

Report of The Regional Workshop on Offshore Fisheries in Southeast Asian Waters



3 – 4 December 2013

Bangkok, Thailand

Southeast Asian Fisheries Development Center (SEAFDEC)

About SEAFDEC

The Southeast Asian Fisheries Development Center (SEAFDEC) is an intergovernmental organization established in December 1967 to promote sustainable fisheries development in the Southeast Asian region through research, training and information services.

SEAFDEC comprises the secretariat as its administrative arm, and four technical departments, namely: the Training Department (TD), the Marine Fisheries Research Department (MFRD), the Aquaculture Department (AQD), and the Marine Fishery Resources Development and Management Department (MFRDMD).

Membership

The Member Countries of SEAFDEC are Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR., Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam.

SEAFDEC Mandate

SEAFDEC was mandated to "develop and manage the fisheries potential of the region by rational utilization of the resources for providing food security and safety to the people and alleviating poverty through transfer of new technologies, research and information dissemination activities".

In achieving its mandate, SEAFDEC has been implementing programs and activities with the strategic objectives as follows:

1. To promote rational and sustainable use of fisheries resources in the region;
2. To enhance the capability of fisheries sector to address emerging international issues and for greater access to international trade;
3. To alleviate poverty among the fisheries communities in Southeast Asia; and
4. To enhance the contribution of fisheries to food security and livelihood in the region.

REPORT OF THE REGIONAL WORKSHOP ON OFFSHORE FISHERIES IN SOUTHEAST ASIAN WATERS

Bangkok, Thailand

3 – 4 December 2013



**Southeast Asian Fisheries Development Center
Training Department**

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I. Introduction

1. The Regional Workshop on Offshore Fisheries in Southeast Asian Waters was convened in Bangkok, Thailand, from 3 to 4 December 2013 to update the National / Regional initiatives on offshore fisheries resources development/exploration in the member countries. To discuss on future plan of activities of the project from 2014 to 2017 and to facilitate the utilization of M.V.SEAFFDEC 2 by the member countries for future development of offshore fisheries resources. The workshop was attended by authorities from Cambodia, Indonesia, Malaysia, Myanmar, Philippine, Thailand, and Vietnam. As well as SEAFFDEC personnel from the Secretariat, Marine Fishery Resources Development and Management Department (MFRDMD) and Training Department (TD). The list of participants appears as **Annex 1**.

II. Opening of the Workshop

2. In his opening remarks, the Assistant Japanese Trust Fund Program Manager of SEAFFDEC, *Mr. Hidenao Watanabe*, to explain on the implementation of a regional program with the financial support from Japanese Trust Fund Program through a newly 5-year project (2013 to 2017) entitled “Offshore Fisheries Resource Exploration”. This is in order to follow up outputs from the previous deep-sea projects of SEAFFDEC as well as to expand SEAFFDEC’s technical assistance to the Member Countries with wider scope of fisheries resources exploration in the offshore areas in the EEZ of the countries in the Southeast Asian waters.

3. The Assistant Japanese Trust Fund Program Manager also revealed the future plan of activities to be implemented under this project during the year 2014 to 2017 will also be discussed and tentatively agreed in this workshop and discuss on utilization of M.V.SEAFFDEC 2 by the member countries for offshore fisheries resources exploration. He also believed that the valuable inputs and contributions could help the workshop in revising and tentatively finalizing the annual plan of project activities from 2014 to 2017. His opening statement appears as **Annex 2**.

III. Background and Agenda of the Workshop

4. *Dr. Worawit Wanchana*, Capture Fishery Technology Division Head of SEAFFDEC TD explained the introduction and the definition of offshore in South East Asia water and in member Country (**Annex 3 and Annex 4**). The common challenges for offshore fisheries and the potential offshore fisheries resources in Southeast Asia were clarified in details. He also revealed the objective of this meeting to update information on national and

regional initiatives related to offshore fisheries resources exploration and the envisaged outputs from this meeting to review of initiatives related to offshore fisheries resources explorations, the needs of MCs in developing offshore capture fisheries and agreed draft of the project's annual plan 2014 to 2017 (SEAFDEC-JTF)

IV. International initiative related to offshore fisheries resources exploration / development

5. International initiatives related to study on impact of fishing to deep-sea ecosystem and international Guidelines for the Management of Deep-sea Fisheries in the High sea (Somboon Siriraksophol, Ph.d) was presented by *Mr. Isara Chanrajchakij (Annex 5)*. Principle study of deep-sea (DS) fishing is always included with major issues i.e. 1) current situation of DS fisheries of the world and 2) impact of DS Fishing. The current situation of DS fisheries of the world is emphasized to potential fishing ground around sea-mouths in High-sea area and availability of data as well as gaps and shortcomings in the current legal and institutional regimes in the management of DS fisheries in the High-seas and conservation and environmental pressures. Study on the impact of DS Fishing is emphasized on vulnerability of DS resources-maturation that indicated by the biological characteristic of old ages, slow growth, long life expectancies, low natural mortality rates, low productivity, be able to sustain only very low exploitation rates, and recovery is expected to be long and is not assured; and etc. Significant impacts of DS fishing to vulnerable marine eco-systems habitats, resources and their environment i.e. Sea-mounts, Hydrothermal vents, Cold seeps, Sponge grounds, etc.

6. Since United Nations Convention on the Law of the Sea (UNCLOS) has been rectified by Members in 1982, fisheries managements of DS fisheries in high-sea as international fishery instruments have been legislated, i.e., Rio Declaration (Agenda 21) : Environment and Development (1992), Agreement to promote Compliance with International Conservation and Management Measures by Fishing Vessels on the high Seas (1993), Code of Conduct for Responsible Fisheries (1995), Kyoto Declaration and Plan of Action on the Sustainable Contribution of Fisheries to Food Security (1995), and Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stock (UN Fish Stocks Agreement, 1995) has been following enacted. In Year 2008, FAO adopted the *International Guidelines for the Management of Deep-Sea Fisheries in the High Seas* and the document has been published in following year (2009).

7. The guidelines are developed to provide guidance on management factors ranging from an appropriate regulatory framework to the components of a good data collection programme, and include the identification of key management considerations and measures necessary to ensure the conservation of target and non-target species, as well as affected to habitats. These guidelines are voluntary and constitute an instrument of reference to help States and RFMOs/As in formulating and implementing appropriate measures for the management of DS fisheries in the high seas. Although the Guidelines has voluntary nature but developed based on a number of several international binding instruments and **UNGA Resolution 61/105**, the Guidelines once adopted will be used as a reference in dealing with issues related to DS

fisheries in the High-seas. Thus, compliance by States and RMFOs/As to the Guidelines is priority.

8. Refer to UNGA Resolution 61/105, Southeast Asian Countries has role to against the bottom trawls in the high seas (and in EEZs) by using the recommendation in International Guidelines for the Management of DS Fisheries in the High-Seas. In Southeast Asia, areas of DS Fisheries resources both in the high seas (i.e. off-east coast of the Philippines), and in countries' EEZs (i.e. Thailand and Indonesia) is obviously limited, however there may be direct impacts to the countries where their fleets are currently conducting or planning to expand DS Fisheries in the High-seas. Thus, the extent of implication of management requirement for DS Fisheries in EEZs should be carefully studied both national and regional.

9. In addition, SEAFDEC/TD has already embarked into research/studies on DS fisheries resources. SEAFDEC has cooperated with NFU to conduct collaborative fisheries resources survey and improve human resources capacity for SEAFDEC and member countries scientists since 2006.

10. The future development of the cooperation among Southeast Asia Countries and SEAFDEC should be strengthened on the human resources improvement on DS research works, species identification and appropriated DS sampling gear to support the DS exploration. In order to obtain data of DS fisheries resources and acknowledge their impact, review secondary data on the result of DS surveys in the region and develop mechanism to conduct DS survey in each Sub-regional areas as well as sharing information is possibility to cooperate in the future

11. This should be able to enlighten of assisting many SEAFDEC Member Countries in rationalizing their policy of promoting strategic development of offshore fisheries (within EEZ of the country or other countries, and in the high seas). With data and information obtained by SEAFDEC activities could support the formulation of solid policy advice on high-sea and off-shore fisheries development to ensure that they are sustainable and economically feasible and do not create a “bounce back” effect to near-shore fisheries.

V. Regional initiative “ Joint Research Program on Tuna Resources in Sulu-Sulawesi Sea

12. Framework of “Joint Research Program on Tuna Resources in Sulu-Sulawesi Sea” (Annex 6) was presented by *Ms. Penchan Laongmanee* of SEAFDEC/TD as a regional initiative of the Offshore Fisheries in Southeast Asian Waters. The overall goal of the program is to provide updated scientific findings on the status and trends of Yellowfin, Bigeye and Skipjack tunas in the Sulu-Sulawesi Sea. It was a cooperation of Philippine, Indonesia and Malaysia through SEAFDEC mechanism.

13. Activities of the program including data collection at the landing site as well as fishery resources survey on board M.V. SEAFDEC 2 for the determination of spawning ground and tuna stock assessment. Data and information of the program will be shared among three countries via working group and scientific committee meeting. It was three years plan, started from 2013. The first survey cruise of MV. SEAFDEC 2 will be in October to November 2014

VI. Lessons learn from SEAFDEC Program on “Deep-Sea Fishery Resources Exploration in the Southeast Asian Waters during 2007-2012”

14. Was presented by *Ms. Natinee Sukramongkol* (**Annex 7**). Five project activities implemented under the program are included: (1) Supporting of Deep Sea Fisheries Resources Survey; (2) Deep Sea Ecosystem and its impact from fisheries; (3) Development/improvement of the deep sea sampling gears and technology; (4) HRD program on deep-sea research and sampling/eco-system; (5) Information dissemination.

15. Under the project, the investigations of deep - sea fishery resources in the Southeast Asian waters in close collaboration with the SEAFDEC Member Countries were conducted. Together with the HRD activities (e.g. training; workshop; on the job training) to encourage the Member Countries to take initiatives in conducting deep-sea resources exploration in their EEZ waters in order to investigate the status and potentials of the deep-sea fishery resources. From the point of view of the international concerns on ecosystem approach for the deep-sea fisheries and based on the data collected through the actual surveys since 1998, collaboration and coordination with other relevant initiatives were also enhanced. *Ms. Natinee Sukramongkol* further informed the meeting that more detail information on the project can be accessed from the website <http://map.seafdec.org/DeepSea/index.html> where manual, report, and poster can also be downloaded. The website also publishes the database of deep-sea fish in SEAFDEC collection.

VII. Nation initiative related to offshore fishery resources exploration and development

a. Cambodia

16. *Mr. Heng Sotharith*, Cambodian’s representative from Department of Fisheries Affairs, Informed the meeting that the offshore fisheries in Cambodia were not developed due to the limited of fishing activities in the offshore area. At present, there were also no statistical data or information on the offshore fishery resources.

17. The Cambodia representative also expressed a need to clarify the definition of the terms deep-sea fisheries, offshore fisheries, and high-sea fisheries in order to prevent the misunderstanding on the scope of offshore fisheries in the Southeast Asian Waters and information sharing among the countries.

b. Indonesia

18. Indonesia tuna fisheries management in related to the offshore fisheries exploration was presented by *Mr. Didik Agus Suwarsono*, officer of the directorate general of marine and fisheries resources surveillance of Indonesia (**Annex 8**). He explained the Indonesia fisheries management which defined into three types of fishing areas: line IA from shore to 2 nm and line IB between 2 - 4 nm which authorized by district; line II from 4 - 12 nm, authorized by province; line III for more than 12 nm which regulation and authorized by the central

government (MMAF). He also explained the Indonesia fishing area management which separated into 11 fishing areas including 5 areas of under 200 meter depth and 6 areas of above 200 meter depth.

19. To reduce the fishing pressure on the territorial waters (within 12 nm), Indonesia offshore fishing is being promoted with incentives including of subsidized diesel fuel price (maximum 25 KL/month). The fishing fleets expand their fishing zone into the Indonesia EEZ and high seas to utilize the straddling fish stock and the highly migratory fish stocks. The plans for expansion into offshore waters was including: (1) to consider the request of the purse seiners to convert to longliners to fish in offshore area (Indian and Pacific Oceans); (2) to limit fishing aggregating device (FAD) application in order to avoid FAD as fish migration barrier; and (3) to obligate fish catches from catcher and/or fish carrier vessels of the Integrated Fishing-based Fisheries Industry to be processed at fish processing facilities in Indonesia.

20. According to the National Policy on offshore fisheries, the Regional Fisheries Management Organizations (RFMOs) are the organizations which the Indonesia fishing fleet must comply with RFMOs resolution and conservation and management measures. For the status of Indonesia in RFMOs, Indonesia is the full member of Indian Ocean Tuna Commission (IOCT), Convention for the Conservation of Southern Bluefin Tuna (CCSBT), Western and Central Pacific Fisheries Commission (WCPFC), and a cooperation non-party to the Inter-American Tropical Tuna Commission (IATTC) since 2013. Moreover, the International Legislation/Agreement on Highly Migratory Species (Tuna) (*e.g.* United Nation Convention on the Law of the Sea, UNCLOS 1982; Agreement for Implementation of the Provisions of the Convention relating to the Conservation and Management of Straddling Fish and highly Migratory Fish Stocks, UNIA 1995; FAO Code of Conduct for Responsible Fisheries, CCRF) were ratified by Indonesia Government.

21. Recently, Indonesia adapted to the RFMO measurement at national legislation by issued the license (SIPI) to authorize fishing at long distance since 2012. There is Indonesia fishing vessels recorded in RFMOs (WCPFC, IOCT, and CCSBT) about 1,871 units and installed of 1,654 IOTC sticker on vessels operated in Indian Ocean. Mr. Didik Agus Suwarsono informed the meeting that Indonesia already implementing the resolution and management measures of the RFMOs, *e.g.* Catch Documentation Scheme (CDS) on every Southern Bluefin tuna catches, IOTC Bigeye statistical document for exported, apply fishing quotas (CCSBT and WCPFC), Minister regulation on fishing logbook, regulating the fishing gears additional support gears, closed system for certain fishing ground areas, data collection of ecologically related species (ERS), and Minister regulation regarding utilization and installation of fish aggregate device (FAD).

c. Malaysia

22. The Malaysia representative, senior research officer of Department of Fisheries, *Mr. Richard Rumpet*, provided the meeting with information on the research programs of Fisheries Research Institute of Malaysia (FRI) related to the offshore fisheries resources exploration/development. According the Malaysia National Agro-Food Policy (2011-2020)-

NAP was launched to ensure continues to have sufficient and safe food supply. Therefore, in an effort to achieve the target, research programs those focus on fish stock assessment, fishing gear technology, research vessel, fish stock enhancement and ecosystem for capture fisheries sector were proposed in the Fisheries Research National Plan of Action 2013-2020.

23. As the information on current status of fisheries stock is very important for the strategic fisheries management in Malaysia to determine fishing license quotas, total allowable catch, new fishing ground, and fish resources and gears development. The research program for capture fisheries for marine fish stock assessment in Malaysia waters (2014-2015) with six project components was submitted to Malaysian Government to apply for fund amounting to RM22.1 million (**Annex 9**).

d. Myanmar

24. The status of offshore fisheries resources exploration of Myanmar was presented By *Mr. Hla Win*, Fisheries Officer of Department of Fisheries, Myanmar (**Annex 10**). He explained about the fishing grounds locations within the EEZ that comprises four zones located at: 1) Rakhine fishing grounds; 2) Ayeyarwady fishing grounds; 3) Mon fishing ground; 4) Thanin thaiy fishing ground. The union of Myanmar is blessed with 3,000 km coastline and the country's continental shelf covers an area of about 230,000 km². The current status of national and offshore fishing vessels in Myanmar are 2,373 and 91 vessels, respectively.

25. Back to year 1984, the marine fisheries resources exploration within the EEZ of Myanmar waters was conducted by R/V Dr.Fridtjof Nansen with main propose to estimate of marine fish resources and map of non-exploited stock and train counterparts. Myanmar also jointed survey with Department of Fisheries of Thailand using R/V Chulabhorn and collaborated with SEAFDEC using M.V.SEAFDEC2 to conduct fishery resources surveys. The results indicated that the demersal fishery resource around the EEZ of Myanmar water is still in good condition.

26. He also informed the workshop that currently Department of Fisheries of Myanmar has been involving the offshore research activities with assistance from Norway Government (NORAD) under the program of BOBLME. Under this program, the fishery resources were conducted by R/V Dr.Fridtjof Nansen from 13 November to 1 December 2013 in Myanmar waters. There were 12 scientists from Myanmar also jointed the R/V Dr.Fridtjof Nansen cruise.

e. Philippines

27. The offshore fisheries resources exploration in the Philippines (**Annex 11**) was presented by *Mr. Remar P. Asuncion* of National Marine Fisheries Development Center of Bureau of Fisheries and Aquatic Resources (BFAR). In the Philippine, offshore is area beyond coastal water until limits of Exclusive Economic Zone (EEZ) and Extended continental shelf (ECS) while deep sea is area beyond shelf that deeper than 200 meter.

28. BFAR conducted the assessment of DS fisheries in continental slopes and sea mouths since 207 with the aims to assess and initiate development of potential deep sea fisheries resources. Result of the assessment suggested that a nylon shrimp (*Heterocarpus spp.*) was a potential resource in deep sea area of the Philippines. They can be caught by deep sea trap. Currently, the development of pilot fisheries is being planned.

29. Mr. Remar also reported that Benham Rise Region located east Philippine in the Pacific seaboard was recognized by Commission on the Limits of the Continental Shelf (CLCS UN) as an expansion of Philippine boundary since April 12, 2012. The area was focused by BFAR since 2013 to be alternative fishing ground by providing operational support to fisherman/stakeholders including provision of Fish Aggregating Devised (FAD) for tuna fishing. Moreover, the fisheries assessment surveys were conducted continuing in the area.

30. For the management of tuna fishery, Philippine is member of WCPFC. Recently Philippine improved the catch and effort monitoring and stock assessment by expanded coverage for National Stock Assessment Program (NSAP) to cover offshore tuna fishery and implementation of observer program in tuna purse seine and rings net.

f. Thailand

31. Status of offshore resources of Thailand (**Annex 12**) was reported to the meeting by *Mr. Chirdsak Chookong* of Department of Fishery, Thailand. He reported that offshore fisheries in Thailand included catch from deep water fishing ground in EEZ, high sea and oversea joint venture. There are about 200 Thai fishing vessels operate in Myanmar, Indonesia, Malaysia, Cambodia, Bangladesh and India under the joint venture arrangement licenses. Moreover, a tuna purse seiner and three tuna longliners operate in Indian Ocean flying Thai flag.

32. With regard to the prime policy of Thai government to reduce fishing pressure in the coastal area, promoting responsible offshore fishery both in Thai water and high sea is one of the solutions. The following are DOF activities to facilitate Thai offshore fisheries; fishing ground survey which data and information will be provided to concerned stakeholder, providing revolving fund for offshore and high sea fisheries, establishing database on offshore and high seas fisheries, i.e. vessel, gear and crews and improving fishing ports. However, there are numbers of challenge that limit number of Thai fishers in offshore and high sea fisheries such as high price of fuel and lack of fisheries resource data.

g. Vietnam

33. The on-going initiatives related to offshore fisheries of Vietnam (**Annex 13**) were presented to the meeting by *Mr. Nguyen Quoc Anh* of Department of Capture Fishery and Resources Protection. Offshore area of Vietnam is that more than 30 nm from shore. Major fishing gears operated in the area are gillnet, purse seine and trawl.

34. Vessel monitoring system (VMS) was main activity of Vietnam to monitoring, control and surveillance for offshore fishing vessel. Data from VMS were also used for tuna fishing ground study. Currently, 6,500 offshore fishing boats were installed the VMS. With the unclear

offshore stock status, Vietnam suggested that the offshore fishing vessel should be limit in number. He also recommend for the cooperation of ASEAN countries to share and capacity building on data and information on stock assessment, data collection methodology and fishery management which could also improve the cooperation in combating IUU fishing in the ASEAN region.

VIII. Collaborative research survey related to Offshore fisheries in Southeast Asian waters

35. Collaborative research survey related to Offshore Fisheries in Southeast Asian Waters was presented by *Mr. Nakaret Yasook (Annex 14)*. Since 1967, SEAFDEC is an autonomous intergovernmental body established as the regional treaty organization to promote fisheries development in Southeast Asian. Now, The Training Department has two research vessels namely, M.V. SEAFDEC and M.V. SEAFDEC 2 can conduct fishery surveys and training operations in the offshore area. M.V. SEAFDEC is a 1,178 GT steel purse seiner, she can operate tuna purse seine, tuna longling, bottom vertical longline, deep sea pot and automatic squid jig. M.V. SEAFDEC 2 is a 211 GT steel trawler, she can operate bottom trawl, mid-water trawl, beam trawl, tuna longling, bottom vertical longline, deep sea pot and automatic squid jig. There are many collaborative surveys, trainings and researches were conducted.

