistic

- There is a practical limit to the number of issues that can be dealt with by a management system
- Prioritization of specific issues is usually conducted using a risk assessment

7. EAFM PROCESS OVERVIEW 27

EAFM Process

Step 2
Identify & prioritize issues & goals

2.2 Prioritize issues by Risk Assessment

A risk analysis typically seeks answers to 4 questions:

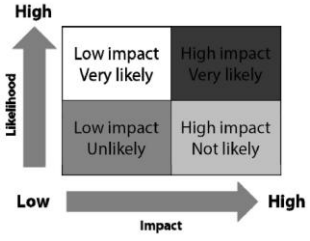
- What can go wrong? (*Risk*)
- How likely is it to go wrong? (*Likelihood*)
- What would be the consequences of it going wrong? (*Impact*)
- What can be done to reduce either the likelihood or the consequences of it going wrong? (*Action*)

RISK = LIKELIHOOD x IMPACT

- High priority issues are those with a high likelihood of occurrence and high impact
- High priority issues are the ones that require direct management

7. EAFM PROCESS OVERVIEW 28

Prioritization based on risk



Impact
- How much change would occur

Likelihood
- Probability of it occurring

2

Prioritization based on risk

		Consequence Level			
		Minor	Moderate	Major	Extreme
Likelihood		1	2	3	4
Remote	1	1	2	3	4
Unlikely	2	2	4	6	8
Possible	3	3	6	9	12
Likely	4	4	8	12	16

EAFM Guidelines for WCPFC

Consequent level
(Impact)

Likelihood
- Probability of it occurring

3

EAFM Process

Step 2
Identify & prioritize issues & goals

2.2 Goals

A risk analysis typically seeks answers to 4 questions:

- Goals are nested under the vision and should still be broad level and limited to three to five for any EAFM plan.
- A goal is the long term outcome that management is striving to achieve.
- It often refers to a group of inter-related issues and components

Vision
Broad goal for the plan

Goals
Goals for different set of issues

7. EAFM PROCESS OVERVIEW 31

EAFM Process

Step 2
Identify & prioritize issues & goals

2.2 Goals

For example:

Theme: Fishery and ecological issues

"Restored and Sustainably managed neritic tuna and associated marine living resources"

Theme: Habitat issues

"Restored and conserved vulnerable critical and spawning habitats of neritic tuna"

Theme: Livelihood issues

"All communities that depend on the neritc tuna resources are restored to and maintained above the poverty level"

Theme: Governance issues

"Compliance and enforcement of illegal neritic tuna fishing activities is effective and efficient

11. STEP 2: IDENTIFY & PRIORITIZE ISSUES & GOALS 32

Step 3
Developing the EAFM plan

3.1 Develop operational objectives

3.2 Develop indicators & benchmarks

3.3 Management actions & compliance

3.4 Identify sustainable financing

3.5 Finalize the EAFM plan

Develops the management framework

3

EAFM Process

Step 3 Develop objectives, indicators and benchmarks

3.1 Develop Objective

Objective is a formal statement detailing the desired outcome of management

Fishery and ecological objective "Maintain or restore stocks at capable of producing maximum sustainable yield as qualified by relevant environmental and economic factors (Objective of WCPFC)

Habitat objective "Maintain the nursery habitat of neritic tuna from the fishing activity

Livelihood objective"Maintaining access to sufficient resources to enable of survival of the communities and industries"

Governance objective "Reducing the illegal fishing in neritic tuna fisheries"

Through the process of Participatory Approach and agreed by stakeholder

7. EAFM PROCESS OVERVIEW 34

EAFM Process

Step 3 Develop objectives, indicators and benchmarks

3.1 Develop Objective

Objective is a formal statement detailing the desired outcome of management

"Maintain or restore stocks at capable of producing maximum sustainable yield as qualified by relevant environmental and economic factors (Objective of WCPFC)

"Maintain the nursery habitat of neritic tuna from the fishing activity

"Maintaining access to sufficient resources to enable of survival of the communities and industries"

"Reducing the illegal fishing"

7. EAFM PROCESS OVERVIEW 35

EAFM Process

Step 3 Developing the EAFM plan

3.2 Develop Indicator and Benchmark

A measure of the current status at one point in time (e.g. number of fish, area of mangroves, number of illegal vessel)

An indicator must be linked to the objective

Benchmark is a target, limit, or baseline that provides a reference for comparing the indicator

Target = where you want to be
Limit = where you do not want to be
Baseline = where you have come from

7. EAFM PROCESS OVERVIEW 36

EAFM Process

Data & information for the indicators and benchmarks

- Data and information are needed for the indicators and benchmarks
- Use existing data, where available
- Collect new data, if necessary
- Use participatory approaches, if possible

Note:

✓ When the indicator is compared to benchmark ,it tells you how well you are meeting the objective

✓ Data & information is a cross-cutting theme. It was needed for scoping to set the background and now for indicators and benchmarks

✓ Indicators and benchmarks must be "***SMART***"

- **S**pecific (in terms of quantity, quality and time)
- **M**easurable (easy to measure with acceptable cost)
- **A**vailable (from existing sources or with reasonable extra effort)
- **R**elevant (to objectives and sensitive to change)
- **T**imely (measured regularly)

13. STEP 3. DEVELOP OBJECTIVES, INDICATORS & BENCHMARKS 37

EAFM Process

Step 3 Developing the EAFM plan

3.3 a Management actions

Sets of management action will help meeting of the objectives

Management actions could include:

(i) Technical measures
- Catch and effort controls (e.g. gear, limited entry, harvest control)
- Spatial and temporal controls (e.g. MPAs, seasonal closures)

(ii) Ecosystem manipulation i.e. habitat restorations (e.g. Restocking)

(iii) Community-based i.e. income diversification (e.g. alternative livelihoods skills)

(iv) Human capacity i.e. Fishery management skills

(v) Strengthen institutions i.e. increase coordination (e.g. interagency task forces)

(vi) Work with others to achieve objectives outside your mandate e.g. ICM, MSP, Environment Agency, etc.

