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The First Core Expert Meeting on Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region

SEAFDEC MFRDMD,
Kuala Terengganu, Malaysia

25 November 2020

Southeast Asian Fisheries Development Center (SEAFDEC)
Marine Fishery Resources Development and Management Department (MFRDMD)

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Southeast Asian Fisheries Development Center

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Report of the First Core Expert Meeting on Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region

SEAFDEC/MFRDMD, Kuala Terengganu, Malaysia

25 November 2020

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The First Core Expert Meeting on Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region
25 November 2020
SEAFDEC/MFRDMD, Kuala Terengganu, Malaysia

I. OPENING ADDRESS

1. The Deputy Chief of SEAFDEC/MFRDMD, *Dr Masaya Katoh* warmly welcomed all the participants to the "First Core Expert Meeting on Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region". He explained that due to ongoing pandemic, SEAFDEC/MFRDMD has to organized the meeting virtually. He hoped that all the participants would be engaged in the information exchanged throughout this meeting whilst encouraged to continue data collection activities to ensure sustainable fisheries in the region. Last but not least, he reminded everyone to keep safe and practice social distancing. His opening address appears as **Annex 1,** and the list of participants appears as **Annex 2**.

II. ADOPTION OF THE AGENDA

2. The agenda was presented to the meeting and adopted without any amendment as appeared in **Annex 3**.

III. INTRODUCTION AND OVERVIEW OF THE MEETING

3. Overview of the meeting was presented by the Project Coordinator, *Ms Wahidah Mohd Arshaad*. SEAFDEC has initiated the regional study on sharks and rays since 2003. Throughout the duration, SEAFDEC had organized many trainings and workshops to enhance member countries' capacity in taxonomy and data collection as well as for sustainable utilization, conservation and management of shark resources in the region. According to her, major aims of this meeting are i) to introduce JTFVI Phase II project from 2020 to 2024 and ii) to present achievements of previous JTFVI project which has been completed in 2019. Her presentation appears in **Annex 4**.

IV. PRESENTATION OF THE OUTPUT OF THE JTF PROJECT IN 2015- 2019

4. Outputs of JTFVI Project, "Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region" was presented by the Chief of SEAFDEC/MFRDMD, *Dr Ahmad Ali*. Its main objectives are i) to train technical officers in the participating member countries to be able to collect taxonomic and biological data on sharks and rays in their respective countries, ii) to summarize genetic information of shark and ray species identification by DNA barcoding technique, and iii) to gather information on utilization of sharks and rays in the region for proper fishery management and sustainable utilization.

5. He briefly explained significant achievements from this project, which includes the compilation of shark biodiversity in the region during the five (5) years project duration; in which Indonesia recorded the highest species diversity (117 species; seven (7) orders, 26 families). Additionally, DNA samples for DNA barcoding study were collected from numerous locations throughout the region, namely Cambodia, Malaysia, Myanmar, Thailand and Viet

Nam. Apart from that, shark marketing surveys were conducted in collaboration with Indonesia in Java and Sumatera (2018) and Kalimantan (2019). The report has been jointly published by Indonesia and SEAFDEC/MFRDMD. His presentation appears in **Annex 5**.

6. The representative of Japan, *Mr Taiki Ogawa*, asked concrete examples of shark and ray teeth products, which were shown in the presentation. *Dr Ahmad* responded that while all sharks that were caught are fully utilized, not all parts are edible. Bigger-sized teeth are commonly used as ornaments and souvenirs. The representative of Indonesia, *Mr Dharmadi*, explained that shark products' demand and price across Indonesia is consistent despite the current global pandemic situation.

V. CURRENT GLOBAL ACTS, CONSERVATION AND MANAGEMENT OF SHARKS AND RAYS AND FUTURE DIRECTION

7. The meeting continued with a presentation by the Policy and Program Coordinator from SEAFDEC Secretariat, *Dr Worawit Wanchana*. In his presentation, he highlighted that shark resources' status is still largely unknown despite Southeast Asian region has the most diverse species of sharks and rays in the world as there is lack of catch and landing data on specific species of sharks. He informed that SEAFDEC/MFRDMD has conducted research on the utilization of sharks and their by-products throughout the years and thus will continue to support ASEAN Member States (AMSs) in order to improve data collection activities in the region. Hence, he concluded his presentation by iterating the importance of capacity building activities on sharks and rays species identification to facilitate data collection on both groups. His presentation appears in **Annex 6.**

8. The representative of Malaysia, *Mr Abdul Haris Hilmi Ahmad Arshad*, strongly supported *Dr Worawit*'s suggestions to i) to continue data collection and ii) capacity building for sharks and rays. He also recommended conducting stock assessments for both groups in the future.

9. *Dr Ahmad* informed that from March to May 2020, IUCN had organized online assessment for sharks and rays from Indian waters to Vietnamese waters. Cambodia, Indonesia and Malaysia participated in this assessment, and the report will be published in 2021. The finding indicates that there is taxonomic difficulty in the identification of certain sharks and rays species in the region. Furthermore, he strongly supported the suggestion by *Dr Worawit* in which the continuation of capacity buildings for sharks and rays identification at the species level is needed.

10. The representative of Japan, *Mr Teruo Kitade,* expressed his appreciation for SEAFDEC on its continuous support for shark and ray studies in the Southeast Asian region. He wished to continue assisting SEAFDEC to ensure sustainable utilization of shark and ray.

11. The representative of Malaysia, *Ms Noor Hasmayana Yahya* mentioned that Malaysia is preparing the National Plan of Action for Conservation and Management of Sharks Plan 3 (NPOA-Sharks) in 2021. At the same time, Malaysia is also preparing the Coral Triangle Initiative (CTI) assessment report with Dr Ahmad and his team's assistance.

VI. INTRODUCTION OF THE NEW JTFVI PHASE II PROJECT ENTITLED "RESEARCH FOR ENHANCEMENT OF SUSTAINABLE UTILIZATION AND MANAGEMENT OF SHARKS AND RAYS IN THE SOUTHEAST ASIAN REGION 2020-2024

12. *Dr Katoh* presented JTFVI Phase II project entitled "Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region". The objectives of this project are; i) to develop capacity in taxonomy, new species/ record identification and management of major shark species, ii) to clarify the stock structure for at least two (2) common species of sharks or rays and one (1) CITES-listed species, and iii) to collect information on utilization of sharks and rays for future management and sustainable utilization. His presentation appears in **Annex 7**.

13. The Assistant Project Manager for the Japanese Trust Fund Programs, *Mr Isao Koya* proposed to submit findings from this project to Animal Committee of CITES in 2022. He iterated on the importance of information sharing with CITES to downlist the current status of certain sharks and rays species from Appendix II to Appendix III. *Dr Katoh* responded that SEAFDEC may submit the results of the project to the Animal Committee of CITES and he suggested further discussion with SEAFDEC Secretariat on submission of documents to Animal Committee of CITES.

14. The representative of Philippines, *Mr Franscisco Tores, Jr* inquired on the documentation for the downlisting of species from Appendix II to Appendix III. *Dr Ahmad* explained that submission of scientific evidence that demonstrates the stock is increasing for a certain period is required to downlist the species listing from Appendix II to Appendix III.