36. Since 1993, Tuna resources surveys by tuna purse seine have been done in Eastern Indian Ocean onboard M.V. SEAFDEC totally 221 operations. The Species composition by tuna purse seine, DFADs drifting, by-catch and tuna tagging were studied simultaneously.

a. Oceanic squid resources survey

South China Sea

- Collaborative survey western of The Republic of Philippine by M.V. SEAFDEC (1998)
- Collaborative survey in Vietnamese water by M.V. SEAFDEC (1999)
- Offshore western Borneo (Brunei Darussalam) by M.V. SEAFDEC (2000)
- Marine resources survey eastern of The Republic of Philippine by R.V. DABFAR (2002)
- Collaborative survey by M.V. SEAFDEC 2 (2004-10)

Andaman Sea

- Training/Research on the Marine resources survey by M.V. SEAFDEC (1998)
- Eastern Indian Ocean
- Training/Research on the Marine resources survey by M.V. SEAFDEC (1998-9)

b. Large pelagic resources survey

South China Sea

- Collaborative survey western of The Republic of Philippine by M.V. SEAFDEC (1998)

- Collaborative survey in Vietnamese water by M.V.SEAFFDEC (1999)
- Off shore western Borneo (Brunei Darussalam) by M.V.SEAFFDEC (2000)
- Collaborative survey in South China Sea by M.V.SEAFFDEC 2 (2004 -)

Andaman Sea

- Research/training in Andaman Sea By M.V. SEAFFDEC (1994)
- Collaborate Sea trail for pelagic longline reel with Department of Fisheries, Thailand (2000-1)
- Collaborative survey in Andaman Sea by M.V.SEAFFDEC 2 (2006)

Eastern Indian Ocean and Bay of Bengal

- Training/research in EIO By M.V. SEAFFDEC (1994-)
- Collaborative survey of Ecosystem-Based Fishery Management in the Bay of Bengal by M.V.SEAFFDEC (2006-7)

c. Demersal resources survey by bottom vertical longline

South China Sea

- Training/Research Offshore western Borneo (Brunei Darussalam) by M.V.SEAFFDEC (2000)
- Collaborative survey in Vietnam Water by M.V.SEAFFDEC 2 (2005-6)
- Collaborative survey in Malaysia Water by M.V.SEAFFDEC 2 (2005, 2010)
- Collaborative survey in Philippines Water by M.V.SEAFFDEC 2 (2005)

Andaman Sea

- Training/Research on the Marine resources survey by M.V. SEAFFDEC (1994-8)
- Collaborative survey in Andaman Sea by M.V.SEAFFDEC 2 (2005, 2007)

d. Demersal resources survey by trap and pot

South China Sea

- Training/Research Offshore western Borneo (Brunei Darussalam) by M.V.SEAFFDEC (2000)
- Collaborative survey in Vietnam Water by M.V.SEAFFDEC 2 (2005-6)
- Collaborative survey in Malaysia Water by M.V.SEAFFDEC 2 (2005, 2010)
- Collaborative survey in Philippines Water by M.V.SEAFFDEC 2 (2005)

Andaman Sea

- Training/Research on the Marine resources survey by M.V. SEAFFDEC (1994-8)
- Collaborative survey in Andaman Sea by M.V.SEAFFDEC 2 (2005, 2007)
- The previous collaborative surveys using M.V. SEAFFDEC and M.V. SEAFFDEC 2 can be used for guidance of the future survey planning in offshore area in the region especially for the large pelagic resource survey

IX. Annual plan of project activities (2014 to 2017)

37. *Mr. Sayan Promjinda* was presented the plan of the training program for offshore fisheries resources exploration in Southeast Asian Waters in the year from 2014 to 2017 (**Annex 15**). He also explained the detail of training activities and technical support from TD on offshore fisheries resources exploration in EEZ of the MCs, including cruise survey by using M.V.SEAFFDEC 2 and supporting of technical staff onboard research vessels. To facilitated joint collaborative survey in areas of sharing fisheries resources. The program of training from 2014 to 2017 are following topics ; the Training on Stock Assessment for Fisheries Resources in Offshore Waters, the training on Application of Hydro-Acoustic Methods for Potential Offshore Fisheries Resources Assessment, the training on Modern Survey Technologies for Exploring Non-exploited Fisheries Resources and the training on Environmental Characteristics Appraisal for Developing Offshore Pelagic Fisheries respectively.

X. Training Need Assessment for the future activities

38. Training need assessment (TNA) is one of agenda in the Regional Workshop on Offshore Fisheries in Southeast Asia Waters was facilitated by *Mr. Isara Chanrajchakij* and *Mrs. Penchan Lanongmanee*. The workshop is one of the activities under Project Offshore Fisheries in Southeast Asia conducted by SEAFDEC/TD under supporting by Japanese Trust Fund (JTF). The workshop was convened during 3rd to 4th December 2013 at Bangkok, Thailand, aimed to address the training requirements of SEAFDEC Member Countries on the offshore fisheries developing. As well as to ensure the Member Countries junior scientists have the knowledge and skill to conduct their research work with better performance as well as seeking for the gap of each SEAFDEC member countries on Offshore Fisheries. The report on preliminary training need assessment in **Annex 16**.

XI. Conclusion and Recommendation

39. The summary of the Results of the Regional Workshop on Offshore Fisheries in Southeast Asian Waters including the Conclusion and Recommendations (**Annex 17**) presented by *Dr. Worawit Wanchana* were adopted by the Meeting. Considering the importance of the recommendations, the Regional Workshop suggested that these should be prioritized for possible implementation taking into consideration the capabilities and resources available in SEAFDEC and the Member Countries.

XII. Closing of the Workshop

40. After thanking the participants for providing updated national initiatives on offshore fisheries resources development/exploration and discussion on the future plan of activities of the project from 2014 – 2017, the Assistant Japanese Trust Fund Program Manager of SEAFDEC, *Mr. Hidenao Watanabe* declared the Workshop closed. He also expressed the gratitude for the suggestions made on the future activities from 2014 -2017 to be carried out in the Southeast Asian waters. His Closing Statement appears as **Annex 18**.

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Regional Workshop on Offshore Fisheries in Southeast Asian Waters
3 – 4 Dec 2013, Bangkok, Thailand

Opening Address

Resource persons, Participants from SEAFDEC Member Countries, staff of SEAFDEC Secretariat, Training Department, and Marine Fishery Resources Development and Management Department,

Ladies and Gentlemen, Good Morning!

On behalf of SEAFDEC, I would like to welcome all of you to the Regional Workshop on Offshore Fisheries in Southeast Asian Waters, and welcome you all to Bangkok, Thailand.

To follow-up with that of ASEAN-SEAFDEC Resolution and Plan of Actions on Sustainable Fisheries for Food Security for the ASEAN Region that adopted in 2001 and 2011 on the promotion of alternative fisheries resources in the area where a number of areas in the region is still under-utilized condition and potentially be alternative fisheries resources.

Over the years, SEAFDEC has implemented a regional program with the financial support from Japanese Trust Fund Program through a newly 5-year project (2013 to 2017) entitled “Offshore Fisheries Resource Exploration”. This is in order to follow up outputs from the previous deep-sea projects of SEAFDEC as well as to expand SEAFDEC’s technical assistance to the Member Countries with wider scope of fisheries resources exploration in the offshore areas in the EEZ of the countries in the Southeast Asian waters.

I have heard that information several national initiatives on offshore fisheries resources development and exploration in the member countries will be updated and shared in this workshop. In addition, the proposed future plan of activities to be implemented under this project during the year 2014 to 2017 will also be discussed and tentatively agreed in this workshop. This workshop will also discuss on utilization of M.V. SEAFDEC 2 by the member countries for offshore fisheries resources exploration. Although the workshop has only 2 days period, but I do strongly believe that your valuable inputs and contributions could help the workshop in revising and tentatively finalizing the annual plan of project activities from 2014-2017.

Last but not least, I am looking forward to your active participation. I hope the workshop could finally come up with key conclusions that would fulfill the objectives of the workshop.

With that note, I declare the meeting officially open.

Thank you once again and have a very good day!

PROVISIONAL PROSPECTUS

Background and rationale:

Depletion of coastal fisheries resources has led to increased focus on offshore fisheries resources exploration. Currently, attempts of some countries in the Southeast Asia (including Brunei, Indonesia, Philippines, Thailand, and Vietnam) have been made to expand the fishing more towards the offshore in their EEZ areas where fisheries resources are still under-utilized as for the alternative fisheries resources. Over the years, SEAFDEC/TD has initiated and provided technical support to the Member Countries on the exploration of coastal and marine fishery resources through various programs/activities. However, the development of capture fisheries for such under-utilized resources should be made with the view of concerns on the ecosystem approach to fisheries (EAF). In this connection, SEAFDEC has currently initiated a series of activities aiming at building human resources capacity of the Member Countries on exploration of fishery resources with the basis of EAF. During the past few years, TD had organized a number of technical meetings, workshops and trainings related to fisheries resource exploration. The outputs from such activities could be referred to as the basis for developing offshore fishery resources in the EEZ of some Member Countries.

In 2008, SEAFDEC, FAO and APFIC co-organized “Workshop on Assessment and Management of the Offshore¹ Resources of South and Southeast Asia” in 2008, aiming to provide a regional review and synthesis of current knowledge as well as economic feasibility of developing new fishing activities directed to these resources. A number of technological, social and ecological constraints have made offshore fishing a high risk undertaking, especially for developing countries in Southeast Asia.

To follow-up with that of ASEAN-SEAFDEC Resolution and Plan of Actions on Sustainable Fisheries for Food Security for the ASEAN Region adopted in 2001 and 2011 on the promotion of alternative fisheries resources in the area where still under-utilized condition, SEAFDEC has implemented a regional program with the financial support from Japanese Trust Fund (JTF) Program through the 5-year (2008 to 2012) project entitled “Deep-sea Fisheries Resources Exploration in the Southeast Asia”. Under this project, a series of meetings, workshops, and trainings were conducted through this project aiming at reviewing national initiatives related to deep-sea fisheries resources development in the Member Countries and enhancing capacity of researchers to explore deep-sea fisheries resources with the view of EAF.

In 2013, a 5-year regional project entitled “Offshore Fisheries Resource Exploration” has developed to monitor the outputs from the previous deep-sea projects as well as to expand SEAFDEC’s technical assistance to the Member Countries with wider scope of fisheries resources exploration in the offshore areas of the Southeast Asian Region.

¹ For the purpose of the workshop, offshore was defined as waters deeper than 200 m, i.e. the outer continental shelf, the slope and deep-sea areas of country’s EEZ as well as the high seas. During the workshop, it was noted that different countries had different definitions for their offshore areas, some based on distance offshore, making comparisons among countries difficult.

Objectives

- To update national initiatives on offshore fisheries resources development/exploration in the member countries (2008 and onwards);
- To update information on regional initiatives related to offshore fisheries resources development/exploration in Southeast Asian waters;
- To discuss on future plan of activities of the project from 2014 to 2017; and
- To facilitate the utilization of M.V. SEAFDEC 2 by the Member Countries for future development of offshore fisheries resources.

Envisaged Outputs:

- Review of initiatives related to offshore fisheries resources exploration and development in Southeast Asian region; and
- Revision of the annual plan of project activities from 2014 to 2017.

Date and Venue: November 2013 (2days), Bangkok, Thailand

Provisional agenda and time table

Time	Activities	Presenter	Chair
3 December (Tuesday)			
08:30-09:00	Registration		
09:00-09:20	Opening		
09:20-09:45	Introduction and objectives of the meeting	Dr. Worawit	Mr.Isara
09:45-10:00	<i>Group photo and coffee break</i>		
10:00-10:30	International initiative related to offshore fisheries resources exploration / development	Mr. Isara	
10:30-11:00	Regional initiative “ <i>Joint Research Program on Tuna Resources in Sulu-Sulawesi Sea</i> ”	Ms. Penchan	
11:00-11:30	Lesson Learn from SEAFDEC –Program on “ <i>Deep-Sea Fishery Resources Exploration in the Southeast Asian Waters 2007-2012</i> ”	Dr. Natinee	
11:30-13:00	<i>Lunch</i>		
13:00-13:30	Nation initiative related to offshore fisheries resources exploration/development <ul style="list-style-type: none">- Cambodia- Indonesia- Malaysia- Myanmar		Dr. Worawit
13:30-14:00			
14:00-14:30			
14:30-15:00			
15:00-15:20	<i>Coffee break</i>		

Time	Activities	Presenter	Chair
15:20-15:50	Nation initiative related to offshore fisheries resources exploration/development - The Philippines - Thailand - Vietnam		Dr. Worawit
15:50-16:20			
16:20-16:50			
18:00-20:00	<i>Reception dinner</i>		
4 December 2013 (Wednesday)			
09:00-09:30	Collaborative research survey related to Offshore fisheries in Southeast Asian waters	Mr. Nakaret	Mr. Watanabe
09:30-10:10	Annual plan of project activities (2014 to 2017)	Mr. Sayan	
10:10-10:30	<i>Coffee break</i>		
10:30-11:30	Training Need Assessment for future activities, discussion and revision of the project annual plan	Dr. Worawit/	
11:30-12:00	Possible future technical collaboration program offshore fisheries resources, and follow-up actions	Dr. Worawit	
12:00-13:30	<i>Lunch</i>		
13:30-14:00	Conclusion	Dr. Worawit	
14:00-14:20	Closing		

Contact Persons:

Mr. Sayan Promjinda Fishing Gear Technologist, SEAFDEC/TD
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Meeting Arrangement

Cost of participation of participants of the Regional Workshop will be arranged by using SEAFDEC/TD's standard, including international economy air-ticket, DSA, and accommodation during the meeting.

Annex 4. Introduction and objectives of the meeting



Introduction and Objectives

Regional Workshop on Offshore Fisheries in
Southeast Asian Waters
3-4 December 2013, Bangkok, Thailand

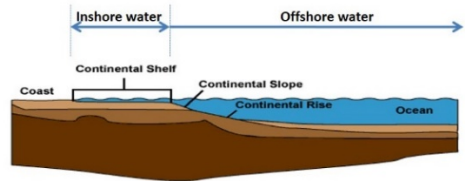
Introduction

- Depletion of the fisheries resources in coastal areas → alternative fisheries resources including offshore...
- Number of countries in SEA has made their efforts in exploring fisheries resources in their EEZ and highsea
- SEAFDEC has supported MCs on various capacities including technical and facilities onboard T/V and R/V
- Recently, SEAFDEC has initiated a series of technical regional/national programs on F.R.E.E

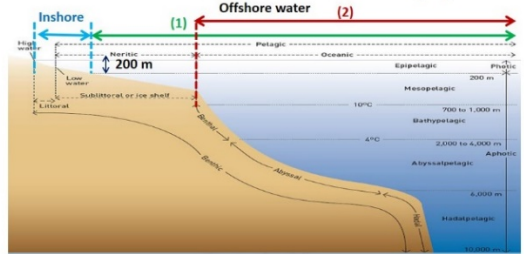
Introduction (2)

- ASEAN-SEAFDEC RES & POA 2001 and 2011, promotion of alternative fisheries resources where still under-utilized condition
- JTF Project on deep-sea implemented 2008 to 2012
- JTF Project on offshore fisheries resources from 2013 to 2017

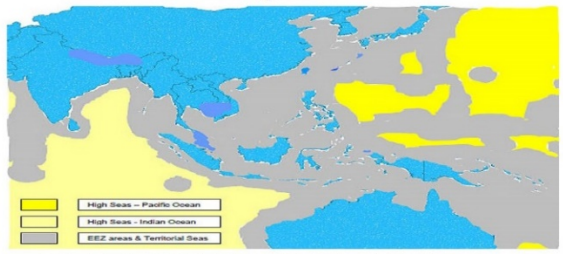
Definition of Offshore (1)



Definition of Offshore (2)



EEZ and High-sea in SEA



Source: Dr. Derek Staple, FAO-APFIC-SEAFDEC Workshop, Bangkok, 2008

Offshore Areas in South and SEA

Country	Area EEZ	Area Continental shelf	Offshore area
Bangladesh	39,868	59,638	
Brunei	38,600*	8,600*	30,000*
Darussalam			
Cambodia	55,600	55,600	
India	2,002,000*	450,000*	1,630,000*
Indonesia	2,700,000*	1,847,707	
Malaysia	198,173	335,913	
Maldives	1,000,000*	29,609	46,000
Myanmar	488,000*	230,000*	
Pakistan	250,000*	50,270*	
Philippines	2,200,000*	184,600*	2,015,400*
Sri Lanka	517,000*	30,000*	495,000*
Thailand	420,000*	185,351	
Viet Nam	1,000,000*	352,429*	69,7700*

Source: Dr. Derek Staple, FAO-APFIC-SEAFDEC Workshop, Bangkok, 2008 (unit, km²)

Definitions in MCs

Country	Definition
Brunei	45 to 200 nm, zone 4, about 75% of EEZ water (deep-sea)
Cambodia	?
Indonesia	Limited maximum size of vessels is 600 GT (catcher), and 3,500 GT (carrier) (offshore)
Malaysia	> 30 nm and > 70 GRT, fishing in C2 area, demersal capture fisheries in Sarawak water (deep-sea)
Myanmar	> 12 nm (offshore)
Philippine	> 200 m deep (oceanic)
Thailand	100 to 1350 m deep, continental shelf, Andaman Sea (offshore)
Vietnam	> 100 m deep, in Central and South waters (offshore)

Source: FAO-APFIC-SEAFDEC Workshop, Bangkok, 2008

Definition of Offshore in MCs

- See [file](#)

Common Challenges for Offshore Fisheries

- Most species have low productivity
- Often associated with vulnerable marine habitats
- Difficult to monitor – leading to IUU fishing
- Difficult to study and assess
- Require greater technological effort and investment

Source: FAO-APFIC-SEAFDEC Workshop, Bangkok, 2008

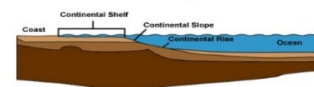
Challenges on Offshore Fisheries in SEA

- 80% of EEZ in SEA waters are under-utilized
- Post-harvest, processing, and marketing
- High cost of operation
- Study on economic feasibility and impact from fishing
- Pilot activity
- Safety at sea of vessels and crews
- Fishing gear technology development

Source: FAO-APFIC-SEAFDEC Workshop, Bangkok, 2008

Potential Offshore Fisheries Resources in SEA

- Pelagic fisheries
 - Tuna resources in Eastern Indian Ocean
 - Oceanic squid
 - Small pelagic (mackerel and round scads) in SCS
- Demersal fisheries
 - Continental slope
 - Continental shelf



Source: Dr. Somboon S., FAO-APFIC-SEAFDEC Workshop, Bangkok, 2008

Objectives

- Update national initiatives on offshore fisheries resources exploration
- Update information on regional initiatives related to offshore fisheries resources exploration

Envisaged Outputs

- Review of initiatives related to offshore fisheries resources exploration
- Needs of MCs in developing offshore capture fisheries
- Agreed draft of the Project's annual plan 2014 to 2017 (SEAFDEC-JTF)

Agenda and Timetable – Day1

Agenda		
09:00	Opening	Mr. Watanabe
09:20	Introduction and objective of the workshop	Mr. Worawit
09:45	<i>Refreshment break</i>	
10:00	International initiatives related to offshore fisheries resources exploration/development	Mr. Isara
10:30	Regional initiative "Joint Research Program on Tuna Resources in Sulu-Sulawesi Seas"	Ms. Penchan
11:00	Lesson learned from SEAFDEC's program	Dr. Natinee
11:30	<i>Lunch break</i>	
13:00	National initiatives related to offshore fisheries resources exploration/development	Countries
15:00	<i>Refreshment break</i>	
15:20	National initiatives related to offshore fisheries resources exploration/development (continued)	Countries

Agenda and Timetable – Day2

Agenda		
09:00	Collaborative research survey related to offshore fisheries in Southeast Asian waters	Mr. Nakaret
09:30	Annual plan of project activities 2014 to 2017	Mr. Sayan
10:10	<i>Refreshment break</i>	
10:30	Training needs assessment for future activities on offshore, discussion and revision of the project annual plan	Mr. Worawit
11:30	Possible future technical collaboration program on offshore fisheries resources, and follow-up actions	Mr. Worawit
12:00	<i>Lunch break</i>	
13:30	Conclusion	Mr. Worawit
14:00	Closing	Mr. Watanabe

Annex 5. International initiative related to offshore fisheries resources exploration / development

International initiatives related to study on impact of fishing to deep-sea ecosystem and International Guidelines for the Management of Deep-sea Fisheries in the High Seas



SOMBOON SIRIRAKSOPHON
Policy and Program Coordinator
SEADEF/SEC



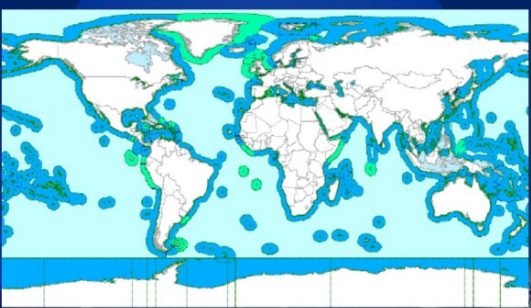
Outline

- ❖ Introduction > Impact of DS Fishing
- ❖ International Guidelines for the Management of Deep-sea Fisheries in the High Seas
- ❖ Perceived Concerns to Southeast Asia
- ❖ Recommendations for Future Actions
- ❖ Collaborative Arrangements
- ❖ Future Cooperation on Deep sea Exploration



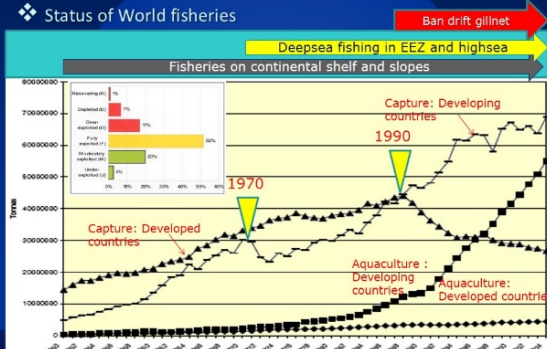

Introduction > Development of DS fishing

- ❖ 64% of World's Oceans lie beyond national jurisdictions (FAO)



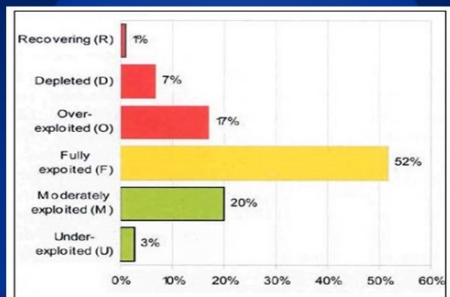

Introduction > Development of DS fishing

- ❖ Status of World fisheries




Introduction > Development of DS fishing

- ❖ Status of World fisheries





Introduction > Development of DS fishing

- ❖ Decadal Trends in Deep Sea Catches >IO & WPO



NW Pac. – pollock, cod and hairtails
WC Pac. – scabbards and Hairtails
SW Pac. – hoki (and orange roughy & alfonsino)
W & E IO. – hairtail, (grenadiers, orange roughy & alfonsino)



Introduction > Development of DS fishing

INTERNATIONAL FISHERY INSTRUMENTS

- 1982 United Nations Convention on the Law of the Sea
- 1990s ..attempts to enhance and develop the legal framework for fisheries management
- 1992 Rio Declaration : Environment and Development
- 1993 Agreement to promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas
- 1995 Code of Conduct for Responsible Fisheries
- 1995 Kyoto Declaration and Plan of Action on the Sustainable Contribution of Fisheries to Food Security
- 1995 under UNCLOS: Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stock (UN Fish Stocks Agreement)...