7. EAFM PROCESS OVERVIEW 38

EAFM Process

Step 3 Developing the EAFM plan

3.4 Financing

Budget
- How much?
- Where from? (Existing sources? / New sources?)
- Existing budget and budget cycles
- Need to consider who will/can pay, equity, impacts

Sources of financing
- Government (part of the normal budget cycle)
- Government (special grant)
- Donors (may cover startup costs but not ongoing)
- Grants from NGOs
- Fishing fee and fines (e.g. licenses, penalties)
- Stakeholders – **Industries (share the costs)**

7. EAFM PROCESS OVERVIEW 39

EAFM Process

Step 4 and 5

5 .1 Monitor and Evaluate performance of management actions

5.2 Adapt the plan

Step 4 Formalize, communicate & engage

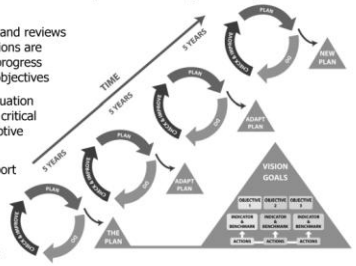
4

EAFM Process

Step 5 Monitor, evaluate, adapt

Step 5 is a critical step in the management cycle

- Regular monitoring and reviews of management actions are required to assess progress towards achieving objectives
- Monitoring and evaluation (M&E) provides the critical information for adaptive management
- Need scientific support including ecology socioeconomic and governance
- Prepare for the coming new threats

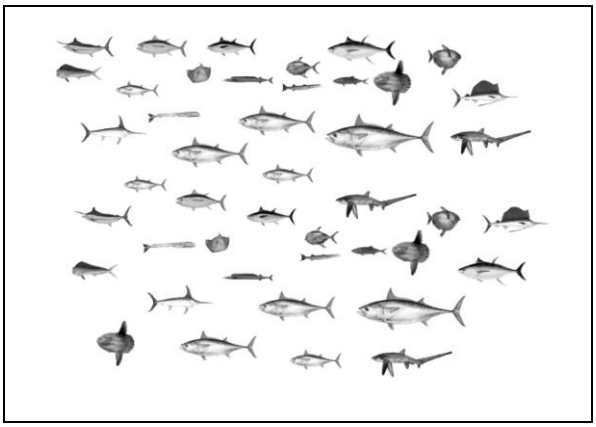


7. EAFM PROCESS OVERVIEW 41

Notes

- Is neritic tuna is straddling / high migratory
- Institutional framework – Far beyond local/national level?
- EAFM need PA - Who are stakeholders in Neritic Fisheries? (National / Regional)
- Who are high influent and high important stakeholders
- What happen in neritic tuna fisheries? (Threat and Issues in fisheries)
- In EAFM, threats and issues needed considering in 3 components (Possible 4 pillars)
- Economic incentive to mobilize fishing industries is required
- Development of Management Plan is national / regional level
- EAFM is never ending stories even though you have already finish the plan
- Management is success or not indicate by project indicator


EEAFM and LEAD Website
www.eafmlearn.org
EAFM
EAFM
www.eafmlearn.org



Annex 10

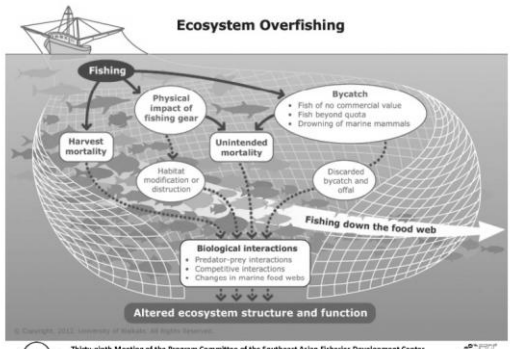
Promotion of Sustainable Fisheries Development through the EAFM concept
by *Dr. Somboon Siriraksophon,* Policy and Program Coordinator from SEAFDEC Secretariat

THIRTY-NINTH MEETING OF THE PROGRAM COMMITTEE
SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER
Yogyakarta, Indonesia, 28-30 November 2016

Promotion of Sustainable Fisheries Development through the EAFM concept

SECRETARIAT

Side Event of the REBYC2



Thirty-ninth Meeting of the Program Committee of the Southeast Asian Fisheries Development Center
Yogyakarta, Indonesia, 28-30 November 2016 2

