



AGENDA

Agenda 1: Procedural Matters

- 1.1 Opening of the Meeting
- 1.2 Election of Chairperson for the Year 2012-2013
- 1.3 Adoption of the Agenda and Arrangements of the Meeting

Agenda 2: Report of the SEAFDEC Secretary-General

Agenda 3: Note of the Chairperson of the SEAFDEC Program Committee on the Results of the Thirty-fourth Meeting of the SEAFDEC Program Committee

Agenda 4: Note of the Chairperson of the Fisheries Consultative Group (FCG) of the ASEAN-SEAFDEC Strategic Partnership (ASSP) on the Results of the Fourteenth Meeting of the FCG/ASSP

Agenda 5: Policy Consideration on Important Issues

- 5.1 Implementation of the 2011 Resolution and Plan of Action and Way Forward
- 5.2 International/Regional Fisheries-related Issues
 - 5.2.1 Recommendations for Addressing Technical Issues Related to Selected Commercially-exploited Aquatic Species
 - 5.2.2 Combating IUU Fishing
 - 5.2.3 Development of "ASEAN Catch Certification"
- 5.3 Southeast Asian State of Fisheries and Aquaculture (SEASOFIA)
- 5.4 Others

Agenda 6: Cooperation with International/Regional Organizations and Non-member Governments

- 6.1 ASEAN
- 6.2 Food and Agriculture Organization of the United Nations (FAO)
- 6.3 INFOFISH

Agenda 7: Other Matters

- 7.1 Proposed Establishment of a Regional Center for Inland Fisheries Development in Indonesia
- 7.2 Others

Agenda 8: (*Closed Session*) Future Direction of SEAFDEC

Agenda 9: (*Closed Session*) Management of the Center

- 9.1 Adjustment of Minimum Regular Contribution (MRC)
- 9.2 Progress of the Third SEAFDEC Review
- 9.3 Proposed Adjustment of the Modality to Increase the Effectiveness of the FCG/ASSP Mechanism
- 9.4 Operation of SEAFDEC Training and Research Vessels
- 9.5 Collaborative Arrangement between SEAFDEC and Other Organizations



AGENDA AND TIMETABLE

Monday, 2 April 2012

08:30-09:00	Registration
09:00-10:30	Opening Ceremony - o Assembly of Guests - o Arrival of Guest of Honor and SEAFDEC Council Directors - o Welcome Remarks by the Chairperson of the SEAFDEC Council for the Year 2011-2012 - o Other Remarks - o Opening Remarks by the Guest of Honor - o Group Photography
10:30-10:45	Coffee-break
10:45-11:00	Agenda 1: Procedural Matters 1.1 Opening of the Meeting 1.2 Election of Chairperson for the Year 2012-2013 1.3 Adoption of the Agenda and Arrangements of the Meeting
11:00-12:30	Agenda 2: Report of the SEAFDEC Secretary-General
12:30-14:00	Lunch
14:00-14:30	Agenda 3: Note of the Chairperson of the SEAFDEC Program Committee on the Results of the Thirty-fourth Meeting of the Program Committee
14:30-15:00	Agenda 4: Note of the Chairperson of the Fisheries Consultative Group (FCG) of the ASEAN-SEAFDEC Strategic Partnership (ASSP) on the Results of the Fourteenth Meeting of the FCG/ASSP
15:00-15:40	Agenda 5: Policy Consideration on Important Issues 5.1 Implementation of the 2011 Resolution and Plan of Action and Way Forward
15:40-16:10	Coffee-break
16:10-17:30	Agenda 5: Policy Consideration on Important Issues (cont'd) 5.2 International/Regional Fisheries-related Issues 5.2.1 Recommendations for Addressing Technical Issues Related to Selected Commercially-exploited Aquatic Species 5.2.2 Combating IUU Fishing

Tuesday, 3 April 2012

09:00-10:00	Agenda 5: Policy Consideration on Important Issues (cont'd) 5.2 International/Regional Fisheries-related Issues (cont'd) 5.2.3 Development of "ASEAN Catch Certification" 5.3 Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) 5.4 Others
10:00-10:30	Agenda 6: Cooperation with International/Regional Organizations and Non-member Governments 6.1 ASEAN 6.2 Food and Agriculture Organization of the United Nations (FAO) 6.3 INFOFISH
10:30-10:50	Coffee-break
10:50-12:30	Agenda 7: (Closed Session) Other Matters 7.1 Proposed Establishment of a Regional Center for Inland Fisheries Development in Indonesia 7.2 Others

12:30-14:00	Lunch
14:00-15:30	Agenda 8: (Closed Session) Future Direction of SEAFDEC (to be attended by Member Countries' Head Delegates only and the SEAFDEC Secretary-General)
15:30-15:50	Coffee-break
15:50-17:00	Agenda 9: (Closed Session) Management of the Center
	9.1 Adjustment of Minimum Regular Contribution (MRC)
	9.2 Progress of the Third SEAFDEC Review

Wednesday, 4 April 2012

09:00-10:30	Agenda 9: (Closed Session) Management of the Center (cont'd)
	9.3 Proposed Adjustment of the Modality to Increase the Effectiveness of the FCG/ASSP Mechanism
	9.4 Operation of SEAFDEC Training and Research Vessels
	9.5 Collaborative Arrangement between SEAFDEC and Other Organizations
10:30-10:50	Coffee-break
10:50-12:30	Agenda 10: (Closed Session) Financial Matters
	10.1 Adoption of Audited Financial Report for the Year 2010
	10.2 Un-audited Financial Report for the Year 2011, and Status of the Financial Situation in the Year 2012
	10.3 Proposed Budgetary Requirements of the Center for the Year 2013
	10.4 Other Financial Matters
12:30-14:00	Lunch
14:00-17:00	<i>Preparation of Report</i>

Thursday, 5 April 2012

09:00-12:30	Agenda 11: Concluding Matters
	11.1 Adoption of the Report and Press Statement
	11.2 Date and Venue of the Forty-fifth Meeting of the Council
	11.3 Vote of Thanks to the Host Government
	Agenda 12: Closing of the Meeting

Friday, 6 April 2012

Field Trip

Agenda 10: (Closed Session) Financial Matters

- 10.1 Adoption of Audited Financial Report for the year 2010
- 10.2 Un-audited Financial Report for the Year 2011, and Status of the Financial Situation in the Year 2012
- 10.3 Proposed Budgetary Requirements of the Center for the Year 2013
- 10.4 Other Financial Matters

Agenda 11: Concluding Matters

- 11.1 Adoption of the Report and Press Statement
- 11.2 Date and Venue of the Forty-fifth Meeting of the Council
- 11.3 Vote of Thanks to the Host Government

Agenda 12: Closing of the Meeting



ANNOTATED AGENDA

Monday, 2 April 2012

Registration is arranged in front of the Meeting room. Meeting documents are provided upon registration.

Opening Ceremony

Invited guests are requested to be seated while waiting for the arrival of the Guest of Honor and SEAFDEC Council Directors. After their arrival, the Chairperson of the SEAFDEC Council for 2011 delivers his Welcome Remarks. This would be followed by other remarks if any (names and designations of concerned officers will be confirmed by host country), and finally ends with the Opening Remarks by the Guest of Honor (name and position to be confirmed by the Host Country). After the Opening Remarks, the SEAFDEC Council Directors and Guests are invited to a group photography session.

Agenda 1: Procedural Matters

1.1 Opening of the Meeting (*by the Chairperson of the SEAFDEC Council for the Year 2011-2012*)

The Chairperson of SEAFDEC Council for the Year 2011-12, *Dato' Ahamad Sabki bin Mahmood* welcomes the participants and observers, and starts the meeting in the normal SEAFDEC procedure.

1.2 Election of Chairperson for the Year 2012-2013

The Chairperson invites nominations to elect the new Chairperson of SEAFDEC Council for the Year 2012-13. Each nomination should be seconded by at least one Council Director. The Chairperson is elected by a majority vote of the Council Directors present at the Meeting. After the election, the new Chairperson (hereinafter called Chairperson) is invited to take the chair and deliver a short speech.

1.3 Adoption of the Agenda and Arrangements of the Meeting

The Chairperson introduces the Provisional Agenda as proposed by the Secretariat and requests the Council to discuss and comment on the agenda. The Council, after discussion, is requested to adopt the Agenda as is or as amended.

Documents:

INF02	<i>List of Documents</i>
WP01	<i>Agenda</i>
WP01a	<i>Agenda and Timetable</i>
WP01b	<i>Annotated Agenda</i>
REF01	<i>Report of the Forty-third Meeting of the SEAFDEC Council</i>
REF02	<i>Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020</i>

Agenda 2: Report of the SEAFDEC Secretary-General

The SEAFDEC Secretary-General presents to the Council the Draft SEAFDEC Annual Report for 2011, focusing on the highlighted activities and major achievements in 2011, in accordance with the SEAFDEC mandate. After the presentation, the Secretary-General requests the Council to provide comments on the performance and achievements of SEAFDEC as well as policy directives for SEAFDEC to undertake future activities, and to approve the SEAFDEC Annual Report 2011 as is or as amended.

Documents:

- WP02 *Draft SEAFDEC Annual Report 2011*
REF03 *Progress in the Implementation of Information Strategies for Enhancing SEAFDEC Visibility and Communication in the Year 2011*

Agenda 3: Note of the Chairperson of the SEAFDEC Program Committee on the Results of the Thirty-fourth Meeting of the Program Committee

The Secretary-General as Chairperson of SEAFDEC Program Committee reports on the results of the deliberation and the major recommendations made at the Thirty-fourth Meeting of the SEAFDEC Program Committee, particularly on the programs and activities to be implemented by SEAFDEC in 2012 and the issues that require policy directives and consideration by the SEAFDEC Council. The Council is invited to consider and approve the programs implemented in 2011, and to endorse the programs to be implemented in 2012 as recommended by the SEAFDEC Program Committee.

Documents:

- WP03 *Executive Summary of the Thirty-fourth Meeting of the SEAFDEC Program Committee*
REF04 *Report of the Thirty-fourth Meeting of the SEAFDEC Program Committee, 14-16 November 2011, Manila, Philippines*

Agenda 4: Note of the Chairperson of the Fisheries Consultative Group (FCG) of the ASEAN-SEAFDEC Strategic Partnership (ASSP) on the Results of the Fourteenth Meeting of the FCG/ASSP

The ASEAN Co-chair of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) from Cambodia reports to the Council the results of the deliberation and the recommendations made at the Fourteenth Meeting of the FCG/ASSP for endorsement by the Council. In particular, important issues are also presented for consideration and policy guidance by the Council.

Documents:

- WP04 *Executive Summary of the Fourteenth Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP)*
REF05 *Report of the Fourteenth Meeting of the Fisheries Consultative Group (FCG) of the ASEAN-SEAFDEC Strategic Partnership (ASSP), 17-18 November 2011, Manila, Philippines*

Agenda 5: Policy Consideration on Important Issues

5.1 Implementation of the 2011 Resolution and Plan of Action and Way Forward

The SEAFDEC Secretariat reports to the Council on the outputs of the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People 2020: Adaptation to a Changing Environment” organized in June 2011, which include the 2011 Resolution and Plan of Action.

The report emphasized on the priorities identified during the Inception Workshop on Follow-up Activities to the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 which was convened in Bangkok, Thailand from 4 to 5 July 2011 as well as the draft format for the report on the implementation of the 2011 Resolution and Plan of Action. The Council is requested to provide policy recommendations on the future direction and actions towards the implementation of the 2011 Resolution and Plan of Action.

Documents:

WP05	<i>Implementation of the 2011 Resolution and Plan of Action and Way Forward</i>
REF06	<i>Report of the Inception Workshop on Follow-up Activities to the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020, 4-5 July 2011, Bangkok, Thailand</i>

5.2 International/Regional Fisheries-related Issues

5.2.1 Recommendations for Addressing Technical Issues Related to Selected Commercially-exploited Aquatic Species

The Council will be informed on the actions undertaken by the SEAFDEC Secretariat in response to the request made during the 43rd Council Meeting in 2011, especially with regards to the identification of technical problems faced by the Member Countries on CITES related issues. The results of the deliberation and the recommendations made at the Regional Technical Consultation on Addressing Technical Issues on Commercially-exploited Aquatic Species (18-20 October 2011, Bangkok) will then be presented to the Meeting. The Council is requested to consider the report and provide policy considerations, and recommend further actions to be undertaken by SEAFDEC and Member Countries that could contribute to the development of common approaches to address the issues.

The Council Meeting is also requested to discuss the relevant information that the Member Countries would like to provide to the CITES Secretariat for them to be aware of the situation and concerns of the Member Countries, before the next CoP16-CITES in 2013.

Documents:

WP06	<i>Executive Summary Report of the Regional Technical Consultation on Addressing Technical Issues on Commercially-exploited Aquatic Species</i>
REF07	<i>Report of the Regional Technical Consultation on Addressing Technical Issues on Commercially-exploited Aquatic Species, 18-20 October 2011, Bangkok, Thailand</i>
REF07a	<i>Overview of Elasmobranchs Fisheries in the Southeast Asian Region</i>
REF07b	<i>Summary on the Status of Tuna Fisheries in the Western Central Pacific Ocean</i>
REF07c	<i>Status and Issues Relevant to Sea Cucumber Fisheries in Southeast Asia</i>

5.2.2 Combating IUU Fishing

The SEAFDEC Secretariat reports to the Council, the updated status of the activities of SEAFDEC aimed towards combating IUU fishing in the region, including the results of several projects under the “Promotion of Sustainable Fisheries and IUU Fishing Related Countermeasures in Southeast Asia” supported by the Japanese Trust Fund as well as the efforts undertaken by the SEAFDEC-Sida project to address such issues at sub-regional levels. The Council is requested to consider the reports and provide policy directives for SEAFDEC to undertake future activities on the issues.

Document:

WP07	<i>SEAFDEC Efforts Aimed to Combat IUU Fishing</i>

5.2.3 Development of “ASEAN Catch Certification”

The SEAFDEC Secretariat informs the Council on the request made at the Fourteenth Meeting of the FCG/ASSP (17-18 November 2011, Manila, Philippines) for SEAFDEC to assist in the development of the ASEAN Catch Certification. As a first step, SEAFDEC would organize a workshop to share information and experiences among the countries on their efforts to implement EC Regulation 1005/2008. In implementing the said regulation and to some extent catch certification, the Member Countries have experienced both positive and negative impacts. Therefore, an evaluation and assessment of the impacts of EC Regulation 1005/2008 to the small-scale fisheries in the Member Countries would be undertaken during the planned workshop. The information obtained from and compiled during the workshop would serve as inputs for the development of a common stand of the region to be conveyed to the EU, indicating the specificities of fisheries in the region, and would also be used for the development of the ASEAN Catch Certification. The Council is requested to provide policy direction on this matter, and the future direction and actions towards addressing the issue.

Document:

WP08 *Development of the ASEAN Catch Certification Scheme*

5.3 Southeast Asian State of Fisheries and Aquaculture (SEASOFIA)

The SEAFDEC Secretariat presents the Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) which was prepared and published by SEAFDEC based on the fishery statistics at national and regional levels, and other data and information collated from various programs/projects/activities implemented by SEAFDEC. The publication is envisaged to improve the understanding and knowledge of the Member Countries and other concerned stakeholders on the status and trend of fisheries and aquaculture in the Southeast Asian region. The Meeting is requested to take note of the publication and to consider the possible development of the publication periodically and on a regular basis, including funding support for the publication in the future.

Document:

WP09 *Policy Consideration on the Production of the Southeast Asian State of Fisheries and Aquaculture (SEASOFIA)*

5.4 Others

Other issues, which require the attention and consideration by the Council Meeting, may be brought up for discussion.

Agenda 6: Cooperation with International/Regional Organizations and Non-member Governments

- 6.1 ASEAN
- 6.2 Food and Agriculture Organization of the United Nations (FAO)
- 6.3 INFOFISH

The SEAFDEC Secretariat presents the collaborative activities between SEAFDEC and other organizations in 2011. Representatives from non-member governments and international/regional organizations attending the Meeting are then invited to make their respective statements particularly on the areas of mutual interest and possible cooperation with SEAFDEC in the future.

Agenda 7: *(Closed Session)* Other Matters

7.1 Proposed Establishment of a Regional Center for Inland Fisheries Development in Indonesia

It should be recalled that during the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 in June 2011, the importance of inland fisheries was emphasized, and thus has been reflected in the “Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020”. During the Ministerial Session of the Conference, the Minister of Marine Affairs and Fisheries (MMAF) of Indonesia proposed to establish a Regional Center for Inland Fisheries Development as part of the SEAFDEC organization. The proposed establishment has been supported in principle, by the ASEAN-SEAFDEC countries during the Conference. However, further steps need to be undertaken to proceed with the aspects spelled out in the detailed proposal in accordance with the “SEAFDEC Procedures for the Establishment of New Department”, especially the need to seek policy consideration of the SEAFDEC Council. The Council Director for Indonesia therefore, presents the detailed proposal for the establishment of a Regional Center for Inland Fisheries Development in Indonesia for endorsement by the Council. The Meeting is requested to provide recommendations on the future actions to be carried out with regards to this issue.

Documents:

WP10	<i>A Proposed Establishment of the Inland Fishery Resources Development and Management Department (IFRDMD) in Indonesia</i>
REF08	<i>Procedures for the Establishment of New SEAFDEC Department</i>
REF09	<i>SEAFDEC Mission to Relevant Agencies in Cambodia Dealing with Inland Fisheries</i>

7.2 Others

This session allows Member Countries to discuss important issues upon request.

Agenda 8: *(Closed Session)* Future Direction of SEAFDEC ***(to be attended by respective Member Countries’ Head Delegates only and the SEAFDEC Secretary-General)***

The SEAFDEC Secretariat reports to the Council on the results of its efforts to respond to the special request made by the Member Countries during the 43rd Council Meeting in 2011. This agenda would provide opportunity for the Member Countries to discuss the priority issues and activities required by the countries and provide directives for necessary actions that would be undertaken by SEAFDEC in 2012.

Document:

WP11	<i>Report on Member Countries’ Views on the Expected Roles, Functions and Activities of SEAFDEC</i>

Agenda 9: *(Closed Session)* Management of the Center

9.1 Adjustment of Minimum Regular Contribution (MRC)

The SEAFDEC Secretariat reports to the Council on the issues pertaining to Minimum Regular Contribution (MRC) to SEAFDEC, including the status and the proposed adjustment of the MRC for consideration by the Council.

Document:

WP12	<i>Progress and Considerations for the Adjustment of the Minimum Regular Contribution (MRC)</i>

9.2 Progress of the Third SEAFDEC Review

The SEAFDEC Secretariat presents the Preliminary Report on the Roles, Function and Activities of SEAFDEC which had been submitted to the SEAFDEC Council by *ad referendum* before this 44th Meeting of the SEAFDEC Council, anticipating that information obtained from the report would be used as basis for discussion during this Meeting. The Council is requested to provide policy directives and suggestions for improving the roles, function and activities of SEAFDEC in the future.

Document:

WP11 *Report on Member Countries' Views on the Expected Roles, Functions and Activities of SEAFDEC*

Wednesday, 4 April 2012

9.3 Proposed Adjustment of the Modality to Increase the Effectiveness of the FCG/ASSP Mechanism

The SEAFDEC Secretariat presents the proposed adjustment on the modality to increase the effectiveness of the FCG/ASSP Mechanism. In principle, under the FCG mechanism only the summary report of the FCG/ASSP collaborative programs are endorsed during the FCG/ASSP meetings, although proposals under the ASSP require the collaborative efforts and involvement of SEAFDEC and the ASEAN. Noting thus far that only SEAFDEC proposals under the ASSP are actively implemented by SEAFDEC while for others proposed by the ASEAN countries or ASEAN Secretariat are discussed and considered at other fora such as AFCF and ASWGF, SEAFDEC therefore proposes some options to increase the effectiveness of the FCG/ASSP mechanism, by reducing any duplication of efforts as well as reducing the periods of the two meetings (PCM and FCG/ASSP). The Meeting is requested to consider the proposal on possible options to enhance the modality and increase the effectiveness of the FCG/ASSP mechanism, and provide guidance on the future direction and actions to be undertaken to address the issue.

Document:

WP13 *Proposal on Possible Options to Enhance the Modality and Increase the Effectiveness of the FCG/ASSP Mechanism*

9.4 Operation of SEAFDEC Training and Research Vessels

The SEAFDEC Training Department reports to the Council on the progress of the activities undertaken by the SEAFDEC Training and Research Vessels in 2011, and the proposed plan for the year 2012 and onwards, for consideration and approval.

Document:

WP14 *Operation of SEAFDEC Training and Research Vessels*

9.5 Collaborative Arrangement between SEAFDEC and Other Organizations

The SEAFDEC Secretariat presents to the Council the collaborative arrangements between SEAFDEC and other organizations during the year 2011.

Document:

WP15 *Collaborative Arrangement between SEAFDEC and Other Organizations in 2011*

Agenda 10: (Closed Session) Financial Matters

10.1 Adoption of Audited Financial Report for the Year 2010

The External Auditor of SEAFDEC presents the Audited Financial Report for the Year 2010, for the consideration and approval of the Council.

Documents:

WP16a	<i>Consolidated Financial Statement for the Year 2010</i>
WP16b	<i>The Secretariat Financial Statement for the Year 2010</i>
WP16c	<i>Training Department Financial Statement for the Year 2010</i>
WP16d	<i>Aquaculture Department Financial Statement for the Year 2010</i>
WP16e	<i>Marine Fishery Resource Development and Management Department Financial Statement for the Year 2010</i>
WP16f	<i>Abridged Financial Statement for the Year 2010</i>

10.2 Un-audited Financial Report for the Year 2011, and Status of the Financial Situation in the Year 2012

The SEAFDEC Finance Officer presents the Un-audited Financial Report for the Year 2011 and Status of the Financial Situation for the Year 2012, for consideration by the Council.

Document:

WP17	<i>Un-audited Financial Report for the Year 2011, and Status of the Financial Situation for the Year 2012</i>

10.3 Proposed Budgetary Requirements of the Center for the Year 2013

The SEAFDEC Finance Officer presents the Proposed Budgetary Requirements of the Center for the Year 2013, for consideration and approval by the Council.

Document:

WP18	<i>Proposed Budgetary Requirements of the Center for the Year 2013</i>

10.4 Other Financial Matters

The Council may wish to propose other financial issues to be discussed under the Sub-agenda.

Thursday, 5 April 2012

Agenda 11: Concluding Matters

11.1 Adoption of the Report and Press Statement

The Chairperson requests for comments and advice from the Council Directors about the draft report of the Meeting and the draft press statement. After thorough scrutiny and deliberation, the Council is requested to adopt the report and the press statement as are or as amended.

11.2 Date and Venue of the Forty-fifth Meeting of the Council

Any Council Director wishing to propose hosting the next annual meeting of the Council could inform the Meeting on the plans for the next annual meeting.

11.3 Vote of Thanks to the Host Government

The Council Directors offer votes of thanks to the Government hosting this annual meeting, particularly on the organization and arrangements of the meeting.

Agenda 12: Closing of the Meeting

The Chairperson of the Council expresses his gratitude to all Council Members and SEAFDEC officials for their contribution to the Meeting, and declares the Meeting closed.

Friday, 6 April 2011

Field trip for Meeting participants and observers is arranged, the details of which will be confirmed by the Host Government.



PROVISIONAL LIST OF DOCUMENTS

INFORMATION	
INF01	Information Notes for Participants
INF02	List of Documents
INF03	List of Participants (will be distributed after registration)
WORKING PAPERS	
WP01	Agenda
WP01a	Agenda and Timetable
WP01b	Annotated Agenda
WP02	Draft SEAFDEC Annual Report 2011
WP03	Executive Summary of the Thirty-fourth Meeting of SEAFDEC Program Committee
WP04	Executive Summary of the Fourteenth Meeting of Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP)
WP05	Implementation of the 2011 Resolution and Plan of Action and Way Forward
WP06	Executive Summary Report of the Regional Technical Consultation on Addressing Technical Issues on Commercially-exploited Aquatic Species
WP07	SEAFDEC Efforts Aimed to Combat IUU Fishing
WP08	Development of the ASEAN Catch Certification Scheme
WP09	Policy Consideration on the Production of the Southeast Asian State of Fisheries and Aquaculture (SEASOFIA)
WP10	A Proposed Establishment of the Inland Fishery Resources Development and Management Department (IFRDMD) in Indonesia
WP11	Report on Member Countries' Views on the Expected Roles, Functions and Activities of SEAFDEC
WP12	Progress and Considerations for the Adjustment of the Minimum Regular Contribution (MRC)
WP13	Proposal on Possible Options to Enhance the Modality and Increase the Effectiveness of the FCG/ASSP Mechanism
WP14	Operation of SEAFDEC Training and Research Vessels
WP15	Collaborative Arrangement between SEAFDEC and Other Organizations in 2011
WP16a	Consolidated Financial Statement for the Year 2010
WP16b	The Secretariat Financial Statement for the Year 2010
WP16c	Training Department Financial Statement for the Year 2010
WP16d	Aquaculture Department Financial Statement for the Year 2010
WP16e	Marine Fishery Resource Development and Management Department Financial Statement for the Year 2010

WP16f	Abridged Financial Statement for the Year 2010
WP17	Un-audited Financial Report for the Year 2011, and Status of the Financial Situation for the Year 2012
WP18	Proposed Budgetary Requirements of the Center for the Year 2013
REFERENCE PAPERS	
REF01	Report of the Forty-third Meeting of the SEAFDEC Council, Malacca, Malaysia, 4-8 April 2011
REF02	Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020
REF03	Progress in the Implementation of Information Strategies for Enhancing SEAFDEC Visibility and Communication in the Year 2011
REF04	Report of the Thirty-fourth Meeting of the SEAFDEC Program Committee, 14-16 November 2011, Manila, Philippines
REF05	Report of the Fourteenth Meeting of the Fisheries Consultative Group (FCG) of the ASEAN-SEAFDEC Strategic Partnership (ASSP), 17-18 November 2011, Manila, Philippines
REF06	Report of the Inception Workshop on Follow-up Activities to the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020, 4-5 July 2011, Bangkok, Thailand
REF07	Report of the Regional Technical Consultation on Addressing Technical Issues on Commercially-exploited Aquatic Species, 18-20 October 2011, Bangkok, Thailand
REF07a	Overview of Elasmobranchs Fisheries in the Southeast Asian Region
REF07b	Summary on the Status of Tuna Fisheries in the Western Central Pacific Ocean
REF07c	Status and Issues Relevant to Sea Cucumber Fisheries in Southeast Asia
REF08	Procedures for the Establishment of New SEAFDEC Department
REF09	SEAFDEC Mission to Relevant Agencies in Cambodia Dealing with Inland Fisheries



REPORT OF THE FORTY-THIRD MEETING OF THE COUNCIL OF THE SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER

**Malacca, Malaysia
4-8 April 2011**

INTRODUCTION

1. The Forty-third Meeting of the Council of the Southeast Asian Fisheries Development Center (SEAFDEC) was convened in Malacca, Malaysia from 4 to 8 April 2011, at the invitation of the Department of Fisheries Malaysia of the Ministry of Agriculture and Agro-based Industry (MOA) Malaysia.

2. The Meeting was attended by the Council Directors for Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam together with their respective delegations, as well as the Secretary-General, Deputy Secretary-General and the senior officials of SEAFDEC. The Meeting was also attended by representatives from the Association of Southeast Asian Nations (ASEAN) Secretariat, Bay of Bengal Large Marine Ecosystem (BOBLME) Project, Colombo Plan Secretariat, and Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific (FAO/RAP). The list of participants appears as **Annex 1**.

INAUGURAL CEREMONY

3. The Inaugural Ceremony of the Forty-third Meeting of the SEAFDEC Council was held on 4 April 2011, and was officiated by the Secretary-General of the Ministry of Agriculture and Agro-based Industry Malaysia, *Dató Mohd Hashim bin Abdullah*.

4. The Director-General of the Department of Livestock and Fisheries and Council Director for Lao PDR, *Dr. Bounkhouang Khambounheuang* in his capacity as the Chairperson of the SEAFDEC Council for 2010-2011, welcomed the participants to the Meeting and expressed the gratitude of the SEAFDEC Council to the Government of Malaysia for hosting the Forty-third Meeting of the SEAFDEC Council and to the Ministry of Agriculture and Agro-based Industry Malaysia and Department of Fisheries Malaysia for the arrangements of the Meeting.

5. While noting that in the case of the new Member Countries of SEAFDEC, the development of their fisheries sector still lags behind those of the original Member Countries, he encouraged SEAFDEC to intensify its efforts in transferring the new technologies and conducting of human resources development to the Member Countries as these are highly needed to enhance the development of fisheries in these countries especially for Lao PDR. He promoted that it should be the ultimate colossal goal of SEAFDEC to reduce the development gaps among the countries in the Southeast Asian region. His Statement appears as **Annex 2**.

6. The Deputy Director-General of the Department of Fisheries Malaysia and SEAFDEC Alternate Council Director for Malaysia *Mr. Ismail bin Abu Hassan*, on behalf of the Director-General of Fisheries and SEAFDEC Council Director for Malaysia *Datú Ahmad Sabki bin Mahmood*, welcomed the participants to the historic City of Malacca considered as the cradle of Malaysian history. He expressed the apology of the Council Director for Malaysia for not being able to attend the Forty-third Meeting of the SEAFDEC Council due to unforeseen circumstances beyond his control.

7. He assured the Meeting that Malaysia will give its utmost support to the activities of SEAFDEC, and expressed his appreciation to SEAFDEC for the assistance extended to Malaysia for the development of the country's fisheries industry and especially in addressing the emerging international fisheries related issues. He also encouraged the participants to visit the historical sites of Malacca and expressed the hope for the successful Meeting of the Council Directors of SEAFDEC. His Welcome Address appears as **Annex 3**.

8. The Secretary-General of the Ministry of Agriculture and Agro-based Industry Malaysia, *Dató Mohd Hashim bin Abdullah* welcomed the participants to the historic city of Malacca and commended SEAFDEC for making significant strides in ensuring food security for the present and future generations of the Southeast Asian region. He emphasized that fisheries is an important sector in the development of Malaysia as well as in other countries in the region considering that fish is the main source of protein of the peoples in the region. Specifically for Malaysia, the fisheries sector provides employment to more than 100,000 people who are directly involved in fisheries and aquaculture activities, and that fish is a major commodity considered under the country's Economic Transformation Program since the fishing industry is perceived to have potentials for development into a high income generating industry.

9. He added that the trade of fish and fishery products is very vital for the improvement of the economies in the region. With the importing countries imposing more requirements especially on food safety and traceability, it is necessary that the countries in the region comply with such requirements in order to gain access to the international markets. Although such requirements could be seen as obstacles in developing the fisheries industry, he encouraged the countries in the region to take serious look at such requirements as means of improving the respective country's production systems.

10. Finally, he expressed his appreciation to SEAFDEC for its assistance to the Member Countries especially in addressing the emerging international fisheries-related issues especially on fish safety and quality, measures to combat Illegal, Unreported and Unregulated (IUU) fishing, the regulations of trading of live fish in accordance with the Convention on International Trade in Endangered Species (CITES), and the promotion of sustainable fisheries management. He also acknowledged the efforts of SEAFDEC in developing the human resource capability of the countries in the region especially in Malaysia where the officers trained by SEAFDEC have shown high standard of competence. He then declared the Meeting open. His Opening Speech appears as **Annex 4**.

I. PROCEDURAL MATTERS

1.1 Opening of the Meeting

11. The Chairperson of the SEAFDEC Council for the year 2010-2011, *Dr. Bounkhouang Khambounheuang* welcomed the participants to the Meeting. Before proceeding with other procedural matters, he expressed the sympathy on behalf of the SEAFDEC Council of Directors to the victims of the earthquake and subsequent Tsunami that struck the northeastern coast of Japan on 11 March 2011, and also to the people of Myanmar who had been affected by a destructive earthquake on 24 March 2011. He then invited the participants to observe a Moment of Silence for the victims of the devastating calamities in Japan and in Myanmar.

1.2 Election of the Chairperson for 2011-2012

12. The Council Director for Malaysia, *Dató Ahamad Sabki bin Mahmood* was unanimously elected Chairperson of the SEAFDEC Council for 2011-2012, in accordance with Article 5, paragraph 4 of the Agreement Establishing SEAFDEC.

13. On behalf of *Dató Ahamad Sabki bin Mahmood*, the Alternate Council Director for Malaysia *Mr. Ismail bin Abu Hassan*, thanked the Council Directors for the opportunity given to the Council Director for Malaysia to serve as the Chairperson of the SEAFDEC Council. He commended *Dr. Bounkhouang Khambounheuang*, the Council Director for Lao PDR for his excellent chairmanship of the SEAFDEC Council from 2010 to 2011, which has enabled SEAFDEC to steer towards its goal in promoting sustainable fisheries development in the region, and paved the way for strengthening its activities that aim to enhance the contribution of fisheries to food security and alleviation of poverty in the region. He added that 2011 would be a significant year for SEAFDEC considering that the ASEAN-SEAFDEC Conference in June 2011 is expected to adopt the new decade Resolution and Plan of Action that would serve as policy framework for the sustainable development of SEAFDEC during the next decade. He added that there are several issues that should be addressed which could have great impact to the fisheries sector of the region especially those that impede the sustainable development of fisheries, and which would need the guidance of the Council at this Meeting. His Opening Remarks appear as **Annex 5**.

1.3 Adoption of the Agenda

14. The Council adopted the Agenda of the Meeting, which appears as **Annex 6**.

II. REPORT OF THE SECRETARY-GENERAL

15. The Secretary-General of SEAFDEC congratulated the Council Director for Malaysia *Dató Ahamad Sabki bin Mahmood* for having been elected as the Chairperson of the SEAFDEC Council for 2011-2012, and expressed his appreciation to the Council Director for Lao PDR *Dr. Bounkhouang Khambounheuang*, for his chairmanship of the Council for 2010-2011 and for leading the Council Directors towards providing SEAFDEC with the directives and guidance during the past year. As requested by the Secretary-General, the Council also approved the appointment of *Dr. Endhay Kusnendar Kontara* of the Agency of Marine and Fisheries Research and Development as the new Council Director for Indonesia.

16. The Council commended the SEAFDEC Secretariat and Departments for the continued efforts in promoting sustainable fisheries development in the Southeast Asian region, as indicated in the report presented by the SEAFDEC Secretary-General *Dr. Chumnarn Pongsri*, and approved the SEAFDEC Annual Report 2010 for publication and dissemination.

17. The Council Director for Indonesia, while congratulating SEAFDEC for the activities undertaken in 2010, also reiterated the areas of importance in the region, which should be given more focus by SEAFDEC. These include: 1) sustainable management measures for highly migratory stocks; 2) conservation of endangered species and enhancement of stocks in the region; 3) strengthening collaboration among Member Countries in the implementation of Regional Plan of Action (RPOA) to Promote Responsible Fishing Practices (Including Combating IUU Fishing) in the Region; 4) reduction of the use of illegal fishing practices; 5) strengthening regional collaboration on fish disease in the region; and 6) enhancing the utilization of freshwater fishery resources in the region.

18. The Council Director for Japan commented that SEAFDEC has made progress in the implementation of activities during the past decade, of which the activities were well recognized through the SEAFDEC Newsletter and the Special Publication "Fish for the People". He then suggested that SEAFDEC should continue the implementation of its activities along this line for the benefit of the countries in the region.

19. The Council Director for Lao PDR, while expressing the appreciation to SEAFDEC for undertaking more activities focusing on inland fisheries during the past year, requested that activities along this line should be continued. He also requested the Chairperson of the

SEAFDEC Council for the year 2011-2012 to further guide SEAFDEC to continue implementing activities that would also focus on inland fisheries in the future.

20. The Council Director for Myanmar expressed his appreciation for the assistance extended by SEAFDEC to Myanmar, particularly on human resources development in aquaculture and fish disease surveillance system, and would look forward to closer cooperation with SEAFDEC in the future.

21. The Council Director for the Philippines while congratulating SEAFDEC for the activities undertaken during the past year expressed the concern that the results from some of the projects implemented by SEAFDEC Departments were not fully extended to the Member Countries. Although the Philippines and its local government units have established mechanism to closely collaborate with AQD, there are still some constraints in working with the other SEAFDEC Departments, particularly in the aspect of marine fisheries. He added that despite the Philippines' membership in several regional fisheries management organizations (RFMOs), the country still lacks technical expertise and information. In this regard, he requested SEAFDEC to consider conducting additional regional research in marine fisheries. He also recommended that since SEAFDEC has undertaken a number of research projects on marine fisheries in the past, a mechanism should be established by SEAFDEC in close coordination with Member Countries to transfer the technologies and information in order that these could be fully utilized by the Member Countries. In this regard, he also suggested that the Member Countries could help in sharing the costs for transferring such technologies to the end users.

22. The Alternate Council Director for Singapore on behalf of the Council Director for Singapore congratulated SEAFDEC for the activities it had undertaken, particularly those that addressed the priority issues confronting the fishery sector, *e.g.* trade requirements for exporting fish and fishery products to the European Union (EU) and other countries such as trade certification and traceability schemes to ensure that fisheries activities are undertaken in responsible manner and complying with IUU and Port State Measures. She recommended that information on technologies and other outputs from SEAFDEC activities should be packaged and disseminated to maximize the benefits gained and utilization by the Member Countries. In addition, taking into consideration the limited budget, the conduct of activities should be prioritized based on the needs and requirements of the countries in the region. In particular, she commended SEAFDEC for undertaking activities that respond to the proposed listing of several shark species in the CITES Appendices and requested SEAFDEC to continue its effort along this area especially in providing fora for the formulation of common/coordinated positions by the countries in the region to address the issues.

23. The Council Director for Thailand requested SEAFDEC to continue its research and development activities on fishing gears in the high sea areas; study on climate change and its impacts of which geographic information system and satellite data could be integrated; and developing standards for the hygiene of vessels and fishing ports to comply with requirements of importing countries, among others. In addition, she also supported the activities of SEAFDEC that address the importance of freshwater fisheries in the region.

24. After reviewing the progress made by SEAFDEC in 2010 as reflected in the SEAFDEC Annual Report 2010, the other Council Directors took the opportunity of expressing the deepest sympathy of their respective governments to the Government of Japan on the earthquake and tsunami that struck the country on 11 March 2011 and to the Government of Myanmar on the earthquake that struck part of the country on 24 March 2011 that resulted in loss of lives, properties and livelihoods, and expressed the hope that Japan and Myanmar would be able to rehabilitate soon from the destructions brought about by such calamities.

III. NOTE OF THE CHAIRPERSON OF THE SEAFDEC PROGRAM COMMITTEE ON THE RESULT OF THE THIRTY-THIRD MEETING

25. The Council took note of the outcome of the Thirty-third Meeting of the Program Committee of SEAFDEC (**Annex 7**) held from 30 November to 2 December 2010 in Bangkok, Thailand, as presented by the Secretary-General in his capacity as Chairperson of the Program Committee. While noting the programs implemented by SEAFDEC in 2010, the Council also approved the proposed programs for 2011 as well as the recommendations made at the Program Committee Meeting for future implementation.

26. In the conduct of research and training activities, the Council Director for Brunei Darussalam recommended that the SEAFDEC Departments should avail of the information and experiences gained by other countries in the region. Specifically for the conduct of research on disease control and hatchery management of catfish (*Clarias batrachus*), AQD could learn from the experience of Vietnam to avoid duplication of efforts. In response to this, the Council Director for Vietnam expressed willingness of the country to share its experience in catfish breeding and hatchery management with AQD and to the other countries in the region.

27. While supporting the programs implemented by SEAFDEC, the Council Director for Japan reiterated that in 2011 a new project that covers a wide range of activities including those of combating IUU fishing would be implemented by SEAFDEC with funding support from the Japanese Trust Fund. In this regard, he encouraged the Member Countries to provide support and collaborate with SEAFDEC Secretariat and Departments in the implementation of the project.

28. The Council Director for Lao PDR while also supporting the activities implemented by SEAFDEC reiterated that more focus should be given on capacity building in freshwater fisheries and aquaculture in cooperation with the Mekong River Commission (MRC).

29. The Council Director for Malaysia suggested that the new programs under the FCG/ASSP addressing IUU fishing should be considered from the regional point of view and that sharing of information on the countermeasures on IUU fishing should be promoted. In addition, he suggested that SEAFDEC should seek funding support for the implementation of the project on safety at sea for small fishing boats which should focus on the development of the guidelines for the safety of small fishing boats.

30. The Council Director for Myanmar supported the project on mud crab resource enhancement in the coastal areas, and acknowledged the assistance of AQD on the seed production of mud crab although the country is still not successful in producing quality seeds. He also suggested that AQD should intensify its efforts in transferring mud crab seed production technology considering that mud crab is an economically-important commodity in the region. In connection with the need for human resource development (HRD) focusing on food safety standards for fish and fishery products exported to EU and other countries, he suggested that information on the fishery resources should be assessed and compiled by SEAFDEC for dissemination to the Member Countries for better management of their resources.

31. The Council Director for Philippines reiterated that for transparency of the implementation of the programs and activities, SEAFDEC should conduct an evaluation of its programs and activities, the results of which should be disseminated to the Member Countries.

32. On the program of AQD on Food Safety of Aquaculture Products in Southeast Asia, the Council Director for Singapore commented that the activities should complement with the ASEAN program specifically on the development of the Guidelines for the Use of Chemicals in Aquaculture. In response, AQD clarified that through the said program scientific inputs had been provided by AQD to Malaysia as Lead Country in the implementation of activity on the

Harmonization of Guidelines for the Use of Chemicals in Aquaculture and Measures to Eliminate the Use of Harmful Chemicals under the ASWGFi framework.

33. The Council Director for Thailand requested MFRD to give more emphasis on food safety, laboratory and hygiene in its programs. In addition, she encouraged AQD to implement regional human resources activities, *e.g.* training, study visit, and joint research among Member Countries in aquaculture and related activities. While reiterating the importance of the adaptation and mitigation measures of climate change and its effect on fisheries and aquaculture, the Council Director for Thailand suggested that this issue should be considered high priority by SEAFDEC and requested SEAFDEC to focus its activities on the adaptation measures that could mitigate the impact of climate change on small-scale fisheries. She also encouraged SEAFDEC to conduct joint research on climate change adaptation and mitigation in the region incorporating geographical information system technology, and come up with surveillance and monitoring measures in mitigating the impacts of climate change in the region.

34. With regards to the project on Traceability Systems for Aquaculture Products in the ASEAN Region conducted by MFRD, the Council Director for Vietnam recommended that the project should put more emphasis on the certification scheme in aquaculture. In addition, she also requested SEAFDEC to consider providing assistance in the development of a national statistical system for Vietnam.

35. As for the status of the proposal on Climate Change and Adaptation which was jointly prepared by AQD and the Bureau of Fisheries and Aquatic Resources (BFAR), the Council was informed that the proposal was presented by AQD for the information of the participants during the Regional Technical Consultation on International Fisheries-related Issues in January 2011. Moreover, the Council was also informed that the proposal would be submitted by the Philippines as Lead Country for Climate Change under the ASEAN Fisheries Consultative Forum (AFCF) to the 19th Meeting of ASWGFi on 27-29 April 2011.

IV. NOTE OF THE CHAIRPERSON OF THE FISHERIES CONSULTATIVE GROUP (FCG) OF THE ASEAN-SEAFDEC STRATEGIC PARTNERSHIP (ASSP) ON THE RESULT OF THE THIRTEENTH MEETING

36. The Council took note of the results and endorsed the recommendations of the Thirteenth Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP), which was held from 3-4 December 2010 in Bangkok, Thailand (**Annex 8**), as presented by Ms. *Hajah Hasnah Ibrahim*, the Council Director for Brunei Darussalam in her capacity as the ASEAN Co-Chair of the FCG/ASSP.

37. The Council noted the request made by Thailand as the interim Secretariat of AFCF with regards to the preparations for the forthcoming meeting of the AFCF scheduled on 26 April 2011. Specifically, information on the progress in the implementation of activities under the key clusters of the AFCF should be submitted by the respective cluster's lead country as well as by SEAFDEC to Thailand by 15 April 2011. The Council also noted that the outcomes of the ASEAN Shrimp Alliance Annual Meeting which was organized on 9 March 2011 would also be reported to the 19th Meeting of the ASWGFi scheduled on 27-29 April 2011.

V. POLICY CONSIDERATION ON IMPORTANT ISSUES

5.1 International Fisheries-related Issues and Emerging Issues in Response to the Requests of the Council.

38. The Council was informed on the updated information and regional positions on the important international fisheries-related issues which have been identified during the 13th Meeting of the FCG/ASSP (3-4 December 2010, Bangkok, Thailand) and subsequently discussed

at the Regional Technical Consultation on the International Fisheries-related Issues (18-20 January 2011) as summarized in the Executive Report on International Fisheries-related Issues (2010-2011) which appears as **Annex 9**. The Council took note of the priority issues which included: 1) the Technical Guidelines on Aquaculture Certification; 2) Measures Against Illegal, Unreported and Unregulated Fishing (IUU Fishing); 3) Quality and Safety Issues in International Trade; 4) Small-scale Fisheries; 5) Fisheries Subsidies; 6) CITES Issues; 7) Climate Change Adaptation and Mitigation; and 8) Ecosystem Approach to Fisheries and Aquaculture.

39. Regarding the FAO Technical Guidelines on Aquaculture Certification which was adopted at the 29th Session of COFI in January 2011, the Council Director for Vietnam suggested that SEAFDEC should support the Member Countries in the implementation of the Guidelines by developing the Regional Guidelines on Aquaculture Certification. In this connection, the Council Director for Thailand informed the Council that along the line with the development of the FAO Guidelines on Aquaculture Certification, the ASEAN Shrimp GAP has been developed taking into consideration the provisions in the Guidelines.

40. With regards to measures against IUU fishing, the Council Director for Indonesia encouraged all Member Countries to enhance their capacity on the implementation of the Port State Measures to eliminate IUU fishing as well as to develop measures to mitigate the impacts of climate change to the livelihoods of people in the region relying on the fisheries resources for their socio-economic well-being.

41. In response to the request of the Member Countries, the Council Director for Malaysia informed the Council that Malaysia is willing to share the information and its experience on the implementation of the EC Regulation 1005/2008 following the recent evaluation mission by EU to Malaysia.

42. On Global Record for Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels, the Council Director for Vietnam suggested that the scope of application of the Global Record should cover vessels in international waters, and sought for the common position of the Member Countries in this regard. In addition, the Council Director for Thailand informed the Council that during the 29th Session of COFI, Thailand raised the issue on the Unique Vessel Identification (UVI) which should cover only vessels in high sea areas considering that the registration of vessels operating in the EEZs should be the responsibility of the flag states.

43. The Representative from the FAO/RAP clarified that the Global Record would not replace but only try to complement the existing national or regional vessel registration systems. However, the national and regional records would be essential in maintaining the integrity of the new Global Record and to its international focus. He also informed the Council that the Global Record includes all fishing vessels greater than or equal to 10 GT (gross tonnage), 10 GRT (gross register tonnage) or 12 meters length overall (LOA), regardless of where such vessels operate, *i.e.* waters under national jurisdictions or the high seas. In this regard, he provided the comprehensive information on the Global Record to the countries in the region as shown in **Annex 10**, and requested SEAFDEC to share the information to the Member Countries.

44. With regards to quality and safety issues in international trade, the Council Director for Malaysia suggested that all ASEAN countries should consider establishing a strong collaborative mechanism through SEAFDEC such as upgrading the instruments used for testing the parameters that are required by importing countries in order to ensure the quality and safety of fish and fisheries products.

45. The Council Director for Thailand added that although several trade-related requirements by importing countries could be considered as technical barriers to trade, the Member Countries should actively participate in the relevant WTO fora to safeguard the countries' benefit. In

addition, the Member Countries should also enhance the establishment of the Mutual Recognition Agreement (MRA) in order to facilitate trade between and among the countries.

46. With regards to fisheries subsidies that had been discussed during the World Trade Organization (WTO) round of negotiations, the Council Director for Vietnam requested SEAFDEC to establish a mechanism of compiling information on activities related to fisheries subsidies in the region to enable the countries to immediately respond to and address the requirements of the new Chairperson of the Negotiation Group on Rules (NGRs).

47. The Council Director of Malaysia informed the Council on the latest development of the ongoing fisheries subsidies negotiations at the WTO. In view of the need for issuing a new text in May of 2011, the Chair of the NGRs had launched an intensive round of negotiations in early 2011 which was concluded early of this month. He added that Malaysia had been invited to several plurilateral sessions which deliberated on the issues of fuel subsidies, small-scale fisheries, high seas fisheries, fisheries management, income support, and shared stocks. In addition, Malaysia had submitted a textual proposal which was drafted based on Article II (General Exception) of the Chair's 2007 Text. The proposal demanded for the exception of vessel modification and upgrading in meeting food safety and hygiene standards which otherwise should have been prohibited under Article I.1 (a) of the Chair's 2007 Text. He also informed the Council that Malaysia had gained wide support from both the developing and developed countries and thanked SEAFDEC Member Countries for their support during the negotiations in Geneva. In this connection, the Council Director for Malaysia encouraged the Member Countries who were not invited to the plurilateral session to examine the Chair's Transparency Report for clarity, and also urged the Member Countries to request their respective Missions in Geneva to register their e-mail addresses with the NGRs Secretariat to be able to keep abreast of all the activities and development relating to the negotiations.

48. With regards to the issues relevant to CITES, the Council Director for Japan informed the Council that the proposed listing in the CITES Appendices included only the economically-important species, and that in the new proposed list the number of commercial aquatic exploited-species could be increased. In this regard, SEAFDEC was requested to identify the technical problems on CITES faced by all Member Countries and provide the information to the CITES Secretariat to make them aware of the situation and concerns of the Member Countries before the COP16- CITES.

5.2 Human Resources Development Gaps and Requirements for ASEAN Member Countries

49. The Council was informed on the results of the Study on Human Resources Development Gaps and Requirements for the ASEAN Member Countries which appears as **Annex 11**.

50. In this regard, the Council recommended that in order to support human capacity development for the Member Countries, SEAFDEC should mobilize the existing collaboration with research and development institutions and relevant organizations in exchanging expertise to assist the Member Countries for the development of their respective human resources. In addition, Member Countries having more expertise in some specific areas should consider providing special training to other countries. SEAFDEC was also requested to consider conducting special training on required subjects by mobilizing experts within the region or inviting the experts from outside the region.

51. The Council Director for Malaysia, while agreeing with the recommendations from the study, expressed the concern that the outputs from the survey in Malaysia may not truly reflect the status of the availability and gaps of human resources in the country due to certain difficulties in responding to the questionnaire brought about by the insufficient description of the scope the

subjects. In this connection, SEAFDEC informed the Council that the study is only a preliminary survey to obtain indicative figures on the availability and gaps of human resources in the region in various scopes and subjects of fisheries, and that the outcomes from the survey were based on the information provided by the Member Countries although the results may not have fully reflected the whole picture of the available expertise in the countries. However, the Council was also further informed that the results of the survey demonstrated a certain trend that in some countries most experts in certain subjects are almost in the retirement age and that there is a need to intensify the engagement of younger recruits.

52. The Council Director for Cambodia also supported the outputs of the study, and suggested that as the study has indicated gaps in human resources in certain subjects of fisheries in the region, development of human resources capability particularly for young generation, should be enhanced. In this connection, he requested SEAFDEC to come up with activities to enhance the human capacity of the countries in fisheries, particularly on the areas related to the emerging issues and challenges.

5.3 Regional Policy Recommendations on Poverty Alleviation by Fisheries Intervention

53. The Council took note of the achievements in the implementation of the Program on “Human Resource Development (HRD) for Poverty Alleviation and Food Security by Fisheries Intervention in the ASEAN Region” which was funded by the ASEAN Foundation through the ASEAN-Japan Solidarity Fund (**Annex 12**). While considering the proposed Regional Policy Recommendations on Poverty Alleviation by Fisheries Intervention as output of the Program, the Council Director for Cambodia informed the Council that in the case of Cambodia, fisheries management in the country as well as rules and regulations are now being implemented at the local level through the establishment of Community Fisheries (CFs). Through the mechanism of the 500 or more CFs in the country, the participation of the local fisheries communities in fisheries resource management has been promoted.

54. However, since some CFs need assistance in the development of their respective management plans, he suggested that training of trainers should be promoted following the approach of the HRD Program to enhance the capacity of the members of the Community Fisheries in developing and implementing their respective resource management plans. He added that capacity building for the members of CFs could focus on understanding the importance of fish refuge and sanctuary in deep pools which are critical for fish spawning and on resource enhancement of marine grounds through the installation of artificial reefs, although the specific training activities could be formulated based on the needs of the CFs in order to encourage the active participation of the members of the CFs.

55. The Council Director for the Philippines while supporting the Program on HRD informed the Council that empowering the fisheries communities in the country has been done through the establishment of the Fisheries and Aquatic Resource Management Council (FARMC) as well as that of fisherfolks organizations. He also informed the Council that the country encourages fisherfolks to obtain hands-on experience on the management of fishery resources through the government program launched during the annual celebration of the farmers and fisherfolks month in May. Under this program, representatives from the fisherfolk organizations are allowed to take charge of the offices of BFAR from the central to the local levels, after which the fisherfolk representatives would be able to provide information on the status of the development of fisheries management to their respective areas.

56. The Council Director for Indonesia noted the achievements of the Program on HRD and encouraged all Member Countries to consider enhancing the development of their human resources to alleviate poverty which should be one of the main goals of sustainable fisheries management.

57. After the discussion, the Council endorsed the Regional Policy Recommendations on Poverty Alleviation by Fisheries Intervention in Southeast Asia, which will be submitted to ASWGF_i on 27-29 April 2011 for endorsement. The Council was informed that SEAFDEC will incorporate the valuable comments from the Council in the development of the National Guidelines on Poverty Alleviation by Fisheries Intervention once the Regional Policy Recommendations is endorsed by the ASWGF_i.

VI. ASEAN-SEAFDEC CONFERENCE ON SUSTAINABLE FISHERIES TOWARDS 2020 “FISH FOR THE PEOPLE 2020: ADAPTATION TO A CHANGING ENVIRONMENT”

6.1 Progress Report

58. The Council took note of the progress made by the ASEAN, SEAFDEC and the Department of Fisheries of Thailand in the preparation for the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People 2020: Adaptation to a Changing Environment” (**Annex 13**) scheduled on 13-17 June 2011 in Bangkok, Thailand.

59. The Council was informed on the participation of the Member Countries to the Technical Session of the Conference wherein five delegates from each ASEAN-SEAFDEC Member Country would be fully supported using the budget allocated by the ASEAN Foundation. In addition, SEAFDEC would also be responsible for the cost of the participation of resource persons to the Technical Session of the Conference. However, it was clarified that for the participation of additional participants from the Member Countries, the participants should register and pay the corresponding registration fees in accordance with the registration policy of the Conference.

60. The Council Director for Myanmar informed the Council on the willingness of the Fisheries Federation of Myanmar to participate in the Conference on its own expense, and requested the SEAFDEC Secretariat to issue the invitation letter accordingly as soon as possible.

61. The Council Director for Thailand, as the host government of the Conference, informed the Council that Thailand would issue the invitation letter for the participation of the Senior Officials and Ministers in the Senior Officials Plus Three Meeting (SOM Plus Three), the Senior Officials Meeting (SOM), and the Ministerial Meeting as soon as possible but not later than 15 April 2011. The letter will include the agenda and detailed arrangements for the Meetings. In the invitation letters for the Ministers, Thailand would also inquire whether the Ministers of respective countries would wish to deliver Remarks during the Ministerial Meeting for appropriate time allocation. The Council also noted that Thailand would be responsible for the expenditures of the Ministers including accommodation, domestic transportation arrangements, and other hospitality arrangements, and the meeting costs for the SOM and Ministerial Session. However, the respective ASEAN-SEAFDEC Countries would be responsible for other expenses of their respective Senior Officials and other participants to the SOM and the Ministerial Session.

62. The Representative from the ASEAN Secretariat, *Ms. Pouchamarn Wongsanga* provided additional information on the organization of the Preparatory Meeting for the ASEAN-SEAFDEC Conference on 25 April 2011 in Siem Reap, Cambodia to finalize important issues, particularly the agenda and arrangements for the SOM Plus Three, SOM and Ministerial Session, the Final Draft Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020, and the Concept Note to support the implementation of the Plan of Action. She also informed the Council that the Final Draft Resolution and Plan of Action reviewed at this Council Meeting would be submitted to the 19th Meeting of the ASWGF_i for consideration and approval before further endorsement by the SOM and Ministers, respectively; while the Concept Note would be endorsed by the ASWGF_i.

6.2 Draft Resolution and Plan of Action

63. The Council took note of the Draft Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020, which was discussed during the ASEAN-SEAFDEC Consultation on Drafting the Resolution and Plan of Action organized on 21-23 February 2011 with further refinements by the ASEAN Secretariat, and circulated to the ASEAN-SEAFDEC Member Countries in early March 2011 for consideration and comments. After the discussion, the Council agreed on the amendments made to the Draft Resolution and Plan of Action as shown in **Annex 14**. However, the Council Directors for Singapore and Thailand made reservations on the use of the term “Ensure” in paragraph 43 under Section C on Aquaculture, and suggested that this term be changed to “Encourage”.

64. The Council was informed that the amendments and the comments made by the SEAFDEC Council Meeting would be conveyed to the 19th Meeting of the ASWGF for consideration and for subsequent accommodation into the Final Draft Resolution and Plan of Action.

VII. COOPERATION WITH INTERNATIONAL/REGIONAL ORGANIZATIONS AND NON-MEMBER GOVERNMENTS

65. The Council took note of the collaborative activities in 2010 between SEAFDEC and other regional/international organizations as well as with the non-member governments under the existing collaborative agreements, which include the collaboration with: the ASEAN Foundation; Association of Southeast Asian Nations (ASEAN); Fishery Research Agency (FRA), Japan; Food and Agriculture Organization of the United Nations (FAO); Hokkaido University, Japan; National Agriculture Training Council (NATC), Malaysia; National Fisheries University (NFU), Japan; United Soybean Board, USA; and Vocational Education Commission of Thailand.

66. The Council also noted the collaborating partners for the ASEAN-SEAFDEC Conference which include: the Mekong River Commission (MRC); Asian Institute of Technology (AIT); Network of Aquaculture Centers in Asia-Pacific (NACA); WorldFish Center; Coastal Development Center of Kasetsart University, Thailand; Fisheries Research Agency (FRA), Japan; Japan International Research Center for Agricultural Sciences (JIRCAS); Tokyo University of Marine Sciences and Technology (TUMSAT), Japan; Faculty of Fisheries of Kagoshima University, Japan; School of Marine Science and Technology of Tokai University (TUMST), Japan; Hiroshima University, Japan; Research Institute for Humanity and Nature (RIHN), Japan; and Marine Institute (MI) of the Memorial University of Newfoundland, Canada.

67. The Council Director for Malaysia suggested that in order for the Member Countries to maximize the benefits from the collaborative activities, SEAFDEC should provide more detailed information related to collaborative arrangements between SEAFDEC and other organizations to enable the Member Countries to participate in such activities. In this connection, the Council was informed that the collaborative activities are usually planned and undertaken in an *ad-hoc* manner and most of the activities are aimed at enhancing the capacity of staff from both institutions on specific aspects of mutual interest. However, SEAFDEC would try to keep the Member Countries informed on the activities and for them to be involved in the activities where applicable and possible.

7.1 Food and Agriculture Organization of the United Nations (FAO)

68. The Representative from the Food and Agriculture Organization of the United Nations/Regional Office for Asia and the Pacific (FAO/RAP), *Dr. Simon Funge-Smith* expressed his appreciation for the invitation extended by SEAFDEC and to the Department of Fisheries Malaysia and the Ministry of Agriculture and Agro-based Industry Malaysia for their excellent arrangements and the hospitality during the Council Meeting in Malacca, Malaysia. He

reaffirmed that SEAFDEC has been playing an important role as a regional capacity building body in the fisheries and aquaculture sectors in the Southeast Asian region and importantly, the increasing role of SEAFDEC as a regional technical advisory body to the ASEAN.

69. Specifically, he informed the Council that FAO is pleased to be able to provide technical support to the forthcoming Conference in June 2011 and the associated ASEAN Resolution and Plan of Action, and the concrete cooperation between FAO and SEAFDEC in the development of a five-year regional Global Environment Facility (GEF) funded project for the management of fisheries by-catch and discards. Moreover, he also informed the Council that FAO would be able to collaborate closely with SEAFDEC in addressing the needs for capacity building and technical expertise of the SEAFDEC Member Countries in: the management of by-catch, capacity building on Ecosystem Approach to Fisheries/Aquaculture, the small pelagic fish program, regional shark management planning, sub-regional fishery management plans in the South China Sea and Bay of Bengal, and improved reporting of the status and trends of fisheries in the region. He added that FAO also expressed interest in cooperating with SEAFDEC on other associated areas such as the development of the Global Record of fishing vessels, capacity building related to climate change adaptation, traceability of fishery and aquaculture products, and management of inland fisheries.

70. He also took the opportunity to inform the Council on the two APFIC regional consultative workshops scheduled for 2011, namely: the Regional Workshop on Climate Change and Adaptation in Fisheries and Aquaculture in the Asian Region and the Use of Fisheries Assessments for Management would largely benefit from the regional inputs of SEAFDEC. His statement appears as **Annex 15**.

7.2 ASEAN Secretariat

71. The Representative from the ASEAN Secretariat congratulated SEAFDEC for the achievements made in 2010, and reiterated the ASEAN Leaders' decision in realizing an ASEAN Community in 2015 of which fisheries would form an important part of it. She stressed the importance of the ASEAN-SEAFDEC Strategic Partnership and highlighted on the upcoming ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 "Fish for the People 2020: Adaptation to a Changing Environment" to be organized on 13-17 June 2011, as the key cooperation with SEAFDEC under the ASSP collaborative mechanism. She emphasized that the "Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020" as outcome from the Ministerial Meeting of the Conference would be the new strategic plan for the fisheries sector of the region. She thanked the SEAFDEC Council for its continued cooperation with the ASEAN and assured the Council of the strong interest in and any possible support to the close collaboration and partnership with SEAFDEC. Her Statement appears as **Annex 16**.

7.3 The Colombo Plan

72. The Representative from the Colombo Plan, *Ms. Devika Karunaratne* expressed her gratitude to SEAFDEC and the Department of Fisheries Malaysia for extending the invitation for the Colombo Plan Secretariat to attend the 43rd Meeting of the SEAFDEC Council. She gave a brief overview of the Colombo Plan's collaboration with international organizations and specifically recognized the potential of the SEAFDEC approach on One Village One Fisheries Product (FOVOP) which can contribute towards the poverty alleviation projects of the Colombo Plan in its Member Countries. In this light, the Colombo Plan would like to propose the implementation in 2011 of the Training Workshop on Promotion of "One-Village One-Fisheries Product" for the developing member countries of the Colombo Plan. She reiterated that the collaboration could be an opportunity for both organizations to discuss issues and considerations in the promotion of One Village One Fisheries Products which will help uplift the living

standards in fishing communities in the Colombo Plan developing member countries (**Annex 17**).

7.4 The Bay of Bengal Large Marine Ecosystem (BOBLME) Project

73. The Representative from the Bay of Bengal Large Marine Ecosystem (BOBLME) Project, *Dr. Chris O'Brien* gave a brief background and update of the BOBLME Project. He informed the Council that the countries under the Project include: Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka, and Thailand, and that the Project receives funding support from GEF, Norway, Sweden, the National Oceanic and Atmospheric Administration (NOAA) of the USA, and the Food and Agriculture Organization of the United Nations (FAO) with FAO as the executing agency.

74. He added that the major output of the Project is the Transboundary Diagnostic Analysis (TDA) that identifies, quantifies and ranks water-related environmental transboundary issues and their causes according to the severity of the environmental and/or socio-economic impacts. Moreover, the Project has an ambitious program of work and is seeking to collaborate with the SEAFDEC Member Countries and Departments in areas that include: ecosystem surveys, improving fisheries statistics in terms of training, understanding the implications of climate change, analysis of historical data, small pelagic fisheries, national plan of action (NPOA) on sharks and regional plan of action, supporting sub-regional collaboration, and implementing a framework for the ecosystem approach to fisheries. His statement appears as **Annex 18**.

VIII. OTHER MATTERS

8.1 Ecopath Trophic Model for the Matang Mangrove Estuary, Malaysia

75. The Council took note of the report of the JIRCAS-DOF Malaysia collaborative study on Ecopath Trophic Model for the Matang Mangrove Estuary, Malaysia (**Annex 19**) which was aimed at developing appropriate technology for sustainable development and management of the fisheries resources. The conclusion and recommendations of the study could serve as basis for the development and refinement of fisheries management plan for ecosystem approach to fisheries of the countries in the region.

8.2 Statement by the Government of Japan

76. On behalf of the Council Director for Japan, *Mr. Masanori Miyahara*, the head delegate for Japan *Mr. Kazuo Hiraishi* expressed his sincere gratitude to SEAFDEC and its Member Countries for their strong support by expressing consolation to Japan after the northeastern part of country was hit by the devastation earthquake and subsequent tsunami on 11 March 2011. The two calamities have resulted in enormous loss of lives and livelihoods including destruction of fishing port facilities, fishing boats and most importantly livelihood of fishing villages. He informed the Council that at present, the country is in the initial phase of recovery, giving precedence to supporting evacuees while investigating the situation of the devastated area however, it could not still be envisaged how much cost would be required and when the recovery would be overcome.

77. He also informed the Council that SEAFDEC has made significant achievements in its efforts towards sustainable fisheries development in the Southeast Asian region. Since SEAFDEC would soon have a new policy framework and direction for the next coming decade as output from the ASEAN-SEAFDEC Ministerial Meeting in June 2011, Japan is still willing to continue supporting SEAFDEC onwards as far as advanced efforts would be required. His statement appears as **Annex 20**.

IX. FUTURE DIRECTION REQUESTED BY THE COUNCIL (CLOSED SESSION)

78. The Secretary-General reported on the progress made by SEAFDEC (**Annex 21**) in response to the request made by the Council during the 42nd Meeting of the SEAFDEC Council in Lao PDR in 2010.

9.1 Review of the Operations of SEAFDEC

79. With a view to improve the operations of SEAFDEC, the Secretary-General of SEAFDEC proposed the organization of the Third SEAFDEC Review Committee (**Annex 22**) while the Council Director for Singapore proposed the Review of the SEAFDEC Agreement and Plan of Operations of SEAFDEC Departments (**Annex 23**). The Council Directors discussed these proposals at length, and while agreeing to have the Third Review on the roles and functions of SEAFDEC, the Council requested the Secretary-General to communicate with the National Coordinators of the respective countries to compile the information on the countries' views on the activities of SEAFDEC. In addition, the Council also requested SEAFDEC to incorporate in the report other relevant documents/information as outlined in **Annex 24**.

80. The Council requested that the Report should be completed within six months after the Council Meeting, and the results should be circulated to the SEAFDEC Council Directors by *ad referendum* to obtain feedback and further guidance from the Council. SEAFDEC will then accommodate such feedback and submit the final report to the Council Directors also by *ad referendum*. The report would be tabled for discussion and further directives from the Council during its Forty-fourth Meeting in 2012.

X. SEAFDEC FUTURE OPERATIONS

10.1 Adjustment of Minimum Regular Contribution (MRC)

81. The Council took note of the SEAFDEC Future Operation: Progress and Consideration on the Minimum Regular Contribution (MRC) which appears as **Annex 25**. The Council also noted the priority issues for the future operation of SEAFDEC that would require budgetary allocation from the MRC, which include: 1) Sustainability of the SEAFDEC Special Publication "Fish for the People"; 2) Sustainability of the Regional Fisheries Policy Network (RFPN); 3) Sustainability of the Working Groups under the Regional Advisory Committee (RAC); 4) Sustainability of the operation and maximizing the utilization of the M.V. SEAFDEC 2; and 5) Other Priority Areas/Activities urgently required by the Member Countries.

82. The Council Director for Thailand expressed the view that due to the circumstance of high inflation rate and the devaluation of the US dollars by 25%, the budget of SEAFDEC would be limited and SEAFDEC would face difficulties in its operation and management as mandated by the Council. It is therefore necessary to increase the budget of SEAFDEC otherwise its future operation would not be successful and sustainable. She therefore supported the proposal on increasing the amount of MRC.

83. While taking note the proposed adjustment of the MRC, the Council Director for Singapore requested SEAFDEC to revise the MRC of Singapore in the proposal which should be 13,000US\$. She also informed the Council that Singapore would follow the consensus of the Council regarding the proposed adjustment of the MRC.

84. The Council Director for Indonesia commented that increasing the budget of the Secretariat is understandable, but the increase should be kept at minimum. He expressed the apprehension that the adjustment of the MRC for Indonesia is not acceptable and it would be difficult to justify the increase to its Ministry of Foreign Affairs. He also suggested that in the calculation of the MRC, gross domestic product (GDP) of fisheries and not the total GDP of the

country should be used. However, if the total GDP is used, then the total population of the country should be one criterion to be included in the calculation.

85. The Council Director for Vietnam suggested that since in the proposed adjustment the use of GDP was one of the criteria, other criterion could however be explored and considered for the calculation, such as the number of fishers in the coastal areas. She informed the Council that although Vietnam supports the proposal in principle, she reiterated the complex process that would be involved in seeking the internal approval of the authorities concerned with financial matters in the country and thus, Vietnam could not directly commit its concurrence to the proposed adjustment of the MRC at this Meeting.

86. While supporting the proposal on the adjustment of the MRC, the Council Directors for Indonesia and Myanmar however expressed the view that it would be possible to increase the amount of their respective MRCs by only 25% of the existing MRC.

87. The Council Director for Cambodia informed the Meeting that the proposal will be brought to the attention of the Ministry of Agriculture, Forestry and Fisheries of Cambodia, and thus he cannot commit his country's position on the proposal at this Meeting. He requested that other criteria should also be considered in the calculation of the MRC.

88. The Council Director for the Philippines supported the existing MRC, while considering the proposal for future increase of the MRC. In the meantime, BFAR will work with AQD for funding arrangements on projects that are aligned with priorities of BFAR.

89. The Council Director from Japan expressed his understanding that the proposed adjustment including the rationalization of the Secretariat which was discussed at the Special Meeting of the National Coordinators in December 2010 had been made clear. While expressing his support to the proposed adjustment of the MRC, he reiterated that the contribution of the Government of Japan to SEAFDEC comes in the form of Trust Fund.

90. The Council Director for Malaysia expressed no objection to the proposal to increase the MRC based on the formula proposed by SEAFDEC. However, since Malaysia deemed it high to increase its current MRC by 100%, he therefore suggested that SEAFDEC should reconsider the proposal by minimizing certain budgetary items including the possibility of abolishing the Regional Fisheries Policy Network (RFPN) stationed at the SEAFDEC Secretariat.

91. After the deliberation, the Council Directors for Brunei Darussalam, Japan, Lao PDR, and Thailand reiterated their support to the proposal. In addition, the Council suggested that the Secretary-General should visit the Member Countries that had difficulty in proceeding with their respective MRC adjustments as proposed, to provide clarification and rationale of the proposal to the concerned authorities of five countries, such as Indonesia, Cambodia, Myanmar, Philippines and Vietnam. Moreover, the Council also suggested that the SEAFDEC Secretary-General should take the opportunity to discuss the issues related to MRC with the Ministers of the Member Countries during the ASEAN-SEAFDEC Conference in June 2011.