15. The representative of Indonesia, *Mr Dharmadi,* expressed his concern regarding this project's population and socio-economic components. The population component includes landing data for both sharks and rays, and the socio-economic components include target fishing and by-catch.

16. The representative of Thailand, *Ms Thanawan Somjit,* revealed that Thailand had published NPOA- Sharks in the Thai language. She also requested supports in term of training in taxonomy and research. *Dr Ahmad* informed that SEAFDEC has been working with The Department of Fisheries (DoF) Thailand, such as translating NPOA-Sharks from the Thai language to English.

VII. GENERAL DISCUSSION FOR THE IMPROVEMENT OF THE NEW JTFVI PHASE II PROJECT

17. *Mr Dharmadi* inquired on the continuation of study for sharks and rays marketing from central to eastern Indonesia. *Dr Katoh* explained about the difficulty in obtaining permission for research activities from the Government of Indonesia. However, SEAFDEC is willing to support any local researcher who is interested in the study. *Dr Ahmad* mentioned that similar methodology from domestic marketing surveys in Java, Sumatra and Kalimantan could be applied if there is a future collaboration with local researchers.

18. *Ms Noor Hasmayana* mentioned that the Core Expert Meeting (CEM) is an excellent information exchange platform amongst AMSs. She iterated that DoF Malaysia will continue to provide supports on all activities under JTFVI Phase II. She hoped that more data collection

efforts could be conducted to provide accurate information to give accurate information to CITES listing species.

19. The representative of Myanmar, *Mr Soe Win,* informed that information and knowledge obtained in the previous JTFVI training would be applied in JTFVI Phase II. Myanmar will also focus on collecting data for sharks and rays utilization in the country.

20. *Mr Torres* hoped for more collaboration between SEAFDEC and the Philippines in the future. He explained that Philippines would continue working on "Shark Identification Guide Version 2". The guide will be published in 2021.

21. *Mr Kitade* stated that projects of SEAFDEC do not always have specific goals such as downlisting particular species. He also mentioned that the proposal from *Mr Koya* might be too ambitious at this time. *Mr Kitade* suggested that SEAFDEC member countries consider their possible actions on CITES meetings after observing data collected by their projects. *Dr Katoh* emphasized the importance of sufficient scientific evidence to ensure the success of downlisting species from Appendix II to Appendix III. *Mr Koya* also agreed and added that if there is enough information collected in JTFVI Phase II, SEAFDEC will present the findings to the Animal Committee of CITES to remove certain species from Appendix II to Appendix III. *Dr Ahmad* stated that SEAFDEC/MFRDMD would support the idea of downlisting certain sharks and rays, as mentioned by *Mr Koya* with the data and information collected in this region.

22. *Dr Worawit* suggested the meeting to establish a scientific working group (SWG) similar to SWG Neritic Tunas in the region to encourage technical discussion, especially on stock assessment model. *Dr Ahmad* clarified that a Whatsapp group had been established in data collection participating countries. IUCN Shark Specialist Group for Southeast Asia is now open for application for new members. The curriculum vitae (cv) format will be distributed to participants interested in joining the IUCN expert group in the region.

23. The representative of SEAFDEC/TD, *Mr Sukchai Anupapboon* mentioned that many enumerators in participating countries still face difficulties to identify sharks and rays up to species level. As a data validator in SEAFDEC/TD, he found that important information such as fishing ground is not recorded correctly. He suggested SEAFDEC/MFRDMD conduct training courses on sharks and rays identification and data recording and validating data according to SOP provided by SEAFDEC.

24. *Dr Ahmad* explained that SEAFDEC only managed to support data collection for five (5) days per month for participating countries due to budget constraints. In Malaysia, the DoF supported an additional seven (7) days per month, enabling Malaysia to collect more robust data for stock assessment purposes. However, he assured *Mr Sukchai* that SEAFDEC/MFRDMD would try to accommodate SEAFDEC/TD suggestions.

25. *Dr Ahmad* announced that since he will retire next year, *Ms Wahidah* replaced him as the new project leader for JTFVI Phase II. *Ms Wahidah* mentioned that she would focus on DNA study and for JTFVI Phase II, SEAFDEC/MFRDMD will emphasize stock structure for the selected shark species while *Mr Abdul Haris Hilmi* will assisting in sharks and rays identification.

VIII. CLOSING OF THE MEETING

26. *Dr Ahmad* thanked all participants for their attendance, despite their busy schedule. He informed that MFRDMD would take necessary action to accommodate all ideas and suggestions from AMSs, SEAFDEC Secretariat and SEAFDEC/TD. The credits are also given to *Dr Worawit*, all SEAFDEC/MFRDMD officers especially *Dr Katoh*, *Ms Wahidah* and *Ms Mazalina,* for their tireless work to ensure this meeting materialized as scheduled. His closing remarks appears as **Annex 8.**

Annex 1

OPENING ADDRESS

Dr MASAYA KATOH
Deputy Chief of SEAFDEC/MFRDMD

First Core Expert Meeting on Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region

25 November 2020
SEAFDEC/MFRDMD, Kuala Terengganu, Malaysia

Dr Ahmad Ali, Chief of SEAFDEC/MFRDMD, Mr Abd. Haris Hilmi Ahmad Arshad, Senior Researcher, Distinguished Representatives from SEAFDEC Member Countries, my colleagues from SEAFDEC/Secretariat, TD and MFRDMD, and Ladies and Gentlemen, Good morning

Thank you very much for participation from SEAFDEC Member Countries during the COVID-19 pandemic. Because of the pandemic, we cannot host Face-to-face international meetings. Instead, we can have a video meeting today. This CEM is supported by the Japanese Trust Fund 6 Phase II project started this year, namely "Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region." Many member countries have collected the landing data in sharks and rays in Asia. I hope you will have good information exchange through the meeting and continue collecting good data in sharks and rays in the SE Asian region for sustainable fisheries. Because of COVID-19, please do not forget social distancing and face masks whenever necessary. I declare the 1st Core Expert Meeting is open. Thank you.