EAFM for Neritic Tunas

Resources/Environment	ASEAN Governances	Social Aspects
❖ **RPOA-neritic Tunas** ❖ Scientific Target Ref. ❖ Risk Assessment ❖ Management measures • Input-Output control • ACDS, PSM, RFVR ❖ **RPOA-Capacity** ❖ Sub-regional Management ❖ **Impact to Ecosystem**	❖ Sub-regional agreement ✓ Gulf of Thailand ✓ Andaman Sea ✓ Sulu-sulawesi seas ❖ Laws and regulations ❖ VGSSF	❖ Labor aspects • ASEAN Guildeline on Labor aspects ❖ Gender ❖ Human right (relation to labor and VGSSF) ❖ VGSSF

Thirty-ninth Meeting of the Program Committee of the Southeast Asian Fisheries Development Center
Yogyakarta, Indonesia, 28-30 November 2016 3

Integrated Workplan and Cooperation among AMSs, among the Partners are needed to meet the required EAFM Concept for Sustainable Development of Fisheries and ensures the food security

REBYC-II CTI · JTF TRUST FUND - FISHERIES AGENCY OF JAPAN · SWEDEN · USAID FROM THE AMERICAN PEOPLE

Thirty-ninth Meeting of the Program Committee of the Southeast Asian Fisheries Development Center
Yogyakarta, Indonesia, 28-30 November 2016 4

Annex 11

Andaman Sea Sub-region
(Indonesia, Malaysia and Thailand)
Identification of Key Issues concerning the Neritic Tuna resources in the Andaman Sea Sub-region

Ecological aspects	Social and Economic/Human well-being	Governance
❖ Over fishing (Recruitment overfishing) ❖ Catch of small size fish (Juvenile) ❖ Lack of scientific data (*to be associated with the followings*; ✓ *No good CPUE for stock assessment* ✓ *Quality of data for stock assessment* ✓ *Unknown stock structure* ✓ *Insufficient biological data* ✓ *Quality of catch data* ✓ *Landing data only (No logbook available)* ✓ *No good national data collection system* ✓ *Low quality of logbook data* ✓ *No observer onboard for Neritic tunas*	❖ Lack of awareness on responsible fisheries ✓ *Alien labor* ✓ *Coordination with private sectors* ✓ *No downstream activities for tuna (Processing factory)* ✓ *Fishing ground conflict* ✓ *Safety for fishers onboard*	❖ Transboundary species management ❖ Lack of/insufficient regional landing site ❖ IUU fishing ❖ Regional traceability system ❖ Enforcement and compliance ❖ MCS

Andaman Sea Sub-region: Prioritized Stakeholders

High important and Low influence (Need to be represented) ● FAO ● SEAFDEC ● University ● Researcher (not including DOF and Government Agency) ● Bank ● Ministry of Labour ● Customs	**High important and High influence** (Key stakeholder in EAFM , Needs including in Stakeholder Group) ● Funding Agencies ● Department of Fisheries (including researcher) ● Fisheries Patrol ● Coast guard ● Processing factory ● Fisherman Association ● Tuna Association ● Ministry of Agriculture and Ministry of Fisheries ● RFMOs (IOTC) ● Vessel owners
Low important and Low influence (Less Priority) ● Ministry of Foreign Affairs ● ASEAN Tuna Working Group	**Low important and High influence** (Need to get them into EAFM Process) ● Conservation International (NGOs) ● WWF ● Port Authority ● Navy ● Association of fish export/ import ● Local Government ● Marine Department ● FMO/LKIM ● Hypermarket ● Consumer

Annex 12

Gulf of Thailand

IMPACT: Food Security

	Ecological Aspect		Governance Aspect			Human Aspect		
Effect	**Unsustainable Neritic Tuna Resources**		**Poor Governance**			**Poverty**		
Problem	• Difficulty in term of management due to multi species/ multi gear fisheries • Impact of fishing on secondary species and by-catch		Inadequacy of controls fishing capacity	Poor cooperation and coordination		Low income of fisheries		
Cause	- Inadequate Management Measures - Inadequate conservation	- Lack of scientific data Unreliable data - Lack of transboundary species	Lack of law & regulation enforcement	Lack of regional cooperation	- Lack of cooperate with government sector - Lack of understanding of EAFM (Awareness and fisherman)	Low Price	Lack of Privilage of Fishermen	Lack of Harvesting Technology
	- No regulation on light fishing - No regulation for FADs development	- Lack of information on spawning area - Lack of data & information on migratory of tuna - Lack of effective data collection system			- Lack of Communication - Conflict among Fishermen - Scientific, manage stakeholders cooperation	Degradation in post harvest fish quality (low quality)	- Monopoly marketing for tuna product - Unfair agreement between big company and small fisherman - No Financial Support	- Lack of Local Labour - Low Welfare for Fisheries labour

Gulf of Thailand: Prioritized Stakeholders

High important **High influence** • **Department of Fisheries** • **Policy Maker** • **Marine Department** • **DOF Researcher** • **Politician**	**Low important** **High influence** • **WWF** • **MSC** • **FAO (IPOA)** • **Fishing vessels owners** • **Processing plant** • **Oil & Gas company** • **RPOA-IUU** • **Supplier** • **Broker** • **Importer** • **Fisheries association**
High important **Low influence** • **Academic researcher** • **RFMO (WCPFC)** • **IGO *e.g.* SEAFDEC** • **Marine police, Navy** • **Fishing port authority**	**Low important** **Low influence** • **Labour** • **Consumer (local)**