Introduction > Impact of DS Fishing

- ❖ Concerns on vulnerability of deep sea resources - maturation at relatively **old ages**, **slow growth**, **long life expectancies**, **low natural mortality rates**, **low productivity**, able to sustain only very low exploitation rates, recovery is expected to be long and is not assured, etc.



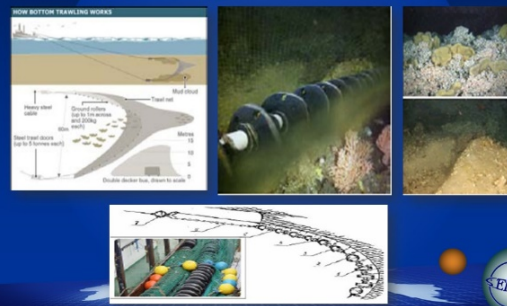
Introduction > Impact of DS Fishing

- ❖ Significant impacts of deep-sea fishing to **vulnerable marine eco-systems** (habitats, resources, environment) i.e. seamounts, hydrothermal vents, cold seeps, sponge grounds, etc.



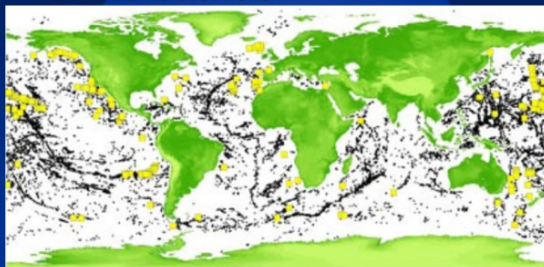
Introduction > Impact of DS Fishing

- ❖ Deep Sea Trawl



Introduction > Current Situation

- ❖ Seamounts Locations



Square indicate seamounts have been sampled biologically (from seamounts.sdsc.edu)
Small black dots indicate predicted seamounts from Kitchiman and Lai, 2004



Introduction > Current Situation

- ❖ Availability of data as well as gaps and shortcomings in the current legal and institutional regimes in the management of deep-sea fisheries in the high seas
- ❖ Conservation and environmental pressures



Introduction > Current Situation

- ❖ Request of 27FAO COFI (2007) - to assist States and RFMOs/As to protect vulnerable marine ecosystems (VMEs) through achieving “Responsible Fisheries in the Marine Eco-system” (UNGA Resolution 61/105)



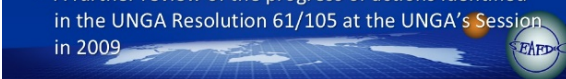
Introduction > Current Situation

- ❖ The Guidelines should include:
 - Standards and criteria for identifying VMEs in areas beyond national jurisdiction
 - Identifying potential impacts of fishing activities on such ecosystems



Introduction > Development Process

- **Expert Consultation** on Deep-sea Fisheries in the High Seas (Bangkok, Thailand, 21-23 November 2006)
- **Expert Consultation** (Bangkok, Thailand, 11-14 September 2007)
- **Two Technical Consultations** in Rome, Italy, from 4-8 February 2008 and 25–29 August 2008, where the FAO International Guidelines were reviewed and adopted
- Submission to 28FAO COFI (2009)
- A further review of the progress of actions identified in the UNGA Resolution 61/105 at the UNGA’s Session in 2009



Introduction > Development Process

- ❖ **Other related process**
 - Workshop on Vulnerable Marine Ecosystems and Destructive Fishing (Rome, Italy, 26-29 June 2007)
 - Workshop on Knowledge and Data on Deep-sea Fisheries in the High Seas (Rome, Italy, 5-7 November 2007)
- ❖ **Guidelines** – to provide tools and guidance on their application to facilitate and encourage the efforts of RFMOs/As and States towards sustainable use of marine living resources, the prevention of significant adverse impacts to vulnerable marine ecosystems (VMEs) and the protection of marine biodiversity.



International Guidelines : Compositions (1)

❖ Preamble & Background Considerations

❖ Scope and Principles

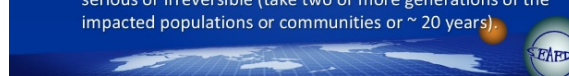
- Fisheries in areas beyond the national jurisdiction that
 - Catch includes species that can only sustain low exploitation rates and/or suffer incidental mortality; and
 - Fishing gear is likely to contact the seafloor, whether intended or not.
- States and RFMOs/As should
 - Adopt and implement measures in conformity with the relevant rules of international laws and instruments
 - Identify areas where VMEs are known or likely to occur; and
 - Take action using the best information available.



International Guidelines : Compositions (2)



❖ Descriptions of Key concepts

- **Vulnerable Marine Ecosystems** - Vulnerability is the likelihood that a population, community, or habitat will experience substantial alteration from short-term or chronic disturbance (physically or functionally fragile), and are very slow to recover, or may never recover. Vulnerable
- **Significant Adverse Impacts** - Adverse impacts caused by fishing gear to VMEs that are more than minimal and not temporary in nature.
- **Adverse impacts** become significant when the harm is serious or irreversible (take two or more generations of the impacted populations or communities or ~ 20 years).





International Guidelines : Compositions (3)

- ❖ **Governance and Management**
 - **Adopt conservation plans** as well as plans for the prevention of significant adverse impacts on VMEs and the protection of marine biodiversity;
 - **Identify areas or features** where VMEs are known or likely to occur, and the location of fisheries;
 - **Develop data collection and research programs** to assess the impact of fishing;
 - Base the management of deep sea fisheries on the **best information available** taking into account fisher's knowledge;


International Guidelines : Compositions (4)

- ❖ **Governance and Management (cont'd)**
 - **Use the most selective fishing methods** possible, recognizing the difficulties of managing fisheries with mixed species or high bycatch;
 - Implement and enforce conservation and management measures through **MCS**;
 - **Eliminate subsidies** that contribute to IUU fishing and to over-capacity;
 - **Ensure transparency, public dissemination** of information and enable participation of all relevant stakeholders.

International Guidelines : Compositions (5)

- ❖ **Governance and Management (cont'd)**
 - States should **ensure** that activities under their jurisdiction or control **do not cause damage** to the marine environment of other States or areas beyond the limits of national jurisdiction.
 - States should **establish** and implement **national policy, legal and institutional frameworks** for the effective management of DSF and to prevent adverse impacts on VMEs.
 - States should **strengthen existing RFMOs/As** with the competence to manage and regulate DSF and their impacts on VMEs.

International Guidelines : Compositions (6)

- ❖ **Governance and Management (cont'd)**
 - States should urgently cooperate in the **establishment of new RFMOs/As** with such competence where no such organization or arrangement exists.
 - **RFMOs/As should develop mechanisms** for communication, cooperation, and coordination among themselves, as well as with relevant regional and international organizations, scientific bodies, and NGOs, as appropriate..




International Guidelines : Compositions (7)

- ❖ **Management and Conservation Steps**
 - Data collection, reporting and assessment
 - Identifying Vulnerable Marine Ecosystems and Assessing Significant Adverse Impacts
 - Enforcement and compliance
 - Application of management and conservation tools
 - Processes for the Application of Management Tools (Environmental assessments and harvesting plans Fishery management plans)
 - Assessment and Review of **Effectiveness of Measures/Adjustment** of Measures



International Guidelines : Compositions (8)

- ❖ **Additional Considerations on Implementation**
- ❖ **Annexes – Data Collection and Reporting, and Management Tools**




Perceived Concerns to Southeast Asia (1)

- ✓ Pressure and movement against bottom trawls in the high seas (and in EEZs), including under UNGA framework
- ✓ In Southeast Asia, the exist limited areas of deep-sea fisheries resources in the high seas (i.e. off-east coast of the Philippines), and in countries' EEZs (i.e. Thailand and Indonesia).
- ✓ However, there may be direct impacts to the countries where their fleets are currently conducting or planning to expand deep-sea fisheries in the high seas.



Perceived Concerns to Southeast Asia (2)

- ✓ The Guidelines has **voluntary nature** but developed based on a number of several international binding instruments
- ✓ As indicated in the UNGA Resolution 61/105, the Guidelines once adopted will be used as a reference in **dealing with issues related to deep-sea fisheries in the high seas**. Thus, compliance by States and RFMOs/As to the Guidelines could be expected.
- ✓ **Various views** have been expressed on how the deep-sea fisheries issues are currently handled.
 - ✓ **Good** → the issue is back for discussion by international competent agency/forum like FAO.
 - ✓ **Bad** →burden and overwhelming requirements particularly to developing countries



Perceived Concerns to Southeast Asia (3)

- ✓ **Although**, the Guidelines **focus** on the bottom fisheries in the **high seas** but it does **not “exclude”** those within national jurisdiction.
- ✓ Thus, the extent of implication of management requirement for **deep-sea fisheries in EEZs should be carefully studied**.
- ✓ **Flag States'** responsibility particularly to ensure that sound assessment of deep-sea fisheries resources and proper management plans should be conducted before allowing new or continuation of deep-sea fisheries may be constraint to many developing countries.



Perceived Concerns to Southeast Asia (4)

- ✓ **Current capacity limitation** of the Member Countries in meeting requirements in conducting stock assessment, obtaining data/information/research/reporting needs, identification of vulnerable marine ecosystems (VMEs) and assessing significant adverse impacts (SAIs).
- ✓ **MCS requirements** and applicability in the regional fisheries context.
- ✓ **Deadlines for States and RFMOs/As to adopt and implement measures to regulate bottom fisheries** adopted in the UNGA Resolution 61/105 (**This is not directly related to the Guidelines proper**).



Recommendations for Future Action (1)

- ❖ Careful study on the draft Guidelines, noting the requirements and potential concerns
- ❖ Take part in the finalization of the Guidelines (4-8February 2008) for submission to FAO COFI at the 28th Session in March 2009
- ❖ Prepare follow-up actions for both national and regional levels
In addition, SEAFDEC/TD is currently embarking into research/studies on deep sea fisheries resources. This should be seen in light of assisting many Member Countries in rationalizing their policy of promoting strategic development of off-shore fisheries (within EEZ of the country or other countries, and in the high seas).



Recommendations for Future Action (2)

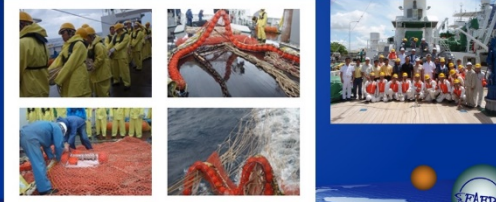
- ❖ Mobilizing relevant available data and information collected over the year and outcome of existing and future regional programs, SEAFDEC/TD could seriously consider clarifying goals and target of embarking into this issue.
- ❖ This could lead to a solid policy advice on off-shore fisheries development to ensure that they are sustainable and economically feasible and do not create a “bounce back” effect to near-shore fisheries..



SEAFDEC Arrangements with NFU (1)

❖ Objectives :

- Enhancing human resources capacity
- Collaborative Fisheries Resources Survey



SEAFDEC Arrangements with NFU (2)

❖ SEAFDEC Cooperation with NFU

- 2006 : Offshore Sarawak, Malaysia by Tenyo maru
- 2007 : Brunei Darussalam waters by Tenyo maru
- 2008 : Gulf of Thailand by Tenyo maru
- Off central Vietnam by Koyo maru
- 2009 : Off central Vietnam by Koyo maru
- 2010 : Off central Vietnam by Koyo maru
- 2011-13 : >>>to be determined



SEAFDEC Arrangements with NFU (2)



Future Cooperation

Consideration:

- ✓ Use of SEAFDEC Vessel based on Country requests
- ✓ Lack of human resources on deep sea research, fish identification,
- ✓ Appropriate fishing gears for fish samplings
- ✓ Supports for conducting the Deep sea Exploration
- ✓ Southeast Asian Region as a high biodiversities, Lack of deep sea data available



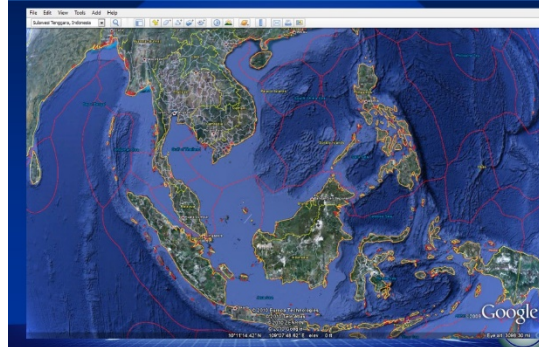
Future Cooperation

Possible Cooperation:

- ✓ Use of potential research vessels in/outside the Region under Bi-tri lateral agreement, SEAFDEC-As
- ✓ Encourage members to conduct the deep sea survey in each Sub-regional areas, sharing information, experiences under cost share policy
- ✓ Reviewed all deep sea surveys in the region to identify the potential resources, appropriate fishing gears, management contexts, etc.
- ✓ Work together and Develop the Regional proposal through consultation with relevant member countries then seek funding support from other donors



Future Cooperation



Annex 6. Regional initiative “*Joint Research Program on Tuna Resources in Sulu-Sulawesi Sea*”


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



Agenda 4: Sulu-Sulawesi Sea

Background

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



Background


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

Joint Research Program on Tuna Resources in SSS

overall goal


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

Areas of Cooperation



- Research Cooperation
- Information Sharing and Exchange
- Technical Transfer and Training

Program Activities



- Activity 1: Review**
 - catch and efforts
 - biological data
 - information on tuna harvested
- Activity 2: Tuna Stock Assessment**
 - Expert working group
 - Standardize of methodology
 - Estimation of MSY of target tuna species
- Activity 3: Determination of spawning ground**
 - Expert working group
 - Standardize of methodology
 - Determination of tuna fishing ground

Program Activities

Activity 4:

Data Collection

- Landing site
- Survey on board M.V. SEAFDEC 2

Activity 5:

Assessment of the use of FADs in SSS

- No. of FAD
- Species Composition and size

Activity 6:

Organization of Scientific Committee Meeting

- Scientific Committee Meeting
- Regional Advisory Committee (RAC)

Responsibility--Participating Countries

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

Responsibility--Participating Countries

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

Responsibility--SEAFDEC /SEC,TD,MFRDMD

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

Workplan-1st year (2013)

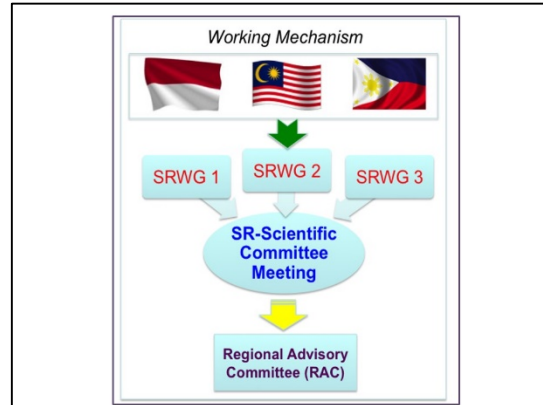
- 1st Working Group Meeting to finalize the Collaborative Research Work Plan: set standardized methodology for the collaborative program
- **Finalize the Collaborative Research Work Plan**
- Secure financial support from the respective national governments

Workplan-2nd year (2014)

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

Workplan-3rd year (2015)

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



Sub-regional Working Group and Lead Countries -Stock Assessment

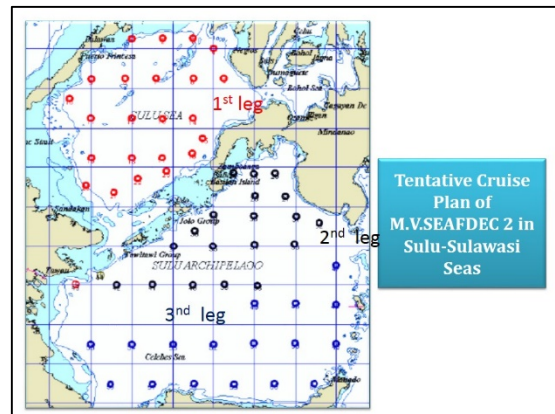
SR-Working Group	Lead Country/ Chief Scientist	SRWG Members/Country
Bigeye tuna	Philippines: <Mr. Noel Barut>	1. Mudjekeewis Santos (P) 2. Ronnie Romero (P) 3. Ellaine Garvilles (P) 4. Sallehuddin Jamon (M) 5. Anung Widodo (I)
Yellow fin tuna	Indonesia < Dr. Fayakun Satria>	1. Richard Rumpet (M) 2. Lilis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

Sub-regional Working Group and Lead Countries

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

Sub-regional Working Group and Lead Countries

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



Annex 7. Lesson Learn from SEAFDEC –Program on “Deep-Sea Fishery Resources Exploration in the Southeast Asian Waters 2007-2012”


 Regional Workshop on Offshore Fisheries in Southeast Asian Waters
 3-4 December 2013, Bangkok, Thailand

Lesson Learnt from SEAFDEC-Program on “Deep-Sea Fishery Resources Exploration in the Southeast Asian Waters 2007-2012”

Natinee Sukramongkol
 Capture Fishery Technology Division
 SEAFDEC/TD

Background

- Depletion of the inshore/coastal Fishery resources in the Southeast Asian Countries
- Search for the potential fishery resources targeting at **shelf-break areas (100-200m) and continental slopes areas (200-500m)**
- Rare existing data/information in the SEA Waters
- In serving Member Countries, SEAFDEC/TD, with the active financial and technical support of Japanese Government started the “Deep Sea Fishery Resources Exploration in the Southeast Asia” since 2007

Objectives (1)

- ▶ Collaboration with SEAFDEC Member Countries using M.V. SEAFDEC2 and national research vessels implementing under cost-sharing policy to explore the deep-sea fishery resources and develop of the fishing/sampling gears;
- ▶ Investigate the impact of fishing/sampling gears to the deep-sea ecosystem;

Objective (2)

- ▶ Provided the technical support to investigate the potential fishery resources at the continental shelf and slope in the EEZ and trans-boundary areas of the Member Countries;
- ▶ Increase number and capacity of researcher of the member countries to explore the deep-sea fishery resources as well as its ecosystem (recognized that the deep-sea ecosystem are vulnerable to damages);

Activities

- Activity 1: Meeting and Workshop
- Activity 2: Development/improvement of sampling gear and exploration methodology
- Activity 3: Support deep-sea fishery resources survey
- Activity 4: HRD programs
- Activity 5: Information dissemination



Activity 1: Meeting/workshop

1. **Workshop on the Standard Operating Procedure (SOP) and Development of Sampling Gears for Deep-Sea Resource Exploration;** 26-28 May 2009 at SEAFDEC/Training Department, 22 Participants including SEAFDEC/TD and MFRDMD, Brunei, Japan, Indonesia, Philippine, Malaysia, Myanmar Thailand and Vietnam;
2. **Expert meeting on deep-sea fishing and its impact on ecosystem** 31 August - 2 September 2010, Bangkok, Thailand, 21 participants: SEAFDEC/TD, NOAA, Brunei, Japan, Indonesia, Philippine, Malaysia, Myanmar,



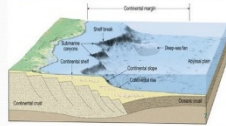
Activity 1: Meeting/workshop

Output from the meeting: (1)

- Interpretation of “Terms and Scope of Deep-Sea Area”
- Common understanding for Standard Operating Procedure for the deep-sea resources survey in the SEA region
- Standardization of the specific procedure for the operation of the deep-sea sampling gear
- Indicators for deep-sea resources survey
- Indicator for the impact of fishing to ecosystem

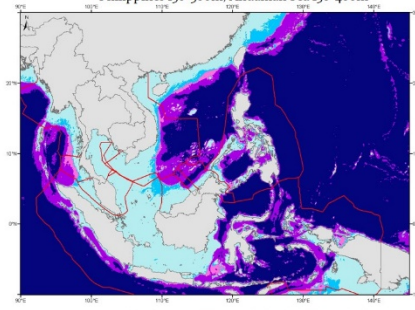
Definition of “Deep-sea”

“The deep sea represents those marine environments that occur beyond the continental shelf. The average depth at which this occurs is approximately 200m”



Deep-Sea Area in ASEAN Waters

Brunei Darussalam 200-500m, West Coast of Luzon, Philippines 200-1,000m, Visayan Sea, Philippines 150-500m, Andaman Sea 150-400m



ETOPO1, Data, 1 minute resolution from: <http://seamless.usgs.gov/seamless/data/ETOPO1.html> prepared by Sitiporn

Activity 1: Meeting/workshop

***Summary information from participants of the meeting in activity 1**

Country	Survey method	Unit of indicator
Japan	trawl (commercial boat)	CPUE (Kg/hr)
Thailand (MRC)	Beam trawl, Agassiz trawl, Otter trawl	? (for biodiversity)
Malaysia	trawl (1 hr), BVL, Trap	CPUE (Kg/hr), Kg/100 traps, Kg/station
Brunei Darussalam	trawl	CPUA (Kg/km ²)
Indonesia	Deep sea trawl	CPUE (kg/hr)
Myanmar	Trawl, BVL	CPUE Kg/hr, number/1,000 hooks
Philippine	Trawl, Trap	CPUA (kg/km ²), g/trap/hr
Vietnam	Trawl	CPUE (kg/hr)

Activity 1: Meeting/workshop

***Indicator and Unit agreed (meeting in activity 1) to be use for SOP**

Fishing gear	indicator	unit
Trawl	CPUE	Kg/hr
	CPUA,	Kg/km ²
Line BVL, VL	CPUE	kg/1,000 hooks and/or number/1,000 hooks
Trap/pot	CPUE	Kg/100 traps and/or number/100 traps
Bottom gill net	CPUE	kg/km net

Activity 1: Meeting/workshop

Output from the meeting: (2)

Number of needs to further promote deep-seas exploration were identified that include;

- Understanding the stock/habitat and its assessment;
- Establishment of regional and national network to share information and exchange of experts and facilities;
- Further improvement and restructuring of the SOPs considering their applicability and usage as minimum requirements for scientists involved in the deep-sea explorations;
- Development of more simple sampling gears for effective collection of deep scattering layer (DSL) organisms;
- Exploring the meso-pelagic resources;

Activity 1: Meeting/workshop

Output from the meeting: (3)

- Comparison of the catches obtained by different types of gear, e.g. fish/shellfish biomass in beam and otter-board trawl, should be made;
- To avoid damage to the marine habitats, sampling gears, particularly beam and otter-board trawl, should be made smaller;
- Efforts to minimize the deep-sea fishing impact on maritime ecosystem (e.g. through using novel or environmental-friendly fishing gears) should be made;
- Inventory of deep-sea fishes found in the Southeast Asian waters should be compiled;
- Studies of the life history of important deep-sea fishes/shellfishes, as compared with the coastal species, should be carried out;
- Bathymorphic mapping should be carried out;
- The use of ROV or underwater VDO camera for faster and more efficient detection of VMEs systems should be made.