Annex 2

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Annex 3

PROVISIONAL AGENDA AND TIMETABLE *Moderator: Ms Wahidah Mohd Arshaad*	
Agenda 1 : Opening of the Meeting	
10.00 - 10.05	Opening Address *By Deputy-Chief of SEAFDEC/MFRDMD*
Agenda 2: Adoption of the Agenda and Group Photo	
10.05 - 10.15	Adoption of the Agenda
Chairperson: Deputy-Chief of SEAFDEC/MFRDMD **Agenda 3: Introduction and Overview of the Meeting**	
10.15 - 10.30	Introduction and Overview of the Meeting *By Ms Wahidah Mohd Arshaad, Project Coordinator from SEAFDEC/MFRDMD*
Agenda 4: Achievement of the JTF VI Project	
10.30 - 10.50	Presentation of the output of the JTF VI project in 2015 – 2019 *By Dr Ahmad Ali, Chief of SEAFDEC/MFRDMD*
10.50 - 11.00	*Refreshment*
Chairperson: *Chief of SEAFDEC/MFRDMD* **Agenda 5: Current Global Acts, Conservation and Management of Sharks and Rays and Future Direction**	
11.00 – 11.20	Current Global Acts, Conservation and Management of Sharks and Rays and Future Direction *By Dr Worawit Wanchana from SEAFDEC/SEC*
Agenda 6: Introduction of the new JTFVI-II project	
11.20 - 11.40	Introduction of the new JTFVI-II project entitled "Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region", 2020 – 2024 *By Deputy Chief of SEAFDEC/MFRDMD.*
Agenda 7: General discussion *Facilitator: Chief of SEAFDEC/MFRDMD*	
11.40 - 12.10	General discussion for the improvement of the new JTF VI-II project
Agenda 8: Closing of the Meeting	
12.10 - 12.20	Closing remarks *By Chief of SEAFDEC/MFRDMD*

Annex 4

Introduction

- Some of elasmobranchs (sharks & rays) have been concerned by international organizations that promote sustainable management of shark and ray species in recent years.
- Although shark fins are only one of the by-products of the shark catch in ASEAN, meat and many of the shark products have been utilized and sold by fishers. Especially for small-scale fishers, all parts of sharks are valuable and fully utilized.
- Noting the increased concern about expanding fisheries targeting for sharks and the potential negative impacts on shark populations, CITES Resolution Conf. 9.17 in 1994 requested the Food and Agriculture Organization of the United Nations (FAO) to gather necessary information on sharks to develop and propose guidelines leading to a plan of action for the conservation and management of sharks.
- The International Plan of Action for Conservation and Management of Sharks has been developed in 1998 and The IPOA-Sharks was subsequently endorsed during 23rd Session of COFI in Rome, 15-19 February 1999.

Continue..

- SEAFDEC initiated *"regional study on sharks and rays data collection"* since 2003.
- SEAFDEC also had conducted a series of meetings, regional workshops, and capacity development for ASEAN Member States on taxonomy and identification of sharks and rays in Southeast Asian waters since 2011.
- Moreover, appropriate stock assessment model such as Yield Per Recruit (YPR) Model for Southeast Asian Region has been discussed and agreed among technical officers of the AMS.
- This meeting is part of the continuous efforts organized by SEAFDEC for sustainable utilization and management of sharks and rays resources in the Southeast Asian waters.
- This Core Expert Meeting aims to introduce new activities under Japanese Trust Fund VI (Phase II) project starting from 2020 to 2024 as well as achievement of data collection project under Japanese Trust Fund VI (2015-2019).

Objectives of the Meeting

- To introduce new JTFVI-II project entitled "Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region", 2020 – 2024.
- To present achievement of the JTFVI "Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region" project implemented in 2015 – 2019.

Expected outputs:

- Recommendations for improvement of Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region (2020-2024).

1st Core Expert Meeting on Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region, 25 November 2020, Google Meet

Output of the JTF VI project in 2015 – 2019
By:
SEAFDEC/MFRDMD

Background and Objectives

Title: Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region

- In order to ensure the survival and sustainable utilization of these resources, many governments in the Southeast Asian Region, have taken several important steps to mitigate the decreasing of the resources.
- SEAFDEC has undertaken the important step to support member countries for the conservation and management of sharks and rays in the region.

2

Objectives

- Objective 1: To train technical officers in the participating Member Countries to be able to collect taxonomic and biological data on sharks and rays in their countries
- Objective 2: To obtain/summarize genetic information for shark and ray species identification in the region by DNA bar-coding
- Objective 3: To collect information on utilization of sharks and rays in the region for proper fishery management and sustainable utilization

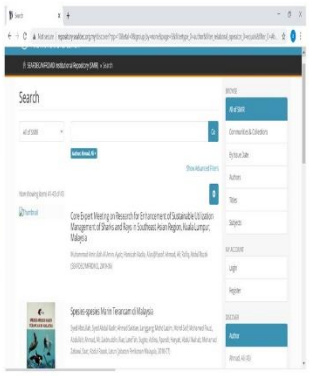
Overall Project Implemented

Activity	Sub-Activity	2015	Y2 2016	Y3 2017	Y4 2018	Y5 2019
Activity 1: Identification of Sharks and Rays in the Southeast Asian Region	Sub-activity 1.1 On-site training in the region	18,400		8,430	10,420	
	Sub-activity 1.2 Workshops on identification of sharks and rays in the region		25,909	9,905		25,909
	Sub-activity 1.3: Identification of shark and ray species by DNA bar-coding	18,900	10,000	13,500	27,400	2,590
Activity 2: Utilization of By-catch Sharks and Rays	Sub-activity 2.1: Country visits	6,492		4,433	9,871	9,000
	Sub-activity 2.2: Summarization and publication					6,293
	Sub-activity 2.3: Core Expert Meeting				28,126	
	Sub-Total Budget	43,792	35,909	36,268	75,817	43,792

Major Achievements Objective 1

- Since 2015, 40 participants attended the training and workshop at SEAFDEC/MFRDMD and more than 40 participants attended on-site training in Viet Nam.
- Trained participants from AMSs, SEAFDEC/TD, SEAFDEC/SEC and universities are able to identify species of sharks and rays using SEAFDEC guidelines with guidance by lecturers and facilitators during the training and workshop conducted at SEAFDEC/MFRDMD.
- Most of participants from member countries are now working in the field on data collection under SEAFDEC and country funding.
- The Core Expert Meeting (CEM) on Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region was organized by SEAFDEC/MFRDMD in Kuala Lumpur, Malaysia from 9th – 10th October 2018. The report was published in 2019.
- The CEM was attended by the representatives from Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Thailand, Viet Nam, SEAFDEC/Secretariat, SEAFDEC/TD, SEAFDEC/MFRDMD as well as resource persons from Japan Fisheries Research and Education Agency, Kasetsart University and Ubon Ratchathani University.
- Issues presented and discussed including data collection, NPOA-Sharks, CITES listed species, marketing, international trade, (NDFs) and socioeconomic studies on sharks and rays.

5

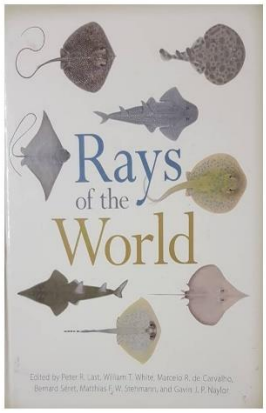


Major Achievement Objective 1
Biodiversity of Sharks in SEA Region (2015-2019):

- Indonesia : 117 species (7 orders and 26 families)
- Philippines : 96 species (9 orders and 27 families)
- Thailand : 86 species (8 orders and 23 families)
- Vietnam : 70 species (7 orders and 23 families)
- Malaysia : 68 species (7 orders, 19 families)
- Myanmar : 64 species (8 orders and 19 families)
- Brunei Darussalam : 45 species (6 orders and 15 families)
- Cambodia : 26 species (5 orders and 10 families)

Many species still need to be confirmed and most probably misidentification based on latest finding by Last *et al* 2016.