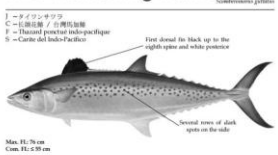
Annex 13

Data preparation for seer fish stock assessments of Indo-Pacific king mackerel and narrow-barred Spanish mackerel by *Dr. T. Nishida*, Resource Person

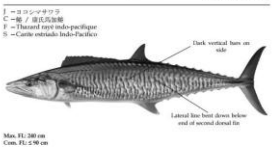
Data preparation for seer fish stock assessments
(Indo-Pacific king mackerel and narrow-barred Spanish mackerel)

Tom Nishida (Resource Person)

Indo-Pacific king mackerel



Narrow-barred Spanish mackerel



Contents

- Consideration of Stock assessment method (software)
- ⇩
- Data requirements and submission (important for member countries)
- ⇩
- Home (office) work

Data required by stock assessment model

	Structure	Model (example)	Data				
			Catch	CPUE	size	biology	space/tag
(1)	Catch (datapoor)	SRA					
(2)	Production model	ASPIC					
(3)	Age/size	VPA					
(4)	Integrated	SCAA/SCAS					
		SS3					

As the 1st step, we will attempt the simple model (2) ASPIC
but if we don't have CPUE ➔ (1) SRA

Data required by stock assessment model

	Structure	Model (example)	Data				
			Catch	CPUE	size	biology	space/tag
(1)	Catch (datapoor)	SRA					
(2)	Production model	ASPIC					
(3)	Age/size	VPA					
(4)	Integrated	SCAA/SCAS					
		SS3					

As the 2nd step (future), if we have catch, CPUE, size and biological data, we will attempt (3) or (4) (also for LOT+KAW)

If we don' have CPUE,

we will attempt the data poor approach
SRA (Stock Reduction Analysis)

What are differences
between SRA and PM (ASPIC)

Differences between SRA and PM (ASPIC)
(theory and Estimation)

Method==>	PM (ASPIC)	SRA (data poor)
basic model	Population growth equation (e.g. logistic curve)	
catch	available	
CPUE	available	not available
Estimation : r and K	r and K will be estimated statistically	optimum r and K will be searched by simulations
Estimation process	simpler	Complex ==> Highly computing intensive approach
software	available	we absolutely need to be developed

If we have CPUE,

ASPIC (as applied for LOT and KAW)

⇩

CPUE standardization (simple version for GLM is ready)

We need further functions for GLM (interaction terms etc.)

In addition, we expect a lot of 0 CPUE (seer fish)

We need other models (Negative binominal, delta log normal…)

⇩

Need to include additional functions + models (**further development**)

ASPIC (software are available)

After we finish either SRA or ASPIC

We need to present results

Kobe plot (software is available)

Risk assessment (software needs to be developed)

Summary: software

	CPUE standardization GLM with more functions + other models (NB, DLN etc)	stock assessments	Kobe plot	Risk assessment
SRA (Stock Reduction Analysis)	No need	(1) need to develop ($$$) if we use	(3) available	(1) need to develop ($$$)
ASPIC	(1) Need to develop ($$$)	(2) available		

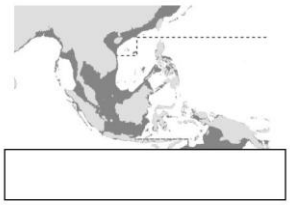
Note
(1) SEAFDEC property (need permission from Secretariat to use)
(2) Free software : web link will be available soon
(3) Free software available http://ocean-info.ddo.jp/kobeaspm/kobeplot/KobePlot.zip

How to compile and submit seer fish catch and CPUE data

Indo-Pacific King Mackerel
Narrow-barred Spanish Mackerel

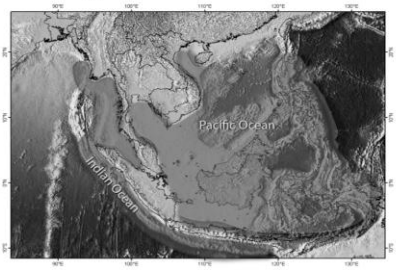
First we consider the Stock structure

Narrow-barred Spanish Mackerel
Scomberomorus commerson



Indo-Pacific King Mackerel
Scomberomorus guttatus

2 stock hypothesis (Pacific and Indian Ocean)



Indonesia, Malaysia and Thailand: 2 data sets (Indian and Pacific)

Pacific and Indian stocks covered by country

	(a) Pacific stock FAO 71 area	(b) Indian stock FAO 57 area
(1) Brunei		
(2) Cambodia		
(3) Indonesia (2 stocks)		
(4) Malaysia (2 stocks)		
(5) Myanmar		
(6) Philippines		
(7) Thailand (2 stocks)		
(8) Viet Nam		

To conduct SRA or ASPIC

We need 2 information

(1) Global catch both SRA and ASPIC
(2) Nominal CPUE ASPIC only
****
(3) (extra) Species compositions

(1) Global catch

What is the global catch ?