Activities

- Activity 1: Meeting and workshop
- Activity 2: Development/Improvement of Sampling Gear and Exploration Methodology
- Activity 3: Support deep-sea fishery resources survey
- Activity 4: HRD programs
- Activity 5: Information dissemination

Activity 2: Development/Improvement of sampling gear and exploration methodology

Sampling gears developing under the program;

- Beam trawl
- Agassiz trawl (Beam trawl)
- Deep sea trap
- Isaccs-Kidd Midwater trawl (IKMT)
- Under water VDO camera

Beam trawl

Beam / Frame diagram

Technical drawings showing the beam trawl structure. The side view shows a frame with a width of 800 and a height of 1000. The front view shows a beam with a length of 2000 and a height of 800. The top view shows a beam with a width of 800 and a length of 2000. A photograph shows the physical beam trawl frame, which is a long, narrow structure with a central beam and side rails.

TOTAL WEIGHT - 400 kgs

Beam and net diagram

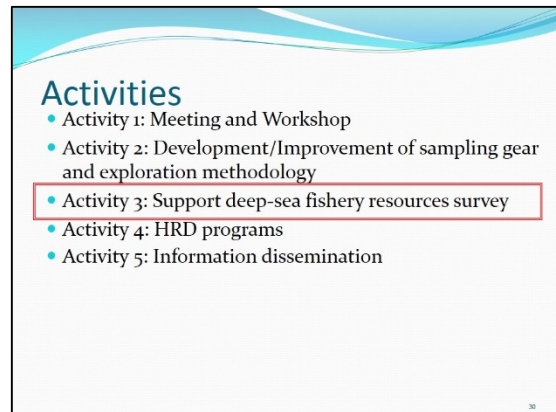
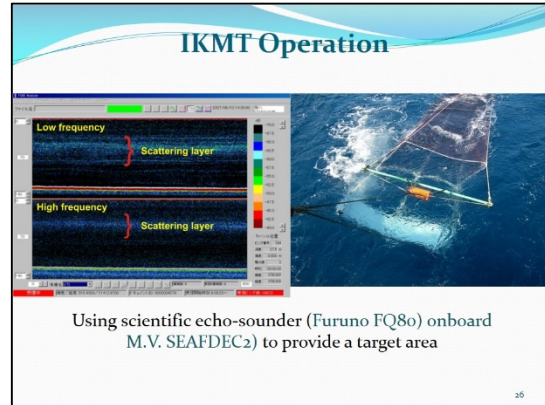
A 3D perspective view of the beam trawl frame. To the right is a detailed net diagram showing the layout of the net, including the beam, side rails, and various sections of the net. The diagram includes dimensions and labels for different parts of the gear.

Operation of beam trawl

A collage of four photographs showing the operation of the beam trawl. The top-left photo shows the trawl being hoisted on a ship. The top-right photo shows the trawl being deployed from the deck. The bottom-left photo shows the trawl being towed through the water. The bottom-right photo shows a close-up of the trawl's beam and side rails.

Specimens from beam trawl

A collage of three photographs showing the catch from the beam trawl. The top photo shows people on a ship sorting through the catch. The bottom-left photo shows people sorting through the catch in a large container. The bottom-right photo shows two red plastic crates filled with various specimens, including fish and crustaceans.



Activity 3: Support deep-sea fishery resources survey

Support technical staffs of SEAFDEC/TD to join the actual survey on M.V.SEAFDEC2 and national research vessels

- 2008 Brunei and Philippines
- 2009 Brunei Darussalam
- 2010 Brunei and Malaysia
- 2011 Brunei Darussalam



M/V DA-BFAR , the Philippines
11-25 May 2008

Lingayen Gulf, Philippines Waters



M.V.SEAFDEC 2 Cr.29-2/2008,
Brunei Waters, 4 June-5 July 2008



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M.V.SEAFDEC 2 Cr.31-1/2009,
Brunei Waters, 6 March-11 April 2009



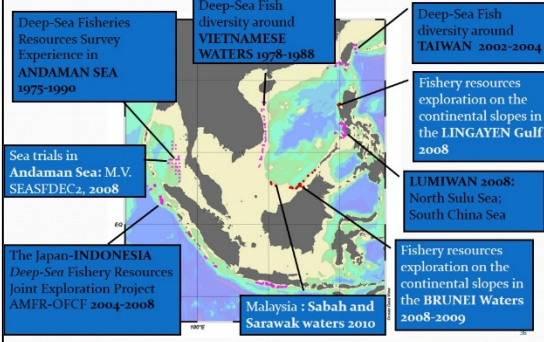
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M.V.SEAFDEC 2 Cr.35-3/2010,
Sabah-Sarawak Waters, Malaysia,
28 June-11 August 2010



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Support Deep-Sea Fishery Resources Survey using M.V.SEAFDEC2 and Information Gathering



- Deep-Sea Fisheries Resources Survey Experience in ANDAMAN SEA 1975-1990
- Deep-Sea Fish diversity around VIETNAMESE WATERS 1978-1988
- Deep-Sea Fish diversity around TAIWAN 2002-2004
- Fishery resources exploration on the continental slopes in the LINGAYEN Gulf 2008
- LUMIWAN 2008: North Sulu Sea; South China Sea
- Fishery resources exploration on the continental slopes in the BRUNEI Waters 2008-2009
- Sea trials in Andaman Sea: M.V. SEAFDEC2, 2008
- The Japan-INDONESIA Deep-Sea Fishery Resources Joint Exploration Project AMFR-OFCE 2004-2008
- Malaysia : Sabah and Sarawak waters 2010

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Activities

- Activity 1: Meeting and workshop
- Activity 2: Development/improvement of sampling gear and exploration methodology
- Activity 3: Support deep-sea fishery resources survey
- Activity 4: HRD Programs
- Activity 5: Information dissemination

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Activity4: HRD programs on deep-sea fishery resources exploration

On-site and On-the-job training

1. **7-11 April 2009:** On the job training on collection, preservation and digital imaging technique for deep-sea fish, Brunei Darussalam
2. **2-4 February 2010:** On site training on technique for preparation of deep-sea fish pictorial book, Brunei
3. **18-21 July 2011:** On-site training on Identification of Deep-sea Fish, Malaysia

Training/Workshop

1. **11-25 May 2008:** Ship board training on deep-sea exploration, R.V.DA BFAR, Philippines
2. **18-22 January 2010:** Training workshop on identification of deep-sea fish, SEAFDEC/TD
3. **16-20 October 2010:** Training on research methodologies for study on impact of fishing on deep-sea ecosystem, Brunei Darussalam
4. **11-15 July 2011:** Training/workshop on identification of deep-sea benthic-macroinvertebrate vulnerable to fishing gear, SEAFDEC/TD
5. **18-22 February 2013:** Training workshop on benthic habitat mapping, SEAFDEC/TD

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Ship board training on deep sea exploration on M.V.DA-BFAR (Co-organize by Bureau of Fishery and Aquatic Resources, the Philippines)

Objectives: to enhance the human resources capacity on the deep-sea resources exploration including

- Methodology for samplings of deep sea Fishery resources,
- Identification of deep-sea fishes and juveniles

Participants from Member Countries : Brunei (1) , Indonesia (1), Malaysia (2), Philippines (5), Thailand (1) , Vietnam (1) and SEAFDEC staffs (5)

Resource person:

Fish taxonomist : Mr. Montri Sumontha
Invertebrate zoology: Associate Professor Kotaro Tsuchiya, Tokyo University of Marine Science and Technology

Read full report : <http://map.seafdec.org/DeepSea/pubo3.html>

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Shipboard training on deep-sea exploration on M.V.DA-BFAR



Training Workshop on Identification of Deep-sea Fishes

Objectives:

- To enhance the human resources capacity on deep-sea fish species identification;
- To encourage the SEAFDEC Member Countries to initiate deep-sea resources exploration ensuring the accurate deep-sea fishes identification

Participants from Member Countries : Brunei (2), Indonesia (1), Malaysia (1), Philippines (1), Thailand (2) , Vietnam (1) and SEAFDEC staffs (2)

Resource persons:

1. Dr. Yoshinobu Konishi, Retire researcher of Fishery Agency, Japan
2. Dr. Fayakum Satria, Research Center for Capture Fishery, Indonesia
3. Assistant Professor Dr. Toshio Kawai, Fishery Science Center, The Hokkaido University Museum

Watch: Summary activities VDO at <http://map.seafdec.org/DeepSea/>
Read: Training report at <http://map.seafdec.org/DeepSea/pubo1.html>

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Training Workshop on Identification of Deep-Sea Fishes



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Training Workshop on Identification of Deep-Sea Fishes

Training Workshop on Research Methodologies for the Study on Impact of Fishing to Deep-Sea Ecosystem (co-organize by Department of Fishery, Brunei Darussalam)

Objectives:

- To enhance participants' knowledge on research methodologies on impact of fishing to deep-sea ecosystem
- To build human resources capacity through actual practices on: research planning, topographic survey; sampling gears operating methods; sampling methods (quantitative and qualitative); and data collection methodology from the actual survey.

Participants from Member Countries : Brunei (4), Indonesia (1), Malaysia (1), Philippines (1), Thailand (1), Vietnam (1)

Resource persons:

1. Dr. Yoshinobu Konishi, Retire researcher of Fishery Agency, Japan
2. Dr. Chittima Aryuthaka, Associate Professor, Kasetsart University
3. Dr. Sumaitt Putchakarn, Senior Scientist, Institute of Marine Science, Burapha University

Training Workshop on Research Methodologies for the Study on Impact of Fishing to Deep-Sea Ecosystem

Read: Training report at <http://map.seafdec.org/DeepSea/pub01.html>

MIPR HOSTS WORKSHOP ON IMPACT OF FISHING ON ECOSYSTEM

Participants in a group photo

The Department of Fisheries, Ministry of Natural Resources and Environment is pleased to announce the successful completion of the training workshop on Research Methodologies for Study on Impact of Fishing to Deep-Sea Ecosystem, organized by the Department of Fisheries, Ministry of Natural Resources and Environment, Kasetsart University, Bangkok, Thailand, in cooperation with the Department of Fisheries, Ministry of Natural Resources and Environment, Brunei Darussalam, and the Department of Fisheries, Ministry of Natural Resources and Environment, Philippines, in cooperation with the Department of Fisheries, Ministry of Natural Resources and Environment, Indonesia, Malaysia, Thailand, Vietnam and Viet Nam.

Training Workshop on Identification of Deep-Sea Benthic Macro-invertebrate Vulnerable to Fishing Gear

Objectives

- Participants' ability on deep-sea benthic macroinvertebrate identification will be enhanced through practical works.
- Deep-sea benthic macroinvertebrate specimen collected from Fishery resource survey by MV:SEAFDEC 2 will be identified to the lowest taxa.

Participants from Member Countries : Brunei (2), Indonesia (2), Malaysia (2), Philippine (2), Thailand (5), Vietnam (2), Myanmar (1)

Resource persons:

1. Associate Professor Chittima Aryuthaka (Ph.D.), Kasetsart University
2. Assist. Prof. Suriyan Tunkijjanukij (Ph.D.), Kasetsart University
3. Assist. Prof. Puntip Wisespongpan, Lecturer, Kasetsart University
4. Assist. Prof. Teerapong Duangdee, Lecturer, Kasetsart University
5. Dr. Sumaitt Putchakarn, Senior Scientist, Institute of Marine Science, Burapha University
6. Mr. Mike Kendal (Ph.D.), Senior Scientist, England

Training Workshop on Identification of Deep-Sea Benthic Macro-invertebrate Vulnerable to Fishing Gear

11-15 July 2011, SEAFDEC/TD

Training Workshop on Benthic Habitat Mapping

Objectives

- Enhance the human resources capacity on techniques and procedure of benthic habitat mapping; and
- Encourage the SEAFDEC's member countries on explore the deep-sea fishery resources.

Participants from Member Countries : Indonesia (1), Malaysia (1), Philippines (1), Thailand (1), Vietnam (1), Myanmar (1)

Resource persons:

1. Associate Professor Pachoenchoke Jintaseranee (Ph.D.), Burapa University
2. Mr. Wirote Laongmanee (Ph.D.), Burapa University
3. Mr. Fayakun Satria (Ph.D.), Research Center for Fishery Enhancement&Conservation, Indonesia
4. Mr. Ulit Ongsaengkoon (Ping Electric Co., Ltd), Singapore
5. Mr. Teo Kian (J.J. Tango Marine Electronics Pte. Ltd), Thailand



Activities

- Activity 1: Meeting and workshop
- Activity 2: Development/improvement of sampling gear and exploration methodology
- Activity 3: Support deep-sea fishery resources survey
- Activity 4: HRD programs
- Activity 5: Information Dissemination

Activity 5: Information Dissemination

- Project Website: <http://map.seafdec.org/DeepSea/>

Activity 5: Information Dissemination

- Guide for Deep-Sea Trap Operation
- Guide for Beam Trawl Operation
- Guide for Isaacs-Kid Mid-water Trawl
- Check lists of the deep-sea fishes in the South China Sea and Adjacent Waters
- Report of Training Workshop on the Deep Sea Fishery Resources Exploration on the Continental Slopes in Southeast Asian Waters, 11-25 May 2008, M/V DA-BFAR, Philippines
- Report of the Regional Training/Workshop on Identification of Deep-Sea Fishes, SEAFDEC/TD, Thailand, 18-22 January 2010
- Report of the Expert Meeting on Deep-Sea Fishing and Its Impact on Ecosystem, 31 August - 2 September 2010, Bangkok, Thailand
- Report of the Training Workshop on Research Methodologies for the Study on Impact of Fishing to Deep-Sea Ecosystem 16-20 October 2010, Brunei Darussalam

Activity 5: Information Dissemination

Series of publication:
<http://map.seafdec.org/DeepSea/pub01.html>

Activity 5: Information Dissemination

Poster presentation in
Marine Science Seminar,
Phuket, Thailand
28-30 June 2010

Activity 5: Information Dissemination

Poster of trawled fish of the Southeast Asian Waters:
 I - 100 - 370 m
 II - 300 - 1,200 m

- 500 pcs/type
- Distribute through networks
- Download at <http://map.seafdec.org/DeepSea/>

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Activity 5: Information Dissemination

MARINE CRABS OF THE SOUTHEAST ASIAN WATERS (100-370 M.)

Activity 5: Information Dissemination

Database of Deep-sea fishes in SEAFDEC collection at http://map.seafdec.org/deep_sea/search.php

http://map.seafdec.org/cftd/survey_mv2/mvseafdec_2.php

Conclusions

- It was noted that some of Southeast Asian Countries recently implement deep-sea fishery resource survey targeting high value fish using trawl;
- Preliminary outcomes, from few studies/surveys those conducted, convinced all concerned that a great potential exists in the unexploited fishing grounds in the region;
- Proper management plan should be formulated before actual implementation of a new or on-going deep-sea fishery that may restrain future development as were the case of many developing countries;
- SEAFDEC member countries intend to apply the ecosystem-based fisheries management (EBFM) approach, particularly by incorporating it into the national plan for deep-sea fisheries, however, the activities need to get support due to the high cost of deep-sea exploration;

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Conclusions

Potential Fishery Resources?
 Deep-sea fishes from Thai fisherman (2011)

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Conclusions

Where is the Potential Fishery Resources ???



Deep-sea shrimp: pandalid shrimp species (*Heterocarpus* spp., e.g. *H. woodmasoni*, *H. hayashi*, *H. dorsalis*) found in Brunei, Philippines, Malaysia and Thailand (Andaman Sea)

Philippines : A pilot deep-sea shrimp trap fishery aim to formulate a management plan/policy on deep-sea shrimp;

- Improve efficiency of fishing gear
- Study impact to deep-sea ecosystem
- Cost/benefit study

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Diversity in the Benthic Community




Lamellibrachia sp. live in cold seep habitat: area of the ocean floor where hydrogen sulfide, methane, and other hydrocarbon-rich fluid. They provide as producer in deep sea community

Tubeworm, Vestimentifera (Polychaeta: Siboglinidae), *Lamellibrachia* sp.



Attention for deep-sea exploration

- **Vulnerability of deep-sea stocks**
Generally, late maturation, extreme longevity, low fecundity and slow growth
- **Conservation of habitat**
Minimize negative effect of fishing to habitat, especially, for biogenic habitat.




Reviewed 283 reports on habitat impacts of fishing

(After Matsushita, 2009)

- **Negative impacts to organisms:** Short and long term effects, chronic effects to target and other organisms in the habitat
- **Negative impacts to seafloor:** Change of geographical features
- **Sediment suspension:** Turbidity increase, seabed erosion, Change in organic matter balance
- **Gear modification :** Light weight gear, Less contact or contactless gear

Research Technologies: Habitat Mapping

- Deep-sea exploration for fishing requires understanding physical and biological characteristics of seafloor habitats (Habitat mapping).
- "Habitat" refers the environment necessary to support, directly or indirectly, the life process of the resident organisms



Consideration from Various Angles is Necessary to Explore Deep-Sea

- Ecosystem Approach to Fisheries (FAO, 2003)
An extension of conventional fisheries management recognizing more explicitly the interdependence between human and ecosystem health and need to maintain ecosystems productivity for present and future generations;
- Request of 27thFAO COFI (2007) - to assist States and RFMOs/As to protect vulnerable marine ecosystems (VMEs) through achieving "Responsible Fisheries in the Marine Eco-system" (UNGA Resolution 61/105)

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Thank you for your attention !

Annex 8. Nation initiative related to offshore fisheries resources exploration/development

Indonesia



Ministry of Marine Affairs and Fisheries
Republic of Indonesia

Indonesia Tuna Fisheries Management

In related to the Offshore Fisheries and Exploitation

Regional Workshop on Offshore Fisheries in Southeast Asian Waters
3 - 4 December 2013, Bangkok, Thailand

INDONESIA FISHERIES MANAGEMENT			
Line	Area	Authority	FV
I A	Shore - 2 nm	District	under 10 GT
I B	more 2 nm - 4 nm		
II	more 4 nm - 12 nm	Province	more 10 GT - 30 GT
III	more 12 nm	Central Government MMAF	above 30 GT



DEEP WATER CHARACTERISTIC		
No	Deep Water	FV
1.	under 200 m	<ul style="list-style-type: none"> ▪ WPP 571 ▪ WPP 711 ▪ WPP 712 ▪ WPP 713 ▪ WPP 718
2.	above 200 m	<ul style="list-style-type: none"> ▪ WPP 572 ▪ WPP 573 ▪ WPP 714 ▪ WPP 715 ▪ WPP 716 ▪ WPP 717

FISHING GEAR AND AUXILIARY GEAR MANAGEMENT

Management fishing vessel related fishing gear and auxiliary gear in Indonesia fishing area consider :

1. Fishing gear characteristic;
2. Selectivity and capacity of fishing gear;
3. Type and size of fishing gear;
4. Type and size of auxiliary gear;
5. Tonnage of fishing vessel;
6. Fishing ground



Fisheries resources sustainability and fairness in fisheries resources access

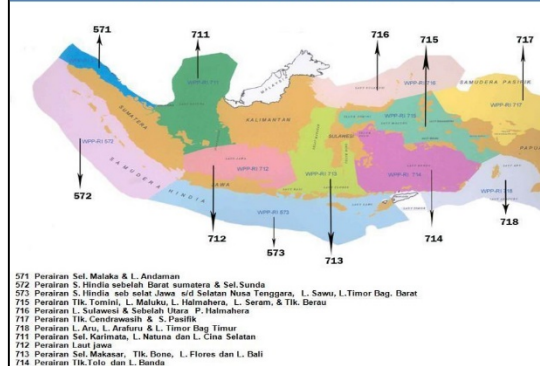
Workshop on Assessment and Management of the Offshore Resources of South and Southeast Asia Bangkok, Thailand 17-19 June 2008

- In Indonesia offshore fishing is being promoted in order to **reduce fishing capacity within 12 nautical miles**, with incentives including of subsidized diesel fuel price (maximum of 25 KL/month) for Indonesian fishing vessels being given. The policy is to control offshore fishing through licenses and joint ventures are allowed. More than 1 422 longliners fish for tuna in the Indonesia EEZ and also 399 purse seiners and 64 fish trawlers. All vessels above 30 GT (catcher and carrier) need to obtain licenses from the Central Government.
- Based on exploratory surveys and experience in fishing, Indonesia considers that the potential yield of large pelagics is rather limited. Surveys have shown decreasing catch rates of oceanic tunas and, increasingly, smaller fish are being caught. Where this is occurring (decreasing catch rate, smaller size of fish caught and longer distance of fishing ground), licenses to fish in the offshore area are being limited on the basis of its fish resource availability. Vessels under joint venture are only permitted to fish in Indonesian EEZ waters of South China Sea, Indian and Pacific Ocean, and Arafuru Sea, where the catches shall be reported at the Indonesian territories and fish processed at the fish processing industry factories in Indonesia. Information about the demersal resources is limited but there has been recent deep-sea surveys conducted in cooperation with the Japanese Deep-Sea Trawl Association and an economic feasibility trial has been conducted.
- **Future plans for expansion into offshore waters include (1) to consider the request of the purse seiners to convert to longliners to fish in offshore area (Indian and Pacific Oceans); (2) to limit fishing aggregating device (FAD) application in order to avoid FAD as fish migration barrier; and (3) to obligate fish catches from catcher and/or fish carrier vessel of the Integrated Fishing based Fisheries Industry to be processed at fish processing facilities in Indonesia.**

INDONESIA OFFSHORE FISHERIES DEVELOPMENT

1. To reduce the fishing pressure on the territorial waters, Indonesia fishing fleet expand their fishing zone into the Indonesia EEZ and high seas to utilize the straddling fish stock and the highly migratory fish stocks.
2. Transboundary, highly migratory, straddling stock, and discrete high seas stocks are strategic fish resources whose management requires cooperation between countries.
3. In this term, the Regional Fisheries Management Organizations (RFMOs) are the organizations which have the duty to develop cooperation between countries untuk ensure proper management, optimum conservation and utilization of the highly migratory fish stock including in EEZ and high seas, and encourage sustainable fisheries development.
4. In order to utilize the straddling fish stocks and the highly migratory fish stocks in high seas, Indonesia fishing fleet must comply with RFMOs resolution and conservation and management measures.