Information on biodiversity of rays and skates still in draft since many name were changed based on Last *et al* (2016)



Many changed were made in order, family, genus and species

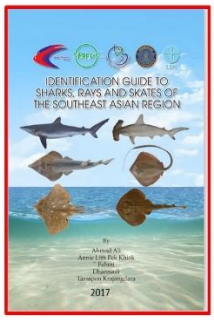
Eg:
1. Order Pristiformes + Order Rhinobatiformes: Rhinopristiformes

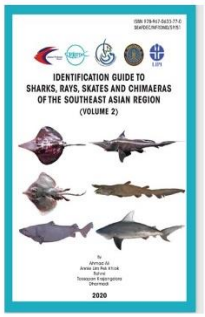
2. Dasyaties zugei to *Telatrygon zugei*
3. Himantura gerrardi to *Maculabatis gerradi*
4. Dasyatis kuhli to *Neotrygon kuhlii* to *Neotrygon orientalis*

5. Manta birostris to *Mobula birostris*
6. Manta alfredii to *Mobula alfredii*

7. Pastinachus atrus to *Pastinachus ater*
8. Himantura fai to *Pateobatis fai*

Collaboration with participated countries





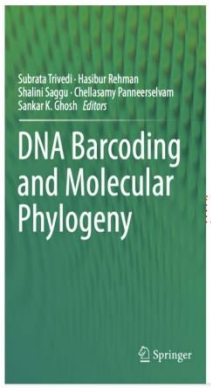
Major Achievement for Objective 2

- MFRDMD had collected samples from 16 locations namely Beluran, Kota Kinabalu, Sandakan and Tawau (Sabah); Kuantan, Temerloh, Pekan and Rompin (Pahang); Bagan Panchor (Perak); Dungun (Terengganu); Mukah (Sarawak) for Malaysia,
- Sihanoukville (Cambodia);
- Yangon (Myanmar);
- Phuket and Andaman Sea (Thailand) and
- Vung Tau (Viet Nam).

(Samples were collected during site visit and training program implemented for this project (With official approval from participated AMSs)

Major Achievement for Objective 2

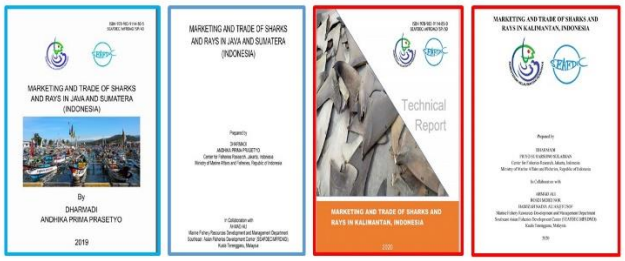
- SEAFDEC/MFRDMD had managed to sequence 142 sharks' specimens, 261 rays' specimens, 18 skates' specimens and 2 chimaeras' specimens for DNA barcoding.
- These specimens consist of 43 species of sharks, 51 species of rays, 4 species of skates and 2 species of chimaeras.
- From of this DNA sequence, 80% have been uploaded to the Barcode of Life Data Systems (BOLD; http://boldsystems.org) as reference globally. Some of the data were new DNA sequences in BOLD.



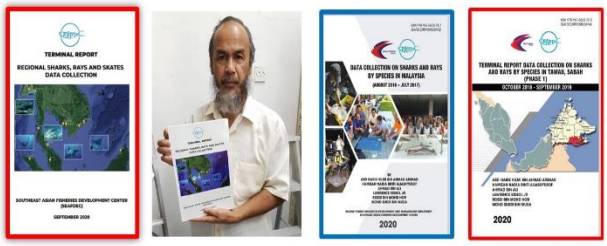
Major Achievement for Objective 3

- SEAFDEC/MFRDMD in collaboration with Center for Fisheries Research, Indonesia conducted marketing and trade surveys in Java and Sumatera (in 2018) and in Kalimantan (in 2019). We found that there were high diversity of products produced from sharks and rays excluding fin, such as meat, skin, cartilages, teeth, intestine and stomach.
- Resources of sharks and rays generated massive livelihood for coastal communities of not only direct beneficiaries i.e. fishers, boat owners, exporters, collectors, wholesalers, retailers and processors but also various labour workers in different level of marketing channels such as, factories, port and transportation workers.
- A source of livelihood and protein has been significantly generated by shark and ray resources. Poor remote communities in the middle part of Indonesia depend on the dried meat of sharks and rays as protein resources.
- A survey report conducted in Java and Sumatera in 2018 was published in 2019 and report for Kalimantan published in 2020.

Collaboration with Indonesia

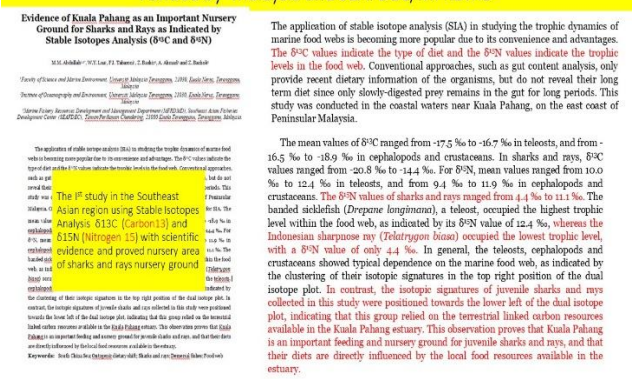


Collaboration with SEAFDEC/SEC and SEAFDEC/TD



Collaboration with Malaysia Funded by Malaysia with Technical Assistance from SEAFDEC/MFRDMD

Collaboration with Malaysia Funded by Malaysia and SEAFDEC/MFRDMD



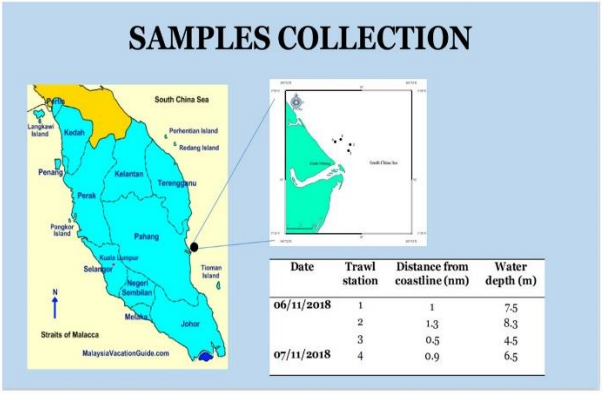
Evidence of Kuala Pahang as an Important Nursery Ground for Sharks and Rays as Indicated by Stable Isotopes Analysis ($\delta^{13}C$ and $\delta^{15}N$)

M.M. Abdullah*, W.S. Lee, P.I. Tukimat, Z. Bashir, A. Ahmad and Z. Bachok

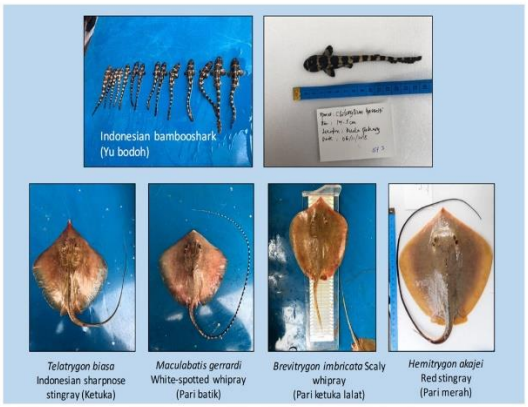
The Ist study in the Southeast Asian region using Stable Isotopes Analysis δ13C (Carbon13) and δ15N (Nitrogen 15) with scientific evidence and proved nursery area of sharks and rays nursery ground

The application of stable isotope analysis (SIA) in studying the trophic dynamics of marine food webs is becoming more popular due to its convenience and advantages. The $\delta^{13}C$ values indicate the type of diet and the $\delta^{15}N$ values indicate the trophic levels in the food web. Conventional approaches, such as gut content analysis, only provide recent dietary information of the organisms, but do not reveal their long term diet since only slowly-digested prey remains in the gut for long periods. This study was conducted in the coastal waters near Kuala Pahang, on the east coast of Peninsular Malaysia.