In any Stock assessment models---
Need total removals (catch) (same stock area)
(all countries + all gears + all fishing areas)
to estimate F (fishing mortality)
➔ **Not Good** if we use **partial** catch, i.e.,
only some countries, some gears, some fishing areas

Template for data submissoin by excel (Example)

Thailand/Pacific stock

Annual seer fish cacth by gear and species (tons)

0 (zero) catch are also important statistics (don't forget)

	Gear 1 (PS)			Gear 2 (GILL)			Total		
year	Spanish	King	combined	Spanish	King	combined	Spanish	King	combined
2005			345			3,356			3,701
2006			123			1,123			1,246
2007			123			6,789			6,912
2008	234	0		346	987		234	987	
2009	122	456		0	298		578	754	
2014	787	324		223	1,256		1,010	1,580	
2015	0	654		788	1,298		788	1,952	

If you don't have separate catch by species report the combined catch (it is OK)

Template for data submissoin by excel (Example)

Thailand/Pacific stock

Aannual seer fish cacth by gear and species (tons)

0 (zero) catch are also important statistics (don't forget)

	Gear 1 (PS)			Gear 2 (GILL)			Total		
year	Spanish	King	combined	Spanish	King	combined	Spanish	King	combined
2005			345			3,356			3,701
2006			123			1,123			1,246
2007			123			6,789			6,912
2008	234	0		346	987		234	987	
2009	122	456		0	298		578	754	
2014	787	324		223	1,256		1,010	1,580	
2015	0	654		788	1,298		788	1,952	

But if you can separate catch using species compositions, please do so.

Or send (detail) species compositions by year, season and area

(2) Nominal CPUE

What is the nominal CPUE?

Raw (original) CPUE data
CPUE (catch and effort)

We need nominal CPUE by country, gear, area, year, month, day and set (boat name) as fine scale as possible (set by set is ideal) important for CPUE standardization

If you don't have set by set data, you can send aggregated levels of CPUE that you have…

For example CPUE **by gear, area and month**

CPUE Example 1 (if species are separated)
0 and other catch are very important ! Don' t forget !!
You may have more than 2 types of efforts

Thailand Pacific stock Gear :GILL Area: 5 (Gulf of Thailand)

year	month	date	boat name	set	catch (kg)			effort		
					King	Spanish	others	hours	hauls	days
1999	1	1	A	1	34	0	234	12	4	2
1999	1	1	A	2	0	0	566	23	4	4
2015	12	27	C	1	0	0	999	44	5	5
2015	12	27	C	2	0	0	234	23	3	4
2015	12	28	C	1	23	11	333	12	4	5

CPUE Example 2 (aggregated case)
(if species are combined and if you have only monthly data ➔ OK)
0 and other catch are very important ! Don' t forget !!

Thailand Indian stock Gear :GILL Area: 6 (Andaman)

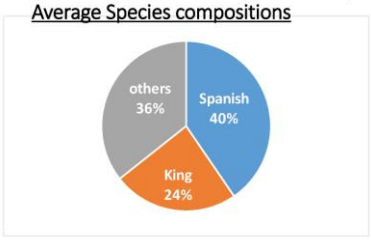
year	month	catch (kg)		effort		
		king+Spanish combined	others	hours	hauls	days
1999	1	34	234	12	4	2
1999	1	0	566	23	4	4
2015	12	0	999	44	5	5
2015	12	0	2334	23	3	4
2015	12	23	333	12	4	5

(3) (Extra data if available) Species compositions

Any information of Species compositions
(King + Spanish + Others)
by year, season and area (as fine scale as possible) are important to estimate catch and CPUE by species

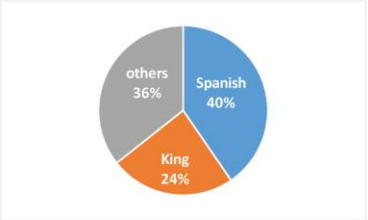
If you don't have fine scale information,
even **coarse scale** information are also important

For example (fine scale)
Thailand, GILL, Area 3 (Andaman Sea) (December, 2016)
Average Species compositions



For example (highly aggregated still useful)
but should be by gear

Indonesia 2016 annual average species composition (PS)



19 Data coordinator for seer fish (I)

No	Country	stock		Coordinators	Post	Agency	e-mail
1	Brunei	1	1	Ms Noorizan Karim	Head	Department of Fisheries	noor6263@gmail.com
			2	Mr Matzaini Juna	Head		matzaini.juna@fisheries.gov.bn
			3	Muhammad Adam Ramlee	Fisheries Assistant		adam.ramlee@fisheries.gov.bn
			4				muhd.adam1804@gmail.com
2	Cambodia	1	5	Mr. Suy Serywath	Director	Fisheries Research and Development Institute, Fisheries Administration (FiA)	serywath@gmail.com
			6	Mr. Kao Monirith	Deputy Director		kaomonirith@yahoo.com
3	Indonesia	2	7	Dr Khairul Amri	Chief scientist	Research Institute for Marine Fisheries	Kh_amri@yahoo.com
			8	Mr Thomas Hidayat	Researcher		hidayatthomas245@gmail.com