Tuna Fishing Ground Within IFMA



STATUS OF INDONESIA IN RFMOs

1. **IOTC : Full Member** Since 9th July 2007 → Regulation of President of Republic Indonesia No. 9/2007 dated 5th March 2007 Approval for establishing Indian Ocean Tuna Commission (IOTC)
2. **CCSBT : Full Member** Since 8 April 2008 → Regulation of President of Republic Indonesia No.109/2007 dated 6th December 2007 concerning Endorsement Convention for the Conservation of Southern Bluefin Tuna (SBT)
3. **WCPFC : Cooperating Non-Member (CNM)** since 2006, → Ratified by Indonesia Government through President Regulation **No 61 year 2013** Ratification of Convention on The Conservation and Management of Highly Migratory Fish Stocks in The Western and Central Pacific Ocean, **decision to become full member in 10th Regular Session WCPFC in Cairns - Australia, 2 - 6 December 2013.**
4. **IATTC : Cooperating non-party** since 2013

INTERNATIONAL LEGISLATION / AGREEMENT ON HIGHLY MIGRATORY SPECIES (TUNA)

❖ United Nations Convention on the Law of the Sea (UNCLOS 1982).

Ratified by :

Indonesia Government through Law No. 17 year 1985 on ratification of United Nations Convention on the Law of the Sea

President Decree No. 178 year 1999 on ratification of Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982

❖ Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (1993)

(ratification is still in process)

❖ Agreement for the Implementation of the Provisions of the Convention relating to the Conservation and Management of Straddling Fish and Highly Migratory Fish Stocks (UNIA 1995)

Ratified by Indonesia Government through Law No 21 year 2009 on ratification of Agreement for the implementation of the provisions of the UNCLLOS of 10 December 21982 relating to the Conservation and Management of Straddling Fish Stock and Highly

INTERNATIONAL LEGISLATION / AGREEMENT ON HIGHLY MIGRATORY SPECIES (TUNA)

- ❖ **FAO "Code of Conduct for Responsible Fisheries" (CCRF)**
- ❖ **Agreement For The Establishment Of The Indian Ocean Tuna Commission**
Ratified by Indonesia Government through President Regulation No 9 year 2007 on Ratification of Agreement For The Establishment Of The Indian Ocean Tuna Commission
- ❖ **Convention For The Conservation of Southern Bluefin Tuna**
Ratified by Indonesia Government through President Regulation No 109 year 2007 on Ratification of Convention For The Conservation Of Southern Bluefin Tuna
- ❖ **Convention on The Conservation and Management of Highly Migratory Fish Stocks in The Western and Central Pacific Ocean**
Ratified by Indonesia Government through President Regulation No 61 year 2013 Ratification of Convention on The Conservation and Management of Highly Migratory Fish Stocks in The Western and Central Pacific Ocean
- ❖ **Resolution and Conservation and Management Measures RFMOs**

ADAPTING TO THE REGIONAL FISHERIES MANAGEMENT ORGANIZATION (RFMO) MEASURES

1. **Issued license (SIPI) – to authorize fishing at long distance fishing**
 - Minister Regulation No. 12/2012 regarding Capture Fisheries Business in the High Seas and
 - Minister Regulation No. 30/2012 regarding Capture Fisheries Business at Management zones (WPPs) Rol amended by Minister Regulation No. 26/2013 regarding Capture Fisheries Business at Fisheries Management zones (FMAs)
2. **Registration of Vessels on Record of Fishing Vessels in RFMOs (WCPFC, IOTC, CCSBT):**
Indonesia Fishing Vessels in RFMOs:
 - IOTC : 1.256 unit
 - CCSBT : 255 unit
 - WCPFC: 360 unit
3. **Data Collection of Active Vessels**
4. **Vessels marking (Unique Vessel Identifier).**
 - Minister Regulation No: 27/2009 regarding Vessels Registration and Marking
 - Installed of 1.654 IOTC Sticker on vessels operating in Indian Ocean (supported by IOTC);

ADAPTING TO THE REGIONAL FISHERIES MANAGEMENT ORGANIZATION (RFMO) MEASURES

6. **Implementation of CDS on every SBT catch since 1 January 2010.**
7. **Implementation of IOTC Bigeye Statistical Document for every export of bigeye (whole) since 1 January 2010; Implementation of Regional Observer Program (ROP) since 2009 (IOTC and WCPFC)**
8. **Apply Fishing Quotas (CCSBT and WCPFC)**
9. **Implementation of fishing logbook** : Minister Regulation No. 18/2010 regarding Fishing Logbook;
10. **Regulating the fishing gears additional support gears : the used of circle hook, tori line, Regulating the used of additional gears such as payaos, light and boat.**
Limitation of fishing gears (oceanic gillnet max 2,5 km)
Minister Regulation No:Per02/Men/2011 regarding fishing lines and fishing gears placement at WPPs Rol

ADAPTING TO THE REGIONAL FISHERIES MANAGEMENT ORGANIZATION (RFMO) MEASURES

11. **Implementation of closed system for a certain fishing ground areas :**
IOTC (Resolution 10/01 that was amendment with Resolution 12/13):
 - a. All of 24 meters overall length and over, and under 24 meters if they fish outside their EEZ, fishing within the IOTC area of competence : was temporary closed fishing ground area in Indian Ocean (from 00.00 hours on 1 Feb to 24.00 hours on 1 March). Area : 0 ° - 10° North, 40° and 60° East.
 - a. Purse Seine: was temporary closed fishing ground area in Indian Ocean (from 00.00 hours on 1 Nov to 24.00 hours on 1 Dec). Area: 0 ° - 10° North, 40° and 60° East
 - b. DG Capture Fisheries was issued a circular letter to all stakeholders concerning on closing of fishing ground area in IOTC for 2011,2012, 2013.
12. **Data collection of Ecologically Related Species (ERS)**
13. **Fish Aggregate Device (FAD)** : Minister Regulation No. 30/2004 regarding Utilization and Instalation of Fish Aggregate Device (FAD) (still progress to revise this regulation)

THANK YOU

National initiative related to offshore fisheries resources exploration/development for Malaysia

By Richard Rumpet, Fisheries Research Institute, Bintawa, Sarawak, Malaysia

1. Background

Fisheries Research Institute (FRI) of Malaysia is one of the divisions in Department of Fisheries Malaysia. FRI was responsible for the implementation of the research activities in the fisheries sector of Malaysia.

In January 2012, the Malaysia National Agro-Food Policy (2011-2020) - NAP was launched to ensure Malaysia continues to have sufficient and safe food supply. The Agriculture and Agro-based Industry Ministry has lined up specific strategies to achieve the policy's objectives, covering agrofood industry development which focuses on the padi and rice industry, fisheries, livestock, vegetables and fruits, agro-based industry and agro-tourism. The policy aims at ensuring sufficient food supply, making the agrofood as a viable and sustainable industry, and increasing the income of agriculture entrepreneurs.

2. Research on Capture Fisheries

In line with Malaysia NAP, the target for fish production in Malaysia by 2020 is 2.5 metric ton and 1.25 metric ton is from capture fisheries. In an effort to achieve the target, various research programmes for the capture fisheries sector were proposed in the Fisheries Research National Plan of Action 2013-2020. These programmes will focused on fish stock assessment, fish gear technology, research vessel, fish stock enhancement and ecosystem.

3. Fish Stock Assessment

Fisheries management is the main role of the Department of Fisheries Malaysia in an effort to ensure Malaysia continues to have sufficient and safe food supply. Information on current status of fisheries stock is very important for the strategic fisheries management in Malaysia. The information will be obtained through research surveys (demersal and pelagic fish), bio economic studies etc. The last survey was carried in 1997-1998.

A comprehensive fish stock assessment is very important as the data will be used to determine fishing license quotas, total allowable catch, new fishing ground, fish resources and gears development.

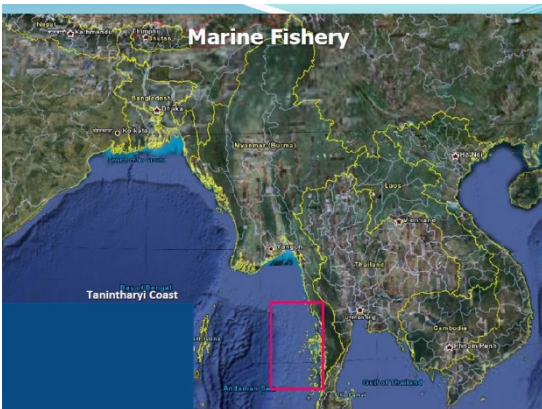
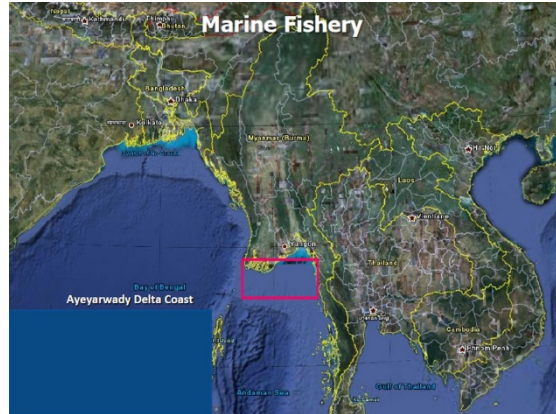
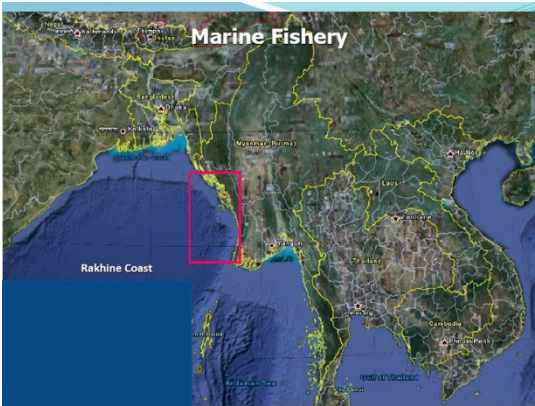
In July 2013, proposal for marine fish stock assessment in Malaysia waters (2014-2015) was submitted to Malaysian Government to apply for fund amounting to RM22.1 million.

4. Capture Fisheries Research Programmes 2014-2015

No.	Project title	Year	Cost (RM)	Output	Outcome
1.	Fish Stock Assessment (Fisheries independent)	2014-2015	2.0 mil	Biomass estimation for demersal and pelagic fish stock, change in species composition, information on stock density by area.	Status on the fisheries stock by area, zone, states for sustainable fisheries stock management
2.	Fish Stock Assessment (Fisheries dependent/land base)	2014-2015	6.0 mil	Estimation of MSY for demersal and pelagic fish stock, estimation of optimum fishing effort, information on fishing season and area.	Sustainable fisheries stock management
3.	Tuna fish stock assessment	2014-2015	4.0 mil.	Estimation of oceanic and neritic tuna stock by area and season, Tuna species composition	Tuna development and industry Plan of Action Malaysia
4.	Feasibility studies on the area, gears and species	2014-2015	2.0 mil	Information on cost and return of fishing gears, fishing vessel performance by fishing gears	Sustainable fisheries stock management
5.	Bio economic studies	2014-2015	2.0 mil	Status on bio economic of the fisheries	Sustainable fisheries stock management
6.	Fisheries Oceanography	2014-2015	1.2 mil	Fisheries oceanographic information by area	Fisheries stock management based on ecosystem.

Annex 10. Nation initiative related to offshore fisheries resources exploration/development

Myanmar



Fishing grounds off Myanmar

The fishing grounds are located four locations.

- Rakhine fishing grounds, 30 numbers
- Ayeyarwady fishing grounds 44 numbers
- Mon fishing grounds 14 numbers
- Tanin thayi fishing grounds 52 numbers.
- Total fishing grounds is 140 numbers.

Department of Fisheries
Fishing Grounds of Myanmar

Current status of National And Foreign Offshore Fishing Vessels In Myanmar

Sr	Type of gear	National vessel	Foreign vessel
1	Trawl	1194	55
2	Purse seine	249	30
3	Stow net	402	
4	Drift net	126	
5	Long line	25	6
6	Squid cast net	282	
7	Trap	95	
8	total	2373	91



Previous research activities

- There are less information in the status of fisheries resources in Myanmar water 1980 (Nakken and Aung, 1980).
- The marine fisheries resources exploration within the EEZ in 1984 by RV Dr Fridtjof Nansen
- The main purpose is to make an estimation of marine fish resources and map of non-exploited stock and train counterparts (Druzhinin, 1970, Druzhinin and Hlaing, 1972).
- Pre-established sampling design, (Pauly and Aung, 1984)
- Another joint survey between Union of Myanmar and Thailand using FRV Chulabhorn.

Previous research activities in Myanmar water

Sr	Research Activities	Depth (Mtr)	Year	Catch/Tr (kg)	MSY
1	Taiyo Maru	20-54	1953-1955	160-190	
2	Anton Brun	15-110	1963	20-90 shrimp only	
3	RV Lin Zin	20-63	1966-1967	191-282	
4	501 vessel	20-40	1977	60 shrimp only	
5	515 vessel	10-50	1890	288	
6	525 vessel	50-200	1983		
7	Dr. Fridtjof Nansen	-	1979-1980	331	1.05 Million MT/yr
8	FRV Chulabhorn	-	1989	184	
9	DOF-5	-	1994-1995	140	
10	MV-SEAFDEC 2	-	2007, 11 Feb to 11 march	85	

Previous activities

- Preliminary survey on Catch Composition of Demersal Fisheries Resources in Myanmar.
- Using SEAFDEC 2 research vessel.
- Conducted during February – March 2007
- fishing gear used
 - Standard Bottom trawl, 4 streams, head rope 31.6 mtr, ground rope 37 mtr, net body 40.55 mtrs long
 - Size of otter board is 1.4 x 2.2 mtr.
 - Trawling speed is 3.0 to 3.5 knot.



results

- Species composition
 - Fishes (113 species and 62 family are identified)
 - Invertebrates (eight groups)
 - Jelly fish (white/red)
 - Horse shoe crabs
 - Shrimps
 - Crabs
 - Mantis shrimp
 - Mollusks
 - Squid and
 - Echinoderms (worms)

results

The result found:

- Catch composition
 - Saurida undosquamis 23.38%
 - Jelly fish 16.0 %
 - Loligo sp 15.19 %
 - Priacanthus macracanthus 8.35%
 - Satyrichthys welchi 7.52 %
 - Decapterus resseli 5.98 %
 - Apogon sp 5.46%
 - Upeneus moluccensis 4.85%
 - Nemipterus japonicus 4.08%
 - Parapeneus chrysoprurum 3.56%
 - Sepia sp 3.02 %
 - Crab 2.53 %
- Calculated as weight composition as well.

results

- The result found:
- Invertebrate composition
 - Jelly fish 46.22 %
 - Loligo sp 37.17 %
 - Sepia sp 7.4 %
 - Crabs 6.19%
 - Shrimps 3.02%

Conclusion of the seafdec-2 activities

It can be concluded that

- Demersal fisheries resources around the EEZ of Myanmar is still good condition.
- Additionally, the survey plan in this study was simple Random sampling according to give basic information for scientists.

Currently off shore research activities in Myanmar water

- Currently Department of Fisheries have been involving of off shore research activities with RV. Dr Fridtjof Nansen under the program of BOBLME project.
- The warmly assistance by Norway Government (NORAD) , the fisheries resources survey was performing by RV. Dr Fridtjof Nansen on (13.11.2013 to 1.12 2013)
- 12 pcs of scientist from Myanmar will be conducting with research activities.



Thank you for your kind attention

Annex 11. Nation initiative related to offshore fisheries resources exploration/development

The Philippines

INITIATIVES ON OFFSHORE FISHERIES
RESOURCES DEVELOPMENT/EXPLORATION IN
THE PHILIPPINES

Remar P. Asuncion, MV DA-BFAR
Jose A. Villanueva, BFAR-11

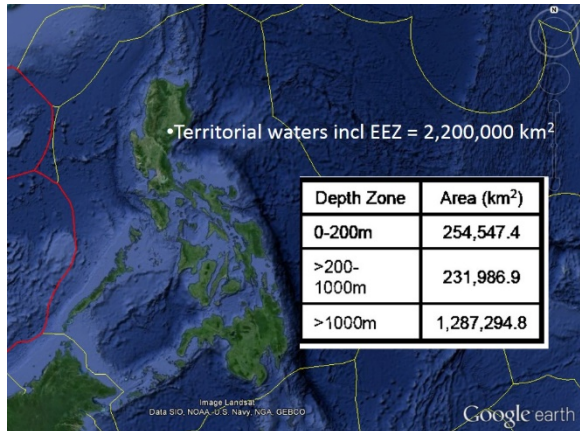
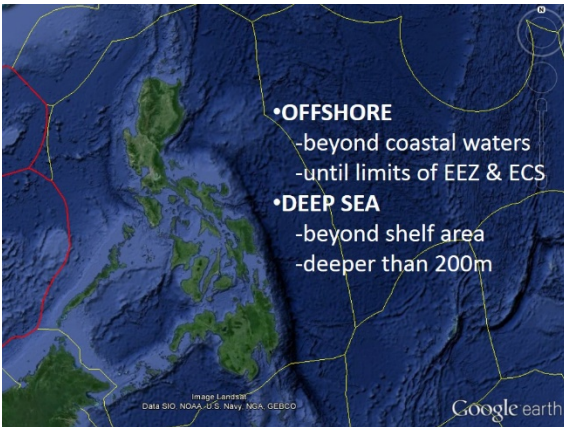
Regional Workshop on Offshore Fisheries in Southeast Asian Waters; 3-4 December 2013, Bangkok, Thailand

LEGAL FRAMEWORK

- R.A 8550 Sec. 2 - The State shall ensure the attainment of the objectives of the fishery sector including:
 - (4) Optimal utilization of offshore and deep-sea resources**

(a) to achieve food security as the overriding consideration in the utilization, management, development, conservation and protection of fishery resources in order to provide the food needs of the population.

(c) to ensure the rational and sustainable development, management and conservation of the fishery and aquatic resources in Philippine waters including the Exclusive Economic Zone (EEZ) and in adjacent high seas, consistent with the primordial objective of maintaining a sound ecological balance, protecting and enhancing the quality of environment;



OFFSHORE AND DEEP SEA FISHERIES PROGRAM INITIATIVES



ASSESSMENT OF DEEP SEA FISHERIES IN CONTINENTAL SLOPES AND SEAMOUNTS

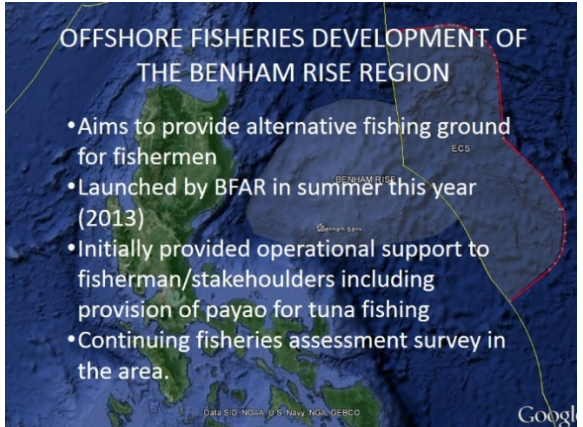
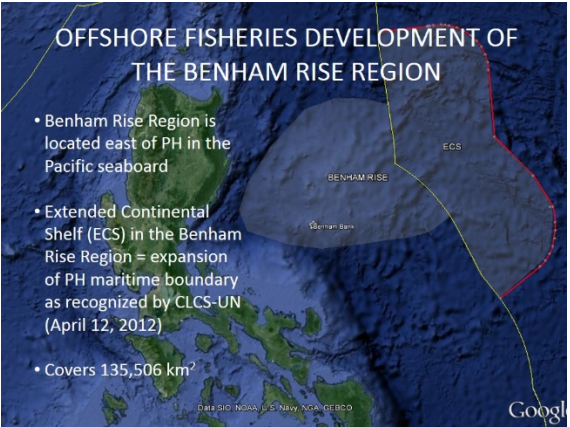
- Project implemented in conjunction with other projects of MV DA-BFAR
- Aims to assess & initiate development of potential deep sea fisheries resources

OFFSHORE AND DEEP SEA FISHERIES PROGRAM INITIATIVES



ASSESSMENT OF DEEP SEA FISHERIES IN CONTINENTAL SLOPES AND SEAMOUNTS

- Initially identified nylon shrimps (*Heterocarpus spp.*) as potential fisheries
 - Lingayen gulf = 0.12 kg/trap
 - Manila bay = 0.133 kg/trap
 - West Phil. Sea = 0.124 kg/trap
 - Polillo is. = 0.562 kg/trap
- Optimum fishing depth has been identified (@ 300-600 m)
- Identified partially covered trap as most efficient design
- Development of pilot fisheries is being planned





OTHER INITIATIVES IN SUPPORT TO OFFSHORE FISHERIES

IMPROVED MANAGEMENT OF OFFSHORE FISHERIES

- Full engagement with RFMOs especially WCPFC
 - Compliance to various conservation & management measures
- Enhanced catch & effort monitoring and stock assessment
 - expanded coverage for NSAP especially to cover offshore tunas
- Implementation of Observer Program in tuna purse seine and ringnets

Data: SIO, NOAA, U.S. Navy, NGA, GEBCO Google earth



Annex 12. Nation initiative related to offshore fisheries resources exploration/development

Thailand




Status of offshore resources in Thailand

Presented by

Mr. Chirdsak Chookong

Deep Sea Fishery Technology Research and Development Institute




Introduction

Thai marine fishery comprises 2 structures, coastal fishery and offshore fishery.

200 Thai fishing vessels under licenses in Myanmar.

The fish production of Thailand during 2008-2012 periods reached the levels 3-3.2 million tones.



Physical characteristics of the offshore area



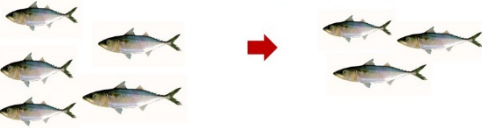



Fig. 1. The EEZ of Thailand



Fisheries Production

In 2006, 4.00 million metric tons 2008-2012 at the level of 3.0-3.2 million metric tons

Fisheries Production (con.)