10.2 Improvement of SEAFDEC Information Tools and Activities for Enhancing Visibility and Communication

92. The Council took note of the progress of implementation of the information activities aimed at enhancing the visibility of SEAFDEC that were conducted by the Secretariat and Departments in 2010 (**Annex 26**).

10.3 Operation of the Training and Research Vessels

93. After noting the information provided by SEAFDEC regarding the conduct of cruise surveys to be carried out by the M.V. SEAFDEC and the M.V. SEAFDEC 2, the Council endorsed the plan of activities for the use of the vessels in 2011 (**Annex 27**).

94. The Council Director for Vietnam informed the Council that Vietnam proposed to use the M.V. SEAFDEC 2 for the conduct of a five-year research survey on small pelagic stock assessment in Vietnam waters starting in 2012 under the cost-sharing basis. The proposed schedule of the cruise is preferably from April to May and also from October to November. In this regard, the Council endorsed the request made by Vietnam and asked SEAFDEC to include the request of Vietnam in the plan of operations of the M.V. SEAFDEC 2 in 2012.

95. The Council was informed by the Secretary-General of SEAFDEC on the collaboration between SEAFDEC and the BOBLME Project, which focuses in the Andaman Sea area. He added that the BOBLME Project planned to request for the utilization of the SEAFDEC vessels to conduct collaborative fisheries resources surveys with financial support from the BOBLME Project and the information that could be derived from the surveys would be shared with the SEAFDEC Member Countries. The Council Director for Myanmar suggested that since four Member Countries of SEAFDEC are involved in the BOBLME Project, he requested SEAFDEC to coordinate with the BOBLME Project for the utilization of the SEAFDEC vessels. In this regard, the Council approved the plan for utilization of the vessels for such collaborative fisheries resources surveys.

96. With the view of the need to maximize the utilization of the M.V. SEAFDEC 2, the Council Director for Japan requested the Member Countries to fully utilize the vessel based on the agreed guidelines when the vessel was granted to TD in 2003. In this regard, the Council Director for Japan supported the request on the use of the M.V. SEAFDEC 2 by other organizations under the SEAFDEC collaborative arrangements.

97. Referring to the proposal of Bangladesh Fishery Research Institute (BFRI) on the utilization of the M.V. SEAFDEC 2 in 2010 funded by the Islamic Development Fund, the Council was informed that the Member Countries had already endorsed through referendum the request made by BFRI. However, due to late availability of the budget they were not able to conduct the survey as scheduled. In response, the Council agreed in principle the request of BFRI to utilize the vessel when their budget is available.

10.4 Strengthening the Roles and Functions of RAC and Proposed Adjustment on Streamlining the Working Mechanism of RAC

98. The Council was informed on the proposed strengthening of the roles and functions of Regional Advisory Committee on Fisheries Management in Southeast Asia (RAC) and the proposed adjustment on streamlining the working mechanism of RAC (**Annex 28**), and also noted the recommendations from the 1st Meeting and 2nd Meeting of RAC in 2008 and 2009, respectively as well as the Special Meeting of the SEAFDEC National Coordinators in December 2010.

99. The Council Director for Vietnam recommended that RAC operations should focus on scientific and technical issues as outlined in the Terms of Reference (TOR) to support the Member Countries in sustainable fisheries management.

100. While considering the revised TOR of RAC as attached to **Annex 28** the Council Director for Singapore requested SEAFDEC to also circulate the original TOR for information of the Council and suggested that other activities such as combating IUU fishing could be included

in the scope of RAC activities. She also suggested that the TOR of RAC should not be revised but the proposed changes should only be on the working mechanism of RAC.

101. With regards to the RAC meetings to be conducted within the prescribed period, the Council Director for Thailand suggested that SEAFDEC could also avail of the teleconferencing facilities to communicate among Member Countries and facilitate the discussion and dialogue between the standing members of RAC as well as the other members who have expertise in some specific fields. She also informed the Council that the use of the teleconferencing facilities could be extended to the other activities of SEAFDEC.

102. Since the issues to be discussed by RAC are quite broad, the Council recommended that RAC should focus its discussion on specific fisheries management issues. The Council Director for Malaysia then expressed the view that the working mechanism of RAC should not duplicate with the functions of the SEAFDEC Program Committee.

103. After discussion, the Council endorsed the proposed adjustments of the TOR and the working mechanism of RAC as proposed by SEAFDEC.

XI. MANAGEMENT OF THE CENTER

11.1 Collaborative Arrangement between SEAFDEC and Other Organizations

104. The Council noted the establishment of collaborative arrangements between SEAFDEC and other organizations in 2010 (**Annex 29**) such as those with Tokyo University of Marine Science and Technology (TUMSAT); Graduate School of Agricultural and Life Sciences, and Faculty of Agriculture, University of Tokyo (GSALS-UT); Research Institute for Humanity and Nature (RIHN); Colombo Plan Secretariat (CPS); WorldFish Center; University of Tehran, Iran; GAIA Mariculture Pte, Ltd. (Singapore). The collaborative arrangements were aimed at facilitating the exchange of information among researchers, participation in training programs, and promotion of academic exchanges in information of mutual interest for the sustainable development of fisheries in the region.

105. The Council Director for Malaysia suggested that SEAFDEC's future collaboration should ensure widespread benefits to the Member Countries at large. In response, it was clarified that the collaborative activities are envisaged to build the capacity of SEAFDEC staff which through multiplier effect would eventually benefit the Member Countries considering that the progress and development of relevant activities are included in the SEAFDEC programs on capacity building and human resource development. In addition, it was also reiterated that the collaborative activities are formulated in line with the programs and activities approved by the Council as endorsed by the SEAFDEC Program Committee.

XII. FINANCIAL MATTERS

12.1 Adoption of Auditor's Financial Report for the Year 2009

106. The Council was informed that the official auditors of SEAFDEC, Fuangthong Accounting and Lawyer Office was unable to send a representative to the Meeting due to unforeseen circumstances beyond their control. In this regard, the Council agreed that the Finance Officer of SEAFDEC would present the Auditor's Financial Report for the Year 2009 on behalf of the auditors.

107. In accordance with Article 6, paragraph 2 (ii) of the Agreement Establishing the Center, the Council endorsed the audited consolidated financial statement of the Center for the year ended 31 December 2009 including that of the Secretariat and the three Departments for the Year 2009 (**Annex 30**) as audited by the Center's official auditors.

108. As regards the financial statement of MFRD, the Council Director for Singapore requested to replace “none” by “not applicable (n/a)”.

12.2 Un-audited Financial Report for the Year 2010, and Status of the Financial Situation for the Year 2011

109. The Council took note of the Un-audited Consolidated Financial Report for the Year 2010 (**Annex 31**), which comprised the Un-audited Balance Sheet as of 31 December 2010, the Un-audited Statement of Income and Expenditures for the Year 2010, and the Un-audited Fund Balance as of 31 December 2010.

110. The Council was informed by the Council Director for Singapore that in the case of MFRD, its funds in 2010 are under the management of the Agri-Food & Veterinary Authority of Singapore (AVA) and are already audited by the Auditors of AVA.

111. The Council also noted the Status of the Financial Situation for the Year 2011 (**Annex 32**), which includes the MRC in 2011 from the Member Countries and contributions from the Fisheries Agency of Japan for the Japanese Trust Fund program as well as other international organizations.

12.3 Proposed Budgetary Requirements of the Center for the Year 2012

112. The Council approved the proposed budgetary requirements of the Center for the Year 2012 (**Annex 33**) and requested the Secretariat and the Departments to finalize the actual budget for submission to and consideration of the Member Countries for funding support.

12.4 Other Financial Matters

113. The Council approved the change in 2010 of the auditing firms for AQD from “KPMG Manabat Sanagustin” & Co to “SGV and Company”, and for MFRDMD from “MNZWAJ Associates (AF 1959)” to “Adib Azhar & Co. (AF 1446)”.

XIII. CONCLUDING MATTERS

13.1 Adoption of the Meeting Report and Press Statement

114. The Council adopted the Report of the Forty-third Meeting of the Council and the Press Statement on the results of the Meeting (**Annex 34**) on 8 April 2011.

13.2 Date and Venue of the Forty-fourth Meeting of the SEAFDEC Council

115. In considering the date and venue of the Forty-fourth Meeting of the Council, the Council Director for Myanmar informed the Council that the Government of Myanmar would accept the responsibility of hosting the next Council Meeting in Myanmar in 2012.

116. The Council expressed its appreciation to the offer made by the Council Director for Myanmar to host the next Council Meeting in Myanmar, and requested the SEAFDEC Secretariat to discuss this further with the Council Director for Myanmar for the finalization of the exact date and venue of the next Meeting.

13.3 Vote of Thanks to the Host Government

117. On behalf of the SEAFDEC Council, the Council Director for Lao PDR *Dr. Bounkhouang Khambounheuang* expressed the Council’s appreciation and gratitude to the Government of Malaysia, for their warm hospitality and arrangements for the 43rd Meeting of the

SEAFDEC Council. He also congratulated the Chairperson of the Meeting for his excellent chairpersonship which enabled the Meeting to accomplish its objectives in a very efficient manner. He also expressed appreciation to all Council Directors for their valuable contribution to the Meeting as well as for the policy guidance given to SEAFDEC towards its future operation and in maximizing the benefits to all the Member Countries. Lastly, he expressed his appreciation to the Secretariat of the Meeting, particularly to the staff of the Department of Fisheries Malaysia, for their preparatory works and arrangements which ensured the smooth and successful conduct of the Meeting. His statement appears in **Annex 35**.

XIV. CLOSING OF THE MEETING

118. On behalf of the Council Director for Malaysia *Dató Ahamad Sabki bin Mahmood*, the Alternate Council Director for Malaysia *Mr. Ismail bin Abu Hassan*, expressed the appreciation to all Council Directors for their active participation and contribution to the Meeting. In expressing the gratitude of the Council to the Secretariat of the Meeting for their support and hard work, he also offered the apologies for whatever shortcomings and inconvenience that the participants may have been experienced during the Meeting. He added that since the task ahead is very challenging especially with the coming ASEAN-SEAFDEC Conference in June 2011, he encouraged the Council Directors to extend their utmost assistance during the Conference. On the part of SEAFDEC, he exhorted that more efforts will have to be done not only for the forthcoming Conference but also in addressing the several issues raised by the Council at this Meeting especially the upcoming review of the roles and functions of SEAFDEC and the proposed adjustment of the MRC. He also encouraged SEAFDEC to collaborate with the Council Directors for the effective and efficient implementation of the instructions and directives of the Council. After expressing his wish for the participants to have safe journey back to their countries and homes, he declared the 43rd Meeting of the SEAFDEC Council closed. His Closing Remarks appears as **Annex 36**.



RESOLUTION ON SUSTAINABLE FISHERIES FOR FOOD SECURITY FOR THE ASEAN REGION TOWARDS 2020

We, the Ministers of ASEAN-SEAFDEC Member Countries who are responsible for fisheries, met in Bangkok, Thailand on the occasion of the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People 2020: Adaptation to a Changing Environment” on 17 June 2011,

Recalling the principles of the ASEAN Vision 2020 and relevant ASEAN declarations/initiatives including the Roadmap for an ASEAN Community (2009-2015); the ASEAN Economic Community Blueprint; the ASEAN Socio-Cultural Community Blueprint; the ASEAN Fisheries Consultative Forum Work Plan (2010-2012); the ASEAN Integrated Food Security (AIFS) Framework and Strategic Plan of Action on Food Security in the ASEAN Region (SPA-FS) (2009-2013); and the ASEAN Multi-sectoral Framework on Climate Change: Agriculture and Forestry Towards Food Security (2010 onwards) ; and the Millennium Development Goals (MDGs) that need to be considered in achieving sustainable development of fisheries and the socio-economic well-being of all relevant stakeholders;

Guided by the ASEAN Charter, which aims to ensure sustainable development for the benefit of present and future generations and to place the well-being, livelihood and welfare of the people as the focus of the ASEAN Community building process;

Recognizing the importance of the fisheries sector for food security, livelihoods and well-being of the ASEAN people and its contribution to sustainable development and realisation of the ASEAN Community by 2015, which encompasses the three pillars - the ASEAN Political Security Community, the ASEAN Economic Community and the ASEAN Socio-Cultural Community;

In response to the challenges of the changing environment and the emerging issues including climate change and the growing gap between the increased demand for fish and fishery products and ASEAN’s ability to supply these products in a sustainable manner, and taking into account the imperative to minimize the impacts caused by the increasing pressures on fisheries and globalization of trade that are resulting in increased illegal, unreported and unregulated (IUU) fishing, the depletion of coastal fish resources, habitat degradation, negative impacts of aquaculture, and increased conflicts among resource users that further jeopardize the food security and livelihoods of ASEAN people, in particular the poor and disadvantaged;

Recognizing the “ASEAN-Japan Partnership for New Growth in Asia”, through supporting the implementation of the Roadmap for an ASEAN Community 2009-2015;

Recognizing the support from the other dialogue partners to ASEAN in the implementation of the Roadmap for an ASEAN Community 2009-2015;

Bearing in mind the provisions of international and regional declarations and instruments relevant to fisheries, food security, ocean governance, trade, rights/safety, social well-being and the aquatic environment, including the continued relevance of provisions provided in the FAO Code of Conduct for Responsible Fisheries and the Regional Guidelines on Responsible Fisheries in Southeast Asia;

Acknowledging the ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region that was adopted by the ASEAN-SEAFDEC Ministers responsible for fisheries during the ASEAN-SEAFDEC Conference on Sustainable Fisheries for

Food Security in the New Millennium “Fish for the People” on 24 November 2001, and the progress made by the Member Countries in the implementation of the 2001 Resolution and Plan of Action;

Recognizing the ASEAN-SEAFDEC Strategic Partnership (ASSP) in providing a cooperative platform between ASEAN and SEAFDEC, in achieving long-term common goals towards development and management for sustainable fisheries;

Acknowledging that priority should be given to the issues identified through the national and regional participatory processes in preparation for, and at the ***ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People 2020: Adaptation to a Changing Environment”***;

DO HEREBY RESOLVE, without prejudice to the sovereign rights, obligations, and responsibilities of our countries under relevant international laws and arrangements, to:

1. Sustain the supply of fish and fishery products from the ASEAN region to improve food security, facilitate poverty alleviation, and improve the livelihoods of ASEAN people dependent on the harvesting, farming and marketing of fish and fishery products, by enhancing the necessary national fisheries policy, legal and institutional frameworks that encourages and support small-scale fisheries/farmers, including providing alternative livelihood opportunities;
2. Further develop strategic partnerships and cooperation to maximize the synergies and complementarities among the various stakeholders – government, private sector, civil society and relevant development partners and donor agencies to address regional and global challenges;
3. Strengthen human capacity of relevant stakeholders through mobilization of resources and the harmonization of initiatives that support fisheries communities and governments, with a special focus on the women and youth;
4. Strengthen fisheries governance by evaluating current constraints to ensure comparability and compatibility between the required practices and operation of fisheries in the ASEAN Member Countries;
5. Further develop regional initiatives to promote a responsible fisheries management mechanism, taking into account the specific social, economic, cultural, ecological and institutional contexts and diversity of ASEAN and ASEAN fisheries in the spirit of the development of the ASEAN Economic Community and the ASEAN Socio-Cultural Community;
6. Implement effective management of fisheries through an ecosystem approach to fisheries that integrates habitat and fishery resource management aimed at increasing the social and economic benefits to all stakeholders, especially through delegating selected management functions to the local level and promoting co-management as a partnership between government and relevant stakeholders;
7. Promote better management of fishing capacity and use of responsible fishing technologies and practices, recognizing the movement towards replacing the “open access” to fisheries resources with “limited access” through rights-based fisheries, and at the same time, secure the rights and well-being of inland and coastal fisheries communities;
8. Foster cooperation among ASEAN Member Countries and with international and regional organizations in combating IUU fishing;

9. Enhance resilience of fisheries communities to anticipate and adapt to changes in environmental conditions of inland and coastal waters, including those caused by climate change, which could adversely affect fisheries and aquaculture of fisheries communities;
10. Strengthen knowledge/science-based development and management of fisheries through enhancing the national capacity in the collection and sharing of fisheries data and information;
11. Enhance the awareness of the contribution that inland fisheries makes to food security and sustainable livelihoods, and include consideration of fisheries stakeholders when undertaking development projects that may impact inland fisheries;
12. Support ASEAN efforts to promote low carbon development by minimizing the contribution of the fisheries sector to green-house gas emissions, with emphasis on promoting energy efficiency and use of alternative energy sources;
13. Improve the working conditions of people engaged in fisheries activities, and strengthen measures for safety of fishing vessels taking into consideration regional specificity;
14. Promote inter-agency coordination of multiple uses of freshwater resources for sustainable development of the resources and conservation of freshwater habitats;
15. Enhance the awareness that aquaculture makes to food security and sustainable livelihoods to deliver a responsible increase in aquaculture production that promotes aquaculture for rural development as means of rational use of land and water resources;
16. Promote cooperation among Member Countries and with international and regional organizations in encouraging responsible aquaculture practices through joint research, technology transfer and human resource development;
17. Mitigate the potential impacts of aquaculture on the environment and biodiversity including the spread of aquatic animal diseases caused by the uncontrolled introduction and transfer of exotic aquatic species and over-development of aquaculture;
18. Promote joint ASEAN approaches and positions in international trade in fish and fishery products indigenous to the region by harmonizing the standards, criteria and guidelines and developing mutually-recognized agreements on sustainability and safety management systems;
19. Support the competitiveness of the ASEAN fish trade through the development of procedures and programmes that would certify, validate or otherwise indicate the origin of fish to reflect the need for traceability, sustainable fishing practices and food safety, in accordance with international and national requirements;
20. Optimize the utilization of catch from water to market by reducing post-harvest losses and waste to increase fish supply and improve economic returns through promotion of appropriate technologies and facilities along the supply chain;
21. Improve technologies and facilities to ensure fish quality assurance and safety management systems, taking into account the importance of traditional fishery products and food security requirements, and promote the development of fishery products as an alternative supplementary livelihood for fisheries communities;

22. Support the Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 adopted by the ASEAN-SEAFDEC Senior Officials; and
23. Pledge our commitment to fully support this Resolution and task ASEAN Senior Officials to implement necessary actions and report progress in the advancement of sustainable fisheries that contribute to a prosperous, stable and peaceful ASEAN Community.

AND DO HEREBY DECIDE,

That the Resolution be implemented as soon as possible and use the ***Plan of Action*** adopted by the ASEAN-SEAFDEC Senior Officials during the ***ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People 2020: Adaptation to a Changing Environment”***, held June 13-17, 2011, in Bangkok, Thailand, as a guideline for formulating and implementing programs, projects, and activities through appropriate ASEAN-SEAFDEC mechanisms.

LIST OF ASEAN-SEAFDEC MINISTERS

H.E. Pehin Dato Yahya Bakar, Minister of Industry and Primary Resources, Brunei Darussalam

H.E. Dr. Fadel Muhammad, Minister of Marine Affairs and Fisheries, Indonesia

H.E. Mr. Seiji Kojima, Ambassador Extraordinary and Plenipotentiary of Japan to the Kingdom of Thailand

H.E. Dr. Ty Phommasack, Vice Minister of Agriculture and Forestry, Lao PDR

H.E. Noh Bin Omar, Minister of Agriculture and Agro-Based Industry, Malaysia

H.E. Mr. Khin Maung Aye, Deputy Minister of Livestocks and Fisheries, Myanmar

H.E. Ms. Linglingay F. Lacanlale, Ambassador Extraordinary and Plenipotentiary of Republic of the Philippines to the Kingdom of Thailand

H.E. Dr. Mohamad Maliki Bin Osman, Senior Parliamentary Secretary for National Development, Singapore

H.E. Mr. Theera Wongsamut, Minister of Agriculture and Cooperatives, Thailand

H.E. Dr. Chu Tien Vinh, Deputy Director General of Fisheries Administration, Ministry of Agriculture and Rural Development, Viet Nam

PLAN OF ACTION ON SUSTAINABLE FISHERIES FOR FOOD SECURITY FOR THE ASEAN REGION TOWARDS 2020

On the occasion of the *ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People 2020: Adaptation to a Changing Environment”*, the Senior Officials of ASEAN-SEAFDEC Member Countries met in Bangkok, Thailand on 16 June 2011.

Guided by the Resolution on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020, and the need to enhance collaboration among government agencies that have responsibility for fisheries and fisheries-related issues in order to harmonize policies, plans and activities that support sustainable fisheries, food security and safety at the national and regional levels, the Senior Officials adopted the following Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 to be used as a guideline to develop programs, projects and activities for the implementation of the Resolution.

A. PLANNING AND INFORMATION

1. Integrate the planning of marine capture fisheries, inland capture fisheries and the aquaculture sub-sectors to promote the sustainable development of the fisheries sector, including harvesting and post-harvest in both capture fisheries and aquaculture;
2. Strengthen the capacity to plan for sustainable fisheries in the context of changing socio-economic and ecological environments through the mobilization of the most up-to-date data and information and the provision of appropriate policy summaries for decision makers;
3. Strengthen national statistical mechanisms for fisheries and aquaculture and the exchange of statistical data and related information. Include other non-routine data and information such as fish consumption surveys as well as mobilizing local and indigenous knowledge with the aim of improving the valuation of fisheries and monitoring their performance, to address the needs of the ecosystem approach to fisheries and adaptation to climate change;
4. Enhance regional fishery information systems and mechanisms to facilitate sharing, exchange and compilation of statistics and information that are required at the sub-regional and regional level and apply, where appropriate, regionally standardized definitions and classifications for statistical data to facilitate regional compilation, analysis and data exchange;
5. Coordinate, decentralize and enhance the sharing of relevant statistics and information of fisheries-related statistical data and information between the national fisheries and other authorities including those responsible for food security, environment, trade, aquaculture, water resources, agriculture/forestry, wetlands, migration/employment and rural development;
6. Further develop simple and practical indicators in support of planning and monitoring of sustainable fisheries;

B. FISHERIES MANAGEMENT

7. Regularly review, update and strengthen national fisheries policy, legal and institutional frameworks through consultation and engagement of government agencies, the private sector, fishers, civil society and other relevant stakeholders;

8. Accelerate the development of fisheries management plans based on an ecosystem approach, as a basis for fisheries conservation and management;
9. Take measures to prevent unauthorized fishing and eliminate the use of illegal fishing practices by building awareness of their adverse impacts, strengthening law enforcement, developing and promoting responsible and selective fishing gears and practices, enforcing regulations and encouraging alternative means of livelihoods;
10. Establish and implement comprehensive policies for an ecosystem approach to fisheries management through effective systems (i) to provide licenses to fish (boats, gear and people); (ii) for community fishing rights/rights-based fisheries; (iii) that provide for the development of supporting legal and institutional frameworks; (iv) encourage and institutional cooperation; and (v) that aid in streamlining co-management;
11. Adopt co-management at all levels and with all relevant stakeholders in the process of planning and policy formulation for management, conservation and rehabilitation of habitats and protective geographical features, as well as policy formulation on the use and management of natural and human resources to ensure that climate change responses are integrated into fisheries policy frameworks;
12. Strengthen the capacity of fisheries communities and the capability of fisheries-related organizations, NGOs and the private sector to better implement necessary actions towards enabling the communities and local organizations to increase resilience, improve livelihoods, alleviate poverty, adopt alternative livelihoods adapt to climate change in support of achieving sustainable development, and encourage the participation of women and youth groups in the process;
13. Enhance and promote the participation of local communities, fisheries associations and other stakeholders in fisheries management and co-management. In addition, communities should take part in fisheries and stock assessments by providing data, local ecological knowledge, and status of the stocks;
14. Raise awareness of the need to develop financial incentives, especially for small-scale stakeholders and cooperatives, *e.g.* micro-credit, with national and regional institutional assistance for the responsible development of fisheries enterprises and developmental activities that will optimize socio-economic returns and food security;
15. Increase the efficient use of the alternative energy sources and reduce the use of carbon fossil energy by using appropriate fishing gear and fishing boats designs in fishing operations;
16. Encourage good and appropriate employment practices in accordance with domestic laws and regulations;
17. Develop guidelines and enhance the capacity of relevant authorities and communities to collaboratively resolve conflict with other stakeholders and with other competing users of resources;
18. Investigate the potential of under-utilized fisheries resources and promote their exploitation in a precautionary manner based upon analysis of the best available scientific information;
19. Enhance joint ASEAN programmes to better protect the livelihoods of small-scale producers and for a more equitable distributions of benefits gained from both intra and extra regional trade of fish and fishery products;

20. Adjust existing programs to take into consideration the effects of climate change, focusing on the programs for (i) managing fisheries and habitats; (ii) reducing fishing capacity and combating illegal, unreported and unregulated (IUU) fishing; (iii) strengthening local organizations; and (iv) promoting safety at sea and other priority areas. Develop indicators and reporting measures to assess how actions of the programs build resilience to climate change;

MARINE FISHERIES

21. Strengthen regional and national policy and legislation to implement measures and activities to combat IUU fishing, including the development and implementation of national plans of action to combat IUU fishing, and promote the awareness and understanding of international and regional instruments and agreements through information dissemination campaigns;
22. Establish and strengthen regional and sub-regional coordination on fisheries management and efforts to combat IUU fishing including the development of regional/sub-regional Monitoring, Control and Surveillance (MCS) networks;
23. Facilitate consultative dialogue among fisheries legal officers to share, at the sub-regional/regional level, perspectives of the respective legal and regulatory framework in terms of developing MCS-networks and to implement efforts to combating IUU fishing;
24. Build up capacity among Member Countries, including functions for regional and sub-regional cooperation, to effectively meet the requirements of Port State measures and Flag State responsibilities;
25. Conduct research on the impacts of various gear types and methods, including light fishing, trawls and push nets, on ecosystems and populations of aquatic animals and also the effects of fishing vessel discharges and waste disposal on marine ecosystems, to promote the use of selective fishing gears and sustainable devices;
26. Take reference from the FAO International Guidelines on Managing By-catch and Reducing Discards, where applicable, to identify and find solutions to ASEAN by-catch problems, including the excessive catch of juvenile fish;
27. Optimize the use of inshore waters through resource enhancement programs such as promoting the installation of artificial reefs and structures, encouraging coordinated and effective planning for coastal fisheries management programs, undertaking environmental impact assessment studies, restocking of commercially important fish species, as appropriate, and give priority to human resources development for the implementation of such programs;
28. Ensure the inclusion of fisheries objectives in the management plans of future Marine Protected Areas (MPAs) and promote the adoption and use of the *refugia* concept in line with the ASEAN/SEAFDEC Regional Guideline on the use of Fisheries *Refugia* in Capture Fisheries Management, where appropriate;
29. Recognizing the different management approaches that are required, sustainably manage major critical coastal habitats, such as mangroves, coral reefs and sea grasses; and develop and disseminate information and guidance on appropriate tools and interventions;
30. Strengthen efforts to address safety at sea, including considerations of working conditions and socio-economic development, and ensure that these considerations are addressed by all concerned authorities while improving monitoring and control of the status of conditions, especially on small fishing boats;

31. Assess the possible impact of government subsidies on fisheries, particularly the impact on the special requirements and the needs of small-scale fisheries in the region.

INLAND FISHERIES

32. Establish and implement comprehensive policies and supporting legal and institutional frameworks for an ecosystem approach to inland fisheries management by integrating fisheries and habitat management that devolves co-management to the local authority and stakeholders, and at the same time strengthens the rights of communities and develops rights-based fisheries;
33. Undertake campaigns to promote awareness of the importance of freshwater fisheries for local food security, and the importance of rehabilitating and restoring habitats for migratory freshwater fish, restocking indigenous fish species to enhance productivity and encouraging culture-based freshwater fisheries, where appropriate;
34. Develop inter-agency coordination (national/sub-regional) on multiple-use water resources of the wetlands/flood-plains to sustain freshwater fisheries, mitigate conflicts between users and also encourage better coordination to address trans-boundary inland fisheries management issues;
35. Ensure the sustainability of inland fisheries by maintaining ecological health of the ecosystem, particularly the inter-connectivity of habitats and the specific management needs during the dry season. Develop mitigating measures for the adverse impacts on inland fisheries that may be caused by the construction of water infrastructure and alteration of water ways;
36. Encourage coordinated planning on the use of inland rivers, water-bodies and flood plains through (i) resource enhancement programs; (ii) inland wetlands and fisheries management programs; (iii) environmental impact assessment studies with regards to structures that might impact on aquatic resources; (iv) the consideration of restocking of locally and/or commercially important inland fish species; and (v) giving priority to human resources development for the implementation of such programs;
37. Formulate guidelines to promote the use of practical and simple indicators for inland/flood-plain fisheries within the national inland fisheries management framework, to facilitate (i) timely local level fisheries management decisions with due respect to the large number of people/farmers that take part in fishing; (ii) dialogue to ensure that the inter-connectivity of fish migration path is kept as a tool for management/conservation measures; and (iii) adaptation to the effects of climate change within catchments;
38. Monitor the impact of the structures that might affect migration and spawning of fish through a consultative process that involves collaboration with the regional organizations;

C. AQUACULTURE

39. Ensure that national programs and policies on aquaculture address social, economic and environmental aspects of sustainable aquaculture to improve food security, livelihoods, employment and poverty alleviation by (i) providing the mechanisms and enabling environment for good aquaculture practices, efficient markets and fair trade; (ii) strengthening the capacity of small-holder farmers; and (iii) promoting inter-agency collaborations;

40. Develop and implement ASEAN guidelines for environment-friendly and responsible aquaculture and good aquaculture practices that cover (i) the integration of quality and safety management systems for products with significant trade potential; (ii) the harmonization for chemical use and food safety in aquaculture; (iii) the development of product traceability systems from farm to market; and (iv) harmonization of the quarantine and inspection/sampling procedure and Sanitary and Phytosanitary (SPS) measures for aquaculture products to secure food safety;
41. Integrate aquaculture into rural development activities within the context of multiple-use of land and water resources through inter-agency coordination in policy formulation, project planning and implementation, stakeholder consultation, extension services and technology transfer, participate in and provide support to regional initiatives that will assess the role of aquaculture in poverty alleviation for better policy formulation;
42. Implement measures or strategies at national and local level to (i) monitor and regulate aquaculture operations; (ii) prevent over development; and (iii) ensure that activities are carried out in an environment-friendly manner. This also includes effectively enforcing regulations to avoid conflict in the use of common resources and adopting the concept of environmental capacity as a strategy to prevent aquatic pollution brought about by intensification of aquaculture activities;
43. Provide government support for research and development (R&D) on (i) improving existing genetic resources; (ii) assessing the impact of climate change on broodstock management; and (iii) the feeding and disease management of broodstock;
44. Promote the production and distribution of specific pathogen-free (SPF) and quality seed through the (i) establishment of certified government or private hatcheries as sources of quality seed; (ii) dissemination of new breeding technologies and techniques for the effective distribution and maintenance of genetically improved strains; and (iii) implementation of sound policies that will promote better hatchery management practices, including the responsible collection and use of wild broodstock and seed;
45. Apply the concept of aquatic biosecurity by providing support to (i) research for development of domesticated, genetically improved, specific pathogen-free (SPF) cultured species; and (ii) the small-scale hatchery operators and farmers so as to enhance their access to healthy broodstock and improve their ability to adopt, at the farm level, the established techniques for aquatic animal health care;
46. Formulate and implement complementary and supportive policies that will (i) build the capacity of small-scale farmers and hatchery operators in adopting simple broodstock and hatchery technologies and innovations; (ii) enhance small-scale farmers and hatchery operators' access to quality broodstock and SPF seeds produced through farmer-friendly broodstock management methods; and (iii) foster strong cooperation between the public and private sectors engaged in development and dissemination of quality broodstock and seed stock;
47. Encourage good and appropriate employment practices in accordance with domestic laws and regulation;
48. Raise awareness of the need to develop financial incentives and micro-credit, with national and regional institutional assistance, for the responsible development of aquaculture enterprises and developmental activities that will optimize socio-economic returns and food security;

49. Reduce the risk of negative environmental impacts, loss of biodiversity, and disease transmission by regulating the introduction and transfer of aquatic organisms in accordance with the Regional Guidelines on the Responsible Movement of Live Aquatic Animals and Plants;
50. Continue the national efforts to control serious disease outbreaks by providing government support to (i) R&D to improve the ability to handle new and emerging diseases and surveillance of transmission of diseases to wild populations; and (ii) regional initiatives on harmonization of regional disease control standards, disease reporting and implementation of contingency plans to handle new and emerging diseases;
51. Further enhance the capabilities in the diagnosis and control of fish diseases within the region through (i) continued support in development of technology and techniques for disease identification; (ii) promotion of the widespread use of affordable, field-friendly, rapid and standardized diagnostic tests; and (iii) the establishment of regional and inter-regional referral systems, including the designation of reference laboratories and timely access to disease control experts within the region;
52. Develop regional warning systems on aquatic animal health and diseases to inform other Member Countries of relevant epidemiological events and to raise awareness of new diseases that may pose risks. Build emergency preparedness capacity through rapid and timely responses to reduce potential catastrophic consequences of diseases;
53. Improve the efficient use of aquatic feeds by strictly regulating the quality of manufactured feed and feed ingredients and support continued research for developing suitable alternative protein sources that will reduce the dependence on fish meal and other fish-based products. This effort will include the consideration of ingredients not derived from wild caught fish, encouraging the culture of species requiring no or low fish meal content in their feed and applying effective feeding management practices, taking into account the need for cultural and social acceptance of alternative feed ingredients;
54. Improve human resource capabilities for responsible aquaculture through (i) closer public and private sector collaboration in R&D, paying particular attention to the need for advanced skills in biotechnology and assessment of the efficacy and economics of the use of probiotics and immunostimulants; and (ii) effectively implementing aquaculture education and extension services;
55. Formulate and implement national policies and strategies that will enable the aquaculture sector to mitigate and/or adapt better to the impacts of climate change. These strategies should include providing support to R&D on climate change, increasing resilience, and strengthening the overall capacity of various stakeholder groups and fostering cooperation within the aquaculture sector and with other sectors;
56. Where applicable, encourage good practices in aquaculture such as the FAO Technical Guidelines on Aquaculture Certification;
57. Encourage Member Countries to take a precautionary approach to safeguard the environment from the acceleration of offshore aquaculture, and to consider developing regional guidelines on responsible marine (inshore to offshore) aquaculture;

D. OPTIMAL UTILISATION OF FISH AND FISHERY PRODUCTS

58. Introduce and provide support for the development and application of technologies that optimize the utilization of catches, reduce post-harvest losses, wastes and discards in commercial and small-scale fisheries and processing operations, through improved

processing, facilities and infrastructure development, on-board and on-shore handling, storage, distribution and marketing of fish and fishery products;

59. Promote the production of and preserve the diversity of traditional fish products by assisting producers to secure stable supplies of quality raw materials, meet food safety requirements and to improve product identity, nutritive value and marketing. In the process, promote One Village One Fisheries Product (FOVOP) and other initiatives to promote local fishery products;
60. Develop traceability systems, with mechanisms as needed to certify or validate the information, for the whole supply chain, and establish regulations and enforcement schemes in line with international standards. Align Member Countries' inspection systems and incorporate strengthened port inspections in the process as a means to improve inspection systems;
61. Strengthen fish quality and safety management systems that support the competitive position of ASEAN fish products in the world markets, including moving towards ISO/IEC 17025 accreditation of national fish inspection laboratories, strengthening capacity and acknowledging the recognized national laboratories, risk analysis and equivalence agreement such as the Mutual Recognition Agreement (MRA) and promote the implementation of the quality and safety management systems among small and medium enterprises in the ASEAN region;
62. Encourage relevant control agencies at all levels in applying appropriate legislation and coordinated activities regarding the handling, processing, distribution, storage, marketing, quality and safety of fish and fishery products;
63. Promote and conduct training programs and develop training materials to upgrade the technical skills and competencies of personnel in the public and private sectors on fisheries post-harvest technology and food safety management system;
64. Raise awareness of the need to develop financial incentives and micro-credit, with national and regional institutional assistance for the responsible development of fisheries and aquaculture enterprises and developmental activities that will optimize socio-economic returns and food security;
65. Encourage good and appropriate employment practices in accordance with domestic laws and regulations;
66. Develop standards and guidelines for aquaculture products handling and transportation, hygienic vessel design and construction, and include training of fish handling as part of the requirement for issuance of permits at all levels for fish vessel crews, and encourage new workers to enter the industry where needed;

E. FISH TRADE

67. Strengthen cooperation among Member Countries to implement international standards with regards to trade on fish and fishery products within the ASEAN region;
68. Establish regional/ASEAN standards applicable for fishery and aquaculture products that are in line with international requirements and applicable to the region. Harmonize standards, technical regulations and conformity assessment procedures as inputs for the establishment of the ASEAN Policy Guidelines on Standards and Conformance, to increase the competitiveness of fishery products on regional and international markets;

69. Strengthen cooperation and mechanisms among Member Countries to work towards common positions that could be reflected in international fish trade related fora, such as World Trade Organization (WTO), Food and Agriculture Organization of the United Nations (FAO), Office International des Epizooties (OIE), *Codex Alimentarius* Commission, and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
70. Engage the private sector (*e.g.* ASEAN Seafood Federation) in addressing trade-related issues, and in collaborative efforts to promote and sustain regional and international trade;
71. Assist small-scale producers to comply with standards on safety and quality of fish and fishery products by providing support programs including training;
72. Assist small-scale producers from both capture fishery and aquaculture in securing and maintaining access to markets at the national, regional and international levels, and in the process, develop marketing systems that are not capital intensive and accessible for local producers;
73. Encourage and provide guidance to develop/improve branding of fish and fishery products that demonstrate the eco-friendly and socially acceptable nature of ASEAN fish products (*e.g.* one community one fishery product), including organic standards and coordination of Halal requirements;
74. Encourage the implementation of appropriate international standards and strengthen programs relevant to Sanitary and Phytosanitary (SPS) measures, Technical Barriers to Trade (TBT) measures, R&D, as well as capacity building and awareness raising on fish trade-related issues, and information dissemination recognizing the different status of development in Member Countries;
75. Strengthen risk assessment and R&D related to the use of Genetically Modified Organism (GMO) products in fisheries and aquaculture, including food safety issues;

F. REGIONAL AND INTERNATIONAL POLICY FORMULATION

76. Increase participation and involvement of Member Countries in international fora and technical committees such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); *Codex Alimentarius* Commission; Food and Agriculture Organization of the United Nations (FAO); Office International des Epizooties (OIE); Regional Fisheries Bodies (RFBs); and World Trade Organization (WTO); and promote ASEAN interest, recognizing that fisheries policies of relevance to the ASEAN region are increasingly discussed and agreed upon at the global level.



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Southeast Asian Fisheries Development Center
Nay Pyi Taw, the Republic of the Union of Myanmar
2-6 April 2012

WP02



SEAFDEC ANNUAL REPORT 2011

(Final Draft)

Southeast Asian Fisheries Development Center

Preparation and Distribution of This Document

This SEAFDEC Annual Report 2011 was prepared by the Secretariat of the Southeast Asian Fisheries Development Center (SEAFDEC) in collaboration with the SEAFDEC Departments, namely: Training Department (TD), Marine Fisheries Research Department (MFRD), Aquaculture Department (AQD), and Marine Fishery Resources Development and Management Department (MFRDMD). The Annual Report is distributed to the SEAFDEC Member Countries and Departments, partner agencies and other fisheries-related organizations, and to the public to make them aware of the activities of SEAFDEC and promote the visibility of the Center.

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ABOUT SEAFDEC

The Southeast Asian Fisheries Development Center (SEAFDEC) is an autonomous inter-governmental body established in 1967. The mandate of SEAFDEC as endorsed by the 41st Meeting of the SEAFDEC Council is “*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*”. SEAFDEC comprises 11 Member Countries: Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. The Center operates through the Secretariat located in Thailand and has four Technical Departments, namely: the Training Department; the Marine Fisheries Research Department; the Aquaculture Department; and the Marine Fishery Resources Development and Management Department.

The Secretariat

The SEAFDEC Secretariat is mandated to coordinate and oversee the general policy and planning of the Center, and acts as the focal point for channeling and implementing the decisions and resolutions of the SEAFDEC Council of Directors. In addition, the Secretariat also organizes regular SEAFDEC meetings to obtain directives and guidance from the Member Countries on the operation of the organization, as well as regional technical consultations and meetings on issues as recommended by the Member Countries.

The Training Department (TD)

Established in Thailand in 1968, TD has been focusing its efforts on the development of modern fishery techniques to aid regional fisheries in a more sustainable approach through the promotion of responsible fishing technologies and practices, exploration of resources, and advancing the coastal fisheries management approach. Under the new Strategic Plan which was endorsed in 2006, the structure and activities of TD have been adjusted to emphasize on the promotion of coastal fisheries management to ensure responsible resource utilization and sustainable livelihoods in coastal communities, and the promotion of off-shore fisheries through the development of best fishing practices and energy optimization technology to ensure stable supply of food fish and reduce fishing pressure in coastal areas.

The Marine Fisheries Research Department (MFRD)

MFRD was established in Singapore in 1969 and is responsible for promoting, undertaking, and coordinating research in fisheries post-harvest technology and furthering the development of the fish processing industry in the region. Its task includes research and development on fisheries post-harvest technology and practices, such as fish processing technology to optimize the utilization of harvested fish and enhancing the quality and safety of fish and fishery products. MFRD also develops technology-based analytical methods to assess seafood safety and quality, and publishes several manuals as reference materials for the Member Countries.

The Aquaculture Department (AQD)

Established in the Philippines in 1973, AQD has been carrying out research, technology verification, training and information dissemination on a wide range of aquaculture disciplines, including broodstock management and seed quality improvement, promotion of responsible and environment-friendly aquaculture, diagnosis and control of aquatic diseases, aquaculture for stock enhancement, and culture of aquatic species under international concerns. The aquaculture commodities covered by AQD include fishes, shrimps, mud crab, mollusks, and seaweeds. In addition, AQD also promotes good aquaculture practices and effective management of aquatic resources to support rural development and alleviate poverty.

The Marine Fishery Resources Development and Management Department (MFRDMD)

MFRDMD was established in Malaysia in 1992 to conduct activities on marine fishery resources focusing on biological studies of commercially important fish species, resource assessment and management, and conservation and management of aquatic species under international concerns, *e.g.* sharks and marine turtles. MFRDMD also implements activities that support the Member Countries in gathering information on inland capture fisheries, and developing of indicators to be used for the sustainable development and management of fisheries.

SEAFDEC COUNCIL IN 2011

Chairperson of the SEAFDEC Council: Dato' Ahamad Sabki bin Mahmood

SEAFDEC Council and Alternate Council Directors

Brunei Darussalam

Council Director: Hajah Hasnah binti Ibrahim (until November 2011)
Director, Department of Fisheries
Abdul Halidi Mohd. Salleh (from December 2011)
Director, Department of Fisheries

Alternate Council Director: Abd. Halidi bin Mohd. Salleh (until November 2011)
Deputy Director, Department of Fisheries
Haji Sabri Mohd. Taha (from December 2011)
Deputy Director, Department of Fisheries

Cambodia

Council Director: H.E. Dr. Nao Thuok
Director-General, Fisheries Administration

Alternate Council Director: H.E. Dr. Sam Nouv
Deputy Director-General, Fisheries Administration

Indonesia

Council Director: Dr. Martani Huseini (until January 2011)
Director-General of Fisheries Product Processing and Marketing
Dr. Endhay Kusnendar (from February 2011)
Chairman of the Agency for Marine and Fisheries Research

Alternate Council Director: Dr. Made L. Nurdjana (until January 2011)
Director-General of Aquaculture
Dr. Dedi Sutisna (from February 2011)
Director General of Capture Fisheries

Japan

Council Director: Mr. Masanori Miyahara
Deputy Director-General, Fisheries Agency

Alternate Council Director: Mr. Tadashi Yokoyama
Director, First Country Assistance Planning Division

Lao PDR

Council Director: Dr. Bounkhouang Khambounheuang
Director-General, Department of Livestock and Fisheries

Alternate Council Director: Dr. Somphanh Chanphenxay (until February 2011)
Deputy Director-General, Department of Livestock and Fisheries
Mr. Bounthong Saphakdy (from March 2011)
Director of Fisheries Division

Malaysia

Council Director: Dato' Ahamad Sabki bin Mahmood
Director-General, Department of Fisheries Malaysia

Alternate Council Director: Mr. Ismail bin Abu Hassan
Deputy Director-General, Department of Fisheries (Development),
Malaysia

Myanmar

Council Director: Mr. Khin Ko Lay
Director-General, Department of Fisheries

Alternate Council Director: Mr. Kyaw Myo Win
Deputy Director-General, Department of Fisheries

Philippines

Council Director: Atty. Malcolm I. Sarmiento, Jr. (until May 2011)
Director, Bureau of Fisheries and Aquatic Resources
Atty. Asis G. Perez (from June 2011)
Director, Bureau of Fisheries and Aquatic Resources

Alternate Council Director: Mr. Gil A. Adora
Assistant Director for Technical Services, Bureau of Fisheries and Aquatic Resources

Singapore

Council Director: Ms. Tan Poh Hong (until October 2011)
Chief Executive Officer, Agri-Food & Veterinary Authority of Singapore
Mr. Lee Kwong Weng (from November 2011)
Deputy CEO, Agri-Food & Veterinary Authority of Singapore

Alternate Council Director: Ms. Tan-Low Lai Kim
Director, Food Supply Resilience Department, Agri-Food & Veterinary Authority of Singapore

Thailand

Council Director: Dr. Somying Piumsombun (until November 2011)
Director-General, Department of Fisheries
Dr. Wimol Jantrarotai (from December 2011)
Director-General, Department of Fisheries

Alternate Council Director: Dr. Nuntiya Unprasert (until October 2011)
Deputy Director-General, Department of Fisheries
Mr. Chirdsak Vongkamolchoon (from November 2011)
Deputy Director-General, Department of Fisheries

Vietnam

Council Director: H.E. Dr. Luong Le Phuong
Vice Minister, Ministry of Agriculture and Rural Development

Alternate Council Director: Dr. Chu Tien Vinh (until October 2011)
Director-General, Department of Capture Fisheries and Resources Protection
(Vacant from 2 October 2011)

SEAFDEC SENIOR OFFICIALS IN 2011

Secretary-General

Dr. Chumnarn Pongsri

Deputy Secretary-General

Mr. Kenji Matsumoto

Training Department (TD)

Chief

Dr. Chumnarn Pongsri

Deputy Chief

Mr. Kenji Matsumoto

Marine Fisheries Research Department (MFRD)

Chief

Mr. Yeap Soon Eong

Aquaculture Department (AQD)

Chief

Dr. Joebert D. Toledo

Deputy Chief

Dr. Teruo Azuma

Marine Fishery Resources Development and Management Department (MFRDMD)

Chief

Ms. Mahyam Mohd. Isa

Deputy Chief

Dr. Masaya Katoh

MESSAGE FROM THE CHAIRPERSON OF THE SEAFDEC COUNCIL

Dato' Ahamad Sabki bin Mahmood

MESSAGE FROM THE SECRETARY-GENERAL OF SEAFDEC

Dr. Chumnarn Pongsri

OVERVIEW OF SEAFDEC ACTIVITIES IN 2011

The activities of SEAFDEC in 2011 were implemented in line with the policy directives given by the SEAFDEC Member Countries during SEAFDEC annual meetings, *i.e.* the 33rd Meeting of the SEAFDEC Program Committee (30 November-2 December 2010, Thailand), 13th Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) (3-4 December 2010, Thailand), and the 43rd Meeting of SEAFDEC Council (4-8 April 2011, Malaysia).

Formulation and development of the programs and activities implemented by SEAFDEC in 2011 had been guided mainly by regional and international fisheries policy frameworks, particularly the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region adopted by the ASEAN-SEAFDEC Ministers during the ASEAN-SEAFDEC Millennium Conference in 2001. Moreover, after the establishment of the ASEAN-SEAFDEC Strategic Partnership (ASSP) in 2007, SEAFDEC has been implementing activities to support the ASEAN in its efforts towards the realization of ASEAN Economic Community, particularly the ASEAN Roadmap for Integration of the Fisheries Sector, the ASEAN Integrated Food Security (AIFS) Framework, and the ASEAN Community Building which is expected to be achieved by 2015.

In 2011, SEAFDEC in collaboration with the ASEAN and the Department of Fisheries of Thailand convened the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Toward 2020 “Fish for the People 2020: Adaptation to a Changing Environment” in June 2011 in Bangkok, Thailand. The new decade Resolution and Plan of Action were adopted by the ASEAN-SEAFDEC Member Countries during the said Conference, to serve as new policy framework for the development of sustainable fisheries and in enhancing the contribution of fisheries to food security, starting from 2011 through the coming decade.

The progress of the programs and activities implemented in 2011 has been approved and endorsed by the 34th SEAFDEC Program Committee Meeting held in the Philippines on 14-16 November 2011, and the 14th Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) on 17-18 November 2011, also organized in the Philippines.

The programs and activities implemented by SEAFDEC in 2011 included:

Departmental Programs

1. Center-wide Information Network (Secretariat);
2. Information and Communication Technology (TD);
3. Tailor-made Training and Study Tour (TD);
4. Integrated Mollusk Production (AQD);
5. Mud Crab and Shrimp Domestication (AQD);
6. Marine Fishes (AQD);
7. Small-holder Freshwater Aquaculture (AQD);
8. Seaweed Strain Improvement (AQD); and
9. Aquatic Ecology (AQD).

Programs under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP)

1. Assistance for Capacity Building in the Region to Address International Trade-related Issues (Secretariat);
2. Improvement of Statistics and Information for Planning and Management of Fisheries in the ASEAN Region (Secretariat);
3. Activities Related to Climate Change and Adaptation in Southeast Asia with Special Focus on the Andaman Sea (Secretariat);

4. ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 (Secretariat and all Departments);
5. Strengthening SEAFDEC Network for Sustainable Fisheries and IUU Fishing Related Countermeasures (Secretariat);
6. Responsible Fishing Technologies and Practices: *Fishing in Harmony with Nature* (TD);
7. Sustainable Utilization of Potential Fisheries Resources and Reduction of Post-harvest Losses (TD);
8. Fisheries Resource Survey and Operational Plan for the M.V. SEAFDEC 2 (TD);
9. Deep Sea Fisheries Resources Exploration in Southeast Asia (TD);
10. Collection of Information on Highly Migratory Species in Southeast Asian Waters (TD);
11. Development of Regional Database for Fishery Management (TD);
12. Promotion of Rights-based Fisheries and Co-management Towards Institution Building and Participatory Mechanism for Coastal Fisheries Management (TD);
13. Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement (TD);
14. Improvement of Information Gathering System for IUU Fishing Related Countermeasures in Southeast Asia (TD);
15. Promotion on Fishing License, Boats Registration, and Port State Measures (TD);
16. Human Resource Development for Sustainable Fisheries (TD);
17. Chemical and Drug Residues in Fish and Fish Products in Southeast Asia: Biotoxins Monitoring in the ASEAN (MFRD);
18. Traceability Systems for Aquaculture Products in the ASEAN (MFRD);
19. Utilization of Freshwater Fish for Value-Added Products (MFRD);
20. Promotion of Sustainable and Region-oriented Aquaculture (AQD);
21. Resource Enhancement of Internationally Threatened and Over-exploited Species in Southeast Asia through Stock Release (AQD);
22. Accelerating Awareness and Capacity-building in Fish Health Management in Southeast Asia (AQD);
23. Food Safety of Aquaculture Products in Southeast Asia (AQD);
24. Tagging Program for Economically-important Pelagic Species in the South China Sea and Andaman Sea (MFRDMD in collaboration with TD); and
25. Research and Management of Sea Turtles in Foraging Habitats in Southeast Asian Waters (MFRDMD).

Non-Funded FCG/ASSP Programs

1. Use of Indicators for Sustainable Development and Management of Capture Fisheries in the ASEAN (MFRDMD);
2. Development of Integrated Inland Fisheries Management in ASEAN Countries (MFRDMD); and
3. Capacity Improvement of Fisheries Community for Fisheries Management and Alleviation of Poverty (TD and Secretariat).

Other Programs

1. Cetacean Research in Southeast Asian Waters: Cetacean Sighting Program;
2. Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institution Building and Participatory Approaches; and
3. Safety at Sea for Small Fishing Boats.

SEAFDEC ACTIVITIES IN 2011

The programs and activities implemented by SEAFDEC in 2011 could be broadly grouped into nine categories to appropriately respond to the requirements of the Member Countries as stipulated in the new decade Resolution and Plan of Action.

1. Development of Policy Framework on Sustainable Fisheries for Food Security

The fisheries sector of the Southeast Asian region has been widely recognized as one of the important sectors providing substantial contributions to food security for the countries in the region. In order to sustain such condition, the need to address the concerns confronting the fisheries sector and the emerging issues and challenges that could impede the sustainable development and the contribution of fisheries to food security in the region, had been recognized. Thus, SEAFDEC in collaboration with the ASEAN co-organized the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People 2020: Adaptation to a Changing Environment” in Bangkok, Thailand on 13-17 June 2011, which was hosted by the Government of Thailand through its Department of Fisheries.

During the preparatory works for the Conference, several technical consultations were conducted by SEAFDEC, ASEAN and the Member Countries at regional, sub-regional and national levels involving fisheries-related organizations/agencies and the stakeholders. The outputs from the consultations served as technical inputs for the planning and conduct of the Conference, specifically for the Technical Session and also as basis for the development of the draft Resolution and Plan of Action which were subsequently considered and adopted by the ASEAN-SEAFDEC Member Countries. The Conference was attended by more than 500 participants and fisheries experts from the ASEAN-SEAFDEC Member Countries as well as from other parts of the world, regional and international organizations, and the Senior Officials and Ministers from the ASEAN-SEAFDEC Member Countries who are responsible for fisheries.



Representatives from the ASEAN-SEAFDEC Member Countries with the SEAFDEC Secretary-General and the representative from ASEAN during the Inaugural Ceremony of the Conference



Technical exhibition showcasing the activities and achievements of SEAFDEC and the ASEAN-SEAFDEC Member Countries in enhancing sustainable development of fisheries

During the Technical Session of the Conference, important fisheries-related issues and concerns were discussed under eight thematic panel sessions, namely: 1) Enhancing Governance in Fishery Management; 2) Sustainable Aquaculture Development; 3) Ecosystem Approach to Fisheries; 4) Post-harvest and Safety of Fish and Fisheries Products; 5) Emerging Requirements for Trade in Fish and Fisheries Products; 6) Climate Change Adaptation and Mitigation Towards Food Security; 7) Livelihood among Fishing Communities and Prospects of Employment in Fisheries-related Activities; and 8) Sustaining Food Supply from Inland Fisheries.

The preparations and conduct of the panel sessions were carried out in collaboration with the Member Countries and relevant regional/international organizations. As a result, the Conference came up with momentous recommendations that should be taken into consideration by the countries in the Southeast Asian region for the sustainability of the fisheries sector. Specifically, the major outputs of the Conference included significant suggestions during the Technical Session; the adopted “Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020” and “Concept Notes on the Conference Follow-up Program” (5-year plan) by the ASEAN-SEAFDEC Senior Officials; and the adopted “Resolution on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020” by the ASEAN-SEAFDEC Ministers. The Conference also paved the way for enhancing closer cooperation and partnership among the ASEAN-SEAFDEC countries, relevant regional/international organizations, and stakeholders for the implementation of activities to support the sustainable development of fisheries for food security in the region.

Immediately after the Conference, follow-up activities were undertaken by SEAFDEC starting with the “Inception Workshop on Follow-up Activities to the ASEAN-SEAFDEC Conference” which was conducted on 4-5 July 2011 in Bangkok, Thailand. The Inception Workshop aimed to raise the awareness of the ASEAN-SEAFDEC countries, relevant agencies/institutions/organizations and donor agencies on the new Resolution and Plan of Action adopted during the Conference; review the existing activities/initiatives undertaken in the region in line with the new Resolution and Plan of Action; and facilitate the planning and implementation of activities by relevant agencies, institutions and organizations at various levels in line with the new Resolution and Plan of Action in coordinated and harmonized manner. Then followed the publication of relevant outputs of the Conference, such as the adopted “Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020”, and two volumes of the Conference Proceedings. In addition, SEAFDEC also made some adjustments where possible to its activities under the existing programs to accommodate the priority issues identified in the Resolution and Plan of Action as well as the recommendations from the Technical Session of the Conference and the Inception Workshop.

2. Responsible Fishing Technologies and Practices

In order to put an end to the deteriorating and declining fishery resources particularly in marine capture fisheries, the Training Department (TD) during the past decade, has been conducting activities that aimed to enhance responsible fishing technologies and practices. The activities implemented in 2011 continued to focus on the promotion of selective fishing gears and devices for the sustainable utilization of fishery resources and at the same time minimize the impacts of fishing activities to the coastal and marine resources and ecosystems. Building upon the progress of its past initiatives in promoting the use of the Juvenile and Trash Excluder Devices (JTEDs), TD provided technical assistance to the Philippine Bureau of Fisheries and Aquatic Resources (BFAR) during its National Seminar on “JTED in Bottom Trawl Fishery” held in the Philippines in January 2011. During the Seminar, the design and use of JTEDs were demonstrated to fishery extension officers and fishing gear technologists while the rationale and importance of installing JTEDs in trawlers were explained to fishing operators and fishers. After the Seminar, the resource persons from TD also took the opportunity to conduct an investigation of the use of baby shrimp trawl net in Tacloban City, Philippines.

Moreover, activities to promote the use of alternative energy sources and improve energy efficiency in fishing operations, particularly the use of light in squid/anchovy fishing, were also implemented. In September 2011, TD provided technical advice to the Department of Fisheries of Myanmar in planning and preparation of a national study on the impacts of the use of lights in squid fishing on the fishery resources and the ecosystem. In addition, TD also took the initiative of developing appropriate fish handling technologies, including the hygienic handling of fish onboard to improve the quality of catch in small- and medium-scale fishing boats and reduce post-harvest losses. In 2011, on-site training sessions on appropriate fish handling and optimum utilization of fuel for fishing operations, were conducted for fishers in Thailand and Vietnam.



Practice on the installation of Juvenile and Trash Fish Excluder Device

3. Exploration and Monitoring of Fishery Resources and Their Utilization

Better understanding of the fishery resources and their status could be crucial for the development of appropriate policies and management plans by the countries in the region for the sustainability of fisheries. With such perception, TD had been collaborating with MFRDMD especially in providing technical assistance to the Member Countries in the conduct of fishery resources surveys in their respective national waters through the use of the M.V. SEAFDEC 2. The activities focus not only in undertaking research to obtain data and information on the fishery resources, but also in promoting human resource development by giving opportunities for fishery officers from the Member Countries involved in such activities, to enhance their capacities.

3.1 Exploration and Fishery Resources Survey in Southeast Asian Waters

On 8-21 July 2011, TD in collaboration with the Department of Fisheries (DOF) of Brunei Darussalam carried out a fishery resources survey in Zone 2 located 3-20 nautical miles off the Brunei Darussalam coast. The survey was aimed at obtaining information on fishery resources in the trophic level, and scientifically verifying the impacts of fishing gears and methodologies on the marine environment. Through this collaborative survey, knowledge and experience of the technical staff of TD had been extended to the concerned fishery staff of Brunei Darussalam, particularly in the aspect of sampling gears and survey equipment, as well as in data analysis. During the survey, discussion was also made with the DOF of Brunei Darussalam on the possibility of conducting fishery resources survey of untrawlable grounds, and surveys of the deep-sea fishery and pelagic resources including ways and means of analyzing the data compiled from the surveys.



Fish species collected during the demersal resource survey onboard the M.V. SEAFDEC 2 in the waters of Brunei Darussalam



Participants analyzing samples during the Training Workshop on Identification of Deep-sea Benthic Macro-invertebrates Vulnerable to Fishing Gear

In addition to the collaborative resources surveys, TD also conducted activities that aim to enhance the capacity of fishery officers from the Member Countries in the identification of deep-sea species, which is very crucial in carrying out activities in the future that aim to collect information on deep-sea fishery resources. The activities included the Training Workshop on Identification of Deep-sea Benthic Macro-invertebrates Vulnerable to Fishing Gear on 11-15 July 2011 in Samut Prakan, Thailand; and the On-site Training on Identification of Deep-sea Fishes for 16 fishery biologists in Malaysia on 18-21 July 2011 using the specimens collected during the collaborative resource survey in the waters of Sabah-Sarawak in August 2010.

3.2 Collection of Information on Highly Migratory Species

One of the most economically important but highly migratory species in the Southeast Asian waters is tuna. However, the status of tuna stocks in the region is unclear considering that statistics on tuna production collected by most of the Member Countries are very scattered and are believed to have been collected based only on data at landing places without information on the areas where the fish had been caught. In order to address this concern, TD initiated the program on “Collection of Information on Highly Migratory Species in Southeast Asian Waters” in 2008 to gain better understanding of the status of tuna fisheries in Southeast Asia, and develop a tuna database to facilitate the compilation of data collected through the program. In 2009, a one-year-cycle of information on tuna production at selected landing sites was developed and from 2009 to 2010, the catch data on tuna and neritic tuna species and their origins were collected by Indonesia, Philippines, Thailand, and Vietnam at their respective selected landing sites based on an agreed data collection framework. In 2011, the data compiled by the participating countries were presented during the Special Meeting on Improvement of Tuna Information Collection in Southeast Asia which was convened by SEAFDEC on 7-9 September 2011 in Songkhla, Thailand.

In addition, TD also initiated the collection of data/information on tuna from various tuna canneries in Thailand. The data derived from such initiative could be incorporated with other data and information on tuna including tuna statistics in order to come up with better understanding of the status of tuna stocks, fishing, fishing effort/capacity, and catch landing of tuna in the future.

3.3 Tagging of Important Pelagic Species

Pelagic fishes usually migrate over vast distances across the oceans for their spawning and feeding requirements, especially towards the required optimum environmental conditions, *e.g.* water current, temperature, salinity, plankton abundance. Tagging is one of the methods for studying the migratory patterns of small pelagic fishes. The information obtained from the tagging exercises could be used for the identification of small pelagic fish stocks as well as shared stocks. Thus, MFRDMD in collaboration with TD implemented since 2008 the “Tagging Program for Economically-important Pelagic Species in the South China Sea and Andaman Sea”.

The tagging activities which were conducted in collaboration with Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand, and Vietnam, were completed in mid 2011. The target species for the tagging activities in the South China Sea were the Japanese scad (*Decapterus maruadsi*), short mackerel (*Rastrelliger brachysoma*), shortfin scad (*D. macrosoma*), and the Indian mackerel (*R. kanagurta*). For the Andaman Sea area, the species tagged were the short mackerel (*R. brachysoma*) and Indian mackerel (*R. kanagurta*). In the tagging activities in the South China Sea, 71% of targeted number was tagged although it was only for the Japanese scad where the tagged fishes exceeded the target. Meanwhile, for the short mackerel only 85% of the target was tagged, 62% for shortfin scad and 36% for Indian mackerel. In the Andaman Sea area, 92% of targeted fish was tagged, where 98% of the target number for short mackerel was tagged and 88% for the Indian mackerel. Recovery of the tagged fishes was recorded at 1.2% for the South China Sea and 1.3% for the Andaman Sea. Such information could be used to provide an initial picture of the migratory pattern of the species.



Map showing the ten sampling sites for DNA study of Indian mackerel and Japanese scad in the South China Sea, and four sampling sites in the Andaman Sea for Indian mackerel

After the tagging exercises, the focus of the program shifted to genetic study through DNA analysis of the Indian mackerel and Japanese scad. In order to conclude the previous activities and to introduce the new phase of the program, MFRDMD organized the “Fourth Meeting of Core Experts on Tagging Program for Economically-important Pelagic Species in the South China Sea and Andaman Sea” in Kuala Lumpur, Malaysia on 20-22 September 2011. The Meeting discussed the preliminary findings of the tagging exercises, and also the Standard Operating Procedure (SOP) for collecting tissue samples of the Indian mackerel and Japanese scad in sampling sites agreed upon during the Meeting.



Participants in the 4th Meeting of Core Experts on Economically-important Pelagic Species held in Kuala Lumpur, Malaysia in September 2011

4. Management for Sustainable Fisheries

For the effective management of fishery activities and in strengthening the sustainable exploitation of fishery resources, it is necessary to have a clear picture of the current status of fishing capacity in the respective waters of the countries in the region. Several relevant regional consultations have been convened in the past years where the recommendations emphasized on the need for the countries to improve their vessel registration and fishing licensing systems as means of combating IUU fishing in the region, and develop a mechanism for sharing the relevant information among the countries as appropriate.

4.1 Management of Fishing Capacity and Combating Illegal, Unreported and Unregulated (IUU) Fishing

TD and MFRDMD jointly organized the “Regional Core Experts Meeting on Fishing Licensing, Boats Registration and Information on Export of Fisheries Products in Southeast Asia” on 4-7 October 2011 in Bangkok, Thailand under the SEAFDEC program on “Promotion of Fishing Licensing, Boats Registration and Port State Measures”. The Meeting focused its discussion on the minimum requirements for fishing licensing and vessel registration in the region, which could serve as basis for the development of regional guidelines on fishing licensing and boats registration in the near

future, and on the export of fishery products from the region. With regards to the export of fishery products from the countries in the region, the importance of value-adding was deemed necessary to increase the price and marketability of the region's fish and fishery products.



Group discussion during the Regional Core Expert Meeting on Fishing Licensing, Boats Registration and Information on Export of Fisheries Products in Southeast Asia



Training Course on Fisheries Management to Combat IUU Fishing in the Southeast Asian Region

Illegal, unreported and unregulated or IUU fishing is among the very important issues being addressed by the countries in the region. It is well recognized that the several requirements and regulations imposed by major importing countries, *e.g.* countries in the EC and the USA, as well as the FAO Legally-binding Instrument on Port State Measures, are aimed at preventing the entry into importing countries' ports, products that have been derived from IUU fishing.

In an effort to enhance the adoption of responsible fisheries and combat IUU fishing in the Southeast Asian region, TD through the SEAFDEC program on “*Human Resource Development for Sustainable Fisheries*” organized the “Regional Workshop on HRD Programs for Sustainable Fisheries and Related Countermeasures to Combat IUU Fishing in Southeast Asia” on 6-8 July 2011. The Workshop had the main objective of identifying the needs and requirements for HRD programs in promoting sustainable fisheries and combating IUU fishing. TD also proposed to conduct new training programs designed to support IUU fishing countermeasures, where recommendations to improve the respective curricula of the training courses to be conducted in the future, were made during the Workshop. Moreover, the HRD Network was also established and had since then been mobilized to facilitate the exchange of information and serve as forum to discuss relevant issues encountered by the countries in the region with regards to combating IUU fishing.

Following the recommendations of the HRD Workshop, TD therefore packaged two new training courses. The “Regional Training for Trainers on Fishery Management to Combat IUU Fishing (mainly for fishery managers)” which was conducted on 6-15 September 2011 in Samut Prakan, Thailand, aimed to assist fishery managers in formulating policies and management plans to combat IUU fishing. The second was the “Regional Training for the Trainers on Ecosystem Approach to Fisheries and Extension Methodologies”, which aimed to strengthen the awareness and knowledge of participants on the impact of IUU fishing on the marine ecosystems, and familiarize participants with the principles and concept of responsible fishing, sustainable fisheries development, and on the concept of ecosystem approach to fisheries (EAF) and its application in the Southeast Asian context, which was conducted from 22 November to 16 December 2011 in Samut Prakan, Thailand. In addition, TD also formulated other new training courses, such as the Regional Training Course on Effective MCS System, and the Regional Training for Trainers on Fishery Information and Statistics for Management of Marine (Coastal) Fisheries which would be launched in 2012.

Moving towards the same goal of combating IUU fishing in the Southeast Asian region, the SEAFDEC-Sida Project which is funded by the Swedish International Development Cooperation

Agency, continued its efforts in enhancing the cooperation among Member Countries around the Andaman Sea for the improvement of fisheries management, which were fulfilled through a series of on-site workshops in specific sites, and Sub-regional Meetings of the Gulf of Thailand and the Southern Andaman Sea that were organized in 2011. During these events, the rules and regulations on the management of fishing capacity were discussed, and the need to reduce illegal and destructive fishing operations was recommended. While the events had provided relevant information on the ways and means of improving fisheries management in the region to combat IUU fishing, it was agreed that efforts with respect to “Monitor, Control and Surveillance”, “vessel records and inventory” and “port monitoring” should be sustained by building upon regional and sub-regional cooperation, and the need to monitor, assess and record the status of fisheries in the Gulf of Thailand, the Andaman Sea and the region’s waters as a whole, was also well recognized.

Meanwhile, in an effort to strengthen the cooperation among ASEAN-SEAFDEC Member Countries, SEAFDEC also kept track of the progress on the promotion of sub-regional and regional cooperation in fisheries management by taking part in various international and regional fora, such as the 3rd Meeting of the ASEAN Fisheries Consultative Forum (AFCF) in Cambodia (April 2011), the 4th Meeting of the Coordination Committee on Regional Plan of Action to Promote Responsible Practices including Combating IUU Fishing in the Southeast Asian Region in Siem Reap, Cambodia (November 2011), and the Expert Consultation on Effect, Surveillance and Law Enforcement to Combat Illegal, Unreported and Unregulated (IUU) Fishing in Jakarta, Indonesia (December 2011), as well as in relevant events organized by FAO/Asia-Pacific Fishery Commission (APFIC).

4.2 Ecosystem Approach to Fisheries

In line with the promotion of the concept of ecosystem approach to fisheries (EAF) which is being promoted by FAO, the SEAFDEC-Sida Project in cooperation with partners, has for six to seven years, been working towards building awareness on the need to integrate fisheries management into habitat management around the Andaman Sea through a sequence of On-site Workshops/Training Sessions (e.g. in Medan, Indonesia (2010); Langkawi, Malaysia (2010); Satun, Thailand (March 2011); Myeik, Myanmar (March 2011); and Ranong, Thailand (July 2011)). These activities were followed by Sub-regional Consultations in two distinct sub-sub-regions, namely: the Southern Andaman Sea (October 2011) and Northern Andaman Sea (March 2012) in cooperation with the Bay of Bengal Large Marine Ecosystem (BOBLME) Project. The basic element in the plans is to promote sub-regional cooperation through dialogues among neighbouring countries, by providing special attention to shared ecosystems/habitats, shared (groups) of species, and fishing activities in trans-boundary areas including the need to combat illegal and destructive fishing.

These events had provided basis for common understanding, raising awareness and sharing of information on the importance of critical habitats to fishes (e.g. mangroves, coral reefs and sea grass beds) and related ecosystems, as well as information on migratory fish stocks (e.g. *Rastrelliger* spp.). During the said events, a set of criteria for development of larger fisheries management and conservation areas (building upon existing but smaller management areas) was introduced to local fishers and relevant local and central responsible institutions of the countries around the Andaman Sea.

Specifically during the Southern Andaman Sea Sub-regional Consultation in October 2011, which was attended by local fishers, local administration and other officers from relevant agencies in Indonesia, Malaysia and Thailand, the importance of developing joint/trans-boundary approaches for the management of migratory species such as the Indo-Pacific mackerel and Indian mackerel (*Rastrelliger* spp.) around the Andaman Sea, was highlighted. Moreover, in order to have better understanding and improve information on *Rastrelliger* spp., data to be collected could include fish spawning areas, feeding areas, and migration patterns as well as oceanographic information. The Southern Andaman Sea Countries (i.e. Indonesia, Malaysia and Thailand) expressed the need to compile scientific-based information required for the management of the species in the Southern Andaman Sea and other larger areas.

