



PROJECT DOCUMENT

ACHIEVEMENTS FOR YEAR 2019

Project ID: 201301008

Program Category	ASEAN-SEAFDEC ASSP and FCG Mechanism		
Project Title	Enhancing the Compilation and Utilization of Fishery Statistics and Information for Sustainable Development and Management of Fisheries in Southeast Asian Region: <i>Activity 2. Improving the Data Collection of the Commercially-exploited Aquatic and Threaten Species</i>		
Program Strategy No.	I	Total Period	2013–2019
Lead Department	Training Department (TD)	Lead Country	None
Donor/Sponsor	Japanese Trust Fund (JTF)	Total Donor Budget	USD 277,700
Project Partner	Marine Fishery Resources Development and Management Department (MRDMD)	Budget for 2019	USD 40,000
Project leader	Sukchai Arnupapboon / TD	Project Participating Country(ies)	All Member Countries

PART I: OVERALL PROJECT DESCRIPTION

1. Brief Project Description:

In the past decades, shark and ray species have become one of the valuable fisheries resources and commodities in the Southeast Asian countries by contributing to the livelihood of fishers, traders and exporters. Recently, nine (9) species of sharks and seven (7) species of rays have been listed under the CITES-Appendix II after the Seventeenth Conference of the Parties (CoP17), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). International trading of CITES-listed shark and ray species are regulated by the CITES Management Authority by permit. However, some CITES-listed shark and ray species are considered as common species and caught regularly during the fishing activities in the SEAFDEC Member Countries (MCs). In order to respond to the issue, SEAFDEC in collaboration with MCs formulated a project to improve the data collections on sharks and rays. It aims to enhance the capability of fishery sectors in compiling and utilizing fishery statistics and information of sharks and rays since 2013. The main outcome of the Project is that MCs are able to collect shark and ray data at species level as well as the data will be used for the most important section in Non-detrimental Findings (NDFs) documents, to support for developing a Shark National Plan of Action (NPOA), and to provide scientific evidences, particularly stock assessment for sustainable fisheries management of sharks and rays.

2. Background and Justification:

In 2013, the project activities focused on the collections of data and information for commercially-exploited species of sharks and rays. This was to follow up the outputs from a series of events, including the Technical Meetings organized by the SEAFDEC Training Department (TD) in Thailand in 2011 and 2012, and the Regional Training Course on Shark Species Identification organized by SEAFDEC Marine Fishery Resources Development and Management Department (MFRDMD) early 2012. The outputs from those meetings and training course showed that the information on shark stock status in MCs was not yet reliable because, in general, species-by-species statistics of sharks were lacking which include the information on stock structure, abundance, life history and

reproductive capacity. Further, insufficient policy and financial supports on research and management of sharks and rays were common key issues in the region. The Project aims at continuing to support MCs for improving quality and timeliness of data and information on sharks.

In 2014, the project activities emphasized on enhancing shark data collections by improving national capacities of species identification through organizing a regional training course for researchers/officers of MCs. The aim of the regional training course was to train trainers, who could pass the gained knowledge to their local enumerators for sharks and rays through conducting a national training course.

In 2015, the Project organized the Regional Technical Meeting on Shark and Ray Data Collection and Project Planning Year 2015-2016, to compile and analyze shark data at regional level and also develop a plan of data collection activities in the project participating countries, who agreed on the financial support, the format and template for shark and ray data collections, and the workplans.

In year 2015-2016. Standard Operational Procedures (SOP) of shark and ray data collections was developed and verified by the participating countries. With financial support of the Government of Japan (through the SEAFDEC Secretariat and MFRDMD) and the European Union (EU) (through the CITES Secretariat), the one-year SEAFDEC-EU Regional Project on Sharks and Rays Data Collection was implemented from 2015 to 2016 in six (6) MCs; namely, Cambodia, Indonesia, Malaysia, Myanmar, Thailand and Viet Nam.