19 Data coordinator for seer fish (II) (Yellow marker not confirmed yet)

No	Country	stock		Coordinators	Post	Agency	e-mail
4	Malaysia	2	9	Mr Sarrsudin Bin Basir	Chief scientist	Department of Fisheries	s_basir@yahoo.com
			10	Mr Sallehudin Jamon	Scientist		dinjamon@rocketmail.com
			11				sallehudin_jamon@dof.gov.my
5	Myanmar	1	12	Dr Htun Thein	Assistant Director	Marine Resources Survey & Research Unit, Department of Fisheries	htunthein.akyab@gmail.com
			13	Mr Nay Myo Aye	Assistant Fisheries Officer		nvnghia@rimf.org.vn
6	Philippines	1	14	Mr Noel Barut	Director	Bureau of Fisheries and Aquatic Resources (BFAR)	noel_c_barut@yahoo.com
			15	Ms Grace Lopetz	Aquaculturist II		gmvlopez@yahoo.com
7	Thailand	2	16	Ms. Suwantana Tossapornpitakkul	Fishery Biologist	Marine Fisheries Technology Research and Development Institute, Department of Fisheries	tsuwantana@yahoo.com
			17	Ms. Praulai Nootmorn	Senior Expert in Marine Fisheries		nootmorn@yahoo.com
8	Viet Nam	1	18	Mr Nguyen Viet Nghia	Deputy Director	Research Institute for Marine Fisheries	nvnghia@rimf.org.vn
			19	Mr Pham Hung	Officer	Research Institute for Marine Fisheries	hungfam83@gmail.com

WORK PLAN (draft)		Meetings	LOT+KAW	Seer fish (IP King + NB Spanish mackerel)	Software development		
2016	12	WS (Management + EAFM)		collection and compilation of data for stock assessments	Risk assessment	CPUE standardization	SRA (data poor stock assessments)
2017	1				new development		
	2						
	3		LOT+KAW Risk assessment training				
	4						
	5						
	6	SWG4 (date to be decided later)					
	7			DEADLINE			
	8						
	9						
	10					add more functions (GLM) + other models	if needed
	11						
	12						
2018	1						
	2			Seer fish stock and risk assessments training			
	3						
	4						
	5						
	6	SWG5 (date to be decided later)					
	7						
	8						

SUMMARY

Your data are CRITICAL for stock + risk assessments and management

step	Procedure for Stock + risk assessments (SRA and ASPIC) and management measure			
	Method =>	SRA	ASPIC	
1	DATA	Catch	Catch	CPUE
2	CPUE Standardization			software need to be enhanced
3	Stock assessments	software will be developed	ASPIC（software available）	
4	Results	Kobe plot (software available)		
5	Risk assessment	software will be developed		
6	management measures (e.g. TAC)	SEAFDEC member countries (SC=>COM) => ASEAN (if needed)		

Thank you and a happy new year !

Annex 14

Kick Off Genetic work for LOT and KAW by *Ms. Wahidah Mohd Arshaad*, Head of Biology and Genetic Unit from SEAFDEC/MFRDMD

Kick Off Genetic work for LOT and KAW

Introduction

- Project title "**The Population Study of *Thunnus tonggol* in the Southeast Asian Region**".
- DNA sampling two species, LOT & KAW
- mitochondrial DNA (mtDNA) displacement loop (D-loop) marker
- Project duration: 2 years (Oct 2016 – Sept 2018)

Objectives

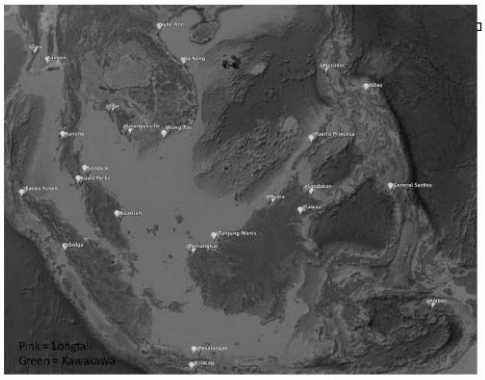
- To identify the level of genetic diversity of *Thunnus tonggol* (Longtail tuna) in the South China Sea and Andaman Sea.
- To identify the genetic structure of *Thunnus tonggol* (Longtail tuna) in the South China Sea and Andaman Sea waters by using mitochondrial DNA (mtDNA) displacement loop (D-loop) marker.

LOT Sampling Sites

Country		Sampling Site	Country & Sampling Site Code	No. of Specimen
Andaman Sea Sub-Region				
➢ Indonesia	1.	Banda Aceh	INBA	50
➢ Malaysia	2.	Kuala Perlis	MYKP	50
➢ Myanmar	3.	Gwa	MMGW	50
➢ Thailand	4.	Ranong	THRG	50
South China Sea and Gulf of Thailand Sub-Region				
➢ Brunei	5.	Muara Port	BRMP	50
➢ Cambodia	6.	Sihanokville	CBSV	50
➢ Indonesia	7.	Pemangkat	INPM	50
➢ Malaysia	8.	Kuantan	MYKN	50
	9.	Tanjung Manis	MYTM	50
➢ Philippines	10.	Masinloc (Zambales)	PHMC	50
	11.	Puerto Princesa (Palawan)	PHPP	100
➢ Thailand	12.	Trat	THTR	50
	13.	Songkla	THSK	50
➢ Viet Nam	14.	Vung Tau	VTVT	50
Out-group				
➢ Indonesia	15.	Ambon	INAB	50
	16.	Cilacap	INCC	50
	17.	Pekalongan	INPK	50
➢ Malaysia	18.	Sandakan	MYSK	50
	19.	Tawau	MYTW	50
➢ Philippines	20.	Albay	PHAY	50
	21.	General Santos	PHGS	50
			Total	**1100**