During the Third Gulf of Thailand Sub-regional Meeting in September 2011, the sub-regional cooperation among four countries, namely: Cambodia, Thailand, Malaysia, and Vietnam, was reactivated while the activities on the promotion of fisheries and habitat management around the Gulf of Thailand which were initiated by the UNEP/GEF/SCS in collaboration with SEAFDEC, was reintroduced. Specifically in the promotion of fisheries *refugia* and habitat management, the linkage of fish life cycle with their critical habitats was again stressed as an important focus area for continued research and management.

4.3 Habitat Conservation and Resources Enhancement

Deterioration of fishery habitats in coastal and inshore ecosystems is one of the major causes of the decline of the fishery resources in the Southeast Asian region. In order to address this issue, TD has implemented the program on “*Rehabilitation of Fisheries Resources and Habitat/Fishing Grounds for Resources Enhancement*” since 2010, which aims to identify appropriate resource enhancement tools, and develop strategies and guidelines for fishery resource enhancement in the region. Thus, artificial reefs (ARs) had been deployed to serve as resource enhancement tool in a pilot site in Rayong Province (near Samet Island) in Thailand since 2010. Activities to monitor the impacts of the artificial reefs on the fishery resources and the environment had also been carried out. The third survey was conducted on 8-12 August 2011 to investigate the fish species composition near the ARs using trammel net, giant trap, and juvenile fish trap, while underwater video recording was also undertaken to record the status of the resources near the deployed ARs.

With an objective of enhancing sea grass beds, surveys had been carried out by TD since 2010 in a pilot site in Krabi Province (near Andaman Sea) in Thailand to assess the status of sea grass beds which was then followed by the introduction of a rehabilitation program. The second survey on 19-24 July 2011 was aimed to diagnose the state of the fishing grounds and monitor the achievements of the rehabilitation program, *e.g.* investigating the fish species composition using juvenile fish traps and trammel net. In addition, two rearing cages were constructed in the pilot site for the culture of dog conchs as means of rehabilitating the shell resources in sea grass beds, and where the survival and growth rates of the shell were monitored every three months.

For resources enhancement in inland areas, Nam Houm Reservoir in Lao PDR was selected as a pilot site, where TD provided technical assistance in identifying and assessing the resources in the reservoir, as well as in evaluating the fisheries ecosystem and recommending the resource enhancement designs and practices appropriate for the area. The first survey was conducted on 25-29 April 2011 in collaboration with Department of Livestock and Fisheries of Lao PDR and concerned local fishers to identify the fish species composition and fish larvae, as well as collect information on the geographic aspects of the reservoir.



Onsite study to evaluate resource enhancement practices including the impacts of artificial reefs to the fishery resources and the environment



Expert Consultation on the Identification of Critical Fishing Grounds and Regional Habitat Rehabilitation and Management Approaches

Furthermore, TD also organized the Workshop-Expert Consultation on the Identification of Critical Fishing Grounds and Regional Habitat Rehabilitation and Management Approaches on 11-13 October 2011 in Bangkok, Thailand. The Workshop outlined the information needed for identifying critical fishing grounds as well as the appropriate and effective resource enhancement tools, measures and rehabilitation plans for various fishing grounds and habitats. In addition to the compilation of scientific data and information, the Workshop highlighted on the application of local indigenous knowledge and on the active participation of local fishers in the resource enhancement activities as these are the major factors that could ensure successful rehabilitation, conservation and management of fishery habitats in the region.

4.4 Promotion of Co-management and Rights-based Fisheries

Being characterized as mostly small-scale involving large numbers of fishers, the coastal and inland fisheries in the Southeast Asian region continue to face innumerable constraints that impede their sustainability, *e.g.* conflicts over resource uses either with large-scale fisheries or even with the non-fisheries sector. Fisheries co-management which aims to provide opportunities for user-based organizations in sharing and collaborating with government-based agencies to manage the fishery resources, is one of the practical approaches that could help in reducing conflicts among resource users. In addition to co-management, rights-based fisheries is another approach that could secure the privilege of resource users, particularly the small-scale fishers in accessing the right to fish and enhancing better management of fishing capacity and efforts.

TD in collaboration with Lao PDR and Myanmar, has implemented since 2008 the project on “*Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institution Building and Participatory Approaches*” with the main objective of fostering co-management and rights-based fisheries in inland fisheries. More specifically, the project was carried out in conjunction with the resources enhancement activities in Nam Ngum Reservoir in Lao PDR which focused on the demarcation of fish conservation zones, and in Duya Inn Reservoir in Myanmar focusing on alternative and additional sources of employment such as fish culture and post-harvest practices. As part of the project activities, SEAFDEC organized the “Stakeholder of Duya Inn Reservoir Consultative Workshop” on 19-20 April 2011 in Duya Inn, Hinthada, Myanmar to enhance the understanding of local stakeholders on the concept of co-management and rights-based fisheries, and where appropriate, the establishment of institutions involving the stakeholders and local government agencies for the effective management of sustainable inland fisheries.

As a final activity, a Regional Workshop was organized on 14-15 September 2011 in Petchburi Province, Thailand, which mainly aimed to conclude the lessons learnt and experiences gained from the implementation of the project in Lao PDR and Myanmar, and to share the information with the other ASEAN Member States. The Workshop also came up with recommendations that should be considered in undertaking future initiatives on co-management and resources enhancement.

Moreover, TD also implemented since 2008 the project on “*Promotion of Rights-based Fisheries and Co-management Towards Institution Building and Participatory Mechanism for Coastal Fisheries Management*”, the focus of which is on coastal small-scale fisheries. In 2011, a questionnaire was designed to collect baseline information on small-scale coastal fishing communities, which cover wide aspects of information, *e.g.* demographics, fisheries in general, IUU fishing, and participation in enforcement of relevant regulations, job opportunities, climate change and adaptation. The socio-economic surveys were subsequently undertaken to collect information from 462 households in 7 countries, namely: Cambodia, Indonesia, Myanmar, Malaysia, Philippines, Thailand, and Vietnam. It was envisaged that from the results of the surveys, the status of small-scale coastal fisheries in the region would be clarified and could serve as basis for sustainable management of the coastal small-scale fisheries.



Regional Workshop on the Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institution Building and Participatory Approach



Interview with local officers in Cambodia, Indonesia, Malaysia and Philippines on rights-based fisheries and co-management

4.4 Fishery Statistics and Information

The SEAFDEC Secretariat continued to compile the regional fishery statistics, based on national statistics data provided by the Member Countries in line with the Regional Framework for Fishery Statistics of Southeast Asia, which contained standards, definitions and classifications of fishery statistics in the region that had been harmonized with those of FAO. The program on “*Improvement of Statistics and Information for Planning and Management of Fisheries in the ASEAN Region*” which has been implemented since 2007 continued to serve as a platform to support the Member Countries in improving their respective data and information collection systems as tools for development planning and management of fisheries. In addition, a number of technical programs and initiatives have been undertaken by TD and MFRDMD, such as data collection on sharks and tuna that are expected to contribute to improving the capacity of officers at the national/local levels in the collection of data and information; and eventually enhance the efforts of the countries in providing their respective fishery statistics to SEAFDEC for regional compilation.

Specifically in 2011, SEAFDEC exerted efforts to enhance the linkage between fishery statistics provided by the Member Countries with other data and information collected through the implementation of SEAFDEC projects or derived from other projects relevant to data/information collection. During the conduct of various fora, *i.e.* 1) Special Meeting on Improvement of Tuna Information Collection in Southeast Asia (7-9 September 2011, Songkhla, Thailand), 2) Special Meeting on Sharks Information Collection in Southeast Asia (15-17 September 2011, Bangkok, Thailand), and 3) Technical Consultation on Addressing Technical Issues on Selected Commercially-exploited Aquatic Species (18-20 October 2011, Bangkok, Thailand), the consensus specified that fishery statistics could provide indication on the status and trends of particular fish species. However, in several cases especially for aquatic species under international concerns, fishery statistics data could be very scattered and mostly collected as a group without detailed species classification. Thus, other non-routine data and information, *e.g.* collected from research projects, should be incorporated with fishery statistics in order to come up with clearer picture on the status and trends of the resources.



*The Special Meeting on Improvement of
Tuna Information Collection in Southeast Asia,
Songkhla, Thailand*



*The Special Meeting on Sharks Information
Collection in Southeast Asia,
Bangkok, Thailand*

Parallel with the initiatives to improve fishery statistics and information, activities were also undertaken by TD to develop and improve regional databases under its program on “*Development of Regional Database for Fisheries Management*”. The program aims to make regional fishery statistics as well as data and information generated from other SEAFDEC programs and activities, not only accessible but also available for ready use by the public.

In addition to the above initiatives, TD also made efforts to improve the collection of information on small-scale coastal and inland fisheries, taking into consideration the fact that data and information on small-scale fisheries particularly in terms of fishery statistics are very scattered in view of the complexity of the system. Activities were therefore undertaken to enhance the national capacities of the Member Countries in improving and producing better quality and timely fishery information. In 2011, review exercises were undertaken on the tools and methodologies for collecting and compiling information and statistics on inland capture fisheries in Cambodia and Thailand. These were meant to come up with appropriate tools and methodologies that could improve the collection of fishery data in the future.

SEAFDEC also embarked on another initiative in 2011 which aims to establish the status and trend of fisheries in the region. As a pilot exercise, the development of the “*Southeast Asian State of Fisheries and Aquaculture*” or “SEASOFIA” was undertaken by mobilizing available fishery data and information, *e.g.* fishery statistics, outputs and information from various regional consultations and projects, in order to come up with better picture of the status and trends of fisheries and aquaculture in the Southeast Asian region, as well as the issues/and challenges being encountered by fisheries in the region.

5. Conservation and Management of Aquatic Species under International Concerns

SEAFDEC through TD and MFRDMD continued to promote the conservation and management of aquatic species under international concerns, such as sea turtles, sharks, and cetaceans. Moreover, AQD also embarked on stock enhancement activities through stock release of internationally threatened species such as seahorses and the Napoleon wrasse, and of regionally over-exploited species such as the abalone, sea cucumber and mud crab.

5.1 Sea Turtles

MFRDMD has been conducting activities on the conservation and management of sea turtles since 1999, where the first phase of the program focused on sea turtle hatchery management and defining the migratory routes of sea turtles through tagging experiments using the Inconel tags. Later, the study focused on tagging through the use of passive integrated transponder (PIT) tags and satellite telemetry, as well as on the collection of tissue samples to identify the sea turtle populations in the region. From 2010 onwards, the program on “*Research and Management of Sea Turtles in Foraging Habitats in the Southeast Asian Waters*”, which aims to come up with biological and ecological information of sea turtles and their foraging habitats, had been carried out by MFRDMD in collaboration with TD.

Monitoring of the sea turtles tagged with Inconel tags was continued at the nesting sites of sea turtles in Malaysia, Myanmar, Philippines, and Vietnam, while the use of satellite telemetry to monitor migratory routes and foraging habitats was also continued by releasing a juvenile green turtle installed with Platform Terminal Transmitter (PTT), into the Lawas foraging habitat of Sarawak in February 2011. The initial result showed that after 154 days from release, the juvenile green turtle was only 32 km from the releasing point, suggesting that Lawas with abundant sea grass beds could be one of the important foraging habitats for this sea turtle species.



Tagging sea turtle using Inconel tag



Measuring the length of the curved carapace



Getting a green turtle attached with PTT ready for release into the Lawas foraging habitats

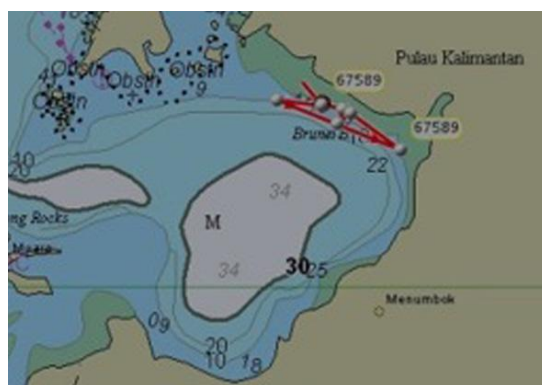
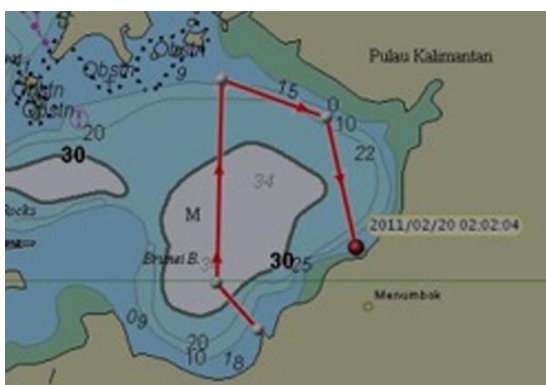
For the genetic analysis to study the sub-populations of sea turtles, tissue samples of sea turtles from foraging habitats in Lawas, Sarawak were collected on two occasions, on 7-10 January and 12-15 February 2011. A special drift net locally called *belat* which is approximately 1000 m long was used to catch the sea turtles in the sea grass area in Lawas waters. Sea turtles that fed on sea grass during high tide at night were trapped during the low tide in the morning. As a result, a total of 28 different sizes and ages of green turtles were caught, and their tissue samples were collected for the population study.



Assembling the drift net



Collecting tissue samples



Position of the green turtle on 20 February (left) and on 18 July 2011 (right) at Lawas foraging habitat

Moreover, MFRDMD in collaboration with Sabah Park and the Department of Fisheries (DoF) Malaysia also conducted the Training on Scientific Survey in Sea Turtle Foraging Habitats in Mabul and Sipadan Islands of Malaysia from 26 September to 1 October 2011. The training aimed to build the capacity of the Member Countries in undertaking surveys and other initiatives/activities relevant to conservation and management of sea turtles. From the 81 green turtles and 3 hawksbill turtles of various sizes caught at 8 sampling sites in the waters of Sipadan Island, information on biological parameters such as curved carapace length (CCL), curved carapace width (CCW), weight, and tissue samples for DNA and genetic analysis, were collected as well as water quality parameters at the sampling sites. In addition, information on the interaction between sea turtles and fishing activities was also collected from local communities at Mabul Island, Malaysia through a questionnaire survey.

Making use of the results of its study on sea turtle foraging habitats, MFRDMD conducted the “Regional Workshop on Management of Sea Turtle Foraging Habitats in Southeast Asian Waters” on 1-3 November 2011 at Kuching, Sarawak Malaysia. The Workshop came up with the draft “Standard Operating Procedure for Conducting Scientific Survey in Sea Turtle Foraging Habitats” and the draft “Guidelines to Develop Management Plan for Foraging Habitats of Green Turtles (*Chelonia mydas*)” which would be used as reference for the conduct of relevant activities in the future.



Measuring the length and width of sea turtles



Weighing the sea turtles



Interview with member of local community



Collecting water quality parameters

In addition to the studies undertaken by MFRDMD, TD also carried out an experiment to investigate the response and reaction of sea turtles to different sound frequencies at the Sea Turtle Conservation Center in Munnai Island, Rayong Province in Thailand. Once it is established that certain sound stimuli affect the behavior of sea turtles, the information could be used as basis for the development of equipment that could reduce by-catch of sea turtles in the region. TD also continued to conduct activities aimed at promoting and raising awareness on the use of Circle-hook in hook-and-line fishing in the Member Countries in order to reduce mortality of sea turtles incidentally caught during fishing operations.



Participants in the Regional Workshop on Management of Sea Turtle Foraging Habitats in Southeast Asian Waters

5.2 Sharks

Although not considered as among the most commercially-important marine fishery commodities of the Southeast Asian region, sharks and rays are usually caught by artisanal small-scale capture fisheries as non-target species. This results in their declining population and as a consequence, several species of sharks have been proposed for listing in the CITES Appendices. Such action by CITES could create huge impacts to the fisheries sector of the region. It has therefore become necessary for countries in the region to collect relevant data and information that could serve as basis for the development of appropriate measures for the conservation and management of sharks and rays, and also as justification during the negotiations in relevant international fora including the CoP-CITES.

Information on shark production, utilization and trade are essential for the development of appropriate policies and plans for the conservation and management of sharks. However, the currently available data and information on sharks in the region are very scattered. TD therefore organized the “Special Meeting on Sharks Information Collection in Southeast Asia” in Bangkok, Thailand, on 15-17 September 2011, to update the current available information on shark fisheries in the region, and to exchange views among experts on the ways and means of ensuring the sustainable utilization of sharks. The conduct of a regional study on stock assessment was recommended during the Meeting, where pragmatic indicators such as changing of fish size, CPUEs, length at first sexual maturity, among others, should be used to analyze the data that are already available in the SEAFDEC database. Meanwhile, the use of logbook or server program should be promoted as this could also provide useful data to support stock assessment of important species of sharks and rays. In addition, countries were encouraged to improve the collection of data on sharks and rays, either through long-term statistics data collection, or non-routine data and information collection, using the standard information collection format, which had been agreed upon by the countries in the region.

5.3 Cetaceans

Cetaceans are among the aquatic species under international concerns, where large cetacean species which are highly migratory inhabiting the oceans are not commonly found around the continental shelf or coastal areas in the Southeast Asian waters, although occasional stranding had been recorded. This results in the very limited information on the distribution of cetacean species in the region. Although, certain systematic studies on the biology of whales and dolphins in the region had been conducted in early 1990s by foreign researchers, the information currently available had been generally based on the stranded specimens and through direct sighting surveys, which are being collected and compiled by responsible national agencies.



Dolphins coming near to coastal areas in the Southeast Asian waters

In order to better understand the distribution of cetaceans in the region, TD conducted the “*Cetacean Research in Southeast Asian Waters: Cetacean Sighting Program*” since 2008, which aims to gather relevant information on large/small marine cetaceans as well as freshwater cetaceans. During the past years, cetacean sighting activities had been incorporated as part of the collaborative research studies

using the research vessels of SEAFDEC and those of the Member Countries, such as the M.V. SEAFDEC 2, M.V. DA-BFAR of the Philippines, and the R.V. Chulabhorn and F.R.V. Mahidol of Thailand. A series of technical meetings and on-the-job training sessions on cetacean research and survey methodologies such as cetacean species identification were conducted in the Member Countries to enhance the capacity of vessel crew and fishery officers in the conduct of the sighting surveys.

5.4 Resource Enhancement of Internationally Threatened and Over-exploited Species in Southeast Asia through Stock Release

Since several commercially-exploited species have been listed or proposed for listing under the CITES Appendices affecting one way or another, the sustainability of the region's fisheries, AQD initiated research activities which aim to develop seed production technologies and release strategies for some species of international concerns through the project '*Resource Enhancement of Internationally Threatened and Over-exploited Species in Southeast Asia through Stock Release*'. More particularly, the project focused on internationally threatened species such as the seahorse (*Hippocampus* spp.) and Napoleon wrasse (*Cheilinus undulatus*), as well as the regionally over-exploited species such as sea cucumber (*Holothuria scabra*), donkey's ear abalone (*Haliotis asinina*), and mud crabs (*Scylla* spp.).

In 2011, significant technological advancements had been accomplished under the project. For the seahorse (*H. comes*), there was no significant difference in the daily growth rate among the groups reared in illuminated sea cages. However, the highest and lowest daily growth rates were observed in groups stocked at 25/m² and 50/m², respectively. For the Napoleon wrasse, information on broodstock maintenance and larval rearing for the development of seed production technology for Napoleon wrasse (*C. undulatus*) had been exchanged with the Research Institute for Mariculture in Gondol, Bali, Indonesia, and updated accordingly.

Meanwhile, broodstock of sea cucumber (*H. scabra*) from the study site in Molocaboc Island, Negros Occidental, Philippines were brought to the hatchery facilities of SEAFDEC in Tigbauan, Iloilo for induced spawning and juvenile production, where two larval batches were produced and reared to juvenile stage (length: >5 mm). Moreover, a floating ocean nursery (hapa netcages) and broodstock pen were established in Daku, Molocaboc in collaboration with the Barangay Fisheries and Aquatic Resources Management Council (BFARMC), where about 3,470 juveniles (0.02-1.20 g) were stocked in the hapa netcages. After 1.5 months, 147 juveniles were transferred from the nursery cages to a monitoring pen where the juveniles grew from 10 to 47 g with 26.5% retrieval.

From the 55 pieces of abalone (*H. asinina*) collected from 10 transects in the study site, 56.4% were wild, 1.8% was recaptured-wild and 41.8% were recaptured-hatchery bred which were released in August 2010. Wild abalone stocks were recaptured up to a maximum of 278 days post release while the second released abalone, up to 294 days. All recaptured abalones were caught from the transect sites where they were originally released. This indicated that parallel with previous findings, the abalone habitat preference had high positive correlation with dead branching corals with encrusting algae.

As for mud crab, *Scylla* sp., assessment of the study site for stock enhancement was made through monthly monitoring of mud crab landings. A total of 9,137 crabs collected from the wild have been identified, measured and weighed. Mud crab yield from 100 days of sampling was 1.26 tons and individual daily yield ranged from 0.09kg to 7.18 kg. Analysis of all crabs sampled showed that catch per unit effort (number and biomass) and yield were not correlated with moon phase, water temperature and salinity. Catchability of *S. olivacea* was positively correlated with soaking time, number of gears deployed and moon phase while *S. tranquebarica* had significantly negative correlation with these factors.

Moreover, an activity on community-based resource enhancement was conducted in the demonstration site in Molocaboc Island, Negros Occidental to improve awareness and participation of stakeholders in resource enhancement. Drafting of guidelines and schedule for managing and “guarding” the abalone (514, 460, and 1,040 tagged individuals were released in June, September, and December 2011, respectively) and sea cucumber in the demonstration site was carried out in April. The participants in this activity were the staff of Sagay Marine Reserve, Molocaboc local government units, SEAFDEC/AQD, and representatives of BFARMC comprising the officers, fishers, men and women of the Barangay.

Furthermore, activities were also undertaken to disseminate the project outputs. For instance, the results of the research were discussed during the ‘International Training Course on Community-based Resource Enhancement’ which was conducted on 12-20 July 2011, while two scientific articles were published in 2011.



Community-based resource enhancement activities in Molocaboc Island, Sagay, Negros Occidental

6. Post-harvest Technology and Safety of Fish and Fishery Products

Post-harvest and safety of fish and fishery products encompasses all aspects of fishery post-harvest technology through the production and distribution chain, from handling the fish onboard fishing vessels, onshore during landing, until processing and/or marketing. MFRD had been assisting the Member Countries in developing technologies that would optimize the utilization of catch, reduce post-harvest losses, and improve the quality of fish and fishery products, as well as in instituting measures to comply with international food safety requirements.

6.1 Monitoring of Biotoxins in Fish and Fishery Products in Southeast Asia

Biotoxins are poisonous substances naturally present in fish and fishery products or accumulated by the animals feeding on toxin producing algae or in water containing toxins produced by such organisms (*Codex Alimentarius* Commission). Consumption of a variety of shellfish and fish could

lead to an increasing number of human intoxications due to the presence or contamination of biotoxins. In addition, biotoxins could also cause mass killings of fish and shellfish, and death of marine mammals and birds after consuming food that contains biotoxins. Considering the possible impacts of biotoxins in fish and fishery products to human health, MFRD has implemented the program on “*Chemical and Drug Residues in Fish and Fish Products in Southeast Asia*” since 2009, under the new phase which focused on “*Biotoxins Monitoring in Fish and Fish Products in Southeast Asia*”.

There are several limitations in monitoring toxicity such as variations in the toxin contents between individual shellfish, different detection and even extraction methods for the various toxins requiring a decision which toxins should be tested for, and the frequency of sampling to ensure that toxicity does not rise to dangerous levels in temporal or spatial gap between sampling times or locations. The activities undertaken by MFRD therefore aimed to develop the methodologies for biotoxins analyses, enhance the capacity of Member Countries in the analysis through training, and obtain better understanding of the levels of occurrence and incidence of biotoxins in fish and fishery products in the region. It is envisaged that these activities would enhance the attention of responsible authorities in expanding and improving initiatives to monitor, detect and share information on marine biotoxins in order to reduce the public health risks associated with the consumption of contaminated shellfish and fish in the future.

After the “Regional Training Course in Biotoxins Analysis” held in Singapore in 2010, the Member Countries were asked to set up their respective analytical methods and facilities for biotoxins analysis. In this connection, Indonesia, Malaysia, Myanmar, Singapore, and Thailand incorporated the high-performance liquid chromatography (HPLC) analytical method into their testing protocols. Nine participating countries (10 ASEAN Member States except Brunei Darussalam) also submitted their survey proposals, and started undertaking surveys in 2011, which focused on the monitoring of paralytic shellfish poisoning (PSP) in green mussel (*Perna viridis*) with the exception of Indonesia and Vietnam, which focused more on PSP monitoring in baby clam (*Meretrix* spp.). Myanmar and Singapore had also expanded the scope of their surveys to include monitoring of the amnesic shellfish poisoning (ASP) and diarrhetic shellfish poisoning (DSP) in green mussels. Although most of the countries conducted their own analysis, e.g. using mouse bioassay as the screening method and HPLC as the confirmation method, Cambodia and Lao PDR sent their samples to Vietnam and Thailand for analysis, respectively, due to lack of resources and facilities. The results of the PSP analysis in the species surveyed have been negative in all the participating countries.

6.2 Traceability Systems for Aquaculture Products in the ASEAN Region

Traceability, defined by the *Codex Alimentarius* Commission as “the ability to follow the movement of a food through specified stage(s) of production, processing and distribution”, has become a major concern of the aquaculture industry, considering that it is a legitimate requirement in major international markets such as the EU and the USA. Traceability has also been considered as an important tool in dealing with concerns of food safety, quality assurance, risk prevention, and gaining consumers’ trust.

Aquaculture has rapidly developed in the Southeast Asian region during the last decade with its production increasing from less than 4 million metric tons to more than 12 million metric tons, with large portion of the production aimed at the export markets. As aquaculture becomes more market- and consumer-driven, great pressure has been placed on product traceability by the general consuming public. For example, consumers are now getting more and more concerned on what they eat – whether the food comes from safe and sustainable sources, and whether production, transportation, and storage conditions could guarantee food safety. In order to address such concerns and requirements, MFRD with the collaboration of AQD initiated in 2010 the five-year project on “*Traceability Systems for Aquaculture Products in the ASEAN Region*” with the main objective of enhancing the capacity of the region’s aquaculture industries to implement appropriate traceability systems for their products to

meet international traceability requirements in the network of aquaculture production, marketing, and trade.



Participants of the 1st On-site Training Workshop in Traceability Systems for Aquaculture Products in the ASEAN Region



Group discussion during the 1st On-site Training Workshop in Traceability Systems for Aquaculture Products in the ASEAN Region

Taking into consideration the available expertise in the region and suitable sites for the on-site training sessions identified during the 2011 Consultation, MFRD organized the “First On-site Training Workshop in Traceability Systems for Aquaculture Products” on 28-30 November 2011 in Ho Chi Minh City, Vietnam, in collaboration with the Ministry of Agriculture and Rural Development (MARD) of Vietnam. The Training Workshop which comprised lectures delivered by resource speakers and on-site visits, had provided opportunities for the participants from ten ASEAN member states to discuss and exchange information on the aquaculture products supply chain in their respective countries, and the basic elements needed in traceability systems for aquaculture products as well as the issues and challenges in the implementation of traceability systems.

6.3 Utilization of Freshwater Fish for Value-added Products

In the Southeast Asian region, freshwater fish is very important in providing substantial sources of animal protein, and serving as raw materials for the processing of various traditional fish products. Freshwater fish products are largely processed as traditional products of the region by household producers and small- and medium-sized establishments which are usually family-owned operations with little mechanization. Upgrading of the processing and packaging technology for the freshwater fish products is therefore necessary to improve products quality and safety with the possibility of commercialization.

The importance of freshwater fish is very prominent in many countries of the region, *i.e.* Cambodia, Lao PDR, Myanmar, and Vietnam. In 2003-2004, MFRD implemented a project to “Maximize the Utilization of Fish Catch”, the activities of which were implemented only in Cambodia due to the resource limitations. MFRD therefore initiated another program on “*Utilization of Freshwater Fish for Value-added Products*” starting in 2011, of which the activities involved Lao PDR, Myanmar, Vietnam, and Indonesia. This is aimed at enhancing the utilization of freshwater fish species for development of value-added products, and assisting the participating countries in upgrading their respective processing and packaging technologies for freshwater fish products.

During the “Project Inception and Planning Meeting” in Singapore on 26-27 April 2011, with the participation of Indonesia, Lao PDR, Myanmar, and Vietnam, the project activities were planned and scheduled, while the freshwater fish species to be used and the types of value-added products to be developed by each country were identified. Subsequently, the “Regional Training Course on Processing of Value-added Products from Freshwater Fish” was conducted in Singapore on 18-21 October 2011. Lectures and hands-on practical sessions were provided on the processing of value-added products (including snack products and frozen comminuted fish products) as agreed during the

Project Inception and Planning Meeting. The introduced processing techniques involved the use of simple and inexpensive equipment, and technology suitable for the village level and small- to medium-sized industries. The participants also experienced the conduct of shelf-life studies and sensory analyses on the fish products. In addition, good manufacturing practices were also emphasized to ensure product safety and quality.



Participants of the Regional Training Course on Processing of Value-added Products from Freshwater Fish



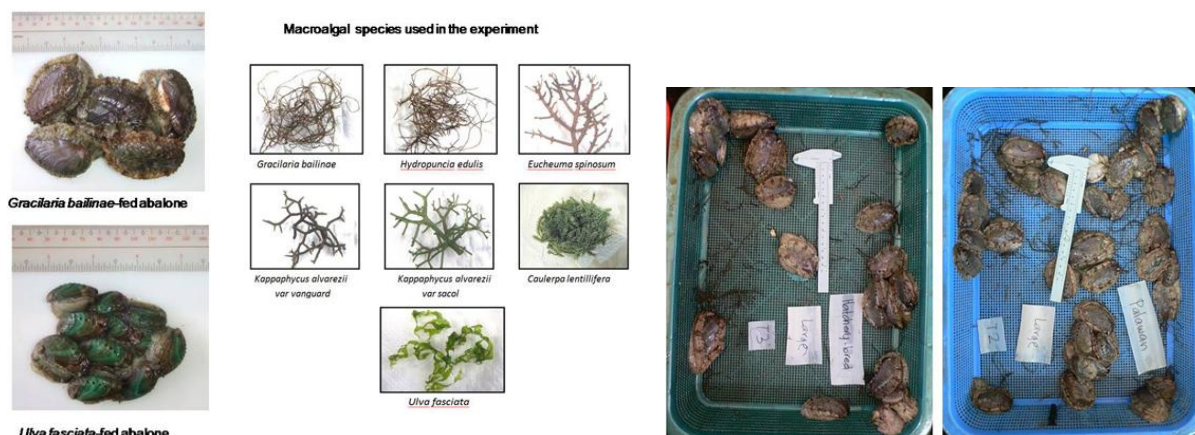
Hands-on practical session during the Regional Training Course on Processing of Value-added Products from Freshwater Fish

7. Sustainable Aquaculture Development

AQD continued to conduct studies on important mollusks especially on the seed production of the donkey's ear abalone for stock enhancement and development of grow-out culture technologies. AQD also conducted studies on the selective breeding and on the improvement of husbandry techniques in all phases of culture of shrimps and mud crabs; breeding and seed production and grow-out for the culture of regionally-important freshwater commodities, improvement of seaweed strains for commercial purposes, and assessment of the impacts of aquaculture on the aquatic ecology. Moreover, AQD also fostered institutional and human capacity building in aquaculture through partnerships with the private sector and stakeholders, as well as continued the activities to accelerate the awareness and capacity in fish health management and promote the food safety of aquaculture products in Southeast Asia. These activities were aimed at addressing the requirements in the aquaculture-related provisions stipulated in the 2011 Resolution and Plan of Action.

7.1 Integrated Mollusk Production

In 2011, AQD continued to conduct a number of studies on the donkey's ear abalone, *H. asinina* for stock enhancement and grow-out culture. Results of experiments conducted to mass produce and utilize diatom diets (*Cocconeis* spp./*Nitzschia* spp.) for settlement rate and growth, and to develop a microparticulate diets for the young post-larvae of abalone to reduce dependence on diatoms, showed that daily feeding of the larvae with microparticulate diet was best in terms of larval settlement. While improving quality of abalone seeds had been pursued, a strategy for genetic management of abalone is being developed, and the role of biota in abalone hatchery has also been studied.



Gracilaria bailinae-fed abalone (upper left photo) and Ulva fasciata-fed abalone (lower left photo). Gracilaria bailinae-fed abalone obtained highest body weight and body increase after 90 days culture. Right photo shows the different macroalgal species used in the experiment

Under selective breeding study, hatchery-bred abalone (left photo) are bigger than the F_1 stocks from Palawan (right photo)

Studies aimed at finding other suitable macroalgae as alternative feeds for abalone juveniles and breeders besides *Gracilaria bailinae* have been continued. However, highest daily increase in shell length and body weight in both juveniles and adults were still attained by abalones given *G. bailinae*. Meanwhile, a study to use the marine thraustochytrid *Schizochytrium* spp. as source of lipid/DHA for the artificial diet of abalone juveniles was also carried out, as well as studies aimed at developing broodstock diets with varying protein/energy ratios to improve spawning frequency and quality of the larvae during hatchery phase.

The financial viability of using various types of nursery cages (black box, round mesh cage, prefabricated, black plastic tray and blue box) and stocking density of 500 and 1,000 pieces/m² shelter surface area in nursery rearing of abalone was assessed. Abalone juveniles reared in black boxes had the highest average body weight (8.3 g) and lowest in blue boxes (6.9 g). To demonstrate AQD's developed technologies for seed production and culture, large-scale production of *H. asinina* juveniles was continued. In another experiment, the performance of abalone hybrids growth in sea-based cages and the quality of meat were evaluated and compared with the pure *H. asinina*. The F_1 of HAFGM (*H. asinina* female x *H. glabra* male) presumptive hybrids grew better than the pure *H. asinina* strain. Pure *H. asinina* was however found to be superior in taste compared to the two presumptive hybrids (HAFGM and HAFPM- *H. asinina* female x *H. planata* male).

7.2 Mud Crab and Shrimp Domestication

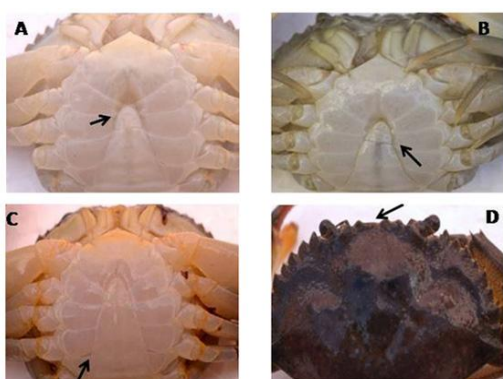
AQD continued to conduct studies on selective breeding of indigenous species of shrimps and mud crab, *Scylla serrata* for sustainable production of good quality broodstocks and seeds. Stock assessment and socio-economics of each culture phase were also carried out to evaluate the impacts of adopting the generated technologies. For shrimps, studies were conducted to refine the methods involved in the domestication of *Penaeus monodon* and *P. indicus*. An initial result from the genetic characterization of *P. monodon* broodstock through microsatellite DNA analysis indicated no significant difference in the genetic variability among populations collected from many areas in the Philippines. In another study, F_1 adults of *P. indicus* were reared in captivity and stocked with those from other families for reciprocal mating. At least 7 mass pairings involving five families were done to produce F_2 . Hatching rates greatly varied and ranged from 23 to 92%.

Mud crab studies in 2011 focused on improvement of survival and quality of *S. serrata* produced in the hatchery, nursery and grow-out phases. The efficiency of formulated feed in reducing the occurrence of the molt death syndrome, one of the major causes of mortality at zoea 5 to megalopa, was investigated, and also the use of high temperature to enhance the molting of zoea 5 to megalopa

and improve survival at the hatchery phase. When the newly molted zoea 5 were reared until megalopa in seawater with constant temperature levels of 27°C, 29°C (ambient), and 31°C, survival was significantly lower at 27°C than at 29°C and 31°C. However, when Zoea 3 were fed different diets to test the efficiencies of formulated feeds as supplements or partial substitutes for *Artemia* and to reduce mortalities attributed to the molt death syndrome, the mean survival rates from 2.67 to 4.67% were similar in all treatments.

Enrichment of 3-5 day old *Artemia* before feeding to crab larvae was tried to determine if this will improve the performance of mud crab larvae. Survival rates from zoea 4 to megalopa were compared among larvae fed *Artemia* enriched with SEAFDEC formulation or Selco for 8 and 15 hours or algae (control). Growth was faster when larvae were fed *Artemia* enriched with either Selco or SEAFDEC formulation than with algae-fed *Artemia*. Experiments were also conducted to determine if survival, growth or occurrence of morphological abnormalities are affected by the use of antibiotics during larval rearing. Larvae, megalopa and crab instar/juveniles were treated with different levels of oxytetracycline or OTC (0, 3.0, 6.0, 9.0, and 12.0 ppm) and furazolidone (0, 0.5, 1.0 and 1.5 ppm), two antibiotics commonly used in hatcheries. Growth was significantly faster and occurrence of abnormalities was lesser in crabs previously exposed to lower concentrations of either OTC or furazolidone.

The incorporation of the amino acid, tryptophan (Trp) in the formulated diet to reduce the aggressive behavior in juvenile crabs was further assessed. Results of incorporating high levels of Trp in crab feeds during nursery rearing showed that survival of crablets was significantly higher in stocks fed with diet containing 0.75% Trp than in stocks fed with diet containing 0.32% Trp. Similar result was also obtained in another experimental run conducted for crab instars.



Deformities observed in crablets treated during larval stage with high doses of oxytetracycline or furazolidone:
A. depressed abdominal flap; B. unsymmetrical flap;
C. gaps between sternites; D. fused frontal spines.



Sorting of harvested mud crabs

Milkfish fingerlings (500 pieces, 3 inches length) and *Scylla serrata* crablets (850 pieces, 3.5-4 cm internal carapace width) were stocked in brackishwater pond for grow-out. After 180 days polyculture of mud crab with milkfish given a formulated grow-out diet (36.5% protein), the total mud crab biomass was 50 kg with an average body weight of 430 g and survival rate of 13%. Milkfish gave a total biomass of 84 kg with an average body weight of 206 grams and survival rate of 100%.

A series of study was also undertaken on fishmeal replacement in mud crab feed. Experiments to develop cost effective diets for mud crab through replacement of soybean meal with copra meal were also initiated. The diets given to crabs had fish meal replaced by 35% soybean meal and copra meal protein replacing the soybean meal protein at 0 (control, no copra meal), 20, 40, 60, 80 and 100% levels. Study was also undertaken using freeze-dried marine annelid or sandworm *Perinereis quatrefagesi* meal as replacement for marine protein sources in juvenile crustacean diet formulations, of which the results indicated that lower levels of incorporation (1.5 to 3% level in the diet) of *P.*

quatrefagesi meal, squid meal and their 1:1 combination resulted in higher growth in white shrimp and mud crab juveniles than those given the control diet (no annelid and squid meal), but survival was not affected by the diets.

7.3 Marine Fishes

AQD has developed several technologies for breeding, seed production, nursery and grow-out culture of various marine fish species that have already been adopted by the fish farmers. Although these technologies are already working, they are continuously improved. Various research studies have therefore been conducted for sustainable aquaculture development, poverty alleviation in the countryside, conservation and reinforcement of aquatic resources, and ensuring food security in the Southeast Asian region, especially for such marine fish species as milkfish, grouper, sea bass, mangrove red snapper, rabbit fish, pompano, kikero (scat), Napoleon wrasse, and hybrid red tilapia, and seahorses. Thus, experiments were conducted to ensure consistent supply of seeds for commercially-important species, by developing reliable captive breeding techniques for pompano (*Trachinotus* spp.), scat (*Scatophagus* spp.) and the Napoleon wrasse (*C. undulatus*).



*Semi-intensive production of pompano in ponds in
Dumangas Brackishwater Station of AQD*

Seed production techniques for various marine fish species have been continuously carried out to increase survival in hatcheries and improve the quality of seeds. In milkfish, improving the nutritional quality of the broodstock feed by adding more micronutrients, and improving the quality of the live feeds during the first feeding period have been pursued. For the Napoleon wrasse, research continued to focus on ensuring the availability of live food with the appropriate size that will fit the size of the mouth of the larvae during the first feeding stage.

Experiments were also conducted to improve production performance of sea bass in net cages in brackishwater ponds during nursery and grow-out phases using AQD-formulated feed with higher energy level. Another verification study evaluated the use of commercially available feeds and AQD feeds (with varying ratio of percent crude protein and crude fat) on pompano juveniles cultured in ponds. Since polyculture of fish/organisms in single rearing system could increase pond production and optimize utilization of nutrient wastes, intensive polyculture of milkfish and mud crab have been carried out, as well as the polyculture of red tilapia hybrid and siganid (*Siganus guttatus*) in brackishwater ponds.

Results of the study on the digestibility and effective level of meat and bone meal (MBM) in formulated feed for milkfish grown in freshwater and seawater environments as determined in sub-adult milkfish (60-90 g) showed that the assimilation efficiencies of diets with different levels of MBM were similar and seemed to decrease as dietary MBM increased. The use of soybean meal and soy protein concentrates as alternatives to fishmeal in practical feeds for milkfish was also tried.



Milkfish harvests from the study on soybean replacement in milkfish diets at Igang Marine Station of AQD

As for seahorses, experiments were continued to develop an acceptable formulated feed for the adult stage, while the design of tanks and aeration system to keep the formulated feed suspended in the water column, had been improved. Furthermore, since understanding the immune system of farmed species is crucial to develop control methods against specific pathogen infestation for better fish health management, preliminary intra-specific pathogen transmission trials were conducted by artificially infecting sea bass with naturally infected rabbitfish.



Semi-intensive production of rabbitfish in ponds at AQD's Dumangas Brackishwater Station (left); and harvest of rabbitfish by seining (right)

Recognizing the pressing need to address issues on climate change, investigations on the effects of increased temperature rearing water and acidity on the reproductive performance in early larval development of important tropical aquaculture fish species (*e.g.* tilapia, rabbitfish, sea bass and milkfish), have also been undertaken by AQD. Results from preliminary runs on both milkfish and sea bass showed very much reduced survival of larvae after 10 days of rearing in the test temperatures (29°C, 31°C and 33°C). Survival of milkfish fry in 31°C and 33°C were 1.32 ± 0.49 and $0.78 \pm 0.43\%$, respectively, compared to $20.38 \pm 1.57\%$ in ambient or 29°C. For sea bass, survival after 10 days of rearing in 33°C was $6.45 \pm 2.6\%$ whereas in 29°C it was $61.2 \pm 6.7\%$.

7.4 Small-holder Freshwater Aquaculture

The optimal breeding, seed production and grow-out culture strategies for regionally-important freshwater commodities such as the giant freshwater prawn, Asiatic carps, tilapia, catfish and indigenous freshwater fish species, are being developed by AQD. Improved production and husbandry schemes had been packaged into aquaculture business technologies, while efforts were continued to implement effective health management strategies for the sustainable production of various farmed species.

For the development of genetically enhanced giant freshwater prawn (*Macrobrachium rosenbergii*) with improved production traits, the first of two broodstock management schemes that would improve the reproductive performance of domesticated *M. rosenbergii* broodstock and the growth of their

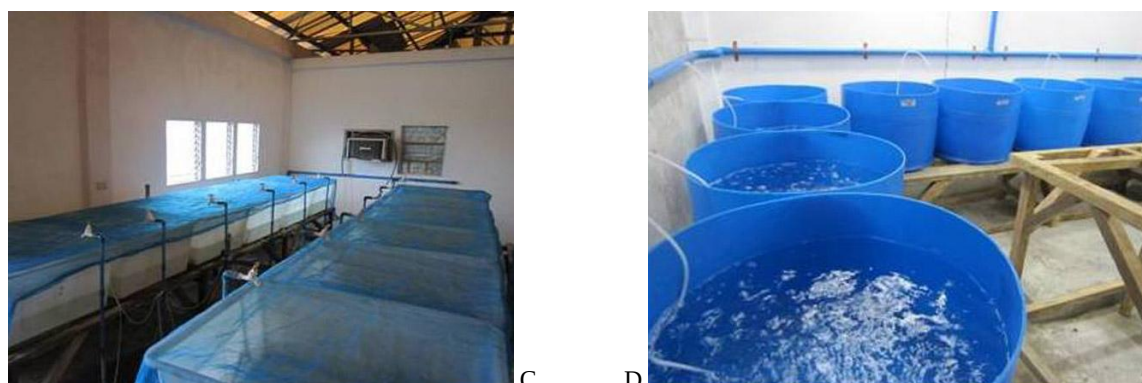
progenies was evaluated. The breeding scheme, which makes use of females from one line crossed with males of another line and *vice versa* was tested as a method that could minimize the adverse effects of long-term domestication on growth and reproduction in broodstock of giant freshwater prawn. Spawning sets composed of specific crosses between similarly aged stocks of Old Calumpit (OC) and New Calumpit (NC) *M. rosenbergii* were used. The cross that will show the best performance in terms mainly of seed production and subsequent growth in tested progenies shall be noted. Reproductive efficiency data have already been collected from ten monthly samplings, while growth trials comparing progenies from all four crosses (OCxOC, OCxNC, NCxOC and NCxNC) were conducted in cages and tanks. Growth and survival rates were better in progenies from either the OCxNC and NCxOC crosses in both the tank and cage trials.

In order to determine the effect of partial fishmeal protein replacement with cowpea meal protein in post larvae and juvenile diets, prawn post-larvae were fed four isonitrogenous and isocaloric diets with different levels of protein substitution (0% or control, 15, 30 and 45%). After 29 days of culture, the maximum average body weight varied from 0.65 to 0.76 g and survival was from 78 to 85%. As for their reproductive performance, results from another experiment showed that broodstock fed 20% cowpea meal-based diet produced better results in terms of berried females, weight of eggs/female and larval survival.

In the development of methods for improved seed production and lake-based cage culture of the giant freshwater prawn, rearing trial to determine the ideal stocking for the nursery rearing of prawn post-larvae was conducted. The results suggested that stocking density of 300 post-larvae/m² could be used for the first month of rearing and subsequent reduction in stocking densities to obtain larger sized juveniles. Results of the evaluation of different grow-out management strategies to improve cage-based production of marketable-sized giant freshwater prawn, showed that providing substrate could improve production of giant freshwater prawn in lake-based cages making higher stocking densities possible compared to those without substrate. The growth and survival performances of ablated and unablated prawns were also evaluated, but no significant differences were found in their performances.



Experimental set-up for (A) tank and (B) cage culture of freshwater prawn post larvae *M. rosenbergii*

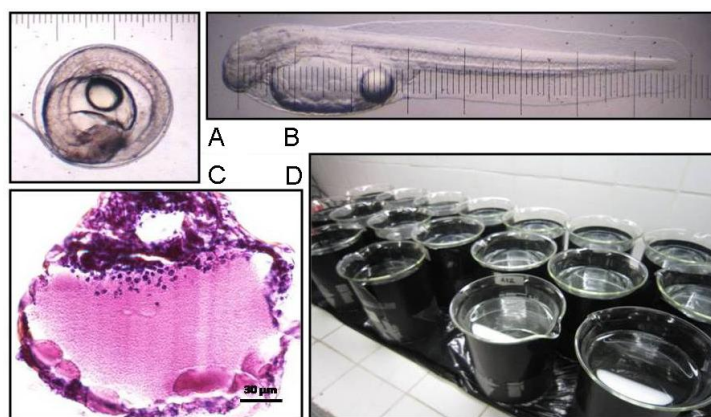


Experimental set-up for (C) breeding and (D) larval rearing experiment of *M. rosenbergii*

In order to improve and promote production technologies for bighead carp, tilapia, and prawn, induced spawning of carp and the production of advanced bighead carp fingerlings had been carried out. The stocks nursed to fingerlings from the first and second spawning episodes have been sold to fish farmers. Meanwhile, the development of saline tolerant tilapia species or strains with enhanced traits had been continued to identify which among the currently available species/strains are suitable for brackishwater culture. Results of experiments in brackishwater tanks showed that both the red and Nile tilapia species generally had better growth and morphometric traits than the Mozambique tilapia stocks. Two stocks of the BEST strain Tilapia from BFAR were used for growth comparison trials. With regards to tilapia mass seed production at AQD stations (Binangonan Freshwater Station and Tigbauan Main Station), Nile and red tilapia fry stocks were fed diets with methyltestosterone to produce sex-reversed fingerlings.

In an experiment to co-culture tilapia and giant freshwater prawn using AQD formulated diets in cages in a freshwater reservoir in Dingle, Iloilo, the results showed that tilapia stocks fed the AQD formulated diet grew better than those fed the commercial diet. The absolute growth rate of prawns fed the AQD formulated diet did not differ significantly from prawns fed the commercial diet. For the development of culture techniques for indigenous freshwater species in the region, domestication and evaluation of the culture potential of an indigenous freshwater prawn species, *Macrobrachium lar* were continued. Newly hatched larvae from wild-sourced berried females collected from Sorsogon and reared at different salinities (6, 12, 18 and 24 ppt) had poor survival although larvae reared in 24 ppt survived until the zoea IV stage. Morphometric characterization of wild-caught adult *M. lar* is ongoing.

Breeding and larval rearing methods for several locally-important fish species with aquaculture potentials have also been studied by AQD. Studies on the reproductive biology of silver therapon (*Leiopotherapon plumbeus*) collected from selected habitats and larval rearing requirements were carried out. Meanwhile, the reproductive biology of the climbing perch, *Anabas testudineus* was likewise studied.



Silver therapon embryo 20 hours post-fertilization (A) and newly hatched larvae (B); histological section of newly-hatched larvae showing the yolk sac reserves (C) and experimental set-up for the larval rearing experiment of silver therapon (D)

7.5 Seaweed Strain Improvement

AQD continued to conduct studies on seaweed strains, such as tissue culture of *Kappaphycus* for the development of 'new' and improved varieties, improvement of the efficiency of *Gracilaria* (other seaweeds) as biofilter, and evaluation of the anti-microbial properties of commercially-important seaweeds against common fish (and human) pathogens.

For the development of new strain through tissue culture, sporulation and protoplast fusion techniques, the conditions for protoplast isolation were optimized for *Kappaphycus alvarezii* and *K. striatum* and the effect of plant growth regulator (PGR) was tested for the regeneration of the protoplasts. When different mannitol concentrations and use of PGR and fertilizers were tested in newly isolated protoplasts, the results indicated that higher concentration of mannitol was more effective in maintaining stability of the cell membrane, while the use of PGR showed higher survival after 2 weeks of protoplast culture. In another study, pre-treatment of fresh and powdered seaweed samples with cellulase or a combination of cellulase and carrageenase have been tested to determine if degradation of cell wall by polysaccharidases will result to higher total cellular DNA yield that is amenable to PCR amplification.



The effect of fertilization on the growth of *K. alvarezii* (vanguard) was monitored every 15 days



K. alvarezii fertilized with ASL and NaNO_3 cultured in net cages in Igang Marine Station

The efficiency of *Gracilaria* and other seaweeds as biofilter has been continuously improved, especially the *Gracilaria bailinae* which can take up as much as 80% of total ammonia and ammonium in the water after 1 hour and almost 95% after 2 hours, while total ammonia and ammonium in the water could remain low or below determinable value after 6 hours. However, when *Caulerpa lentillifera* was used, the results had been erratic. Experiments were also conducted to determine the uptake rate of *G. bailinae* of the dissolved nutrients present in an intensive shrimp culture. *Kappaphycus* was grown in a net cage using different fertilizers (Acadian seaplant, sodium nitrate and without fertilizer) along fish cages in Igang Marine Station. Results showed that fertilization could affect the quantity of the semi-refined carrageenan of *Kappaphycus*.



Effect of fertilization on the photosynthesis of *K. alvarezii* was determined using the 'Light and Dark Bottle' method

The anti-microbial property of seaweeds has also been explored by AQD, where a total of 14 and 10 crude ethanol and water extracts, respectively, from seven varieties of *Kappaphycus* and *Eucheuma*

species have been screened for antibacterial activities against four fish and three human bacterial pathogens. The results suggested that one preparation of the crude ethanol extract of *K. alvarezii* vanguard variety showed promising antimicrobial activity against the human bacteria *S. aureus* and its multidrug-resistant strain, MRSA.

7.6 Aquatic Ecology

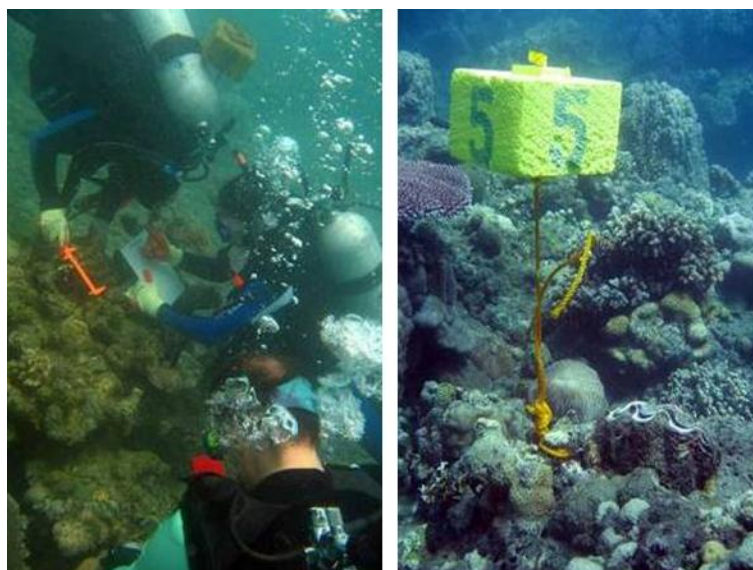
In 2011, AQD continued to assess the impacts of aquaculture on the environment including different practices on biodiversity in ponds and adjoining mangroves and shores, and develop bioremediation measures to mitigate the negative impacts of aquaculture to the environment.

For the assessment of biodiversity in marine cages and platforms for aquaculture in Igang, Guimaras biodiversity baselines were collected around AQD's own research stations comparing with later time periods when environmental conditions change for better or worse, through rapid assessment. Documentation on the flora and fauna in, on, and around the cages was carried out and also in the adjoining sea grass beds and rocky islets of Igang Marine Station (IMS) and Igang Mariculture Park. So far, some 438 species in 182 families in 13 major taxa have been collected and photographed for development of a complete species list.



Installation of nursery cages and stocking of clam juveniles

Different species combinations were found in different types of habitats, which seem to suggest the positive effect of aquaculture on biodiversity. Cage structures provide additional habitat for attachment of seaweed spores and settlement of planktonic larvae of various sponges, tunicates, bryozoans, mollusks, and other invertebrates that otherwise could not find space in the occupied adjoining habitats. However, thick coating of cage biofoulants was noted which inhibits good water flow into the cages and add to the biological oxygen demand.



Monitoring and marking of wild giant clams

An experiment was initiated to identify invertebrate and bivalves that could be used in an integrated multi-trophic aquaculture (IMTA) system, focusing on sandfish and bivalves as bio-remediators in intensive cage culture system. For the first run, sandfish (*Holothuria scabra*), mangrove clam locally known as “imbao” (*Anodontia philippiana*), and window-pane shell locally known as “lampirong” or “kapis” (*Placuna placenta*) were reared either in an open area without cage (no feeding); beneath a fish cage right after harvesting milkfish (no feeding); or beneath a fish cage rearing snapper *Lutjanus argentimaculatus* (with feeding). After eight weeks, 100% mortality was observed in all treatments. After 22 weeks of monitoring the water parameters, results indicated that temperature, salinity and dissolved oxygen did not significantly differ between treatments.

The optimal conditions for growth and survival of sandfish juveniles for culture were explored through an experiment that evaluated the substrate preference of sandfish. The results showed poor performance of sandfish in terms of growth and survival in mudflat in Igang Marine Station (IMS) and in pond muddy substrate at Dumangas Brackishwater Station (DBS). Pond with sandy substrate showed the best potential for sandfish culture. Initial experiment was also done to test the tolerance of sandfish juveniles to different salinity levels (15, 20, 25 ppt) together with the control (ambient salinity of 30 ppt). Initial findings showed that sandfish in the 15 ppt treatment had the most behavioral changes, indicating high stress levels for the animals, while the salinity threshold for sandfish was observed to be between 18 and 20 ppt.

In the trial culture of sandfish juveniles in pens aimed to compare the performance of ponds (DBS) versus open sea pens (IMS), the results showed that IMS stocks gradually increased in body weight (i.e. from 0.3 g/day to 0.11 g/day) after six weeks before shrinking slowly after ten weeks. This suggested that available food in ponds (DBS) were readily available but were easily consumed by the sandfish within 2 weeks even at the very low stocking density of 35 g/m², while natural food supply in the open sea pen can sustain sandfish population longer (6 weeks). For the optimal stocking density of sandfish for pond culture, initial results showed that stocking density of more than 200 g/m² is not ideal for culture with natural food alone. The decline in growth even for lower densities, further indicate the need for efficient feeding schemes after 2 weeks culture of juvenile sandfish.

Studies to identify the fish species suitable for polyculture with sandfish were conducted, starting with a study on fish:sandfish ratio and size at stocking with snapper (*Lutjanus argentimaculatus*) which was successfully completed. The results suggested that culture of sandfish with snapper could be possible provided the snapper is maintained at proper stocking density and graded routinely. Current

production runs in pens in IMS making use of 5-6 inch milkfish (*Chanos chanos*) initially resulted in good growth and survival of the milkfish.

Polyculture of tiger prawn *Penaeus monodon* and sandfish *Holothuria scabra* was also tried. The initial results showed that neither growth rate nor survival rate of the shrimp was significantly affected by the presence of sandfish, while dissolved inorganic nitrogen levels, dissolved oxygen level, pH and salinity of the rearing water and organic matter in the sediment were also not affected. The mean oxidation reduction potential of sediment pore water and mean acid volatile sulfur were significantly higher in tank with sandfish than in a tank without sandfish, suggesting that while sandfish could cause bio-deposition of sulfur to the sediments, but could also maintain the sediment quality in better condition.

For the integrated multi-trophic aquaculture (IMTA) techniques for improved livelihood, preliminary experiments were conducted in DBS ponds, such as the pond polyculture of Asian sea bass (*Lates calcarifer*), oyster (*Crassostrea iredalei*), sandfish (*Holothuria scabra*), and seaweeds (*Gracilaria heteroclada*). In terms of energy budget, the polyculture with feeding only the sea bass was feasible, although the sea bass tended to nip the seaweeds and get entangled with the straw holding the seaweeds. Inorganic nutrient provided to the seaweeds could not be determined due to the disturbance by sea bass. However, phytoplankton production seemed high enough to support the growth of the oysters, while sandfish mortality was high in sediments with higher silt content. Meanwhile, the apparent digestibility coefficient (ADC) of animal (shrimp and mussel) and plant (diatom and seaweed) sources of nutrients (protein, carbohydrate and organic matter) were determined in sandfish. Nutrients from animal source have higher ADC compared to the nutrients from plants, indicating that nutrients from animals can be better assimilated by sandfish and thus could lead to better growth.

In order to quantify the organic load by cage culture of milkfish to adjacent areas, periodic monitoring of water current, dissolved oxygen, chlorophyll *a*, inorganic nitrogen and phosphorus in the water column, carbon and nitrogen content, acid volatile sulfur and organic matter content in the sediments were conducted. The nutrient flow and accumulation in the system will be determined by a mathematical model analysis.



'By-catch' species harvested from a fish cage in AQD's Igang Marine Station

7.7 Other R&D Activities

Institutional Capacity Development on Sustainable Aquaculture (ICDSA) which is being implemented in partnerships with the local government unit, donor communities, fisherfolks/farmers and other stakeholder groups, provides a mechanism for the assessment of socio-economic and environmental impacts of the aquaculture technologies developed by AQD and for building the capacity of beneficiary communities. The Petron-supported ICDSA project on Milkfish Cage Culture as a Livelihood Option for Guimaras Fisherfolks was a learning experience for researchers, development workers and the fishing communities. Milkfish cage culture technology was found to be a viable technology based on the test trials conducted at the IMS facilities with trained fish farmers as the operators. However, transferring this technology to the fishing communities could be the most

challenging part. A “mariculture park” concept will be proposed in order to sustain the initial efforts in ensuring that milkfish cage culture is a sustainable livelihood for fisherfolk communities. Another project being developed is a 2-3 year Mariculture Project in Romblon, Philippines in partnership with Romblon Agricultural Improvement for Sustainable Economic Development, with funding support from Winrock International. In another development, the Dumarao freshwater aquaculture project had attracted interests not only from the originally targeted rural folks but also the private investors, where tilapia culture is being practiced as a viable enterprise in the locality.



Members of the small-scale fish farmers' group in Dolores (KAMAMADO) feed milkfish in cages in Igang Marine Station



Members of the KAMAMADO install nets for the milkfish cages in Igang Marine Station

ABOT (Agree-Build-Operate-Transfer) AquaNegosyo aims to disseminate AQD's science-based aquaculture technologies to encourage private sector investments in aquafarming for livelihood generation and food security. In 2011, the ABOT AquaNegosyo Program served several clients on different activities/projects which earned for AQD a gross income of about PhP 198,000 or US\$ 4,700 (US\$ 1.00 = PhP 42.00). One of the important clients served during the year was the ACDI/VOCA (USA), a non-profit international development organization which is implementing a USDA-funded Mud Crab/Fish Cultivation Project in Timor-Leste. AQD provided the expertise for developing a feasible technical approach to implement viable commercial mud crab culture and hatchery set-up in Timor-Leste. Another activity done under ABOT was the promotion of giant freshwater prawn farming in cages in Laguna de Bay as part of a livelihood development project for the local water cooperative in Binangonan, Rizal in Central Philippines.

7.8 Promotion of Sustainable and Region-oriented Aquaculture

In 2011, AQD pursued activities on the genetic improvement of commercially-important species and development of hatchery technology, formulation of environment-friendly feeds using regionally available ingredients, establishment of management technology for disease tolerance and sustainable aquaculture environment, socio-economic assessment and impact analysis of transfer and adoption of sustainable aquaculture technology, and technology extension and demonstration.

Studies that would assess the quality of mud crab and shrimps to be used in selective breeding experiments were conducted. Zoea 1 of *Scylla serrata* exposed to 30 and 40 ppm formalin solution for 3 hours proved to be a good method for batch quality assessment. Since dose dependent cumulative mortality was confirmed by injection of *Vibrio harveyi* in the range of 0 - 10⁸ CFU/ml to mud crab juveniles, the challenge test using *V. harveyi* could also be an effective method for quality assessment. The challenge test using *V. harveyi* for black tiger shrimp *Penaeus monodon* juvenile (2-3 g), gave a computed median lethal dose of 3x10⁵.65 CFU/ml shrimp, indicating that this test could be effective for quality assessment of *P. monodon* (CFU refers to cell forming unit).

A broodstock management scheme comprising reciprocal mating where males from line one are paired off with females from other lines and *vice versa* with frequent broodstock replenishment, was used to improve or minimize the impact of inbreeding on the giant freshwater prawn *Macrobrachium rosenbergii* hatchery stocks.

In improving the culture conditions of *Kappaphycus* spp., explants from tissue cultured seaweeds and spores were grown in the laboratory, tanks, cages (multi-step culture method). In the laboratory, propagules were cultured while in cages, propagules were tied in lines. About 6,000 individuals (seaweeds seedlings) are now cultured in cages in Igang.

Preliminary experiments on administering hormone to pompano (*Trachinotus* spp.) showed that the highest fertilization rate was obtained in 500 IU. For the optimum salinity requirement for larval rearing, different salinities were tested for newly hatched pompano larvae (up to day 5). The results showed that highest survival rates were observed at 25 ppt and 30 ppt. For the feeding experiments to investigate the effect of partial replacement of fishmeal with cowpea meal (0, 15, 30, and 45%) in diets of grow-out *M. rosenbergii*, preliminarily results indicated that although no significant differences were found among treatments but prawns fed the 45% cowpea meal-based diet had the best performance for all the parameters evaluated (*i.e.* mean final weight, % weight gain, SGR and survival rate).

The proximate nutrient component analyses for fishmeal samples obtained in Palawan showed high proportions of crude protein (>50%), ash content (>35%) with crude fat levels of less than 4%. Sample feeds from Myanmar showed a variety of ingredients of plant origin, including steamed and full-fat soybean meals and peanut cakes (where crude fat had been removed or extracted), sesame seeds, and groundnut. Feed ingredients from Myanmar of plant origin were found to contain high crude protein and crude fat but the sources are not commonly found in the Philippines. In another development, tank experiments confirmed that low temperature and low salinity are white spot syndrome virus (WSSV) risk factors. Viral load in WSSV experimentally infected shrimp *Penaeus monodon* cultured in small tanks with tilapia decreased from 101 to 100 WSSV/mg sample while those in control increased to 105 WSSV/mg sample.

Technology extension and demonstration had also been promoted by AQD through the conduct of six international training programs in 2011 which included: 1) Giant Freshwater Prawn Production Training Program (21 March-1 April 2011, 7 participants); 2) Distance Learning Course on Principles of Aquaculture Nutrition or Aqua-Nutrition Online (21 March-22 July 2011, 10 participants); 3) Marine Fish Hatchery Training Program (20 June-26 July 2011, 10 participants); 4) Abalone Hatchery and Grow-out Training Program (7-27 July 2011, 9 participants); 5) Regional Dissemination of Mud Crab Farming Program (26 September-1 October 2011, 6 participants and 11 observers); and 6) Community-based Freshwater Aquaculture for Remote Areas of Southeast Asia (22 November-1 December 2011, 10 participants). Moreover, to sustain the dissemination of information, one scientific paper was published in the peer-reviewed journal.



The International Training Course on Mud Crab Culture at Chaung Thar, Myanmar organized by AQD in collaboration with Department of Fisheries of Myanmar

7.9 Accelerating Awareness and Capacity-building in Fish Health Management in Southeast Asia

As follow-up to the project “Development of Fish Disease Surveillance System” which was implemented from 2005 to 2009, the project on “Accelerating Awareness and Capacity-building in Fish Health Management in Southeast Asia” has been pursued by AQD starting from 2010. The activities in 2011 focused on accelerating awareness of technologically deprived countries on fish health management through industry-wide capacity building and innovative research to guarantee food safety and sustainable production.

Following the survey in Myanmar in 2010, a parallel survey was conducted in four regions in Luzon, Philippines. As in Myanmar, the Luzon survey confirmed the lack of proper awareness among small-scale fish farmers of fish health management concepts as well as environmental and food safety issues. The surveys also highlighted the need for hands-on training to build the technical capacities of the fish farmers. Thus, new information was disseminated through on-site training courses conducted in Myanmar on parasite detection with emphasis on zoonotic pathogens/parasite fauna with zoonotic potentials.

Tissue filtrates in tilapia in the Philippines showed negative results for zoonotic parasites. A survey for fish borne zoonotic trematodes (FZTs) metacercariae in farmed fish was also carried out in selected fish farms in Vientianne Municipality, Lao PDR. A total of 120 fish samples comprising six species (*Barbodes gonionotus*, *Oreochromis niloticus*, *Cyprinus carpio*, *Clarias* spp., *Hypophthalmichthys molitrix*, and *Ctenopharyngodon idellus*) collected from four fish and local markets were analyzed for the presence of FZT infection. Results showed that an unidentified FZT metacercariae species was present in (2.5%) of the fish samples (*B. gonionotus*) from a local market. No metacercariae were recovered in all fish samples collected from the different fish farms.

The plasmids of DNA viruses like the white spot syndrome virus (WSSV), Iridovirus and Koi Herpes Virus (KHV) that could serve as positive controls have already been developed while that of the ribonucleic acid (RNA) viruses is still on-going. Optimization of the quantitative real time polymerase chain reaction (q-PCR) methods for WSSV, Iridovirus and KHV using infected tissues was already completed but using the plasmids is still on-going. WSSV isolate was already tissue-passed thrice and the infected tissue material is ready for the preliminary infection experiment in determining the threshold level of the virus and in the susceptibility of different shrimp species.

Although spawned eggs from both matured vaccinated and unvaccinated sea bass injected with luteinizing hormone-releasing hormone (LHRH) were negative for betanodavirus detection, eggs from unvaccinated fish were found positive. To test the protective effect of the maternal antibodies present in vaccinated larvae, newly-hatched larvae from vaccinated fish group were also challenged with 10⁶ tissue culture infectious dose 50 (TCID₅₀ assay per ml) of betanodavirus. No significant differences in mortality rates were noted in the virus-challenged vaccinated and unvaccinated larvae.

A 2010 trial showed improved survival to a formalin-inactivated WSSV vaccine. In 2011, tank trials were conducted to test the different delivery vehicles for a recombinant sub-unit vaccine. To prepare laboratory-scale quantities of the recombinant vaccine for the various vaccine + carrier complexes, a transformed strain of *Escherichia coli* (BL21) cells was produced. Upon induction with Isopropyl- β -D-thio-galactoside (IPTG), the bacterial cells were able to produce the recombinant VP28 protein in a previous trial. Although in a preliminary test run previously conducted the vaccine without carrier could be protective, but the delivery needs optimization.

Abalones cultured in cages and wild stocks were examined for the presence of parasites and shell diseases. Shells fouled with burrowing polychaetes (58%), Spionidae (55 and 20%) and Dorveillidae (76 and 30%) were found in cultured and wild stocks. The condition index was significantly low in

abalone with shell-boring worms. Commingle tests with infested abalone showed borers in uninfested abalone within 48-72 hrs.

In an effort to extend the technology in analyzing parasitic diseases in aquatic animals, AQD conducted an “On-site Basic Training on Freshwater Fish Health Management” on 11-14 October 2011 in Lao PDR in collaboration with the Department of Livestock and Fisheries (DLF) of Lao PDR to enhance knowledge and skills of freshwater fish health workers, particularly focusing on zoonotic parasitic diseases. Ten staff of the DLF and 10 observers from private farms attended the course, where the trainees had hands-on practice in parasite detection/identification and disease management. Four papers by AQD researchers were also published in scientific journals to enhance dissemination of findings and technologies to relevant stakeholders.



*Parasitic and shell disease of abalone (left);
routine diagnostic activity at AQD's Fish Health Section Laboratory (right)*



On-site Basic Fish Health Management Training Course conducted in Lao PDR

7.10 Food Safety of Aquaculture Products in Southeast Asia

AQD continued to conduct activities that aim to ensure food safety of aquaculture products in the region. These included an assessment of the withdrawal period of oxytetracycline (OTC) administered in hybrid red tilapia at a dose of 75 mg/kg fish per day which was found to be 26 days while that of oxolinic acid (OXA) given at a dose of 30 mg/kg fish per day was in 17 days. Body weight of the test animals was 120.32 ± 31.5 g and the medicated diet feeding for each treatment was 10 days.

Residues of commonly used antibiotics, OTC and OXA, and organochlorine pesticides (OCPs) were examined in aquaculture products samples such milkfish, grouper, snapper, sea bass, rabbit fish, black tiger shrimp, and tilapia obtained in various areas in the Philippines. One out of 40 samples analyzed was positive for OTC while five samples were positive for OXA. Four OCPs were detected in 6 out of 14 samples analyzed with levels ranging from 0.00066 to 0.02719 ppm. Methoxychlor was detected in three out of six samples found positive for OCPs. The exposure limits levels in OCPs were in the range below the PEL (Permissible Exposure Limits) values. For methoxychlor the PEL value is 0.70734 ppm TWA (8-hr time weighted average), while for OTC, it is 0.02460 ppm TWA. No PEL has been established yet for OXA.