In 2017, the Project emphasized on determining appropriate model for converting shark and ray data to shark and ray stock information to provide such scientific information to fisheries managers. Additionally, the Project continuously supported data collection activities in Cambodia because shark and ray data were still insufficient for stock assessment and it was also found that Cambodia still needs more technical support on building human resources capacity on shark and ray identification at species level.

In 2018, the Project organized Training Workshop on Assessment Resource and Fisheries Status of Sharks and Rays. The training workshop aimed to build national capacities of MCs to utilize data for fisheries management. Further, the Project initiated to support data collection activities for three landing sites, including Cilacap in Indonesia, Tawau in Malaysia, and Songkhls in Thailand.

In 2019, the Project organized Training Workshop on Age Determination by Using Vertebra of Sharks and Rays. It was conducted with the aim to increase the accuracy of resource status assessment. Further, a shark and ray database was developed, and a training was conducted in three MCs (i.e. Indonesia, Malaysia and Thailand) to use the database.

3. Project Overall Objectives, Outcomes, Outputs, Indicators and Activities:

3.1 Objectives, Outcome and Outputs of the Project

Objectives	Outcomes	Outputs	Activities
Objective 1: Improve human resource capacity in Sharks and Rays identification in the national level and utilization data for management scheme	Outcome 1: 1. National data collection system at landing site sharks and rays 2. Shark and ray resource management plan of action	Output 1: a) Human resources on shark and ray data collections, taxonomy identification and assessment for	Activity 1: Human resource development on data collection procedure, identification of species and assessment on shark and ray resource status

Objectives	Outcomes	Outputs	Activities
Objective 2: 2.1) Improve data collection both existing data set and quality of data set to improve fisheries management	Outcome 2: 2.1) National data and database at landing site of sharks and rays	Output 2: a) Data set of landing sharks and rays available at species level b) Sharks and rays information updated c) National network on Shark and Ray Identification	Activity 2: Support SEAFDEC Member Countries to implement shark data collections at landing site(s) Sub-activity 2.1 Shark and ray data collections in Southeast Asian Countries Sub-activity 2.2 Monitoring process in the participating countries of sharks and rays data collection
	2.2) Data utilization for management and conservation of sharks and rays (Data quality to investigate stock assessment of Sharks and Rays)	a) Appropriate method to utilize data to assess shark and ray resources status and fishery status based on ASEAN's existing data b) Regional network on sharks and rays identification and stock assessment	Sub-activity 2.3 Improve quality of data collection to support fisheries management (Determining and on appropriate model for assessing resource and fishery status of sharks and rays)
Objective 3: 3.1) To provide national and regional references on shark or ray data collection and follow-up the trend on shark and ray conservation and management both regional and global level 3.2) Technically support the MCs where NPOA-Shark has not been formulated yet	Outcome 3: 3.1) National and regional reference on shark or ray data collection 3.2) Drafted NPOA-Shark of SEAFDEC MCs where NPOA-Shark has not been formulated yet (As requested by Member Countries)	Output 3: a) National report on sharks and rays data collection b) Regional analysis of the sharks and rays landing in the Participating Countries c) Standard Operating Procedures (SOP) of shark and ray data collection and field guides on sharks and rays species identification	Activity 3: Sub-activity 3.1: Information dissemination Sub-activity 3.2: Participate to Relevant Regional and International Forum

3.2 Overall Scope/Description of Project

Activities	Description
Activity 1: Human resource development programs through the project Improvement of sharks data collection in Southeast Asia	These regional activities aim to improving capacity of Southeast Asian researcher for collecting shark and ray data at species level and utilizing landing data for sustainable fishery management. Activities compose of training/ workshop/ meeting which is a part to encourage SEAFDEC MCs having ability to develop Shark NPOA and NDF Document.