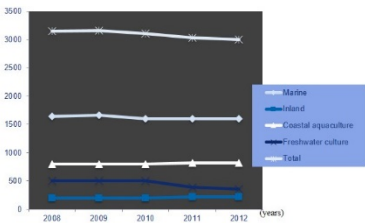



Fig.2. Fisheries production of Thailand, 2008-2012 (in metric tons)



Management arrangements of the offshore area

Continue resource surveys in offshore and high seas areas.

Establish a revolving fund for offshore and high seas fisheries.

Produce database on offshore and high seas fisheries.

Improve fishing ports and their infrastructure.

Management arrangements of the offshore area (con.)

- Disseminate information to all concerned stakeholders.
- Implement fleet development plan for tuna fisheries in the high seas.

Research surveys



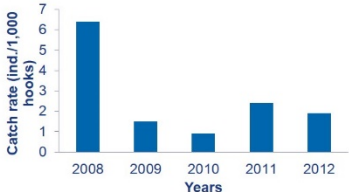
R.V. CHULABHORN



www.sitikhun.com

The CPUEs of Thai tuna longliners in 2008-2012 ranged between 0.9-6.4 fish/1,000 hooks.


Research surveys (con.)




Year	Catch rate (ind./1,000 hooks)
2008	6.4
2009	1.5
2010	0.9
2011	2.5
2012	1.8

Fig. 3. Catch rate by pelagic longline in the Andaman Sea 2008-2012

Economic/Technical feasibility




Available information of fisheries resources in the offshore areas.




Soaring price of fuel discouraging the Thai Fishermen to look for the opportunity to enter into offshore fishing.

Economic/Technical feasibility (con.)




Inadequate understanding of technology for offshore fishing and lack of technical know-how.



On and off policy to promote offshore fishing.

Economic/Technical feasibility (con.)




No interest from foreign countries to enter into joint venture with the Thais to engage offshore fisheries.



Annex 13. Nation initiative related to offshore fisheries resources exploration/development

Vietnam

DERECTORATE OF FISHERIES



3 – 4 DEC 2013, Bangkok, Thailand

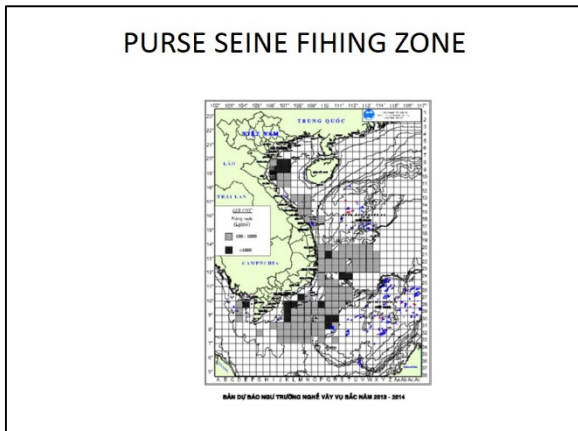
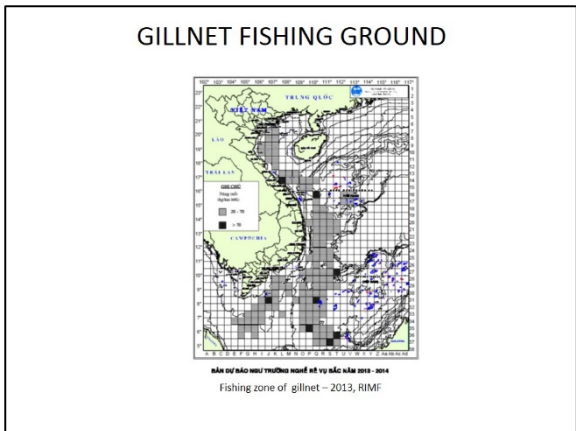
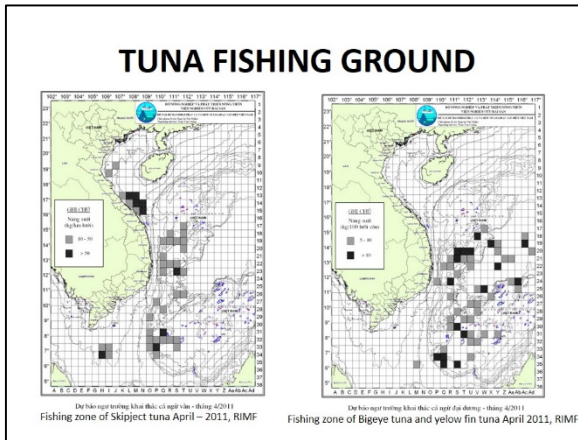
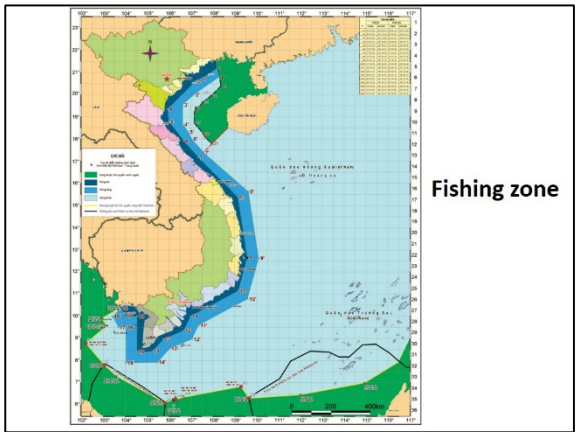
**ON-GOING INITIATIVES RELATED
TO OFFSHORE FISHERIES OF VIETNAM**

Paper prepared by
Nguyen Quoc Anh

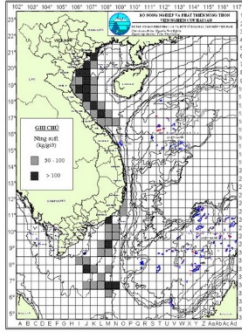
Director of Fishing Monitoring Center, Department of Capture Fishery and
Resource Protection, D-Fish, MARD, Vietnam

CONTENTS

1. Vietnam Fishing ground
2. Fisheries Resources
3. Fishing Fleet
4. Offshore Fishery Management
5. Conclusion



TRAWL FISHING GROUND



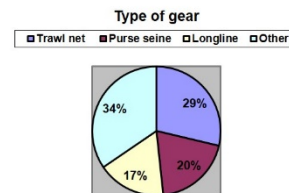
FISHERIES RESOURCES

- Standing stock: 4,000,000 – 4,500,000 tons
- Potential yield: 1,800,000 – 2,000,000 tons
- Pelagic species:
 - + Standing stock 1,145,000 tons,
 - + Potential yield: 405,000 tons

FISHING FLEET

- June 2013: Total fishing vessel 122,013 units
- 59,741 units with engine less than 20 horse powers(HP).
 - 26,621 units with engine from 20 HP to 49 HP
 - 8.796 units with engine from 50 HP to 89 HP,
 - 26,855 units more than 90 HP (only this class can go to catch offshore)

FISHING GEAR



FISHERIES MANAGEMENT

- International regulation:
 - The United Nations Convention for the Law of the Sea (UNCLOS) 1982;
 - The United Nations Agreement on Straddling Fish Stocks and Highly Migratory Species;
 - Code of Conduct for Responsible Fisheries;
 - International Plan of Action to Prevent, Deter, and Eliminate Illegal, Unreported, and Unregulated Fishing (IPOA-IUU),
 - The Regional Plan Of Action (RPOA) To Promote Responsible Fishing Practices Including Combating Illegal, Unreported And Unregulated (IUU) Fishing In The Region;
 - WCPFC regulation

FISHERIES MANAGEMENT

- National regulation:
 - Fishing law: 2003
 - Decree and Circular
 - NPOA IUU
 - NTMP

DECREE and CIRCULAR

- Degree No. 59/2005/NĐ-CP dated on 04/5/2005 of the Government about production and trading conditions of some marine fisheries.
- Degree No. 103/2013/NĐ-CP dated on 12/9/2013 of the Government about financial penalty on fisheries sector.
- Degree No. 32/2010/NĐ-CP dated on 30/3/2010 of the Government about managing fisheries operations of foreign vessels in the Vietnamese waters.
- Degree No. 33/2010/NĐ-CP dated on 31/3/2010 of Government about managing fisheries operations of Vietnamese organizations and individuals at sea.

DECREE and CIRCULAR

- Circular No. 15/2011/TT-BNNPTNT dated on 29/3/2011 about stipulating communication regulations of fishing vessels at sea.
- Amending Circular No. 02/2006/TT-BTS dated on 20/3/2006 of Ministry of Fisheries (former name of Ministry of Agriculture and Rural Development) on guiding implementation of Degree No. 59/2005/NĐ-CP dated 04/5/2005 of Government about production and trading conditions of some marine fisheries;

DECREE and CIRCULAR

- Circular No. 62/2008/TT-BNN on amending and supplementary of Circular No. 02/2006/TT-BTS.
- Circular No. 48/2010/TT-BNN dated on 11/8/2010 of Ministry of Agriculture and Rural Development regulating Degree No. 33/2010/NĐ-CP dated on 31/3/2010 of Government on managing fisheries operations of Vietnamese organizations and individuals at sea.

FISHERY MANAGEMENT MEASURE

- Limited number off fishing vessel
- 2013: 122,013 units,
- In 2013 The Government regulated reduce of fishing vessel:
- 2020: 110,000 units
- 2030: 95.000 units

FISHERY MANAGEMENT MEASURE

- Fishing gear control
- Minimum fish size regulations to be landed
- Fishing closed areas
- Fishing closed seasons
- Fishing method: prohibited use fishing methods for instance explosive material, electricity and poison material.
- Bycatch mitigation

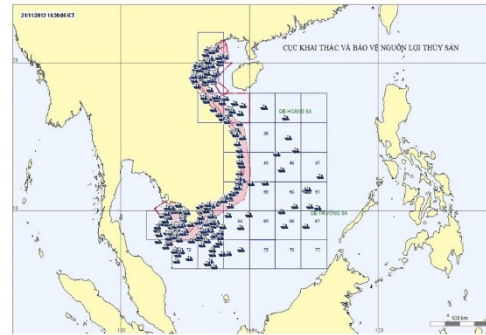
MONITORING CONTROL SURVEILLANCE

- ***Fisheries inspection teams at sea:***
- 4 fisheries controlling agencies working at sea
 - Fisheries inspection,
 - Marine police,
 - Border Guard,
 - Navy

MONITORING CONTROL SURVEILLANCE

- **Vessel Monitoring System**
 - install the VMS for 3000 fishing vessels operating at offshore areas of 28 coastal provinces (use Iridium satellite)
 - 3500 fishing vessel use HF combined GPS for tracking vessel operate offshore area.
-

VMS



MONITORING CONTROL SURVEILLANCE

- **Observer program**
 - It very difficult to apply for small scale like Vietnam, do not enough live condition for observer.
 - Currently implement observer program for fishing research

MONITORING CONTROL SURVEILLANCE

- **Port state measures**
 - 5% random test of national vessel landing of product export to EU
 - At the moment, no fishing port for foreign fishing vessel to landing
- **Catch certificate**
 - catch certification for fishing products to be exported to EU market

RECOMMENDATION

- Stop to expend number of offshore fishing vessel
- Exchange information about stock assessment, data collection, fishery management, etc.
- Cooperating in combat IUU fishing in the ASEAN region.
- Improvement the capacity building for fishery management, data collection, stock assessment.
- Comply, cooperating and share information in ASEAN.

THANK YOU

Annex 14. Collaborative research survey related to offshore fisheries in Southeast Asian waters



International initiatives related to study on impact of fishing to deep sea ecosystem and international Guidelines for the Management of Deep sea Fisheries in the High Seas

Possible Future Cooperation

- Use of potential research vessels in/outside the Region under Bi-tri lateral agreement, SEAFDEC-As
- Encourage members to conduct the deep sea survey in each Sub-regional areas, sharing information, experiences under cost share policy
- Reviewed all deep sea surveys in the region to identify the potential resources, appropriate fishing gears, management contexts, etc.
- Work together and Develop the Regional proposal through consultation with relevant member countries

SEAFDEC
The Southeast Asian Fisheries Development Center (SEAFDEC) is an autonomous intergovernmental body established as the regional treaty organization in 1967 to promote fisheries development in Southeast Asia.

SEAFDEC/TD
The training department focus on the transfer of technical information marine fisheries sector, providing training courses in marine engineering, navigation, fishing technology, extension methodologies, information dissemination and extension work.
Additionally, TD also conducts research on fishing gear improvement, fishing ground survey, socioeconomic profile and collaborative fisheries resource survey program on the marine environmental system that will sustain fish stocks and their distribution in the South China Sea

Objective:
SEAFDEC aims specially to develop fisheries potential in the region through training, research, and information services in order to improve the food supply by the rational utilization of fisheries resources in the region

MV SEAFDEC, 1,178GT (super purse seining types)

- Tuna purse seine
- Tuna longline
- Bottom vertical longline
- Deep sea pot
- Automatic squid jig


MV SEAFDEC2, 210GT (trawling and longline types)

- Bottom trawl
- Midwater trawl
- Tuna longline
- Bottom vertical longline
- Deep sea pot
- Automatic squid jig



Collaborative survey on fishery resources

- Pelagic Resources
 - Tuna Resources in the Eastern Indian Ocean
 - Oceanic Squid Resources
 - Large Pelagic Resources
- Demersal Resources
 - Demersal Resources by Bottom Vertical Longline
 - Demersal Resources by Trap and Pot

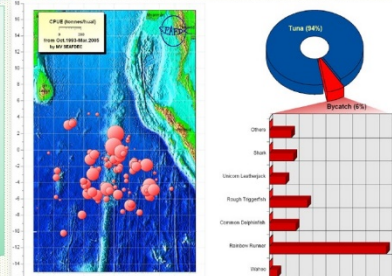


Southeast Asia Fisheries Development Center / Training Department

1993 - Tuna Resources in Eastern Indian Ocean by M.V. SEAFDEC

Subproject:


- Species composition by tuna purse seine operation
- DFADs drifting circulation in EIO
- By-catch from tuna purse seine operation
- Tuna tagging program



Tuna (94%)

By-catch (6%)

Others	~100
Shark	~100
Unclassified	~100
Rough Tigerfish	~100
Common Dogfish	~100
Redfin Herring	~100
Skipper	~100



Southeast Asia Fisheries Development Center / Training Department

Collaborate with IOTC on Tuna Tagging Program



1200 tunas has been tagged and released since 2003
1 Yellowfin tuna was recaptured by M.V. SEAFDEC tuna purse seine operation in 2003



Southeast Asia Fisheries Development Center / Training Department

Oceanic Squid Resources

South China Sea

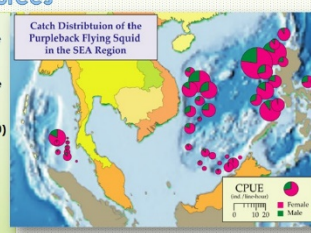


- Collaborative survey western of The Republic of Philippine by M.V. SEAFDEC (1998)
- Collaborative survey in Vietnamese water by M.V. SEAFDEC (1999)
- Off shore western Borneo (Brunei Darussalam) by M.V. SEAFDEC (2000)
- Marine resources survey eastern of The Republic of Philippine by R.V. DABFAR (2002)
- Collaborative survey by M.V. SEAFDEC 2 (2004-10)

Andaman Sea

- Training/Research on the Marine resources survey by M.V. SEAFDEC (1998)

Eastern Indian Ocean

- Training/Research on the Marine resources survey by M.V. SEAFDEC (1998-9)

Southeast Asia Fisheries Development Center / Training Department

Large Pelagic Resources

South China Sea


- Collaborative survey western of The Republic of Philippine by M.V. SEAFDEC (1998)
- Collaborative survey in Vietnamese water by M.V. SEAFDEC (1999)
- Off shore western Borneo (Brunei Darussalam) by M.V. SEAFDEC (2000)
- Collaborative survey in South China Sea by M.V. SEAFDEC 2 (2004 -)

Andaman Sea

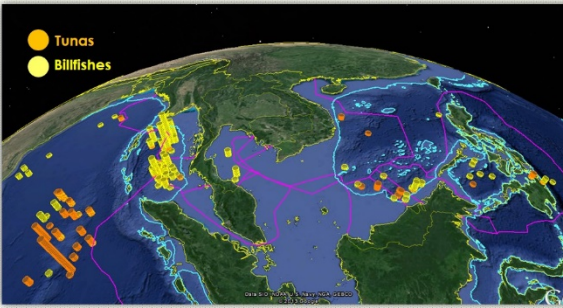
- Research/training in Andaman Sea by M.V. SEAFDEC (1994)
- Collaborate Sea trail for pelagic longline reel with Department of Fisheries, Thailand (2000-1)
- Collaborative survey in Andaman Sea by M.V. SEAFDEC 2 (2006 -)

Eastern Indian Ocean and Bay of Bengal



- Training/research in EIO By M.V. SEAFDEC (1994-)
- Collaborative survey of Ecosystem-Based Fishery Management in the Bay of Bengal by M.V. SEAFDEC (2006-7)



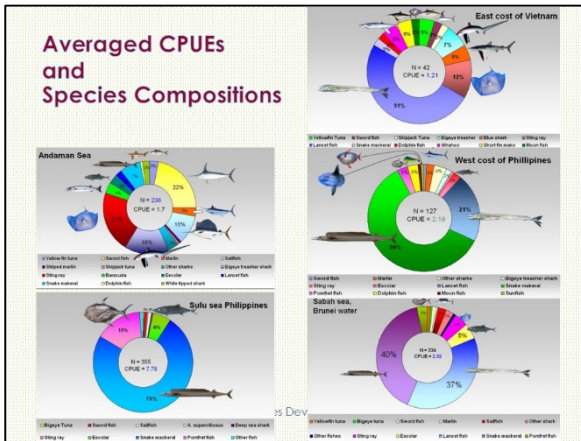
Southeast Asia Fisheries Development Center / Training Department



● Tunas
● Billfishes

Southeast Asia Fisheries Development Center / Training Department



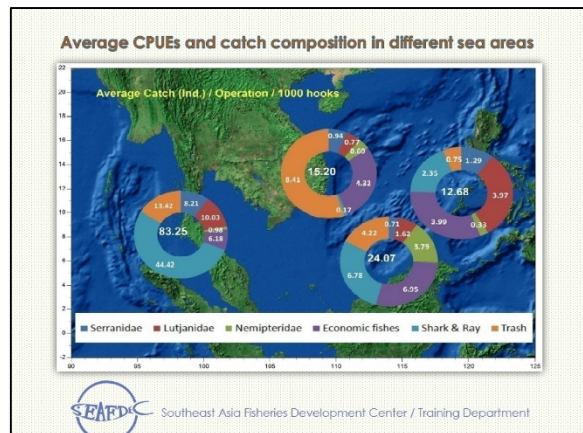
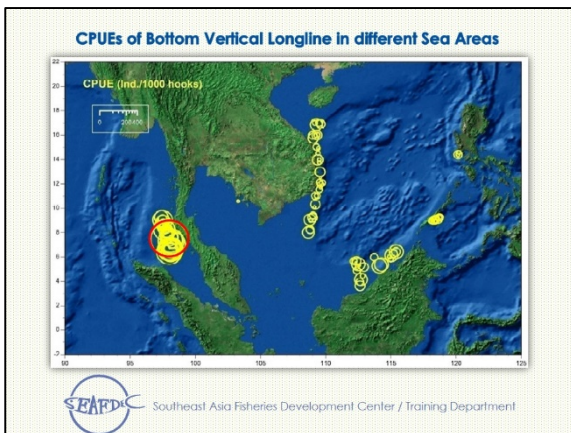
Demersal Resources by Bottom Vertical Longline

South China Sea

- Training/Research Off shore western Borneo (Brunei Darussalam) by M.V.SEAFFDEC (2000)
- Collaborative survey in Vietnam Water by M.V.SEAFFDEC 2 (2005-6)
- Collaborative survey in Malaysia Water by M.V.SEAFFDEC 2 (2005, 2010)
- Collaborative survey in Philippines Water by M.V.SEAFFDEC 2 (2005)

Andaman Sea

- Training/Research on the Marine resources survey by M.V. SEAFFDEC (1994-8)
- Collaborative survey in Andaman Sea by M.V.SEAFFDEC 2 (2005, 2007)



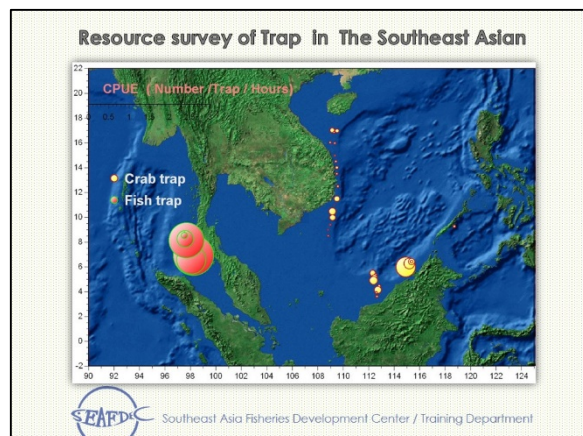
Demersal Resources Survey by trap and pot

South China Sea

- Training Deep sea lobster in Gulf of Thailand by M.V. SEAFFDEC (1993)
- Demonstration Deep sea lobster in Malaysian water by M.V. SEAFFDEC (1995)
- Collaborative survey in Vietnam Water by M.V.SEAFFDEC 2 (2005-6)
- Collaborative survey in Malaysia Water by M.V.SEAFFDEC 2 (2005, 2010)
- Collaborative survey in Philippines Water by M.V.SEAFFDEC 2 (2005, 2010)
- Collaborative survey in Brunei Water by M.V.SEAFFDEC 2 (2010)

Andaman Sea

- Deep sea lobster in the Andaman Sea by M.V SEAFFDEC (1994)
- Collaborative survey in Andaman Sea by M.V.SEAFFDEC 2 (2005, 2007)



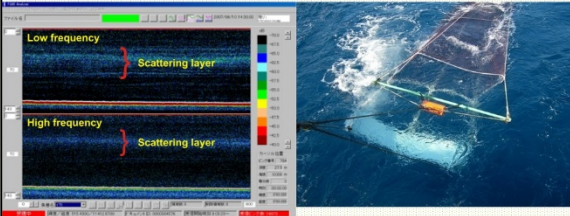
Operation of beam trawl



Specimens from beam trawl

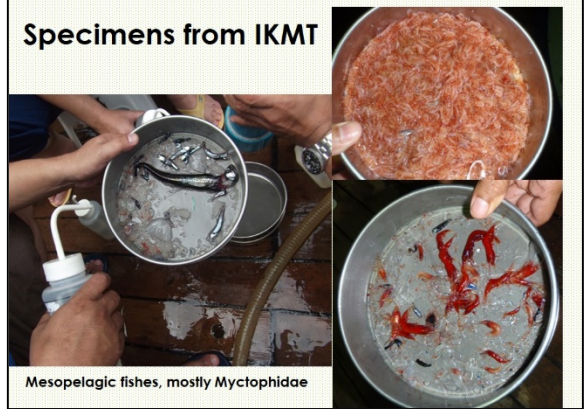


IKMT Operation



Using scientific echo-sounder (Furuno FQ80) onboard M.V. SEAFDEC2 to provide a target area

Specimens from IKMT



Mesopelagic fishes, mostly Myctophidae

This document is prepared for discussion during the 1st technical workshop of the offshore project to be held in 2013. The following contents of the training program and their details will be revised based on the discussion and real needs of the member countries.