The mean values of $\delta^{13}C$ ranged from -17.5 ‰ to -16.7 ‰ in teleosts, and from -16.5 ‰ to -18.9 ‰ in cephalopods and crustaceans. In sharks and rays, $\delta^{13}C$ values ranged from -20.8 ‰ to -14.4 ‰. For $\delta^{15}N$, mean values ranged from 10.0 ‰ to 12.4 ‰ in teleosts, and from 9.4 ‰ to 11.9 ‰ in cephalopods and crustaceans. The $\delta^{15}N$ values of sharks and rays ranged from 4.4 ‰ to 11.1 ‰. The banded sicklefish (*Drepane longimana*), a teleost, occupied the highest trophic level within the food web, as indicated by its $\delta^{15}N$ value of 12.4 ‰, whereas the Indonesian sharpnose ray (*Telatrygon biasa*) occupied the lowest trophic level, with a $\delta^{15}N$ value of only 4.4 ‰. In general, the teleosts, cephalopods and crustaceans showed typical dependence on the marine food web, as indicated by the clustering of their isotopic signatures in the top right position of the dual isotope plot. In contrast, the isotopic signatures of juvenile sharks and rays collected in this study were positioned towards the lower left of the dual isotope plot, indicating that this group relied on the terrestrial linked carbon resources available in the Kuala Pahang estuary. This observation proves that Kuala Pahang is an important feeding and nursery ground for juvenile sharks and rays, and that their diets are directly influenced by the local food resources available in the estuary.



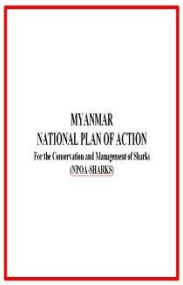
STABLE ISOTOPE ANALYSIS

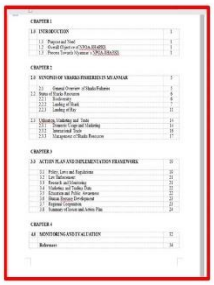


Detailed description of the marine coastal food web components near Kuala Pahang

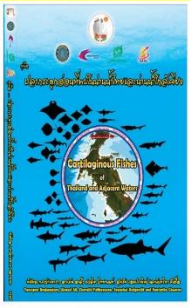
Species	Common name/ Local name	Weight (g)	TL/ CL/ DL (cm)	SL/ DW/ML (cm)	δ¹³C (‰)	δ¹⁵N (‰)	n
Teleosts							
Otolithes ruber	Tiger-toothed croaker (Gelama jarang gigi)	79.0 ±12	19.1 ±0.4	16.5 ±0.3	-17.5 ±0.7	11.7 ±0.3	3
Nibea soldado	Soldier croaker (Gelama papan)	48.0 ±5.3	16.2 ±0.7	13.5 ±0.6	-17.5 ±1.8	12.2 ±0.1	3
Drepane longimana	Banded sicklefish (Daun baru belang)	65.8 ±22.9	13.1 ±1.3	10.5 ±1.2	-17.5 ±0.7	12.4 ±0.2	3
Sardinella albella	White sardinella (Tamban sisik putih)	24.8 ±2.1	14.1 ±0.4	11.8 ±0.5	-17.3 ±0.3	11.4 ±0.4	3
Gnathophis nystromi	Conger eel (Malong)	605.4 ±169.2	75.6 ±8.3	74.9 ±7.9	-17.0 ±2.5	11.3 ±1.5	3
Parascorpaena picta	Painted scorpionfish (Depu kerapu karang)	96.9	17.3	14.0	-16.8	11.5	1
Coilia dussumieri	Goldspotted grenadier anchovy (Bulu ayam tanda emas)	14.2 ±0.6	14.4 ±1.0	13.1 ±1.5	-16.7 ±0.2	12.1 ±0.6	3
Cynoglossus arel	Largescale tonguesole (Lidah sisik besar)	27.2 ±2.2	17.7 ±0.7	16.8 ±0.5	-16.7 ±0.5	10.0 ±0.7	3
Elasmobranch							
Chiloscyllium hasselti	Indonesian bamboshark (Yu bodoh)	66.4 ±44.5	27.1 ±10.4	-	-24.1 ±4.2	6.2 ±1.1	3
Brevitrygon imbricata	Scaly whipray (Pari ketuka lalat)	157.7 ±56.0	16.4 ±0.8	14.7 ±10.4	-23.6 ±1.0	6.8 ±1.2	3
Maculabatis gerrardi	White-spotted whipray (Pari batik)	202.0	18.2	19.0	-23.0	6.4	1
Telatrygon biasa	Indonesian sharpnose stingray (Ketuka)	122.5 ±73.5	16.8 ±8.0	15.2 ±7.5	-20.8 ±4.0	4.4 ±2.5	2
Hemitrygon akajei	Red stingray (Pari merah)	240.0	18.7	19.5	-14.4	11.1	1
Cephalopods							
Loligo chinensis	Common squid (Sotong jarum)	27.7 ±2.2	-	4.4 ±0.6	-18.9 ±2.9	11.9 ±0.4	3
Sepia pharaonis	Pharaon cuttlefish (Sotong katak)	41.8 ±4.7	-	4.6 ±1.3	-17.8 ±1.5	10.9 ±0.5	3
Crustaceans							
Portunus pelagicus	Flower crab	63.2 ±34.7	10.0 ±1.7	-	-17.4 ±1.6	9.4 ±0.8	3
Charybdis feriatus	Crucifix crab	48.5	12.2	-	-16.8	10.5	1
Portunus sanguinolentus	Three-spot swimming crab	101.4	8.6	-	-18.5	9.8	1

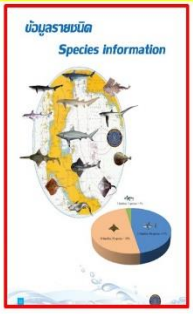
Collaboration with Myanmar
NPOA-Sharks (Draft) Completed in 2018


MYANMAR
NATIONAL PLAN OF ACTION
For the Conservation and Management of Sharks
(NPOA-SHARKS)