Activities	Description
<p>Activity 2: Supported SEAFDEC Member Countries to implement shark data collection at landing site(s)</p> <p>Sub-activity 2.1: Sharks and rays data collection in Southeast Asian Countries</p> <p>Sub-activity 2.2: Monitoring process in the participating countries of sharks and rays data collection</p> <p>Sub-activity 2.3 Improve quality of data collection to support fisheries management</p>	<p>Southeast Asian region have limit of species statistics of sharks and rays resulting to insufficient scientific evident to support policy maker to develop Shark NPOA and NDF document.</p> <p>These activities encourage participating countries to collect shark and ray data at species level by supporting budget and technical. All participating countries could publish national report of shark and ray data collections at species. The activities also design data management platform namely SEAFDEC's shark and ray database in order to store and share data for management fisheries in regional in advance.</p> <p>Eleven (11) selected landing sites in Southeast Asian is supported as pilot for data collection activities. Enumerator of each countries record shark and ray data including catch, biology and fishing ground. Record activities conduct five days per month and number of recorded fishing boat per month is at least 12.</p> <p>In order to ensure the implementation of shark landing data is systematically and correctly at the landing sites, SEAFDEC/TD and MFRDMD monitored enumerator at the landing site and also validate of data in participating countries.</p> <p>To improve quality of data collection to support fisheries management, determining on appropriate stock assessment model for sharks and rays is conducted. The existing landing data in region are converted to valuable information (sharks and rays resource status) and disseminate to policy maker.</p>
<p>Activity 3</p> <p>Sub-activity 3.1 Information dissemination</p> <p>Sub-activity 3.2 Participate to Relevant Regional and International Forum</p>	<p>Reports/publications of the national shark and ray data collection is disseminated to provide the information to manage shark and ray fisheries. Reports will be used as a reference by SEAFDEC Departments, Member Countries, fisheries-related agencies and organizations as well as the general public.</p> <p>This activity has also been collaborated with other relevant initiatives, organizations, and partners, in particular with the issues related to shark data collection. In this connection, the activity includes participation of staff in the regional and international meeting or forums, <i>e.g.</i> WCPFC, IOTC, CITES, etc. to monitor on the current issues that has significant information to sustainable utilization of Sharks and Rays.</p>

3.3 Activity, Sub-activity and Proposed Budget for 2014-2019 (in case of 5 year project from 2015)

Activities	Sub-Activities	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017	Y6 2018	Y7 2019
Activity 1: Human resource development programs	Sub-activity 1.1 Human resource development programs	27,000	27,000	27,000	22,000		32,300	28,000
Activity 2: Support SEAFDEC Member Countries to implement shark data	Sub-activity 2.1 Sharks and rays data collection in Southeast Asian Countries					3,000	13,650	9,000
	Sub-activity 2.2 Monitoring process	4,000	4,000	4,000	4,000	5,000	9,300	

Activities	Sub-Activities	Y1 2013	Y2 2014	Y3 2015	Y4 2016	Y5 2017	Y6 2018	Y7 2019
collection at landing site(s)	in the participating countries on sharks and rays data collection							
	Sub-activity 2.3 Improve quality on data collection to support fisheries management					32,500		
Activity 3 Information dissemination	Sub-activity 3.1 Information dissemination	1,000	1,000	1,000	1,000	2,000	3,950	500
	Sub-activity 3.2 Participate to Relevant Regional and International Forum				3,000	5,000	5,000	2,500
Total		32,000	32,000	32,000	30,000	47,500	64,200	40,000

PART II: ACHIEVEMENT OF 2019 PROJECT IMPLEMENTATION

1. Achievements of the Project Implementation for the present year <2019>:

The major achievement of the project implementation in 2019 was the activities of the capacity building on “Age Determination Using Vertebra for Sharks and Rays” and “Key-in Data and Data Report for SEAFDEC Regional Shark and Ray Database”. The Training Course on Age Determination Using Vertebra for Sharks and Rays was conducted with nineteen (19) participants from eight (8) MCs; namely, Cambodia, Indonesia, Japan, Malaysia, Myanmar, Philippines, Thailand and Viet Nam. The training course was specifically designed for determining age of sharks and rays for formulating growth rates which results could attain the more reliable stock assessment model. The Key-in Data and Data Report for SEAFDEC Regional Shark and Ray Database Practical Workshop aimed to strengthening the skills of key-in and usage of SEAFDEC regional sharks and rays database for local enumerators as well as improving the SEAFDEC regional database.