Offshore Fisheries Resources Exploration in Southeast Asian Waters

Plan of Training Program 2014 to 2017

Year 201X

Course title	Stock Assessment for Fisheries Resources in Offshore Waters
Objectives	<ol style="list-style-type: none"> 1. To provide knowledge on appropriate methodologies appropriate for assessing stock of non-exploited fisheries resources in offshore waters of Southeast Asia 2. To enhance skill of fisheries researchers on sampling and survey for offshore fisheries resources exploration
Major contents	<ol style="list-style-type: none"> 1. Understanding fish stock, biomass, and potential non-exploited fisheries resources in the offshore areas 2. Common models for stock assessment of fisheries resources 3. Applicable models using by number of countries/institutes to assess stock of non-exploited fisheries resources 4. Data requirements for evaluating potential fisheries resources in offshore waters 5. Survey methods for offshore fisheries resources exploration
Target participants	<ol style="list-style-type: none"> 1. Fisheries researchers of the member countries (fully support by JTF) 2. Other researchers (cost will be borne by their offices)
Resource persons	Scientists and researchers of SEAFDEC/TD and MFRDMD, Experts from Japanese Research Agencies, Lecturers from Universities relevant to marine science and technologies for resources exploration
No. of participants	12 persons (maximum)
Duration	6 days (back-to-back with the cruise survey of M.V. SEAFDEC2 in the member country)
Tentative schedule	<p>DAY 1 ~ 2 Lecture</p> <ul style="list-style-type: none"> - Stock assessment for tropical fisheries resources - Model for stock assessment of non-exploited fisheries resources - Habitat and biodiversity assessment <p>DAY 3</p> <ul style="list-style-type: none"> - Sampling gears survey for stock assessment data analysis: Otter-board trawl <p>DAY 5 ~6</p> <ul style="list-style-type: none"> - Analysis of data collected from Day-3 - Conclusion and evaluation
Estimated budget	15,000 to 18,000 USD

Year 201X

Course title	Application of Hydro-acoustic Methods for Potential Offshore Fisheries Resources Assessment
Objectives	<ol style="list-style-type: none"> 1. To provide knowledge on hydro-acoustic methods and aquatic habitat assessment to offshore fisheries management 2. To enhance skill of fisheries researchers on hydro-acoustic survey and data analyzing for fisheries management in the offshore areas
Major contents	<ol style="list-style-type: none"> 1. Application of hydro-acoustic methods to fisheries resources assessment 2. Analysis of survey data for stock assessment 3. Hydro-acoustic equipment 4. Common stock assessment model using for the survey data of the stock assessment
Target participants	<ol style="list-style-type: none"> 1. Fisheries researchers of the member countries (fully support by JTF) 2. Other researchers (cost will be borne by their offices)
Resource persons	Scientists and researchers of SEAFDEC/TD and MFRDMD, Experts from Japanese Research Agencies, Lecturers from Universities relevant to marine science and technologies for resources exploration
No. of participants	12 persons (maximum)
Duration	7 days (back-to-back with the cruise survey of M.V. SEAFDEC2 in the member country)
Tentative schedule	<p>DAY 1 ~ 3 Lecture</p> <ul style="list-style-type: none"> - Application of hydro-acoustic methods to fisheries resources assessment - Analysis of survey data for stock assessment - Hydro-acoustic equipment <p>DAY 4 ~5 Practice</p> <ul style="list-style-type: none"> - Hydro-acoustic survey (scientific eco-sounder) - Offshore sampling gear (otter-board trawl) - Practical use of hydro-acoustic data, habitat and offshore topography to fisheries management <p>DAY 6 Practice Data analysis</p> <p>DAY 7 Conclusion and Evaluation</p>
Estimated budget	15,000 to 18,000 USD

Year 201X

Course title	Modern Survey Technologies for Exploring Non-exploited Fisheries Resources
Objectives	<ol style="list-style-type: none"> 1. To provide knowledge on survey technologies for offshore fisheries resources 2. To enhance skill of researchers on survey technologies for fisheries resources exploration
Major contents	<ol style="list-style-type: none"> 1. Modern survey technologies for fisheries resources exploration 2. Survey methods for biological and physical characteristics in offshore waters 3. Existing facilities of survey equipment in Southeast Asia 4. Modern commercial fishing vessels operating in offshore waters
Target participants	<ol style="list-style-type: none"> 1. Fisheries researchers of the member countries (fully support by JTF) 2. Other researchers (cost will be borne by their offices)
Resource persons	Scientists and researchers of SEAFDEC/TD and MFRDMD, Experts from Japanese Research Agencies, Lecturers from Universities relevant to marine science and technologies for resources exploration.
No. of participants	12 persons (maximum)
Duration	5 days (back-to-back with the cruise survey of M.V. SEAFDEC2 in the member country)
Tentative schedule	<p>DAY 1 ~ 2 Lecture</p> <ul style="list-style-type: none"> - Modern survey technologies for fisheries resources exploration - Biological characteristic sampling (fish sampling gears, acoustic survey, etc.) - Physical characteristic sampling (bathymetry, substrate sampling, temperature, current, etc.) <p>DAY 3 ~ 4 Practice</p> <ul style="list-style-type: none"> - Offshore sampling gears (IKMT) - Oceanographic survey (bongo net, neuston net, larvae net, ICTD) - Seabed mapping survey (underwater VDO camera, ROV) <p>DAY 5 Conclusion and Evaluation</p>
Estimated budget	15,000 to 18,000 USD

Year 201X

Course title	Environmental Characteristics Appraisal for Developing Offshore Pelagic Fisheries
Objectives	<ol style="list-style-type: none"> 1. To enhance knowledge and methods for assessment of environmental condition suitable for offshore fishing ground 2. To enhance skill of fisheries researchers on sampling and survey for biological and physical parameters in the offshore areas
Major contents	<ol style="list-style-type: none"> 1. Understanding offshore environment 2. Environmental characteristics appraisal for developing pelagic fisheries resources (model and application) 3. Survey methods for biological and physical parameters 4. Sampling gears 5. Preservation of the samples
Target participants	<ol style="list-style-type: none"> 1. Fisheries researchers of the member countries (fully support by JTF) 2. Other researchers (cost will be borne by their offices)
Resource persons	Scientists and researchers of SEAFDEC/TD and MFRDMD, Experts from Japanese Research Agencies, Lecturers from Universities relevant to marine science and technologies for resources exploration
No. of participants	12 persons (maximum)
Duration	5 days (back-to-back with the cruise survey of M.V. SEAFDEC2 in the member country)
Tentative schedule	<p>DAY 1 ~ 2 Lecture</p> <ul style="list-style-type: none"> - Marine environment in offshore areas - Model of environmental characteristic appraisal for developing fisheries resources (exploited and non-exploited stock) - Offshore technologies for fisheries resources survey - GIS for management of fisheries resources - Sampling gears for fisheries resources survey <p>DAY 3 ~ 4 Practice</p> <ul style="list-style-type: none"> - Offshore sampling gears (IKMT) - Oceanographic survey (bongo net, neuston net, larvae net, ICTD) - Seabed mapping survey (VDO camera, ROV) - Preservation of larvae, macrobenthic fauna samples <p>DAY 5 Conclusion and Evaluation</p>
Estimated budget	15,000 to 18,000 USD

Annex 15. Annual Plan of project activities (2014- 2017)

Plan of The Training Program

Offshore Fisheries Resources Exploration in Southeast Asian Waters (2014-2017)

Description

- Training activities and technical support from TD on offshore fisheries resource exploration in EEZ of the MCs, including cruise survey by using MV SEAFDEC2 and supporting of technical staff onboard research vessels
- Facilitate joint collaborative survey in areas of sharing fisheries resources

Year 2014(X) ?

"Stock Assessment for Fisheries Resources in Offshore Waters"

Objectives	<ol style="list-style-type: none"> 1. To provide knowledge on appropriate methodologies appropriate for assessing stock of non-exploited fisheries resources in offshore waters of Southeast Asia 2. To enhance skill of fisheries researchers on sampling and survey for offshore fisheries resources exploration
Major contents	<ol style="list-style-type: none"> 1. Understanding fish stock, biomass, and potential non-exploited fisheries resources in the offshore areas 2. Common models for stock assessment of fisheries resources 3. Applicable models using by number of countries/institutes to assess stock of non-exploited fisheries resources 4. Data requirements for evaluating potential fisheries resources in offshore waters 5. Survey methods for offshore fisheries resources exploration

"Stock Assessment for Fisheries Resources in Offshore Waters (2)"

Target participants	<ol style="list-style-type: none"> 1. Fisheries researchers of the member countries (fully support by JTF) 2. Other researchers (cost will be borne by their offices)
Resources persons	<ul style="list-style-type: none"> - Scientists and researchers of SEAFDEC/TD and MFRDMD, - Experts from Japanese Research Agencies, - Lecturers from Universities relevant to marine science and technologies for resources exploration
No. of participants	- 12 persons (maximum)
Duration	- 6 days (back-to-back with the cruise survey of M.V.SEAFDEC2 in the member country)
Tentative schedule	Day 1 -2 /Lecture - Stock assessment for tropical fisheries resources - Model for stock assessment of non-exploited fisheries resources - Habitat and biodiversity assessment

"Stock Assessment for Fisheries Resources in Offshore Waters (3)"

Tentative schedule	Day 3 - 4 - Sampling gears survey for stock assessment, : Otter-board trawl Day 5 – 6 - Analysis of data collected - Conclusion and evaluation
Estimated budget	15,000 to 18,000 USD

Year 2015(X) ?

"Application of Hydro-acoustic Methods for Potential Offshore Fisheries Resources Assessment"


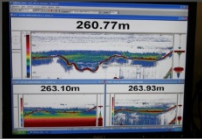
Objectives	<ol style="list-style-type: none"> 1. To provide knowledge on hydro-acoustic methods and aquatic habitat assessment to offshore fisheries management 2. To enhance skill of fisheries researchers on hydro-acoustic survey and data analyzing for fisheries management in the offshore areas
Major contents	<ol style="list-style-type: none"> 1. Application of hydro-acoustic methods to fisheries resources assessment 2. Analysis of survey data for stock assessment 3. Hydro-acoustic equipment 4. Common stock assessment model using for the survey data of the stock assessment
Target participants	<ol style="list-style-type: none"> 1. Fisheries researchers of the member countries (fully support by JTF) 2. Other researchers (cost will be borne by their offices)

"Application of Hydro-acoustic Methods for Potential Offshore Fisheries Resources Assessment(2)"

Resources persons	<ul style="list-style-type: none"> - Scientists and researchers of SEAFDEC/TD and MFRDMD, - Experts from Japanese Research Agencies, - Lecturers from Universities relevant to marine science and technologies for resources exploration
No. of participants	- 12 persons (maximum)
Duration	- 7 days (back-to-back with the cruise survey of M.V.SEAFFDEC2 in the member country)
Tentative schedule	Day 1 – 3 /Lecture <ul style="list-style-type: none"> - Application of hydro-acoustic methods to fisheries resources assessment - Analysis of survey data for stock assessment - Hydro-acoustic equipment

"Application of Hydro-acoustic Methods for Potential Offshore Fisheries Resources Assessment(3)"

Tentative schedule	Day 4 – 5 / Practice <ul style="list-style-type: none"> - Hydro-acoustic survey (scientific eco-sounder) - Offshore sampling gear (otter-board trawl) - Practical use of hydro-acoustic data, habitat and offshore topography to fisheries management Day 6 <ul style="list-style-type: none"> - Data analysis Day 7 <ul style="list-style-type: none"> - Conclusion and Evaluation
Estimated budget	15,000 to 18,000 USD

Year 2016(X) ?

"Modern Survey Technologies for Exploring Non-exploited Fisheries Resources"



Objectives	<ol style="list-style-type: none"> 1. To provide knowledge on survey technologies for offshore fisheries resources 2. To enhance skill of researchers on survey technologies for fisheries resources exploration
Major contents	<ol style="list-style-type: none"> 1. Modern survey technologies for fisheries resources exploration 2. Survey method for biological and physical characteristics in offshore waters 3. Existing facilities of survey equipment in Southeast Asia 4. Modern commercial fishing vessels operation in offshore waters
Target participants	<ol style="list-style-type: none"> 1. Fisheries researchers of the member countries (fully support by JTF) 2. Other researchers (cost will be borne by their offices)

"Modern Survey Technologies for Exploring Non-exploited Fisheries Resources(2)"

Resources persons	<ul style="list-style-type: none"> - Scientists and researchers of SEAFDEC/TD and MFRDMD, - Experts from Japanese Research Agencies, - Lecturers from Universities relevant to marine science and technologies for resources exploration
No. of participants	12 persons (maximum)
Duration	5 days (back-to-back with the cruise survey of M.V.SEAFFDEC2 in the member country)
Tentative schedule	Day 1 – 2 /Lecture <ul style="list-style-type: none"> - Modern survey technologies for fisheries resources exploration - Biological characteristic sampling (fish sampling gear, acoustic survey, etc.) - Physical characteristic sampling (bathymetry, substrate sampling, temperature, current, etc.)

"Modern Survey Technologies for Exploring Non-exploited Fisheries Resources(3)"

Tentative schedule	Day 3 – 4 / Practice <ul style="list-style-type: none"> - Offshore sampling gears (IKMTs) - Oceanographic survey (Bongo net, Neuston net, Larvae net, ICTD) - Seabed mapping survey (underwater VDO camera, ROV) Day 5 <ul style="list-style-type: none"> - Conclusion and Evaluation
Estimated budget	15,000 to 18,000 USD

Year 2017(X) ?

"Environmental Characteristics Appraisal for Developing Offshore Pelagic Fisheries"

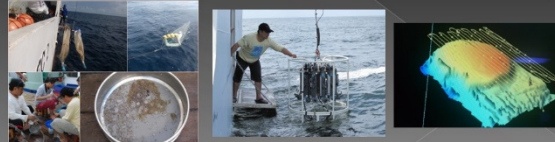
Objectives	<ol style="list-style-type: none"> 1. To enhance knowledge and methods for assessment for environmental condition suitable for offshore fishing ground 2. To enhance skill of fisheries researchers on sampling and survey for biological and physical parameters in the offshore areas
Major contents	<ol style="list-style-type: none"> 1. Understanding offshore environment 2. Environmental characteristics appraisal for developing pelagic fisheries resources (model and application) 3. Survey methods for biological and physical parameters 4. Sampling gears 5. Preservation of the samples
Target participants	<ol style="list-style-type: none"> 1. Fisheries researchers of the member countries (fully support by JTF) 2. Other researchers (cost will be borne by their offices)

“Environmental Characteristics Appraisal for Developing Offshore Pelagic Fisheries (2)”

Resources persons	<ul style="list-style-type: none"> - Scientists and researchers of SEAFDEC/TD and MFRDMD, - Experts from Japanese Research Agencies, - Lecturers from Universities relevant to marine science and technologies for resources exploration
No. of participants	12 persons (maximum)
Duration	5 days (back-to-back with the cruise survey of M.V.SEAFFDEC2 in the member country)
Tentative schedule	Day 1 – 2 /Lecture <ul style="list-style-type: none"> - Marine environment in offshore areas - Model of environmental characteristic appraisal for developing fisheries resources (exploited and non-exploited stock) - Offshore technologies for fisheries resources survey - GIS for management of fisheries resources - Sampling gears for fisheries resources survey

“Environmental Characteristics Appraisal for Developing Offshore Pelagic Fisheries (3)”

Tentative schedule	Day 3 – 4 / Practice <ul style="list-style-type: none"> - Offshore sampling gears (Mid-water trawl, Pelagic longling) - Oceanographic survey (Bongo net, Neuston net, Larvae net, ICTD) - Seabed mapping survey (underwater VDO camera, ROV) - Preservation of larvae, macrobenthic fauna samples Day 5 <ul style="list-style-type: none"> - Conclusion and Evaluation
Estimated budget	15,000 to 18,000 USD



THANK YOU

Report on Preliminary Training Need Assessment

Regional Workshop on Offshore Fisheries in Southeast Asian Waters 3-4 December 2013, Bangkok, Thailand

Sayan promjinda, Penchan Laongmanee and Isara Chanrachkij

Introduction

Training need assessment (TNA) is one of agenda in the Regional Workshop on Offshore Fisheries in Southeast Asia Waters. The workshop is one of the activities under Project Offshore Fisheries in Southeast Asia conducted by SEAFDEC/TD under supporting by Japanese Trust Fund (JTF). The workshop was convened during 3rd to 4th December 2013 at Bangkok, Thailand, aimed to address the training requirements of SEAFDEC Member Countries on the offshore fisheries developing. As well as to ensure the Member Countries junior scientists have the knowledge and skill to conduct their research work with better performance as well as seeking for the gap of each SEAFDEC member countries on Offshore Fisheries.

Preliminary training need is conceptualize to primary prioritize the requirement of SEAFDEC Member Countries emphasized on the Human Resources Improvement for junior scientist. Result of preliminary training need assessment will be harmonized with the comments of Member Countries under the agenda of *Future Technical Collaboration Program on Offshore Fisheries Resources and Future Action* in order to finalize the project plan from year 2014 to 2017.

Objective

Seeking for the overall priority of SEAFDEC Member Countries upon the offshore fisheries related to issue of technical supports of 1) Stock Assessment for Fisheries Resources in Offshore Waters; 2) Application of Hydro acoustic Methods for Potential Offshore Fisheries Resources Assessment; 3) Modern Survey Technologies for Exploring Non-exploited Fisheries Resources; and 4) Environmental Characteristics Appraisal for Developing Offshore Pelagic Fisheries.

Method

Methodology applied to obtain training need information from all member countries is Rapid Rural Appraisal (RRA) comprising two (2) methods i.e.

1. The topics of each training program related with offshore fisheries technological development for Member Countries are obtained by primary information collection method through questionnaire. Details of questionnaire are composed with;
 - 1.1. Identification of members, their mandate and function of the offshore fisheries.
 - 1.1.1. Name
 - 1.1.2. Present Position (Title, Office, Department)
 - 1.1.3. Years of work
 - 1.1.4. Explain participant main task or role on the offshore fisheries
 - 1.1.5. Training experience in related with offshore fisheries
2. Five most important training needs in related with offshore fisheries will be listed by each individual countries. (Table1)
3. Training need activities are summarized and categorized for participatory approach by group discussion.
4. Priority of each training program related with offshore fisheries technological development are prioritized by the participatory approach by group discussion.
 - 4.1. Group interviewing by using structured questionnaire with the details summarized from the questionnaires of item 1. It presented to member of meeting and asking for comments and additional topics. The facilitators separate all participants into 2 groups what composed with all member countries within the group.

Group A composed with Indonesia, Malaysia, Thailand, Vietnam and Cambodia. Group B composed with Indonesia, Malaysia, Thailand, Vietnam and Myanmar. List is showed in Annex 3.
 - 4.2. SEAFDEC staffs will be divided and assigned to participate both groups. Their roles are to assist the facilitating and supporting information of SEAFDEC role and future activities in relevant with offshore fisheries. They will also provide information and comments of feasibility that SEAFDEC can provide support under the needs designed by Member Countries.
 - 4.3. When training needs have been listed, use a weighted voting process to prioritize the training needs. In a weighted voting process, scored by using High (H), Median (M) and Low (L) to determine and prioritize on the list of activities. In order to finalize the priority, the scored has to be transformed into numerical i.e., H=3, M=2 and L=1.

4.4. Due to Malaysia, Indonesia, Philippines and Thailand assigned 2 representative to participated the meeting and they have separated to participate both group A and B, facilitator has to calculate for average score of each respective countries.

4.5. Average score of each training topics will be result of training need priority.

4.6. Representative (s) of each group is assigned to present the result of each group. Participants of the workshop will share their comments. Organizer will summarize the result of and circulate to participant with the result of the workshop.

Table 1 Formatted table of preliminary training needs

Topic	Score						
	Mal	Indo	Phi	Tha	Viet	Cam	Myan
1							
↓							
11							

Result

1) Topics to prioritized training programs

Five from seven Member Countries submitted the questionnaire back to organizer. Cambodia and Myanmar did not submit the questionnaire with different reasons of unclear what their offshore fisheries of their countries. Result of questionnaire what send back from is able to categorized into 11 main groups as below

1. Fishery resource survey methodology
2. Data collection methodology consisted of data collect on board research/fishing vessel and landing site
3. Stock assessment

There are 6 sub-topics should designated by the participants, i.e.