Collaboration with DoF Thailand





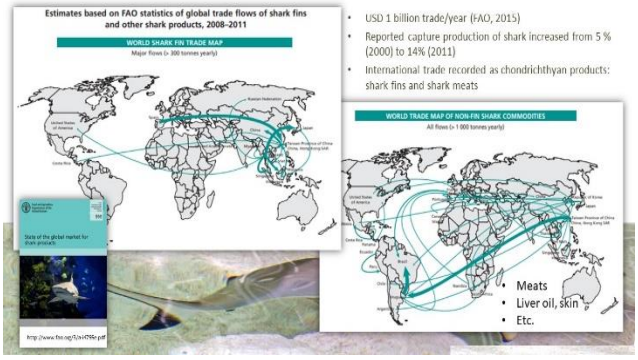
TERIMA KASIH

Annex 6

Introduction

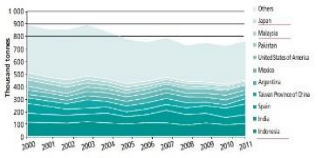
- SEA – richest elasmobranches in the world, at least 327 species including 174 species of sharks 148 species of rays + skates, and 5 species of Chimaeras)
- In SEA, shark is considered as non-target catch (bycatch, indirect fisheries)
- Status of shark resources is still largely unknown, lack of species-specific data
- SEAFDEC supports improvement of shark data collection and national development of the NDFs in AMSs

International Trade of Shark Products

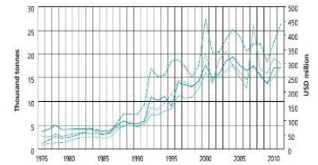


- USD 1 billion trade/year (FAO, 2015)
- Reported capture production of shark increased from 5 % (2000) to 14% (2011)
- International trade recorded as chondrichthyan products: shark fins and shark meats
- Meats
- Liver oil, skin
- Etc.

Shark International Trade

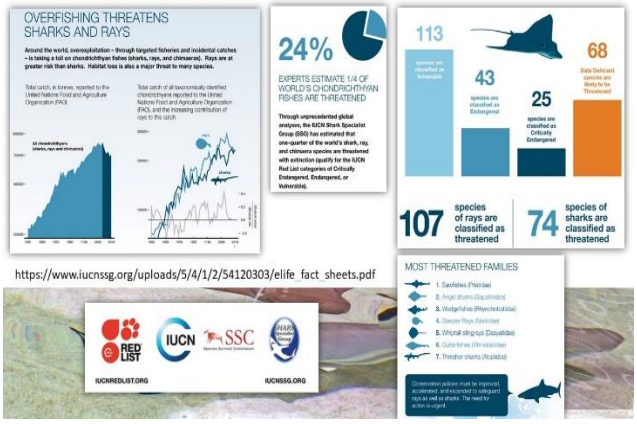


Top chondrichthyan producers, 2000–2011 (FAO 2013)



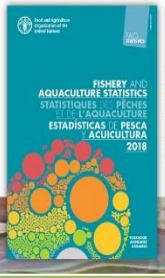
World trade in shark fins, 1976–2011 (FAO, 2013)

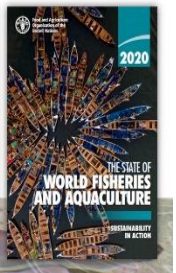
- Hammerhead, oceanic whitetip and blue sharks are preferred for shark fin soup whereas dogfish, mako and tope sharks are preferred for meat
- under-reporting is particularly likely when there is a high proportion of small-scale and/or artisanal vessels in the national fleet



Shark Landing Reports

- FAO
- SEAFDEC Bulletin
- National Fisheries Statistics ??





Reported by Genus in SEAFDEC Bulletin

Brunei Darussalam
Indonesia
Malaysia
Philippines
Thailand
Singapore

No data at special level of shark

Why ?

- relatively slow growth
- late sextual maturity
- small number of young per brood
- highly valued for food

https://www.fisheries.noaa.gov/national/international-affairs/shark-conservation

International Fisheries Organizations

- Regional Fisheries Management Organizations
- Convention on the Conservation of Migratory Species of Wild Animals (CMS)
- International Union for Conservation of Nature (IUCN) – Shark Specialist Group, Red List
- Convention on International Trade in Endangered Species of Wide Fauna and Flora (CITES)
- FAO: International Plan of Action for Conservation and Management of Sharks (IPOA-Sharks)

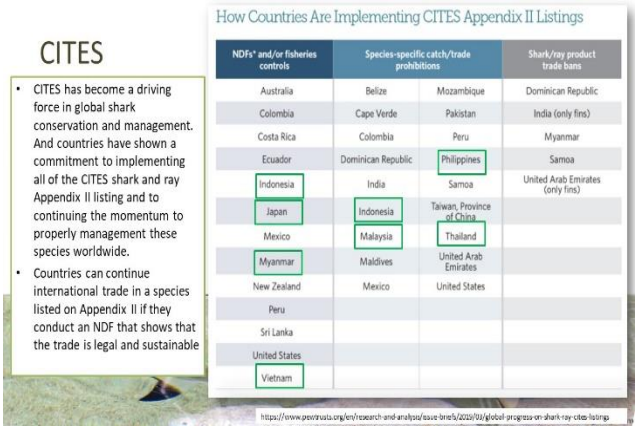
CITES

- CITES has become a driving force in global shark conservation and management. And countries have shown a commitment to implementing all of the CITES shark and ray Appendix II listing and to continuing the momentum to properly management these species worldwide.
- Countries can continue international trade in a species listed on Appendix II if they conduct an NDF that shows that the trade is legal and sustainable

How Countries Are Implementing CITES Appendix II Listings

NDFs* and/or fisheries controls	Species-specific catch/trade prohibitions		Shark/ray product trade bans
Australia	Belize	Mozambique	Dominican Republic
Colombia	Cape Verde	Pakistan	India (only fins)
Costa Rica	Colombia	Peru	Myanmar
Ecuador	Dominican Republic	Philippines	Samoa
Indonesia	India	Samoa	United Arab Emirates (only fins)
Japan	Indonesia	Taiwan, Province of China	
Mexico	Malaysia	Thailand	
Myanmar	Maldives	United Arab Emirates	
New Zealand	Mexico	United States	
Peru			
Sri Lanka			
United States			
Vietnam			

https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2019/01/global-progress-on-shark-ray-cites-listings



Sharks and Rays Listing under CITES Appendices

Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival.