Three landing sites were supported for shark and ray data collections. Two sites were selected as base of demersal sharks and rays and another site as base of pelagic. With guidance from Project Advisors, twelve (12) months of shark and ray data collections starting July 2019 to June 2020 has been recorded, and a national report of shark and ray data collections will be published, which could support policy makers for their decision for developing a National Plan of Action (NPOA) in near future.

2. Information of Present Year Activity including Involved Stakeholders:

List of Actual Sub-activities	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 1 Human resource development programs					
Sub-activity 1.1 Human resource development programs		19	6	5	28,000

List of Actual Sub-activities	Type of activity	Number of Participants			Spent Budget (USD)
		MCs	SEAFDEC	Others	
Activity 2 Support Member Countries to implement shark data collection at landing site(s)					
Sub-activity 2.1 Sharks and rays data collection in Southeast Asian Countries		3			9,000
Activity 3 Information dissemination					
Sub-activity 3.1 Information dissemination					1,500
Sub-activity 3.2 Participate to Relevant Regional and International Forum					1,500

Remarks) Regarding the number of participants, please indicate total number of participants (and number of female participants within), such as 20 (10).

3. Achievements and Expected Outcome/Outputs of the Activity:

Planned activity	Expected outcome/output	Achievements
Activity 1		
Sub-activity 1.1	Ability of researchers of SEAFDEC MCs on the age determination and be able to make growth rate based on vertebra method Strengthening the skill of key-in data and data report for SEAFDEC regional sharks and rays database	Capacity building on Age determination by using vertebra of sharks and rays to researcher of SEAFDEC MCs, the training course was specifically designed for determining age of sharks and ray for formulating growth rates. There were nineteen (19) participants from eight (8) SEAFDEC Member Countries, namely: Cambodia, Indonesia, Japan, Malaysia, Myanmar, Philippines, Thailand, and Viet Nam. With regarding to training course, participant could apply his/her new knowledge to attain the more reliable assess stock model. Three participating countries for sharks and rays data collection initiated store shark and ray data to SEAFDEC regional sharks and rays database. It would be share as reference data for regional fisheries management in future.
Activity 2		
Sub-activity 2.1	Set/Verified data collection of shark landing at the selected sites in participating countries	Set of one-year data collection in Indonesia, Malaysia and Thailand from July 2019 - June 2020. Taxonomic information of sharks and rays caught in Indonesia, Malaysia and Thailand was validated and updated. This data will be a part to assess stock status for sharks and rays for both demersal and pelagic species which is valuable information for developing shark and ray fishery management plan.
Activity 3		

Sub-activity 3.1	Dissemination of sharks and rays information to SEAFDEC MCs	SEAFDEC researchers transferred shark and ray information and knowledge to the Southeast Asian countries and also print and disseminate SOP of shark data collection.
Sub-activity 3.2 (if any)		

4. List of Completed Publications and Others (e.g. technical report, VDO, presentation file, etc.):

List of completed publications for the year 2019	Type of media	Attached e-file
1. National report sharks and rays data collection in Tawau, Malaysia	Hard copy	
2. National report sharks and rays data collection in Cilacap, Indonesia	Hard copy	
3. National report sharks and rays data collection in Songkhla, Thailand	Hard copy	
4. Training report for Age Determination Using Vertebra for Sharks and Rays	Hard copy	
5. Standard Operating Procedure Volume 2.		

5. Evaluation from Participants of Member Countries for WS and Training Course (if available):

Planned activity	Evaluation/ Views from Participants
Activity 1	
Sub-activity 1.1	Age determination using hart part annual rig of shark and ray is the most accurate method to make growth curve. Participant could attain the more reliable YPR model, which was trained in year 2018.They also strengthen a network of stock assessment scientists in the Southeast Asian region. SEAFDEC regional shark and ray database was improved based on recommend of participants, local enumerators. Local enumerators could key-in and use the database. Participant appreciated this database platform that could reduce amount of time for managing data and also could analyze data in a variety of ways.
Activity 2	
Sub-activity 2.1	With support from the project, twelve (12) months of sharks and rays data from July 2018 to June 2019 have been systematically and correctly recorded and national report of sharks and rays data collection will be published. This information could be conveyed to policy maker in order to develop NPOA and/or fisheries management in advance.