Under this project, AQD would come up with the Guidelines on Chemical Use in Aquaculture in the ASEAN, taking into consideration the draft ASEAN guidelines for chemical use in the ASEAN region which is being developed by the Department of Fisheries (DoF) Malaysia. Specifically, to avoid duplication, the draft of the DoF Guidelines was also used as reference during the international seminar on 'Food Safety in Aquaculture in Southeast Asia' conducted on 22 January 2011 at AQD in Iloilo, Philippines which was attended by 51 participants from six Member Countries of SEAFDEC.



Participants of the International Seminar on Food Safety in Aquaculture in Southeast Asia



Samples of aquaculture products (e.g. milkfish) cultured in ponds and cages were analyzed for residues of antibiotics and pesticides



Detection of antibiotic residues in aquaculture products using the High Performance Liquid Chromatography (HPLC)

8. Activities in Response to the Emerging Needs and Concerns of the Region

SEAFDEC continued to conduct activities that aim to respond to emerging fishery issues and concerns faced by the countries in the region including the requirements in fish trade, that tend to hinder the sustainable development of the region's fisheries. Moreover, in the advent of the changing climate which has affected the fisheries sector, SEAFDEC in collaboration with partners had been conducting activities that aim to enhance the capacities of the countries in adapting to climate change.

8.1 International Fisheries-related Issues

In 2011, SEAFDEC organized the ASEAN-SEAFDEC Regional Technical Consultation (RTC) on International Fisheries-related Issues (18-20 January 2011 in Bangkok, Thailand) to provide forum for discussion among the Member Countries on relevant issues as recommended during the 13th Meeting of the FCG/ASSP in November 2010. Such important international fisheries-related issues included among others, the Technical Guidelines on Aquaculture Certification, catch certification scheme, quality and safety issues relevant to international trade, sustainability of small-scale fisheries, the FAO Legally-binding Instruments on Port State Measures for Combating IUU Fishing, fisheries subsidies, CITES-related matters, and the Global Record of Fishing Vessels. As a result, the Executive Report on International Fisheries-related Issues (2010-2011) reflecting coordinated positions of the Southeast Asian countries in addressing the issues was submitted to the 43rd Meeting of the SEAFDEC Council and the 19th Meeting of the ASWGF. The coordinated positions were also reflected in the statement of SEAFDEC during the 29th Session of FAO/COFI (31 January - 4 February 2011, Rome).

With regards to issues on commercially-exploited aquatic species, SEAFDEC attended the 8th Meeting of the ASEAN Expert Group on CITES (8-10 February 2011, Brunei Darussalam), where updated information on the status and relevant initiatives for various species were discussed, especially for the Napoleon wrasse, sharks, tuna, and seahorses. Later in 2011, a series of RTCs was conducted to discuss particular species in a more detailed manner, namely: 1) the Special Meeting on Improvement of Tuna Information Collection in Southeast Asia (7-9 September 2011, Songkhla, Thailand); 2) Special Meeting on Sharks Information Collection in Southeast Asia (15-17 September 2011, Bangkok, Thailand); and 3) the Technical Consultation on Addressing Technical Issues on Selected Commercially-exploited Aquatic Species (18-20 October 2011, Bangkok, Thailand). During these consultations, existing data, and the status and trend of relevant species were discussed, while gaps were identified where data collection should be improved and other recommendations for better conservation and management of the species were also raised. Specifically during the RTC on Selected Commercially-exploited Aquatic Species, the technical problems related to CITES encountered by the countries in the region were identified which should be conveyed to the CITES Secretariat.



*RTC on the ASEAN-SEAFDEC
Regional Technical Consultation on International
Fisheries-related Issues*



*RTC on Address Technical Issues related to
Selected Commercially-exploited Aquatic Species*

Furthermore, the 14th Meeting of the FCG/ASSP (17-18 November 2011, Manila, Philippines) also identified areas where efforts should be exerted to safeguard the interest of the Member Countries in the future. These included combating IUU fishing in the region, and the possible development of the ASEAN Catch Certificate in line with the EC Catch Certificate.

8.2 Climate Change and Fisheries

In order to address the emerging concerns on the impacts from climate change to fisheries, SEAFDEC implemented the program on “Activities Related to Climate Change and Adaptation in Southeast Asia

with *Special Focus on the Andaman Sea*” since 2009. The program is specifically aimed at improving the capacity of participating countries and enhancing coordination on fisheries and habitat management; maintaining ecosystems’ health and increased resilience among coastal fishing communities; improving cooperation on the management of fishing capacity; and supporting the processes of establishing regional/sub-regional fisheries and habitat management mechanisms, as well as agreements that could contribute to strengthening the fisheries sector and its adaptive capacity in response to climate change and its possible impacts. The Program has been pursuing the approach towards building awareness in specific areas at the provincial, sub-regional and regional levels to demonstrate that better organization at the local level; improved habitat management and restored habitats; reduction of destructive fishing; improved registration of vessels, licensing to fish, developing MCS networks; and safety at sea are among the factors that could build adaptive capacity and mitigate possible impacts of climate change. Subsequently, capacity building with specific focus on building up resilience and protection against natural hazards and effects of climate change are incorporated in the context of coordinated habitat and fisheries management, larger fisheries resources conservation areas (*refugia*), and management of fishing capacity to include safety standards as well as the preparedness and ability of crew-members.

In 2011, a series of on-site workshops were organized in Myeik, Myanmar (March 2011), Satun, Thailand (March 2011) and Ranong, Thailand (July 2011) with funding support by the Swedish International Development Cooperation Agency (Sida) through the SEAFDEC-Sida project on “*Activities related to Climate Change and Adaptation in Southeast Asia with Special Focus on the Andaman Sea*”. The workshops provided the fora for coastal communities, local and central government relevant agencies to address the issues on integration of fisheries and habitat management, and improved MCS and MCS networks, vessel records, port monitoring, and local/traditional knowledge. The workshops also enhance the awareness of participants of adaptive capacity to response to the changes in weather patterns and climate change, their possible impacts and increasing importance. Through this project, SEAFDEC had been able to make efforts in strengthening and building up cooperation at sub-regional and regional levels to address the issues on climate change.



On-site Workshops on Activities Related to Climate Change and Adaptation in Southeast Asia in Myeik, Myanmar (left); and Ranong Province, Thailand (right)

In another initiative to enhance better understanding on the impact of climate change, especially to the marine environments, TD developed a program since 2009 to monitor sea surface temperature through the use of satellite images. Together with other fishery data and information such as those from research surveys conducted by SEAFDEC, the data obtained through this monitoring exercise could be used in coming up with better understanding of climate change in relation to fisheries.

Moreover, in relation to enhancing the preparedness of countries in the region on the impacts brought about by climate change, and mitigate the possible impacts from fisheries to climate change, TD implemented the project on “*Safety at Sea for Small Fishing Boats*”. The project aimed to improve safety at sea for small fishing boats, address issues related to the working conditions of fishing crews onboard fishing boats, and promote energy optimization. Moreover, the “*Third Workshop on Safety at Sea and Optimize Energy Use for Small Fishing Boats*” was organized in Samut Prakan, Thailand on 19-22 December 2011, where the minimum safety requirements and working standards for small

fishing boats and fishers were identified. A reporting mechanism that could be used for documenting accidents at sea of small fishing boats in the region was also concluded while energy optimization options were also discussed. Furthermore, the Network for “Safety at Sea for Small Fishing Boats in Southeast Asia” or the “SOS” Network, was also established during the said Workshop.

9. Human Capacity Development in Fisheries

With the objective of compiling information on the current status and gaps in human resources of the countries in the region particularly in the government sector, SEAFDEC conducted a survey from 2010 until early 2011 on the “Existing Human Resources and Expertise in Fisheries in the ASEAN Member Countries”. The results showed that the areas with high number of human resource expertise were in aquaculture, fisheries management and capture fisheries. Meanwhile, the areas where scarcity of expertise is clear especially in the government sector were in basic fisheries biology subjects, and in the cross-cutting/emerging new issues. The limited availability of human resources in these areas could create impact on the development of fisheries in a long-term basis, especially under the situation where several issues and challenges have emerged in the global arena.

In order to enhance the development human capacity and support the region’s fisheries sector, the SEAFDEC Secretariat and Technical Departments organized a number of activities for the Member Countries, *e.g.* consultative meetings, workshops, training courses, both at the national and regional levels. These activities aimed to enhance human capacity under the wide scope of fisheries to ensure sustainable development of fisheries, and boost the contribution of fisheries to food security and national economy as well as to the well-being of the people especially for the generations to come. The number of participants from the SEAFDEC Member Countries in such SEAFDEC activities organized in 2011 is summarized as follows:

Category	Participants from Member Countries (persons)										
	Brunei	Cambodia	Indonesia	Japan	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam
SEAFDEC regional/international meetings, seminars, workshops	25	35	73	58	29	96	69	67	20	150	56
SEAFDEC national/local meetings, seminars, workshops, consultations	0	0	0	4	0	16	0	0	0	20	0
International/regional training courses	10	10	12	0	3	71	7	50	3	14	27
National, on-site training courses (course/trainees)	0	0	4	8	20	3	39	146	0	341	1
Study tours (no. of program/trainees)	0	0	0	22	0	35	5	69	0	0	0
Internships (group/persons)	0	0	0	3	0	0	0	24	0	0	1
On-the-job training (college/students)	0	0	0	0	0	0	0	194	0	15	0
TOTAL	35	45	89	95	52	221	120	550	23	540	85

TD organized several training courses under a wide range of programs, including the tailor-made training programs where curricula could be developed in accordance with the needs of trainees. Other training courses were also conducted to enhance the capacity of the Member Countries in effective fisheries management, as well as in undertaking resources survey and exploration in collaboration with SEAFDEC. TD also embarked in 2011, a newly developed training course on Ecosystem Approach to Fisheries, which aims to enhance the understanding of relevant officers of the Member Countries on the concept of Ecosystem Approach to Fisheries or EAF.

MFRD conducted training courses to enhance the capacity of Member Countries in the areas of fish processing and post-harvest technologies. During the Regional Training Course on Processing of Value-added Products Using Freshwater Fish, the processing techniques involved the use of simple, inexpensive equipment and technology that are suitable for village level and small- to medium- sized

industries. The On-site Training Workshop in Traceability Systems for Aquaculture was conducted by MFRD in collaboration with the Ministry of Agriculture and Rural Development (MARD) of Vietnam, and attended by representatives from the 10 ASEAN countries.

AQD continued to conduct HRD activities to demonstrate its significant contributions to aquaculture development in the region through building institutional capacities and developing a critical mass of experts on aquaculture technologies. In 2011, AQD conducted 15 local and international training courses under various thematic areas and has trained a total of 179 participants. Apart from the regular training courses on aquaculture, AQD also conducted a special training course on 'Capacity Building on Information Dissemination and Data Management' for the information officers of SEAFDEC Secretariat and Departments, as well as internship programs for 22 foreign and local interns and supervised the on-the-job training of 167 students from 22 schools. Moreover, MFRD and MFRDMD also conducted several capacity building activities on the subject related to their respective programs/projects, aiming to improve research capacity of the Member Countries.



Participants from SEAFDEC Secretariat and Departments during the Training Course on 'Capacity Building and Information Dissemination and Data Management'

In addition to the training activities, SEAFDEC Secretariat and Departments also developed a number of technical and promotional materials as well as articles on various fisheries-related subjects published in the SEAFDEC and non-SEAFDEC publications. While aimed at enhancing the visibility of SEAFDEC, these activities were also aimed at widening the scope of dissemination of research findings and technologies of SEAFDEC to target audience, as well as strengthening the capacity of fisheries-related officers in the Member Countries.

The SEAFDEC Secretariat continued to host the Regional Fisheries Policy Network (RFPN) where the members are nominated from each Member Country to be involved in the activities on regional fisheries policy related issues, and enhance closer coordination and communication between SEAFDEC and the Member Countries. In 2011, the RFPN members comprised those from Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand, and Vietnam. The establishment of the RFPN also gives opportunities for fishery officials from the Member Counties to be acquainted with fisheries policy-related issues of the region, and to take part in several programs and activities undertaken by SEAFDEC which could contribute to their capacity development.

COOPERATION WITH DONORS AND PARTNER ORGANIZATIONS IN 2011

In 2011, SEAFDEC continued to establish collaborative arrangements, and undertook collaborative activities with other donors and partner organizations.

ACDI/VOCA, Washington DC, USA

SEAFDEC/AQD forged a Contract Agreement with ACDI/VOCA (USA), a non-profit international development organization, which is implementing a USDA-funded Mud Crab/Fish Cultivation Project in Timor-Leste. The agreement was signed on 19 August 2011 and was completed on 30 September 2011. Based on the provisions in the Agreement, SEAFDEC/AQD provided expert or consultant to work with ACDI/VOCA's Program Manager, Fisheries Cooperative Development Managers and Chief of Party in developing a feasible technical approach to implement viable commercial mud crab culture and hatchery. The consultant had worked within the context of aquaculture business, social, economic and environmental realities of Timor-Leste.

Aklan State University, Philippines

SEAFDEC/AQD and Aklan State University (ASU), a government institution of higher learning in the Philippines, agreed to cooperate in the areas of research, training and information utilizing their joint expertise. The Memorandum of Understanding which was signed in October 2011 and will remain effective for 5 years, aims to: 1) develop cooperative activities in the furtherance of the common goals and objectives of SEAFDEC/AQD and ASU; 2) participate in cooperative research and training programs; 3) promote the exchange of scientists and researchers between SEAFDEC/AQD and ASU for research, training, and other related activities; and 4) strengthen the capabilities of SEAFDEC/AQD and ASU in the field of aquaculture and fisheries through the cooperative use of materials and facilities.

ASEAN Foundation

In 2010, SEAFDEC and the ASEAN Foundation signed a project contract to collaborate in the organization of the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 "Fish for the People 2020: Adaptation to a Changing Environment" which was organized on 13-17 June 2011. In particular, the assistance from the ASEAN Foundation focused on providing support to the participation of representatives from the ASEAN-SEAFDEC Member Countries to the Conference proper. The conduct of this Conference had promoted the interaction and exchange of information on various fisheries-related issues among the ASEAN Member Countries, and helped bridging the gap between the developing and developed countries of the ASEAN. In addition, the Conference also helped the ASEAN Foundation in fulfilling its mandate of creating greater awareness of ASEAN as an organization, which would contribute to the establishment of the ASEAN Community by the year 2015.

Association of the Southeast Asian Nations

• Programs under the ASEAN-SEAFDEC FCG/ASSP Mechanism

Cooperation between SEAFDEC and the Association of the Southeast Asian Nations had been initiated since 1998 with the establishment of the ASEAN-SEAFDEC Fisheries Consultative Group (FCG) Mechanism, which was later on formalized as the ASEAN-SEAFDEC Strategic Partnership (ASSP). In 2011, SEAFDEC implemented 25 programs under the FCG/ASSP framework, the progress of which was reported to the Fourteenth Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (17-18 November 2011 in Manila, Philippines). Out of 25 programs in 2011, 24 programs (except the Program on the ASEAN-SEAFDEC Conference which was completed in 2011) would be continued in 2012. The activities undertaken under these SEAFDEC regional programs had contributed to the implementation of the several key clusters under

the ASEAN Fisheries Consultative Forum (AFCF), the relevant activities of which were reported to the Third Meeting of the AFCF.

- **Collaboration in the preparation and conduct of the ASEAN-SEAFDEC Conference**

ASEAN and SEAFDEC jointly organized the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 or “Fish for the People 2020: Adaptation to a Changing Environment”, on 13-17 June 2011 in Bangkok, Thailand. The technical preparatory works for this Conference were mainly undertaken by SEAFDEC through several technical consultations conducted since 2009. The technical inputs had served as basis in the preparation of the Draft Resolution and Plan of Action, as well as for the conduct of the Technical Session of the Conference. The major outputs from the Conference included: recommendations from the Technical Session, the “Resolution on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020” adopted by the ASEAN-SEAFDEC Ministers, and the “Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020”, adopted by the ASEAN-SEAFDEC Senior Officials responsible for fisheries. These outputs would serve as policy frameworks for undertaking activities both at the national and regional levels, and enhance the sustainable development of fisheries and the contribution of fisheries to food security towards the coming decade.

Under the ASEAN-SEAFDEC Conference framework, SEAFDEC also established partnerships with several other organizations and institutions. Such arrangements and collaboration focused mainly in providing technical inputs to the preparation of the Conference, providing expert(s) to serve as resource persons or deliver statements during the Conference, among others. The collaborating partners for the Conference included:

- Food and Agriculture Organization of the United Nations (FAO);
- Mekong River Commission (MRC);
- Asian Institute of Technology (AIT);
- Network of Aquaculture Centres in Asia-Pacific (NACA);
- WorldFish Center, based in Penang, Malaysia;
- Coastal Development Center (CDC), based at Kasetsart University, Bangkok, Thailand;
- Fisheries Research Agency (FRA), Japan;
- Hokkaido University, Japan;
- Japan International Research Center for Agricultural Sciences (JIRCAS);
- National Fisheries University (NFU), Japan;
- Tokyo University of Marine Sciences and Technology (TUMSAT), Japan;
- Faculty of Fisheries, Kagoshima University, Japan;
- School of Marine Science and Technology, Tokai University (TUMST), Japan;
- Hiroshima University, Japan;
- Research Institute for Humanity and Nature (RIHN), Japan; and
- Marine Institute of the Memorial University of Newfoundland (MI), Canada.

- **Other ASEAN-SEAFDEC Collaboration**

In 2011, SEAFDEC took active role and provided inputs to several ASEAN Meetings, such as the ASEAN Expert Group on CITES (8-10 January 2011 in Brunei Darussalam); Preparatory Meeting for the ASEAN-SEAFDEC Conference (25 April 2011, Cambodia); Third Meeting of the ASEAN Fisheries Consultative Forum (26 April 2011, Cambodia); 19th Meeting of the ASWGF (27-29 April 2011, Cambodia); and the Second ASEAN Maritime Forum (18-19 August 2011, Thailand).

Australian Centre for International Agricultural Research

SEAFDEC through the Aquaculture Department (SEAFDEC/AQD) continued the collaboration with the Commonwealth of Australia represented by the Australian Centre for International Agricultural Research (ACIAR), by forging a contract agreement on 30 May 2011. The agreement which will take effect until 31 May 2015 stipulates that SEAFDEC/AQD as a collaborating institution, would

implement the project on 'Improved Seaweed Culture and Post-harvest Utilization in Southeast Asia'. Specifically, AQD is responsible for the conduct and arrangements of the Project including the management of Project funds provided by ACIAR.

Development Bank of the Philippines

The Development Bank of the Philippines, through a grant from the Norwegian Agency for the Development Cooperation (NORAD, Norway), has contracted the services of SEAFDEC/AQD to undertake a technical assessment of selected Mariculture Parks and help in establishing a framework and standards for the technical assessment of Mariculture Parks and related projects. The one-year project agreement on 'Sustainable Mariculture Investment Program' was signed on 3 March 2011.

Food and Agriculture Organization of the United Nations

SEAFDEC has been collaborating with Food and Agriculture Organization of the United Nations (FAO) on technical issues relevant to sustainable development of fisheries in line with the Code of Conduct for Responsible Fisheries, the International Plans of Action developed under the CCRF framework, as well as other relevant Technical Guidelines adopted at the global level, with a view of enhancing sustainable development of fisheries in the Southeast Asian region and ensuring better utilization of the world's fishery resources. In 2011, the important collaboration between SEAFDEC and FAO focused on:

- ***Bay of Bengal Large Marine Ecosystem Project***

Collaborative activities had been undertaken during the past years between SEAFDEC and the Bay of Bengal Large Marine Ecosystem (BOBLME) project of FAO, on various aspects of mutual interest. Among these was on the joint study of important critical habitats to fish and ecosystems for migratory fish stocks such as *Rastrelliger* spp. and related species in the Andaman Sea. In 2011, SEAFDEC took part in the BOBLME Thailand-Myanmar Workshop for Critical Habitat Management (18-19 January 2011), where SEAFDEC agreed to support relevant joint activities with the BOBLME, specifically on such areas as trans-boundary fisheries management, improvement of fishery statistics, capacity building on the Ecosystem Approach to Fisheries, conduct of fishery resources surveys in the Bay of Bengal areas possibly using the M.V. SEAFDEC, and development of the Regional Plan of Action for the conservation and management of sharks. Along this line, SEAFDEC in collaboration with BOBLME project organized the Sub-regional Consultative Meeting of the Southern Andaman Sea (20-22 October 2011, Thailand), where joint efforts in the management of trans-boundary fisheries such as that of the Indo-Pacific mackerel integrated habitat management in the Southern Andaman Sea/North Strait of Malacca, were discussed.

- ***Coordinating Working Parties on Fishery Statistics and Fisheries Resources Monitoring System***

SEAFDEC continued its collaboration with the Coordinating Working Parties on Fishery Statistics (CWP) and Fisheries Resources Monitoring System (FIRMS) in fishery statistics and information. In 2011, SEAFDEC participated in the 7th Session of FIRMS Steering Committee held back-to-back with the Coordinating Working Party on Fishery Statistics (CWP) Inter-sessional Capture Group Meeting (12-16 December 2011 at FAO Headquarters). In the case of FIRMS, since SEAFDEC is not regional fisheries management organization where countries had the obligation to provide catch data other than fishery statistics, the contribution from SEAFDEC could include relevant data and information derived from projects that collect such information in an *ad-hoc* basis. For the CWP, SEAFDEC could also provide relevant data derived from its projects especially for the development of CWP Handbook for Capture Fisheries which include several new chapters, *e.g.* vessel-gears, socio-economics, ecosystem monitoring, and impacts on ecosystem.

Fats and Proteins Research Foundation, Inc. and National Renderers Association, Inc.

A Contract Research Agreement was forged between SEAFDEC/AQD and two institutions: Fats and Proteins Research Foundation, Inc. (USA) and the National Renderers Association, Inc. (Hong Kong) to jointly undertake a study on 'Digestibility and Effective Level of Meat and Bone Meal in Formulated Diet for Milkfish, *Chanos chanos* Forsskal Grown in Freshwater and Seawater'. The project which began in May 2010 ended in May 2011 with the objective of determining the effective level of meat and bone meal in milkfish practical diet formulation and apparent digestibility values of crude protein and crude ash of diets with meat and bone meal in milkfish reared in freshwater and seawater.

Freshwater Fisheries Research Center/Chinese Academy of Fishery Sciences, China

SEAFDEC/AQD and the Freshwater Fisheries Research Center/Chinese Academy of Fishery Sciences (FFRC/CAFS) have mutually agreed to strengthen their existing collaboration through the expansion of training, research activities and exchange of research staff by renewing the Memorandum of Understanding signed on 14 May 2009. The renewed MOU which commenced on 1 July 2011 and remains in effect for a period of two years, will involve collaboration in research, training, conduct of workshops, conferences, and lectures as well as exchange visit of staff. The specific collaborative activities are in the areas of feed development and disease control, genetic breeding, water environment for aquaculture activities, and socio-economics.

Hokkaido University, Japan

SEAFDEC and the Hokkaido University Faculty of Fisheries Sciences (HUFFS), Japan mutually agreed to extend the existing collaboration through a renewed five-year Agreement, which commenced on 25 February 2011 and will continue to focus on collaborative research, training and other activities in areas of mutual interest. The cooperation covers: 1) joint research and education/training; 2) visit or exchange of researchers and students for study, research, education and training to promote cooperation in areas of common concern that are mutually agreed upon; and 3) participation of researchers/students in conferences and meetings on matters of mutual interest.

Under the renewed collaborative framework starting from April 2011, SEAFDEC and the Hokkaido University would take part in the Asia-Africa Science Platform Program (AASPP) with financial support from the Japan Society for the Promotion of Science (JSPS). The AASPP comprises five components, namely: 1) marine fisheries policy; 2) sustainable production of fisheries resources; 3) environmental friendly aquaculture and stock enhancement; 4) highly efficient utilization and processing of fisheries resources; and 5) globalization of education in fisheries science. The activities under AASPP include cooperative research, technical training through fellowship exchange, and dispatch of staff to international meetings and study tours of organizations.

Under this AASPP Program, technical staff from SEAFDEC Secretariat and Departments will have the opportunity to join the program as exchange fellows at the Hokkaido University under the guidance of Professors from the Faculty of Fisheries Sciences of the University. In 2011, one officer from the Secretariat conducted a study on the Japanese Fisheries Cooperative System and its Community-based Fisheries Management; another one from TD undertook a study on Fishery Information Factsheet as a Management Tool to Support Sustainable Fisheries, and Rights-based Fisheries in Japan; two from AQD studied SDS-PAGE as a protein analysis/profiling tool using *Artemia* as sample, and on the effect of environmental stress on the biochemical composition of *Artemia*; and one officer from MFRDMD conducted a study on Genetic Species Identification of Commercially-important Pelagic Fishes in the South China Sea and Andaman Sea. After completing their studies at HUFFS, the exchange fellows participated in the series of International Seminars organized by HUFFS to report on the accomplishments and conclusion of their respective research activities.

Japan International Research Center for Agricultural Sciences

To strengthen the collaboration between SEAFDEC/AQD and Japan International Research Center for Agricultural Sciences (JIRCAS) for the promotion of fisheries research and development in Southeast Asia, a Memorandum of Agreement was forged between the two parties on 14 July 2011. The collaboration which will remain effective until March 2016 will involve mutual planning and implementation of research projects of common interest in accordance with the intended cooperation. It will also facilitate the exchange of scientists through related research projects, seminars, training and site visits.

National Agriculture Training Council, Malaysia

Since 2009, SEAFDEC/TD established technical and training collaboration with the National Agriculture Training Council (NATC), a government agency under the Ministry of Agriculture and Agro-Based Industry of Malaysia. Through such collaborative agreement, SEAFDEC/TD organized three tailor-made training courses on a wide range of subjects which aim to enhance the capacity of fisheries officers from Malaysia. The subjects of the training included: 1) line fishing (26 September – 3 October 2011 in Labuan); 2) purse seine fishing (17-27 October 2011 in Lamut); and 3) trawl fishing (10-17 November 2011 in Kampong Ache). The lectures included topics on fishing gear materials, design and construction. Shipboard training also formed part of the curriculum for trainees to gain experience in undertaking actual fishing operations.

Nagasaki University, Japan

The Nagasaki University of Japan (School of Dentistry) and SEAFDEC/AQD entered into a Memorandum of Agreement last 5 January 2011 to implement a research project on ‘Extraction of collagen from milkfish’. The project’s main objectives are to extract acid soluble collagen from tropical fish (milkfish) and determine its suitability for medical application. This collaboration will remain in force for a period of two years.

North Carolina State University, USA

SEAFDEC/AQD continued its partnerships with North Carolina State University for the implementation of the project under the AQUAFISH Collaborative Research Support Program (CRSP), which is funded by the United States Agency for International Development (USAID). The joint cooperation covering the period from April 2007 to September 2014 focuses on improving the cost effectiveness and sustainability of aquaculture in the Philippines and Indonesia.

San Miguel Corporation, Philippines

SEAFDEC/AQD entered into a Contract Agreement with San Miguel Corporation of the Philippines on 15 March 2011 for a 12-month collaborative study on the ‘Comparison of performance of formulated diets used for grow-out culture of shrimps, *Penaeus monodon* and *Penaeus vannamei*’. The collaboration involves conduct of trials for each shrimp species using the formulated diets provided by San Miguel Corporation.

Swedish International Development Cooperation Agency (Sida)

The cooperation between SEAFDEC and the Swedish International Development Cooperation Agency (Sida) was initiated since 2003. With the financial support from Sida, SEAFDEC from 2009 to 2011 implemented project entitled “Activities Related to Climate Change and Adaptation in Southeast Asia with Special Focus on the Andaman Sea”. The project aimed to support long-term sustainability of fisheries and reduce the vulnerability from possible impacts from climate change to livelihoods of fisher-folk in ASEAN and around the Andaman Sea. The Project activities primarily focused on: 1) building up of the capacity for management of fisheries and important coastal habitats

(*refugia*) and the protection against natural hazards around the Andaman Sea (integration of habitat and fisheries management); 2) strengthening of capacity and improvement of systems to monitor, record and control active fishing efforts (large- and small-scale) as a basis for development for coordinated plans and management actions on fishing capacity around the Andaman Sea and among ASEAN-SEAFDEC Member Countries; and 3) providing support to policy development and the process to establish a regional fisheries management mechanism and sub-regional agreements for/in the ASEAN region including development of consensus on key fisheries management issues. The period of this project had been extended until mid 2012, with possibility of further extension until the end of 2012.

Smith Bucklin Corporation, USA

Smith Bucklin Corporation (USA) representing the United Soybean Board (USA) continued its collaboration with SEAFDEC/AQD to complete the study on the 'Use of Soybean Meal and Soy Protein Concentrate as Alternatives to Fish Meal in Practical Feeds for Milkfish'. The 'end result contract agreement' for the period from 1 January to 31 December 2011 requires SEAFDEC/AQD to submit the progress and final reports of the study as indicated in the Fiscal Year 2011 Action Plan. The study aimed to refine the optimal soy diet for milkfish and to conduct a pilot feeding trial in sea cages with optimal soy diet. The project would also support the strong R&D and extension activities of SEAFDEC/AQD and would promote sustainable milkfish aquaculture in the Philippines and in Southeast Asia. The 'end result contract agreement' was signed in January 2011.

Universiti Teknologi Malaysia, Malaysia

SEAFDEC/AQD entered into a three-year Memorandum of Understanding with Universiti Teknologi Malaysia (UTM) in December 2011 to collaborate in the following areas: 1) reciprocal exchange of faculty, staff and students, and training programs; 2) joint research projects; 3) exchange of academic publications and information; and 4) promotion of other academic activities. The collaboration is also expected to provide opportunities for UTM postgraduate students and undergraduate students to complete or carry out part of their studies and industrial practical training or research at SEAFDEC.

University of the Philippines in the Visayas

As part of the existing cooperation between SEAFDEC/AQD and University of the Philippines in the Visayas, a Memorandum of Agreement was signed on 1 June 2011 to jointly implement a project on the 'Development of techniques for sustainable production of good quality captive *Penaeus monodon* broodstock and spawners, and high health fry'. The three-year collaboration from 1 June 2011 to 31 May 2014, would be executed under the research program 'Integrated and Sustainable Development Program for the Shrimp Industry' which has been approved for funding by the Department of Science and Technology through the Philippine Council for Aquatic and Marine Research and Development.

Vocational Education Commission of Thailand

The Vocational Education Commission of Thailand and SEAFDEC/TD entered into three-year collaboration for academic collaboration through a Memorandum of Understanding which was signed on 29 September 2011. The collaboration covers: 1) development of human resources in fisheries and fishing vessels through exchange of staff, experts, officers, lecturers, and students in meetings, workshops, seminars, and consultations; 2) promotion and development of joint research, education, and training; 3) exchange of data, documentation and research materials, and development of internet link; and 4) building of good connection and cooperation among public and private sectors and organizations.

SEAFDEC PROGRAMS IN THE YEAR 2012

In 2012, SEAFDEC would continue to implement activities that focus on the development and management of fisheries and aquaculture to support sustainable development of the fisheries sector. Particular priority would be on responsible fisheries in line with the Code of Conduct for Responsible Fisheries; enhancing the contribution of fisheries to food security, poverty alleviation and improved livelihood; as well as in strengthening the region's fisheries towards global competitiveness. The formulation of SEAFDEC programs of activities to be implemented in 2012 took into consideration the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020, which were adopted by the ASEAN-SEAFDEC Ministers and Senior Officials responsible for fisheries during the ASEAN-SEAFDEC Conference in June 2011, as well as the recommendations made during the Technical Session of the Conference.

The SEAFDEC programs of activities proposed for 2012 were scrutinized during the 34th Meeting of SEAFDEC Program Committee (14-16 November 2011, Philippines) and endorsed for submission to the 44th Meeting of the SEAFDEC Council in 2012, for consideration. The programs include:

Departmental Programs

1. Center-wide Information Network (Secretariat);
2. Promotion and Enhancement Fisheries Information (TD);
3. Improvement of Fisheries Technology and Reduction of the Impact from Fishing (TD);
4. Adapting to Climate Change Impacts (AQD);
5. Healthy and Wholesome Aquaculture (AQD);
6. Maintaining Environmental Integrity through Responsible Aquaculture (AQD);
7. Meeting Socio-economic Challenges in Aquaculture (AQD); and
8. Quality Seed for Sustainable Aquaculture (AQD).

Existing FCG/ASSP Programs

1. Assistance for Capacity Building in the Region to Address International Trade-related Issues (Secretariat);
2. Improvement of Fishery Statistics and Information for Planning and Management of Fisheries in the ASEAN Region (Secretariat);
3. Activities Related to Climate Change and Adaptation in Southeast Asia with Special Focus on the Andaman Sea (Secretariat)¹;
4. Strengthening SEAFDEC Network for Sustainable Fisheries and IUU Fishing Related Countermeasures (Secretariat);
5. Responsible Fishing Technologies and Practices: *Fishing in Harmony with Nature* (TD);
6. Sustainable Utilization of Potential Fisheries Resources and Reduction of Post-harvest Losses (TD);
7. Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2 (TD);
8. Deep Sea Fisheries Resources Exploration in the Southeast Asia (TD);
9. Information Collection of Highly Migratory Species in Southeast Asia Waters (TD);
10. Development of Regional Database for Fishery Management (TD);
11. Promotion of Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management (TD);
12. Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement (TD);
13. Improvement of Information Gathering System for IUU Fishing Related Countermeasures in the Southeast Asia (TD);

¹ The program ended in 2011, but was extended until mid of 2012.

14. Promotion on Fishing License, Boats Registration, and Port State Measures (TD in collaboration with MFRDMD);
15. Human Resource Development for Sustainable Fisheries (TD);
16. Chemical and Drug Residues in Fish and Fish Products in Southeast Asia: Biotoxins Monitoring in ASEAN (MFRD);
17. Traceability Systems for Aquaculture Products in Southeast Asian Region (MFRD);
18. Utilization of Freshwater Fish for Value-added Products (MFRD);
19. Promotion of Sustainable and Region-oriented Aquaculture (AQD);
20. Resource Enhancement of International Threatened and Over-exploited Species in Southeast Asia through Stock Release (AQD);
21. Accelerating Awareness and Capacity-building in Fish Health Management in Southeast Asia (AQD);
22. Food Safety of Aquaculture Products in Southeast Asia (AQD);
23. Tagging Program for Economically-important Pelagic Species in the South China Sea and Andaman Sea (MFRDMD); and
24. Research and Management of Sea Turtles in Foraging Habitats in the Southeast Asian Waters (MFRDMD in collaboration with TD).

New FCG/ASSP Programs

1. Climate Change and Its Impacts on Sustainable Fisheries Aquaculture: Adaptation and Mitigation Towards Food Security;
2. Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management; and
3. Strategies for Trawl Fisheries By-catch Management (REBYC-II CTI).

Other Programs

1. Cetacean Research in Southeast Asian Waters: Cetacean Sighting Program; and
2. Safety at Sea for Small Fishing Boats.

ENHANCING SEAFDEC VISIBILITY

Since its establishment, SEAFDEC has implemented fisheries-related programs/projects covering wide aspects of research, training and information. Starting from 2007, the SEAFDEC Secretariat and Departments made full use of the Information Strategies as guiding principles in formulating and implementing information-related activities that aim to enhance the Center's image and visibility. The Information Strategies have been developed to enhance the effectiveness of the implementation, monitoring, and reporting of the progress of SEAFDEC information-related activities.

In 2011, the progress and achievements made by SEAFDEC in the implementation of the information activities during the year were monitored and discussed during the 12th Meeting of the Information Staff Exchange Program (ISEP) on 3-4 November 2011 in Kuala Lumpur, Malaysia.

Strategy 1: Production of relevant, timely, and useful information materials to meet the requirements of the target audience

- Production and dissemination of 37 titles/issues of technical/scientific materials (15,883 copies produced; 7253 copies distributed);
- Production and dissemination of 58 titles of technical/scientific articles (17 titles published in SEAFDEC publications and 41 titles published in non-SEAFDEC publications); and
- Recorded 478 queries for information through SEAFDEC libraries, and 347 materials sold.

Strategy 2: Raising SEAFDEC image at national, regional and international levels

- Production and dissemination of 49 titles/issues of promotional materials (69,073 copies produced; 41,174 copies distributed);
- Establishment and administration of SEAFDEC Websites and web blocks: for SEAFDEC Departmental websites, total unique visitors: 141,684, links from other websites: 10,125, and annual downloads: 121,745;
- Taking part in 12 exhibition events with 58,839 visitors recorded at SEAFDEC exhibition booths and displays; and
- Officially released press statements: 11, and SEAFDEC appearances in public media and websites recorded: 122.

Strategy 3: Enhancing communication and information sharing both within SEAFDEC and with Member and non-Member Countries, other international/regional organizations, and public

- Maintenance of SEAFDEC Secretariat and Department libraries, and providing library services;
- Acquiring a total of 1,111 issues of newsletters/serial publications, 426 titles of technical publications and 41 items of audio-visual materials by the SEAFDEC libraries;
- Cooperation and exchange of materials with 639 network libraries within and outside the region;
- Dissemination of 35 titles (with 5,034 copies) of technical materials, and 13 titles (with 18,700 copies) of promotional materials to target groups;
- Making accessible 1,198 downloadable materials and 15 databases in SEAFDEC websites;
- Enhancing the use of e-mail systems (including e-groups) to facilitate communications both among SEAFDEC staffs and with other concerned;
- Total number of 25,790 direct visitors to SEAFDEC Secretariat and Departments increasing;
- Sending 147 SEAFDEC officials to participate in 87 events organized by other organizations (62 officials in events at regional/international levels, and 85 at national local levels);
- Organization of SEAFDEC events, which include:

- Regional/International meetings, seminars, workshops (22 meetings with a total of 1,338 participants)
- National/local meeting, seminars, workshops, consultations (3 meetings with a total of 90 participants)
- International/regional training courses (22 courses with a total of 267 trainees)
- National, on-site training courses (23 courses with a total of 604 trainees)
- Study tours (17 programs with a total of 171 trainees)
- Internships (18 groups with 35 persons)
- On-the-job training (29 colleges with a total of 209 students)
- Internal meetings (4 meetings with a total of 123 participants);
- Participation of officials from Member Countries to events organized by SEAFDEC:
 - Regional/International meetings, seminars, workshops (678 participants)
 - National/local meetings, seminars, workshops, consultations (40 participants)
 - International/regional training courses (207 trainees)
 - National, On-site training courses (562 trainees)
 - Study tours (131 trainees)
 - Internships (28 persons)
 - On-the-Job training (209 students);
- Establishment of agreements/arrangements with 28 fisheries-related organizations for the implementation of collaborative activities at national, regional and international levels; and
- Activities of SEAFDEC was recognized by other organizations and donor agencies, with funding support of US\$ 3,621,149 provided by non-regular sources to support activities of SEAFDEC.

Strategy 4: Strengthening SEAFDEC capability in information-related activities

- Enhancing staff capabilities in information-related activities through activities in HRD taking into account the scope and requirements of the staff, and during the annual ISEP Meeting; and
- Enhancing financial sustainability of the publication and information activities through by selling technical publications and souvenir items under a cost-recovery basis.

Strategy 5: Regular monitoring and evaluation of information activities

- Organization of the Twelfth Meeting of the SEAFDEC Information Staff Exchange Program (ISEP) to monitor the implementation of information-related activities, in accordance with the Information Strategies for Enhance SEAFDEC Visibility and Communication.

SEAFDEC REVENUES AND EXPENDITURES IN 2011

Southeast Asian Fisheries Development Center Un-Audited Abridged Consolidated Financial Statements (in US\$)

	2011 (Un-audited)	2010 (Audited)
REVENUES		
Contributions from:		
Member governments	7,796,703	7,615,539
Other sources	1,859,625	1,575,446
Total Revenues	<u>9,656,328</u>	<u>9,190,985</u>
EXPENDITURES		
Operating and Capital Expenditure		
Research	949,371	953,076
Training	908,164	775,591
Information	685,079	734,724
Collaborative	140,327	141,591
Others	382,992	157,735
Administrative	5,653,611	5,969,473
Total Expenditures	<u>8,719,544</u>	<u>8,732,190</u>
SURPLUS (DEFICIT), For the year	936,784	458,795
FUND BALANCE, Beginning of year	4,992,354	4,657,243
FUND BALANCE, End of year	<u>5,929,138</u>	<u>5,116,038</u>
REPRESENTED BY:		
Cash at Bank	5,711,095	4,766,329
Receivables	45,715	101,663
Advances and Deposits	193,758	354,913
Supplies Inventory	50,102	57,903
Fuel oil for vessels	115,440	260,075
Prepayments	14,213	18,918
Total Current assets	<u>6,130,323</u>	<u>5,559,801</u>
Reserved budget for vessel periodic maintenance	68,599	42,000
Termination indemnity fund	1,888,776	1,928,340
Other assets-Net	105,572	5,929
Total Assets	<u>8,193,270</u>	<u>7,536,070</u>
Less: Liabilities		
Accrued payable	375,356	491,692
Fund held in trust	0	0
Provision for termination indemnity	1,888,776	1,928,340
Total Liabilities	<u>2,264,132</u>	<u>2,420,032</u>
NET ASSETS	<u>5,929,138</u>	<u>5,116,038</u>

Remarks:

^{1/} Difference of US\$ 123,684 is a result of change of rate in US\$ transaction

**Un-audited contribution received by SEAFDEC from Member Countries
and other sources of funds for the year 2011 (In US\$)**

Sources	Secretariat	TD	MFRD	AQD	MFRDMD	Total	
						In US\$	%
Brunei	7,000					7,000	0.07
Cambodia	6,000					6,000	0.06
Indonesia	26,000					26,000	0.27
Japan	280,000					280,000	2.90
Lao P.D.R.	4,000					4,000	0.04
Malaysia	10,000				927,103	937,103	9.70
Myanmar	10,000					10,000	0.10
Philippines	15,000			3,925,173		3,940,173	40.8
Singapore	8,000					8,000	0.08
Thailand	20,000	2,544,427				2,564,427	26.6
Vietnam	14,000					14,000	0.15
Sub-total	400,000	2,544,427	0	3,925,173	927,103	7,796,703	80.8
Other Sources ^{2/}	106,397	667,582		1,085,646		1,859,625	19.2
Total	506,397	3,212,009	0	5,010,819	927,103	9,656,328	100

Remarks:

^{2/} Other sources of contributions include bank interests, gain/loss from varying exchange rates, contributions from donors directly given to Departments and miscellaneous incomes

Other Contributions Received by SEAFDEC in 2011 (In US\$)

	Amount in US\$ ^{3/}
Fisheries Agency-Japan (TF-II)	1,343,138
Fisheries Agency-Japan (TF-V)	779,451
Swedish International Development Cooperation Agency (Sida)	435,484
Total	2,558,073

Remarks:

^{3/} Includes other sources of contribution which are not reported in the SEAFDEC Financial Statement



PROGRESS IN THE IMPLEMENTATION OF THE INFORMATION STRATEGIES FOR ENHANCING SEAFDEC VISIBILITY AND COMMUNICATION IN THE YEAR 2011

SEAFDEC since its establishment has implemented fisheries-related programs/projects covering wide aspects of research, training and information. Starting from 1998, the information-related activities of SEAFDEC have been intensified through the formulation and implementation of the program on Center-wide Information Network; and in order to harmonize the information-related activities undertaken by the SEAFDEC Secretariat and Departments, SEAFDEC has regularly organized the Information Staff Exchange Program (ISEP) Meeting with the participation of information-related officers from the Secretariat and Departments.

To further harmonize the information-related initiatives toward the organizational goal, during the Sixth ISEP Meeting in 2005, the 'Information Strategies for Enhancing SEAFDEC Visibility and Communication' was formulated; and was endorsed by the 38th Meeting of the SEAFDEC Council in 2006. At the Seventh ISEP in 2006, the Information Strategies was modified to incorporate Key Performance Indicators (KPI); and the Information Strategies together with the KPI were subsequently endorsed by the 39th Meeting of SEAFDEC Council in 2007. Since then, the SEAFDEC Secretariat and Departments started to make use of the Information Strategies as guiding principles in formulating and implementing the information-related activities to enhance the Center's image and visibility to the public. To enhance the effectiveness in the implementation, monitoring and reporting of the progress of SEAFDEC information-related activities, during the Tenth ISEP Meeting in 2009, while maintaining all elements as endorsed by the Council, the Information Strategies were re-categorized to comprise:

- Strategy 1: Production of relevant timely, and useful information materials to meet the requirements of the target audience
- Strategy 2: Raising SEAFDEC image at international, regional and national levels
- Strategy 3: Enhancing communication and information sharing both within SEAFDEC and with Member and non-Member Countries, other international/regional organizations, and public
- Strategy 4: Strengthening SEAFDEC capability in information-related activities
- Strategy 5: Regular monitoring and evaluation of information activities

In order to monitor the progress and achievements made by SEAFDEC in the implementation of the information activities implemented during the year 2011, and discuss information-related activities/initiatives to further enhance the visibility and activities of the Center, the 12th ISEP Meeting was organized on 3-4 November 2011 in Kuala Lumpur, Malaysia, and hosted by MFRDMD. The progress and achievements made by SEAFDEC Secretariat and Departments in the implementation of the Information Strategies were reported, and the summary of the progress would be further informed to the 44th Meeting of SEAFDEC Council for policy support and further guidance.

Strategy 1: Production of relevant timely, and useful information materials to meet the requirements of the target audience

- Production and dissemination of technical materials**

In 2011, a number of technical materials were published and dissemination to target audiences, which include SEAFDEC Member Countries, participants attending in the technical events organized by SEAFDEC Secretariat and Departments, libraries regularly exchanging publications with SEAFDEC, collaborating organizations as well as other relevant international/regional organizations. SEAFDEC also prepared report of events organized by SEAFDEC in response to the directives given by the Member Countries.

Technical materials	No. of Titles/ Issues	No. of Copies Produced	No. of Copies Distributed
Technical/scientific materials	6	3,900	1,350
Report of events organized by SEAFDEC	21	2,969	1,610
Materials for general public, policy makers, politicians, etc.	8	4,014	2,035
Materials for students and youth	2	5,000	2,258
TOTAL	37	15,883	7,253

(List of technical materials, e.g. books, manuals, reports, proceedings, scientific/technical publications, VCDs and posters, etc. appears as **Appendix 1**)

The technical materials produced by SEAFDEC from 2007 to 2011 could be summarized as follow:

Technical materials	2007	2008	2009	2010	2011
Number of titles/issues	59	60	55	66	37
No. of copies produced	22,330	10,025	19,511	14,975	15,883
No. of copies distributed	...	5,918	5,029	6,917	7,253

- Development of technical/scientific articles published in technical/scientific journals/proceedings**

In terms of technical/scientific articles, the number of articles developed by SEAFDEC that were published in technical/scientific journals/proceedings (both SEAFDEC and non-SEAFDEC publications) include:

Technical/scientific articles	No. of Titles/ Issues
Published in SEAFDEC publications (Fish for the People-3 issues of 2011)	17
Published in non-SEAFDEC publications	41
TOTAL	58

(List of technical/scientific articles published in scientific journals/proceedings (SEAFDEC and non-SEAFDEC publications) appears as **Appendix 2**)

The technical/scientific articles developed by SEAFDEC from 2007 to 2011 could be summarized as follow:

Technical/scientific articles	2007	2008	2009	2010	2011
Total number of articles Published in SEAFDEC Publications	...	14	13	11	17
Total number of articles Published in non-SEAFDEC Publications	...	24	18	46	41
TOTAL		38	31	57	58

- **Number of query and record of sell of the materials**

	Number of query for information through libraries	Number of Sale
TD	32	55
AQD	479	388
MFRDMD	4*	-
TOTAL	478	347

Remarks: Number of query and sale of materials of Secretariat and MFRD was not recorded as the materials were published and given out for free either for promotional purpose or on a complimentary basis

In addition, feedback mechanisms were established for the regular publications produced by SEAFDEC through communication channels *e.g.* dedicated e-mail, etc. In 2011, AQD received feedbacks from the audiences of the publication produced by the Department (particularly through the electronic AQD matters) indicating positive responses to the publications.

Strategy 2: Raising SEAFDEC image at national, regional and international levels

- **Production and dissemination of promotional materials**

During the year 2011, SEAFDEC Secretariat and Departments produced and distributed materials that aim to promote the activities and visibility of the Center, which could be summarized as follows:

Promotional Materials	No. of Titles/ Issues	No. of Copies Produced	No. of Copies Distributed
Annual Reports, Highlights	6	1,565	984
Newsletter, Periodical Publications	10	17,400	10,945
E-Newsletter	3	16	5,450 e-mail list and 30 hard copy printing
Promotional Publications (books, flyers, brochures, calendar)	9	14,300	8,300
Promotional CD, VCD	8	780	695
Promotional Posters	13	35,012	14,770
TOTAL	49	69,073	41,174

(List of promotional publications appears as **Appendix 3**)

The promotional materials produced by SEAFDEC from 2007 to 2011 could be summarized as follow:

Promotional Materials	2007	2008	2009	2010	2011
Number of titles/issues	16	76	34	43	49
No. of copies produced	17,050	34,586	33,477	39,091	69,073
No. of copies distributed	...	31,961	27,097	35,859	41,174

- **Website established and administered by SEAFDEC**

SEAFDEC Secretariat and Departments established and administered websites and other web-based tools in order to enhance the SEAFDEC image at international, regional and national levels, which could be summarized as follows:

Website name	Estimated annual unique visitors	Link from other Website	Number of Download	By
www.seafdec.org	10,617	201	2,030	Sec
ASSP portal website	362	8	-	Sec
www.ffp2020.org (until ~August 2011)	2,616	129	3,434	Sec
www.seafdec.or.th	12,421	32	39,534	TD
www.youtube.com/seafdec	7,285 (total view)	-	-	TD
www.fishsafetyinfo.com	MFRD website www.fishsafetyinfo.com has been terminated and is currently incorporated under www.seafdec.org			MFRD
www.seafdec.org.ph	53,334	9,892	2,868	AQD
www.facebook.com/devcom.aqd	351 (friends)	-	60 (posts)	AQD
www.flickr.com/photos/seafdecaqd	20,376	10,260	-	AQD
www.youtube.com/watch?v=C8W4a0v008k	89,586	2,780	-	AQD
SAIR repository.seafdec.org.ph	6,227	2,032	39,161	AQD
www.seafdec.org.my	65,312	-	77,313	MFRDMD
TOTAL*	141,684	10,125	121,745	

Remarks*: SEAFDEC main websites are shaded in grey

The total visitors to SEAFDEC main websites, links from other websites and number of download from 2007 to 2011 could be summarized as follow:

	2007	2008	2009	2010	2011
Total visitors to SEAFDEC main websites	39,600	96,753	68,181	83,851	141,684
Links from other websites	...	275	25	171	10,125
Number of Download	...	12,701	19,848	34,640	121,745

• Exhibition arrangements

During the year, SEAFDEC Secretariat and Departments also arranged a number of exhibitions/poster displays, of which the total number of events and estimated visitors were recorded as follows:

	Total number of exhibition displays (no. of events)	Estimated number of visitors* (person)
Secretariat	1*	460
TD	4	57,100
MFRD	0	0
AQD	7	1,279
MFRDMD	-	-
TOTAL	12	58,839

(List of Exhibition and estimated visitors in 2011 appears as Appendix 4)

* Exhibition during the ASEAN-SEAFDEC Conference, organized in collaboration with all Departments

The total number of exhibition displays and estimated number of visitors from 2007 to 2011 could be summarized as follow:

	2007	2008	2009	2010	2011
Total number of exhibition displays (no. of events)	16	22	11	21	12
Estimated number of visitors (person)	44,660	47,510	31,380	61,284	58,839

- **Press statements and appearance in public media**

As one of the indicator for SEAFDEC image at international, regional and national levels; the number of press statement and appearance in public media and websites during 2011 are summarized as follows:

	Sec	TD	MFRD	AQD	MFRDMD
Number of press statements officially released by SEAFDEC	3	2	0	5	1
Number of appearance in public media (Sub-total)	24	20	0	65	2
- Newspaper/magazines *	7	18	-	37	1
- Websites	15	2	-	25	-
- Radio**	-	-	-	0	-
- Television	2	-	-	3	1
TOTAL	27	22	0	70	3

(List of Press Statements and appearance in Press appear as **Appendix 5** and **Appendix 6**)

* For news on the same event that appears many times in difference newspaper, total number of appearance was reported

** For the same radio spot is broadcasted in the same channel for many days, the appearance was reported only once

The number of press statements and appearance in public media from 2007 to 2011 could be summarized as follows:

	2007	2008	2009	2010	2011
Number of press statements officially released by SEAFDEC	16	20	13	18	11
Number of appearance in public media and website	112	150	75	135	122

- **Conduct of the ASEAN-SEAFDEC Conference “Fish for the People 2020”**

During the year, SEAFDEC organized the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People 2020: Adaptation to a Changing Environment” on 13-17 June 2011 in Bangkok, Thailand to addressed the concerns on the current fisheries situation and emerging issues that may impede the sustainable development and the contribution of fisheries to food security in the Southeast Asian region. The Technical Session of the Conference, was participated in by nearly 500 participants. Based on the technical preparatory works undertaken by SEAFDEC, the “Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020” were prepared and endorsed by the ASEAN-SEAFDEC Senior Officials and Ministers responsible for fisheries.

Strategy 3: **Enhancing communication and information sharing both within SEAFDEC and with Member and non-Member Countries, other international/regional organizations, and public**

- **Library services**

The libraries of SEAFDEC Secretariat, TD, MFRD, AQD and MFRDMD provided information services for their staffs as well as external visitors. For the Secretariat, the library contains publications produced by the Secretariat and Departments, and aimed primarily to serve as reference materials for the staffs and visitors.

The services provided by SEAFDEC Departments include general library services, book loan services (including interlibrary loans), provision of on-line information services through departmental website (for AQD most of information is being digitized and online information services are provided through Web OPAC), etc. These services are envisaged to help enhancing the dissemination and sharing of SEAFDEC information to with Member and non-Member Countries, other international/regional organizations, and public.

For SEAFDEC Departments, the libraries contain reference materials, produced by SEAFDEC and other sources, particularly on the issues that fall under the mandate of the respective department (the libraries also established cooperation and exchange the publications produced by SEAFDEC to other libraries and relevant regional/international organizations all over the world). During the year, the SEAFDEC libraries also received a number of materials to serve as references for staff and visitors. The materials could be summarized as follows:

Library materials received during the year	Secretariat	TD	MFRD	AQD	MFRDMD
Newsletter/serial publications (no. of issues)	20	42	120	873	56
Books, report, technical publications (no of titles)	34	105	2	173	112
Audio-visual Materials (no of items)	0	15	0	18	8

- **Information sharing and dissemination**

In addition to library services, SEAFDEC Secretariat and Departments also enhance the information sharing and exchange with Member and non-Member Countries, other international/regional organizations, and public through the exchange library, provision of downloadable materials; and development of databases accessible in the website, of which the information could be summarized as follows:

	No. of Exchange Library	Technical publications sent to target group		Promotional publications sent to target group		No. of downloadable materials in the website	No. of Databases accessible in the website
		Titles	Copies	Titles	Copies		
Secretariat	224	7	2,255	13	18,700	139	1
TD	36	10	708	-	-	120	-
MFRD	35	2	-	-	-	0	0
AQD**	4 network libraries and 320 exchanges or mail outs (int. libraries 84 local libraries 162; other offices 74)	11	1,971	8	1,704	421 (SAIR)	14
MFRDMD	20	5	100	-	-	110	-
TOTAL	639	35	5,034	13	18,700	1,198	15

- **Use of e-mail address, and establishment of unified e-mail system and e-groups**

The e-mail system were established and used to facilitate communications both among SEAFDEC staffs, and with other contacts. Followings are the e-mail formats used by the SEAFDEC Secretariat and Departments:

Department	E-mail format
Secretariat	name@seafdec.org
TD	name@seafdec.org
MFRD	name_surname@ava.gov.sg or surname_name@ava.gov.sg
AQD	name@seafdec.org.ph
MFRDMD	name@seafdec.org.my

The following e-groups were also established to facilitate communications (particularly internal communication) among the staff:

E-groups	For	By
secstaff@seafdec.org	All Secretariat staff	Sec
RFPN@seafdec.org	All Regional Fisheries Policy Network (RFPN) members and virtual members	Sec
aseanstat@seafdec.org	Members of the ASEAN Network on Fishery Statistics	Sec
tdstaff@seafdec.org	All TD staff	TD
newsletter@seafdec.org	Network of TD e-Newsletter	TD
aft@seafdec.org	Network of Advance Fisheries Technology e-Magazine	TD
combat_iuu@seafdec.org	Network of Combat IUU	TD
gear_expert@seafdec.org	Network of Fishing Gear Expert	TD
hrd@seafdec.org	Network of HRD	TD
ifcome@seafdec.org	Network of the Impact of Fishing Gear in Coastal and Marine Environments in Southeast Asian Water (IFCOME Network)	TD
turtle_expert@seafdec.org	Network of Turtle Expert	TD
turtle_task@seafdec.org	Network of Turtle Task	TD
all@seafdec.org.ph	All AQD staff	AQD
senior_staff@seafdec.org.ph	AQD Chief, Deputy Chief, Division Heads, Section/Unit/Station Heads and Senior Researchers	AQD
researchers@seafdec.org.ph	AQD Chief, Deputy Chief, Senior Staff of Research Division and Technology Verification & Demonstration Division	AQD
dream_team@seafdec.org.ph	AQD staff involved in Institutional capacity dev. project	AQD
devcom_staff@seafdec.org.ph	AQD staff under Development Communication Section	AQD
mfrdmdstaff@seafdec.org.my	All MFRDMD officers and assistant officers	MFRDMD

- **Visitors to SEAFDEC**

The number of people who directly visited SEAFDEC offices were also recorded as one of indicator on communication and information sharing. These were categorized to official visits by Member Countries, Non-member Countries, International/Regional Organizations, as well as the visit by students and general public to SEAFDEC libraries, facilities, etc..

Category	Number of Visitors*					%
	Sec	TD	MFRD	AQD	MFRDMD	
Fisheries-related agency from countries hosting department	12	3	NA	61	4	0.46
Fisheries -related agency from non-Member Countries	-	1	NA	14	2	0.06
Fisheries-related agency from non-Member Countries	-	-	NA	24	2	0.09
International/regional organizations (fisheries and non-fisheries)	6	-	NA	206	3	0.96
Students	20	218	NA	18,595	40	64.72
Others (public, private sector, NGOs, etc.)	1	1	NA	6,474	3	34.05
TOTAL	39	223	NA	25,374	54	100

* Number of visitors does not include participants that involve in the activities such as meetings, training program, internship, and study tour programs conducted by the department, or personal visits

The number of visitors to SEAFDEC from 2007 to 2011 could be summarized as follows:

	2007	2008	2009	2010	2011
Total number of visitors to SEAFDEC	12,404	12,089	5,527	14,649	25,790

• SEAFDEC participation to events organized by other organizations

During 2011, the participation of SEAFDEC officials to the events organized by other organizations at regional/international and national/local levels (number of event and number of person) could be summarized as follows:

	Secretariat		TD		MFRD		AQD		MFRDMD	
	Evnt.	Per.	Evnt.	Per.	Evnt.	Per.	Evnt.	Per.	Evnt.	Per.
Meeting organized by other organizations at regional/international level	15	27	6	6	0	0	15	21	8	8
Meeting organized by other organizations at national/local level	5	11	3	3	0	0	27	41	8	30
TOTAL	20	38	9	9	0	0	42	62	16	38

(See the list of activities organized by other organizations with SEAFDEC participation in **Appendix 7**)

The number of SEAFDEC participation to events organized by other organizations from 2007 to 2011 could be summarized as follows:

	2007	2008	2009	2010	2011
SEAFDEC staff attending meeting organized by other organizations at regional/international level	74	83	73	98	62
SEAFDEC staff attending meetings organized by other organizations at national/local level	51	134	37	87	85
TOTAL	125	217	110	185	147

• Meetings, training, etc organized by SEAFDEC

During 2011, the total number of events organized by SEAFDEC and total number of participants (including SEAFDEC staffs, participants, observers, resource persons, etc.) could be summarized as follows:

Category	Secretariat		TD		MFRD		AQD		MFRDMD	
	Evnt.	Per.	Evnt.	Per.	Evnt.	Per.	Evnt.	Per.	Evnt.	Per.
SEAFDEC regional/international meetings, seminar, workshop	9	920	6	242	2	31	1	52	4	93
SEAFDEC national/local meeting, seminar, workshop, consultation, etc.	-	-	2	70	0		-	-	1	20
International/regional training course (no of course/trainees)	-	-	8	153	1	14	13	100	-	-
National, on-site training courses (course/trainees)	3	192	7	239	0		13	173	-	-
Study tour (no. of program/trainees)	1	5	2	62	0		14	104	-	-
Internship (group/persons)	-	-	1	1	0		17	34	-	-
On-the-job training (college/students)	-	-	6	15	0		23	194	-	-
SEAFDEC internal meetings	4	123			0		-	-	-	-

(See the list of activities in **Appendix 8**)

- **Participation of officials from Member Countries to events organized by SEAFDEC**

Based on the figures in **Appendix 8**, the officials from each SEAFDEC Member Country attending in the events organized by SEAFDEC could also be summarized as follows:

Category	Participants from Member Countries (person)										
	B	C	I	J	L	Ma	My	P	S	T	V
SEAFDEC regional/international meetings, seminar, workshop	25	35	73	58	29	96	69	67	20	150	56
SEAFDEC national/local meeting, seminar, workshop, consultation, etc.	0	0	0	4	0	16	0	0	0	20	0
International/regional training course	10	10	12	0	3	71	7	50	3	14	27
National, on-site training courses (course/trainees)	0	0	4	8	20	3	39	146	0	341	1
Study tour (no. of program/trainees)	0	0	0	22	0	35	5	69	0	0	0
Internship (group/persons)	0	0	0	3	0	0	0	24	0	0	1
On-the-job training (college/students)	0	0	0	0	0	0	0	194	0	15	0
TOTAL	35	45	89	95	52	221	120	550	23	540	85

- **Establishment of Cooperation and Networking with Other Organizations**

SEAFDEC also established cooperation with other national/ regional/international organizations and institutions in the implementation of activities, and received funding support from some of the organizations. Among other, these include:

- Association of Southeast Asian Nations (ASEAN)
- ASEAN Foundation
- Fats and Proteins Research Foundation Inc. (USA)
- Fisheries Agency of Japan (for providing Japanese Trust Fund)
- Swedish International Development Cooperation Agency (Sida)
- Food and Agriculture Organization of the United Nations (FAO)
- FAO/Coordinating Working Party on Fishery Statistics (CWP)
- FAO/Fisheries Resources Monitoring System (FIRMS)
- Hokkaido University, Japan

- Japan International Research Center for Agricultural Sciences
- National Agriculture Training Council (NATC), Malaysia
- Research Institute for Humanity and Nature (RIHN)
- Unites Soybean Board, USA
- The WorldFish Center
- Freshwater Fisheries Research Center, Chinese Academy of Fishery Sciences (FFRC/CAFS)
- Nagasaki University School of Dentistry
- Bay of Bengal Large Marine Ecosystem Program (BOBLME) Project
- North Carolina State University
- Australian Center for International Agricultural Research (ACIAR)
- San Miguel Foods, Inc.
- Marine Environment & Resources Foundation Inc.
- Novus International Inc.
- Development Bank of Philippines
- Fish Market Organization
- Wageningen University, the Netherlands
- Tinsulanonda Fisheries College
- Ubon Ratchthani University
- Lunsad Multi-Purpose Cooperative, Binangonan, Rizal

In addition, SEAFDEC also established collaboration with several organizations/institutions in the preparation and the conduct of **the ASEAN-SEAFDEC Conference**. Collaborative/Partner Organizations include: Food and Agriculture Organization of the United Nations (FAO); Mekong River Commission (MRC); Asian Institute of Technology (AIT); Network of Aquaculture Centres in Asia-Pacific (NACA); WorldFish Center; Coastal Development Center (CDC); Fisheries Research Agency (FRA), Japan; Hokkaido University, Japan; Japan International Research Center for Agricultural Sciences (JIRCAS); National Fisheries University (NFU), Japan; Tokyo University of Marine Sciences and Technology (TUMSAT), Japan; Faculty of Fisheries, Kagoshima University, Japan; School of Marine Science and Technology, Tokai University (TUMST), Japan; Hiroshima University, Japan; Research Institute for Humanity and Nature (RIHN), Japan. There are also organizations at national levels that support the technical preparatory works of the Conference. The detailed information on collaborating organizations and forms of collaboration are summarized in **Appendix 9**.

In terms of funding support from other organizations (extra from regular contribution from host governments and Minimum Regular Contribution (MRC)), the funding supports provided by other agencies and institutions could be summarized as follows:

Category	Funding (USD)					%
	Sec	TD	MFRD	AQD	MFRDMD	
From Agencies/institutions in the region	2,195,484	36,133	-	417,494	285,004	81
From Agencies/institutions outside the region	435,484	-	-	249,550	2,000	19
TOTAL	2,630,968	36,133	-	667,044	287,004	100

(See list of funding support from other agencies/institutions in and outside the region in Appendix 10)

The extra funding support from other agencies/institutions from 2007 to 2011 could be summarized as follows:

Category	Funding (USD)				
	2007	2008	2009	2010	2011
From Agencies/institutions in the region	1,609,835	2,158,292	1,811,421	1,896,937	2,934,115
From Agencies/institutions outside the region	430,078	239,810	633,992	840,837	687,034
TOTAL	2,039,913	2,398,102	2,445,413	2,737,774	3,621,149

Strategy 4: Strengthening SEAFDEC Capability in Information-related activities

- Enhancing staff capabilities that could contribute to information-related activities**

In strengthening the capabilities of SEAFDEC staff that is also envisaged to contribute to enhancing the information related activities and visibility of the Center, the following HRD activities were arranged/participated in during the year:

- HRD on Enhance the Capacity in Statistics-related aspects particularly in generating fisheries information to support sustainable policy planning management of fisheries based on fisheries statistics by Information Officer of secretariat (1)
- 18th Machine Readable Cataloging Workshop – participated in by Library Staff of AQD (1)
- Photography using point and shoot camera – participated in by AQD Staff (15)
- Staff Exchange and Capacity building on information dissemination and data management for staff of SEAFDEC Secretariat (2), TD (2), and MFRDMD (1)
- Asia-Africa Science Platform Program, Hokkaido University, Japan – participated by Information Technology Officer of TD (1)

- Financial sustainability of publication and information activities (cost, and returns from production of selling items during the year)**

Department	Total cost for production of publications and information activities	Total return from publications and information activities	% of returns *	Remarks
Sec	US\$ 52,669	-	-	All materials are promotional publications or report of the meeting which are not for sell
TD	US\$ 28,532	-	-	
MFRD	Materials are not for sell, but given on complimentary basis upon request.			
AQD	Php 801,482	Php 695,310	86%	Sales of publications and videos / total budget allotted for publications & video
MFRDMD	Material are not for sale			

* Returns before deducting production cost

- Percentage of program budget allocated to information activities**

Department	Total Program Budget (USD)	Total budget allocated to information activities (USD)	Percentage of budget allocated to information activities (%)
Secretariat	US\$ 2,600,724	US\$ 54,000	2.08%
TD	US\$ 183,200	US\$ 50,000	27.29%
MFRD	NA	NA	NA
AQD	US\$ 1,312,423	US\$ 611,522	46.59%
MFRDMD	NA	NA	NA

Resource: Report of the 43rd Meeting of the Council of SEAFDEC

Strategy 5: Regular monitoring and evaluation of information activities

The progress in the implementation of information-related activities, in response to the Information Strategies for Enhancing SEAFDEC Visibility and Communication, were regularly monitored through the annual ISEP Meeting. In 2011, the 12th ISEP Meeting was organized from 3 to 4 November 2011 in Malaysia. The progress in the implementation of activities as presented during the meeting (and would be further updated to cover the period from January-December 2011) would be further reported to the SEAFDEC Council during its 44th Meeting.

The 12th ISEP Meeting also recommended that evaluation of information/materials generated by SEAFDEC by target audience or non-SEAFDEC evaluator should be undertaken in 2012 in order to obtain views and further improve the undertaking of activities in the future.