 - i) General Stock assessment
 - ii) Stock assessment for high migratory species (tagging)
 - iii) Stock assessment for Meso-pelagic species
 - iv) Stock assessment for Deep-sea demersal species
 - v) Biomass estimate by using trawling
 - vi) Biological parameter
 - vii) Statistic model to investigate stock
4. Application of scientific hydro acoustic equipment for stock assessment
5. Taxonomy

6. Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property)
7. General fishing technology (Basic)
8. Environmental friendly fishing technology (Advance)
9. Deep-sea fishing technology
10. Tuna fishing technology (Tuna purse seine and longline, handline)
11. Navigation, seamanship and safety at sea (including later)
12. Offshore Fishery management
13. Offshore Fishery Management on Port State Measure (PSM)

Remark:

1. Even though the status of fisheries stock and abundant is able to investigate by Scientific Echo sounder, application and methodology is different from the conventional stock assessment. Member of Group A suggest separating from the training topic of stock assessment however Group B has not separated this item from the conventional one.
2. Offshore fishery management by PSM and other measure is raised up by participants group A, however these issues are carried out by other project of Japanese Trust Fund.
3. Fishing technology developments are separated into; 1) Basic general fishing technology; 2) Advance environmental friendly fishing technology; 3) Deep-sea fishing technology; and 4) Tuna fishing technology (Tuna purse seine and longline, handline)

2) Score to prioritize

Participants of seven Member Countries has prioritized their training need refer to the topic what organizers have categorized already. There are two topics, i.e. 1) Application of Scientific Hydroacoustic Equipment for Stock Assessment; and 2) Offshore Fishery management, what group B did not provide the score refer to both topics are emerged topics, raised by group A during consider the prioritization, so that the score of both topics are not input for the final prioritization. Result of score and the prioritization is present by tables below;

Table 2 Result of training need subject of Cambodia

Priority	Subject Areas of Training Need	Score
1	Stock assessment	3
1	Data collection methodology	3
1	Taxonomy	3
1	Fishery resource survey methodology	3
	Application of scientific hydro acoustic equipment for stock assessment	3
1	Fishery management on PSM	3
1	Navigation , seamanship and safety at sea (including GMDSS, hydro acoustic equipment for navigation purposes)	3
2	General fishing technology (Basic)	3
2	Deep-sea fishing technology	2
2	Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property)	2
2	Environmental friendly fishing technology (Advance)	2
2	Tuna fishing technology (Tuna purse seine and longline, handline)	2
2	Offshore Fishery management	2

Table 3 Result of training need subject of Indonesia

Priority	Subject Areas of Training Need	Score
1	Stock assessment	3
1	Data collection methodology	3
1	Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property)	3
1	Application of scientific hydro acoustic equipment for stock assessment	3
1	Environmental friendly fishing technology (Advance)	3
1	Fishery management on PSM	3
2	Taxonomy	2.5
2	General fishing technology (Basic)	2.5
2	Deep-sea fishing technology	2.5
2	Tuna fishing technology (Tuna purse seine and longline, handline)	2.5
2	Navigation , seamanship and safety at sea (including GMDSS, hydro acoustic equipment for navigation purposes)	2.5
3	Fishery resource survey methodology	2
3	Offshore Fishery management	2

Table 4 Result of training need subject of Malaysia

Priority	Subject Areas of Training Need	Score
1	Stock assessment	3
1	Taxonomy	3
	Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property)	3
1	Application of scientific hydro acoustic equipment for stock assessment	3
1	Tuna fishing technology (Tuna purse seine and longline, handline)	3
2	Environmental friendly fishing technology (Advance)	2.5
2	Deep-sea fishing technology	2.5
2	Navigation , seamanship and safety at sea (including GMDSS, hydro acoustic equipment for navigation purposes)	2.5
3	Fishery resource survey methodology	2
3	Data collection methodology	2
3	General fishing technology (Basic)	2
3	Fishery management on PSM	2
3	Offshore Fishery management	2

Table 5 Result of training need subject of Myanmar

Priority	Subject Areas of Training Need	Score
1	Stock assessment	3
1	Taxonomy	3
1	Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property)	3
1	Tuna fishing technology (Tuna purse seine and longline, handline)	3
1	Fishery resource survey methodology	3
1	Application of scientific hydro acoustic equipment for stock assessment	3
2	Deep-sea fishing technology	2.5
2	Environmental friendly fishing technology (Advance)	2.5
2	Navigation , seamanship and safety at sea (including GMDSS, hydro acoustic equipment for navigation purposes)	2.5
3	Fishery management on PSM	2
3	General fishing technology (Basic)	2
3	Data collection methodology	2
3	Offshore Fishery management	2

Table 6 Result of training need subject of Philippines

Priority	Subject Areas of Training Need	Score
1	Application of scientific hydro acoustic equipment for stock assessment	3
1	Offshore Fishery management	3
2	Stock assessment	2.5
2	Data collection methodology	2.5
2	Deep-sea fishing technology	2.5
2	Fishery resource survey methodology	2.5
2	General fishing technology (Basic)	2.5
2	Environmental friendly fishing technology (Advance)	2.5
3	Taxonomy	2
3	Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property)	2
3	Tuna fishing technology (Tuna purse seine and longline, handline)	2
3	Fishery management on PSM	2
3	Navigation , seamanship and safety at sea (including GMDSS, hydro acoustic equipment for navigation purposes)	2

Table 7 Result of training need subject of Thailand

Priority	Subject Areas of Training Need	Score
1	Stock assessment	3
1	Deep-sea fishing technology	3
1	Tuna fishing technology (Tuna purse seine and longline, handline)	3
1	Fishery management on PSM	3
2	Taxonomy	2.5
2	Data collection methodology	2.5
2	Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property)	2.5
2	Fishery resource survey methodology	2.5
2	Navigation , seamanship and safety at sea (including GMDSS, hydro acoustic equipment for navigation purposes)	2.5
2	Environmental friendly fishing technology (Advance)	2.5
3	General fishing technology (Basic)	2
3	Offshore Fishery management	2
4	Application of scientific hydro acoustic equipment for stock assessment	1

Table 8 Result of training need subject of Vietnam

Priority	Subject Areas of Training Need	Score
1	Data collection methodology	3
1	Taxonomy	3
1	Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property)	3
1	Application of scientific hydro acoustic equipment for stock assessment	3
1	Deep-sea fishing technology	3
1	Environmental friendly fishing technology (Advance)	3
1	Tuna fishing technology (Tuna purse seine and longline, handline)	3
1	Fishery management on PSM	3
1	Offshore Fishery management	3
2	Stock assessment	2.5
2	Navigation , seamanship and safety at sea (including GMDSS, hydro acoustic equipment for navigation purposes)	2.5
3	Fishery resource survey methodology	2
3	General fishing technology (Basic)	2

Table 9 Result of training need subject of offshore fisheries development countries

Priority	Topic	Ind	Mal	Phi	Tha	Total	Average
1	Stock assessment	3	3	2.5	3	11.5	2.88
2	Fishery resource survey methodology	2	2	2.5	2.5	11	2.75
3	Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property)	3	3	2	2.5	10.5	2.63
3	Environmental friendly fishing technology (Advance)	3	2.5	2.5	2.5	10.5	2.63
3	Deep-sea fishing technology	2.5	2.5	2.5	3	10.5	2.63
3	Tuna fishing technology (Tuna purse seine and longline, handline)	2.5	3	2	3	10.5	2.63
4	Data collection methodology	3	2	2.5	2.5	10	2.50
4	Application of scientific hydro acoustic equipment for stock assessment	3	3	3	1	10	2.50
4	Taxonomy	2.5	3	2	2.5	10	2.50
4	Fishery management on PSM	3	2	2	3	10	2.50
5	Navigation , seamanship and safety at sea (including GMDSS, hydro acoustic equipment for navigation purposes)	2.5	2.5	2	2.5	9.5	2.38
6	General fishing technology (Basic)	2.5	2	2.5	2	9	2.25
6	Offshore Fishery management	2	2	3	2	9	2.25

Table10 Result of training need subject of offshore fisheries less development countries

Priority	Topic	Cam	Mya	Viet	Score	Average
1	Data collection methodology	3	3	3	9	3.00
2	Stock assessment	3	3	2.5	8.5	2.83
3	Taxonomy	3	2	3	8	2.67
3	Deep-sea fishing technology	2	3	3	8	2.67
3	Fishery management on PSM	3	2	3	8	2.67
4	Navigation , seamanship and safety at sea (including GMDSS, hydro acoustic equipment for navigation purposes)	3	2	2.5	7.5	2.50
5	Fishery resource survey methodology	3	2	2	7	2.33
5	Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property)	2	2	3	7	2.33
5	General fishing technology (Basic)	3	2	2	7	2.33
5	Environmental friendly fishing technology (Advance)	2	2	3	7	2.33
5	Tuna fishing technology (Tuna purse seine and longline, handline)	2	2	3	7	2.33
-	Application of scientific hydro acoustic equipment for stock assessment	3	NA	3	6 Max =9	
-	Offshore Fishery management	2	NA	3	5 Max =8	

Table 11 Result of training need subject of compare between less offshore fisheries development countries and well development countries

Priority	Topic	
	Offshore fisheries development countries	Less offshore fisheries development countries
1	Stock assessment	Data collection methodology
2	Fishery resource survey methodology	Stock assessment
3	Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property)	Taxonomy
3	Deep-sea fishing technology	Deep-sea fishing technology
3	Environmental friendly fishing technology (Advance)	Fishery management on PSM
3	Tuna fishing technology (Tuna purse seine and longline, handline)	

Table 12 Result of training need subject of participating countries

Priority	Topic	Cam	Ind	Mal	Mya	Phi	Tha	Viet	Total score	Average
1	Stock assessment	3	3	3	3	2.5	3	2.5	20	2.86
2	Data collection methodology	3	3	2	3	2.5	2.5	3	19	2.71
3	Deep-sea fishing technology	2	2.5	2.5	3	2.5	3	3	18.5	2.64
4	Taxonomy	3	2.5	3	2	2	2.5	3	18	2.57
4	Fishery management on PSM	3	3	2	2	2	3	3	18	2.57
5	Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property)	2	3	3	2	2	2.5	3	17.5	2.50
5	Environmental friendly fishing technology (Advance)	2	3	2.5	2	2.5	2.5	3	17.5	2.50
5	Tuna fishing technology (Tuna purse seine and longline, handline)	2	2.5	3	2	2	3	3	17.5	2.50
6	Navigation , seamanship and safety at sea (including GMDSS, hydro acoustic equipment for navigation purposes)	3	2.5	2.5	2	2	2.5	2.5	17	2.43
7	General fishing technology (Basic)	3	2.5	2	2	2.5	2	2	16	2.29
8	Fishery resource survey methodology	3	2	2	2	2.5	2.5	2	16	2.28
-	Application of scientific hydro acoustic equipment for stock assessment	3	3	3	NA	3	1	3	16 Max= 19	
-	Offshore Fishery management	2	2	2	NA	3	2	3	14 Max= 17	

Conclusion

Cambodia prioritized topic of Stock assessment, Data collection methodology, Taxonomy, Fishery resource survey methodology, Application of scientific hydro acoustic equipment for stock assessment, Navigation-seamanship and safety at sea (including GMDSS, hydro acoustic equipment for navigation purposes), Fishery management on PSM, and General fishing technology (Basic) are the top.

Indonesia prioritizes topic of Stock assessment, Data collection methodology, Taxonomy, Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property), Application of scientific hydro acoustic equipment for stock assessment, Environmental friendly fishing technology (Advance), and Fishery management on PSM are the top.

Malaysia prioritizes topic of stock assessment, taxonomy, oceanographic and environmental survey methodology (fish larvae, benthos, physical and physical and chemical property), application of scientific hydro acoustic equipment for stock assessment and Tuna fishing technology (Tuna purse seine and longline, handline) are the top.

Myanmar prioritizes topic of stock assessment, taxonomy, oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property), tuna fishing technology (Tuna purse seine and longline, handline), and fishery resource survey methodology are the top and application of scientific hydro acoustic equipment for stock assessment are the top.

Philippines prioritizes topic of application of scientific hydro acoustic equipment for stock assessment, offshore Fishery management, are the top.

Thailand prioritizes topic of stock assessment, deep-sea fishing technology, tuna fishing technology (Tuna purse seine and longline, handline), Fishery management on PSM are the top.

Vietnam prioritizes topic of data collection methodology, taxonomy, Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property), application of scientific hydro acoustic equipment for stock assessment, environmental friendly fishing technology (Advance), tuna fishing technology (Tuna purse seine and longline, handline), and deep-sea fishing technology, are the top.

Result of scoring compared within less developing offshore fisheries countries i.e. Cambodia, Myanmar and Vietnam Countries, show three (3) highest ranking scores composed with five (5) training topics i.e. 1) Data collection methodology (1st Priority); 2) Stock assessment (2nd Priority); 3) Taxonomy, Deep-sea fishing technology, and Fishery management on PSM (3rd Priority)

Result of scoring compared within offshore fisheries development countries i.e. Indonesia, Malaysia, Philippines, and Thailand show the three (3) highest ranking scores, composed with six (6) training topics i.e. 1) Stock assessment (1st Priority); 2) Fishery resource survey methodology (2nd Priority); 3) Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property); Environmental friendly fishing technology (Advance); and Deep-sea fishing technology; and Tuna fishing technology (Tuna purse seine and longline, handline) (3rd Priority).

Recommendation

1. Refer to questionnaire and participatory approach results, activities what should be develop for training program prioritize from first to forth is below;
 1. Stock assessment
 2. Data collection methodology,
 3. Deep-sea fishing technology, and
 4. Taxonomy and Offshore fisheries management by PSM
2. Offshore fisheries management by PSM what is forth priority, has been remarked by Japanese Trust Fund (JTF) representative that the issue will not include with the offshore fisheries training program. It is regarded that the topic is carrying out by other Japanese Trust Fund Project.
3. Application of scientific hydro acoustic equipment for stock assessment is potential topic for high priority however it is incomplete ranking.
4. Although the results are crystal-clear that stock assessment is top priority, there are seven (7) sub-issues, designated by Member Countries. These sub-issues should be further prioritizing the top sub-issues by regional stock assessment experts. Furthermore the score for top and following priorities are definitely close, project manager can select some topics with one to third priority for develop activities.
5. Comparative result between less offshore fisheries development countries (Cambodia, Myanmar and Vietnam) and well offshore fisheries development countries is found two (2) significant topics i.e. stock assessment and deep-sea fisheries.
6. In spite of the fact that training activities have already prioritized, not only single training topic to accomplish the Human Resource Improvement on offshore fisheries. Some topics show the linkage in between each other e.g. Stock assessment, taxonomy and data Collection, Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property) and Fishery resource survey methodology. Future training program may need to develop in series of training program.

Annex I Training Needs Assessment Questionnaire

1. Name

.....

2. Present Position

.....

3. Year of work

.....

4. Main task or role on the offshore fisheries

.....

5. Training experience in related with offshore fisheries

.....

Five activities are the most important training needs.

1.

2.

3.

4.

5.

Five activities are the most important for future activities (what you want SEAFDEC can support)

1.

2.

3.

4.

5.

Annex II. List of Participant

Countries	Group A	Group B
Cambodia	Mr. Heng Sotharith	
Indonesia	Mrs. Sofi Chullatus Sofla	Mr. Dilik Agus Suwarsono Mrs. Merry Sibuea
Malaysia	Mr. Richard Rumpet	Mr. Mohd Tamimi Ali Ahmad
Myanmar	Mr. Hla Win	
Philippines	Mr. Remar P. Asuncion	Mr. Jose A. Villanueva
Thailand	Narupon Darumas	Mr. Chirdsak Chookong
Vietnam	Mr. Dao Hong Duc	Mr. Hguyen Quoc Anh
SEAFDEC/SEC	Mr. Hidenao Watanabe	Mr. Tadahiro Kawata
SEAFDEC/MFRDMD		Mr. Mohd Tamimi Ali Ahmad
SEAFDEC/TD	Mr. Isara chanrachkij	Ms. Penchan Laongmanee
	Mr. Sayan Promjinda	Dr. Natinee Sukramongkol
	Mr. Nakaret Yasook	

Annex III Training Need Result Group A

Topic	Mal	Ind	Phi	Tha	Vie	Cam
1. Fishery resource survey methodology	M	M	H	H	M	H
2. Data collection methodology	M	H	M	M	H	H
- on board						
- Landing site						
3. Stock assessment General Stock assessment Stock assessment for high migratory species (tagging) Stock assessment for Meso pelagic species Stock assessment for Deep-sea demersal species	H	H	M	H	M	H
4. Application of scientific hydro acoustic equipment for stock assessment	H	H	H	L	H	H
5. Taxonomy	H	H	M	M	H	H
6. Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property)	H	H	M	H	H	M
7. General fishing technology (Basic)	M	H	M	M	M	H
8. Environmental friendly fishing technology (Advance)	M	H	H	H	H	M
9. Deep-sea fishing technology	H	M	M	H	H	M
10. Tuna fishing technology (Tuna purse seine and longline, handline)	H	M	M	H	H	M
11. Navigation , seamanship and safety at sea (including GMDSS, hydro acoustic equipment for navigation purposes)	M	H	M	H	H	H
12. Fishery management on PSM	M	H	M	H	H	H
13. Offshore fishery management	M	M	H	M	H	M

Training Need Result Group B

Topic	Ind	Mal	Mya	Phi	Tha	Vie
1. Fishery resource survey methodology	M	M	M	M	M	M
2. Data collection methodology - on landing - On board	H	M	H	H	H	H
3. Fish Stock assessment Biomass estimate by using trawling Biological parameter Statistical model	H	H	H	H	H	H
4. Hydro acoustic equipment for stock assessment	NA	NA	NA	NA	NA	NA
5. Taxonomy	M	H	M	M	H	M
6. Oceanographic survey methodology (fish larvae, benthos, physical and chemical property)	H	H	M	H	H	H
7. General fishing technology (Basic)	M	M	M	H	M	M
8. Environmental friendly fishing technology (Advance)	H	H	M	M	M	H
9. Deep-sea fishing technology	M	H	M	M	M	M
10. Tuna fishing technology (Tuna purse seine and longline)	H	H	M	M	H	H
11. Navigation and seamanship (including GMDSS, hydro acoustic equipment for navigation purposes)	M	H	M	M	M	M
12. Fishery management on PSM (with SEAFDEC PSM program)	H	M	M	M	H	H
13. Offshore fishery management	H	H	H	H	H	H

Annex IV Training Need Result combination of Group A and B

Topic	Cam	Ind	Mal	Mya	Phi	Tha	Viet	
1. Fishery resource survey methodology	H (3)	M/M (2)	M/M (2)	M (2)	H/M (2.5)	H/M (2.5)	M/M (2)	(16)
2. Data collection methodology - on board - Landing site	H (3)	H/H (3)	M/M (2)	H (3)	M/H (2.5)	M/H (2.5)	H/H (3)	(19)
3. Stock assessment <ul style="list-style-type: none"> ▪ General Stock assessment ▪ Stock assessment for high migratory species (tagging) ▪ Stock assessment for Meso-pelagic species ▪ Stock assessment for Deep-sea demersal species ▪ Biomass estimate by using trawling ▪ Biological parameter ▪ Statistical model 	H (3)	H/H (3)	H/H (3)	H (3)	M/H (2.5)	H/H (3)	M/H (2.5)	(20)
4. Application of scientific hydro acoustic equipment for stock assessment	H (3)	H (3)	H (3)	NA	H (3)	L (1)	H (3)	(16+) Max =19
8. Taxonomy	H (3)	H/M (2.5)	H/H (3)	M (2)	M/M (2)	M/H (2.5)	H (3)	(18)
9. Oceanographic and environmental survey methodology (fish larvae, benthos, physical and chemical property)	M (2)	H/H (3)	H/H (3)	M (2)	M/M (2)	H/M (2.5)	H/H (3)	(17.5)
10. General fishing technology (Basic)	H (3)	H/M (2.5)	M/M (2)	M (3)	M/H (2.5)	M/M (2)	M/M (2)	(17)
11. Environmental friendly fishing technology (Advance)	M (2)	H/H (3)	M/H (2.5)	M (2)	H/M (2.5)	H/M (2.5)	H/H (3)	(17.5)
12. Deep-sea fishing technology	M (2)	M/H (2.5)	H/M (2.5)	H (3)	M/H (2.5)	H/H (3)	H/H (3)	(18.5)
13. Tuna fishing technology (Tuna purse seine and longline, handline)	M (2)	M/H (2.5)	H/H (3)	M (2)	M/M (2)	H/H (3)	H/H (3)	(17.5)
14. Navigation , seamanship and safety at sea (including GMDSS, hydro acoustic equipment for navigation purposes)	H (3)	H/M (2.5)	M/H (2.5)	M (2)	M/M (2)	H/M (2.5)	H/M (2.5)	(17)
15. Fishery management by PSM	H (3)	H/H (3)	M/M (2)	M (2)	M/M (2)	H/H (3)	H/H (3)	(18)
16. Fishery management by Offshore fishery	M (2)	M (2)	M (2)	NA	H (3)	M (2)	H (3)	(14+) Max =17

Possible Future Technical Collaboration Program on Offshore Fisheries Resources, and Follow-up Actions

Regional Workshop on Offshore Fisheries in
Southeast Asian Waters

3-4 December 2013, Bangkok, Thailand

Follow-up actions by SEAFDEC

- Revision of the annual plan of activities 2014~17 accommodating discussion during the workshop, circulate to participants of the workshop
- Facilitate/encourage arrangement of sub-regional joint research program related to O.F.R.E, e.g. Andaman Sea, SCS, EAS, etc.
- Communicating with MCs on sharing of experts/information on Sulu-Sulawesi Seas (Vietnam, and others)
- Encourage MC to jointly resources survey on sharing species (target species)

CONCLUSION

Regional Workshop on Offshore Fisheries in
Southeast Asian Waters

3-4 December 2013, Bangkok, Thailand

Offshore, Oceanic, Inshore, Coastal...

- Definition depends on the country
 - Depth of water
 - Distance from shore-line (EEZ, others)
 - Size of the vessels

Common Issues

- Insufficient information in most of countries in SEA under condition, on-and-off support (budget, staff, etc.)
- Need to enhance knowledge on stock assessment (e.g. biomass estimates using trawling, statistic model for regional, scientific hydro-acoustic equipment, etc.)
- Regionally standardized data of catch and effort for offshore capture fisheries is required
- Capacity building needs on MSY and model used for stock assessment for offshore
- Necessary to know impact after fishing through pre-survey
- High risk of damaging bottom habitats from trawling → new design for less touch on seafloor trawl net

National and regional efforts

- Outputs from international, regional, sub-regional, and national initiatives are very useful sources of information
- Information sharing will be useful for planning development, management, implementation for offshore fisheries development
- Selection of:
 - Appropriate type of fishing gear to be developed
 - Target economical species (commercial, MEY)

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- Stock assessment for fisheries resources in offshore waters
- Application of hydro-acoustic methods for potential offshore fisheries resources assessment
- Modern survey technologies for exploring non-exploited fisheries resources
- Environmental characteristics appraisal for developing pelagic fisheries