6. Major impacts/issues:

One of the objectives of supporting shark and ray data collections in MCs is to build national capacities for assessing the stock status of sharks and rays in the Southeast Asian region by using appropriate model. However, the existing data of sharks and rays are still insufficient to achieve the objective with appropriate model. To assess the stock of sharks and rays, it is required to collect data for three years at least. SEAFDEC already supported data collections in Indonesia, Malaysia and Thailand for 2 year continuously. In this connection, supporting shark and ray data collections should be continued for one more year.

PART III: ACHIEVEMENTS IN OVERALL PROJECT DURATION

1. Abstract of Achievements in the Overall Project Duration (*project duration 6 years (5 years)*):

The achievements for this Project were to build national capacities of MCs to collect and utilize shark and ray data as well as support MCs for formulating a National Plan of Action (NPOA) and NDF document for sustainable fisheries in the Southeast Asia region.

MCs could identify sharks and rays at species level and also systematically collect their own shark and ray data. Currently, shark and ray data at species is available in six (6) participating countries; namely, Cambodia, Indonesia, Malaysia, Myanmar, Thailand and Vietnam (note: Brunei did not participate in the project due to the regulations which shark fishing is prohibited. Lao PDR and Singapore did not participate due to a limited landing of sharks and rays in their countries. Philippines did not participate due to no proper landing site available for the project activities). The data collected during the project implementation period (1995-1996) was used to determine appropriate model (i.e. Yield Per Recruit (YPR) model) to assess the stock and fishery status of sharks and rays in the Southeast Asian region. Researchers of MCs were trained for using the YPR model.

Under the Project, SEAFDEC/TD developed a data management platform; namely SEAFDEC Regional Sharks and Rays Database in order to store and share data for fisheries management at regional level. SEAFDEC Researchers would further share their knowledge and experience in the formulation process of Shark NPOA in MCs. During the project period, the Department of Fisheries Thailand successfully developed their first draft of Shark NPOA for Thailand.

2. Implemented Activities/Sub-activities in the Overall Project Duration:

List of Activities	Description of Implemented Activities
Activity 1	
Sub-activity 1.1	<p>During year 2013-2014, project activities have focused on building capacity of enumerator regarding to data collection technique and identification for sharks and rays at the species level by organize regional meeting and training course.</p> <p>In year 2013, technical meeting on sharks and rays data collection in Asian was organized to understand issue and ongoing activity of shark and rays data collection in each SEAFDEC MCs as well as brainstorm for priorities need activity to improve data collection in Asian region.</p> <p>In year 2014. Organize regional training workshop to improve capacity of species identification to ASEAN Member Countries. The aim of the training was training to trainer, who could able to pass knowledge from workshops to their local shark landing enumerator.</p> <p>During year 2018-19, capacity building to utilize sharks and rays data for providing scientific information, particularly resource and fisheries status assessment have been conducted. Two training courses were organized, namely and Stock Assessment for Shark and Rays Using Yield Per Recruit Model and Age Determination Using Vertebra for Sharks and Rays.</p> <p>Training Course on Stock Assessment for Shark and Rays Using</p>