List of Technical Materials Produced in 2011
(report, proceedings, scientific/technical publications, VCDs and posters)

Material title	Copies Produced	Copies Distributed	By
Technical/Scientific Materials			
Fishery Statistical Bulletin of Southeast Asia 2009	400	300	Sec
Resolution and Plan of Action 2011	1,500	800	Sec
AEM 52 on breeding & seed production of giant freshwater prawn	500	***50	AQD
AEM 50 on cage culture of giant freshwater prawn	500	***50	AQD
Second edition of the textbook on Health management in aquaculture	500	50	AQD
Poster on mud crab life cycle	500	100	AQD
Report of events organized by SEAFDEC			
Report of the Thirty Third Meeting of the SEAFDEC Program Committee Meeting	150	100	Sec
Report of the Twelfth Meeting of the FCG-ASSP	150	100	Sec
Report of the Forty Second Meeting of SEAFDEC Council	150	100	Sec
Report of Inception Workshop on Follow-up Activities to the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 (4-5 July 2011)	60	55	Sec
Proceedings of the ASEAN-SEAFDEC Conference, Volume I : the Conference Proceedings	1,000	700	Sec
Demographic Survey of Fishing Communities in Thailand: Chumphon Province	50	50	TD
Report of the Expert Meeting on Deep-sea Fishing and Its Impact to Ecosystem	1	Download on website	TD
Report of the Training Workshop on Research Methodologies for the Study on Impact of Fishing to Deep-sea Ecosystem	1	Download on website	TD
Report of the Regional Workshop on the Standard Operation Procedure and Development/Improvement of Sampling Gears for the Deep-sea Resource Exploration	1	Download on website	TD
Report of The Fishing Trial and Demonstration to Promote the Use of Circle Hook in Line Fishing	500	235	TD
Report of the Regional Training Program on Cetacean Information Gathering and Research Methodology on Cetacean Stock Assessment	1	Download on website	TD
Report of the Regional Core Expert Meeting on Fishing License, Boats Registration and Information on Export of Fisheries Products in Southeast Asia	200	120	TD
Report of the 2 nd Regional Technical Workshop on Safety at Sea for Small Fishing Boats	10	-	TD
Report of the Regional Workshop on HRD Program for Sustainable Fisheries and Related Counter-Measures to Combat IUU Fishing in Southeast Asia	50	-	TD
Cruise Report on Research Activity MV.SEAFDEC2 Cruise 35-3/2010 28 June-11 August 2010 The Water of Sabah and Sarawak, Malaysia	*10	For reference only	TD
Cruise Report on Research Activity MV. SEAFDEC2 Cruise No. 36-4/2010 15 September-25 October 2010 National Research Survey By Department of Fisheries, Brunei Darussalam	*10	For reference only	TD

Material title	Copies Produced	Copies Distributed	By
Cruise Report on Research Activity MV.SEAFDEC Cruise No.81-3/2010 20-26 December 2010 Fixed Fish Aggregating Device Experiment in Andaman Sea	*10	For reference only	TD
Video on Training Course University#51	50	46	TD
Video on Training Course Ubonrachathani University	25	20	TD
Video on Training Course on Navigation Fishing Boat of Tinlasulanon Collage	25	22	TD
Video on the Regional Training Course on Fisheries Management Combatting IUU Fishing for Fishery Managers	15	12	TD
Proceedings of the RTC-Aquaculture, Bangkok 2010	500	50	AQD
Materials for General Public, Policy Makers, Politicians, etc.			
Rolling up Poster on Whale in Southeast Asian	**1	For reference only	TD
Rolling up Poster on Dolphin in Southeast Asian	**1	For reference only	TD
Rolling up Poster on Bottom Vertical Longline Fishing	**1	For reference only	TD
Brochure of Nam Haum Reservoir Project (Lao Language)	2,000	1,835	TD
Poster on Bangsapan Set-Net	**1	For reference only	TD
Video on Collapsible Crab Trap	10		TD
Flyer on livelihood option for fisherfolk	1,000	100	AQD
Flyer on climate change	1,000	100	AQD
Materials for Students and Youth			
Brochure of Nam Haum Reservoir Project (Lao Language)	2,000	1,835	TD
Story of a Boy Named POR	3,000	423	TD

Remark:

- * All Cruise Report is five for TD library and five for the Capture Technology Fisheries Division.
- ** All poster for promote in Exhibition
- *** For AQD-published titles, the release of the publications was during the book launching in July 2011. AEM is aquaculture extension manual

Appendix 2

List of technical/scientific articles published in scientific journals/proceedings (SEAFDEC and non-SEAFDEC publications) in 2011

Article title	Copies of publication produced	By
Empowering Women's Group in Fisheries Project Development and Management: SEAFDEC Experience (In SP9-1)	1,500	Sec
Consolidating Regional and Sub-regional Cooperation to Combat IUU Fishing in Southeast Asia: Initiative of SEAFDEC-Sida Project (In SP9-1)	1,500	Sec
Steering the Development of Southeast Asian Fisheries Towards Sustainability (In SP9-2: Special Issue)	2,000	Sec
Addressing Emerging International Fish Trade Concerns to Support the Sustainable Development of Fisheries (In SP9-2: Special Issue)	2,000	Sec
Fish for the People 2020: Adapting to Changes in the Environment (In SP9-3)	1,500	Sec
Relationship between variation of phytoplankton community and water quality in Kung Krabaen Bay, Chanthaburi Province, Thailand	2,000	TD
Deep-Sea Resource Explorations: Challenges of the Southeast Asian Countries (In SP9-2:Special Issue)	2,000	TD
Enhancing Management of Fishery Resources through Intensified Efforts in Habitat Conservation and Rehabilitation (In SP9-2:Special Issue)	2,000	TD
Recognizing Gender Capability in Promoting Sustainable Fisheries Development and Poverty Alleviation in Fishery Communities (In SP9-2:Special Issue)	2,000	TD
SEAFDEC Initiatives on Cetacean Sighting in the Waters of Southeast Asia (In SP9-2:Special Issue)	2,000	TD
Optimizing Energy Use in Fisheries in Southeast Asia (In SP9-2:Special Issue)	2,000	TD
Responsible Blood Cockle Fisheries Management in Pethchaburi Province, Thailand: An Ecosystem Approach to Fisheries Management (In SP9-2:Special Issue)	2,000	TD
Acosta BO, Coloso RM, de Jesus-Ayson EGT, Toledo JD (eds.). 2011. Sustainable Aquaculture Development for Food Security in Southeast Asia Towards 2020. Proceedings of the Regional Technical Consultation on Sustainable Aquaculture Development for Food Security in Southeast Asia Towards 2020; 17-19 March 2010; Bangkok, Thailand; Tigbauan, Iloilo, Philippines: SEAFDEC Aquaculture Department; 169 p.	NA	AQD
Aldon MaET, Fermin AC, Agbayani RF. 2011. Sociocultural context of fishers' participation in coastal resources management in Anini-y, Antique, west central Philippines. Fisheries Research 107:112-121.	(2010 – but not included in last ISEP report)	AQD

Article title	Copies of publication produced	By
Aldon MET, Tormon DH, Fermin AC. 2010. Sociocultural factors influencing fisher's participation I coastal resource management in Aniniy, Antique, West Central, Philippines. <i>In</i> : Tolentino LL, Ladicho LD, Wun'Gaeo S, Ikegami K (eds.). Asian Rural Sociology IV. The Multidimensionality of Economy, Energy and Environmental Crises and their Implications for Rural Livelihoods. International Conference; 7-10 September 2010; Bicol University, Legazpi City, Philippines; Asian Rural Sociology Association. Vol. 1.pp. 143-153.	NA	AQD
Acosta BO, Coloso RM, de Jesus-Ayson EGT, Toledo JD (eds.). 2011. Sustainable Aquaculture Development for Food Security in Southeast Asia Towards 2020. Proceedings of the Regional Technical Consultation on Sustainable Aquaculture Development for Food Security in Southeast Asia Towards 2020; 17-19 March 2010; Bangkok, Thailand; Tigbauan, Iloilo, Philippines: SEAFDEC Aquaculture Department; 169 p.	NA	AQD
Amar EC, Faisan JP Jr., 2011. Efficacy of an inactivated vaccine and nutritional additives against white spot syndrome virus (WSSV) in shrimp (<i>Penaeus monodon</i>). The Israeli Journal of Aquaculture-Bamidgeh 63: [IIC:2011.529] 9 pages.	NA	AQD
Aswani S, Christie P, Muthiga NA, Mahon R, Primavera JH, Cramer LA, Barbier EB, Granek EF, Kennedy CJ, Wolanski E, Hacker S. 2012. The way forward with ecosystem-based management in tropical contexts: Reconciling with existing management systems. Marine Policy 36:1-12.	NA	AQD
Ates MCD, Qunitio GF, Qunitio ET, Sanares RC. Comparative study on the embryonic development of three mud crabs <i>Scylla</i> spp.. Aquaculture Research (online first)	NA	AQD
Baliao DD, de los Santos MA. 2011. Low or partial discharge and closed-recirculating systems for the culture of shrimp [<i>Penaeus monodon</i> (Fabricius)] at several demonstration sites in the Philippines. The Philippine Agricultural Scientist 94:58-65.	NA	AQD
Baliao DD, Dosado NS. 2011. Tilapia cage farming in freshwater reservoir using artificial diets during dry and wet season. The Philippine Agricultural Scientist 94:1-8.	NA	AQD
Bautista-Teruel MN, Koshio SS, Ishikawa M. 2011. Diet development and evaluation for juvenile abalone, <i>Haliotis asinina</i> Linne: Lipid and essential fatty acid levels. Aquaculture 312:172-179.	NA	AQD
Borlongan IAG, Tibubos KR, Yunque DAT, Hurtado AQ, Critchley AT. 2011. Impact of AMPEP on the growth and occurrence of epiphytic <i>Neosiphonia</i> infestation on two varieties of commercially cultivated <i>Kappaphycus alvarezii</i> grown at different depths in the Philippines. Journal of Applied Phycology 23:615-621.	NA	AQD
Buen-Ursua SMA, Azuma T, Recente CP, Batatin RE. 2011. Effects of UV-treated sea water, chlorinated sea water, and formalin-treated copepods on survival and growth of newborn seahorses, <i>Hippocampus comes</i> . The Israeli Journal of Aquaculture - Bamidgeh IIC: 63.2011.629, 7 pages.	NA	AQD

Article title	Copies of publication produced	By
Caipang CMA, Pakingking RV Jr., Apines-Amar MJS, Huyop F, Bautista NB. 2011. Development of a polymerase chain reaction (PCR) assay targeted to the <i>dnaJ</i> gene of <i>Vibrio harveyi</i> , a bacterial pathogen in Asian seabass, <i>Lates calcarifer</i> . Aquaculture, Aquarium, Conservation & Legislation – International Journal of the Bioflux Society (AACL Bioflux) 4:447-454.	NA	AQD
Catacutan MR, Pagador GE, Doyola-Solis EF, Teshima S, Ishikawa M. 2011. Growth and feed efficiency in mangrove red snapper, (<i>Lutjanus argentimaculatus</i> Forsskal 1775) fed practical diets supplemented with L-ascorbyl-2-monophosphate-Mg. The Israeli Journal of Aquaculture-Bamidgeh 63:[IIC:63.2011.629] 7 pages.	NA	AQD
Celino FT, Hilomen-Garcia GV, Del Norte-Campus AGC. Feeding selectivity of the seahorse, <i>Hippocampus kuda</i> (Bleeker), juveniles under laboratory conditions. Aquaculture Research (online first)	NA	AQD
Cruz-Lacierda ER, Yamamoto A, Nagasawa K. 2011. Seasonal occurrence of <i>Caligus spinosus</i> and <i>Parabrachiella seriola</i> (Copepoda) parasitic on cage-cultured yellowtail (<i>Seriola quinqueradiata</i>) at a fish farm in western Japan. Bulletin of the European Association of Fish Pathologists 31: 58-65. (news and views)	NA	AQD
Cuvin-Aralar ML, Gibbs P, Palma A, Andayog A, Noblefranca L. 2011. The ACIAR-BFAR Rinconada Lakes project: improving fish culture practices for sustainability and profitability. In: Lui Q, Xu P, Yang J, Li Y, Li J (eds.). Fishery Environmental Evaluation and Ecological Rehabilitation; Beijing, China: China Ocean Press: pp. 51-65.	NA	AQD
de la Pena LD, Suarnaba VS, Capulos GC, Santos MNM. 2011. Prevalence of viral nervous necrosis (VNN) virus in wild-caught and trash fish in the Philippines. Bulletin of the European Association of Fish Pathologists 31:129-138.	NA	AQD
FAO. 2010-2011. Cultured aquatic species information programme. <i>Scylla serrata</i> . Cultured aquatic species information programme. Text by ET Quinitio (SEAFDEC). In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 2011.	NA	AQD
Gonzales TT, Katoh M, Ghaffar MA, Ishimatsu A. 2011. Gross and fine anatomy of the respiratory vasculature of the mudskipper, <i>Periophthalmodon schlosseri</i> (Gobiidae: Oxudercinae). Journal of Morphology 272:629-640.	NA	AQD
Lantin-Olaguer IL. 2006. Commercial pelleted milkfish (<i>Chanos chanos</i> Forsskal) feeds: Physical characteristics and nutrient contribution to water quality in milkfish farming. St. Paul University Iloilo - Faculty Research Journal 1: 22-41.	NA	AQD
Lavilla-Pitogo CL, Catacutan MR, Amar EC. 2011. Healthy and wholesome aquaculture. In: Acosta BO, Coloso RM, de Jesus-Ayson EGT, Toledo JD (eds.). Sustainable Aquaculture Development for Food Security in Southeast Asia Towards 2020. Proceedings of the Regional Technical Consultation on Sustainable Aquaculture Development for Food Security in Southeast Asia Towards 2020; 17-19 March 2010; Bangkok, Thailand; Tigbauan, Iloilo, Philippines: SEAFDEC Aquaculture Department; pp. 221-230.	NA	AQD

Article title	Copies of publication produced	By
Pakingking R Jr., Mori K, Bautista NB, De Jesus-Ayson EG, Reyes O. 2011. Susceptibility of hatchery-reared snubnose pompano <i>Trachinotus blochii</i> to natural betanodavirus infection and their immune responses to the inactivated causative virus. <i>Aquaculture</i> 311:80-86.	NA	AQD
Parkes L, Quintio E, Le Vay L. 2011. Phenotypic differences between hatchery-reared and wild mud crabs, <i>Scylla serrata</i> , and the effects of conditioning. <i>Aquaculture International</i> 19:36-380.	NA	AQD
Parado-Esteva FD, Quintio ET. 2011. Influence of salinity on survival and molting in early stages of three species of <i>Scylla</i> crabs. <i>The Israeli Journal of Aquaculture - Bamidgeh IIC</i> : 63.2011.631, 6 pages.	NA	AQD
Pedrajas-Mendoza SA, Torres JL, Amar E. 2008. Enhancing nonspecific immune response of grouper, <i>Epinephelus coioides</i> using levamisole as immunostimulant. <i>University of the Philippines in the Visayas Journal of Natural Sciences</i> 13:1-10.	NA	AQD
Penaranda MMD, LaPatra SE, Kurath G. 2011. Specificity of DNA vaccines against the U and M genogroups of infectious hematopoietic necrosis virus (IHNV) in rainbow trout (<i>Oncorhynchus mykiss</i>). <i>Fish & Shellfish Immunology</i> 31:43-51.	NA	AQD
Penaranda MMD, Wargo AR, Kurath G. 2011. <i>In vivo</i> fitness correlates with host-specific virulence of infectious hematopoietic necrosis virus (IHNV) in sockeye salmon and rainbow trout. <i>Virology</i> 417:312-319.	NA	AQD
Primavera JH, Abrogueña JBR. 2009. Post-August 2006 oil spill populations of <i>Penaeid</i> shrimp in island and riverine mangroves in Guimaras, central Philippines. <i>Philippine Journal of Natural Sciences (Oil Spill Special Issue)</i> :3-6.	NA	AQD
Quintio ET, Esteva FDP. 2011. Survival and growth of mud crab, <i>Scylla serrata</i> , juveniles subjected to removal or trimming of chelipeds. <i>Aquaculture</i> 318:229-234.	NA	AQD
Romana-Eguia MR, De Jesus-Ayson EGT. 2011. 2010 and beyond: better seeds for sustainable aquatic food production in Asia. <i>In</i> : Acosta BO, Coloso RM, de Jesus-Ayson EGT, Toledo JD (eds.). <i>Sustainable Aquaculture Development for Food Security in Southeast Asia Towards 2020</i> . Proceedings of the Regional Technical Consultation on Sustainable Aquaculture Development for Food Security in Southeast Asia Towards 2020; 17-19 March 2010; Bangkok, Thailand; Tigbauan, Iloilo, Philippines: SEAFDEC Aquaculture Department; pp. 1-15.	NA	AQD
Sombito C, Lio-Po G, Sadaba R, Torreta R. 2009. Initial assessment of the bacterial population of Guimaras waters and soil after the Solar I Oil Spill. <i>Philippine Journal of Natural Sciences (Oil Spill Special Issue)</i> :15-26	NA	AQD
Tendencia EA, Bosma RH, Verreth JAJ. 2011. White spot syndrome virus (WSSV) risk factors associated with shrimp farming practices in polyculture and monoculture farms in the Philippines. <i>Aquaculture</i> 311:87-93.	NA	AQD

Article title	Copies of publication produced	By
Tendencia EA, dela Peña MR. 2010. Effect of different sizes of saline red tilapia hybrid <i>Oreochromis niloticus</i> Linnaeus x <i>O. mossambicus</i> Peters on the growth of luminous bacteria <i>Vibrio harveyi</i> . The Philippine Agricultural Scientist 93:463-467. (research note)	(2010 – but not included in last ISEP report)	AQD
Tendencia EA, Verreth JAJ. 2011. Temperature fluctuations, low salinity and water microflora are risk factors for WSSV outbreaks in pond culture of <i>Penaeus monodon</i> . The Israeli Journal of Aquaculture-Bamidgeh 63:[IIC.63.2011.548] 7 pages.	NA	AQD
Tendencia, EA, Bosma RH, Verreth JAJ. 2011. Identification of stressors that affect white spot syndrome virus (WSSV) infection/outbreak in pond culture <i>Penaeus monodon</i> . Israeli Journal of Aquaculture-Bamidgeh 63:[IIC.63.2011.616] 7 pages.	NA	AQD
Toledo JD, Castaños MT. 2011. SEAFDEC Aquaculture Department: score card for 2002-2009. In: Acosta BO, Coloso RM, de Jesus-Ayson EGT, Toledo JD (eds.). Sustainable Aquaculture Development for Food Security in Southeast Asia Towards 2020. Proceedings of the Regional Technical Consultation on Sustainable Aquaculture Development for Food Security in Southeast Asia Towards 2020; 17-19 March 2010; Bangkok, Thailand; Tigbauan, Iloilo, Philippines: SEAFDEC Aquaculture Department; pp. 135-144	NA	AQD
Watanabe S, Zarate JM, Sumbing JG, Lebata-Ramos MJH, Nievaes MF. Size measurement and nutritional condition evaluation methods in sandfish (<i>Holothuria scabra</i> Jaeger). Aquaculture Research (online first)	NA	AQD
Enhancing management of fishery resources through intensified efforts in habitat conservation and rehabilitation (In SP9-2:Special Issue)	2,000	MFRDMD
Sustainable management of aquatic species of international concern: SEAFDEC initiative (In SP9-2: Special Issue)	2,000	MFRDMD
Putting a plug on increasing fishing capacity: NPOA for the management of fishing capacity in Malaysia (In SP9-2: Special Issue)	2,000	MFRDMD
Sustaining food supply from inland fisheries management in Southeast Asian countries (In SP9-1)	1,500	MFRDMD
Ensuring Improved Governance in Fisheries Management in Southeast Asian Countries (In SP9-1)	1,500	MFRDMD
Sustainable management of aquatic species of international concerns: SEAFDEC Initiatives (In SP9-2:Special Issue)	2,000	MFRDMD
Impact of Climate Change on Capture Fisheries (In FRI Newsletter Vol. 14)	NA	MFRDMD
Mixed Stock of Green Turtles (<i>Chelonia mydas</i>) at Brunei Bay/Lawas Waters, Sarawak (In International Fisheries Symposium, Kuala Terengganu)	NA	MFRDMD

Appendix 3

List of Promotional Materials Produced in 2011

(Annual Report/Highlights, newsletter, brochures, promotional VCDs, and posters to promote the activities and visibility of SEAFDEC)

Title	Copies Produced	Copies Distributed	By
Annual Reports, Highlights			
SEAFDEC Annual Report 2010	1,000	900	Sec
Mid-year Annual Report on TD's Project and Activities in January-June 2011 (Thai Version)	5	4	TD
Annual Report on TD's Project and Activities in 2011 (Thai Version)	10	-	TD
AQD Highlights 2010	500	50	AQD
Report in DOFM Annual Report and FRI Annual Report	1,000	1,000	MFRDMD
FRI Annual Report	500	500	MFRDMD
Annual Highlights 2010	50	30	MFRD
Newsletter, Periodical Publications			
SEAFDEC Newsletter Volume 33 Number 4	1,600	1,400	Sec
SEAFDEC Newsletter Volume 34 Number 1	1,600	1,400	Sec
SEAFDEC Newsletter Volume 34 Number 2	1,600	1,400	Sec
SEAFDEC Newsletter Volume 33 Number 3	1,600	1,400	Sec
Special Publication : Fish for the People Vol. 9 No.1	1,500	1,200	Sec
Special Publication : Fish for the People Vol. 9 No.2	2,000	1,700	Sec
Special Publication : Fish for the People Vol. 9 No.3	1,500	1,200	Sec
Advance Fisheries Technology Magazines (3 volumes)	6,000	1,245	TD
E-Newsletters			
Advance Fisheries Technology e-Magazine	3	2,720	TD
TD e-Newsletter	4	1,930	TD
AQD Matters (January, February-March, April-May, June, July, August, September, October, November-December)	9 PDF files / issues	800 on the email list and 30 hardcopy prints	AQD
Promotional Publications			
SEAFDEC Information Catalogue 2011	1,000	900	Sec
SEAFDEC Calendar 2012	2,500	2,500	Sec
Third Announcement for the ASEAN-SEAFDEC Conference	3,000	2,000	Sec
Handbook for the ASEAN-SEAFDEC Conference	800	700	Sec
SEAFDEC Brochure	3,000	2,000	Sec
Flyer on AQD's Tigbauan Main Station	1,000	50	AQD
Flyer on AQD's Binangonan Freshwater Station	1,000	50	AQD
Flyer on AQD's Dumangas Brackishwater Station	1,000	50	AQD
Flyer on AQD's Igang Marine Station	1,000	50	AQD
Promotional Posters			
Poster display program for ASEAN-SEAFDEC Conference	2	-	Sec
X-stand Poster on Deep-sea Trap	1	-	TD
Poster on Life raft	1	-	TD
Poster on Enhancing Governance in Fishery Management	1	-	TD
Poster on Sustainable Aquaculture Development	1	-	TD
Poster on Ecosystem Approach to Fisheries	1	-	TD
Poster on Post-harvest and Safety of Fish and Fisheries Products	1	-	TD

Title	Copies Produced	Copies Distributed	By
Poster on Emerging Requirements for Trade in Fish and Fisheries Products	1	-	TD
Poster on Climate Change Adaptation and Mitigation Towards Food Security	1	-	TD
Poster on Livelihood among Fishing Communities and Prospects of Employment in Fisheries-related Activities	1	-	TD
Poster on Sustaining Food Supply from Inland Fisheries	1	-	TD
Sticker on Fisheries Responsible	30,000	11,250	TD
Brochure on Introduction Training Department (Thai Version)	5,000	3,520	TD
Promotional CDs, VCDs			
Video of Thank you Party Conference Fish for the People 2020	150	140	TD
Video of Fish for the People 2020 “Adaptation to a Changing Environment”	200	180	TD
Video of Fish for the People 2020 “Implementation of the 2001 Resolution and Plan of Action”	200	175	TD
Video Press Conference Fish for the People 2020	100	90	TD
Video on Training Course University #51	10	5	TD
Video on Training Course Ubonrachathani University	10	5	TD
Video on Training Course on Navigation Fishing Boat of Tinlasulanon Collage	10	5	TD
DVD entitled “ Research and Development of artificial reefs in Malaysia (2006-2010)”	100	95	MFRDMD

Appendix 4**Exhibition Arranged by SEAFDEC in 2011**

Exhibition Title	Estimated Visitors	Exhibited by
ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020	460	Secretariat and Departments
National Children's Day 2011	3,500	TD
Exhibition on ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 "Fish for the People 2020: Adaptation to a Changing Environment"	600	TD
23 rd National Fisheries Exhibition	48,000	TD
National Agriculture Exhibition 2011	5,000	TD
2011 AquaTech Expo and Convention, Clark, Pampanga; 23–25 March	50	AQD
FSA Seabass Culture 'Kita-kits' Fiesta, New Washington, Aklan; 6–7 June	100	AQD
Philippine drawing contest for the SEAFDEC-ASEAN conference, 24–26 March, Amigo Plaza Mall, Iloilo City	450	AQD
1 st Vis-Min Davao Agri-Aqua Expo 2011, Davao City 11–13 August	60	AQD
AgriLink/ FoodLink/AquaLink, World Trade Center, Manila 6–8 October	500	AQD
1 st Regional Organic Agri Research Fair & Exhibit, Central Philippine University, Iloilo City; 14-18 November	112	AQD
Pantat (Catfish) Festival, Zarraga, Iloilo; 18-20 December	7	AQD

Press Statements Produced by SEAFDEC

Title (Date, Venue)	Department
1. 43 rd Meeting of the SEAFDEC Council (4-8 April 2011)	Sec
2. Press statement during the Third Press Conference for the ASEAN-SEAFDEC Conference (6 June 2011)	Sec
3. Press Statement during the ASEAN-SEAFDEC Conference (13 June 2011)	Sec
4. TD's Open House for College Students	TD
5. TD Organized Training Course on Combat IUU Fishing for Fishery Manager	TD
6. Announcement of the drawing contest (Philippines) of the ASEAN-SEAFDEC conference; in two newspapers (Philippine Daily Inquirer and Philippine Star)	AQD
7. ASEAN-SEAFDEC drawing contest awakens young Filipino artists to the interplay of sustainable fisheries and the changing environment; 14 April 2011; distributed to 8 media outlets by email	AQD
8. Filming of R&D activities by GMA-6 TV crew, 1 February 2011 at AQD's TMS	AQD
9. Media interviews of AQD researchers by Malaya Business Insight newspaper (editor Mr. Paul Icamina), 12-15 Aug at AQD stations in Iloilo and Guimaras	AQD
10. Filming of R&D activities by FARM Inc, producer of Mag-Agri Tayo TV show, 26 Sept'11 to 3 Oct'11 at AQD stations in Iloilo and Guimaras	AQD
11. Official promotion program on Fish forecasting system on 13 th September 2011 at Tanjung, Vista Hotel, Terengganu	MFRDMD

Appendix 6

SEAFDEC Appearance in Public Media in 2011

Description	Types of media	Department
Third Press Conference for the ASEAN-SEAFDEC Conference (in Newspaper) • MOAC news • Thairath	2	Sec
Third Press Conference for the ASEAN-SEAFDEC Conference (in Website) • http://www.tofa.or.th/index.php • http://ec.europa.eu/research/bioeconomy/fish/newsevents/events/20110713_en.htm • http://www.ffp2020.org • http://www.biothai.net/news/9121 • http://www.hiroshimau.ac.jp/news/show/lang/en/id/782/dir_id/0 • http://www.fisheries.go.th	6	Sec
ASEAN-SEAFDEC Conference (in Newspaper) • Daily News • Naew Na • MOAC News • Thai Post • Thairath	5	Sec
ASEAN-SEAFDEC Conference (in T.V.) • Thai PBS News • MCOT Channel	2	Sec
ASEAN-SEAFDEC Conference (in Website) • http://www.asean.org/26406.htm • http://www.ffp2020.org • http://iwllearn.net/events/the-asean-seafdec-conference-on-sustainable-fisheries-for-food-security-towards-2020 • http://www.vneconomynews.com/2011/06/vietnam-attends-asean-seafdec.html • http://radio.prd.go.th/songkhla/ewt_news.php?nid=2026 • http://www.moac.go.th • http://www.thai-frozen.or.th/images/book/Newsletter • http://www.presscenter.org.vn/en/content/view/5374/28/ • http://www.notforsale.in.th/autopagev4/show_page.php?topic_id=1322&auto_id=1&TopicPk=	9	Sec
Special Report on Bryde's Whale	Newspaper	TD
Special Report on Tsunami Buoy	Newspaper	TD
Special Report on Fish Enhancing Device	Newspaper	TD
Special Report on Corel Reef Bleaching	Newspaper	TD
Special Report on Closing Season	Newspaper	TD
Special Report on Jellyfish	Newspaper	TD
Special Report on Red Tide	Newspaper	TD
Special Report on Fish for the People Conference 2020	Newspaper	TD
Special Report on 23 rd National Fisheries Exhibition	Newspaper	TD
Special Report on Whale and Dolphin	Newspaper	TD
Special Report on Deep Sea Trap	Newspaper	TD
Special Report on Cone Shell	Newspaper	TD
Special Report on High and Low Tide	Newspaper	TD
Special Report on How to prepare fish farm when flooding	Newspaper	TD

Description	Types of media	Department
Gov't to Start Marine Awareness Campaign	Newspaper	TD
Regional Vessel Completes Fish Resource Survey	Newspaper	TD
SEAFDEC/TD visited Rajamangala University of Technology Srivijaya (Trang Campus)	Newspaper	TD
Release Cone Shell at Sriboya Island, Krabi, Thailand	Newspaper	TD
SEAFDEC organized the Training Course on IUU Fishing	Website	TD
SEAFDEC signed MOU with the Vocational Education Commission on Improvement on Fishing Vessels Operation	Website	TD
Agriculture Magazine, Oct 2010, on page 14-17: Betting on the Samaral by Wilfredo G. Yap	1	AQD
Agriculture Magazine, Oct. 2010, on page 24-25: SEAFDEC Aquaculture Dept.'s Founding Day Celebrated	1	AQD
The Daily Guardian, Nov. 4, 2010, on page B2: Fisherfolk turns to grouper cage culture by Jemin B. Guillermo	1	AQD
Panay News, Nov. 6, 2010, on page 5: Fisherfolk turns to grouper cage culture by Jemin B. Guillermo	1	AQD
Panay News, Nov. 7, 2010, on page B8: Fisherfolk turns to grouper cage culture	1	AQD
Borneo Bulletin, Nov. 25, 2010, on page 3: Expert calls for fisheries collaboration by Azian Othman	1	AQD
Malaya Business Insight, Dec. 3, 2010, on page A9, A11: Fishery school on air	1	AQD
Philippine Daily Inquirer, Dec. 4, 2010, on page K3: Drawing Contest of the ASEAN-SEAFDEC Conference on Sustainable Fisheries	1	AQD
The Philippine Star, Dec. 4, 2010, on page B-11: Drawing Contest of the ASEAN-SEAFDEC Conference on Sustainable Fisheries	1	AQD
Panay News, Dec. 10, 2010, on page 1, 12: 6 rehabbed sea turtles released by Jezza Nepomoceno	1	AQD
Manila Bulletin, Dec. 30, 2010, on page B-6: Sea Cucumber Technology (picture only)	1	AQD
Global Aquaculture Advocate, January 2011 issue: Profitable sea cucumbers also supply bioremediation by Castanos MT, Ledesma RH, Corre KG, Ayson EG. 2011.	1	AQD
GMA-Iloilo <i>Arangkada</i> program (7, 8 and 19 Feb'11)	4	AQD
Agriculture Magazine, Feb. 2011, on page 24-25: Sandfish Culture Technology Developed by Milagros Castaños	1	AQD
UNTV <i>Good morning, Kuya</i> (14 Mar, MR Eguia)	4	AQD
Manila Bulletin, March 18, 2011, on page 4: P25 – M program launched by Marvyn N. Benaning	1	AQD
Malaya Business Insight, March 18, 2011, on page B2, DA Offers grants on biotech research	1	AQD
Manila Bulletin, March 24, 2011, on page B-9: New developments to boost Aurora fish production by Melpha M. Abello	1	AQD
Panay News, April 3, 2011, on page C2: P25- M Biotechnology Research Fellowship Program launched by Marvyn Benaning	1	AQD
Manila Bulletin, April 16, 2011, on page B-6: Farmers urged to grow giant gourami	1	AQD
The Daily Guardian, April 19, 2011, on page 4: ICDSA/ABOT (Advertisement)	1	AQD
The Daily Guardian, April 25, 2011, on page 8: ASEAN-SEAFDEC Drawing Contest for Environment	1	AQD
Philippine Daily Inquirer, June 21, 2011, on page B2: Promote responsible fishing, SEAFDEC urges countries by Ronnel W. Domingo	1	AQD

Description	Types of media	Department
GMA-Iloilo (July'11 anniversary)	4	AQD
Malaya Business Insight, August 26, 2011, on p. A9-A10: SEAFDEC boosts survival of dwindling seahorse stocks by Paul M. Icamina	1	AQD
The Philippine Star, September 4, 2011, on page B-2: Alcala urges aquaculture growers to use more organic fish feeds by Marianne V. Go	1	AQD
Malaya Business Insight, Sept. 9, 2011, on page A9-A10: SEAFDEC develops vaccine against devastating fish virus by Paul M. Icamina	1	AQD
Malaya Business Insight, Sept. 9, 2011, on page A9-A10: The effects are maddening as they go viral by Paul M. Icamina	1	AQD
The Daily Guardian, Sept. 22, 2011, on page 2: DA chief to open Visayas Agri Machineries Roadshow in Iloilo by TW Villavert	1	AQD
The Daily Guardian, Sept. 22, 2011, on page B6: CHED chair to keynote UPV graduate research conference by Lilibeth A. French	1	AQD
The Philippine Star, Oct. 2, 2011, on page B-4: DA-BFAR to put up crab hatcheries (picture only)	1	AQD
Malaya Business Insight, November 11, 2011, on page A9-A10. Abalone culture now ready for local farms by Paul M. Icamina	1	AQD
Malaya Business Insight, November 11, 2011, on page A9-A10. Filipino savants develop new abalone hybrids by Paul M. Icamina	1	AQD
Malaya Business Insight, November 18, 2011, on page A9. Why abalone by Paul Icamina	1	AQD
Malaya Business Insight, November 18, 2011, on page A9-A10. High abalone prices open windows of opportunity by Paul M. Icamina	1	AQD
Manila Bulletin, December 9, 2011, on page 20. Fishing rebounds in Tayabas Bay by Marvyn N. Benaning	1	AQD
The Manila Times, December 15, 2011, on page B3. Aquaculture PPP pushed by James Konstantin Galvez	1	AQD
Manila Bulletin, December 18, 2011, on page 18. No memo for fish imports by Marvyn N. Benaning	1	AQD
Manila Bulletin, December 18, 2011, on page 18. Fish output by Marvyn Benaning	1	AQD
The Philippine Star, December 22, 2011, on page B-5. Biokubo: The search for an alternative feedstock for biodiesel by Luis F. Razon	1	AQD
http://www.pia.gov.ph/?m=7&r=R06&id=14636&y=2011&mo=02 , Feb 1, <i>Sagay marine reserve gets renewed protection</i> by Sagay/JSC/EAD-PIA6 Negros	2	AQD
http://www.mb.com.ph/articles/309945/p25m-program-launched , Mar 17, <i>P25-M program launched</i> by MN Benaning	2	AQD
http://www.mb.com.ph/articles/311025/new-developments-boost-aurora-fish-production , Mar 23, <i>New developments to boost Aurora fish production</i> by MM Abello	2	AQD
http://business.inquirer.net/4787/promote-responsible-fishing-seafdec-urges-countries , June 20, <i>Promote responsible fishing, Seafdec urges countries</i> by RW Domingo	2	AQD
http://asiapacfishwatch.org/2011/07/15/seafdecaqd-launches-institute-repository/ , Jul 15, <i>SEAFDEC/AQD launches Institute Repository</i>	2	AQD
http://rammmpa.blogspot.com/2011/07/guimaras-seafdec.html , Jul 25, <i>Guimaras: SEAFDEC</i> by rammmpa	2	AQD
http://www.sunstar.com.ph/iloilo/local-news/2011/08/16/san-joaquin-declares-all-coastal-areas-sanctuaries-173379 , Aug 16, <i>San Joaquin declares all coastal areas sanctuaries</i> by EC Garcia	2	AQD

Description	Types of media	Department
http://www.mb.com.ph/articles/331630/ngo-fishpond-rent-ridiculously-low , Aug 22, <i>NGO: Fishpond rent ridiculously low</i> by MN Benaning	2	AQD
http://www.malaya.com.ph/aug26/agri1.html , Aug 26, <i>SEAFDEC boosts survival of dwindling seahorse stocks</i> by PM Icamina	2	AQD
http://marinehealth.org/node/18097 , Sep 8, <i>SEAFDEC develops vaccine against devastating fish virus</i> by Robot	2	AQD
http://www.malaya.com.ph/sep09/agri1.html , Sep 9, <i>SEAFDEC develops vaccine against devastating fish virus</i> by PM Icamina	2	AQD
http://www.malaya.com.ph/sep09/agri2.html , Sep 9, <i>The effects are maddening as they go viral</i> by PM Icamina	2	AQD
http://www.fis.com/fis/worldnews/worldnews.asp?monthyear=&day=9&id=45875&l=e&special=&ndb=1%20target= , Sep 9, <i>Scientists test vaccine to halt viral infections in farmed fish</i> by N Real	2	AQD
http://marinehealth.org/node/18350 , Sep 12, <i>SEAFDEC Develops Vaccine Against VNN</i> by Robot	2	AQD
http://www.thefishsite.com/fishnews/15552/seafdec-develops-vaccine-against-vnn , Sep 12, <i>SEAFDEC Develops Vaccine Against VNN</i> by TheFishSite News Desk	2	AQD
http://www.pia.gov.ph/?m=1&t=1&id=53790 , Sep 12, <i>DA allocates P45M for BFAR facilities in Soccsksargen</i> by A Laurilla	2	AQD
http://www.rdmag.com/News/Feeds/2011/09/environment-celebrating-25-years-of-fish-breeding-success-in-t/ , Sep 21, <i>Celebrating 25 years of fish breeding success in the Philippines</i> by ResearchSEA	2	AQD
http://www.da.gov.ph/n_sub.php?pass=News_events/2011/sep/sep_26_2011a.html , Sep 26, <i>DA-BFAR to Put Up Crab Hatcheries</i>	2	AQD
http://opinion.inquirer.net/12907/buwaya-in-the-limelight , Sep 27, <i>'Buwaya' in the limelight</i> by R Jimenez-David	2	AQD
http://www.malaya.com.ph/nov11/agri1.html , Nov 11, <i>Filipino savants develop new abalone hybrids</i> by PM Icamina	2	AQD
http://www.fis.com/fis/worldnews/worldnews.asp?l=e&country=0&special=&monthyear=&day=&id=47572&ndb=1&df=0 , Nov 11, <i>New abalone hybrids could change aquaculture</i> by N Real	2	AQD
http://www.malaya.com.ph/nov18/agri1.html , Nov 18, <i>High abalone prices open windows of opportunity</i> by PM Icamina	2	AQD
http://www.mb.com.ph/articles/344097/fishing-rebounds-tayabas-bay , Dec 8, <i>Fishing rebounds in Tayabas Bay</i> by MN Benaning	2	AQD
http://www.mb.com.ph/articles/345188/advent-sunday , Dec 17, <i>Advent Sunday</i> by J Fernando	2	AQD
http://www.philstar.com/Article.aspx?articleId=760832&publicationSubCategoryId=75 , Dec 22, <i>Biokubo: The search for an alternative feedstock for biodiesel</i> by LF Razon	2	AQD
Program Promosi Sistem Penentuan Lokasi Penangkapan Ikan (Fish Forecasting)	1 and 4	MFRDMD

Category:

1. Newspaper/magazines
2. Websites
3. Radio
4. Television

Appendix 7

SEAFDEC Participation to Meetings organized by other (non-SEAFDEC) Organizations

Title	Organizer	Category	Department
BOBLME Joint Stakeholder Workshop	BOBLME	1	Sec (4)
8 th Meeting of the ASEAN Experts Group on the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	ASEAN	1	Sec (1)
29 th Session of FAO Committee on Fisheries	FAO	1	Sec (2)
3 rd Meeting of Regional Fishery Body Secretariats Network	FAO	1	Sec (2)
19 th Meeting of ASEAN Sectoral Working Group on Fisheries	ASEAN	1	Sec (4)
3 rd Meeting of the ASEAN Fisheries Consultative Forum	ASEAN	1	Sec (2)
Asia-Pacific Fishery Commission (APFIC) Regional Consultative Workshop on Implications of Climate Change on Fisheries and Aquaculture, Nepal	APFIC	1	Sec (3)
22 nd Meeting of NACA Governing Council	NACA	1	Sec (1)
OIE Global Conference on Aquatic Animal Health Programmes: Their Benefits for Global Food Security	OIE	1	Sec (1)
2 nd ASEAN Maritime	ASEAN	1	Sec (1)
7 th Meeting of the Governing Council of the BOBP-IGO	BOBP-IGO	1	Sec (1)
Asia-Africa Science Platform Program, Hokkaido University, Japan , (22 Nov – 23 Dec 2011 Japan)	JSPS	1	Sec (1)
Regional Workshop on Strengthening Assessments of Fisheries and Aquaculture in the Asia-Pacific Region for Policy Development and Management (4-6 October 2011)	APFIC	1	Sec (1)
The FAO Workshop on Development of a Strategy for Assessing the State of Inland Capture Fishery Resources (7-9 December 2011)	FAO	1	Sec (1)
The 7 th Session of the Steering Committee of the FAO/ Fishery Resource Monitoring System (FIRMS) and the Coordinating Working Party on Fishery Statistics (CWP)Inter- session Capture Group Meeting (12-16 December 2011)	FAO	1	Sec (2)
SEAFDEC official visit to Japan (11-15 July 2011)	Japan	2	Sec (5)
The Marine Fisheries Seminar in Thailand	Thailand	2	Sec (2)
Workshop to drive Thai shrimp industry	Thailand	2	Sec (2)
The Inland Fisheries Seminar in Thailand	Thailand	2	Sec (1)
The Study Program on Collection/Compilation and Utilization of Fishery Information and Statistics for Fisheries Management on 27 November – 10 December 2011	Japan	2	Sec (1)
8 th Meeting of the ASEAN Expert Group on the Convention on International Trade in Endangered Species on Wild Fauna and Flora (8-10 February 2011, Brunei)	ASEAN	1	TD (1)
The Regional Follow-up Seminar of the International Training Program on Environment Government and Management in the Public Sector (13-19 March 2011, Vietnam)		1	TD (1)
Regional Workshop on the Development of a Regional Management Plan (RPOA) for Sharks in the BOBLME Region (5-7 July 2011, Maldives)	Bay of Bengal Large Marine	1	TD (1)

Title	Organizer	Category	Department
	Ecosystem (BOBLME) Project		
4 th Meeting of the Coordination Committee on RPOA to Promote Responsible Fishing and Practices Include Combating IUU (2-4 November 2011, Cambodia)	-	1	TD (1)
Expert Consultation on Effective Surveillance and Law Enforcement to Combat IUU Fishing(5-8 December 2011, Indonesia)	-	1	TD (1)
Asia-Africa Science Platform Program, Hokkaido University, Japan ,	JSPS	1	TD (1)
The Committee Meeting on Set Net Project (8 February 2011, Bangkok)	DOF Thailand	2	TD (1)
The Development of Positive Thinking with Library Service (25 May 2011, Thailand)	Christian University	2	TD (1)
The Monthly Meeting of the Royal Project on Model Marine Farm (25 August 2011, Phetchaburi)	DOF Thailand	2	TD (1)
Asian Pacific Aquaculture Conference and Giant Prawn 2011 (17-20 Jan 2011; Kochi, Kerala State, India)	Asian Pacific Aquaculture Conference Chapter of the World Aquaculture Society	1	AQD (1)
9 th Session of FAO Committee on Fisheries (COFI) (30 Jan-02 Feb 2011; Rome, Italy)	FAO	1	AQD (1)
Aqua Aquaria 2011 Conference at the Chennai Convention Center (6-8 Feb 2011; Tamil Nadu, India)	Marine Products Export Development Authority (MPEDA), Government of India	1	AQD (1)
9 th Asian Fisheries Forum (21-25Apr 2011; Shanghai, China)	Asian Fisheries Society	1	AQD (4)
Establishment of SEAFDEC-ROK network on Climate Change Adaptation in Aquaculture Year 2, Regional RTD-Consultation Workshop (28-29 Apr 2011; Novotel, Busan, Korea)	DA-BFAR and NFRDI	1	AQD (1)
22 nd NACA Governing Council Meeting (9-12 May 2011; India)	NACA	1	AQD (1)
6 th Asia-Pacific Biotechnology Congress & 40th Annual Symposium and Scientific Meeting (10-14 May 2011; Philippine International Convention Center, Philippines)	Philippine Society for Microbiology, Inc. (PSM)	1	AQD (2)
World Aquaculture Society 2011 Conference (6-10 Jun 2011; Natal, Rio Grande do Norte, Brazil)	World Aquaculture Society	1	AQD (1)
2011 Aquaculture Stakeholders Strategic Planning Meeting (24-26 Aug 2011; Kona, Hawaii)	United Soybean Board (USB) and US	1	AQD (1)

Title	Organizer	Category	Department
	Soybean Export Council		
Short-term research & training on Advanced Program to Foster Young and Female Researchers from the Southeast Asia in Sustainable Fisheries Sciences (22 Aug-26 Sep 2011 & 31 Aug-05 Oct 2011; Hokkaido University, Japan)	Faculty of Fisheries Sciences, Hokkaido University	1	AQD (2)
Short-term training program - Internship Program for Young Researchers in Indo-China in the Field of Life Sciences (15 Sep- 31 Oct 2011; University of Tsukuba, Ibaraki, Japan)	University of Tsukuba, Japan/ JENESYS	1	AQD (2)
JSPS Asia and Africa Science Platform Program -- Establishment of Research and Educational Network for Science of Sustainable Fisheries in Southeast Asian Marine Community (3-27 Oct 2011; Faculty of Fisheries Sciences, Hokkaido University, Hakodate, Hokkaido, Japan)	Faculty of Fisheries Sciences, Hokkaido University	1	AQD (1)
FAO/SPC Regional Scoping Workshop: Development of a Pacific Aquaculture Regional Cooperative Programme (11-14 Oct 2011; Nadi, Fiji)	FAO	1	AQD (1)
10 th Regional FishHealth Advisory Group meeting and 19-20 November 2011 Mangalore, India	Network of Aquaculture Centers in Asia Pacific; Karnataka Veterinary, Animal & Fisheries Sciences University	1	AQD (1)
8 th Symposium on Disease in Asian Aquaculture (DAA8) and 21-25 November 2011Mangalore, India	Fish Health Section of the Asian Fisheries Society; Karnataka Veterinary, Animal and Fisheries Sciences	1	AQD (1)
PCAMRD TRAC Meeting (27 Jan 2011; Manila, Philippines)	DOST-PCAMRD	2	AQD (1)
Agriculture and Fisheries 2025 (10-11 Feb 2011; Antipolo, Rizal Philippines)	Department of Agriculture	2	AQD (1)
Standards Consultation for Animal Husbandry, Beekeeping and Aquaculture (7-9 Mar 2011; OCCP Headquarters, Quezon City)	Organic Certification Center of the Philippines (OCCP)	2	AQD (1)
Annual General Membership Assembly (9 Mar 2011; Manila Hotel, Manila)	National Research Council of the	2	AQD (2)

Title	Organizer	Category	Department
	Philippines (DOST- NRCP)		
Briefing with the newly reconstituted R&D Pool of Experts (11 Mar 2011; DA-BAR Function Hall, Quezon City)	DA-Bureau of Agricultural Research	2	AQD (1)
Seminar & Forum on "The Code on Electric Practices (RA 7920)" (11 Mar 2011; Westown Hotel, Iloilo City, Philippines)	Institute of Electrical Engineers of the Philippines Inc. (IIEE)	2	AQD (1)
Seminar on Aquaculture Production "Bayer Aquaculture Solution: Transforming Aquaculture Production" (23 Mar 2011; Sugarland Hotel, Bacolod City, Philippines)	Bayer Health Care	2	AQD (1)
Second National Congress on Philippine Lakes (LakeCon 2011) (27-29 Apr 2011; SEARCA, Los Baños, Laguna)	DOST- PCAMRD	2	AQD (1)
Green Microscopy Conference (April 28-29, 2011; De La Salle University, Manila, Philippines)	Philippine Association of Microscop- ists Inc. (MICROSP HIL)	2	AQD (1)
20 th PAM Annual Meeting (10 May 2011; Diamond Hotel, Manila, Philippines)	Philippine Academy of Microbio- logy (PAM)	2	AQD (1)
4 th Annual Summit for Executive Secretaries & Administrative Professionals (25-26 May 2011; SMX Convention Center, Mall of Asia Complex, Pasay City, Philippines)	Ariva Events Manage- ment	2	AQD (3)
HR Training Courses - Compensation and Benefits & Trainer Development Program (01 & 22 Jun 2011; Philippine Stock Exchange Building, Pasig City, Philippines)	Business- maker Academy	2	AQD (2)
Competency-based HR Management Series 2 Seminar "Job Assessment & Alignment & Salary Structure Design" (23 Jun 2011; Astoria Plaza, Pasig City, Philippines)	Ariva Events Manage- ment	2	AQD (1)
Supervision: The Key to Greater Productivity in the Workplace (21-22 Jun 2011; IVPD Building, Iloilo City, Philippines)	Institute for Values and Professional Development (IVPD)	2	AQD (1)
18 th Machine Readable Cataloging (MARC21) Workshop (30 Jun- 01 Jul 2011; St., Louis University, Baguio City, Philippines)	Electronic information Solutions, Inc. (EISI) and St. Louis Uni., Baguio City	2	AQD (1)
25 th Anniversary of Milkfish Spawning (15 Jul 2011; Bohol)	BFAR	2	AQD (1)
Training Workshop on Social Concepts and Tools for Technology Evaluation and Impact Assessment (25 Jul-05	ACIAR and IRRI	2	AQD (1)

Title	Organizer	Category	Department
Aug 2011; International Rice Research Institute (IRRI)			
Mass Fish Kill Forum (5 August 2011; UP Diliman, Quezon City, Philippines)	UP-MSI, UP-CIDS, AQD	2	AQD (10)
Seminar on Measurement of Uncertainty in Chemical Analysis (23-24 Aug 2011; Department of Trade and Industry (DTI) Building, Makati City, Philippines)	Philippine Metrology, Standards, Testing, and Quality, Inc. (PhilMSTQ)	2	AQD (1)
PhilAAS Annual Convention (13 Sep 2011; Manila, Philippines)	PhilAAS	2	AQD (1)
4 th UPV Graduate Research Conference (24 Sep 2011; UPV Auditorium, Iloilo City, Philippines)	University of the Philippines Visayas Graduate Program Office	2	AQD (1)
Regional Research Utilization Forum (27 Sep 2011; NEDA VI Office, Iloilo City, Philippines)	National Economic and Development Authority (NEDA)	2	AQD (1)
Hands-on Training Course on Basic Molecular Biology Techniques (05 Oct 2011; UP in the Visayas, Miagao, Iloilo, Philippines)	UP in the Visayas - National Institute of Molecular Biology and Biotechnology	2	AQD (1)
Basic Security Supervisory Course (12-15 Oct 2011; Quezon City, Philippines)	CADELAC Security Training Center Inc.	2	AQD (1)
48 th PAEDA Biennial Convention (The Challenges of Enhancing the Competitiveness of Philippine Agriculture) 20-21 October 2011 Don Mariano Marcos University, Batac City, Ilocos Norte	Philippine Agricultural Economics & Development Association (PAEDA)	2	AQD (2)
19 th Annual Regional Meeting and Scientific Session Philippine Society for Microbiology Convention (Visayas Regional Chapter) 20-21 October 2011 Iloilo Grand Hotel, Iloilo City	Philippine Society for Microbiology, Inc. (PSMI) Visayas Regional Chapter	2	AQD (1)
MINI-MBA for Executive Assistants, Executive Secretaries and Administrative Professionals 24-25 November 2011	Ariva Events Management	2	AQD (1)

Title	Organizer	Category	Department
Bay of Bengal Large Marine Ecosystem Working Group Meeting – ICM – Co-management 12-13 Jan 2011, Bogor, Indonesia	BOBLME	1	MFRDMD
Bay of Bengal Large Marine Ecosystem Sharks Working Group Meeting (5-7 July 2011: Male, Maldives)	BOBLME	1	MFRDMD
APFIC Regional Consultative Workshop “Implication of climate change on fisheries and aquaculture: Challenges for adaptation and mitigation in the Asia-Pacific Region” (24-26 May 2011, Kathmandu, Nepal)	FAO, APFIC	1	MFRDMD
APFIC / FAO Regional Consultative workshop ‘Strengthening Assessment of Fisheries and Aquaculture in the Asia-Pacific Region for Policy Development’ (4-6 Oct. 2011, Yangon, Myanmar)	FAO, APFIC	1	MFRDMD
AFAS Meeting and conference , 15-19 Nov 2011, Qingdao, China	AFAS	1	MFRDMD
CBD Joint Expert Meeting on addressing biodiversity concerns in sustainable fisheries (7-9 Dec 2011, Bergen, Norway)	CBD	1	MFRDMD
Post-graduate Certificate Course on ICM (1 st Sept – 25 Nov. 2011, AIT, Bangkok)	BOBLME, MFF and AIT	1	MFRDMD
Asia-Africa Science Platform Program, Hokkaido University, Japan , (13 Nov – 8 Dec 2011 Japan)	JSPS	1	MFRDMD
Consultation On Implementation of EBFM in Malaysia 8-10 Jan 2011 Port Dickson, Malaysia	WWF-Malaysia	2	MFRDMD
Meeting with NOAA on IUU Fishing, 1 st June 2011	National Oceanography Directorate	2	MFRDMD
International dialogue on Malaysian Ocean, 17-18 July 2011, University of Malaya	University of Malaya	2	MFRDMD
Seminar on Malaysian Ocean Policy, 28-29 July 2011, MIMA, Kuala Lumpur	Maritime Institute of Malaysia	2	MFRDMD
Workshop on identification of deep-sea fishes (18 -21 July, 2011, Kuala Terengganu, Malaysia)	DOFM	2	MFRDMD
Bay of Bengal Large Marine Ecosystem Working Group On Ecosystem Indicators 28-29 July 2011, Penang, Malaysia	BOBLME	2	MFRDMD
Scientific Writing and Research Methodology Course (7-11 Feb 2011, FRI Pulau Sayak, Kedah, Malaysia)	Research Division, DOFM	2	MFRDMD
Research Convention 2011 17-18 Oct 2011 FRI Penang	FRI DOFM	2	MFRDMD

Category:

- 1) International/regional level
- 2) National level
- 3) Visit to Member Countries

Meetings, Training, and Other Activities Organized by SEAFDEC in 2011

Title (Date, Venue)	Category	Number of Participants														Department
		SEAFDE	Brunei	Cambodia	Indonesia	Japan	Lao PDR	Malaysia	Myanmar	Philippine s	Singapore	Thailand	Vietnam	Others	TOTAL	
RTC on International Fisheries Related Issues	1	26	2	1	1	-	1	2	2	1	1	5	1	-	43	Sec
ASEAN-SEAFDEC Consultation on Drafting the Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region	1	37	2	1	3	2	1	2	1	1	1	10	1	7	69	Sec
43 rd Meeting of SEAFDEC Council	1	39	2	1	2	4	3	12	1	2	2	5	2	4	79	Sec
ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020	1	79	8	14	29	39	14	20	21	28	8	84	31	85	460	Sec
The 3 rd Meeting of the Gulf of Thailand Sub-region	1	18	-	6	-	-	-	6	-	-	-	6	5	7	48	Sec
Sub-regional Meeting between Indonesia, Malaysia and Thailand	1	16	-	-	13	-	-	8	-	-	-	18	-	1	56	Sec
Inception Workshop on Follow-up Activities to the ASEAN-SEAFDEC Conference	1	41	-	1	1	-	1	1	2	1	-	3	1	14	66	Sec
34 th Meeting of the Program Committee	1	23	2	1	4	2	1	2	1	6	1	3	2	2	50	Sec
14 th Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP)	1	23	2	1	4	2	1	2	1	6	1	3	2	1	49	Sec
On-site Training/Workshop on the Integration of Fisheries and Habitat Management and the Management of Fishing Capacity in Myanmar	4	4	-	-	-	-	-	-	34	-	-	4	-	-	42	Sec
On-site Training/Workshop on the Integration of Fisheries and Habitat Management and the Management of Fishing Capacity in Satun	4	11	-	-	4	-	-	3	-	-	-	48	-	-	66	Sec
On-site Training/Workshop on the Integration of Fisheries and Habitat Management and the Management of Fishing Capacity in Ranong	4	15	-	-	-	-	-	-	5	-	-	58	-	3	81	Sec
Observation trip to grouper culture and fish landing in Phuket	5	-	-	-	-	-	-	-	5	-	-	-	-	-	5	Sec

Title (Date, Venue)	Category	Number of Participants														Department
		SEAFDEC	Brunei	Cambodia	Indonesia	Japan	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Others	TOTAL	
SEAFDEC Program Review Meeting for Japanese Trust Fund for 2010 and Onward, Bangkok, Thailand	2	30	-	-	-	2	-	-	-	-	-	-	-	3	35	Sec
Third Press Conference	8	12	-	-	-	-	-	-	-	-	-	-	-	40	52	Sec
SEAFDEC-Sida Annual Reviewing Meeting 2010	8	14	-	-	-	-	-	-	-	-	-	-	-	3	17	Sec
12 th Meeting of SEAFDEC Information Staff Exchange Program	8	19	-	-	-	-	-	-	-	-	-	-	-	-	19	Sec
Regional Workshop on HRD Programs for Sustainable Fisheries and Related Counter Measures to Combat IUU Fishing in Southeast Asia (6-8 July 2011, Bangkok, Thailand)	1	39	-	1	1	1	1	1	1	1	-	1	1	6	54	TD
Stakeholder of Duya Inn Reservoir Consultative Workshop (5 May 2011, Myanmar)	1	5	-	-	-	-	-	-	29	-	-	-	-	-	34	TD
Special Meeting on Improvement of Tuna Information collection in Southeast Asia (7-9 September 2011, Songkhla Province, Thailand)	1	21	-	-	1	1	-	1	1	1	-	1	1	4	32	TD
Regional Workshop on the Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Approaches Project: Transferring Lesson-learned and Experience (14-15 September 2011, Phetchaburi Province, Thailand)	1	18	2	1	2	-	2	1	2	1	-	2	1	4	31	TD
Special Meeting on Sharks Information Collection in Southeast Asia (15-17 September 2011, Bangkok, Thailand)	1	18	-	1	1	2	1	1	-	1	-	2	1	2	30	TD
The 3 rd Regional Technical Workshop on Safety at Sea and Optimizing Energy Use for Small Fishing Boats	1	30	-	2	4	1	1	2	2	2	1	2	2	12	61	TD
Workshop on Research Synopsis (14 January 2011, Training Department, Thailand)	2	40	-	-	-	-	-	-	-	-	-	-	-	10	50	TD
The National Workshop on Database and Information of	2	-	-	-	-	-	-	-	-	-	-	20	-	-	20	TD

Title (Date, Venue)	Category	Number of Participants														Department
		SEAFDE	Brunei	Cambodia	Indonesia	Japan	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Others	TOTAL	
Deep-sea Resource (27 June 2011, Samut Prakan province, Thailand)																
Onsite training on environmental friendly post-harvested techniques for tuna long liners (14-18 February 2011, Vietnam)	3	-	-	-	-	-	-	-	-	-	-	-	22	-	22	TD
Training/ Workshop on Identification of Deep-sea Benthic Macroinvertebrate Vulnerable to Fishing Gear, Southeast Asian Fisheries Development Center (11-15 July 2011, Samut Prakan Province, Thailand)	3	11	2	1	-	-	-	1	1	1	-	4	1	4	26	TD
On-site Training on Identification of Deep-sea Fishes (18-21 July 2011, Malaysia)	3	-	-	-	-	-	-	16	-	-	-	-	-	-	16	TD
The Regional Training Course on Fisheries Management in Combating IUU Fishing for Fishery Managers (6-15 September 2011, Samut Prakan Province, Thailand)	3	1	2	1	1	-	1	1	-	1	-	1	-	-	9	TD
Regional Training Course on Fisheries Management to Combat IUU Fishing for Fishery Officers (26 September – 16 October 2011, Samut Prakan Province, Thailand)	3	22	2	1	5	-	-	1	1	1	-	1	1	-	35	TD
The Training Course on Line Fishing (26 September – 3 October 2011, Malaysia)	3	-	-	-	-	-	-	15	-	-	-	-	-	-	15	TD
The Training Course on Purse Seine (17-27 October 2011, Malaysia)	3	-	-	-	-	-	-	15	-	-	-	-	-	-	15	TD
The Training Course on Trawl Fishing (10-17 November 2011, Malaysia)	3	-	-	-	-	-	-	15	-	-	-	-	-	-	15	TD
3rd Training Course on Set Net (17-21 January 2011, Prachuapkhirikhan Province, Thailand)	4	-	-	-	-	-	-	-	-	-	-	60	-	-	60	TD
The Training Course on Fish Handling and Preservation Technique (1 March 2011, Songkhla Province, Thailand)	4	-	-	-	-	-	-	-	-	-	-	43	-	-	43	TD
Short Term Training Course on Fishery Resource and Fisherman Community around Estuary for University	4	-	-	-	-	-	-	-	-	-	-	46	-	-	46	TD

Title (Date, Venue)	Category	Number of Participants														Department
		SEAFDE	Brunei	Cambodia	Indonesia	Japan	Lao PDR	Malaysia	Myanmar	Philippine s	Singapore	Thailand	Vietnam	Others	TOTAL	
Students#51 (14-24 March 2011, Samut Prakan Province, Thailand)																
The Training Course on Fishery Resource and Fisherman Community around Estuary for Ubon Ratchathani University (28 March – 2 April 2011, Samut Prakan Province, Thailand)	4	-	-	-	-	-	-	-	-	-	-	20	-	-	20	TD
A training course on fishing vessels operation for Tinsulanonda Fisheries College (3 October 2011 – 24 February 2012, Samut Prakan Province, Thailand)	4	-	-	-	-	-	-	-	-	-	-	9	-	-	9	TD
Short Term Training Course The Friendly Use and Conservation for the Sustainable Fishery Resources for University Students#52 (19-20 October 2011, Samut Prakan Province, Thailand)	4	-	-	-	-	8	-	-	-	-	-	43	-	-	51	TD
The Training Course on Fish Handling and Preservation Technique (9-10 November 2011, Songkhla province, Thailand)	4	-	-	-	-	-	-	-	-	-	-	10	-	-	10	TD
A Special Training Program and Study Visit on Educational Institute Management (25-29 January 2011, Samut Prakan Province, Thailand)	5	-	-	-	-	-	-	35	-	-	-	-	-	-	35	TD
Study Trip for the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020	5	-	-	-	-	-	-	-	-	-	-	-	-	-	27	TD
Hokkaido University, Japan (13 October – 26 November 2011)	6	-	-	-	-	1	-	-	-	-	-	-	-	-	1	TD
Practical Trianing for Rajamangala University of Technology Srivijaya (Trang Campus) (7 March – 7 April 2011, Samut Prakan Province, Thailand)	7	-	-	-	-	-	-	-	-	-	-	2	-	-	2	TD
Practical Trianing for Silpakorn University (Phetchaburi Campus) (14 March – 22 April 2011, Samut Prakan, Thailand)	7	-	-	-	-	-	-	-	-	-	-	3	-	-	3	TD
Practical Training for King Mongkut's Institute of Technology Ladkrabang (Chumphon Campus) (14 March – 15 May 2011,	7	-	-	-	-	-	-	-	-	-	-	4	-	-	4	TD

Title (Date, Venue)	Category	Number of Participants														Department
		SEAFDE	Brunei	Cambodia	Indonesia	Japan	Lao PDR	Malaysia	Myanmar	Philippine s	Singapore	Thailand	Vietnam	Others	TOTAL	
Samut Prakan Province, Thailand)																
Practical Trianing for Rajamangala University of Technology Srivijaya (Trang Campus) (18 April – 18 May 2011, Samut Prakan Province, Thailand)	7	-	-	-	-	-	-	-	-	-	-	3	-	-	3	TD
Practical for Asian Institute of Technology (9-25 May 2011, Samut Prakan Province, Thailand)	7	-	-	-	-	-	-	-	-	-	-	1	-	-	1	TD
Practical for Walailak University (5 September – 23 December 2011, Samut Prakan Province, Thailand)	7	-	-	-	-	-	-	-	-	-	-	2	-	-	2	TD
The Government of Japan Trust Fund / SEAFDEC/AQD International Seminar on Food Safety in Aquaculture In Southeast Asia (22 January 2011, SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	1	31	-	1	-	-	-	2	1	12	3	2	-	-	52	AQD
FW Prawn Hatchery and Grow-out Operations (21 March – 01 April 2011; SEAFDEC/AQD, Binangonan, Rizal)	3	1	-	1	1	-	-	1	-	3	-	-	-	-	7	AQD
Distance Learning Course: Basic Principles of Aquaculture Nutrition (AquaNut Online) (21 March -22 July 2011)	3	-	1	1	2	-	-	1	1	2	-	1	-	1	10	AQD
Short-Term Training on Aquaculture (24-30 May 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	3	-	-	-	-	-	-	-	-	-	-	-	-	3	3	AQD
Training Course on Mangrove Conservation, Rehabilitation & Management (25 May- 04 June; SEAFDEC/AQD, Tigbauan, Iloilo; Ibajay, Aklan, Philippines)	3	-	-	-	-	-	-	-	-	24	-	-	1	1	26	AQD
Training Course on Marine Fish Hatchery (20 June-26 July 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	3	-	-	1	-	-	-	-	-	2	3	-	-	4	10	AQD
Training Course on Abalone Hatchery (07-27 July 201; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	3	-	-	1	-	-	-	-	-	7	-	1	-	-	9	AQD
Training Course on Community-Based Resource Enhancement (12-20 July 2011; SEAFDEC/AQD, Tigbauan, Iloilo; IMS, Guimaras; Sagay City, Negros Occidental,	3	-	-	1	-	-	-	-	1	2	-	-	-	1	5	AQD

Title (Date, Venue)	Category	Number of Participants														Department
		SEAFDE	Brunei	Cambodia	Indonesia	Japan	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Others	TOTAL	
Philippines)																
Training Course on Fish Parasite Detection & Identification (15 August-28 September 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	3	-	-	-	-	-	-	-	-	-	-	-	-	1	1	AQD
Specialized Training Course on Milkfish Farming (26 September-10 October 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	3	-	-	-	-	-	-	-	-	1	-	-	-	2	3	AQD
Selected Topics on Fish Breeding (21-23 January 2011; SEAFDEC/AQD, Binangonan, Rizal)	4	-	-	-	-	-	-	-	-	31	-	-	-	-	31	AQD
Training Course on Fish Health Management (22-23 March 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	4	-	-	-	-	-	-	-	-	2	-	-	-	-	2	AQD
Training of Trainers on Abalone Hatchery and Grow-out (29 March -18 April 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	4	-	-	-	-	-	-	-	-	21	-	-	-	-	21	AQD
Training of Trainers on Seaweed (<i>Kappaphycus</i>) Farming (26 April-10 May 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	4	-	-	-	-	-	-	-	-	21	-	-	-	-	21	AQD
Training of Trainers on Seed Production & Grow-out of Sandfish (<i>Holothuria scabra</i>) (04-17 May 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	4	-	-	-	-	-	-	-	-	22	-	-	-	1	23	AQD
Training Course on Culture of Microalgae (09 May-10 June 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	4	-	-	-	-	-	-	-	-	1	-	-	-	-	1	AQD
Training of Trainers on Marine Fish Hatchery (19 May-24 June 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	4	-	-	-	-	-	-	-	-	20	-	-	-	1	21	AQD
Training of Trainers on Crab Hatchery & Grow-out (27 June-19 July 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	4	-	-	-	-	-	-	-	-	23	-	-	1	1	25	AQD
Training Course on Natural Food (07-26 July 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	4	-	-	-	-	-	-	-	-	1	-	-	-	-	1	AQD

Title (Date, Venue)	Category	Number of Participants														Department
		SEAFDE	Brunei	Cambodia	Indonesia	Japan	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Others	TOTAL	
Tilapia Hatchery and Grow-Out Operations (15-19 August 2011; SEAFDEC/AQD, Binangonan, Rizal)	3	-	-	-	-	-	-	1	-	2	-	-	-	-	3	AQD
Freshwater Prawn Hatchery and Grow-out Operations (22-26 August 2011; SEAFDEC/AQD, Binangonan, Rizal)	4	-	-	-	-	-	-	-	-	4	-	-	-	-	4	AQD
Specialized Training Course on Hatchery of Marine Fish (14-30 September 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	4	-	-	-	-	-	-	-	-	1	-	-	-	-	1	AQD
International Training Course on Mud Crab Culture (26 September -01 October 2011; Chaung Tha, Myanmar)	3	-	3	1	-	-	-	-	1	-	-	1	-	-	6	AQD
International On-site Basic Training Course on Freshwater Fish Health Management (11-14 October 2011; Namxouang Aquaculture Development Center, Lao PDR)	4	-	-	-	-	-	20	-	-	-	-	-	-	-	20	AQD
International Training Course on Community-based Freshwater Aquaculture for Remote Rural Areas of South East Asia (22 November-01 December 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	3	-	-	1	1	-	1	1	1	2	-	1	-	2	10	AQD
Short-Term Training Course on Pond/Cage Culture of High-Value Marine Fishes (05-15 December 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	4	-	-	-	-	-	-	-	-	1	-	-	-	1	2	AQD
Training Course on Capacity Building on Information Dissemination and Data Management (12-20 December 2011; SEAFDEC/AQD, Tigbauan, Iloilo, Philippines)	3	-	-	-	-	-	-	1	-	2	-	4	-	-	7	AQD
Study tours (14 Groups)	5	-	-	-	-	22	-	-	-	69	-	-	-	13	104	AQD
Internship (17 groups)	6	-	-	-	-	2	-	1	-	27	-	-	1	3	34	AQD
On-the-Job Training (23 Schools)	7	-	-	-	-	-	-	-	-	194	-	-	-	-	194	AQD
The Fourth Core Expert Meeting on Tagging Program for Economically Important Pelagic Species in the South China Sea and Andaman Sea, JTF II. Kuala Lumpur 20-22 Sept 2011	1	15	1	1	1	-	-	3	-	1	-	1	1	-	24	MFRDMD

Title (Date, Venue)	Category	Number of Participants														Department
		SEAFDE	Brunei	Cambodia	Indonesia	Japan	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Others	TOTAL	
Regional Workshop on Management Sea Turtle Foraging Habitats in Southeast Asian Waters, 1-3 Nov 2011, Kuching, Sarawak	1	5	2	-	1	-	-	10	-	1	-	-	-	6	25	MFRDMD
Training on survey of sea turtles foraging habitat at Mabul-Sipadan, Sabah, Malaysia from 27 Sept – 1 Oct 2011	1	5	-	-	1	-	-	10	-	-	-	-	-	-	16	MFRDMD
JSPS Asia-Africa Science Platform Program: International Seminar S-2 Sustainable Production of Fisheries Resources in Southeast Asia. Kuala Terengganu 15 Dec 2011	1	16	-	-	-	4	-	8	-	-	-	-	-	-	28	MFRDMD
Workshop on identification of deep-sea fishes, 18 -21 July, 2011, Kuala Terengganu, Malaysia	2	2	-	-	-	2	-	16	-	-	-	-	-	-	20	MFRDMD
Utilization of Freshwater Fish for Value-Added Products – Project Inception and Planning Meeting, 26-27 Apr 11, Singapore	1	-	-	-	2	-	2	-	2	-	-	-	2	-	8	MFRD
Utilization of Freshwater Fish for Value-Added Products – Regional Training Course, 18-21 Oct 11, Singapore	3	-	-	-	2	-	2	2	2	-	-	-	2	4	14	MFRD
JTFV: On-site Training Workshop on Traceability Systems for Aquaculture Fish, 23-25 Nov, HCMC, Vietnam	1	-	2	2	2	-	2	2	2	2	2	2	2	3	23	MFRD

* Category:

- 1) International/regional meetings, seminar, workshop
- 2) National/local meeting, seminar, workshop, consultation, etc.
- 3) International/regional training course
- 4) National, On-site training courses
- 5) Study tour
- 6) Internship
- 7) On-the-Job training
- 8) SEAFDEC Internal Events

Collaboration between SEAFDEC and other Organizations in 2011

Organization	Form of Collaboration	With
Japanese Trust Fund	Funding Support to ASEAN-SEAFDEC FCG Program	Sec
Swedish Sida	Funding Support	Sec
ASEAN Foundation	Funding Support	Sec
Coordinating Working Party on Fishery Statistics	Collaborative Activities	Sec
Fisheries Resources Monitoring System (FIRMS)	Collaborative Activities	Sec
Association of Southeast Asian Nations	Collaborative Activities	Sec
Asia-Pacific Fisheries Forum	Collaborative Activities	Sec
Food and Agriculture Organization of the United Nations (FAO)	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec
Asian Institute of Technology (AIT)	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec
The WorldFish Center	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec
Japan International Research Center for Agriculture Sciences (JIRCAS)	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec
Tokyo University of Marine Sciences and Technology (TUMSAT), Japan	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec
School of Marine Science and Technology, Tokai University, Japan	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec
Hiroshima University, Japan	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec
Mekong River Commission (MRC)	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec
Fishery Research Agency (FRA)	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec
Coastal Development Center (CDC)	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec
National Fisheries University (NFU), Japan	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec
Faculty of Fisheries, Kagoshima University, Japan	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec
Hokkaido University	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec

Organization	Form of Collaboration	With
Network of Aquaculture Centres in Asia and Pacific (NACA)	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec
Marine Institute of Memorial University of Newfoundland (MI), Canada	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec
United States Agency for International Development (USAID)	Funding Support to the preparation and conduct of the ASEAN-SEAFDEC Conference	Sec
Research Institute for Humanity and Nature (RIHN), Japan	Collaborative Activities and Partner for the conduct of the ASEAN-SEAFDEC Conference	Sec
DOF Thailand	Funding support and Activities	TD
DOF Brunei	Funding support and Activities	TD
Fish Market Organization (FMO)	Funding support and Activities	TD
DOF Member Countries	Collaborative activities	TD
National Agriculture Training Council (NATC)	Funding support	TD
Tinsulanonda College	Funding support, Agreement	TD
Ubon Ratchthani University	Funding support	TD
Japan International Research Center for Agricultural Sciences (JIRCAS, Tsukuba, Japan): 14 July 2011 – March 2016	Agreement (on strengthening the existing collaboration)	AQD
Nagasaki University School of Dentistry (Japan): 5 January 2011 – 5 January 2013	Agreement (conduct of the study “Extraction of collagen from milkfish”)	AQD
Commonwealth of Australia (represented by ACIAR): 30 May 2011 – 30 May 2015	Agreement (research on “Improved seaweed culture and post-harvest waste utilization in Southeast Asia”)	AQD
Freshwater Fisheries Research Center, Chinese Academy of Fishery Sciences (FFRC/CAFS, Wuxi, China): 1 July 2011 – 1 July 2013	Agreement (on strengthening the existing collaboration ie. staff exchange, research and training)	AQD
ACDI/VOCA (Washington DC, USA): 19 August 2011 – 30 September 2011	Agreement (to provide training and technical assistance to the “Mud Crab/fish cultivation project in Timor Leste”)	AQD
Bureau of Fisheries and Aquatic Resources (BFAR, Philippines: 15 March 2011 until contract fulfillment)	Agreement (on “Training of trainors on hatchery and nursery of aquaculture species for BFAR-RFTC technical staff”)	AQD
BFAR – Regional Office 5, Camarines Sur (Philippines): 12 April 2011 until contract fulfillment	Agreement (to train, provide technical/administrative assistance to BFAR-5’s Sagñay multi-species hatchery and nursery)	AQD
University of the Philippines Visayas (Philippines): 1 June 2011 – 31 May 2014	Agreement (to carry out research on “Integrated and sustainable development of the shrimp industry”)	AQD
Provincial Government of Pangasinan (Philippines): February 2011 – February 2016	Agreement (on the ICDSA project “Strengthening of aquaculture capabilities”)	AQD
Foundation for Agriculture-Related Missions, Inc. (FARM, Quezon City, Philippines): 17 September 2011 until contract fulfillment	Agreement (to document aquaculture technologies and air them on the TV show “Mag-Agri Tayo”)	AQD

Organization	Form of Collaboration	With
San Miguel Corporation, Pasig City (Philippines): 15 March 2011 – 15 March 2012	Agreement (for research on “Comparing formulated diets used for grow-out culture of tiger shrimp and white shrimp”)	AQD
Lunsad Multi-Purpose Cooperative, Binangonan, Rizal (Philippines): 2 March 2011 – 2 March 2014	Agreement (to strengthen capabilities of cooperative member- beneficiaries)	AQD
Mr. David Villaluz of Banate, Iloilo (Philippines): 7 June 2011 – 15 January 2012	Agreement (to provide technology and technical assistance on netcage culture of tilapia fed formulated diets)	AQD
Agri-Food & Veterinary Authority (AVA), Post-harvest Technology Center (PHTC)	Collaborating Center	MFRD
Institute of Oceanography and Environmental, University Malaysia Terengganu	Marine Technology and academic (sponsorship for Phd candidate from MFRDMD and using high technology marine equipment)	MFRDMD
National Hydrography Department , Malaysia	Technical exchange in hydrography technology	MFRDMD
Institute of Agriculture and Food Policy Studies, University Putra Malaysia	Academic and socio economy study on traditional fishers in the coastal waters of Malaysia	MFRDMD
Bay of Bengal Large Marine Ecosystem Program (BOBLME)	Technical assistant on elasmobranch taxonomy to Myanmar	MFRDMD
ARSM , LKIM and NEKMAT	Fish forecasting	MFRDMD
National Oceanography Department (NOD)	CTI	MFRDMD
Fisheries Research Institute (FRI) Penang	Biodiversity	MFRDMD
WWF-Malaysia	EBFM	MFRDMD
MARDI	Climate change	MFRDMD
USM-School of Health Science	Molecular studies	
UM, UPM, UMT, JTLM, Sarawak Forestry, Sabah Park, DOF Sabah , DOMF Sarawak, DOFM, Fire and Rescue Dept. , APMM, MNS, WWF	Marine Mammal Stranding Network	MFRDMD

Appendix 10

Funding Support from Other Agencies/Organizations (extra from regular contribution from host departments, and MRC)

Organizations	Scope	Estimated annual Budget (USD)	To
Government of Japan through the Japanese Trust Fund	Program under FCG Mechanism	2,122,589	Sec
Swedish Sida	Support to Tsunami Rehabilitation of Affected Countries in the ASEAN Region (use program title)	435,484	Sec
ASEAN Foundation	Partial support to the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020	72,895	Sec
National Agriculture Training Council (NATC)	A Special Training Program and Study Visit on Educational Institute Management (25-29 January 2011, Samut Prakan Province, Thailand)	11,667	TD
National Agriculture Training Council (NATC)	Training Programs on Line Fishing, Coastal Purse Seine Fishing and Trawl Fishing (26 September – 3 October, 17-24 October and 7-16 November 2011)	11,800	TD
Tinsulanonda Fisheries College	A training course on fishing vessels operation for Tinsulanonda Fisheries College	8,333	TD
Fish Market Organization	The Project on Preservation Fisheries Products	3,333	TD
Ubon Ratchthani University	The Training Course on Fishery Resource and Fisherman Community around Estuary for Ubon Ratchathani University (28 March – 2 April 2011)	1,000	TD
Wageningen University (The Netherlands)	Establishment of management technology for disease tolerance and sustainable aquaculture environment; January-Dec 2011	2,713	AQD
North Carolina State University (USA)	Alternative feeding strategies to improve milkfish production; February 2010 - Sept 2011	43,210	AQD
United Soybean Board (USA)	Use of soybean meal and soy protein concentrate as alternatives to fish meal in practical feeds for milkfish; Jan 2011-Dec 2011	53,284	AQD
Fats and Proteins Research Foundation, Inc. and National Renderers Association, Inc.	Digestibility and effective level of meat and bone meal in formulated diet for milkfish grown in fresh and seawater; May 2010-May 2011	12,000	AQD
Australian Center for International Agricultural Research (ACIAR)	Carrying capacity, decision support tools for freshwater systems in Australia and the Philippines; July 2010-Dec 2011	56,376	AQD
ACIAR	Improved seaweeds culture and postharvest waste utilization in Southeast Asia; June 2011-May 2015	93,967	AQD

Organizations	Scope	Estimated annual Budget (USD)	To
Japan International Research Center for Agricultural Sciences	Co-culture of sandfish and black tiger prawn in the mangroves; January-Dec 2011	13,170	AQD
WorldFish Center (Malaysia)	Culture of sandfish in Asia-Pacific; Jan 2010-Nov 2011	81,535	AQD
WorldFish	Strengthening governance and sustainability of small-scale fisheries management in the Philippines: an ecosystem-based fisheries management approach; Aug 2010-July 2011	3,440	AQD
Development Bank of the Philippines	Technical assistance on mariculture projects and other ancillary businesses for financing under the Sustainable Mariculture Investment Program; March 2011-Feb 2012	19,493	AQD
Bureau of Fisheries and Aquatic Resources (BFAR)	Aquaculture biotechnology program; January-Dec 2011	114,679	AQD
BFAR – Regional Fisheries Training Center	Training of trainors of the BFAR-Regional Fisheries Training Centers; May -Dec 2011	64,220	AQD
BFAR-Camarines Sur	Technical experts for Sagnay multi-species hatchery and nursery; April 2011-March 2012	15,190	AQD
BFAR-Northern Samar	Technical experts for multi-species hatchery and nursery in Laoang; Nov 2010-Oct 2012	27,022	AQD
BFAR-Palawan	Technical experts for multi-species hatchery and nursery in Bongabong; Nov 2010-Oct 2012	22,936	AQD
Department of Science and Technology (DOST, Philippines)	Development of techniques for sustainable production of good quality captive tiger shrimp broodstock and spawners and high health fry; June 2011-June 2014	24,017	AQD
DOST	Domestication and evaluation of the culture potential of native Cardian prawns; Jan 2011-Dec 2012	2,452	AQD
Novus International, Inc.	Growth, survival and nutritional composition of grouper fry fed formulation diet; Sept 2009-Aug 2010	11,192	AQD
Marine Environment & Resources Foundation, Inc.	Bench-scale production of fucoidan from Philippine brown seaweeds for use on mariculture & medicinal application; April-June 2011	3,854	AQD
San Miguel Foods, Inc.	Comparison of formulated diets used for tiger shrimp and white shrimp; March 2011-Feb 2012	2,294	AQD
DOFM	Artificial reefs Fish forecasting Climate change	50,000 13,000 3,000	MFRDMD
JTF V	Sea turtles	48,700	MFRDMD
JTF II	Tagging small pelagic	75,304	MFRDMD
JTF II	IUU	35,000	MFRDMD
UMT	PhD. scholarship	2,000	MFRDMD
MOSTI	Sea to space (sea turtles)	60,000	MFRDMD



EXECUTIVE SUMMARY OF THE THIRTY-FOURTH MEETING OF SEAFDEC PROGRAM COMMITTEE

The Thirty-fourth Meeting of the Program Committee of the Southeast Asian Fisheries Development Center (SEAFDEC) was held in Manila, Philippines from 14 to 16 November 2011 and hosted by the Aquaculture Department (AQD). The objective of the Meeting was to review the SEAFDEC programs implemented in 2011 and scrutinize the programs to be implemented in 2012, to ensure that the programs are formulated and implemented in line with the priorities and needs of the Member Countries. The Meeting was chaired by the Secretary-General of SEAFDEC in his capacity as the Chairperson of the SEAFDEC Program Committee.