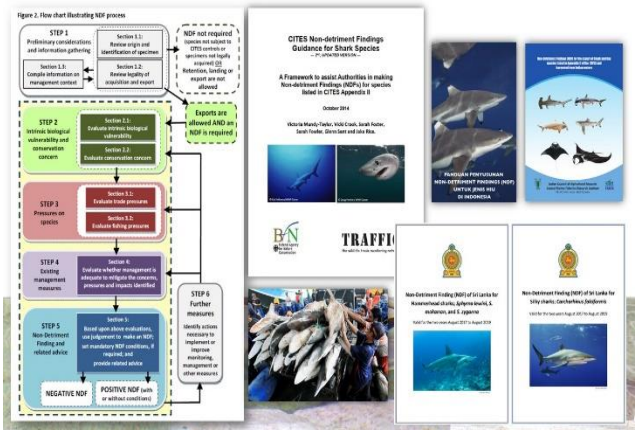
41 Species

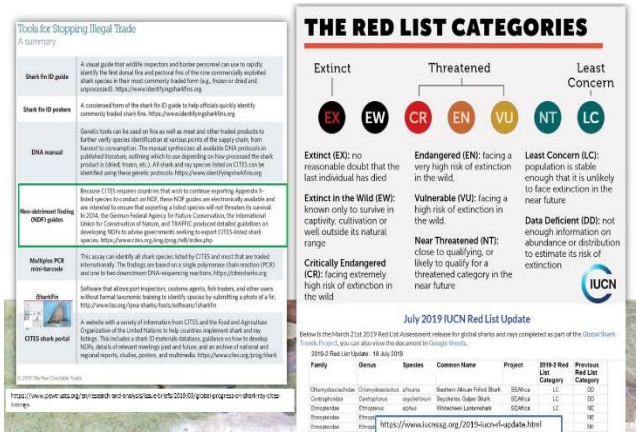
The Conference of the Parties (CoP), which is the decision-making body of the Convention and comprises all its Parties

Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances.

- Appendix I: all sawfish species

Exporting of any products of species listed under Appendix II requires a NDF





THE RED LIST CATEGORIES

Extinct: EX, EW

Threatened: CR, EN, VU

Least Concern: NT, LC

Extinct (EX): no reasonable doubt that the last individual has died

Extinct in the Wild (EW): known only to survive in captivity, cultivation or well outside its natural range

Critically Endangered (CR): facing extremely high risk of extinction in the wild

Endangered (EN): facing a very high risk of extinction in the wild.

Vulnerable (VU): facing a high risk of extinction in the wild.

Near Threatened (NT): close to qualifying, or likely to qualify for a threatened category in the near future

Least Concern (LC): population is stable enough that it is unlikely to face extinction in the near future

Data Deficient (DD): not enough information on abundance or distribution to estimate its risk of extinction

IUCN

July 2019 IUCN Red List Update

https://www.iucnssg.org/2019-iucn-rl-update.html

Conservation and Management of Sharks

- 2001 FAO-IPOA Sharks
  - Review of the Implementation of the IPOA-Sharks (2012)
  - Implementing the CITES through National Fisheries Legal Frameworks (2020)
- CITES CMM Sharks (through Scientific Authority + Management Authority using NDFs)
  - Resolution
    - Resolution Conf. 12.6 (Rev. CoP17) - Conservation and management of sharks
  - Decisions on sharks and rays
    - Decisions 17.209 to 17.216 Sharks and rays (Elasmobranchii spp.)
  - Other relevant Resolutions and Decisions
    - Resolution Conf. 14.6 (Rev. CoP16) - Introduction from the Sea
    - Decisions 17.31 to 17.35 Capacity building
    - Decisions 17.181, 16.48 (Rev. CoP17) to 16.51 (Rev. CoP17) Introduction from the sea

Conservation and Management of Sharks

- RFMOs
  - WCPFC
    - Toward an Integrated Shark Conservation and Management Measure for the Western and Central Pacific Ocean
    - Development of a Comprehensive Shark CMM for the WCPFC
    - Conservation and Management of Sharks
  - IOTC
    - Resolution 18/02 on Management Measures for the Conservation of Blue Shark Caught in Association with IOTC Fisheries
    - Shark and Ray Identification in Indian Ocean Pelagic Fisheries
    - Ecological Risk Assessment for Shark Species Caught in Fisheries Managed by the Indian Ocean Tuna Commission
    - Res. 12/09 on the Conservation of Thrasher Sharks (Family Alopiidae) Caught in Association with Fisheries in the IOTC Area of Competence
    - Res. 13/06 on A Scientific and Management Framework on the Conservation of Shark Species Caught in Association with IOTC Managed Fisheries

CCSBT IATTC ICCAT IOTC WCPFC

Common Management Measures for Sharks (RFMOs, CMS, I/NPOA, etc.)

- Record and submit report by fishing gear on the no. of discards and release of sharks species as regulated
- Prohibit/reduce/(still alive, especially juvenile) release catching of shark species as regulated
- No fining practice, or specify % (normally 5%) of fin onboard the fishing vessel
- Carry out a stock assessment or a comprehensive assessment based on their best scientific data
- Adopt necessary measures to reduce mortality for sharks (fishing gear, area, method/operation)
- Implement FAO IPOA and develop NPOA-sharks

likely no record of such shark caught

Key Issues

- Information on trends in species composition of shark productions
- Information on utilization of shark fins and shark meat not recorded in international trade
- Information on global utilization of products other than shark fins and shark meat
- Limitations of shark/chondrichthyan trade statistics

Source: FAO - http://www.fao.org/3/a-i4795e.pdf

Future Challenges for SEA

- Enhancing understanding of stakeholders
- Establishing management/conservation measures
- Continuing capacity building programs (species ID, NDF development, etc.), research (DNA toolkit, stock status using data-poor, etc.), study socio-economic
- Improving information on sharks (regional/national statistic, trade, etc.)
- Developing regional common position to safeguard fisheries sector, particularly small-scale sectors

Annex 7

1st Core Expert Meeting on Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region
25 November 2020, Google Meet

Introduction of the new JTFVI-II entitled "Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region" 2020 – 2024

SEAFDEC/MFRDMD in collaboration with SEAFDEC/TD and Secretariat

Introduction

- The increase in shark landing to meet the demand of sharks and rays have caused a decrease in several shark and ray resources worldwide.
- SEAFDEC has undertaken the important step of formulating the Regional Plan of Action (RPOA-Sharks) for the conservation and management of sharks and rays in the region.
- Sharks and rays are not the targeted fishes, any decision made on the regulating the international trade by listing several common species in Appendix II CITES will affect the livelihood of traditional fishers and traders.
- Governments need to collect landing and biological data on these species and to prepare management plans when needed.
- Information on utilization of by-catch sharks and rays will be collected and compiled in order to enhance understanding on the importance of sharks and rays in the Southeast Asian region and necessity of fisheries management measures.

Objectives:

1. To development capacity in taxonomy, new species/record identifications and management of major shark species
2. To clarify the stock structures for at least two common species of sharks/rays and one CITES listed species in participating countries
3. To collect information on utilization of sharks and rays in the region for proper fishery management and sustainable utilization

Goal : Sustainable Utilization of Sharks and Rays in the Southeast Asian region.