	<p>Yield Per Recruit Model was organized in year 2018. The aim of training is capacity building SEAFDEC MCs to be able to utilize data for fisheries management.</p> <p>Additionally, SEAFDEC focused to promote SEAFDEC regional Sharks and Rays Database. Regional and on-site training course on Key-in Data and Data Report for SEAFDEC Regional Shark and Ray Database was organized in year 2018. The training course was designed to local enumerator for learning on key-in data and to national coordinator for shark project to learn data report usage.</p> <p>Age Determination Using Vertebra for Sharks and Rays was organized in year 2019. The aim of training is to enhance human resource development on age determination for formulating grow rates of sharks and rays in order to attain the more reliable YPR model.</p>
Activity 2	
Sub-activity 2.1	<p>In year 2015 Regional Technical Meeting on Sharks and Rays Data Collection and Project Planning Year 2015-2016 was organized in order to select pilot landing site, term of agreement and plan of activities for collect sharks and rays data.</p> <p>In year 2015-2016, With financial support from the Government of Japan (through the SEAFDEC Secretariat and MFRDMD) and the European Union (EU) through the CITES Secretariat, the SEAFDEC-EU Regional Project on Sharks and Rays Data Collection was implemented in six (6) ASEAN Member States, namely: Cambodia, Indonesia, Malaysia, Myanmar, Thailand, and Viet Nam.</p> <p>In year 2017 with financial support from the Government of Japan, Data collection in Cambodia was supported.</p> <p>In year 2018-2019 with financial support from the Government of Japan, data collection of sharks and rays at Indonesia, Malaysia and Thailand were supported. The aim to support series of data collection in Asian countries are as following,</p> <ul style="list-style-type: none"> - Increase Data set of data sharks and rays at species level to be long-term condition which was adequate for fisheries management - Up to date and verification of sharks and rays data in pilot site - Improve quality of local enumerator at landing site - Used data to determine appropriate model to assess stock of sharks and rays in Asian region
Sub-activity 2.2 (if any)	<p>Monitoring activities was conducted through organize two meetings namely mid-term project and end project meeting on sharks and rays data collection in year 2016.</p> <p>In year 2017, monitoring was conducted in Cambodia by visiting landing site at Sihanoukville for three (3) times.</p> <p>In year 2018, monitoring was conducted in Indonesia, Malaysia and Thailand by visiting Cilacap, Tawau and Songkhla fishing port, respectively.</p>

	Develop SEAFDEC regional sharks and rays database in year 2019. SEAFDEC monitored project progress and validate data through monthly data input into database by local enumerators.
Sub-activity 2.3	Two (2) technical consultation meetings on Shark Stock Assessment and Improvement Data Collection in Southeast Asian Region were organized in year 2017. It aims to facilitate resource persons and stock assessment researcher from the Southeast Asian countries in determining appropriated model for shark stock assessment and also develop work plan for stock assessment training workshop in order to promote mentioned model to SEAFDEC Member countries.
Activity 3	
Sub-activity 3.1	Published and disseminated guide book on Standard Operating Procedures Sharks, Rays and Skates Data Collection in Southeast Asia Water. Published Handbook for Yield per Recruit model analysis Published National Report on Shark Data Collection in Southeast Asian Countries including Cambodia, Indonesia, Malaysia and Thailand. Participate in process of develop shark NPOA for in SEAFDEC Member countries, Thailand. Sharing lesson learnt of sharks and rays data collection with EU-CITES through participating in CITES training course as speaker
Sub-activity 3.2 (if any)	

3. Achievements and Outcomes/Outputs of Activities in the Overall Project Duration:

List of Activities	Achievements and Outcomes/Outputs of Activities
Activity 1	
Sub-activity 1.1	Capacity of SEAFDEC Member countries to systematically and correctly collect sharks and rays data at species. Capacity of SEAFDEC MCs to utilize data for sustainable fisheries management by converting landing data to be resource and fisheries status using Yield per Recruit assessment model.
Activity 2	
Sub-activity 2.1	Data set at species level of sharks and rays in Asian region is available. Species diversity, biological and catch information of Sharks and rays in Asian region updated. Sufficient data to develop NPOA and study appropriate model for stock assessment.
Sub-activity 2.2	Local enumerator was trained to identify sharks and rays correctly. Data recording method and system at sampling site correctly conducted. Data set of data Sharks and Rays in Asian region was validated. Developed and Promoted SEAFDEC regional sharks and rays database to SEAFDEC MCs, where have regular shark and rays data collection.