The meeting took note of the thirty seven programs implemented by SEAFDEC in 2011 which have been classified into: nine Departmental programs, twenty five programs under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism, and three Other programs. Meanwhile, the meeting endorsed the thirty eight programs proposed to be implemented in 2012, comprising eight Departmental programs, twenty seven programs under the FCG/ASSP, and three Other programs. During the Meeting, the Committee made recommendations to better address emerging issues and to ensure that the programs are appropriately linked with the 2011 Resolution and Plan of Action. More particularly, the new Departmental programs of AQD which were proposed to be conducted starting in 2012 had been reformulated from commodity-based into thematic-based to be in line with the aquaculture-related provisions in the 2011 Resolution and Plan of Action.

Taking into account the challenges confronting the aquaculture sector (*e.g.* impacts of climate change, diseases and market pressures), aquaculture would remain very promising especially in addressing food security provided that it is sustained and maintained in an eco-friendly manner. In this regard, AQD was asked to put more efforts in reducing dependence on fishmeal as main source of feeds by finding plant-based substitutes. Moreover, while recognizing the importance of small-scale aquaculture enterprise as tool for poverty alleviation in rural areas, outputs of relevant research activities and aquaculture technologies should be disseminated in accessible media while publications and pertinent technical papers should be disseminated through the SEAFDEC mechanism in order to enhance their accessibility.

Furthermore, some important freshwater fish species should be considered for R&D in aquaculture development, while studies on organic aquaculture should also be conducted to address the rising demand for organically produced aquaculture commodities. In addition, the training programs implemented by AQD should be evaluated to ensure their effectiveness. In the formulation and conduct of aquaculture R&D activities, AQD should look into relevant studies conducted by other organizations to avoid possible duplication of efforts and in order that the conduct of activities would not start from scratch. Specifically, AQD should collaborate with the Network of Aquaculture Centres in Asia-Pacific which had been promoting “pellet feeds” to small-scale aquaculture farmers.

With due considerations of the species cultured, sources of phyto-proteins should also be carefully studied in terms their applicability, protein efficiency, protein digestibility, and availability. AQD was also requested to provide technical assistance for the development of rural aquaculture in Member Countries particularly Myanmar. With regards to the program on **Improvement of Fisheries Technology and Reduction of the Impacts from Fishing** conducted by TD, the possibility of conducting fish handling activities onboard Indonesian vessels should be considered. Meanwhile, translation of publications into local languages especially on awareness building should be promoted for wider distribution of such materials to various levels of audience.

The Committee endorsed the 27 programs under the FCG/ASSP for the Year 2012 which comprise 24 programs continued from 2011 and another three new programs. The Committee noted that program on “ASEAN-SEAFDEC Conference on Sustainable Development of Fisheries and Food Security Towards 2020” was completed in 2011.

Under the program on **Assistance for Capacity Building in the Region to Address International Trade-related Issues**, SEAFDEC was requested to conduct in-depth study on the impacts of the EC regulations especially on small-scale fisheries, taking into account the experience of the Member Countries that already implemented the EC regulations, where the positive results could be used as basis for other countries to comply with and implement such regulations in the future, while the negative results could be used as reference in future discussions and negotiations with EC for possible adjustment/modification of the regulations. Moreover, experts from the Member Countries should be invited to share their experiences on the implementation of the EC regulation during the Regional Technical Consultation (RTC) on International Fisheries Trade-related Issues in 2012. On issues related to combating IUU fishing including Global Record of Fishing Vessels which are associated with trade measures, SEAFDEC was requested to coordinate with RPOA-IUU Secretariat for the development of the guidelines on reducing IUU fishing which could be made compulsory for the region. This is in line with the other FCG/ASSP program on **Promotion on Fishing License, Boats Registration and Port State Measures** in which SEAFDEC was also requested to consider using the FAO Expert Consultation Report on FAO Global Record on Fishing Vessels as reference, and that sharing of information should be promoted among the Member Countries and capacity building should be carried out to make the Member Countries ready for the implementation of the Port State Measures, and in addressing issues related to catch certificate.

For the programs under the **Information Collection of Highly Migratory Species in Southeast Asia Waters: Focusing Tuna**, and **Resource Enhancement of International Threatened and Over-exploited Species in Southeast Asia through Stock Release**, Myanmar requested SEAFDEC to provide assistance on the stock assessment of tuna species in Myanmar waters and also to assist in breeding and culture of seahorse, mud crab and sea cucumber for conservation purposes. Meanwhile, AQD was requested to provide technical assistance on the mariculture of sea bass, sea cucumber and seahorse as well as on other modern techniques for fish culture. Furthermore, regional technical cooperation and HRD on stock assessment of selected aquatic species and on commercially-exploited aquatic species such as hilsa, Indian mackerel, sharks, tuna, sea cucumber, and seahorse among others, should also be carried out under the program on **Promotion of Sustainable and Region-oriented Aquaculture Practices**.

With regards to the program on **Improvement of Statistics and Information for Planning and Management of Fisheries in the ASEAN Region**, the Member Countries had been requested to submit updated fishery statistics based on the Regional Framework for Fishery Statistics of Southeast Asia in more timely manner, and ensure the accuracy of capture data through the focal point persons of the ASEAN Fisheries Statistics Network. In this connection, SEAFDEC was also requested to keep the National Coordinators informed when following up such concern with the focal point persons. Nevertheless, even if the SEAFDEC Fishery Statistical Bulletin may not be published on time, SEAFDEC should consider facilitating the dissemination of available statistics through the SEAFDEC website based on the online database of SEAFDEC.

Concerning the use of the M.V. SEAFDEC 2 under the program on **Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2**, the Member Countries were encouraged to make full use of the M.V. SEAFDEC 2 especially in conducting surveys and exploration activities to be able to compile valuable data that are useful for the analysis of the respective countries’ fishery resources. The low utilization of the M.V. SEAFDEC 2 could affect the conduct of collaborative projects such as the program on **Fisheries Resources Exploration in the Southeast Asia Including Deep Sea** which aims to establish the status of the fishery resources

in this region. In this connection, SEAFDEC was requested to conduct activities on deep sea fishery resource exploration in the waters of Myanmar and provide relevant information that could be used as basis for the Department of Fisheries of Myanmar to plan its deep sea fisheries resource exploration activities in the future.

For the program on **Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement**, experts should be engaged to assist Thailand in improving the installation of artificial reefs (ARs) including the appropriate design of ARs and in evaluating the fishery resources around ARs before and after their installation, while the published outputs from R&D on artificial reefs undertaken in Malaysia with various objectives such as preventing trawlers from fishing in coastal areas as well as enhancing the fishery resources and habitats, could be used as reference. Since Malaysia has been conducting studies on the effectiveness and impacts of ARs to the livelihood of fishers, local researchers and engineers from Malaysia working on ARs could be invited to serve as resource persons in any planned SEAFDEC workshop on resource enhancement.

With regards to the program on **Promotion of Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management**, SEAFDEC should collaborate with international organizations such as the FAO for its Regional Fisheries Livelihood Programme (RFLP) in order to optimize resources and avoid duplication of efforts in implementation of related activities, especially in the promotion of alternative livelihood and in addressing gender issues. In addition, SEAFDEC was requested to support capacity building activities aimed to enhance the knowledge of fisheries officers of the Member Countries on the concept and theoretical framework of co-management and rights-based fisheries for fisheries resource management.

The Committee took note of the **three new programs under the FCG/ASSP** proposed for the 2012, namely: 1) Climate Change and Its Impacts on Sustainable Fisheries and Aquaculture: Adaptation and Mitigation Towards Food Security; 2) Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management; and 3) Strategies for Trawl Fisheries By-catch Management.

For the program on **“Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management”**, the proposal has been submitted to the Islamic Development Bank (IDB) in 2007 and is expected to be officially approved for funding by the IDB starting in 2012. To complete the procedure for official approval of the proposal by the IDB, the ASEAN Secretariat was asked to coordinate with SEAFDEC and the eligible participating countries for the remaining processes to facilitate the implementation of the project in 2012.

For the program on **Climate Change and Its Impacts on Sustainable Fisheries and Aquaculture: Adaptation and Mitigation Towards Food Security**, the ASEAN-US Technical Assistance and Training Facility (AU-TATF) has planned to conduct a meeting as an initial activity tentatively in February 2012, to discuss and formulate the activities that should be undertaken under this program. However, financial support to be provided by the AU-TATF for the conduct of future activities would be based on the outputs and recommendations of the said initial meeting.

The Other programs proposed for 2012, comprise three continuing programs from 2011, namely: 1) Cetacean Research in Southeast Asian Waters: Cetacean Sighting; and 2) Safety at Sea for Small Fishing Boats; and 3) Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Approaches. In this regard, SEAFDEC/TD is requested to consider expanding its HRD activities to include the coastal areas of the countries under the “Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Approaches”. In this regard, the guidelines on safety at sea for small fishing

boats which had been published in the Thai language should be translated into other languages of the Southeast Asian region.

The Meeting took note of a pipeline project on the **Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand (UNEP/GEF/SCS)** which is still under discussion and negotiation with potential donor agencies. Due to the changes in the GEF funding component of the program, the proposal was revised by SEAFDEC and submitted to UNEP in June 2011. In this regard, the Member Countries were requested to submit their respective letters of endorsement to UNEP by the end of 2011 so that UNEP could submit the proposal to GEF for project approval. As the submission process for funding support from GEF has been prolonged for several years, the SEAFDEC Secretariat was requested to follow up with UNEP and keep the Member Countries informed on the status of the project proposal.

With regards to the development of the **Southeast Asian State of Fisheries and Aquaculture (SEASOFIA)** which was submitted to the Program Committee for consideration, the representative from FAO/RAP suggested that if the publication could be finished within six months before the next COFI meeting, this could be very useful to facilitate the preparation of the global review as this publication is expected to reflect a science-based analysis of the fisheries at the regional level. In addition, SEASOFIA could also support the development of the State of Fisheries and Aquaculture (SOFIA) by FAO as well as enhance the rationalization of fisheries information of the region which could be properly reflected in the global perspective. In this regard, SEAFDEC was also requested to consider developing this publication periodically and on a regular basis.

On the program/activities structure of SEAFDEC, an apprehension was expressed that some activities could have been misclassified and conducted by Departments that were not supposed to carry out such activities in accordance with their functions. In addition, some activities which are of common interest to Member Countries such as tuna fisheries and IUU fishing, among others, could be grouped in the report so that a clearer picture of the situation of such fisheries and practices in the region would be clearly understood. In such a situation, the Agenda of the Program Committee Meeting could be restructured in order that reporting of activities could be grouped based on the Program Thrusts of SEAFDEC.

REQUIRED CONSIDERATION BY THE COUNCIL

The Council is requested to consider and endorse the results of the program implementation in 2011 and the proposed programs for 2012, including the recommendations made at the Thirty-fourth Meeting of the SEAFDEC Program Committee. The Council is also invited to provide directives to the SEAFDEC Secretariat and Departments on important areas for the improvement of program formulation, monitoring and evaluation to ensure that enhanced benefits could be derived by the Member Countries from the implementation of such programs.

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REPORT OF THE THIRTY-FOURTH MEETING OF THE PROGRAM COMMITTEE OF THE SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER

14 – 16 November 2011, Manila, the Philippines

I. INTRODUCTION

1. The Thirty-fourth Meeting of the Program Committee of the Southeast Asian Fisheries Development Center (SEAFDEC) was held in Manila, Philippines from 14 to 16 November 2011 and hosted by the Aquaculture Department (AQD).

2. The Meeting was attended by the National Coordinators from Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam as members of the Program Committee together with their respective delegations as well as the representatives from the FAO Regional Office for Asia and the Pacific (FAO/RAP) and the Association of the Southeast Asian Nations (ASEAN) Secretariat. The SEAFDEC Secretary-General, Deputy Secretary-General and Department Chiefs together with officers from the SEAFDEC Secretariat and the Departments also attended the Meeting. The list of participants appears as **Annex 1**.

II. OPENING OF THE MEETING

3. The Secretary-General of SEAFDEC *Dr. Chumnarn Pongsri*, in his capacity as Chairperson of the Program Committee thanked the Aquaculture Department for hosting and making the arrangements of the Meeting. He cited the year 2011 as a momentous year because of the successful organization of the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People 2020: Adaptation to a Changing Environment” in June 2011, and specifically emphasized on the adoption of the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 during the Conference by the SEAFDEC-ASEAN Ministers responsible for fisheries. After stressing on the reformulation of the Departmental Programs of AQD and TD as well as the development of the Southeast Asian State of Fisheries and Aquaculture (SEASOFIA) which has been initiated by the SEAFDEC Secretariat in collaboration with the Departments, he declared the Meeting open. His Opening Remarks appears as **Annex 2**.

III. ADOPTION OF THE AGENDA AND ARRANGEMENT OF THE MEETING

4. After considering the request of the Committee Member for Indonesia to include in Agenda 6.2 under Other Matters the “Expert Consultation on Effective Surveillance and Law Enforcement to Combat IUU Fishing from 5 to 8 December 2011 in Jakarta, Indonesia”, the Committee adopted the Agenda of the Meeting, which appears as **Annex 3**.

IV. MATTERS RELATED TO SEAFDEC PROGRAMS

4.1 2011 Resolution and Plan of Action and Linkage to SEAFDEC Existing Programs and Program Framework

5. While taking note of the list of SEAFDEC programs for the year 2011-2012 as presented by the Policy and Program Coordinator of SEAFDEC (**Annex 4**), which have been categorized in accordance with the SEAFDEC Program Framework taking into consideration the linkage of

the programs with the 2011 Resolution and Plan of Action, the Committee suggested that relevant activities at the national level should also be linked to the 2011 Resolution and Plan of Action.

6. Moreover, the Committee Member for Cambodia requested SEAFDEC in coordination with the Member Countries, to facilitate the reporting of the implementation of the 2011 Plan of Action. In this regard, a report format highlighting the activities implemented by the Member Countries should be developed.

7. The Committee Member for Malaysia also informed the Committee that the Department of Fisheries Malaysia had conducted a national workshop on the 2011 Resolution and Plan of Action. He added that the results of the workshop indicating the proposed projects and activities to be conducted in line with the implementation of the 2011 Resolution and Plan of Action would be submitted to the Government of Malaysia for funding support.

8. The Committee Member for Cambodia added that as the country's gesture of support to the implementation of the 2011 Resolution and Plan of Action, such instruments had been translated into the Khmer language for wider dissemination and to enable the stakeholders to implement relevant activities at the national level. He also mentioned that the progress of the relevant activities would be reported to the Ministry of Agriculture and Forestry of Cambodia and other policy making bodies.

9. The Committee Member for Myanmar informed the Committee that the Department of Fisheries of Myanmar would implement the 2011 Resolution and Plan of Action according to the prioritized areas of fisheries-related issues to support the promotion of sustainable fisheries, food security and food safety in the country, line with the efforts at regional level.

10. While noting that the implementation of the 2011 Resolution and Plan of Action has different layers of activities at local, national and regional levels, the Committee specified that the Member Countries would implement the local and national activities, while SEAFDEC would focus on regional activities to support the Member Countries during the implementation of the 2011 Resolution and Plan of Action.

11. The Secretary-General of SEAFDEC commended the Member Countries for their efforts in promoting the 2011 Resolution and Plan of Action as such initiatives demonstrated their keen sense of ownership of such instruments. In this regard, the assistance of SEAFDEC especially on the technical aspects could also be sought by the Member Countries during the implementation of the 2011 Resolution and Plan of Action.

4.2 Priorities Identified in the Third SEAFDEC Review Exercise

12. The Preliminary Report containing the Member Countries' Views on the Expected Roles, Functions and Activities of SEAFDEC as part of the Third SEAFDEC Review Exercise (**Annex 5**) was presented by the Information and Program Coordinator of SEAFDEC. In this connexion, the Committee Member for Singapore reiterated that as proposed during the 43rd Meeting of the SEAFDEC Council, the review should be done in conjunction with the assessment of the Plans of Operation of the Departments and that the review should be conducted by an independent entity. While sharing such concern, the Committee Member for Malaysia suggested that such review should also reflect the directives of the Council Directors.

13. While noting the preliminary output of the Review, the Committee Member for the Philippines suggested that in the process of reviewing the Plans of Operation of the Departments, the roles and functions of SEAFDEC should also be enhanced to ensure that the requirements of the Member Countries are addressed. In addition, the Committee Member for Vietnam requested that future activities to be undertaken after the preliminary review should also be developed.

14. With regards to the Preliminary Report, the Committee Member for Malaysia suggested that based on the countries' views, the SEAFDEC Secretariat should propose the next course of action to pave the way for the decision of the SEAFDEC Council. Furthermore, the Committee Member for Indonesia also suggested that the report to be submitted to the Council Directors should be short and precise indicating only the priorities identified by the Member Countries. In response, the Committee was informed that the initial results of the preliminary review had already been submitted for comments by the Council Directors after which their comments would be incorporated in the report of the preliminary review which would be submitted to the Member Countries for appropriate guidance especially on ways and means of improving the activities of SEAFDEC, taking into consideration the recommendations made at this Program Committee Meeting.

4.3 Introduction of Japanese Trust Fund Projects 2011-2012

15. The Japanese Trust Fund (JTF) Projects for the Year 2011-2012 (**Annex 6**) was presented by the Assistant Japanese Trust Fund Manager of SEAFDEC. In addition, the Committee Member for Japan provided supplementary information that some projects under the JTF II would be terminated in 2012 except the projects under the component on 'Promotion of Sustainable Fisheries and IUU Fishing Related Countermeasures in Southeast Asia'. He also informed the Committee that in spite of Japan's financial constraints, the Fisheries Agency of Japan would exert efforts to source additional funding from the Government of Japan to enable SEAFDEC to implement projects that would address emerging issues such as energy-saving in fisheries and safety at sea.

V. REVIEW OF SEAFDEC PROGRAM IMPLEMENTATION FOR THE YEAR 2011 AND PROPOSED PROGRAMS FOR THE YEAR 2012

5.1 Departmental Programs

16. The Committee was informed on the reformulation of Departmental Programs of AQD and TD where the Departmental Programs of AQD had been changed from commodity-based to thematic-based programs to be aligned with the Aquaculture Component of the 2011 Resolution and Plan of Action. Under the revised format, AQD would implement programs and activities under five thematic areas, namely: 1) Adapting to Impacts of Climate Change; 2) Healthy and Wholesome Aquaculture; 3) Maintaining Environmental Integrity through Responsible Aquaculture; 4) Meeting Socio-economic Challenges in Aquaculture; and 5) Quality Seeds for Sustainable Aquaculture. On the other hand, the Departmental Programs of TD would emphasize on enhancing regional fishery information systems and mechanisms to facilitate the sharing, exchange and compilation of information as well as on research and development aimed at improving fisheries technology to reduce the impacts of fishing to the environment.

17. While considering the progress and achievements in the implementation of SEAFDEC Departmental Programs in 2011 and the proposed activities for 2012 (**Annex 7**), the Committee provided recommendations for the improvement of the programs and endorsed the programs including the reformulation of the Departmental Programs of AQD and TD, taking into consideration the recommendations made at this Program Committee Meeting.

• SEAFDEC Secretariat

18. The Committee took note of the program on "**Center-wide Information Network**" which is aimed at keeping the Member Countries, stakeholders, and other organizations well informed on the programs and activities of SEAFDEC; raising public awareness and improving the visibility of SEAFDEC; providing various forms of information to support development of

the fisheries sector; and enhancing coordination and communication between SEAFDEC and other concerned parties.

- **Training Department**

19. The Committee noted the program on **“Information and Communication Technology”** implemented by the SEAFDEC/TD, which also aimed to enhance the visibility of SEAFDEC. In this regard, several forms of information materials such as the TD Newsletter, technical reports, e-books, among others, had been produced and disseminated to the Member Countries and other organizations. Moreover, the Committee was also informed that the source of funds to implement the Departmental Programs of SEAFDEC/TD comes from counterpart funds provided by collaborating partners such as the Government of Thailand, Fish Marketing Organization of Thailand, National Agriculture Training Center of Malaysia, and other donors.

20. For the Program on **“Improvement of Fisheries Technology and Reduction of the Impacts from Fishing”**, the Committee Member for Indonesia while recognizing the importance of some aspects of the program to Indonesia especially on the improvement of fish handling onboard fishing vessels through the use of sherbet ice and exhaust heat recirculation for energy optimization in refrigeration onboard fishing vessels, suggested that SEAFDEC should also consider the possibility of conducting such activities onboard Indonesian vessels. He added that the TD publication “Story of a boy named Por” had been translated into Bahasa Indonesia by the current member of the Regional Fisheries Policy Network (RFPN) for Indonesia and has been made ready for printing, however, the name “Por” had been changed into a local name. He also suggested that similar publications could be translated by the Member Countries into their respective local languages for distribution to a wider audience.

21. On **“Tailor Made Training and Study Tour”**, the representative from FAO/RAP commented that since TD functions as the Training Center for the region, inputs for such training programs should be broadened by considering possible support from several partner organizations. He added that FAO could collaborate with SEAFDEC in this aspect, more particularly on the training program on Ecosystem Approach to Fisheries (EAF) as well as on other programs that are aimed at enhancing regional capacity building.

- **Aquaculture Department**

22. The Committee was informed on the highlights of several programs/projects undertaken by AQD in 2011, which include Marine Fish, Small-holder Freshwater Aquaculture, Mollusk (Abalone), Mud Crab and Shrimp Domestication, Seaweed Strain Improvement, and Aquatic Ecology. AQD also informed the Committee on the various training activities, technology verification and extension services conducted in 2011. Furthermore, AQD also presented the results of its 2011 in-house strategic planning workshop following the outputs of the Fish for the People 2020 Conference. In this connection, the Committee was informed that starting 2012, AQD would shift from commodity-based to thematic programs taking into consideration the 2011 Resolution and Plan of Action.

23. Under marine fish program, research activities focused on improving seed production of selected marine fish species, developing plant-based substitutes for fish meal in aquafeeds, promoting fish health management strategies, and examining the effects of temperature rise to aquaculture species. On freshwater aquaculture program, the activities included the development and refinement of techniques on seed production and domestication/selective breeding of freshwater aquaculture species. For the mollusk program, activities focused on abalone broodstock development, seed production, selection of high-growing lines, and conduct of demonstration hatcheries. On the other hand, the mud crab and shrimp program entailed the domestication and selective breeding, and refinement of feeding and water management strategies in larval rearing, while the seaweeds program involved activities in improving high

profit-yielding strains for aquaculture. Furthermore, the aquatic ecology program included activities on impact assessment of aquaculture practices to the environment and development of bio-remediation techniques to improve water quality in aquaculture media.

24. Moreover, the Committee was also informed on the training programs conducted by AQD during the last 10 years (2002-2011) which received participants from forty-eight countries including the 11 SEAFDEC Member Countries. Considering such accomplishment, the Philippine Bureau of Fisheries and Aquatic Resources (BFAR) has concluded an agreement with AQD for the conduct of 'Trainers' Training on Culture of High-value Aquatic Species' with the participation of all extension workers from the Regional Fisheries Training Centers (RFTC) of BFAR who will then serve as technical experts for the transfer of the various technologies to all stakeholders in the country.

25. While commending the well-implemented programs being embarked by AQD, the Committee made several recommendations to better address emerging issues and link such programs with the 2011 Resolution and Plan of Action. Specifically, the Committee Member for Myanmar cited that despite the challenges confronting the aquaculture sector (*e.g.* impacts of climate change, diseases and market pressures), it still remains very promising especially in addressing food security provided that it is sustained and maintained to be eco-friendly. In this regard, he suggested that more efforts should be made in reducing the dependence of the sector on fish meal as main source of feeds by finding plant-based substitutes. He also requested that feeds for soft-shell mud crab should be developed by AQD, and recognizing the importance of small-scale aquaculture enterprise as tool for poverty alleviation in the countryside, he further suggested that dissemination of relevant aquaculture technologies should be given more emphasis in the relevant programs and activities of AQD.

26. The Committee Member for Lao PDR requested AQD to consider including some important freshwater fish species for its R&D activities, while the Committee Member for Indonesia also requested AQD to make available the outputs of its research activities and the pertinent technical manuals in accessible media for the benefit of the Member Countries. Specifically, he also suggested that AQD should consider disseminating its publications and pertinent technical papers through the SEAFDEC mechanism in order to enhance their accessibility. On the other hand, the Committee Member for the Philippines suggested that AQD should also consider conducting studies on organic aquaculture to address the rising demand for organically produced aquaculture commodities. As for training activities, he also suggested that an evaluation of the AQD training programs should be undertaken to ensure their effectiveness.

27. The Committee Member for Myanmar informed the Committee that Myanmar is considering the non-mandatory issues on reduction of fish meal in aquafeeds. Although aquaculture in Myanmar had been using raw plant ingredients for feeds such as rice bran, broken rice and peanut cake for a long time, the Department of Fisheries of Myanmar has also considered the potentials of using fish meal as major component of the ingredients in formulated feeds. However, since the sustainability of capture fisheries is not ensured, Myanmar also agreed to promote the substitution of phyto-protein in feeds using soybean. Nevertheless, he added that in order to facilitate the introduction of such technology to the farmers, field demonstration through pilot farms should be conducted by making use of the intensified technology developed by AQD.

28. Regarding the dissemination of research publications, AQD informed the Committee that relevant information on results from its research results could be accessed through the AQD website as well as through the SEAFDEC/AQD Institutional Repository (SAIR) in downloadable formats. On the issue of aquafeeds, AQD cited that feeds formulation for soft-shell mud crab culture would vary depending on availability of materials in a locality. Nonetheless, the feeds for mud crab formulated by AQD could also be applied for any crab culture in general.

29. The Committee also suggested that in the formulation and conduct of R&D activities, AQD should look into relevant studies conducted by other organizations to avoid possible duplication of efforts and in order that the conduct of activities would not start from scratch. In addition, sources of phyto-proteins should be carefully studied with considerations on their applicability, protein efficiency, and protein digestibility to culture species, as well as their availability. The representative from FAO/RAP informed the Committee that FAO and the Network of Aquaculture Centres in Asia-Pacific (NACA) had embarked on the promotion of “pellet feeds” which had been piloted with small-scale aquaculture farmers with positive results. He therefore suggested that AQD should collaborate with NACA to improve the results of relevant pilot studies taking into consideration the maximum utilization of fishery by-catch.

30. Furthermore, the Committee Member for Myanmar informed the Committee that the current Government of the Republic of the Union of Myanmar has considered rural development and poverty alleviation as high priority in the country’s development plan, and that small-scale aquaculture has been considered crucial for the rural people in the coastal and central dry zone areas of the country, specifically in the establishment of community-based organizations. He then requested AQD to provide technical assistance especially for the development of rural aquaculture in Myanmar. While considering that aquaculture is facing various challenges brought about by climate change, he suggested that appropriate technologies for adaptation should be studied in the context of pond designs, species selection, as well as on aquafeeds and health management. In this connection, he also proposed that the impacts of climate change on aquaculture should be assessed by a regional body.

5.2 Programs under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) Mechanism

31. The Committee considered and endorsed the progress and achievements in the implementation of the programs under the Fisheries Consultative Group Mechanism of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) in 2011 and the activities proposed for 2012 (**Annex 8**).

• SEAFDEC Secretariat

32. For the Program on “**Assistance for Capacity Building in the Region to Address International Trade-related Issues**”, the Committee suggested that SEAFDEC should conduct in-depth study on the impacts of the EC regulations especially on small-scale fisheries. SEAFDEC was also requested to develop a methodology of obtaining data and information on the experiences of Member Countries that have already implemented the EC regulations in order that the positive results could be used as basis for other countries in complying and implementing the said regulations in the future. Meanwhile, the negative results could be used as reference in future discussions and negotiations with EC for possible adjustment/modification of the regulations. In this connection, the Committee requested SEAFDEC to convey the concerns of the region to the FAO Sub-committee on Fish Trade and FAO COFI which would be convened in 2012. The Committee was also informed that SEAFDEC Secretariat has conducted in 2009 a review on the implementation of the EC regulations. However, since at that time most of the Member Countries had just started the implementation of the regulations, the SEAFDEC Secretariat would consider following-up and compiling the updated progress of implementation of the EC regulations by the Member Countries. In this regard, the Member Countries were requested to provide the necessary inputs for the analysis which would be carried out by the SEAFDEC Secretariat.

33. Moreover, with regards to catch certification as a requirement for complying with the EC regulations, the Committee Member for Malaysia requested SEAFDEC to consider inviting experts from the Member Countries which had already received the EU Evaluation Mission

Report to present their cases and share their experiences during the proposed Regional Technical Consultation (RTC) on International Fisheries Trade-related Issues in 2012. SEAFDEC was also requested to conduct a study that would address the issues on Global Record of Fishing Vessel, the results of which could be used as inputs for the forthcoming RTC.

34. The Committee Member for Myanmar requested SEAFDEC to provide assistance on stock assessment of tuna species and also for AQD to assist in the breeding and culture of sea horses, mud crab and sea cucumber for conservation purposes. In response, SEAFDEC reiterated that during the conduct of the Regional Technical Consultation (RTC) on Addressing Technical Issues on Selected Commercially-exploited Aquatic Species in October 2011, difficulties were encountered with respect to the collection of quality data from the Member Countries, which are necessary for the stock assessment of certain aquatic species. For such reason, the Member Countries were requested during the said RTC, to collect relevant data in a more detailed manner which could serve as inputs for stock assessment, after which SEAFDEC would consult with the relevant Departments for the possible conduct of activities including stock assessment based on the data and information provided by the Member Countries.

35. While conveying a concern on combating IUU fishing issues related to trade measures, the Committee Member for Cambodia expressed the apprehension that certain requirements under such measures could not be complied by some Member Countries especially on Port State Measures and traceability. In this connection, he suggested that SEAFDEC should coordinate with the RPOA-IUU Secretariat to develop guidelines on reducing IUU fishing, which could be made compulsory for the region. SEAFDEC was also requested to consider the involvement of experts who could provide substantial recommendations to the Member Countries during the discussion on relevant issues identified during the relevant RTC.

36. With regards to the Program on **“Improvement of Statistics and Information for Planning and Management of Fisheries in the ASEAN Region”**, the Member Countries were encouraged to submit updated fishery statistics in more timely manner, based on the Regional Framework for Fishery Statistics of Southeast Asia. In this regard and in order to expedite the production process of the Fishery Statistical Bulletin of Southeast Asia by the SEAFDEC Secretariat, the Committee Member for the Philippines suggested that the members of the ASEAN Fisheries Statistics Network comprising the focal point persons in the ASEAN countries should be encouraged to make commitments for the timely submission of the necessary data and that SEAFDEC should also keep the National Coordinators informed when following up such concern with the focal point persons.

37. Furthermore, in addition to providing the necessary data and information, the Committee also suggested that the Member Countries should ensure the accuracy of the data by improving their respective data collection and compilation systems. In addition, the Member Countries should also try to provide statistics and information on fishery production based on fishing areas, which could be classified as those from Exclusive Economic Zone (EEZ) or those from outside their EEZ, as this would facilitate the analysis of the state of the fisheries resources and the formulation of appropriate national policies.

38. The representative from the ASEAN Secretariat expressed the view that even if inputs for the preparation of the Fishery Statistical Bulletin of Southeast Asia could not be provided by the Member Countries in a timely manner, SEAFDEC should consider facilitating the dissemination of certain fishery statistics through its website, based on available information in the online database which SEAFDEC had already developed.

39. Regarding the program on **“Activities Related to Climate Change and Adaptation in Southeast Asia with Special Focus on the Andaman Sea”**, the Committee Member for Myanmar informed the Committee that his country supports the activities and would actively participate in the program’s forthcoming activities.

40. As for the program on “**Strengthening SEAFDEC Network for Sustainable Fisheries and IUU Fishing Related Countermeasures**”, the Committee Member for Vietnam suggested that SEAFDEC should consider enhancing its cooperation with the ASEAN Tuna Working Group to avoid duplication of efforts, considering that the Working Group focuses on trade promotion of tuna and private participation by enhancing the international competitiveness of the ASEAN tuna products and private sector’s involvement. However, since some Member Countries are not members of the RPOA-IUU, the Committee Member for Vietnam also suggested that SEAFDEC should consider disseminating relevant information that have emanated from its discussions with the RPOA-IUU Secretariat, to the Member Countries especially information related to IUU fishing vessels.

41. In addition, the Committee Member for Myanmar informed the Committee that Myanmar has planned to install Vessel Monitoring System (VMS) on its fishing vessels. He also expressed the view that VMS could be more effective than the Global Positioning System (GPS) since the former compared to the latter, could monitor not only IUU fishing vessels but also natural hazards, *e.g.* storms, of which the information could be immediately disseminated to the fishers.

42. The Committee took note of the information dissemination activities under this program which had been conducted in an *ad-hoc* manner and could be different from those under the Program on “**Center-wide Information Network**” which are routine activities. Moreover, while considering that some activities of this program could be duplicating other SEAFDEC programs, the Committee suggested that coordination among the various project activities implemented by SEAFDEC should be enhanced to avoid any duplication of efforts.

43. The Committee was also informed on the compilation of the results of tuna stock assessment in the Western and Central Pacific Ocean based on the analysis at the 7th Scientific Committee of the Western and Central Pacific Fisheries Commission (WCPFC). Results of the analysis had been used as reference during the Special Tuna Meeting convened by SEAFDEC in September 2011 in Songkhla, Thailand to promote importance of the stock assessment to the relevant tuna-producing countries in the WCPFC area such as Indonesia, the Philippines, Thailand and Vietnam. In this connection, SEAFDEC was encouraged to assist these countries and to come up with synthesized information on and stock assessment of tuna fishery resources in the Southeast Asian region.

- **Training Department**

44. With regards to the Program on “**Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2**”, the Committee was requested to consider the planning activities that could maximize the utilization of the M.V. SEAFDEC 2. In this connection, the Committee Member for Vietnam informed the Committee that the detailed 5-year plan of Vietnam to conduct a survey of small pelagic species using the M.V. SEAFDEC 2 had been proposed, but due to unforeseen circumstances especially the flooding situation in Thailand, the mission team from TD was unable to visit Vietnam to finalize the said plan. On the other hand, the Committee Member for Myanmar informed the Committee that an inshore fishery resource survey had been conducted in the waters of Myanmar using the M.V. SEAFDEC 2, and requested TD to provide the analysis of the data collected during the said survey.

45. The Committee Member for Japan expressed a concern regarding the low usage of the M.V. SEAFDEC 2 which could affect the conduct of collaborative projects in the region. In this connection, he encouraged the other Member Countries to make full use of the vessel especially in conducting surveys and exploration activities to enable the countries to compile valuable data that are useful for the analysis of the respective countries’ fishery resources.

46. For the Program on **“Deep Sea Fisheries Resources Exploration in the Southeast Asia”**, the Committee Member for Singapore sought clarification on the rationale of this program, specifically drawing the attention of the Committee to the priority of such activity which had been reflected by the Member Countries in the survey as part of SEAFDEC Review Exercise. In response, SEAFDEC/TD informed the Committee that the cruises for deep sea fishery resource surveys had been integrated with other survey activities to maximize resources use. The Committee was also informed that continued activities under this program could secure the funding support for the optimum utilization of the M.V. SEAFDEC 2. The Committee Member for Myanmar informed the Committee that although activities on deep sea fishery resource exploration has not yet been conducted in Myanmar, such activities could be explored in the near future and requested SEAFDEC to provide relevant information to the Department of Fisheries of Myanmar on the results of the deep sea fisheries resource exploration activities conducted by TD, for its reference.

47. Moreover, the Committee was informed that one of the objectives of deep sea exploration activities is to come up with a picture of the potential deep sea fishery resources in the Southeast Asian region considering that almost 50% of the sea areas in the region are deep seas. In spite of such situation, limited activities on deep sea fisheries have been conducted in the region. More particularly, since economically-important species in the deep sea areas such as the purpleback flying squid has not been exploited, appropriate technologies should be developed by SEAFDEC based on the results of its exploration activities, to harvest such resources in a sustainable manner.

48. The Committee was also informed that SEAFDEC in collaboration with the research vessel of the National Fisheries University of Japan, the R.V. Koyo Maru has been conducting exploration activities to study the deep sea resources in the region. Currently, the study focused on the underwater sea mounts in Philippine waters involving researchers from the Philippine Bureau of Fisheries and Aquatic Resources.

49. Regarding the program on **“Development of Regional Database for Fishery Management”**, the Committee Member for Myanmar requested TD to also provide HRD training on database development and processing.

50. For the program on **“Promotion of Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management”**, the Committee Member for Vietnam suggested that in order to optimize resources and avoid duplication of efforts in implementation of the activities, especially on alternative livelihood and gender issues, SEAFDEC should consider collaborating with international organizations such as FAO for its Regional Fisheries Livelihood Programme (RFLP) which is being carried out in some Member Countries of SEAFDEC. Furthermore, the Committee also requested SEAFDEC to support the activities on capacity building to enhance the knowledge of fisheries officers of the Member Countries especially on the concept and theoretical framework of co-management and rights-based fisheries for fisheries resource management, and to disseminate the outputs of the program to the Member Countries.

51. With regards to the program on **“Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement”**, the Committee Member for Thailand requested SEAFDEC to engage experts from the region to assist Thailand in improving the installation of artificial reefs (ARs) including the appropriate design of ARs and to evaluate the fishery resources before and after the installation of ARs. The Committee was also informed that MFRDMD had already published the outputs from an R&D activity on artificial reefs undertaken in Malaysia, with various objectives that include preventing trawlers from fishing in coastal areas and enhancing the fishery resources and habitats, among others.

52. Moreover, the installation of ARs that had been undertaken by the Government of Malaysia for resource enhancement included many designs that are suitable for all types of bottom substrates, while other agencies in the country also deployed ARs to serve as aggregating devices. Furthermore, Malaysia is also conducting a study on the effectiveness of ARs and on the impacts of ARs to the livelihood of fishers. In this connection, the Chief of MFRDMD suggested that local researchers and engineers from Malaysia who are working on ARs could be invited to serve as resource persons during the planned SEAFDEC workshop on resource enhancement. In addition, the Committee was informed that SEAFDEC plans to conduct a study on the assessment of ARs. Although such study could take a long time to undertake, experts from the region should be sourced for such study.

53. The Committee Member for the Philippines suggested that SEAFDEC should inform the Member Countries on the progress of the implementation of the program on Establishment and Operation of a Regional System of Fisheries *Refugia* in the South China Sea and Gulf of Thailand. In this connection, the Committee was informed that SEAFDEC in collaboration with FAO and the Bay of Bengal Large Marine Ecosystem (BOBLME) Project plans to organize a Workshop on Marine Protected Areas (MPA) including fisheries *refugia* where the FAO Guidelines on MPAs would be discussed. In this connection, SEAFDEC was encouraged to disseminate the outputs of the Workshop to the Member Countries for their information. In addition, the Committee Member for Myanmar requested SEAFDEC to extend the implementation of this activity to Myanmar.

54. In response to the request of Malaysia for capacity building with respect to observer program onboard fishing vessels, under the program on “**Improvement of Information Gathering System for IUU Fishing Related Countermeasures in the Southeast Asia**”, SEAFDEC/TD cited that collaboration with the World Wildlife Fund (WWF) and the National Oceanic and Atmospheric Administration (NOAA) had been established for the training fisheries officers and university graduates in Vietnam and Indonesia to enable them to observe onboard operations and collect data and information of tuna longline fisheries.

55. The Committee Member for Malaysia suggested that issues related to the FAO Global Record should be included in the program on “**Promotion on Fishing License, Boats Registration and Port State Measures**”. In this connection, the Committee was informed that during the proposed Regional Technical Consultation/Workshop on Fishing License and Boat Registration, SEAFDEC was requested to obtain a copy of the FAO Expert Consultation Report on FAO Global Record on Fishing Vessels for dissemination to the Member Countries as well as with relevant organizations and stakeholders to facilitate sharing of information.

56. In this connection, the Committee requested SEAFDEC to consider conducting capacity building for the Member Countries to make them ready for the implementation of the Port State Measures. The Committee Member for Vietnam suggested that SEAFDEC should include catch certificate issues while conducting activities to enhance the capacity of Member Countries in addressing IUU fishing concerns. The Committee Member for Myanmar also informed the Committee that experts from European Commission had visited Myanmar in August 2011 to assess the country’s existing catch certification systems relevant to combating IUU fishing and to make sure that such systems are equivalent with the recognized international practices. In addition, he also informed the Committee that Myanmar would take part in future training activities on combating IUU fishing as well as on other relevant workshops, and requested SEAFDEC to work closely with RPOA-IUU Secretariat and other organizations about this matter.

57. The Committee Member for the Philippines informed the Committee that in relation to the implementation of the EC regulation on IUU fishing, the EU has conducted an audit in the Philippines to evaluate the implementation on EC regulations on IUU fishing in the country. Considering the significant recommendations made from such audit, he suggested that the

country evaluation reports compiled by EU should be used as reference in addressing IUU fishing activities in the region.

58. For the program on **“Human Resource Development for Sustainable Fisheries”**, the Committee Member for Malaysia while recognizing the importance of human resources development for sustainable fisheries specifically on Ecosystem Approach to Fisheries (EAF), suggested that TD should continue to conduct the training program on EAF to promote better understanding on the concept of EAF in the region. However, since the EAF concept is new to the region, he also suggested that TD should conduct a pilot study on the application of EAF before promoting the said concept. In this regard, the Committee was informed that the training to be conducted by TD in November 2011 is aimed at introducing the concept of EAF to all stakeholders especially to those who have active role in disseminating the information on EAF, and the participants of the training would include representatives from the Member Countries as well as from relevant organizations and stakeholders.

- **Marine Fisheries Research Department**

59. While supporting the programs of MFRD on **“Chemical and Drug Residues in Fish and Fish Products in Southeast Asia: Biotoxins Monitoring in ASEAN”** and **“Utilization of Freshwater Fish for Value-added Products”**, the Committee Member for Myanmar informed the Committee that Myanmar is conducting a survey on biotoxins which would be completed in 2012 and that the report would be disseminated after the completion of the survey. In addition, Myanmar is upgrading its monitoring system with particular reference to traceability and that the country would participate in the planned Workshop to be organized by MFRD on this issue.

- **Marine Fishery Resources Development and Management Department**

60. On the **“Tagging Program for Economically-important Pelagic Species in the South China Sea and Andaman Sea”**, the Committee noted that the recovery rate from the tagging activities conducted by MFRDMD had been about 1% for small pelagic and about 2% for large pelagic fish species. In this regard, the Committee suggested that MFRDMD should increase its efforts to be able to achieve higher recovery rates of the tagged fishes.

61. While noting that the data collected under the program on **“Research and Management of Sea Turtles in Foraging Habitats in the Southeast Asia Waters”** also included those for sharks and rays, the Committee suggested that the title of the program should be changed accordingly to take into consideration to the context of the program.

- **Aquaculture Department**

62. With regards to the program on **“Promotion of Sustainable and Region-oriented Aquaculture”**, the Committee Member for Myanmar expressed the appreciation of his Government to AQD for conducting research activities on mud crab hatchery operations in Myanmar.

63. While also reiterating the need to promote collaborative activities and regional technical cooperation specifically on stock assessment of selected aquatic species and on commercially-exploited aquatic species such as hilsa, Indian mackerel, sharks, tuna, sea cucumber, and sea horse among others, the Committee Member for Myanmar suggested that HRD programs on stock assessment should be conducted. He also requested AQD to provide technical assistance on the mariculture of sea bass, sea cucumber and sea horses as well as on other modern techniques for fish culture.

64. While commending SEAFDEC for the implementation of various activities in 2011, the Committee Member for Indonesia suggested that SEAFDEC should provide the overall timeline of the activities under each program to enable the Committee to monitor the implementation of the activities based on the timeline as planned. Moreover, SEAFDEC should modify the activities and harmonize the linkage of such activities with the SEAFDEC Program Framework. In addition, the representative from FAO/RAP suggested that the strategic direction of each program or project should also be indicated and linked to available resources.

65. In response, the Committee was informed that the modality of the programs would be improved based on SEAFDEC Program Framework to ensure that every program would fit into the framework.

- **Non-funded Programs**

66. The Committee agreed to remove the list of non-funded programs from the FCG/ASSP as recommended by the 19th ASEAN Sectoral Working Group on Fisheries (ASWGFi).

5.3 Other Programs

67. Considering the results of the other programs conducted by SEAFDEC (**Annex 9**), the Program Committee provided recommendations for the improvement of such programs.

68. For the **“Cetacean Research in Southeast Asian Waters: Cetacean Sighting Program”**, the Committee Member for Cambodia requested TD to compile the information on the identification of cetacean species found in the Southeast Asian waters and to disseminate such information to the Member Countries. In this regard, SEAFDEC/TD informed the Committee that training on the identification of cetacean species had been previously conducted for the Member Countries and that the initial outputs of this activity had already been published and would be disseminated to Member Countries for their information.

69. For the program on the **“Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Approaches”**, the Committee Member for Myanmar informed the Committee that a survey conducted in one area of the country had shown positive results. In this connection, he requested TD to consider expanding the HRD activities to the other coastal areas of the country.

70. With regards to the program on **“Safety at Sea for Small Fishing Boats”**, the Committee Member for Malaysia, while noting that the guidelines on safety at sea for small fishing boats have been published in the Thai language, requested that the guidelines should also be translated into other languages. In this connection, the Committee was informed that TD would consider developing the regional guidelines, which would take into consideration the outputs of the forthcoming ‘Regional Technical Workshop on Safety at Sea and Optimizing Energy Use for Small Fishing Boats’ in December 2011.

VI. PIPELINE PROJECTS AND EMERGING NEEDS FOR PREPARATION OF FUTURE PROJECT PROPOSALS

71. The Committee discussed and endorsed the pipeline projects and emerging needs for the preparation of future project proposals as shown in **Annex 10**.

72. Regarding the proposed program on **“Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management”**, which has been submitted to the Islamic Development Bank (IDB) in 2007 for funding, the Committee was informed that the IDB had communicated with the SEAFDEC Secretariat in early 2011 to revise the project proposal, while the representative from the ASEAN Secretariat also followed up with the IDB on

the status of the proposal. In this connection, the Committee was informed by the representative of the ASEAN Secretariat at this Program Committee Meeting that the proposal is expected to be officially approved for funding by the IDB in 2012. However, in order to complete the process of the official approval by IDB, the ASEAN Secretariat would coordinate with SEAFDEC Secretariat and the eligible participating countries to facilitate compliance with the remaining requirements for the project implementation in 2012.

73. For the program on **“Climate Change and its Impacts on Sustainable Fisheries and Aquaculture: Adaptation and Mitigation towards Food Security”**, the representative from the ASEAN Secretariat informed the Committee that the ASEAN-US Technical Assistance and Training Facility (AU-TATF) has agreed to support the conduct of a meeting tentatively in February 2012, as an initial activity to discuss and formulate the activities that would be undertaken under this program. However, the Committee was also informed that any financial support which the AU-TATF would provide for future activities would be subject to the outputs and recommendations from the initial meeting.

74. In this connection, the Committee Member for Myanmar informed the Committee that Myanmar has formed a new environment commission to assess the significant indicators that could determine the impacts of climate change especially in biology, habitats, migration, unseasonal disease occurrence, and aquaculture. Moreover, the Department of Fisheries of Myanmar has also mandated the various levels of the country’s fisheries sector to monitor sudden changes in fisheries resulting from climate change, and that Myanmar would be willing to participate in the regional activities under the program.

75. As for the program on **“Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand”**, the Committee was informed that the proposal was revised by SEAFDEC and submitted to UNEP in June 2011 to take into consideration the changes in the GEF funding component of the program. In this regard, the Member Countries were encouraged to submit their respective letters of endorsement to UNEP by the end of 2011 so that UNEP could submit the proposal to GEF for project approval. As the submission process for funding support from GEF has been prolonged for several years, the Committee requested the SEAFDEC Secretariat to follow-up the status of the project proposal with UNEP and to inform the Member Countries on the status of the proposal.

76. Regarding the program on **“Strategies for Trawl Fisheries By-catch Management”** which is supported by FAO/GEF with SEAFDEC as the regional facilitating unit and executing partner, the Committee was informed that in principle the program is now operational, and that the corresponding inception meeting would be conducted in early 2012.

VII. OTHER MATTERS

7.1 Southeast Asian State of Fisheries and Aquaculture (SEASOFIA)

77. The Committee noted the production of the State of Southeast Asian Fisheries and Aquaculture (SEASOFIA) which has been undertaken by SEAFDEC Secretariat in collaboration with all Departments as presented by the SEAFDEC Secretariat which appears as **Annex 11**. In this regard, the representative from FAO/RAP suggested that if the publication could be finished within six months but before the next COFI meeting, this could serve as very useful information to facilitate the preparation of the global review as this is expected to reflect a science-based analysis of the fisheries at the regional level. In addition, SEASOFIA could also support the development of the State of Fisheries and Aquaculture (SOFIA) by FAO as well as enhance the rationalization of fisheries information of the region which could be properly reflected in the global perspective.

78. Considering the possibility that similar synthesis is being prepared by FAO on the global level in the so-called ‘State of Fisheries and Aquaculture (SOFIA)’ while in the Asia-Pacific region a synthesis is also being done by APFIC in its ‘Status and Potential of Fisheries and Aquaculture in Asia and the Pacific’, the Committee requested SEAFDEC to consider developing this publication periodically and on a regular basis to provide reference for the other relevant initiatives at the regional and international levels. In response, the Committee was informed that this activity which is being supported by the JTF project would be completed in 2012. Meanwhile, the Committee Member for the Philippines informed the Committee that internal consultation would be conducted especially among the various offices of BFAR to review the draft document on SEASOFIA and the compiled comments would be sent back to SEAFDEC Secretariat by the end of December 2011, in order that the SEASOFIA could be published before the forthcoming SEAFDEC Council Meeting.

7.2 Expert Consultation on Effective Surveillance and Law Enforcement to Combat IUU Fishing

79. The Committee took note of the forthcoming event on **“Expert Consultation on Effective Surveillance and Law Enforcement to Combat IUU Fishing” (Annex 12)** which was presented by the National Coordinator for Indonesia. The said Expert Consultation to be organized by the Ministry of Marine Affairs and Fisheries of Indonesia from 5 to 8 December 2011 in Jakarta, Indonesia, is expected to come up with recommendations on effective surveillance and law enforcement to combat IUU fishing. Such information could be used as reference by policy making bodies as well as in improving compliance with regional and global laws and regulations related to fisheries management.

7.3 Program/Activities Structure

80. The Committee Member for Indonesia expressed the concern that there had been activities conducted by some Departments that are not tasked to carry out such activities based on their functions. He then suggested that these activities should be adjusted accordingly and delegated to appropriate Departments. Otherwise, such Departments could be renamed in accordance with their current activities. This concern should be raised for the consideration of the SEAFDEC Council during its Meeting next year.

81. The Committee Member for Indonesia also expressed the opinion that some activities which are of common interest to the Member Countries, such as tuna fisheries and IUU fishing should be grouped together in the report so that a clearer picture of the situation could be presented and properly understood. He also suggested that in order to avoid confusion and enhance clarity, the Program Committee Meeting could be restructured in such a way that reporting of the activities is grouped based on the program thrusts of SEAFDEC.

VIII. COOPERATION WITH DONORS, NON-MEMBER GOVERNMENT AND INTERNATIONAL/REGIONAL ORGANIZATIONS

82. The representative from FAO/RAP, *Dr. Simon Funge-Smith* expressed his appreciation to SEAFDEC for inviting FAO to the 34th Program Committee Meeting and to AQD as host, for the warm hospitality. He then informed the Committee on the status of the proposal for GEF funding on “Reduction of By-Catch Phase II” and that FAO looks forward to working closely with SEAFDEC in the implementation of this regional project as well as other activities of common interest between SEAFDEC and the BOBLME project. However, he viewed that the current streamlining structure of the SEAFDEC programs could still be based on inputs-driven and formulated in the form of projects rather than programs. He therefore encouraged SEAFDEC to consider re-arranging the projects into programs in order to facilitate possible funding support from other sources and organizations. The same should also apply with the activities undertaken by the countries at national level. In addition, he also suggested that SEAFDEC activities should

reflect a coherent regional program, particularly with respect to reporting of the program outcomes by conducting strategic planning of the program activities involving the Departments. He added that streamlining of the SEAFDEC programs in accordance with the 2011 Plan of Action would be crucial for the development of the plans of the Departments to be reviewed during the Program Committee Meeting, to ensure that relevant provisions of the Plan of Action are addressed accordingly. His statement appears as **Annex 13**.

83. The representative from the ASEAN Secretariat, *Ms. Pouchamarn Wongsanga* thanked SEAFDEC for inviting the ASEAN Secretariat to this Program Committee Meeting, and especially cited the progress of the efforts towards ‘Strengthening the ASEAN-SEAFDEC Strategic Partnership’. She recalled that since the establishment of the FCG in 1999 and the ASEAN-SEAFDEC Strategic Partnership in 2007, the ASEAN and SEAFDEC had enhanced the collaborative mechanism especially on the implementation of programs under FCG/ASSP from “Collaborative Projects” to “Strategic Collaborative Program”. She then stressed on the future perspectives of ASSP highlighting on the implementation of the Resolution and Plan of Action that were adopted in 2011. She added that the ASEAN Supporting Program on Sustainable Fisheries for Food Security (2011-2015) would be the platform of cooperation and partnership between the ASEAN and SEAFDEC under the ASSP, to enhance the contribution of the fisheries sector to the ASEAN Community Building in 2015, as well as ensure the sustainable development of the sector and promote better livelihoods of the people involved in fisheries. Her statement is shown in **Annex 14**.

IX. RECOMMENDATIONS OF THE THIRTY-FOURTH MEETING OF THE PROGRAM COMMITTEE

9.1 Adoption of Report of the Meeting

84. The Committee adopted the report of the Thirty-fourth Meeting of the SEAFDEC Program Committee on 16 November 2011, and mentioned that the Report would be submitted to the 44th Meeting of SEAFDEC Council for consideration and endorsement. As for the programs under the FCG/ASSP mechanism, the progress of the activities conducted in 2011 and the proposed activities for 2012 would also be reported to the Fourteenth Meeting of the FCG/ASSP.

9.2 Date and Venue of the Thirty-fifth Meeting of the Program Committee

85. The Chief of MFRD expressed his Department’s willingness to host the Thirty-fifth Meeting of the Program Committee in November 2012. However, considering the high cost of holding the Meeting in Singapore especially in terms of hotel accommodation, the Committee agreed that the venue of the Meeting would be in Thailand. While abiding with the decision of the Program Committee, the Committee Member for Singapore asked MFRD to coordinate with the SEAFDEC Secretariat in finalizing the schedule and related arrangements for the Meeting as well as the date and venue of the Meeting.

X. CLOSING OF THE MEETING

86. In his Closing Remarks, the Chairperson of the Program Committee thanked the Committee Members and participants for their active participation and contributions to the Meeting. He also thanked AQD for hosting the Meeting especially the outstanding hospitality extended to the participants. He assured the Committee that SEAFDEC would do its best to address the issues considered and to follow-up the recommendations under the program and non-program matters of this Meeting, and declared the Meeting closed. His Closing Remarks appears as **Annex 15**.



**EXECUTIVE SUMMARY OF THE FOURTEENTH MEETING OF FISHERIES
CONSULTATIVE GROUP OF THE ASEAN-SEAFDEC STRATEGIC PARTNERSHIP
(FCG/ASSP)**

The Fourteenth Meeting of Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) was held from 17 to 18 November 2011 in Manila, Philippines. The Meeting was co-chaired by the representative from Cambodia on behalf of the Chairperson of the ASEAN-Sectoral Working Group on Fisheries (ASWGFi) and the SEAFDEC Secretary-General. The Meeting provided views and recommendations for the efficient and effective implementation of programs, projects and activities under the FCG/ASSP Mechanism.

The Meeting noted the follow-up actions carried out by SEAFDEC in response to the directives given at the Thirteenth Meeting of the FCG/ASSP held in December 2010, the Forty-third Meeting of the SEAFDEC Council in April 2011, as well as at the meetings of the ASEAN bodies that discussed issues related to fisheries. Specifically with regards to CITES-related issues, SEAFDEC/MFRDMD has already submitted a three-year project on sharks and rays for funding support by the Japanese Trust Fund from 2012. Moreover, the ASEAN has planned to convene a meeting of the ASEAN Expert Group on CITES (AEG-CITES) in early 2012 to discuss relevant issues and prepare the ASEAN Member States for the forthcoming 16th Conference of Parties of the CITES.

Since it is expected that the proposal on “Enhancing Coastal Community Resilience for Sustainable Livelihood and Coastal Resources Management” would soon receive the official approval for funding support from the Islamic Development Bank (IDB), the ASEAN Secretariat was asked to coordinate with SEAFDEC Secretariat and eligible countries to complete the remaining processes for the implementation of the project in 2012 in order to facilitate eventual approval of the proposed project by IDB. For the effective implementation of the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020, the ASEAN Secretariat was requested to communicate with the “Plus Three” countries and other prospective funding sources to follow-up their commitment for possible support, and to explore possible ways of developing activities that would support the implementation of the Resolution and Plan of Action. In addition, the ASEAN-SEAFDEC Member Countries should prioritize the requirements spelled out in the Plan of Actions into short-, medium- and long-term plans/activities that could be implemented in respective countries. Meanwhile, in order to enhance the effectiveness of the activities of SEAFDEC that aim to combat IUU fishing in the region, SEAFDEC should continue to coordinate with the RPOA-IUU for the formulation and implementation of relevant programs to ensure that such programs would complement with those of the RPOA-IUU and avoid duplication of efforts.

The Meeting endorsed the progress and achievements of the programs implemented in 2011 under the FCG/ASSP and the programs proposed for 2012, as previously discussed and endorsed by the 34th Meeting of SEAFDEC Program Committee. More particularly, the 25 programs implemented in 2011 would be continued in 2012 except the Program on “ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020” which was successfully completed in 2011. Regarding the two pipeline projects proposed as new activities under the FCG/ASSP Mechanism for 2012, namely: 1) Climate Change and Its Impacts on Sustainable Fisheries and Aquaculture: Adaptation and Mitigation Towards Food Security; and 2) Enhance Coastal Community Resilience for Sustainable Livelihood and Coastal Resource Management, the representatives attending the Meeting were requested to bring back the proposals on these two projects to their respective national governments for consideration and endorsement at the forthcoming meeting of the ASWGFi

Furthermore, the new project on “Strategies for Trawl Fisheries By-catch Management” which would be supported by FAO/GEF with SEAFDEC as the regional facilitating unit and executing partner, should also be brought up during the next meeting of the ASWGFi for collaboration, implementation and incorporation into the FCG/ASSP programs. While noting the proposed organization of an initial consultation with the public and private sector by the ASEAN Secretariat with support from the AU-TATF, which aimed to discuss and recommend future activities that would be implemented under the program on “Climate Change and Its Impacts on Sustainable Fisheries and Aquaculture: Adaptation and Mitigation towards Food Security”, the Meeting recommended that any possible linkage of such program with the activities being undertaken under the ASEAN Multi-Sectoral Framework on Climate Change: Agriculture and Forestry towards Food Security (AFCC) should be clarified.

Considering that fishery resources in the region had deteriorated and that restoration of the resources would be necessary, SEAFDEC was requested to provide technical support in the resource rehabilitation efforts of depleted fishing areas in the region, *e.g.* installation/deployment of artificial reefs, establishment of Marine Protected Areas, promotion of the concept of fisheries *refugia*, deployment of fish enhancement devices, and for SEAFDEC to also enhance regional collaboration for the implementation of such activities. Moreover, a clear regional implementation plan should be put in place in order that such rehabilitation strategies could be effectively carried out.

On the need to conduct a review of the regional implications of EC Regulation 1005/2008 as expressed by the Meeting, sharing of information and experiences among countries in the region on the implementation of catch certification should be enhanced. The development of the ASEAN Catch Certification scheme should also be initiated but should be consistent with the EU Catch Certificate scheme. SEAFDEC was then requested to explore the possibility of incorporating the development of the ASEAN Catch Certification scheme into its existing relevant programs, and to organize a workshop to discuss the relevant issues. The ASEAN Member States should also convey this matter to the forthcoming meeting of the ASWGFi for consideration and support.

Regarding the “Outputs of the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020”, in addition to the adopted 2011 Resolution and Plan of Action, two volumes of the Conference Proceedings are being prepared for publication by SEAFDEC. Since the existing programs of SEAFDEC should be aligned with the 2011 Resolution and Plan of Action, some re-grouping or re-formulation in terms of broader aspects under the SEAFDEC Program Framework may have to be carried out taking into consideration important regional issues indicated in the Plan of Action and the revised programs should be incorporated into the FCG/ASSP Mechanism. SEAFDEC was also requested to assist the Member Countries in the implementation of the Resolution and Plan of Action.

With regards to the status of the concept proposals to support the implementation of the “ASEAN-SEAFDEC Cooperation in the Implementation of the ASEAN Integrated Food Security (AIFS) Framework”, the Meeting supported the organization by the ASEAN of initial activities in early 2012 such as the public-private sector consultation. The Meeting also took note of the progress of the activities under the ASEAN Fisheries Consultative Forum (AFCF) as reported during the 3rd AFCF Meeting on 26 April 2011 in Cambodia.

On the activities under the “ASEAN Shrimp Alliance (ASA)”, the representative from Vietnam suggested that the culture environment aspect under the “Animal Health and Welfare” in the ASA should be clarified and that guidance for implementation of this aspect should be proposed and discussed at the next meetings of ASA, considering that the aspect on “Animal Health and Welfare” has already been incorporated in the FAO Technical Guidelines on Aquaculture Certification.