Outcome : Stock assessments and management advice for Sharks and Rays in the Southeast Asia region

Overall Project Implementation Plan

Activities	2020	2021	2022	2023	2024
1. Capacity development in taxonomy, new species/record identifications and management of major shark species					
Activity 1.1: On-site training on taxonomy and biology at selected landing sites			x		
Activity 1.2: On-site training on taxonomy and biology at selected landing sites		x	x	x	
Activity 1.3: Meetings on chondrichthyans research and Access and Benefit Sharing in the region	x				x
Activity 1.4: Publication of up-dated guidebook on identification of chondrichthyans in the region					x
Activity 1.5: Supporting data collection at least one site in Indonesia, Malaysia, Myanmar, Philippines, Vietnam and Thailand	x	x	x	x	x
Activity 1.6: Training workshops on sharks for stock assessment models		x		x	

Overall Project Implementation Plan (Continue)

Activities	2020	2021	2022	2023	2024
2. Confirmation of stock structures for at least two common species of sharks/rays and one CITES listed species in participating countries (shared-stock or separate stocks)					
Activity 2.1: Study of stock structures of selected species of sharks and rays by genetic markers	x	x	x	x	x
3. Development of socio-economic studies in the northern part of Vietnam, Western part of Myanmar and Celebes Island or Kalimantan Indonesia using methods such as Multifactor Partitioning Analysis					
Activity 3.1: Survey on fishers' dependencies, marketing and trade of sharks and rays in the region/country visited		x	x	x	

Proposed Activities for 2021

Sub-activity 1.2
One on-site training on taxonomy and biology at selected landing sites (Pontianak, Indonesia) to enhance human resource development in elasmobranch taxonomy and biology as well as technique in data collection of sharks and rays up to species level.

Sub-activity 1.5:
Continue support landing data collection in selected participating countries.

Sub-activity 1.6
A training workshop on sharks for stock assessment models like Bayesian Surplus Production model and Bayesian State Space Surplus Production Model

Sub-activity 2.1
Continues the study on stock structures of 2 shark species (*Chiloscyllium hasseltii* and *Carcharhinus sorrah*) and one CITES listed species (*Sphyrna lewini*).

Sub-activity 3.1
A survey on fishers' dependencies, marketing and trade of sharks and rays will be conducted in mid-Viet Nam.

Achievements of Project Implementation 2020

Sub-activity 1.3:

- The 1st Core Expect Meeting to introduce JTF 6-II project on sharks and rays from 2020 to 2024 to all participating AMSs; to present the results of the JTF 6 project conducted from 2015-19; and to develop appropriate on-site trainings proposal to improve national information collection on sharks and rays in participating countries via virtual on 25th November 2020.

Continue...

Achievements of Project Implementation 2020

Sub-activity 1.5:

- Monthly landing data collection on sharks and rays up to species in Perak (Larut Matang) and Sabah (Kota Kinabalu and Tawau) are continued.
- A workshop on landing data collection was organized at MFRDMD on 24 – 27 August 2020. Six participants from Department of Sabah, one research officer from Fishery Research Institute, one contract staff and six industrial training students from local university had attended this workshop.
- Participants were trained to record landing data and guided to identify sharks and rays, as well as according to order, family, genus and species using several references published by MFRDMD photographic techniques for taxonomy used.

Continue...

Achievements of Project Implementation 2020

Sub-activity 2.1:

- *Chiloscyllium hasseltii*, *Carcharhinus sorrah* and one CITES listed species *Sphyrna lewini* were selected for confirmation stock structure study. The first trip of sample collection was conducted at Kuantan on 9 – 13 August 2020.
- 39 samples of *Chiloscyllium hasseltii*, 35 samples of *Carcharhinus sorrah* and 18 samples of *Sphyrna lewini* were collected.
- New primer sets to amplify DNA mitochondrial Cytochrome b and D-loop regions were designed and optimized.

THANK YOU!

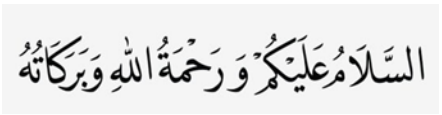
Annex 8

CLOSING ADDRESS

Dr Ahmad Ali
Chief of SEAFDEC/MFRDMD

First Core Expert Meeting on Research for Enhancement of Sustainable Utilization and Management of Sharks and Rays in the Southeast Asian Region

25 November 2020
SEAFDEC/MFRDMD, Kuala Terengganu, Malaysia



Very good afternoon
Representatives from Cambodia
Representative from Indonesia
Representatives from Japan
Representatives from Malaysia
Representatives from Myanmar
Representatives from the Philippines
Representative from Thailand
Representatives from SEAFDEC Secretariat
Representatives from SEAFDEC/TD
and All officers from SEAFDEC/MFRDMD

We have been very fortunate today to have listened to three presentations from SEAFDEC/MFRDMD on the achievement of JTF VI project conducted from 2015-2019 and way forward of JTF VI Phase II project scheduled from 2020 to 2024 and a very interesting and informative presentation from Dr Worawit from SEAFDEC Secretariat on Current Global Acts, Conservation and Management of Sharks and Rays and Future Direction.

This is a subject that many of us have heard of, but probably not everybody is familiar, especially new officers. With a significant budget allocated by the Japanese Government through SEAFDEC, we should pay greater attention towards this project to ensure maximum benefits are derived from this allocation. I hope today's meeting had enlightened us on this subject.

Ladies and gentleman,

SEAFDEC/MFRDMD will take necessary action to accommodate all ideas and suggestions from AMSs, SEAFDEC Secretariat and SEAFDEC/TD during the implementation of all proposed activities until 2024. I would like to take this opportunity to express SEAFDEC/MFRDMD appreciation and gratitude to all of you for attending this meeting and

making it a success in spite of our busy schedule. The credits are also given to Dr Worawit Wanchana from SEAFDEC Secretariat, all SEAFDEC/MFRDMD officers especially Dr Masaya Katoh, Ms Wahidah and Ms Mazalina for their tireless work to ensure this meeting materialized as scheduled.

With that, I officially close this meeting.

Thank you.

The South Asian Fisheries Development Center (SEAFDEC) is an intergovernmental organization established in December 1967 to promote sustainable fisheries development in the region. Its current Member Countries are Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam.

Reprensenting the Member Countries is the Council of Directors, the policy-making body of SEAFDEC. The Chief administrator of SEAFDEC is the Secretary-General whose office, the Secteriat is based in Bangkok, Thailand.

SEAFDEC undertakes research on appropriate fishery technologies, trains fisheries technicians and disseminates fisheries information. Five Departments, namely Training Department (TD), Marine Fisheries Research Department (MFRD), Aquaculture Department (AQD) Marine Fishery Resources Development and Management Department (MFRDMD), Inland Fishery Resources Development Management Department (IFRDMD) were established in Thailand, Singapore, The Philippines, Malaysia and Indonesia, respectively, to pursue the objectives of the Center.

Since 1998, technical cooperation between ASEAN and SEAFDEC towards sustainable fisheries development has been initiated under the regional **ASEAN-SEAFDEC Fisheries Consultative Group Mechanism (FCG)** framework; and the promotion of sustainable fisheries development through this mechanism is well accredited within the ASEAN.

To assure that the efforts of ASEAN and SEAFDEC in tackling a number of challenges that have impacts on the development and management of the fisheries sector are sustained, and in support of various activities for the benefit of Member Countries, the **ASEAN-SEAFDEC Strategic Partnership (ASSP)** was formalized in November 2007. ASSP is envisaged to enhance closer cooperation between ASEAN and SEAFDEC and its Member Countries, paving the new phase for ASEAN-SEAFDEC collaboration in achieving long term common goals towards collective regional development and management of sustainable fisheries.

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