Sub-activity 2.2	Determine YPR model as appropriate model to assess sharks and rays in Southeast Asian region based on existing data (By census of Asian Stock assessment expert)
Activity 3	
Sub-activity 3.1	Published and disseminated guidebook on Standard Operating Procedures Sharks, Rays and Skates Data Collection in Southeast Asia Water.
Sub-activity 3.2 (if any)	<p>Published Handbook for Yield Per Recruit model analysis.</p> <p>Published National Report on sharks and rays data collection in participating countries, which it would support develop of fisheries monument.</p> <p>SEAFDEC researcher transfer sharks and rays information and knowledge to Southeast Asian countries.</p> <p>Shark NOPA was formulated in Thailand.</p>

4. Evaluation and Major Impacts/Issues in the Overall Project Duration:

The Asian region has high diversity and stock of sharks and rays. Even though sharks and rays are non-target catch in the fisheries, they play a significant role for Asian fishers, traders and exporters because of their products' high market value. Over the past several decades, regional shark and ray products have declined. Sharks and rays are caught by various types of fishing gear without any appropriate management of the resources for its sustainability due to insufficient data, e.g. catch, biological, habitat, etc. SEAFDEC has initiated regional activities to improve data collections for sharks and rays in the Southeast Asian region for aiming MCs to have sufficient shark and ray data to develop fisheries management, particularly a Shark NPOA.

The Project provided significant impacts to MCs by improving their capacities to collect shark and ray data at species level correctly and systematically as well as building their capacities to utilize data for fisheries management. Also, SEAFDEC developed a regional shark and ray data management platform, namely "SEAFDEC Regional Sharks and Rays Database", in order to safely store the data recorded and easily utilized.

However, some countries in Southeast Asia still have not developed a Shark NPOA. One of the reasons is a limit number of enumerators who could identify sharks and rays at species level and a limited number of national researchers who could convert the landing data to the stock information for fisheries management. Further, many shark and ray species have been listed in the CITES Appendix over the past decade. Some CITES-listed shark and ray species are considered as common species and caught regularly during fishing activities in the region, which concerns about livelihood of Asian fishers, traders and exporters. For exporting shark and ray products, it has been requested by MCs for Non-detriment Founding (NDF) document. In this regard, capacity building of MCs' researchers for taxonomy identification, data utilization for fishery management and NDF matters is a challenge in the region.

5. Publications and Others (e.g. technical report, VDO, presentation file, etc.):

- Report of the Regional Workshop on Data Collection Methodology for the Assessment of shark stock status
- Report of the Project-End-Meeting on Sharks Data Collection in Southeast Asia
- Report of Technical Meeting on Sharks and Rays Data Collection Planning 2017-2018

- Report of the Technical Meeting to Determination Appropriate Model for Shark Stock Assessment in Southeast Asian Region
 - Report of the Technical Consultation Meeting on Shark Stock Assessment and Improvement Data Collection in Southeast Asian Region
 - Report of the On-site Monitoring and Training on Key-in Data and Usage of SEAFDEC Sharks and Rays Database
 - Report of the Training Workshop on Sharks and Rays Stock Assessment by YPR Model
 - Report of the Training Course on Age Determination Using Vertebra for Sharks and Rays
 - National report sharks and rays data collection in Cambodia, period September 2017-August 2018
 - National report sharks and rays data collection in Thailand, period July 2018- June 201
 - National report sharks and rays data collection in Indonesia, period July 2018- June 201 (Writing)
 - National report sharks and rays data collection in Malaysia, period October 2018- September 2019 (Writing)
 - Standard Operating Procedures of Sharks, Rays and Skates Data Collection I Southeast Asian Water
 - Handbook for Yield Per Recruit model analysis
 - A Technical Manual Sample Preparation for Age Determination of Elasmobranchs (presentation file)
 - Fish for the People, Volume 17 Number 2, 2019, Page 10-15 “Paving the Way for the Development of Non-Detriment Finding: Towards Precise species Identification of Shark and Rays in Southeast Asia”
-