With regards to the possible adjustment of the “Modality to Increase the Effectiveness of the FCG/ASSP Mechanism”, the SEAFDEC Secretariat in close coordination with the ASEAN Secretariat was requested to develop the necessary proposal with possible options to enhance the modality and increase the effectiveness of the FCG/ASSP Mechanism, taking into consideration the recommendations during this FCG/ASSP Meeting. The proposal should be submitted to the forthcoming meetings of the SEAFDEC Council and ASWGF_i for consideration and further guidance.

Notwithstanding financial considerations, the “Establishment of the Regional Center for Inland Fisheries Development” under SEAFDEC proposed by the Minister of Marine Affairs and Fisheries (MMAF) of Indonesia, received support from the Meeting as such establishment would help in promoting sustainable inland fisheries development in the Southeast Asian region, and could benefit the Member Countries, especially Lao PDR, Cambodia, and Myanmar.

Regarding the commendable initiative of SEAFDEC in preparing the “Southeast Asian State of Fisheries and Aquaculture” or SEASOFIA, SEAFDEC was encouraged to sustain the publication in the future. SEAFDEC was also requested to coordinate with FAO in order that the relevant issues and information of the Southeast Asian region contained in the SEASOFIA, could be reflected in the global State of Fisheries and Aquaculture (SOFIA) developed by FAO.

The full Report of the 14th Meeting of the FCG/ASSP was adopted on 18 November 2011.



REPORT OF THE 14th MEETING OF THE FISHERIES CONSULTATIVE GROUP OF THE ASEAN-SEAFDEC STRATEGIC PARTNERSHIP (FCG/ASSP)

Manila, the Philippines, 17-18 November 2011

I. INTRODUCTION

1. The Fourteenth Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) was organized in Manila, Philippines from 17 to 18 November 2011. The main discussion of the Meeting focused on the programs and activities implemented in 2011 and proposed for 2012 under the FCG/ASSP Mechanism as endorsed by the SEAFDEC Program Committee at its Thirty-fourth Meeting in 2011, the progress of other proposals implemented under the ASSP Framework as well as policy considerations on issues of importance to the fisheries sector of the ASEAN-SEAFDEC Member Countries. The Meeting was attended by representatives from the ASEAN-SEAFDEC Member Countries, the representative from the ASEAN Secretariat, and the SEAFDEC Secretary-General, Deputy Secretary-General and senior officials of the SEAFDEC Secretariat and Departments. The List of Participants appears as **Annex 1**.

2. The Meeting was Co-chaired by the representative from Cambodia, *Mr. Ing Try* on behalf of the current Chairperson of the ASEAN Sectoral Working Group on Fisheries (ASWGF) and by the Secretary-General of SEAFDEC, *Dr. Chumnarn Pongsri*. The Co-chair for the ASEAN welcomed the participants and declared the Meeting open.

II. ADOPTION OF THE AGENDA

3. The Agenda which appears as **Annex 2** was adopted.

III. FOLLOW-UP ACTIONS TO THE DIRECTIVES GIVEN AT THE MEETINGS OF SEAFDEC COUNCIL AND ASEAN BODIES RELATED TO FISHERIES

3.1 Follow-up Actions to the Directives Given at the Forty-third Meeting of the SEAFDEC Council and the Thirteenth Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP)

4. The Meeting was informed on the follow-up actions undertaken by SEAFDEC in response to the directives given by the SEAFDEC Council during its 43rd Meeting held on 4-8 April 2011 and the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) during its 13th Meeting on 3-4 December 2010. The corresponding document appears as **Annex 3**.

5. The representative from Thailand requested SEAFDEC to consider conducting a study on the impacts of the massive amount of freshwater flowing into the coastal and marine environments as a result of the flooding situation in Thailand, particularly the impacts on fishery resources and fishing activities. Meanwhile, the use of teleconferencing facilities which have already been initiated by the Department of Fisheries of Thailand should also be promoted to foster closer communication and coordination between SEAFDEC and the Member Countries.

6. With regards to the issues related to the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Meeting was informed that the SEAFDEC Marine Fishery Resources Development and Management Department (MFRDMD) has already submitted a three-year project proposal on sharks and rays for funding support from the Japanese Trust Fund starting in 2012. In addition, the representative from the ASEAN Secretariat also informed the Meeting that ASEAN is planning to convene a Meeting of the ASEAN Expert Group on CITES (AEG-CITES) in early 2012 to discuss the relevant issues and prepare the ASEAN Member States for the forthcoming 16th Conference of Parties of the CITES.

3.2 Follow-up Actions to the Directives Given at ASEAN Bodies Related to Fisheries

7. The representative from the ASEAN Secretariat presented the follow-up actions in response to the directives given at meetings of the ASEAN Bodies Related to Fisheries from October 2010 to October 2011, as well as the progress of the collaborative activities as shown in **Annex 4**. These included the Policy on Fisheries and ASEAN Community Building, the ASEAN Policy and Cooperation in Fisheries, the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020, progress of the ASEAN-SEAFDEC collaborative activities, endorsement of the new initiatives under the FCG/ASSP (five renewed projects) in 2011, and the ASEAN Cooperation with Dialogue Partners including the ASEAN Plus Three Project on the Promotion of Sustainable Aquaculture and Resource Enhancement in Southeast Asia to be implemented by SEAFDEC from 2010-2014 with financial support from the Government of Japan, ASEAN-IDB and ASEAN-US.

8. The Meeting noted the potential support from the ASEAN dialogue partners to the activities of SEAFDEC specifically for the proposal that aimed to “Enhance Coastal Community Resilience for Sustainable Livelihood and Coastal Resource Management”, which is expected to officially get the approval for funding by the Islamic Development Bank (IDB). However, to facilitate the official approval by the IDB, the ASEAN Secretariat should coordinate with the SEAFDEC Secretariat and the eligible countries to complete the remaining processes for this project to be implemented in 2012.

9. The representative from Singapore expressed the appreciation to the Government of Japan for the support extended to SEAFDEC in the development of various activities that support the implementation of the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020, which was adopted during the ASEAN-SEAFDEC Conference in June 2011. The representative from the ASEAN Secretariat was then requested to communicate with the other Plus Three Countries to explore the possibility of supporting the activities that would enhance the implementation of the 2011 Plan of Action.

10. The representative from Thailand also recommended that the ASEAN-SEAFDEC Member Countries should prioritize the requirements in the 2011 Plan of Action for implementation as short-, medium-, and long-term plans/activities. Moreover, the ASEAN Secretariat should also seek funding for the program and activities that support the implementation of the 2011 Resolution and Plan of Action.

11. With regards to issues on Illegal, Unreported and Unregulated (IUU) fishing and on the progress of the activities undertaken by the RPOA-IUU, the representative from Singapore encouraged SEAFDEC to continue coordinating with the RPOA-IUU in the formulation and implementation of programs that would address the relevant issues and for SEAFDEC to ensure that its programs related to combating IUU fishing complement with those of the RPOA-IUU to avoid any duplication of efforts.

IV. PROGRAMS UNDER THE FISHERIES CONSULTATIVE GROUP OF THE ASEAN-SEAFDEC STRATEGIC PARTNERSHIP (FCG/ASSP) FOR THE YEAR 2011-2012

4.1 Summary Report on the Programs under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) for the Year 2011-2012

12. The Collaborative Programs under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) for 2011-2012 were reviewed by the 34th Meeting of SEAFDEC Program Committee held in Manila, Philippines from 14 to 16 November 2011. The 14th Meeting of the FCG/ASSP endorsed the progress and achievements of the programs implemented under the FCG/ASSP in 2011 and the programs proposed for 2012, which have been summarized and previously discussed and endorsed by the 34th Meeting of SEAFDEC Program Committee.

13. The Meeting noted that 25 FCG/ASSP programs implemented in 2011 would be continued in 2012 except the Program on “ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020” which was successfully completed in 2011, and the two pipeline projects which were proposed for 2012 under the new FCG/ASSP programs, namely: 1) Climate Change and Its Impacts on Sustainable Fisheries and Aquaculture: Adaptation and Mitigation Towards Food Security; and 2) Enhance Coastal Community Resilience for Sustainable Livelihood and Coastal Resource Management. The Meeting therefore asked the country representatives to bring back the proposals to their respective national governments for consideration and endorsement at the forthcoming meeting of ASWGFi.

14. While taking note of the new project on “Strategies for Trawl Fisheries By-catch Management”, which would be supported by FAO/Global Environmental Facility (GEF) with SEAFDEC as the regional facilitating unit and executing partner, the Meeting cited that such project should also be brought up at the forthcoming meeting of the ASWGFi for collaboration, implementation and incorporation into the FCG/ASSP program.

15. The Meeting also noted the recommendation of the 34th Meeting of the SEAFDEC Program Committee to remove the non-funded programs from the list of FCG/ASSP programs as recommended by the 19th ASWGFi. The summary of the recommendations from the 34th Meeting of SEAFDEC Program Committee appears as **Annex 5**.

4.2 Discussion

16. The representative from Singapore sought clarification on the three program concept notes to support the implementation of the ASEAN Integrated Food Security (AIFS) Framework, which had been consolidated into one program on “*Climate Change and Its Impacts on Sustainable Fisheries and Aquaculture: Adaptation and Mitigation towards Food Security*”, specifically on whether the consolidated proposal has been circulated and referred to the Member Countries. In response, the representative from the ASEAN Secretariat informed the Meeting that the program proposal has been disseminated during the 34th Meeting of the SEAFDEC Program Committee. The Meeting was also informed by the ASEAN Secretariat that an initial consultation with the public and private sector would be organized by the ASEAN Secretariat with support from the ASEAN-US Technical Assistance and Training Facility (AU-TATF) in order to discuss and recommend future activities to be implemented under this program. The representative from Singapore further recommended that as activities to address issues on climate change are also being carried out by the ASEAN Multi-Sectoral Framework on Climate Change: Agriculture and Forestry towards Food Security (AFCC), a clear linkage should be made between this program and the activities being undertaken under the AFCC framework.

17. Recognizing that SEAFDEC has undertaken several programs focusing on the exploration of under-utilized resources (*e.g.* deep sea areas), the representative from Thailand raised the concern that fishery resources in the region had deteriorated and that restoration of the resources is necessary. SEAFDEC was therefore requested to provide technical support in resource rehabilitation efforts of depleted fishing areas, and to enhance regional collaboration on such activities. Specifically, such efforts could involve the installation/deployment of artificial reefs, establishment of Marine Protected Areas, application of the concept of fisheries *refugia*, deployment of fish enhancement devices. In order to effectively carry out these rehabilitation strategies, a clear regional implementation plan should also be put in place.

18. In relation to combating IUU fishing in the region, the representative from Thailand also informed the Meeting that Thailand had recently conducted a review and assessment after the first year implementation of the EC Regulation 1005/2008, including catch certification. Recognizing that the EC Regulation has both positive and negative impacts to the countries' fisheries as well as fish trade, a review on the regional implications of the EC Regulation in the region is deemed necessary. In addition, since many countries had experiences in the implementation of catch certification, sharing of information and experiences among countries would be very useful. Furthermore, the possibility of developing the ASEAN Catch Certification should also be explored.

19. The representative from Singapore supported the development of the ASEAN Catch Certification scheme which should be consistent with the EU Catch Certificate, as this is envisaged to support the ASEAN intra-regional trade as well as trade with countries outside the region. This view was also shared by Vietnam and the Philippines. In addition, the results of the evaluation could serve as basis for the formulation of a common catch certification scheme. The Meeting therefore requested SEAFDEC to explore the possibility of incorporating this requirement into its existing relevant programs, and that the Member Countries should convey this concern to the forthcoming meeting of the ASWGFi for consideration and support.

20. The representative from Thailand further suggested that SEAFDEC should organize a workshop to facilitate the sharing of information and experiences, and the development of the ASEAN Catch Certification scheme. The representative from Vietnam added that evaluation and assessment of the impacts of the EU Regulation 1005/2008 to small-scale fisheries in the Member Countries should also be carried out during this workshop. The representative from Singapore also cited that the results of this workshop could serve as inputs in developing the process of conveying the specificities of fisheries in the region to the EU.

V. PROGRESS OF THE PROPOSALS IMPLEMENTED UNDER THE ASEAN-SEAFDEC STRATEGIC PARTNERSHIP (ASSP)

5.1 Outputs from the ASEAN-SEAFDEC Conference

21. The Meeting was informed on the outputs of the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 (**Annex 6**), specifically on the preparation of the Volume I: Conference Proceedings which would be published by the SEAFDEC Secretariat by January 2012. The Meeting was also informed on the preparation of the Volume II: Technical Proceedings of the Conference which is under way although publication of this volume could take longer than expected in view of the time required in compiling the technical inputs.

22. The Meeting was also informed that although there had been no new activities initiated to directly address the 2011 Resolution and Plan of Action, the existing programs undertaken by SEAFDEC have already been aligned with the Resolution and Plan of Action. Nevertheless, such programs would be further re-grouped and reformulated in line with the broader aspects of the

SEAFDEC Program Framework, while also considering the important regional issues as indicated in the Plan of Action.

23. Furthermore, the Meeting requested SEAFDEC to assist the Member Countries in the implementation of the 2011 Resolution and Plan of Action, and for the new programs to be incorporated under the FCG/ASSP program framework.

5.2 ASEAN-SEAFDEC Cooperation in the Implementation of the ASEAN Integrated Food Security (AIFS) Framework

24. The Meeting noted the progress of the status of the concept proposals that were developed and proposed by SEAFDEC to support the implementation of the ASEAN Integrated Food Security (AIFS) Framework as reported by the representative from the ASEAN Secretariat. Moreover, the Meeting was also informed that the public-private consultation as initial activities which would be supported by the AU-TATF, is planned to be organized in early 2012.

5.3 ASEAN Fisheries Consultative Forum (AFCF)

25. The Meeting took note of the progress of the activities under the ASEAN Fisheries Consultative Forum (AFCF) as of the 3rd AFCF Meeting convened on 26 April 2011 in Siem Reap, Cambodia, which was presented by the representative from Indonesia as the Interim Secretariat of the AFCF (**Annex 7**).

5.4 ASEAN Shrimp Alliance (ASA)

26. The Meeting noted the progress of the activities under the ASEAN Shrimp Alliance (ASA) which has Thailand as the Lead Country (**Annex 8**). During the discussion, the representative from Vietnam suggested that the culture environment aspect under the “Animal Health and Welfare” in the ASA should be elaborated in detail. Specifically, such aspect should be clarified with more guidance for implementation which should be raised at the next meetings of ASA considering that the aspect of “Animal Health and Welfare” has already been included in the FAO Technical Guidelines on Aquaculture Certification.

VI. POLICY CONSIDERATION ON IMPORTANT ISSUES

6.1 Modality to Increase the Effectiveness of the FCG/ASSP Mechanism

27. Considering that the collaborative mechanism between ASEAN and SEAFDEC was initiated since 1999 as the ASEAN-SEAFDEC Fisheries Consultative Group (FCG) Mechanism and later on strengthened and formalized as the ASEAN-SEAFDEC Strategic Partnership (ASSP), the Meeting took note of the initial proposal of the SEAFDEC Secretariat on the need to improve the modality to increase the effectiveness of the FCG/ASSP Mechanism in the future (**Annex 9**).

28. Since the initial proposal for adjustment of the modality to increase the effectiveness of the FCG/ASSP Mechanism should be proposed for consideration and guidance of the SEAFDEC Council and the ASWGF, the Meeting provided the following recommendations, which should be taken into consideration in the development of the final proposal:

- Although the programs under the FCG/ASSP Mechanism have been scrutinized at the SEAFDEC Program Committee Meeting, and considering that the same country representatives may attend the subsequent FCG/ASSP Meeting, presentations on the progress and proposed programs to be endorsed at the FCG/ASSP Meeting should be

made in a concise manner, but detailed enough to allow deliberation at the FCG/ASSP forum.

- The appropriate timing for the conduct of the FCG/ASSP Meeting should be revisited, whether the Meeting should be held back-to-back with the PCM, back-to-back with the Council Meeting or separately organized.
- The agenda of the FCG/ASSP Meeting should be reviewed and revised to make it more effective and fulfill the TOR of FCG/ASSP. The SEAFDEC Secretariat could propose the new agenda for the next meeting and circulate to Member Countries for consideration.

29. The Meeting then requested the SEAFDEC Secretariat, in close coordination with the ASEAN Secretariat, to develop a proposal with possible options to enhance the modality and increase the effectiveness of the FCG/ASSP Mechanism. Such proposal should be submitted to the forthcoming meetings of the SEAFDEC Council and the ASWGF_i for consideration and guidance.

6.2 Proposed Establishment of Regional Center for Inland Fisheries Development

30. The Meeting took note of the proposal made by the Minister of Marine Affairs and Fisheries (MMAF) of Indonesia during the Ministerial Session of the 2011 ASEAN-SEAFDEC Conference to establish a Regional Center for Inland Fisheries Development under SEAFDEC (**Annex 10**). The Meeting also noted the steps that should be undertaken by Indonesia to proceed with the proposal through appropriate SEAFDEC mechanism and to seek policy recommendations from the SEAFDEC Council during its forthcoming meeting in 2012. In addition, the Meeting was informed that the Secretary-General of SEAFDEC visited Indonesia to make a courtesy call to the MMAF of Indonesia and observed the proposed site of the Center in Palembang. This was followed by trips of the SEAFDEC mission to relevant agencies in Cambodia dealing with inland fisheries such as the Mekong River Commission Secretariat/Fisheries Programme, the WorldFish Center, and the Fisheries Administration/Inland Fisheries Research and Development Institute to gather information on inland fisheries initiatives that have been undertaken by these agencies. In this regard, the SEAFDEC Secretariat was requested to circulate the report of the mission to all Member Countries for their consideration and reference.

31. While supporting the proposal to establish a new Regional Center for Inland Fisheries Development, the representative from Malaysia raised the concern on the possible additional financial implications to SEAFDEC. In response, the Meeting was assured that financial support for the operations of the proposed Department would not create additional burden on the contribution of the Member Countries to SEAFDEC through the Minimum Regular Contribution, as the host country would be responsible for the costs of operating the new regional center.

32. The representative from Japan cited that the proposal made by Indonesia could provide a good opportunity for the Member Countries to seek the best way to promote sustainable inland fisheries development. In addition, the representative from Lao PDR also expressed the appreciation for putting forward the proposed establishment of the Regional Center as this would benefit the Member Countries, especially Lao PDR, Cambodia and Myanmar.

33. While expressing the concern that the programs under the proposed Department should be distinguished from and not to overlap with those already existing in the SEAFDEC Departments and other relevant organizations, the Meeting recommended that the proposal for the establishment of the new Department should be circulated to the Member Countries and

SEAFDEC Departments one to two months prior to the forthcoming SEAFDEC Council Meeting.

6.3 Other Matters

34. The representative from Singapore commended the initiative undertaken by the SEAFDEC Secretariat in collaboration with Departments in the preparation of the “Southeast Asian State of Fisheries and Aquaculture” or SEASOFIA, which is a very useful initiative as it reflects the state of fisheries in the region. SEAFDEC was then encouraged to continue such effort in the future. The representative from Thailand also expressed strong support to the production of the SEASOFIA and requested the SEAFDEC Secretariat to coordinate with FAO so that the issues and information of the Southeast Asian region contained in the SEASOFIA could be reflected in the global State of Fisheries and Aquaculture (SOFIA) developed by FAO.

7. ADOPTION OF RECOMMENDATIONS AND REPORT OF THE MEETING

35. The Meeting adopted the Report of the 14th Meeting of the FCG/ASSP on 18 November 2011.

36. The results of the Meeting would be submitted to the higher authorities of the ASEAN and SEAFDEC for consideration, endorsement and appropriate action.

8. CLOSING OF THE MEETING

37. The Co-chair for the ASEAN expressed his gratitude to the ASEAN-SEAFDEC Member Countries for the comments and suggestions made during the Meeting, particularly in enhancing the effectiveness of the FCG/ASSP Mechanism. He also thanked the staff of the SEAFDEC Aquaculture Department (AQD) for their excellent preparation and arrangements for the Meeting, and declared the Meeting closed.

38. The representative from Indonesia, on behalf of the Meeting participants, then conveyed his appreciation to the Government of the Philippines, AQD and the secretariat of the Meeting for their support and arrangement that allowed the Meeting to come up with fruitful results.



IMPLEMENTATION OF THE 2011 RESOLUTION AND PLAN OF ACTION AND WAY FORWARD

I. INTRODUCTION

The outputs of the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People 2020: Adaptation to a Changing Environment” in June 2011 included the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020 or the so-called “2011 Resolution and Plan of Action”, which were adopted by the ASEAN-SEAFDEC Member Countries.

As a follow-up, the 2011 Resolution and Plan of Action would be implemented in different layers of activities at local, national and regional levels. While the Member Countries would implement local and national activities, SEAFDEC would focus on regional activities to support the Member Countries in the implementation of the 2011 Resolution and Plan of Action.

With the main objective of enhancing the awareness of the ASEAN-SEAFDEC Member Countries, relevant agencies/institutions/organizations and donor agencies on the 2011 Resolution and Plan of Action, the Inception Workshop on Follow-up Activities to the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 was organized on 4-5 July 2011 in Bangkok, Thailand. The Workshop also reviewed the existing activities/initiatives undertaken in the Southeast Asian region in line with the Resolution and Plan of Action; and facilitated the planning and implementation of activities by relevant agencies, institutions and organizations at various levels. During the Workshop, the participants identified the priority issues to be addressed in ensuring sustainable fisheries development and enhancing the contribution of fisheries to food security in the Southeast Asian region, which have been summarized and shown in **Annex 1**.

During the 34th Meeting Program Committee in November 2011, the Committee was informed that the SEAFDEC programs have been linked accordingly with the provisions in the 2011 Resolution and Plan of Action, and noted the progress made by some countries in the implementation of the 2011 Resolution and Plan of Action.

- Malaysia conducted a national workshop on the 2011 Resolution and Plan of Action, the results of which included proposed project activities in line with the implementation of the 2011 Resolution and Plan of Action, and which would be submitted to the Government of Malaysia for funding support.
- Cambodia had translated the 2011 Resolution and Plan of Action into the Khmer language for wider dissemination and to enable the stakeholders to implement relevant activities at the national level. The progress of the activity would be reported to the Ministry of Agriculture and Forestry and other policy making bodies of the country.
- Myanmar will implement the 2011 Resolution and Plan of Action based on the prioritized areas of fisheries-related issues to support the promotion of sustainable fisheries, food security and food safety in line with the efforts at regional level.

Moreover, the Program Committee suggested that relevant activities at the national level should also be linked with the 2011 Resolution and Plan of Action, and in order to facilitate reporting of the implementation of the 2011 Plan of Action, SEAFDEC was asked to develop a format of the report highlighting on the activities implemented by the Member Countries. The objectives of this working paper therefore, are to report the progress of implementation of the 2011 Resolution and Plan of Action, and provide the suggested draft format of the report format on

implementation of the 2011 Resolution and Plan of Action for consideration by the SEAFDEC Council. The report format covers relevant provisions of the 2011 Resolution and Plan of Action which are deemed priority at the national level, the corresponding projects/programs to address such issues as well as recommendations for future development/improvement of the ASEAN-SEAFDEC Resolution and Plan of Action based on the perspectives from the implementation of activities at local/national level. The draft report format appears as **Annex 2**.

II. REQUIRED CONSIDERATION BY THE COUNCIL

The Council is requested to provide guidance on the implementation of the 2011 Resolution and Plan of Action by the Member Countries and SEAFDEC.

**SUMMARY OF THE PRIORITY ISSUES IDENTIFIED BY PARTICIPANTS¹
THAT SHOULD BE ADDRESSED TO ENSURE SUSTAINABLE FISHERIES AND
ENHANCE THE CONTRIBUTION OF FISHERIES TO FOOD SECURITY**

I. Marine/Coastal Fisheries

1.1 Planning and Information

- (1) Conduct of a regional training program and regular technical meeting to increase the number of people capable of interpreting national/regional data
- (2) Expand the coverage of data/information to include fishery labor dimensions (fishers)
- (3) Include import-export data on marine fishery products (where presently these are not cover because some Member Countries are unable to provide the data)
- (4) Incorporate ecological/environmental data into fishery data, in order to support national policy and planning
- (5) Provide information in the user-friendly format for decision-makers/stakeholders to easily understand such information
- (6) Provide technical assistance on the usage of GIS and HRD activities on spatial (zoning) planning
- (7) Improve the reliability of statistical data collection at landing sites

1.2 Fisheries Management

- (1) Develop regional guidelines on fishing license, boat registration and port state measure to combat IUU fishing
- (2) Develop common terminology on fishing vessel registration based on the global fishing record
- (3) Develop national database center (by Member Countries) on fishing vessel that kept history and its fishing activities to support regional database/mechanism to combat IUU fishing
- (4) Conduct awareness program for the fishery sector on the aspect of IUU fishing particularly to fishery managers (of the fishery authorities) and entrepreneurs/fishing communities
- (5) Promote market based management to combat IUU fishing and/or eco-labeling
- (6) Promote the application of good governance approach in fishery (e.g. co-management, right-based fisheries) in the region
- (7) Promote the importance of safety at sea at all levels through information dissemination and training programs
- (8) Encourage the sharing experiences based on local knowledge on fisheries management among countries in the region through training/workshop or available media
- (9) Encourage local government units to promote the use of by-catch devices by conducting on-site training programs to keep them aware on the significance of sustainable fisheries (e.g. use of JTED in addressing excessive catch of juvenile fish)
- (10) Create alternative means of livelihoods by supporting small-scale aquaculture especially on herbivorous species
- (11) Optimize socio-economic returns and food security for small-scale stakeholders through value addition and market promotion of the fishery products
- (12) Assess the fuel consumed by the fishing sector (vessels/gears) and carbon emitted by fishing boats, and identify and promote the use of alternative energy for fishing activities

¹ Inception Workshop on Follow-up Activities to the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 was organized on 4-5 July 2011 in Bangkok, Thailand

- (13) Develop regional guidelines for management of commercial marine fish species
- 1.3 Optimum Utilization of Fish and Fishery Products**
- (1) Apply hygienic practices to improve fish handling along the whole supply chain from landing to retail markets
 - (2) Develop consumer guidelines on good quality fish and fishery products through expert consultation
 - (3) Enhance cooperation among relevant authorities on health and quality concerns through Mutual Recognition Agreement
 - (4) develop regional guidelines on the employment practices in fish processing industries
- 1.4 Fish Trade**
- (1) Study supply chain (marketing channel) of fishery products and improve local fish marketing systems
 - (2) Promote community fish marketing system at the production sites (to improve income of the fishers)
 - (3) Establish market information network for fisheries in the region
 - (4) Conduct regular survey on consumer purchasing power and consumers' choice
 - (5) Develop regional guidelines for halal fishery products
- 1.5 Regional and International Policy Formulation**
- (1) Create common understanding through information exchange mechanism and establish strong common stand among Member Countries on international fisheries related-issues such as WTO fishery subsidies process, CITES, Convention on Biodiversity (CBD) process, etc., and identify the need for collaboration among Member Countries
- II. Inland Fisheries**
- 2.1 Planning and Information**
- (1) Improve information/statistics and better understanding on inland fisheries (current inland fishery statistics is underestimated)
 - Review, adopt and implement methodologies (*e.g.* in empowering of local people in wetland management through Tai-Baan research program and Salaphom initiatives in the Lower Mekong Basin) to enhance the collection and dissemination of inland fishery statistics/information, *e.g.* by involving local people and other stakeholders (*e.g.* private sector, NGOs, etc.) in data/information collection, which will be useful to improve management practices
 - Promote and enhance awareness of local people and stakeholders on the need to improve the livelihood (income benefit and food security)
 - Incorporating information from census, research, survey (fish consumption), and indigenous/local knowledge (such as habitat, bio-diversity, migration) with statistics data to provide more realistic figures and better understanding on inland fisheries
 - Develop simple indicators such as CPUE (taking into consideration EAF) for inland fisheries in order to get better picture on the status and trends of the fisheries
 - (2) Enhance awareness of public and private sector on the importance of inland fisheries (presently inland fisheries sub-sector is generally given lower priority compared to other development sectors)
 - Improve the presentation/dissemination of available data/information to policy makers and planners in an easily understandable form in order to be easily used for the development and implementation of activities in poverty alleviation and food security
 - Quantify the contribution from freshwater ecosystem services, including fishery and other activities, in terms of livelihood and economy benefits

- (3) Conserve habitats
 - Map vulnerable inland ecosystems that need to be conserved/protected (*e.g.* deep pools for preserving brooders especially during dry season) to ensure sustainable availability of resources, and establish mechanism (*e.g.* local system with support from government) for the protection/management of these vulnerable ecosystems

2.2 Fisheries Management

- (1) Enhance inland fisheries production
 - Improve technology/methodology to enhance the integration/harmonization of inland fisheries with other activities/sectors, *e.g.* rice field (need environmental-friendly agriculture technology), water management (reservoirs, irrigation-water flow scheme)
 - Study the capacity of fishing gears, in order to come up with basis for fisheries management
 - Develop and promote the use of environmental-friendly, selective gears/practices that are appropriate for inland fisheries (in relation to species and habitats)
 - Apply/enforce appropriate fisheries-related regulations, *e.g.* regulated gears, areas and seasonality, based on scientific information (*e.g.* spawning grounds, seasonality, and other factors affecting spawner and juvenile population) such as deep pools, dry season refuge)
 - Review the practicality/appropriateness of laws/regulations, taking into consideration the situation of fishing grounds, and demonstrate the benefit that could be derived from enforcing such laws/regulations to fisherfolk's income and livelihood in a long-term basis
 - Conduct study on the effectiveness of fish restocking program to natural habitats (stocking strategy, size, species, etc.) in terms of cost-benefit, resource enhancement taking into account the carrying capacity of the habitats
 - Promote inland aquaculture taking into consideration the natural geographical habitats and the availability of seedstocks and fish throughout the year
- (2) Co-management
 - Promote co-management for inland fisheries, and enhance participation of all stakeholders in protection and sustainable utilization of fishery resources
 - Promote alternative livelihood (*e.g.* eco-tourism, etc.) to reduce pressure and negative impacts from fishing activities to resources and the environment
- (3) Regional management
 - Enhance coordination among concerned countries and agencies (such as MRC, WWF) in research (including data collection, monitoring and evaluation) and management for transboundary freshwater ecosystems, *e.g.* Mekong River

2.3 Optimal Utilization, Post-harvest Practices and Trade

- (1) Utilization of trade of inland fishery products
 - Ensure year-round availability of fish and fishery products by improving post-harvest and preservation technologies (considering seasonal variation of production)
 - Improve the quality of traditional fish products to meet food security and safety requirements
 - Improve marketing and returns from fish and fishery products to fishers, *e.g.* development of value-added products

2.4 Regional and International Policy Formulation

- (1) Regional coordination and policy formulation
 - Establish regional center, specifically working on sustainable inland fisheries development (*e.g.* as department under SEAFDEC framework)
 - Enhance coordination among organizations/institutions working on issues relevant to inland fisheries

2.5 Cross-cutting Issues

- (1) Lack of expertise (experts) in inland fisheries (the bid difference among the various inland ecosystems (*e.g.* riverine, lake, floodplain, swamps) makes expertise in certain areas not applicable for other areas)
 - Develop more expertise in the areas/subjects on freshwater ecology/limnology, population dynamics, fisheries management, ecosystem services and valuation, at various levels (local, national and regional)
 - Seek cooperation with agencies that have the required expertise (*e.g.* MRC, WWF, Wetland alliance) to enhance HRD activities, specifically for inland fisheries
- (2) Climate change
 - Conduct proper/sufficient documentation on the effects of climate changes on inland fisheries
 - Study the influence of climate change on inland fisheries, taking into consideration available data from fisheries and non-fisheries agencies, and take appropriate measures to mitigate the impacts from climate change to inland fisheries

III. Aquaculture

3.1 Enhance the Role of Aquaculture in Rural Development

- (1) Conduct policy assessment to identify mechanisms, infrastructure that support socially equitable fish production/livelihood programs by government, NGOs and other relevant organizations
 - Review of existing policies
 - Set up the solutions
 - Craft guidelines

3.2 Inequitable Distribution of Opportunities and Benefits, Leaving Behind Small-scale Farmers

- (1) Adopt and implement the concept of community-based or cluster approach and or cluster approach and consequently to develop rural aquaculture by government and small-scale farmers
 - Disseminate knowledge and technologies

3.3 Compliance to Standards and Requirements of Importing Countries and Enhance the Quality of Local Aquaculture Products

- (1) Harmonize ASEAN guidelines on GAqP, come up with GAqP guidelines for high and low value species by ASEAN-SEAFDEC countries and other organizations
 - Categorize the scale of aquaculture based on market potential, quality-based, marketability

3.4 Farmers Not Fully Aware on Importance of Food Safety for Aquaculture Products

- (1) Promote the application of GAqP by government in partnership with private sector and farmers
 - Conduct intensive campaign on the importance of food safety and GAqP
 - Strengthen the capacity (financial and knowledge) of farmers to enable them to meet the standards
 - Encourage Member Countries to comply with FAO Guidelines on Aquaculture Certification

3.5 Fast-track the Search for Alternative Protein Source through R&D

- (1) Promote closer collaboration among Member Countries and R&D institutions and on-site training for farmers at all levels including small-scale farmers on efficient and healthy feeding management practices as well as cost-efficient and healthy feeding management by government and private R&D institutions and farmers
 - Facilitate information sharing, particularly on progress of research on alternative protein source and development of quality feeds-nutritious, cost effective, and less polluting

- 3.6 Aquatic Animal Disease which Remains a Problem**
- (1) Conduct capacity building for aquatic animal health by Government and private sector, and regional laboratories (*e.g.* AAHRI) and farmers
 - Conduct of on-site training and hands-on training
 - Conduct R&D on disease diagnostic, control and prevention
- 3.7 Importance of Biosecurity Especially in Domestication of Stocks**
- (1) Monitor closely at national and regional levels/surveillance of disease transmission should be linked to biosecurity and promote information sharing on pathogens transboundary movement by government and private sector, and regional laboratories (*e.g.* AAHARI) and farmers
 - Set up surveillance system
 - Establish national laboratories for fish disease
- 3.8 Address Poor Quality of Aquatic Seeds and Broodstocks**
- (1) More R&D efforts on domestication, selective breeding and other genetic improvement approaches to improve stocks by government and private sector hatcheries, research institutions and agencies and farmers
 - R&D on development of improved stocks
 - Technology verification
 - Transfer of technology
- 3.9 Long-term Breeding Program**
- (1) Set up program for exchange of genetic resources among Member Countries by regional organizations, government, NGOs and private sector
 - Establish network among Member Countries and regional organization on breeding program
 - Develop regional guidelines on exchanges of genetic resources (important however to strictly follow existing international guidelines)
 - (2) Enhance the capacity of hatchery operators to properly maintain stocks (emphasis on genetic management) at farm level by government and private sector hatcheries, research institutes
 - Set up standard guidelines for hatchery operators
- 3.10 Over Development of Aquaculture; Indiscriminate Aquaculture Practices**
- (1) Conduct more research to assess the effects of aquaculture on the environment by governments, NGOs, private sector and research institutes
 - Implement regulations on responsible management of aquaculture (*e.g.* GAqP, BMP)
 - Develop national regulation on licensing of aquaculture farms
 - Proper zoning of aquaculture sites
 - (2) Enhance knowledge of farmers on environment-friendly aquaculture practices by governments, NGOs, private sector, research institutes
 - Intensify information dissemination through IEC
- 3.11 Impacts of Climate Change on Aquaculture**
- (1) Develop capacity to conduct risk assessment (identify risk) and management by R&D organizations in collaborations with Member Countries
 - Research to assess the impacts of climate change on species (*e.g.* reproduction, survival and growth, tolerance to diseases)
- 3.12 Stocks/Strains Adaptable to Climate Change Need to be Developed**
- (1) Develop species and strains that are tolerant to changes in environmental condition (*e.g.* temperature/salinity fluctuations) by R&D organizations in collaboration with Member Countries
 - R&D on ecological and physiological aspects on target and candidate species and strains
- 3.13 Impacts of Aquaculture Management on Climate Change**
- (1) Assess and mitigate impacts of aquaculture management on environment by R&D organizations in collaboration with Member Countries

- Improve aquaculture engineering and design
- Mapping of aquaculture sites vulnerable to environmental changes (*e.g.* site selection)
- R&D on carbon footprints from aquaculture
- R&D to reduce greenhouse gas emission from aquaculture activities (*e.g.* promote use of alternative energy sources, utilization of mangroves)
- Training for all sectors (especially farmers) to increase their capacity to adapt to climate change

3.14 Gender Development

REPORT ON THE IMPLEMENTATION OF THE 2011 RESOLUTION AND PLAN OF ACTION

Country: _____

Period covered: from _____ to _____

Resolution no.	Relevant Plan of Action	Program/activities title	Duration	Lead agency and collaborating partners	Program description and expected outputs	Achievement and lesson learnt



REPORT OF THE INCEPTION WORKSHOP ON FOLLOW-UP ACTIVITIES TO THE ASEAN-SEAFDEC CONFERENCE ON SUSTAINABLE FISHERIES FOR FOOD SECURITY TOWARDS 2020

4-5 July 2011, Bangkok, Thailand

1. The Inception Workshop on Follow-up Activities to the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 was organized on 4-5 July 2011 in Bangkok, Thailand. The Workshop was participated in by the representatives from the SEAFDEC Member Countries, namely: Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand, and Vietnam as well as the members of the Regional Fisheries Policy Network (RFPN) at SEAFDEC. The Workshop was also attended by the SEAFDEC Secretary-General and Deputy Secretary-General, the officials of the SEAFDEC Secretariat and Departments, and representatives from regional/international organizations such as the Coastal Development Center (CDC) of Kasetsart University, Thailand; the Embassy of Sweden; Hokkaido University (Japan); INFOFISH, International Labour Organization (ILO) Regional Office (Thailand); Tokai University and the Research Institute of Humanity and Nature (Japan); University of Tokyo (Japan); and the World Wild Fund for Nature (WWF) Thailand. The List of Participants appears as **Annex 1**. The Workshop availed of the services of *Mr. Terry Clayton* to facilitate the smooth and efficient deliberations.

2. The Workshop aimed to enhance the awareness of the ASEAN-SEAFDEC Member Countries, relevant agencies/institutions/organizations and donor agencies on the Resolution and Plan of Action; review the existing activities/initiatives undertaken in the Southeast Asian region in line with the Resolution and Plan of Action; and facilitate the planning and implementation of activities by relevant agencies, institutions and organizations at various levels in line with the Resolution and Plan of Action to ensure that such activities are implemented in coordinated and harmonized manner.

I. OPENING OF THE WORKSHOP

3. The Secretary-General of SEAFDEC, *Dr. Chumnarn Pongsri* welcomed the participants to the Workshop and reiterated that during the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 in June 2011, the Resolution and Plan of Action were adopted by ASEAN-SEAFDEC Ministers and Senior Officials responsible of fisheries. These instruments are envisaged to serve as regional policy frameworks and priority actions to guide the ASEAN countries in moving towards sustainable development of fisheries and enhancing the contribution of fisheries to food security. The Workshop was also organized to discuss priority issues and gaps that should be addressed, taking into account the existing initiatives that have already been undertaken in the region. He then urged all participants to take active roles in providing views and inputs during the deliberations to pave the way for the implementation of the Resolution and Plan of Action towards the next decade. His Opening Statement appears as **Annex 2**.

II. BACKGROUND AND INTRODUCTION

4. The SEAFDEC Secretary-General, *Dr. Chumnarn Pongsri* expounded the background and the objectives of the Workshop emphasizing on the need to come up with prioritized actions that need to be undertaken in line with the Resolution and Plan of Action adopted during the ASEAN-SEAFDEC Conference. He also provided an introductory presentation of the concept of fisheries service in the government sector, which primarily aims to: i) ensure the availability of fish, and ii) enforce law and regulations to ensure sustainable development of fisheries. He also

highlighted on the three important sources of fish and fishery products, which are from i) capture fisheries, ii) aquaculture, and iii) import as well as the steps involved and the various aspects that should be taken into consideration to ensure the sustainable availability of fish. Summary of his introductory presentation appears as **Annex 3**.

III. ADOPTION OF THE AGENDA AND ARRANGEMENTS

5. The Meeting adopted the Agenda which appears as **Annex 4**.

IV. PRESENTATION ON EXISTING AND PLANNED ACTIVITIES/PROJECTS IN LINE WITH THE PLAN OF ACTION

6. The Workshop took note of the presentation made by the SEAFDEC Secretariat on the existing and planned activities/projects that have been undertaken in the region, *e.g.* by the respective countries, regional/international organizations including SEAFDEC, donor agencies, among others that are in line with the “Plan of Action” (**Annex 5**).

V. DISCUSSION ON PRIORITY AND GAPS AND DEVELOPMENT OF PROGRAMS TO ADDRESS THE PLAN OF ACTION

7. Taking into consideration the existing/planned activities in the region which are relevant to the Plan of Action, the Workshop was separated into three groups to deliberate on the three sub-sectors of fisheries, namely: i) marine/coastal fisheries; ii) inland fisheries; and iii) aquaculture. Under the respective groupings, priority areas and activities that should be undertaken in the implementation of the Plan of Action were discussed and recommendations were put forward. The outcomes of the group discussions appear as **Annex 6**, **Annex 7** and **Annex 8**, respectively.

8. In addition, the participants also provided their views on the priority issues that should be addressed to ensure sustainable development of fisheries and enhance the contribution of fisheries to food security. Their views were compiled and summarized in **Annex 9**.

VI. OTHER MATTERS

9. Representatives from regional/international organizations, institutions and the academe also provided their insights on the possible cooperation that could be developed with respect to the implementation of the Resolution and Plan of Action that were adopted during the recently concluded ASEAN-SEAFDEC Conference.

10. The representative from INFOFISH, *Ms. Fatima Ferdouse* expressed her appreciation to SEAFDEC for the invitation extended to INFOFISH to participate in the Inception Workshop. She noted that through the presentations and discussions, several areas of common interest between SEAFDEC and INFOFISH could be advanced, and INFOFISH is looking forward to cooperate in the implementation these areas of common interest in the future, in support to the implementation of the Resolution and Plan of Action.

11. The representative from WWF-Thailand, *Mr. Rattaphon Pitakthepsombat* thanked SEAFDEC for giving WWF the opportunity to take part in this Inception Workshop. He commended the Workshop for coming up with very useful information, specifically in the aspects of inland and marine fisheries, which could further contribute to ensuring the sustainable utilization of the resources. He looked forward to further cooperation and communication with SEAFDEC as well as with the other Workshop participants, in the implementation of future activities and in sharing of useful information especially in line with the new Resolution and Plan of Action.

12. The representative from Hokkaido University, *Prof. Katsutoshi Arai* presented the Two Kinds of JSPS-programs under the Faculty of Fisheries Sciences of Hokkaido University (**Annex 10**). The first program is the Asia Africa Science Platform Program (AASP) from 2011 to 2014, which aims to create high potential research hubs in selected fields within the Asian and African region, while fostering the next generation of leading researchers. Being undertaken in collaboration with various agencies/institutions in Asia and Africa more particularly in Southeast Asia, this program intends to invite a total of eight (8) researchers to undertake research in Japan on identified thematic areas. The second program is the Japan-East Asia Network of Exchange Students and Youths (JENESYS) Program. To be undertaken in 2011, the JENESYS Program aims to establish and expand the network of young and female researchers from the Asian countries.

13. The representative from Tokyo University, *Dr. Nobuyuki Yagi* presented the potential areas of cooperation between the ASEAN Member Countries through SEAFDEC and Tokyo University (**Annex 11**). He elaborated the Japan's policy and situation on Marine Protected Areas where targets were set to conserve by 2020 at least 17 percent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services. He also explained that in Japan there are more than 1,000 locations identified as Marine Protected Areas. As fisheries is the most significant activity in the coastal areas of the country, more than 90% of the MPAs are subjected to fisheries-related regulations, particularly through the Japanese fisheries cooperation under the community-based voluntary management scheme. In this regard, he informed the Workshop that Tokyo University is willing to extend assistance to the ASEAN Member Countries especially in the aspects of: i) conducting analysis of the socio-economic and biologic aspects of Asian fisheries (based on Japan's experience); and ii) exploring possible Japanese agencies as funding partners for large-scale projects on Artificial Reefs.

14. Representing the Research Institute for Humanity Nature (RIHN), *Dr. Satoshi Ishikawa* from Tokai University presented the concept of the Collaborative Project between SEAFDEC and RIHN on Coastal Area Capability Enhancement in Southeast Asia which will be implemented from 2012 to 2017 (**Annex 12**). The project aims to develop guidelines on "Area Capability Approach" through the implementation of pilot projects in two sites: one in Rayong Province, Thailand to focus on Conflicts among Users and Stock Evaluation, and the other in Panay Island, Philippines to assess the Deterioration of Ecosystem and Stock Enhancement. In addition, three Satellite Sites would also form part of the project: in Ishigaki Island (on Coral Reefs), in Surat Thani Province, Thailand (for Aquaculture), and Trang Province, Thailand (on Mangroves and Sea Grass Beds).

VII. CONCLUSION AND RECOMMENDATIONS

15. During the concluding part of the Workshop, the Secretary-General informed the participants that the Report together with the conclusion and recommendations from this Inception Workshop would be disseminated to all Member Countries, SEAFDEC Departments and other relevant regional/international organizations. It is envisaged that various aspects of the recommendations would be extracted by relevant agencies and organizations and used in the planning and formulation of activities that would support the ASEAN Member Countries in the implementation of the Resolution and Plan of Action on Sustainable Fisheries for Food Security Towards 2020.

VIII. CLOSING OF THE WORKSHOP

16. In closing, the SEAFDEC Deputy Secretary-General, *Mr. Kenji Matsumoto* expressed his appreciation to the participants and the facilitator for their active contribution during the deliberations that allowed the Workshop to successfully come up with the priority areas and required activities. He reiterated that these requirements would pave the way towards the

formulation of programs and activities to support the ASEAN Member Countries in the implementation for the Plan of Action. He then urged the relevant organizations to make use of the recommendations from the Workshop and incorporate the outcomes in their future activities whenever possible, to ensure that all concerned would be moving in a harmonized manner towards a similar goal of achieving sustainable ASEAN fisheries for food security. With that note, he declared the Workshop closed. His closing Remarks appear as **Annex 13**.



EXECUTIVE SUMMARY REPORT OF THE REGIONAL TECHNICAL CONSULTATION ON ADDRESSING TECHNICAL ISSUES ON COMMERCIALY-EXPLOITED AQUATIC SPECIES

I. INTRODUCTION

The Regional Technical Consultation on Addressing Technical Issues on Commercially-exploited Aquatic Species was organized by the SEAFDEC Secretariat and Training Department from 18 to 20 October 2011 in Bangkok, Thailand to: (1) build awareness of the SEAFDEC Member Countries on CITES issues related to commercially-exploited aquatic species (CEASs); (2) review the existing data, status and trend of selected CEASs; (3) provide the forum to enable the Member Countries to discuss and develop common position on CEASs which could be reflected in relevant international fora; and (4) promote regional cooperation on the conservation and management of selected CEASs. The Consultation was attended by national delegates from the ASEAN and SEAFDEC Member Countries, namely: Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, Philippines, Thailand, and Vietnam. The SEAFDEC Secretary-General and Deputy Secretary-General, and senior officials of the SEAFDEC Secretariat and the Departments as well as a representative from the United Nations Environment Programme Regional Office for Asia Pacific also attended the Consultation.

The Consultation noted the conservation efforts of SEAFDEC on concerned aquatic species which focused on sharks, tunas, sea cucumber as well as the progress of the enhancement programs on seahorse, sea cucumber and humphead wrasse. With regards to CITES related issues, particularly on the process of listing aquatic species in CITES Appendices, the Consultation expressed the following concerns:

- 1) difficulty in species identification from exported products (*e.g.* tuna meat, juvenile tunas, shark fins);
- 2) some species listed under CITES Appendices are caught as incidental catch from trawl fisheries due to the multi-species nature of fisheries in Southeast Asia where large number of small-scale fishers involved in fishing operations;
- 3) national statistics framework does not seem to facilitate data collection by species resulting in lack of data and information for management purposes; and
- 4) weak enforcement of national legislations that regulate management and trade of the concerned species.

Considering that several RFMOs and relevant national agencies are also pursuing efforts to ensure sustainable exploitation of aquatic species by regulating trade to ensure the sustainable utilization of resources including the collection of data and information through their respective statistical frameworks, a regional cooperation through the existing mechanisms should be strengthened to facilitate the exchange of information and avoid duplication of efforts. Meanwhile, the participation of fisheries-related authorities in CITES related meetings and discussions should be enhanced to reinforce the arguments of the countries in the region and augment relevant information on the commercially-exploited aquatic species. Since in previous CoP-CITES most representatives from the ASEAN came from environment-related agencies, a situation which makes it difficult to coordinate and convey the arguments that emanate from the fisheries sector through the said representatives, the SEAFDEC-ASEAN Member Countries should consider supporting the participation of their respective fisheries-related authorities in future CoP-CITES starting with the forthcoming CoP16-CITES in 2013, to be able to reflect the stance from the fisheries point of view in such fora.

Recommendations for Regional Collaboration and Cooperation on the Selected Commercially-exploited Aquatic Species Related to CITES

The Key Recommendations for Future Regional Collaborations on the Selected Commercially-exploited Aquatic Species Related to CITES which were adopted during the Regional Technical Consultation are shown in **Annex 1**.

Moreover, in spite of the fact that some progress on scientific data collection had been made by the Member Countries, the region still lacks specific mechanisms or tools for sharing such existing scientific data. The Consultation therefore suggested that the Member Countries should enhance their cooperation and develop a platform for discussion of the relevant issues scientifically, and that the ASEAN Working Group on CITES should be one of the means where regional cooperation could be enhanced and where the efforts of the ASEAN countries could be reflected.

II. REQUIRED CONSIDERATION BY THE COUNCIL

The Council is requested to endorse the key Recommendations for Future Regional Collaborations on the Selected Commercially-Exploited Aquatic Species Related to CITES, as well as to provide comments; and policy direction on enhancing the collaboration among the ASEAN countries, the ASEAN Secretariat and SEAFDEC with respect to the aforementioned concern.

KEY ISSUES AND RECOMMENDATIONS FOR FUTURE REGIONAL COLLABORATION

Regional Technical Consultation on Addressing Technical Issues Related to Selected Commercially-exploited Aquatic Species 18-20 October 2011, Bangkok, Thailand

1. INTRODUCTION

Issues on the sustainable fishery management of commercially-exploited aquatic species have been discussed at SEAFDEC Meetings for many years, and at the 43rd Meeting of the Council Directors of SEAFDEC in April 2011, “SEAFDEC was requested to identify the technical problems on CITES faced by all Member Countries and provide the information to the CITES Secretariat to make them aware of the situation and concerns of the Member Countries before the next CoP16-CITES in 2013”. Responding to such directive, SEAFDEC organized the Regional Technical Consultation on Addressing of Technical Issues Related to Selected Commercially-exploited Aquatic Species in October 2011 with the main objective of identifying the technical problems encountered by the ASEAN-SEAFDEC Member Countries on commercially-exploited aquatic species related to CITES issues.

Specifically, the status and trends of the selected commercially-exploited aquatic species such as sharks-rays, sea cucumber, seahorse, humphead wrasse, including some inland aquatic species such as the Irrawaddy dolphin were discussed during the Consultation. The following concerns on the fisheries management and conservation of the selected commercially-exploited aquatic species were raised during the Consultation, which needs to be addressed:

1.1 Insufficiency of data and information to support decision-making on proper management measures

- Species under international concerns are sometimes caught as by-catch and being caught in small quantity, which cannot be segregated from total catch
- Difficulty in identifying species and recording of catch landing by species due to inadequate human resource capacity
- Data and information available on catch landing may not be reliable as many fishers are unable to provide the necessary information because of capacity problem and also due to illegal fishing practices
- Limited capacity and methodologies for stock assessment, especially for the multi-species nature of fisheries in the region

1.2 Trade

- Species in CITES Appendices are usually traded in small quantities (mixed with other species) and inspection of specimens by custom officers is usually done at random, which makes implementation of CITES rules not practical
- Unavailability of tagging methodologies for certain species (e.g. seahorse, corals) that are imported and re-exported
- Application for farm registration and certification for cultured species under CITES Appendices (e.g. Arowana farms) need long process for approval by the CITES Secretariat, stimulating continued illegal trade of many restricted species (e.g. juvenile golden Arowana mistaken as silver Arowana).

1.3 CITES-related issues

- Possibility of listing certain species in CITES Appendices, which are not endangered with extinction, or likely to become so, including (but not limited to) look-alike species
- Difficulty of down-listing or de-listing of species even if the resources could have already recovered
- Impacts of the CITES system for management of aquatic species under CITES, which could possibly bring about various adverse effects to the regional/local fisheries communities

2. Key Issues and Recommendations for Future Regional Collaboration

In order to support decision-making on the proper management of commercially-exploited aquatic species or/and endangered species listed in the CITES Appendices, the key issues and recommendations for future regional collaboration including HRD requirements are as follows:

Key Issues/ Concerns	Recommendations	Priority of Action	HRD Requirements
Collection of scientific data on status and trends of selected commercially-exploited aquatic species	1. Compile historical data from relevant agencies on trends of national catch and production (within and outside EEZ) 2. Develop fishing data collection system from fishers and markets, if necessary 3. Identify critically important commercially-exploited aquatic species (at appropriate species level and other data items) 4. Harmonize and improve national statistics systems and capacity for the collection data on catch including endangered species or selected commercially-exploited aquatic species 5. Conduct periodic biological data collection 6. Develop national and regional database for long term assessment and prediction of fisheries trends 7. Identify and define the origin of catch/production by species	<i>Immediate and long term</i>	• Training on species identification (based on selected commercially-exploited aquatic species) • Training on biological data collection • Fishing Logbook, Catch documentation schemes
Inadequate stock/catch assessment of selected commercially-exploited species	1. Promote the conduct national stock/catch assessment for selected target species (such as tuna, identified sharks) in order to support the regional stock assessment managed by RFMOs 2. Establish the Regional Working Group on Stock Assessment (tuna, identified sharks) 3. Implement Ecosystem Approach to fisheries	<i>Immediate and long term</i>	

Development of coordinating mechanism between fisheries sector and agencies involved in CITES-related issues at country level	1. Identify the gap of communication/coordination 2. Clarify the list of focal point of both agencies 3. Enhance coordination 4. Enhance the role/function of fisheries authority in the CITES venues	<i>Immediate and Medium-term actions</i>	
Involvement of representatives for fisheries sector in CITES discussions	1. Encourage the participation of countries' fisheries authorities in CITES-related meetings (CoP-CITES, CITES Animals and Standing Committees, Committees' on-line inter-sessional discussions)	<i>Immediate and long term</i>	
Technical problems within CITES system itself	1. Develop and implement appropriate fisheries management measures on important species so that CITES regulations may no longer be necessary 2. Examine whether proposed listing of commercially exploited aquatic species in CITES Appendices is really justified and necessary 3. Share information on unjustified proposals among SEAFDEC Member Countries for collaborative action 4. Ensure that scientific evidences such as biomass level for MSY are adequately evaluated in the proposals 5. Evaluate the application of look-alike provisions in the CITES regulations 6. Assess the interpretation of criteria for inclusion of species in CITES Appendices which should be appropriate and clear	<i>Immediate and long term</i>	
Various adverse impacts of CITES listings to regional/local communities	1. Evaluate the impacts of the proposed listings at the proposal stage and share the results of the evaluation among Countries concerned 2. Develop and improve data collection and analysis systems to ensure appropriate implementation of CITES Non-Detriment Findings (NDF)	<i>Medium and long term action</i>	• Training on NDF
Promotion of conservation/management measures	1. Review status and trends, and conduct assessment of fish stocks 2. Define the appropriate fisheries management measures based on the results of stock assessment 3. Enhance national policies and legal framework to support the enforcement and implementation of the various measures 4. Adjust national legislations accordingly, if necessary	<i>Medium and long term action</i>	

Stock enhancement	1. Focus on identified priority species when initiating stock assessment activities 2. Share experiences among the ASEAN countries on successful aquaculture and stock enhancement technologies (e.g. artificial breeding) of giant catfish, Arowana, seahorse, giant clams, corals, sea cucumbers, and others 3. Promote the conservation of ecologically and biologically significant areas (EBSA) such as nursery areas through the establishment of marine protected areas (MPAs) and/or other measures 4. Implement rehabilitation programs in EBSA such as critical fishing grounds and habitats	<i>Medium and long term action</i>	
Participation of SEAFDEC in CITES-related fora	1. Issue official communications (from SEAFDEC to CITES Secretariat) to enable SEAFDEC to take part in CITES Animals and Standing Committees discussions as well as during the Committees' on-line inter-sessional discussions	<i>Medium and long term action</i>	

3. Schedule of Preparatory Works for the CoP16-CITES

As discussed during the October 2011 Consultation, SEAFDEC-ASEAN Member Countries should consider supporting the participation of their respective fisheries-related authorities in future CoP-CITES starting with the forthcoming CoP16-CITES in 2013. The following schedule should be taken into consideration by the Member Countries to prepare their respective representatives for the CoP16-CITES

Period	Activity	Remarks
Oct. – Dec. 2011	Finalize Summary of technical problems encountered by SEAFDEC Member Countries/Report of the RTC on Addressing Technical Issues Related to Selected Commercially-exploited Aquatic Species	All member countries including Singapore
Dec. 2011 – Jan. 2012	Regional Advisory Committee Meeting: Establishment of the Stock Assessment Working Group (for tuna, sharks, others)	
Feb. 2012	Submission of Report of RTC on Addressing Technical Issues Related to Selected Commercially-exploited Aquatic Species	To SEAFDEC Council
15-20 Mar. 2012	Participation of SEAFDEC in the 26th Meeting of Animals Committee (March 2012) and Joint Meeting of Animals and Plants Committee (subject to availability of funds)	SEAFDEC Secretary-General together with Policy and Program Coordinator
Jan. – Sep. 2012	Compilation of results of R&D activities on selected commercially exploited aquatic species in the ASEAN region (review all results if appropriate)	Designation of country focal points on specific target species

23-27 Jul. 2012	• SEAFDEC Participation to the 62nd Meeting of Standing Committee (subject to availability of funds)	To be confirmed
Oct. 2012	• Expert Meeting to discuss the proposed list of commercially-exploited aquatic species (Review of proposals on inclusion of commercially-exploited aquatic species in CITES Appendices to be submitted to the CoP16-CITES)	Date to be confirmed
Nov. 2012	• RTC on International Fish Trade and CITES Related Issues (ASEAN-SEAFDEC coordinated position will be developed on the each proposal on inclusion of commercially-exploited aquatic species in CITES Appendices)	Date to be confirmed
Dec. 2012 – Jan. 2013	• Submission of the ASEAN-SEAFDEC Coordinated Position to : ➢ SEAFDEC Council for approval ➢ ASEAN-Secretariat, AEG-CITES and ASEAN-WEN	SEAFDEC
Mar. 2013	• Participation in the CoP16-CITES in Thailand	Representatives from Member Countries and SEAFDEC

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Summary Report on the Concerned Commercially-exploited Aquatic Species from the 26th Meeting of the Animals Committee

15-20 March 2012, Geneva, Switzerland

Chumnarn Pongsri and Somboon Siriraksophon
SEAFDEC SECRETARIAT

I. INTRODUCTION

The 26th Meeting of the Animals Committee (AC26) was organized by the CITES from 15-20 March 2012 at Geneva, Switzerland and continuing with the Join-Committee between Plants and Animals from 22-25 March 2012 at Dublin, Ireland. Follow-up the recommendations from the SEAFDEC Regional Technical Consultation on Addressing Technical Issues on Commercially Exploited Aquatic Species held in Bangkok from 18-20 October 2011 that suggested SEAFDEC to participate to the CITES-related for a such as the CITES Animals Committee in order to address the Regional concerns and assist Member Countries on technical matters. Response to the Consultation, SEAFDEC secretariat as officially communicated and requested to the Chair of the Animals Committee for SEAFDEC participation. Under his authorization SEAFDEC, therefore lead by the Secretary-General, Dr. Chumnarn Pongsri and the Policy and Program Coordinator, Dr. Somboon Siriraksophon participated to the first half meeting in Geneva.

A total of 165 participants were: the Animals Committee from different regions of the world (namely Africa, Asia, Central and South America and the Caribbean, Europe, North America, and Oceania Regions), 37 Observer-Parties, 1 Observer-Nonparty, 4 Observer-IGOs (including SEAFDEC), 18 Observer-NGOs, and 18 Observer-National NGOs. Regarding this five SEAFDEC Member Countries namely Indonesia, Japan, the Philippines, Thailand and Vietnam participated to the AC26.

The Agenda of the meeting and daily highlights of the AC26 from 15 to 20 March are shown in **Annex 1** and **Annex 2**, respectively.

II. AIMS OF THIS PAPER

The aims of this paper are as follows:

- 1) To update the list of Fish CITES Species concerning to the Southeast Asian Region (Annex 5);
- 2) To update the results on the concerned Commercially-exploited Aquatic Species addressed at the AC26 to all ASEAN-SEAFDEC Member Countries; and
- 3) To build the awareness to all Member Countries on the recommendations on CITES-related species such as sharks, sea cucumber, seahorses, and corals and other CITES management matters.

III. IMPORTANT ISSUES CONCERNED TO THE REGION

1. Sharks:

➤ Implementation of Resolution Conf. 12.6 (Rev. CoP15) on Conservation and management of sharks (Class Chondrichthyes)

Refers to the AC26 Doc. 16.1, the working group on Implementation of Resolution Conf. 12.6 (Rev. CoP15) on *Conservation and management of sharks (Class Chondrichthyes)* reported that:

- ✓ In Resolution Conf. 12.6 (Rev. CoP15) on *Conservation and management of sharks (Class Chondrichthyes)*, the Conference of the Parties instructs the CITES Secretariat

to inform FAO of the concerns of the CITES Parties regarding the significant lack of progress in implementing the IPOA-Sharks, and to urge FAO to take steps to actively encourage relevant States to develop NPOA-Sharks.

- ✓ In July 2010, the FAO and CITES Secretariat jointly convened the *Workshop to review the application and effectiveness of international regulatory measures for the conservation and sustainable use of elasmobranchs* in Genazzano, Italy. This workshop was attended by experts from a range of geographic areas and sectors, including scientists, fisheries industry and representatives of the government. The workshop tried to outline the strengths and weaknesses of regulatory measures and to evaluate their effectiveness. If it is finalized in time, the final report of the workshop will be submitted as an information document at the present meeting.
- ✓ During the 29th session of the FAO Committee on Fisheries (COFI) that was held in Rome, Italy, in February 2011, the CITES Secretariat pointed out that the joint workshop in Genazzano showed that harvest-related measures and trade-related measures could and should be used in tandem, where appropriate, to ensure the successful management of fish.
- ✓ In Resolution Conf. 12.6 (Rev. CoP15), the Conference of the Parties also encourages Parties to obtain information on implementation of NPOA-Sharks or regional plans, and to report directly on progress to the CITES Secretariat and at future meetings of the Animals Committee, and "directs the Animals Committee to examine information provided by range States on trade and other available relevant data and information, and report their analyses at the 16th meeting of the Conference of the Parties". The following list, the parties are invited to:
 - o submit a list of shark species (Class Chondrichthyes) that they believe require additional action to enhance their conservation and management, including if possible any concrete measures which they believe to be needed. The list should include a summary of additional supporting information;
 - o advise whether they have domestic measures (e.g. laws or regulations) regulating the fishing, retention or landing of shark or ray species in their waters, and whether those measures apply to certain species only or to all species; and
 - o advise whether they have domestic measures (e.g. laws or regulations) regulating the import or export of shark parts and products (fins, meat, skin, organs, etc.) and, if so, what those measures are.
- ✓ By the reporting deadline of 15 January 2011 provided in that Notification, the Secretariat had received responses from the European Union (on behalf of 27 Parties), Canada, New Zealand, Peru and the United States of America. Further responses were received before the 25th meeting of the Animals Committee (AC25, Geneva, July 2011) from Australia, Canada, Colombia, Costa Rica, India, Japan and Mexico. At the 25th meeting of the Animals Committee in July 2011, a Working Group considered these 12 reports; however, it was noted that reports had not been received by many key Parties involved in shark fisheries.

The Recommendations from Working Group at AC26 are:

1. Parties take note of the above documents submitted to the Animals Committee when reviewing species of concern from the Class Chondrichthyes, and the Secretariat inform Parties when the final version of the UK Report on assessing the intrinsic vulnerability of harvested sharks (AC26 Inf. 9) becomes available;
2. The CITES Secretariat contact the top 26 shark fishing Member States/Entities (i.e. those taking >1% of the global catch of sharks) that did not respond to CITES notifications (2010/027 and 2011/049 – as they relate to sharks) or to the FAO questionnaire on the status of implementation of the FAO IPOA-Sharks, and encourage a response, and the Secretariat to make this information publicly available to the Parties;
3. The CITES Secretariat invite Parties that responded to CITES Notification 2011/049, but did not provide the following information on trade in sharks and on domestic measures (e.g. laws or regulations) regulating the import or export of shark parts and products (fins,

meat, skin, organs, *etc.*), to do so, and the Secretariat to make this information publicly available to the Parties;

4. The CITES Secretariat issue a notification alerting Parties when the FAO report “*The Implementation of the International Plan of Action for the Conservation and Management of Sharks*” (in preparation for the upcoming COFI meeting in July 2012), becomes available and provide a link to this document;
5. The summary list of shark species submitted by Parties in response to Notification 2011/049 a) ii, that they believe require additional action to enhance their conservation and management, be appended to this Working Group report;
6. Recognising the MOU between the CITES and FAO Secretariats, ask the CITES Secretariat to request from FAO the terms of reference for the FAO assessment to be undertaken regarding all commercially exploited aquatic species listed in the CITES Appendices, make this information available to Parties through a notification, and request FAO to report on progress in its reports to CoP16 and AC27;

Draft Decisions

1) **RECOGNIZING** that it is difficult for Parties to avoid importing illegally-obtained shark products if they are unaware of the domestic legislation and regulations of other Parties, or of measures adopted by RFMOs, and hence to enable importing Parties, [where applicable,] to assist exporting Parties with the enforcement of their laws, [as appropriate,] and to assist the Animals Committee to inform the Parties as required under Resolution Conf. 12.6 (Rev CoP15); **REQUESTS** the Animals Committee to ask the Standing Committee to request the Secretariat to:

- i) issue a Notification to Parties requesting them to summarise their domestic laws and regulations that prohibit the landing or trade of shark species and products, and provide copies of or links to these instruments; in order for the Secretariat to make this information available on the CITES website; and
- ii) collaborate with the FAO Secretariat in the development of a single, regularly updated, source summarising current RFMO measures for shark conservation and management, with information on species, fisheries, Members/Contracting Parties, and the geographical areas covered and excluded;

2) **RECOGNIZING/RECALLING** the CITES/CMS Joint Work Plan, **ENCOURAGES** Parties to engage with the work of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), as appropriate, particularly for shark species listed in the relevant Appendices to CITES and CMS, recognising that CMS Parties are required to strive towards strictly protecting species listed in Appendix I to CMS, including by prohibiting the taking of these species, and to implement other measures through the Migratory Sharks MOU;

Draft amendment to Resolution Conf. 12.6 (Rev. Cop15)

The following wording (underlined) to be added to operative paragraphs 6 and 8:

URGES Parties that are shark fishing States but that have not yet implemented an NPOA-Sharks, to develop their own NPOAs at the earliest opportunity and take steps to improve research and data collection on both fisheries and trade as a first step towards their Shark Plans, particularly the necessity to AC26 WG4 Doc. 1 – p. 3 improve the collection of catch and trade data at the lowest taxonomic level possible (ideally by species), and to report these data to the relevant national, regional and international authorities;

ENCOURAGES Parties to improve data collection, data reporting, management and conservation measures for shark species, implementing, enhancing and enforcing these actions through domestic, bilateral, RFMOs or other international measures;

➤ **List of Shark Species (Class Chondrichthyes) Submitted by Parties** (see Annex 4)

The Animals Committee notes that the following list of shark species (*Class Chondrichthyes*) were submitted by the Parties in response to CITES Notification to the Parties No. 2011/049, which invited Parties to submit a list of shark species (*Class Chondrichthyes*) that they believe require additional action to enhance their conservation and management, including if possible any

concrete measures which they believe to be needed (for more details, see documents AC26 Doc. 16.1 and AC26 Doc. 16.2).

2. Sea Cucumbers:

The Committee established a drafting group (DG1) to draft a Notification to the Parties drawing attention to the report from the CITES workshop in 2003 (see document CoP14 Doc. 62), the FAO documents on these species and any other relevant publications, and encouraging range States to use this and other information to manage their fisheries. This Notification would effectively conclude the work directed to the Committee in Decision 14.100 (Rev. CoP15).

The group drafted the following recommendations to the Parties (AC26 DG1 Doc. 1).

Recommendations

1. Recommend that the Secretariat issue a notification to the Parties drawing their attention to FAO Fisheries and Aquaculture Technical Paper 516 and 520 arising from the FAO Workshop on the Sustainable Use and Management of Sea Cucumber Fisheries, conducted in 2007. And furthermore draw attention to the abridged version of Technical Paper 520, entitled "*Putting into practice an ecosystem approach to managing sea cucumber fisheries*", and drawing their attention to the forthcoming publication of an FAO catalogue "*Commercially Important Sea Cucumbers of the World*".
2. Encourages range countries to promote conservation and management of sea cucumbers which occur in their own jurisdiction, taking advantage of the information in these and other documents available from FAO, the report from the CITES workshop in 2003 (CoP14 Doc. 62), and other publications, and taking into account the status of stocks, fisheries and use of sea cucumber as well as social, economic and historical factors of each region, and where appropriate, with the help of FAO and/or regional fishery-related bodies, manage their sea cucumber fisheries in a sustainable way.
3. Recommend that these recommendations fulfill the mandate of Decision 14.100 (Rev. CoP15), and so the work of the Sea Cucumber WG is complete.

3. Seahorses:

The seahorses issue was addressed under the Review of Significant Trade (RST) in Specimens of Appendix-II Species. The CITES secretariat informed the overview of the species-based Review of Significant Trade referring to the Resolution Conf.12.8 (Rev. CoP13), the Conference of the Parties directs the Secretariat, for the purpose of monitoring and facilitating the implementation of that Resolution, "to report at each meeting of the Animals or Plants Committee on the implementation by the range States concerned of the recommendations made by the Committee".

The latest list of countries under a recommendation to suspend trade for certain species following non-compliance with Article IV of the Convention Species was published with Notification to the Parties No. 2011/035 of 5 September 2011 (see <http://www.cites.org/eng/notif/2011/E035.pdf>). The recommendations were made in accordance with Resolution Conf. 12.8 (Rev. CoP13), or its predecessor Resolution Conf. 8.9 (Rev.). These cases are kept under regular review by the Standing Committee in line with paragraph v) of Resolution Conf. 12.8 (Rev. CoP13). Other species, including some seahorses that concerned to the Southeast Asian Countries for which a Review of Significant Trade is ongoing are shown in the Annex to the present document (AC26 Doc.12.1), with an indication of the current status of the review, and the reference documents that provide detailed information for the cases in question.

Further information on species selected by the Animals Committee for the Review of Significant Trade following the 13th, 14th and 15th meetings of the Conference of the Parties (CoP13, Bangkok, 2004; CoP14, The Hague, 2007; and CoP15, Doha, 2010) is provided in documents AC26 Doc. 12.2 and AC26 Doc. 12.3.