KAW Sampling Sites

Country		Sampling Site	Country & Sampling Site Code	No. of Specimen
Andaman Sea Sub-Region				
➢ Indonesia	1.	Banda Aceh	INBA	50
➢ Malaysia	2.	Kuala Perlis	MYKP	50
➢ Myanmar	3.	Gwa	MMGW	50
	4.	Yangon	MMYN	50
➢ Thailand	5.	Ranong	THRG	50
South China Sea and Gulf of Thailand Sub-Region				
➢ Brunei	6.	Muara Port	BRMP	50
➢ Cambodia	7.	Sihanokville	CBSV	50
➢ Indonesia	8.	Pemangkat	INPT	50
➢ Malaysia	9.	Kuantan	MYKN	50
	10.	Tanjung Manis	MYTM	50
➢ Philippines	11.	Masinloc (Zambales)	PHMC	50
	12.	Puerto Princesa (Palawan)	PHPP	100
➢ Thailand	13.	Trat	THTR	50
	14.	Songkla	THSK	50
➢ Viet Nam	15.	Da Nang	VTDN	50
	16.	Nghe Ann	VTNA	50
	17.	Vung Tau	VTVT	50
Out-group				
➢ Indonesia	18.	Ambon	INBN	50
	19.	Cilacap	INCC	50
	20.	Pekalongan	INPN	50
	21.	Sibolga	INSG	50
➢ Malaysia	22.	Sandakan	MYSK	50
	23.	Tawau	MYTU	50
➢ Philippines	24.	Albay	PHAY	50
	25.	General Santos City	PHGS	50
			Total	**1300**



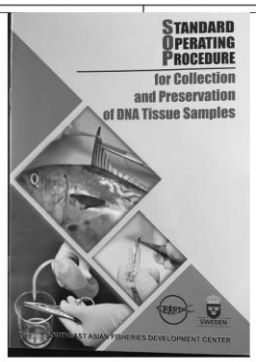
Work Plan

Year	2016			2017												2018								
Quarter	Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3		
Month	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
1. Literature review and project preparation																								
2. Sampling																								
3. Laboratory work																								
4. Data analysis																								
5. Prepare report																								X

Focal Point

No.	Country	Name
1	Brunei	Mr. Matzaini Hj Juna
2	Cambodia	Mr. Suy Serywath
3	Indonesia	Mr. Thomas Hidayat
4	Malaysia	Mr. Samsudin Basir
5	Myanmar	Dr. Htun Thein
6	the Philippine	Ms. Grace V. Lopaz
7	Thailand	Ms. Praulai Nootmorn
8	Viet Nam	Dr Vu Viet Ha

Sampling Materials



Country work plan, timeframe for tissues sampling for LOT and KAW

Budget support/in-kind co finance plan (if appropriate)

Country	No. of sites	Chemicals and etc.	Shipping	DSA (DSAxPxD)	Accommodation	Transpotation	Total in USD
Brunei	1	40	85	280	0	100	505
Cambodia	1	40	0	200	400	200	840
Indonesia*	6	240	0	1680	2400	1200	5520
Malaysia	5	200	0	2560	2900	1,750	7410
Myanmar	2	80	170	400	800	400	1850
The Philippines	4	160	340	1120	1600	800	4020
Thailand	3	120	255	840	1200	600	3015
Viet Nam	3	120	255	400	800	400	1975
Sub Total	25	1000	1105	7480	10100	5450	25135

Tissue specimens transferring

- Currier service
- Hand over during SEAFDEC meeting

Annex 15

Proposed Schedule and Issues for 4th SWG-Neritic Tunas
by *Dr. Somboon Siriraksophon*, Policy and Program Coordinator

Proposed Schedule and Issues for 4th SWG-Neritic Tunas

SEAFDEC Secretariat

WORK PLAN FOR 2017-18

Activities	2017												2018										
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
1) Genetic: Tissues samplings Phase 1:																							
2) Compilation of data for SA (Seer fishes)																							
3) Development of Risk Ass. Software																							
4) Training on Risk Ass. For KAW and LOT (3rd – 4th Week)																							
5) 4th SWG Meeting (Philippines)																							
6) Development of more function GLM + other model																							
7) Training on SA and Risk Ass. (Kng & swd (3rd – 4th Week).																							
8) Genetic: Tissues samplings Phase 2:																							
8) 5th SWG –neritic tunas																							

Tentative Agenda for 4th SWG Neritic Tunas

Agenda 1: Opening of the Meeting (details will be updated)
Agenda 2: Introduction and Adoption of the Agenda
Agenda 3: Recommendations from SEAFDEC meetings, ASEAN Forums and Workshops
Agenda 4: Reviews on biology and ecology of the neritic tunas: Spanish Mackerel and King Mackerel
Agenda 5: Discussion on Stock Assessment for Spanish Mackerel in Southeast Asian,
Agenda 6: Discussion on Stock Assessment for King Mackerel in Southeast Asian,
Agenda 7: Review of Information for Neritic Tuna Species: Frigate tuna, Bullet tuna
Agenda 8: Review/Progress of the Genetic Study, Improved Data Collection, and Capacity Building
Agenda 9: Other Matters:
Scientific and Policy Recommendations,
Draft EAFM for Neritic Tunas (LOT and KAW)
Neritic tunas database and website,
Others
Agenda 10: Work Plan for Research, Capacity Building and Priorities for 2018- onward
Agenda 11: the 5th SWG-Neritic Tunas Meeting
Agenda 12: Closing of the Meeting

Annex 16

Wrap-up
by *Dr. Somboon Siriraksophon*, Policy and Program Coordinator

Wrap-up

Kawakawa: Indian Ocean side

Recommendation :Management Measure (catch limit)

if MSY level (55,380 t) were continued in 10 years

⇩

Probabilities (risk) violating TBmsy and Fmsy are about 45%.

⇩

Recommendation : total catch (kawakawa, Indian Ocean side of the SEAFDEC area) should be less than its MSY level (55,380 t).

The current catch level (59,800 t) (Average of 2012-2014) **should be decreased by 7%.**

Kawakawa: Pacific Ocean side

Recommendation :Management Measure (catch limit)

if MSY level (185,400 t) were continued in 10 years

⇩

Probabilities (risk) violating TBmsy and Fmsy are about 56%.

⇩

Recommendation : total catch (kawakawa, Pacific Ocean side of the SEAFDEC area) should be less than its MSY level (185,400 t).

The current catch level (171,000 t) (Average of 2011-2013) **can be increased by 9%.**

Longtail Tuna: Indian Ocean side

Recommendation :Management Measure (catch limit)

if MSY level (37,580 t) were continued in 10 years

⇩

Probabilities (risk) violating TBmsy and Fmsy are about 53%.

⇩

Recommendation : total catch (Longtail tuna, Indian Ocean side of the SEAFDEC area) should be less than its MSY level (37,580 t).

The current catch level (43,000 t) (Average of 2012-2014) **should be decreased by 13%.**

Longtail Tuna: Pacific Ocean side

Recommendation :Management Measure (catch limit)

Even if the current catch were increased to the MSY level (196,700 t) (223% higher than the current catch level (88,200 t) (Ave of 2011-2013)

⇩

Probabilities (risk) violating TBmsy and Fmsy are about 50%.

⇩

Recommendation

No catch limit but should be less than its MSY level (196,700 t) (Longtail tuna, Pacific Ocean side of the SEAFDEC area)

Noted that increasing of the capacity and efforts may afftect to other 2nd species and by-catch due to multispecies fisheries concerns.

Results of SA for LOT and KAW

⇩

Risk Assessment for LOT and KAW

⇩

Recommendations for Management Measures of LOT and KAW

⇩ Circulate to SEAFDEC NC, January 2017

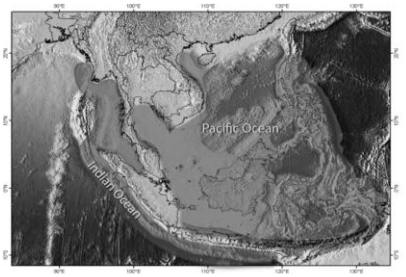
49th Meeting of SEAFDEC Council, (April 2017)

⇩

25th Meeting of ASEAN Sectoral Working Group, (June 2017)

Genetic study (2017-18)>

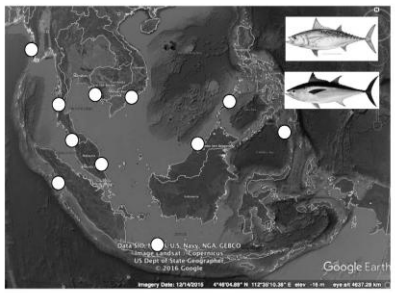
Hypothesis: LOT and KAW are different stock between Pacific and Indian oceans



Key points

1) Correction of species Identification
2) Make sure samplings from different fishing boats
3) Samplings should cover all different size of fish depend upon landing sites/areas (if appropriate)

Genetic study (2017-18)> Year 1-testing



Annex 17

CLOSING REMARKS

By Mr. Raja Bidin Raja Hassan
Chief of SEAFDEC/MFRDMD

Thank you Dr Osamu ABE,
Assalamualaikum w.r.a and very good afternoon.

Honourable Dr. *Kom Silapanjan*, Secretary General of SEAFDDEC,
Dr. Osamu Abe, Deputy Chief of SEAFDEC/MFRDMD,
Dr. Somboon, Program and Policy Coordinator for SEAFDEC,
Our Resource Persons, *Dr. Tom Nishida*
Distinguish Delegates from SEAFDEC Member Countries,
SEAFDEC Senior officers
Ladies and gentlemen,

On behalf of the organizing committee, I would like to extend our appreciation to everyone attending our "Workshop on Managements of Longtail Tuna and Kawakawa Resources in the Southeast Asian Region and Development of Ecosystem Approach to Fisheries Management (EAFM) as an alternate approach.

During the 3-day workshop, we have discussed on appropriate model of ecosystem approach for neritic tunas fisheries management (EAFM-neritic tunas) which could guide ASEAN Member States with proper management of neritic tunas in the Southeast Asian Region.

We also learned from our resource persons from Japan, Malaysia and Thailand regarding activities that need to be covered under EAFM program to sustain our neritic tuna resources in the Western Pacific Ocean and Indian Ocean.

We understand that these resources need to be managed regionally as they are shared among neighbouring countries in the South China Sea and Andaman Sea. Therefore we need a close cooperation and effective communication in order to share available information for better management of our resources.

Hopefully, whatever recommended by our scientific working group could be discussed further at our national level, so that appropriate measures could be proposed and highlighted during the next scientific working group meeting.

Before ending my closing remarks, on behalf of organizing committee, I would to thank again everyone for your active participation and make our meeting success. Thanks also to the meeting secretariat for making this workshop run smoothly.

I hope you will have a safe journey home and now I would like to declare our meeting close.

Thanks you and see you again next time.

Thank you