Regarding this, AC26 established a working group to review the reports and the responses received from range States as well as formulate recommendations for species of urgent concern and of possible concern with deadlines for their implementation. Since there are many taxa selected under the Review of Significant Trade, however, this paper will select only concerned seahorses species in which relevant Member Countries may have to consider actively response to the CITES secretariat.

The draft recommendations for species of Urgent and Possible Concern are as follows:

Thailand¹

Species of Urgent concern: *Hippocampus kellogi*, *H. kuda* and *H. spinosissimus*

The Recommendations are as follows:

Within 150 days the Management Authority should:

- a) Clarify what legal protection is afforded to these species in Thailand and provide information to the Secretariat on controls or regulation of fishing activity that might otherwise detrimentally impact on seahorse populations;
- b) Provide available information to the Secretariat on the distribution, abundance, threats and conservation status of, and any current management measures in place for, the three *Hippocampus* spp in Thailand; and
- c) Provide justification for, and details of, the scientific basis by which, it has been established that the quantities of the *Hippocampus kellogi*, *H. kuda* and *H. spinosissimus* exported will not be detrimental to the survival of the species and in compliance with Article IV, paragraphs 2(a) and 3 taking into account any potential unregulated and/or illegal off-take and trade.
- d) Initiate measures to ensure that descriptions on all CITES permits are standardized such that trade is only permitted at **species level** and that, in compliance with Resolution Conf. 12.3 , XIV e), trade ceases to be reported or permitted at higher taxon levels(genus or family).

Within one year the Management Authority should:

- e) Undertake studies to provide evidence on variation in the spatial and temporal abundance of the three species of *Hippocampus* to enable areas of high seahorse density to be identified and provide the results of the analysis to the Secretariat, as the basis for considering area restrictions on nonselective fishing gear that obtains *Hippocampus* species as by catch;
- f) Examine the technical and logistical feasibility of returning to the sea live seahorses taken as by catch in various types of fishing gear, particularly by inshore gear such as crab gill nets and other traps, as the basis for considering the feasibility of minimum size limits and/or other output controls.

Within 2 years the Management Authority should:

- g) Establish a detailed monitoring program of landings of the three *Hippocampus* spp. at representative sites, taking into account different gear types and means of extraction and recording catch and effort metrics and provide a report to the Secretariat;
- h) Conduct a detailed study of the life history parameters of the three *Hippocampus* spp., including growth rate, size and age at maturity, average annual reproductive output, and annual survivorship of different age classes and provide a report to the Secretariat. Based on the outcome of this study, model population responses to exploitation pressures in order to review and revise management measures;
- i) Implement additional measures, including spatial and/or temporal restrictions on fishing activities, to support non-detriment findings;

¹The following issue was referred to the Secretariat to follow up with the Management Authority of Thailand and to bring to the attention of the Animals or Standing Committee as appropriate : whether adequate control measures and inspection were in place or being developed to enhance the enforcement of the reported ban on trawling within 3-5 km of the coast, as the main means of reducing incidental capture of these *Hippocampus* species

- j) Based on the studies and measures in h), i) and j) above, establish an adaptive management programme for extraction of, and trade in, the three *Hippocampus* spp., enabling management measures to be reviewed and, if necessary, revised to ensure that trade is not detrimental to the survival of the species in the wild and complies with Article IV.2.a and IV.3;

Vietnam

Species of Possible concern: *Hippocampus kuda*

The Recommendations are as follows:

Within 90 days the Management Authority should:

- a) Clarify what legal protection is afforded to the species and inform the Secretariat whether the present policy allows for export of wild-taken specimens;
- b) If there is no intent to allow export of wild specimens of this species for the foreseeable future establish a zero export quota which should be communicated to the Parties by the Secretariat; or
- c) If trade is to be allowed, provide a justification for, and details of, the scientific basis by which it has been established that export is not detrimental to the survival of the species and is in compliance with Article IV, paragraphs 2 (a) and 3, taking into account potential unregulated and/or illegal off-take and trade;
- d) Initiate measures to ensure that descriptions on all CITES permits are standardized such that trade is only permitted at **species level** and that, in compliance with Resolution Conf. 12.3 , XIV e), trade ceases to be reported or permitted at higher *taxon* levels(genus or family).

Within 2 years the Management Authority should:

- e) If trade in wild specimens is anticipated in the future conduct a study of the life history parameters of *H. kuda*, including growth rate, size and age at maturity, average annual reproductive output and annual survivorship of different age classes and make the results available to the Secretariat. Based on the outcome of this study, model population responses to exploitation pressures in order to review and revise export quotas; and if they *intend* to trade the species in the future,
- f) Provide to the Secretariat a justification for, and details of, the scientific basis by which it has been established that any proposed export quota for wild specimens of *H. kuda* will not be detrimental to the survival of the species and is in compliance with Article IV, paragraphs 2 (a) and 3
- g) If trade in wild specimens is anticipated in the future, establish a detailed monitoring program of landings of *Hippocampus kuda* at representative sites, taking into account different gear types and means of extraction and recording catch and effort metrics and provide a report to the Secretariat;

The categorizations of each species into one of the three categories outlined in Resolution Conf. 12.8 (Rev. CoP13), namely:

- i) ‘species of **urgent concern**’ shall include species for which the available information indicates that the provisions of Article IV, paragraph 2 (a), 3 or 6 (a) of the Convention are not being implemented;
- ii) ‘species of **possible concern**’ shall include species for which it is not clear whether or not these provisions are being implemented; and
- iii) ‘species of **least concern**’ shall include species for which the available information appears to indicate that these provisions are being met. Actions required from the 26th Animals Committee (refers to AC26 WG7 Doc.1)

4. Corals:

On CITES-listed corals (**Annex 4**), the Committee agreed that it is not possible even for an informed non-specialist, with reasonable effort, to distinguish between all the species in the genus without recourse to a specialist taxonomist.

IV. CONSIDERATION BY THE COUNCIL

The council is invited to take note some outputs on fish species related to CITES from the 26th Meeting of the Animals Committee particularly the sharks, sea cucumbers, seahorses and corals species listed in the CITES Appendix. The Council is also requested to consider the recommendations and draft decision on sharks including the development and implementation of the NPOA-Sharks as well as well as to provide comments; and policy direction to SEAFDEC and/or Member Countries for further works on this matter.

Annex 1: Agenda of the Meeting for Animals Committee (not included Plants Committee)

1. Opening of the meeting
2. Rules of Procedure
3. Adoption of the agenda and working programme
4. Admission of observers
- 5-11. <Plants Committee Issues >
12. Review of Significant Trade in specimens of Appendix-II species
13. Periodic review of animal species included in the CITES Appendices
 - 13.1 Overview of species under review
 - 13.2 Species selected for review from CoP13 (2004) to CoP15 (2010)
 - 13.2.1 Galliformes – Report of the working group
 - 13.3 Species selected for review from CoP15 (2010) to CoP17 (2016)
14. Criteria for the inclusion of species in Appendices I and II – Report of the working group
15. Sturgeons and paddlefish
 - 15.1 Secretariat's report
 - 15.2 Evaluation of sturgeon stock assessment and Total Allowable Catch (TAC) determination methodology – Reports from Caspian Sea range States
 - 15.3 Review of Resolution Conf. 12.7 (Rev. CoP14) on *Conservation of and trade in sturgeons and paddlefish* regarding caviar labelling, product sources and species identification – Report of the working group
16. Implementation of Resolution Conf. 12.6 (Rev. CoP15) on *Conservation and management of sharks (Class Chondrichthyes)*
 - 16.1 Report of the working group
 - 16.2 Reports from Parties
17. Snake trade and conservation management (Decision 15.76)– Report of working group
18. Tortoises and freshwater turtles (Decision 15.79)
19. Sea cucumbers [Decision 14.100 (Rev. CoP15)] – Report of the working group
20. Nomenclatural matters
21. Identification of CITES-listed corals in trade [Decision 15.64 b)] – Report of the working group
23. Relationship between wildlife trade and wildlife diseases
24. Report of the Chair for the 16th meeting of the Conference of the Parties
25. Review of objections to the registration of operations that breed Appendix-I animal species in captivity for commercial purposes
26. Proposals to amend the Appendices
27. Reports on the actions taken by regional representatives and additional information from Parties, relevant to regional cooperation and the work of the Animals Committee
28. Time and venue of the 27th meeting of the Animals Committee
29. Any other business

Annex 2: Daily Highlights of the Meeting:

Day 1: 15 March 2012

The twenty-sixth meeting of the Animals Committee (AC26) of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) opened today in Geneva, Switzerland.

Carlos Ibero Solana, Chair of the Animals Committee (AC), opened the AC by highlighting the record number of more than 200 registered participants as a sign of the interest of parties in scientific deliberations. He stressed that the increased workload for the AC would need greater financial or staff support.

John Scanlon, CITES Secretary-General, welcomed participants to the first of a series of meetings of the scientific bodies of the Convention, which will last for the next 16 days. He acknowledged the important work done by the Committees who rely on the voluntary work of individuals.

Throughout the day participants discussed the Periodic Review of Appendices as well as conservation matters concerning shark, snake, sturgeon and paddlefish and sea cucumber.

In the afternoon, the Minister for the Environment and Forests of Madagascar thanked CITES for the technical and financial assistance provided to protect rare and threatened species of native fauna and flora, including ebony and other precious woods. He outlined strategies to end the exploitation of rare and protected species of trees in Madagascar, and to update the country's legislation on forestry and rare species. The Secretariat noted that CITES funding from the European Commission has been diverted to Madagascar to assist in these efforts.

Day 2: 16 March 2012

In plenary on Friday, AC26 participants discussed Review of Significant Trade (RST) in specimens of Appendix-II species. They also reviewed: the objections to the registration of operations that breed Appendix-I animal species in captivity for commercial purposes, as well as nomenclature matters; identification of CITES-listed corals in trade; and the relationship between wildlife trade and wildlife diseases. On the latter, the CITES Secretariat recalled the invitation received from the Convention on the Conservation of Migratory Species of Wild Animals (CMS) Secretariat to become a core affiliate of the Scientific Task Force on Wildlife Diseases convened with the Food and Agriculture Organization of the UN (FAO).

In the afternoon, participants reconvened into working groups to discuss: listing criteria, snakes, nomenclature, periodic review and sturgeon and paddlefish. The Working Group on Listing Criteria discussed, inter alia, whether to provide guidance for determining if commercially exploitable aquatic species qualify for listing on CITES Appendix II when that species has multiple stocks or subpopulations. The working group on snakes discussed: the preliminary results of the International Union for Conservation of Nature (IUCN) Species Survival Commission Reptile Assessment, including possible listing of threatened trade snake species that are currently not listed under CITES. The working group on periodic review looked at recommendations on the list of species selected for review from CoP13 to CoP15 and from CoP15 to CoP17. The working group on sturgeon and paddlefish addressed the labeling of caviar shipping containers, appropriate source codes for roe, and other topics surrounding the conservation of and trade in these species and products derived from them.

Day 3: 17 March 2012

On Saturday, working groups on sharks, periodic review, sturgeon and paddlefish, snake, tortoises and freshwater turtles, review of significant trade (RST), nomenclature and corals identification met throughout the day. The sharks working group considered, inter alia: national reports; the report of the CITES/FAO workshop to review the application and effectiveness of international regulatory measures for the conservation and sustainable use of sharks; complementary with regional fisheries management organizations (RFMOs) measures; and CITES and FAO shark questionnaires, noting that, out of the 26 top shark fishing states, 10 and 8 nations, respectively, did not respond. Participants also discussed draft recommendations, including asking the CITES Secretariat to request parties to submit outstanding shark questionnaire responses and urging them to record trade data at the species level.

The working group on RST met to address recommendations on the provisional categorization of species made by UNEP-WCMC and on the list of species selected for RST following COP15. The Group on tortoises and freshwater turtles met in the early afternoon and considered recommendations to forward to the Secretariat, parties and Standing Committee, noting that no progress had been made in identifying elements and guidance for a non-detriment finding. The Working Group on Sturgeon and Paddlefish prepared a draft report to present to plenary that amended the relevant resolution and acknowledged the limited progress achieved since the Standing Committee meeting.

Day 4: 19 March 2012

Throughout the morning, AC participants convened in the established working groups to complete their discussions. Among them, the nomenclature working group met briefly to address the lack of global standard coral references. The shark working group continued revising draft recommendations for the AC and discussed outstanding information and analysis concerns, inter alia: whether to attach party responses to the CITES shark questionnaire as a list of shark species or to compile it in a table with additional information for analysis; and an in-progress FAO review of commercially exploited aquatic species.

Participants reconvened in plenary in the afternoon. The representative of Africa read a statement by Senegal highlighting the proposal to transfer the West Africa manatee to CITES Appendix I. Mexico introduced a draft proposal to delete the imperial woodpecker from the appendices, citing that extinction of the species took place between 1946 and 1965. Regional representatives then presented their respective reports.

Later in the afternoon, participants heard the reports of the working groups on sturgeon and paddlefish, snakes and periodic review. While recommendations on sturgeon and paddlefish and snakes were adopted, the Committee discussed at length amendments to the report on periodic review. The Committee deferred further discussion of the report to Tuesday's plenary.

Day 5: 20 March 2012

On Tuesday, AC26 Participants reconvened for the last day to hear recommendations from working groups and proceed to adopt them. On sturgeon and paddlefish, the Committee agreed to amend the definitions of non-reusable caviar labels and secondary containers and recommended that the Secretariat continue to produce a written report at each AC meeting on related activities. On Sea Cucumbers, the AC recommended that the Secretariat issue a notification to the parties drawing attention to the FAO Fisheries and Aquaculture Technical Papers arising from the FAO Workshop on Sustainable Use and Management of Sea Cucumber Fisheries.

On CITES-listed corals, the Committee agreed that it is not possible even for an informed non-specialist, with reasonable effort, to distinguish between all the species in the genus without recourse to a specialist taxonomist. On nomenclature, it recommended not add a footnote to *Primates* spp. clarifying that *Homo sapiens* are not covered by this higher taxon listing. On sharks, the Committee recommended, inter alia, that the CITES Secretariat contact the top 26 shark fishing member States that did not respond to CITES notifications relating to sharks or to the FAO questionnaire on the status of implementation of the FAO IPOA-Sharks, and encourage a response and make this information publicly available to parties. AC adopted the recommendation for the species urgent and possible concerns such as seahorses addressed by the RST working group.

Shortly before the closing of the meeting, Ireland welcomed the forthcoming arrival of all the delegates to Dublin for the Joint AC & PC and PC meetings and encouraged other parties to host future CITES meetings. The meeting was gavelled to a close at 6:34.

Annex 3: List of Shark Species (Class Chondrichthyes) Submitted by Parties

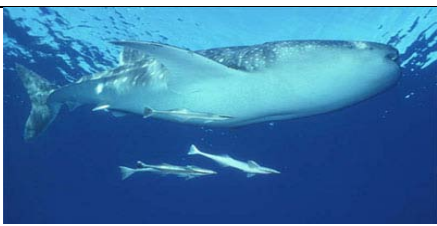
Australia (AC28 Doc. 16.2 Annex AU) School shark (<i>Galeorhinus galeus</i>) Gulper sharks (<i>Centrophorus harrissoni</i>, <i>C. moluccensis</i>, <i>C. zeehaani</i>)	Montenegro (this submission was provided after the deadline and will be posted as an information document on the CITES website) Porbeagle (<i>Lamna nasus</i>) Blue shark (<i>Prionace glauca</i>)
Colombia (AC28 Doc. 16.2 Annex CO) Silky shark (<i>Carcharhinus falciformes</i>) Oceanic whitetip shark (<i>Carcharhinus longimanus</i>) Scalloped hammerhead (<i>Sphyrna lewini</i>)	New Zealand (AC28 Doc. 16.2 Annex NZ) Deepwater Nurse Shark (<i>Odontaspis ferox</i>) Manta Ray (<i>Manta birostris</i>) Spinetail Devil Ray/Spinetail Mobula (<i>Mobula japonica</i>) Shortfin Mako Shark (<i>Isurus oxyrinchus</i>) Longfin Mako Shark (<i>Isurus paucus</i>) Porbeagle (<i>Lamna nasus</i>) Scalloped Hammerhead Shark (<i>Sphyrna lewini</i>) Great hammerhead Shark (<i>Sphyrna mokarran</i>) Smooth Hammerhead Shark (<i>Sphyrna zygaena</i>) Oceanic Whitetip Shark (<i>Carcharhinus longimanus</i>)
European Union (AC28 Doc. 16.2 Annex EU) Shortfin (<i>Isurus oxyrinchus</i>) and longfin Mako (<i>Isurus paucus</i>) Porbeagle (<i>Lamna nasus</i>) Bigeye thresher (<i>Alopias superciliosus</i>) Silky shark (<i>Carcharhinus falciformes</i>) Scalloped hammerhead (<i>Sphyrna lewini</i>) Spiny dogfish (<i>Squalus acanthias</i>)	United States of America (AC28 Doc. 16.2 Annex US) Spiny dogfish shark (<i>Squalus acanthias</i>) Porbeagle shark (<i>Lamna nasus</i>) Freshwater stingrays Family Potamotrygonidae Sawfishes Family Pristidae Gulper sharks genus <i>Centrophorus</i> School, tope, or soupfin shark (<i>Galeorhinus galeus</i>) Guitarfishes, shovelnose rays Order Rhinoatiformes Requiem and pelagic sharks Devil rays Family Mobulidae Leopard sharks (<i>Triakis semifasciata</i>) Hammerhead sharks (<i>Sphyrna</i> spp.) Dusky shark (<i>Carcharhinus obscurus</i>) Thresher sharks (<i>Alopias</i> spp.) Shortfin mako (<i>Isurus oxyrinchus</i>) Silky shark (<i>Carcharhinus falciformis</i>) Oceanic whitetip shark (<i>Carcharhinus longimanus</i>) Blue shark (<i>Prionace glauca</i>) Sandbar shark (<i>Carcharhinus plumbeus</i>) Bull shark (<i>Carcharhinus leucas</i>) Tiger shark (<i>Galeocerdo cuvier</i>)
India (AC28 Doc. 16.2 Annex IN) Whale shark (<i>Rhinocodon typus</i>) Knifetooth sawfish (<i>Anoxypristis cuspidate</i>) Pondicherry shark (<i>Carcharhinus hemiodon</i>) Ganges shark (<i>Glyphis gangeticus</i>) Speartooth shark (<i>Glyphis glyphis</i>) Ganges stingray (<i>Himantura fluviatilis</i>) Largetooth sawfish (<i>Pristis microdon</i>) Longcomb sawfish (<i>Pristis zijsron</i>) Giant guitarfish (<i>Rhynchobatus djiddensis</i>) Porcupine ray (<i>Urogyrnus asperimus</i>)	
Israel (AC28 Doc. 16.2 Annex IL) Sharpnose guitarfish (<i>Glaucostegus granulatus</i>) Halavi Guitarfish (<i>Glaucostegus halavi</i>) Clubnose guitarfish (<i>Glaucostegus thouin</i>) Common shovelnose Ray, Giant shovelnose Ray (<i>Glaucostegus typus</i>)	
Japan (AC28 Doc. 16.2 Annex JP) Whale shark (<i>Rhinocodon typus</i>) Basking shark (<i>Cetorhinus maximus</i>) Great white shark (<i>Carcharodon carcharias</i>)	

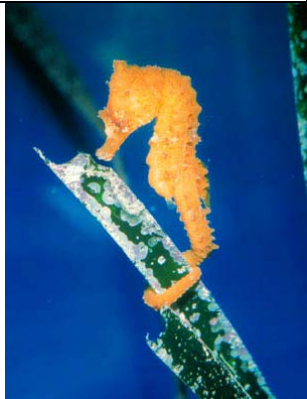
Annex 4: Coral Taxa where Identification to Genus Level is Acceptable*, but which should be Identified to Species Level where Feasible

Taxa	Number of species in the genus
<i>Acanthastrea</i>	10
<i>Acropora</i>	127
<i>Agaricia</i>	7
<i>Alveopora</i>	12
<i>Anacropora</i>	5
<i>Astreopora</i>	11
<i>Balanophyllia</i>	56
<i>Barabattoia</i>	3
<i>Blastomussa</i>	3
<i>Caulastrea</i>	4
<i>Coccinaraea</i>	9
<i>Ctenactis</i>	3
<i>Cycloseris</i>	11
<i>Cyphastrea</i>	7
<i>Dendrophyllia</i>	21
<i>Diaseris</i>	
<i>Distichopora</i>	23
<i>Echinophyllia</i>	8
<i>Echinopora</i>	9
<i>Euphyllia</i> (dead)	9
<i>Favia</i>	18
<i>Favites</i>	9
<i>Fungia</i>	25
<i>Galaxea</i>	4
<i>Goniastrea</i>	8
<i>Goniopora</i>	20
<i>Heterocyathus</i>	3
<i>Heteropsammia</i>	2
<i>Hydnophora</i>	7
<i>Isopora</i>	?
<i>Leptastrea</i>	6
<i>Leptoseris</i>	14
<i>Lithophyllon</i>	4
<i>Lobophyllia</i>	7
<i>Madracis</i>	15
<i>Millepora</i>	17
<i>Montastrea</i>	9
<i>Montipora</i>	56
<i>Mussismilia</i>	3
<i>Mycetophyllia</i>	5
<i>Oculina</i>	9
<i>Oxypora</i>	3
<i>Pachyseris</i>	12
<i>Pavona</i>	17
<i>Pectinia</i>	5
<i>Physogyra</i> (dead)	2
<i>Platygyra</i>	9
<i>Pterogyra</i> (dead)	4
<i>Pocillopora</i>	7
<i>Porites</i>	41

Taxa	Number of species in the genus
<i>Psammocora</i>	11
<i>Seriatopora</i>	5
<i>Scolymia</i>	5
<i>Siderastrea</i>	4
<i>Stylaster</i>	75
<i>Stylocoeniella</i>	3
<i>Stylophora</i>	5
<i>Symphyllia</i>	7
<i>Tubastraea</i>	6
<i>Turbinaria</i>	12

Annex5: Some Fish CITES Species concerning to the Southeast Asian Region

Common name: Coelacanth; Gombessa; Latimeria Scientific name:<i>Latimeria chalumnae</i> Distribution: Comoros, Indonesia, South Africa (ex) CITES listing:Appendix I (19/07/2000) Photo: © Johnny Jensen (taken at Denmark Aquarium, Denmark)	
Common name: Jullien's Golden Carp; Seven-line barb; Esok; Isok barb Scientific name:<i>Probarbus jullieni</i> Distribution: Cambodia, Lao People's Democratic Republic, Malaysia, Thailand, Viet Nam CITES listing:Appendix I (01/07/1975) Photo: © Johnny Jensen (taken at Sangklaburi, Thailand)	
Common name: Basking shark; Bone shark; Elephant Shark; Hoe-mother; Sun-fish Scientific name: <i>Cetorhinus maximus</i> CITES listing: Appendix II (13/02/2003) Distribution: Atlantic, Indian Ocean, Mediterranean and Black Sea, Pacific Photo: © S L Fowler	
Common name: Great white shark; man-eater shark (United Kingdom); mango-taniwha (New Zealand); mango-ururoa (New Zealand); white pointer (United Kingdom); white shark (United States of America); white death (Australia); Scientific name:<i>Carcharodon carcharias</i> Distribution:Worldwide distribution CITES listing:Appendix II Photo: © Rachel Powell	
Common name: Whale Shark Scientific name: <i>Rhincodon typus</i> Distribution: Atlantic, Indian and Pacific Oceans CITES listing:Appendix II (13/02/2003) Photo: © Shark Trust	
Common name: Golden Arowana, Asian Arowana, Asian bonytongue, Golden Dragon Fish Scientific name: <i>Scleropages formosus</i> CITES listing: Appendix I (01/07/1975) Distribution: Southeast Asia Photo: Jörg Hess, Zoological Garden Basel	

Common name: Giant Catfish Scientific name: <i>Pangasianodon gigas</i> Synonym: <i>Pangasius gigas</i> Distribution: Cambodia, China: Yunnan, Lao People's Democratic Republic, Myanmar, Thailand, Viet Nam CITES listing: Appendix I (01/07/1975) Photo: © Johnny Jensen (taken at Bung Sam Lan Lake, Bangkapi, Thailand)	
Common name: Black seahorse; short-snouted seahorse Scientific name: <i>Hippocampus hippocampus</i> Synonyms: <i>H. antiquorum</i>, <i>H. antiquus</i>, <i>H. brevirostris</i>, <i>H. europaeus</i>, <i>H. heptagonus</i>, <i>H. pentagonus</i>, <i>H. rondeletii</i>, <i>H. vulgaris</i> Distribution: Atlantic - eastern central, northeast, Mediterranean and Black Sea CITES listing: Appendix II (15/05/04) © Patrick Louisy Photo: (taken at the Banyuls aquarium, south of France)	
Common name: Longsnout seahorse; slender seahorse Scientific name: <i>Hippocampus reidi</i> Synonyms: <i>Hippocampus obtusus</i>, <i>Hippocampus poeyi</i> Distribution: Atlantic ocean – southwest, western central CITES listing: Appendix II (15/05/04) © Patrick Louisy Photo: (taken in Curaçao, Netherland Antilles)	
Common name: Long-snouted Seahorse Scientific name: <i>Hippocampus guttulatus</i> Synonyms: <i>H. atrichus</i>, <i>H. bicuspis</i>, <i>H. multiannularis</i>, <i>H. filamentosus</i>, <i>H. jubatus</i>, <i>H. longirostris</i>, <i>H. microcoronatus</i>, <i>H. microstephanus</i>, <i>H. rosaceus</i> Distribution: Atlantic ocean – eastern central, northeast, Mediterranean Sea and Black Sea CITES listing: Appendix II (15/05/04) © Patrick Louisy Photo: (taken at the Thau laguna, south of France)	



REPORT OF THE REGIONAL TECHNICAL CONSULTATION ON ADDRESSING TECHNICAL ISSUES ON COMMERCIALY-EXPLOITED AQUATIC SPECIES

18-20 October 2011, Bangkok, Thailand

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I. INTRODUCTION

1. The Regional Technical Consultation on Addressing Technical Issues on Commercially-exploited Aquatic Species was organized by the SEAFDEC Secretariat and Training Department from 18 to 20 October 2011 in Bangkok, Thailand.

2. The Consultation was attended by national delegates from the ASEAN and SEAFDEC Member Countries, namely: Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, Philippines, Thailand and Vietnam. The Consultation was also attended by the SEAFDEC Secretary-General and Deputy Secretary-General, and senior officials of the SEAFDEC Secretariat and the Departments as well as a representative from the United Nations Environment Programme Regional Office for Asia Pacific. The list of participants appears as **Annex 1**.

II. OPENING OF THE CONSULTATION

3. The SEAFDEC Secretary-General, *Dr. Chumnarn Pongsri* welcomed the participants to the Consultation, and summarized the objectives and expected outputs of the Consultation which include the identification of technical issues related to selected commercially-exploited aquatic species and the priority actions and recommendations to address such issues. He emphasized that the recommendations of the Consultation would be compiled and submitted to the SEAFDEC Council Directors for policy guidance and to the CITES Secretariat for appropriate action considering that such issues could continue to confront the sustainability of fisheries in the SEAFDEC Member Countries. His Opening Speech appears as **Annex 2**.

III. BACKGROUND AND OBJECTIVE OF THE CONSULTATION AND INTRODUCTION TO AGENDA, ARRANGEMENTS AND ITS ADOPTION

4. A brief background and introduction of the agenda and arrangements of the Consultation was presented by *Dr. Worawit Wanchana* from the SEAFDEC Training Department (TD). He informed the Consultation that the forum to discuss CITES-related issues has been arranged as part of the SEAFDEC Program on 'Addressing international fisheries related issues from a regional perspective'. This program aims to generalize the regionally common/coordinated approaches by providing a platform for Member Countries and other relevant organizations to discuss important international related issues concerning commercially-exploited aquatic species, and recommend necessary actions to address the looming issues. Therefore, the Consultation includes four main objectives which are to: 1) build awareness of the SEAFDEC Member Countries on CITES issues related to commercially-exploited aquatic species (CEASs); 2) review the existing data, status and trend of selected CEASs; 3) facilitate the development of policy recommendations to be further used as common views of the Member Countries; and 4) promote regional cooperation on the conservation and management of selected CEASs. The Consultation adopted the Agenda which appears as **Annex 3**.

IV. OVERVIEW ON CONCERNED AQUATIC SPECIES BASED ON EXISTING/CURRENT INITIATIVES AND RECOMMENDATIONS FROM THE PREVIOUS ASEAN-SEAFDEC REGIONAL TECHNICAL CONSULTATION

5. The Consultation took note of the overview on commercially-exploited aquatic species under international concern especially focusing on species discussed during CoP-CITES for a (**Annex 4**), which was presented by *Dr. Somboon Siriraksophon* from the SEAFDEC Secretariat. During the ensuing discussion, the Consultation cited that the main problems with regards to CITES-related issues could include: difficulty in species identification from exported products (e.g. tuna meat, juvenile tunas, shark fins), the fact that some species listed under CITES Appendices are caught as incidental catch from trawl fisheries due to the multi-species nature of fisheries in Southeast Asia, the large number of small-scale fishers involved in fishing operations, national statistics framework that does not seem to facilitate data collection by species resulting in lack of data and information for management purposes, and weak enforcement of national legislations that regulate management and trade of the concerned species.

6. The Consultation was also informed that in addition to the initiative of CITES in ensuring the sustainable exploitation of aquatic species by regulating trade, related efforts are also being pursued by several RFMOs and relevant national agencies to ensure the sustainable utilization of resources including the collection of data and information through their respective statistical frameworks. In this regard, it was recommended that regional cooperation through existing mechanisms should be strengthened to facilitate the exchange of information and avoid duplication of efforts. Meanwhile, the participation of fisheries-related authorities in CITES related meetings and discussions should be enhanced to reinforce the arguments of the countries in the region and augment relevant information on the commercially-exploited aquatic species.

7. While taking note of the CoP-CITES decision processes on certain Resolutions and its Decisions, the Consultation commented that during the previous CoP-CITES most representatives from the ASEAN came from environment-related agencies. Such situation made it difficult to coordinate and convey the arguments that emanate from the fisheries sector through the said representatives. The Consultation therefore urged that in future CoP-CITES starting with the forthcoming CoP16-CITES in 2013, all SEAFDEC-ASEAN Member Countries should consider supporting the participation of their respective fisheries-related authorities to reflect the stance from the fisheries point of view in the said fora.

4.1 Sharks and Rays

8. The representative from the SEAFDEC Marine Fishery Resources Development and Management Department (MFRDMD), *Mr. Abu Talib bin Ahmad* presented the Overview on Sharks and Rays (**Annex 5**) which focused on the shark species that had been proposed and discussed in the CITES and FAO fora as well as the outputs from the review exercises on sharks and rays conducted by SEAFDEC. The Consultation was informed on the issues and concerns which include insufficient data on catch and species composition, lack of understanding on the biology and identification of species, and stock assessment has never been conducted. The Consultation was also informed on the proposed activities that should be conducted such as training on species identification, improving data collection using the logbook system, and conduct of stock assessment programs as well as the development of NPOA-Sharks and NPOA guidelines for implementation by stakeholders.

9. The representative from SEAFDEC/TD, *Mr. Isara Chanrachkij* presented the outputs of the Special Meeting on Sharks Information Collection in Southeast Asia (**Annex 6**) which was conducted from 15 to 17 September 2011 in Bangkok, Thailand. The Consultation was informed that the said Meeting was aimed at improving the collection of information on the current production of sharks as well as the utilization and management of sharks in the ASEAN

countries, and identifying the key issues and limitations as well as the appropriate program of activities aimed at improving national information collection on sharks in the ASEAN countries.

10. The Consultation however noted that the high biodiversity of aquatic species with small portion of sharks in the catch data could result in low incentive to collect the necessary information. Since sharks and rays are incidental catch mainly by bottom trawls, information on their stock structure, abundance, life history, reproductive rate, and status of habitat would be difficult to collect. The Consultation was also informed on the recommendations made during the September 2011 Meeting which focused on three aspects, namely: need to improve governance, enhance capacity building, and conduct of R&D and socio-economic studies. Moreover, the Consultation was also informed on the activities of SEAFDEC in 2012 which would focus on information collection of sharks and rays, capacity building for species identification and development of model/methodologies for stock assessment of dominant species.

11. The Consultation noted the comments made by the representative from Japan *Mr. Makoto Yamauchi* during the discussion on sharks at the 25th Meeting of the Animals Committee. He cited that CoP15-CITES adopted the Resolution on conservation and management of sharks by directing the Animals Committee to “*make species-specific recommendations at meetings of the Conference of the Parties if necessary on improving the conservation status of shark*”. He informed the Consultation that during the working group discussion on sharks at the CITES 25th Animals Committee, EU proposed to focus on species-specific recommendations. However, the Asian countries argued against such proposal due to several reasons including the rejection of the list of concerned shark species by vote at the CoP15-CITES. While the working group did not develop further recommendations, all Parties were encouraged to submit a list of shark species as candidates for discussion during the 26th Meeting of the Animals Committee to be convened on 15 to 19 March 2012 in Geneva. Considering that only few SEAFDEC Member Countries attended the working group discussion on sharks, he suggested that the Consultation should consider increasing the participation of representatives from the Member Countries during the inter-sessional working group meeting which is conducted through email basis without incurring any costs. His statement appears as **Annex 7**.

12. The representative from Japan, *Mr. Hisashi Endo* added that after CoP15-CITES, FAO and CITES Secretariat jointly convened a workshop in July 2010 to review the application and effectiveness of international regulatory measures for the conservation and sustainable use of elasmobranchs. Since no expert from the Southeast Asian region attended the said workshop considering that sharks are important for the region, he therefore encouraged the Member Countries to take part in similar workshops in the future. In addition, he informed the Consultation that discussions on various aspects were made during the workshop, *e.g.* the strengths and weaknesses of regulatory measures including those of CITES and evaluation of their effectiveness. Since the report of the said workshop has not yet been released, he requested the SEAFDEC Secretariat to follow-up with concerned agencies to be able to obtain the relevant information for dissemination to the Member Countries.

13. The Consultation recognized that based on the total landing catch data, sharks account for only small portion compared with the total fishery production since most of the sharks are caught accidentally. In addition, based on the review exercises, all parts of sharks are utilized, *e.g.* meat, fins, skin, bones, head. However, no traceability or food safety initiatives have been undertaken for such products from sharks and rays. The NPOA-Sharks should therefore consider coming up with accurate data and information with respect to the production and utilization of sharks as well as on the effective implementation of the NPOA. Moreover, while noting that collection of statistics on sharks and rays by detailed species level by country would be difficult to undertake, the Consultation suggested that initial data collection could focus on the scientific perspective of specific species that are commercially-exploited and of international concern.

14. Recognizing that CITES deals only with international trade, and that there are other channels that deal with exploitation of sharks, the Consultation argued that regulating international trade may not effectively ensure the sustainable utilization of sharks, and suggested that focus should be made by relevant countries on the broader aspects of conservation and management. In this regard, the Consultation suggested that awareness and education programs should be considered as top priority. A member expressed the opinion that education is necessary not only for the local people but also for consumers in order to possibly reduce the demand for sharks, while another member argued that it is not a scientific approach and that conservation of sharks should be based on the scientific data by species or stocks.

15. The Consultation also suggested that specific species of sharks, perhaps at least five species and specific areas, could be initially considered to start with any assessment although such effort would need the assistance of experts. In addition, the previous proposal which has been accepted and/or rejected by CITES should also be investigated and used as basis for planning related to the collection of information and development of baseline information that could be used to facilitate discussion during future CITES relevant fora.

4.2 Tuna

16. The representative from SEAFDEC/TD, *Dr. Worawit Wanchana* presented the 'Current Status of Tuna Fisheries in Southeast Asia: Regional Perspective' as shown in **Annex 8**. He summarized the world catch of oceanic and neritic tunas, and tuna fisheries in Southeast Asia, the key issues and concerns on the development and management of tuna fisheries in the region, and presented some policy recommendations for sustainable tuna fisheries in the region.

17. While noting that the main problem in data collection of tuna lies mainly on the inadequacy of data on catch landed in transboundary countries, the Consultation suggested that bi-lateral agreements between flag states and port states should be established in order to distinguish the actual quantities landed and the extent of deviation of the information from official national landing statistics.

18. Furthermore, while expressing the view that the participation of fisheries-related agencies in CITES-related fora is important, the Consultation suggested that high-ranking officials should be made to understand the current situation which could include providing them with the basic information to be used as reference during negotiations. In this regard, the Consultation also suggested that information should be prepared in an easy to understand manner and conveyed to responsible agencies prior to the organization of relevant fora. Information collection should also be improved focusing on species that are important and which may be proposed for listing in the CITES Appendices.

19. While considering that only the bluefin tuna was proposed for listing during the CoP15-CITES, the Consultation expressed the apprehension that other species of oceanic tunas could be proposed for listing in CITES Appendices in the future. The Consultation therefore stressed that accurate data for stock assessment should be collected and compiled, especially noting that several tuna-related RFMOs have promoted the improvement of data collection, *e.g.* through catch documentation scheme. The Consultation, however, considered that stock assessment could be influenced by the other factors, including concerns about the possibility of abuse of the results of the assessment, leading to unnecessarily severe regulations of trading of certain species, *e.g.* too small quota to be given to each fishing area, and listing of species in CITES Appendices. In this regard, the Consultation suggested that Member Countries should play the important role of collecting and compiling accurate data on tuna by species and by fishing area, the results of which could be used for stock assessment as well as for addressing issues related to IUU fishing.

20. The Consultation supported the suggestion that data collection on landing across the countries' borders should be made part of the recommendations to improve data collection on tuna in the region. In this connection, the representative from SEAFDEC/TD, *Mr. Isara Chanrachkit* informed the Consultation on the willingness of SEAFDEC to share information on available methodology for investigating the species composition of tuna in canneries, which could be disseminated in electronic format to the participants of the Consultation.

21. The Consultation also suggested that the impacts of listing certain species of tunas (*e.g.* bluefin tuna) in CITES Appendices to the other tuna species found in the region, should be identified and discussed. Although bluefin tuna is not caught in the Indian Ocean, data collection on landings of other tuna species in this fishing area should be enhanced as the current data which is limited would not be sufficient for stock assessment purposes. In addition, since stock assessment is considered very costly, the Consultation suggested that catch assessment should be considered an option to study the status and trends of tuna production. The Consultation also suggested that data collection by countries should focus on tuna species in general as the tuna species to be addressed by CITES could change over time.

4.3 Sea cucumber

22. The Consultation took note of the issues and results of international discussions relevant to sea cucumbers and the recent available information on sea cucumbers based on SEAFDEC review exercises, *e.g.* status of production and trade, including relevant studies and initiatives undertaken at national and regional levels, which was presented by *Ms. Sawitree Chamsai* from the SEAFDEC Secretariat (**Annex 9**). The Consultation was also informed on the status of 'Indonesia's Sea Cucumber Research and Relevant Information' which was presented by the representative from Indonesia, *Mr. Mustaidz Billah* (**Annex 10**).

23. The representative from the Philippines, *Mr. Edwyn B. Alesna* shared the results of the initiatives undertaken by his country in improving management measures for sea cucumbers such as size regulation, and that the relevant law providing such measures may be enacted in 2012. In this connection, the representative from Japan informed the Consultation that conservation management measures in Japan are managed by fishers based on fishery rights, and that management is implemented by each fishery cooperative/association where members of the concerned cooperatives/associations will be solely granted with rights to conduct fishery activities including harvesting of sea cucumbers.

4.4 Enhancement programs: seahorse, humphead wrasse, sea cucumbers and others

24. The representative from SEAFDEC Aquaculture Department (AQD), *Dr. Teruo Azuma* presented the Overview on CITES-related species such as sea horse, sea cucumber, humphead wrasse and others, focusing on the status, culture technology and enhancement programs (**Annex 11**). He cited that the main activities conducted by AQD on resource enhancement include: 1) stock enhancement of internationally traded species, *e.g.* sea horses, humphead wrasse; 2) stock enhancement of regionally important species, *e.g.* sea cucumbers, abalone, mud crab, as well as community-based management for such species; 3) establishment of adaptive measures for the changing environment focusing on corals; and 4) conduct of related training courses.

Seahorse

25. The Consultation noted that nine species of sea horses found in the region have been listed in Appendix II of CITES. Considering such scenario, AQD has been developing the technology for breeding and mass production of seahorses in order to reduce pressure on wild stocks and lessen the dependence of fishers on the wild population. AQD's culture studies have been focused on 18 species (13 for commercial, 4 under research, 1 unknown). The Consultation was also informed on the status of trading of sea horses at the global and regional levels.

26. The Consultation recognized that the development of aquaculture technology for sea horses could have the potential to alleviate pressures on the wild population only if this is accompanied with other fisheries and habitat management initiatives. In addition, aquaculture could also be a solution to replace wild-caught animals by providing economic opportunities for fishers to meet future increases in demand of the species. In addition, since stock release programs may not have any positive action to support the population in natural environments on emergent cases, the Consultation suggested that certain risks should be avoided such as disease transmission and genetic biodiversity threats among others.

27. While taking note of the progress in sea horse research at AQD, the representative from Cambodia expressed the desire of his country to invite experts from AQD to assist in the development of aquaculture techniques for sea horses in Cambodia.

Humphead wrasse

28. The Consultation was informed on the distribution of humphead wrasse in the Indo-Pacific region in water depths of less than 100 meters, and also on its long life cycle development and late maturation that lead to the species' lack of resilience to fishing pressure. In this regard, efforts have been made by AQD to collect information on the spawning and larval development of the species. The Consultation was also informed that in the experiments conducted by AQD, low fertility and hatching rates had been observed due to the insufficient information on appropriate feeds for the larvae causing high mortality at the early stages. AQD is therefore considering the procurement of more robust breeders in order to conduct further studies focusing on appropriate feeding management during the larval rearing.

Sea cucumber

29. The Consultation was informed that although sea cucumber fishery is mostly dependent on wild stocks, aquaculture could be an option to reduce pressure on the wild stocks but such effort is still costly at this moment. In this connection, the Consultation suggested that protection of habitats such as sea grass beds should be promoted in order to enhance the population of sea cucumbers, and that the size of sea cucumbers to be harvested should be regulated.

Abalone

30. The Consultation expressed the view that size regulations for harvesting of abalone should not be limited only to the small sizes but also the large sized abalone to preserve the broodstock. In response to the observation made by the Consultation that releasing hatchery-bred abalone in the wild did not increase survival rate and production, AQD agreed to conduct further studies on transport techniques, suitable size to be released, and habitat selection to ensure good quality of abalone juveniles and high survival rates.

Corals

31. The Consultation pointed out that although corals are distributed in various levels of water depths, coral bleaching occurs only in shallow waters affected by direct sunlight. Thus, a study on this phenomenon should be conducted. In this connection, the Consultation was informed that information and knowledge on the affective factors, which are available in Japan could be availed of, including the survival rates of coral spawns, conditions of coral seeds or spawns, growth of coral juvenile colonies, appropriate releasing areas, and predators in the releasing areas.

Mud crab

32. The Consultation expressed the view that mud crab should be included as among the species that are heavily exploited especially for soft-shell crab production. In this regard, production technologies and management strategies should be further developed for the conservation of the species.

V. SPECIAL ISSUES RELATED TO CITES

5.1 Introduction on the process of proposing in Biodiversity Convention, including common problems and constraints in the listing of aquatic species in CITES Appendices

33. The representative from the United Nations Environment Programme Regional Office for Asia Pacific, *Dr. Haruko Okusu* presented some technical issues related to CITES (**Annex 12**). The Consultation was informed that CITES uses a system of permits and certificates to regulate international trade in animal and plant species listed in any of the three Appendices by degree of protection needed.

34. While noting that the non-detriment finding (NDF) concluded by a **Scientific Authority** concerning the exportation of specimens of particular species will not negatively impact on the survival of such species in the wild, the Consultation suggested that SEAFDEC should provide information on NDF of certain species to the Animals Committee through the CITES Secretariat especially during the preparation and development of the guidelines on NDF. The Consultation also noted that the NDF process has been developed by IUCN with the purpose of encouraging countries to prove that their respective volumes of export of certain species under Appendix II will not affect the wild population therefore setting of quotas could be one of the measures to be promoted.

35. The Consultation was informed that for species listed under CITES Appendices, responsible authorities of respective countries could request for such list from CITES while the data could also be accessed from the CITES website by searching for “check list of appendix”. In this connection, SEAFDEC was asked to compile the relevant information on all aquatic species including freshwater and marine fishes, crustaceans, and corals, among others, which should be provided to the Member Countries to be used as background information during the participation of the countries’ representatives at CITES meetings.

5.2 Problems on Coastal Resource Management under the CITES: Seahorse and Sea Cucumber Cases

36. The representative from Nagoya City University of Japan, *Dr. Jun Akamine* presented the “Problems on Coastal Resource Management under the CITES: Seahorse and Sea Cucumber Cases” (**Annex 13**). The Consultation was informed that the two main problems related to seahorses which had been listed in the CITES Appendices include the review of significant trade (RST) at the Animals Committee with the possibility of trade-suspension in case the RST fails in the future, and lack of follow-up research activities on the conservation of the species and the impacts on the livelihoods of concerned fishers after 2004.

37. The Consultation while taking note of the background and information on species listed in CITES Appendices, reiterated that information on species listed in CITES Appendices as well as species that have been proposed for listing in the Appendices should be compiled by SEAFDEC for dissemination to the Member Countries.

5.3 Others

38. The Consultation noted that thus far, there has been no proposal yet on any aquatic species for possible listing in the CITES Appendices during the CoP16-CITES.

VI. IDENTIFICATION OF THE TECHNICAL PROBLEMS ON MANAGEMENT OF THE SELECTED COMMERCIALY-EXPLOITED AQUATIC SPECIES WHICH ARE SHARKS AND RAYS, TUNA, SEA CUCUMBER, HUMPHREY WRASSE, INLAND AQUATIC SPECIES SUCH AS IRRAWADDY DOLPHIN.

Brunei Darussalam

39. The representative from Brunei Darussalam, *Mr. Idirs Haji Abd Hamid* presented some technical problems encountered by his country with respect to management of selected commercially-exploited aquatic species (**Annex 14**). These include: lack of awareness on the commercially-exploited aquatic species; insufficient monitoring, control and surveillance system; inadequate data collection especially in terms of individual species since landings are not recorded; difficulties in species identification especially for tuna juveniles, sharks, sea cucumbers; and multi-species fisheries which is difficult to select and omit certain listed species.

40. While noting that Marine Protected Areas (MPAs) has been used as management measure to conserve some selected commercially-exploited aquatic species in the country, the Consultation suggested that an assessment of how effective the MPAs are for the conservation of some species should be carried out. In response, the Consultation was informed that monthly reef monitoring under the reef check program is conducted, the result of which is compared with the relevant data after the establishment of MPAs. With regards to regulating the harvest of marine organisms in the established MPAs' no-take zone, the Consultation suggested that concerned fishers should also be informed on the regulation and warned before actual enforcement, and that assessment should be carried out to check whether the particular species population had increased after the establishment of MPAs.

41. The Consultation was also informed that the country planned to conduct stock assessment for sharks and lobsters in the near future. However, for other species such as the Napoleon wrasse, since production is lumped in general catch landings, the specific catch is not distinct and thus, would be difficult to conduct any stock assessment. He added that a regional expert consultation on selective fishing gear for the said species will be conducted in his country and requested SEAFDEC and other related organizations to support the consultation by providing the relevant expertise.

Cambodia

42. The representative from Cambodia, *Mr. Ouk Vibol* presented a summary on Management of Endangered Aquatic Species in Cambodia which appears as **Annex 15**. He mentioned that the country has identified 58 aquatic species as endangered half of which are freshwater aquatic species and the rest are marine species. The country has already established laws on fisheries including those for the management and protection of resources and sub-decree on International Trade of Wildlife Fauna and Flora, and developed the Strategic Planning Framework for Fisheries to improve the stocks of endangered aquatic species.

43. The Consultation noted the challenges faced by the country with regards to the management of endangered aquatic species which include controlling the accidental catch of such species, difficulty in data collection since there is no specific type of fishing gear for these species, and fishers not keeping records on these species in their logbooks to circumvent the laws that had been enforced on catching of particular species. The Consultation was also informed that the country is planning to establish MPAs which is expected to be completed in 2012, setting the

no-take or no-utilization zones. In addition, the country is developing the appropriate format to record data including those of endangered aquatic species based on scientific research.

44. The Consultation expressed the view that since the geographical situations of Cambodia, Thailand and Vietnam are similar, collaboration should be enhanced especially from the point of view of the taxonomy of species common to these countries. In this connection, the Consultation was informed that Cambodia and Thailand have established MOU on scientific information collaboration, initially for satellite tagging to study sea turtle migration and in the future such effort could be enhanced to include other relevant areas of concern.

Indonesia

45. The Consultation noted the technical problems of Indonesia on the management of selected commercially-exploited aquatic species as presented by *Mr. Mustaidz Billah* which appears as **Annex 16**. Indonesia has identified the problems for management of 1) *sharks and rays* - taxonomy and identification of species, and accuracy of catch and effort data from capture fisheries; 2) *tunas* - limitations of data and information on tuna stocks and the level of utilization, and absence of National Tuna Management Plan; 3) *sea cucumbers* - no specific regulations for management, while spawning in hatcheries has not yet been successfully carried out although successes had been recorded in laboratory experiments, export of sea cucumbers which is less than 1000 tons per time is recorded only under export of 'other marine products'; 4) *sea horse* - relatively small number of eggs and pairing life which describes their vulnerable social structure making them easily distracted that leads to reduced level of production in the end; 5) *Napoleon wrasse* - destructive method of catching that damages the environment such as the use of cyanide threatening the species habitat and destroying the coral reefs, no optimum harvesting supervision available as of the moment.

46. The Consultation was also informed that Indonesia is in the process of issuing moratorium for the catch of Napoleon wrasse, and thus, no data on export of the species is available. Moreover, considering that stock assessment of tuna should be conducted before issuing any quota for such species, and since Indonesia is now developing the quota for tuna, SEAFDEC was requested to work closely with Indonesia on this issue.

Japan

47. The representative from Japan, *Mr. Hisashi Endo* presented his views on the listing of commercially-exploited aquatic species in CITES Appendices (**Annex 17**) which include: 1) application of the current listing criteria to commercially-exploited aquatic species could result in possible listing of species which are not endangered with extinction or likely to become so, in the CITES Appendices; 2) down-listing (transferring from Appendix I to II) or de-listing (removing from the Appendices) of species would be difficult even after the resources have already recovered; 3) the CITES system would not function effectively for the management of aquatic species; and 4) various adverse effects of the CITES Appendices to the livelihoods in local communities.

Lao PDR

48. The representative from Lao PDR, *Mr. Akhane Phomsouvanh* presented the Technical Problems on Management of Selected Commercially-exploited Aquatic Species in Lao PDR which appears as **Annex 18**. He cited the country's two main endangered aquatic species in freshwater environment which are the Mekong giant catfish (*Pangasianodon gigas*) and the Irrawaddy dolphin (*Orcaella brevirostris*). The Consultation was also informed that Lao PDR and Cambodia already have an existing MOU on trans-boundary agreement to establish quota for harvesting the Mekong giant catfish. The Consultation also expressed the view that the declining population of the Irrawaddy dolphins could be due to inbreeding.

Malaysia

49. The representative from Malaysia, *Mr. Abdullah bin Md Dan* introduced briefly the technical problems on management of selected commercially-exploited aquatic species of Malaysia which appears as **Annex 19**. Considering that obtaining quality data and information is difficult to undertake, the Consultation suggested that collection of the data could start from a minimum level where fishers should know the catch situation and amount of catch, in which case there is a need to enhance cooperation with fishers for data collection and management purposes. However, the representative from Malaysia expressed the view that collecting data from fishers, limiting fishing activities, developing educational programs, conducting research, and strengthening enforcement always need certain forms of incentives. Furthermore, the Consultation suggested that possible replacement of shark fins should be explored taking as an example the development of artificial crab meat.

50. For corals and sea horses, the Consultation was informed that export of these species is not allowed in his country although re-export could be allowed. In this connection, the Consultation suggested that tagging of corals and sea horses could be explored in order to determine that the species come from importation and thus can be re-exported. In this connection, the representative from the Philippines informed the Consultation that the tagging technique for corals had been studied by USA and the relevant information is available from the coral base.

51. While noting that the country has more than 100 sea horse culture farms in operation which require registration with relevant national authorities and the CITES Secretariat in Geneva, the Consultation expressed the apprehension that since the process for registration with the CITES Secretariat takes very long time (usually taking one year for registration), this could result in increased illegal trade of such species. Moreover, the Consultation also expressed the concern that illegal trade could be carried out easily as the small specimens can be packed in aerated bags and exported to other countries.

Myanmar

52. The Consultation took note of the overview of Myanmar's conservation initiatives for selected species, the technical problems and suggestions (**Annex 20**) which was presented by the representative from Myanmar, *Mr. Tint Swe*. The Consultation was also informed on the problems in data collection and biological study of sharks and rays, sea cucumber, and tuna species in Myanmar. Specifically for shark fisheries which are small-scale and where sharks are mainly caught as by-catch, collection of actual data of production by species is difficult to undertake which is coupled by the insufficient capacity to collect scientific data at landing sites. The Consultation then suggested that co-management approach could be considered for the data collection of such species.

Philippines

53. The representative from the Philippines, *Mr. Edwyn B. Alesna* presented the Challenges in the Implementation on CITES-listed Aquatic Animals in the Philippines which appears as **Annex 21**. The Consultation was informed that the country prohibits the utilization of all CITES-listed aquatic animals in both domestic and international use/consumption. The Consultation suggested that the said national policy should be disseminated to those who are affected by the implication of listing certain aquatic species in the CITES Appendices, specifically the fishers whose livelihood must have suffered the consequences, by reducing their potential incomes and diminishing business opportunities. In this regard, the representative from Philippines emphasized that culture of aquatic species has been carried out to address such concern, and for the identification of such species tagging system could be developed to ensure that the species traded are not from the wild. The representative from Malaysia expressed the view that since

CITES is only regulating international trade, domestic trade could be supervised under the respective countries' jurisdictions.

Thailand

54. The Consultation took note of the brief introduction on the technical problems related to the management of selected commercially-exploited aquatic species in Thailand which was presented by *Ms. Yoo-ee Getpech (Annex 22)*. In this connection, the representative from Cambodia suggested that since Thailand has been carrying out the restoration of the Mekong giant catfish resource by releasing millions of fingerlings to the wild habitat for many years, the experience of Thailand and the results of such activity could be shared by interested countries particularly Cambodia.

Vietnam

55. The representative from Vietnam, *Ms. Le Hong Lien* presented an overview of the country's national legislation and implication of CITES (**Annex 23**), and informed the Consultation that CITES provisions have been included in various regulations enacted by the country since 1994, and implemented through the country's two main authorities in charge of the compliance of CITES regulations, the scientific and management authorities.

56. Specifically in 2009-2010, Vietnam had set the export quota of about 15,000 pieces for clams and in 2011 a quota of 100,000 individuals was set for the export of seahorses. In this connection, the Consultation requested Vietnam to share its experience with the other countries in the region especially with regards to the NDF scheme/requirement as well as on the development of quota permits for clams and seahorses.

Summary of the technical problems on management of the selected commercially-exploited aquatic species

57. The Consultation noted the summary of the technical problems on management of the selected commercially-exploited aquatic species which was introduced by *Dr. Somboon Siriraksophon (Annex 24)*, and the upcoming activities related to the issues on commercially-exploited aquatic species such as CITES Animals Committee on 15 to 20 March 2012, the Joint Meeting of CITES's Plant and Animal Committee on 22 to 24 March 2012, CITES Standing Committee on 23 to 27 July 2012, and the FAO COFI meeting in July 2012. In this regard, all Member Countries were encouraged to participate in such events and that SEAFDEC should serve as the lead institution of the region and to guide the Member Countries on the issues that would be discussed during such fora. In this connection, the Consultation suggested that a common practice of regularly disseminating relevant information (scientific evidence) should be established.

58. In addition, the Consultation suggested that SEAFDEC should assist the Member Countries in conducting pre-assessment of specific individual species especially sharks and rays, using simple methods. From the assessment results, the Member Countries could develop relevant measures and regulations to enable them to provide scientific information during the discussions at regional and international fora.

59. The representative from Japan informed the Consultation that it is not appropriate to simply apply CITES standards to a fish species being managed by an international organization, as the rules of CITES and fisheries management are different. For example, in the case of the southern bluefin tuna, although its stock status is low, fishing is being continued in a sustainable manner under CCSBT fisheries management, according to the scientific advice and the newly introduced TAC setting system (management procedure).

60. While noting the aforementioned suggestions on the actions to be undertaken in the future, the Consultation requested SEAFDEC to identify short-term and long-term activities for consideration by the SEAFDEC Council. In this connection, the Consultation requested the Member Countries and SEAFDEC to prepare a concrete work plan especially on the need to collect information on the gaps and to come up with tangible scientific information.

VII. CURRENT UPDATE INFORMATION ON IMPLEMENTATION OF THE CONSERVATION AND MANAGEMENT BY INTERNATIONAL, REGIONAL, AND NATIONAL BODIES RELATED TO CONSERVATION AND MANAGEMENT OF COMMERCIALY-EXPLOITED AQUATIC SPECIES

CoP16-CITES, Thailand

61. The representative from Thailand, *Ms. Yoo-ee Getpech* informed the Consultation on the planned arrangements for the CoP16-CITES in Thailand from 3 to 15 March 2013 as agreed by Thailand and CITES Secretariat (**Annex 25**). However, the meeting venue will be confirmed later by Thailand's Ministry of Natural Resources and Environment as the national agency in charge of co-organizing the CoP16-CITES.

IDENTIFICATION OF THE ISSUES TO BE ADDRESSED AT THE FORTHCOMING SESSION OF FAO COMMITTEE ON FISHERIES (COFI) AND CITES EVENTS (SUCH AS ANIMALS COMMITTEE MEETING)

62. The representative from Japan expressed the concern on the relationship between FAO and CITES. He pointed out that from the 3rd FAO Expert Advisory Panel held prior to the CoP15-CITES which seemed to have not functioned appropriately, some improvements had been noted during the 29th Session of COFI, viz: *"The Committee express the view that technical aspects related to trade and management should be considered by FAO Expert Advisory Panel for assessment of CITES listing proposals for commercially exploited aquatic species in accordance with the existing terms of reference."* His statement appears as **Annex 26**.

VIII. RECOMMENDATIONS FOR REGIONAL COLLABORATION AND COOPERATION ON THE SELECTED COMMERCIALY-EXPLOITED AQUATIC SPECIES RELATED TO CITES

63. The Consultation expressed the view that some progress on scientific data collection had been made by the Member Countries. However, the region still lacks specific mechanisms or tools for sharing such existing scientific data. In this connection, the Consultation suggested that all Member Countries should enhance their cooperation and develop a platform for discussion of the relevant issues scientifically. The Consultation also suggested that the ASEAN Working Group on CITES should be one of the fora to enhance regional cooperation and where the efforts of the ASEAN countries could be reflected.

IX. CONCLUSION AND CLOSING OF THE CONSULTATION

64. The Deputy Secretary-General of SEAFDEC, *Mr. Kenji Matsumoto*, expressed his appreciation to the participants for their active participation and inputs during the deliberations which enabled the Consultation to come up with significant recommendations. He then declared the Consultation closed. His Statement appears as **Annex 27**.



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REF07a

Overview of Elasmobranchs Fisheries in the Southeast Asian Region

2011

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1. Introduction

In Southeast Asian region, most elasmobranchs were caught by-catch by the artisanal or small-scale fisheries, make up only a small percentage of the species targeted by the world's fisheries. Their economic value ranks low among marine commercial fishes. But over the past two-three decades, human exploitation of sharks has substantially increased worldwide. Shark's fins have become one of the world's most lucrative fisheries commodities. This was due to the fact that sharks have become a valuable resource. Figure 1 shows the total world export quantity of sharks and rays productions in comparison with the export from Southeast Asian Region.

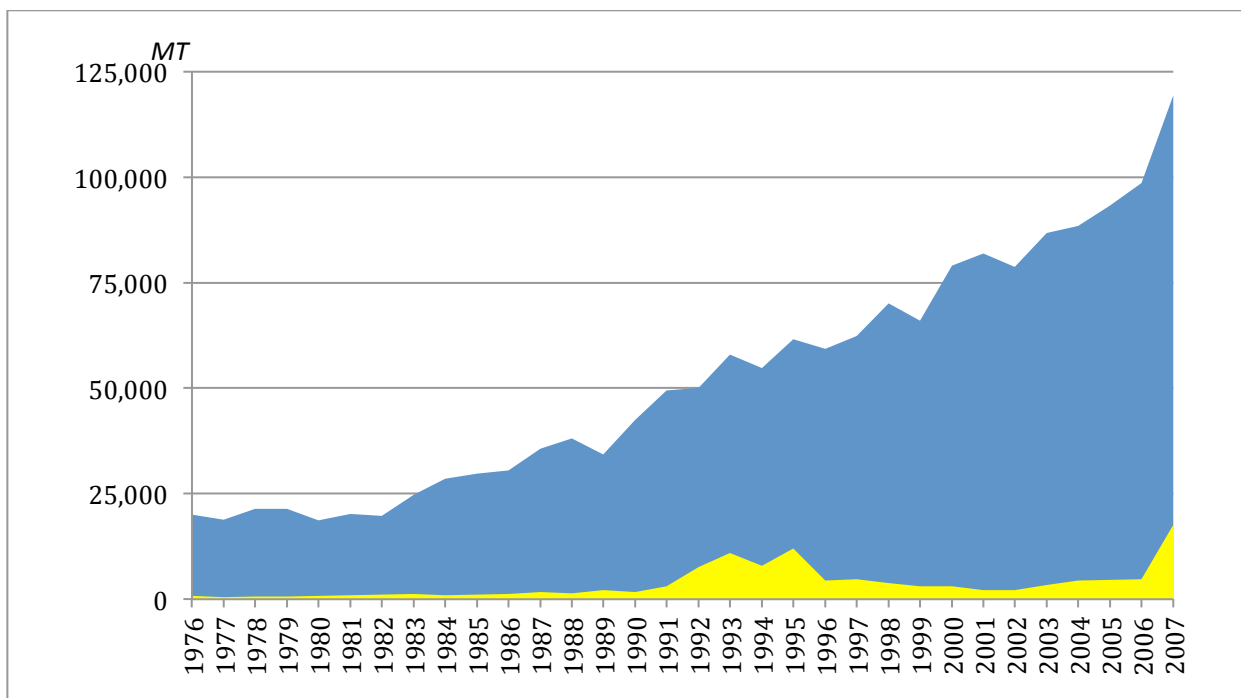


Figure 1 World sharks and rays export productions comparing to Southeast Asian region during 1976-2007 (FAO Fishstat; dataset, Commodities production and trade 1976-2007)

In general the life-history characteristics of elasmobranchs make them a fragile resource, more susceptible to overfishing than most teleost fishes. They are typically slow growing and long-lived and mature at a late age. This, together with their low fecundity, results in a low reproductive potential for most of species. The rapid growth in the size and value of the elasmobranchs fisheries, along with increasing elasmobranchs bycatch and recreational fishing and the known vulnerability of shark to overfishing, have engendered worldwide concerns and attempts to manage and conserve sharks, so that fishes may be extinct if do not have any management to fisheries and exploitation.

Even though the Southeast Asian region has rich elasmobranchs in the world but the status of elasmobranchs populations and their fisheries of this region is still largely unknown. Due to lack of available catch, landings and trade data as well as limited information on the biology parameters of many species and their identification, the necessary information are required for research, management and conservation of

elasmobranchs in this region. In this regards, since 2004 the author has compiled all information related to sharks and rays in the Southeast Asian Region with the aims to 1) study the trends and status of elasmobranchs fisheries including trade of their productions in Southeast Asian region, 2) to identify the issues and challenges on the assessment of elasmobranchs resources in the region, and 3) to develop policy recommendation for effective management of elasmobranchs fisheries for long-term sustainable use.

2. Elasmobranchs Taxonomy

Elasmobranchs are part of the Chondrichthyes. The Class Chondrichthyes comprises a diverse group of fishes whose most obvious common feature is the possession of a cartilaginous skeleton as opposed to the bony skeleton of the Osteichthyes or bony fishes. The chondrichthyans are grouped into two main subclasses by many taxonomists: Holocephalii (Chimaeras or ratfishes and elephant fishes) and the Elasmobranchii, which is a large, diverse group (including sharks and rays) with representatives in all types of environments, from fresh water to the bottom of marine trenches and from polar region to warm tropical waters. Key of shark like fish is presented in Figure 2.

The great majority of the commercially important species of chondrichthyans are elasmobranchs. The subclass Elasmobranchii consists of only one extant subcohort, the Neoselachii (modern rays and sharks) consists of four extant superorder: Squalomorphii, Squatinomorphii, Galeomorphii, and Rajomorphii and one extinct superorder Palaeospinacormorphii.

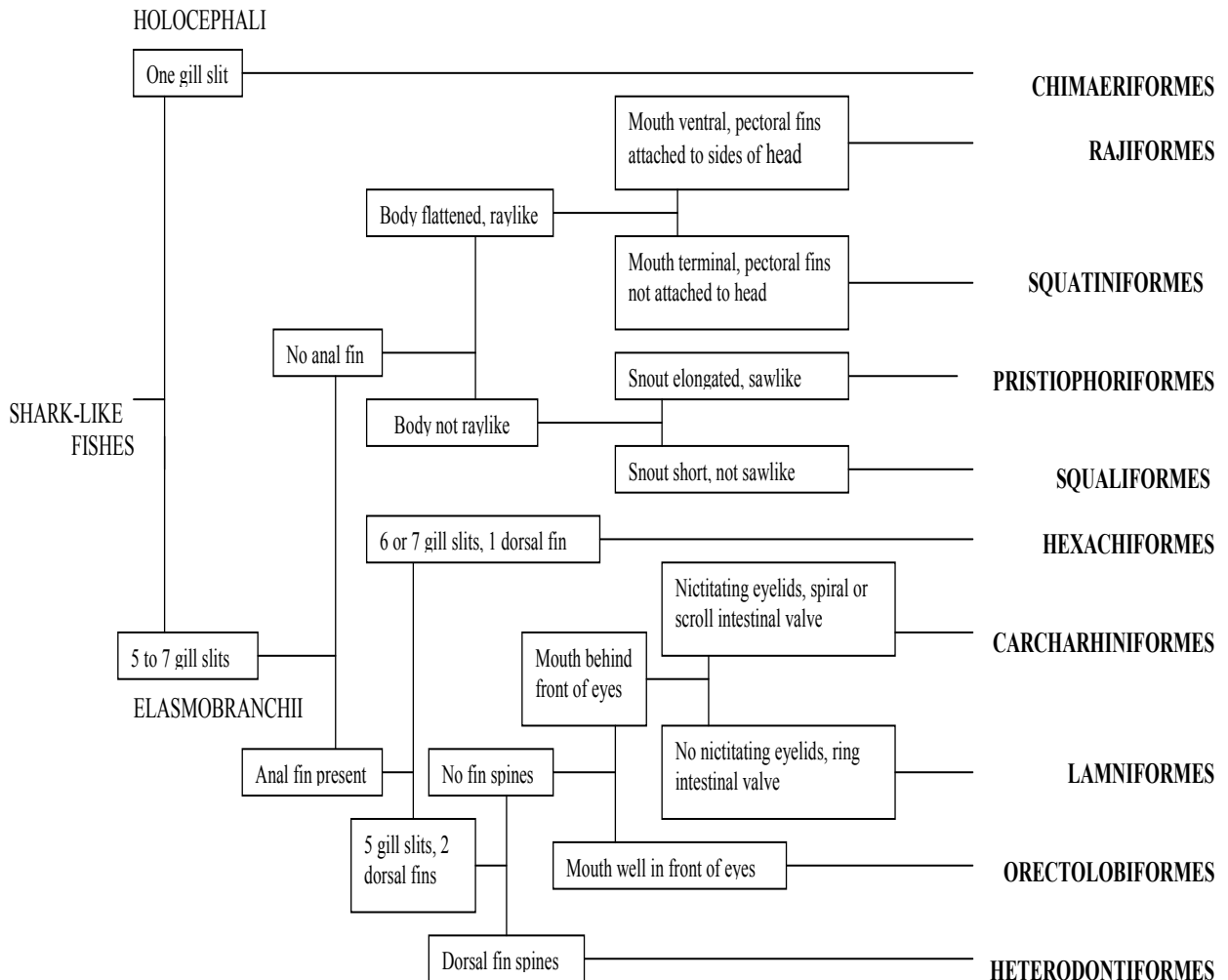
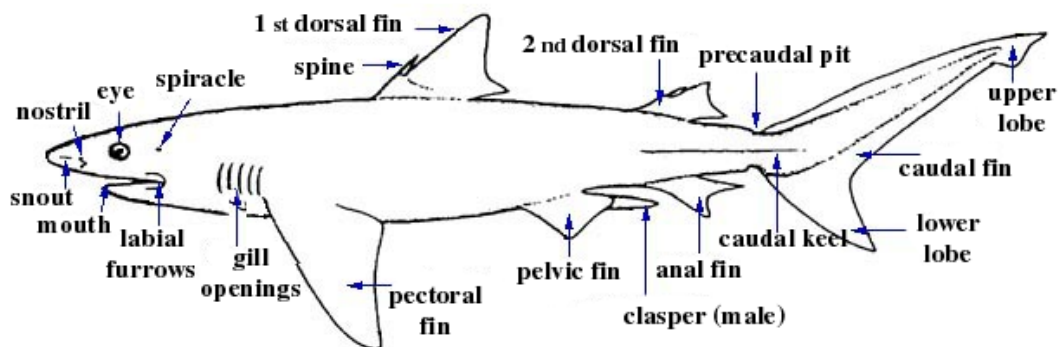


Figure : Key of shark-like fishes

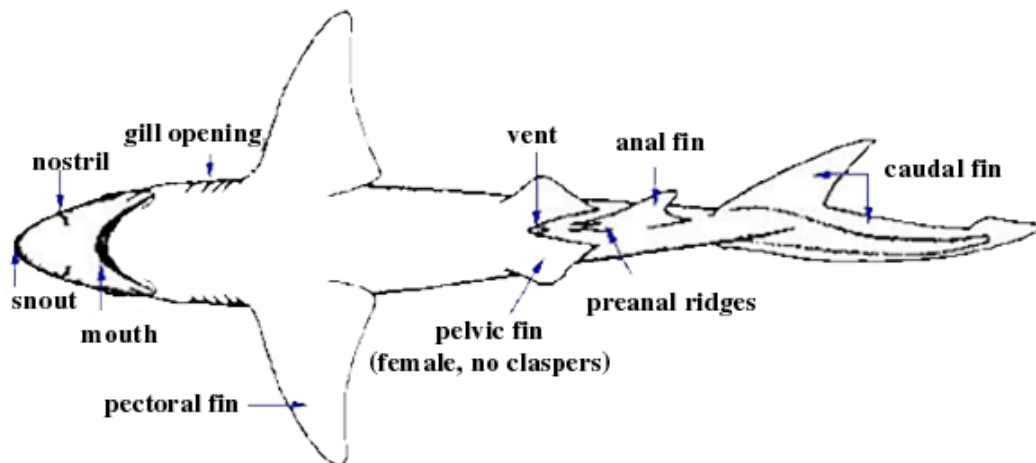
3. General Biological of Elasmobranchs

3.1 Sharks

Sharks include a variety of usually cylindrical, elongated, or moderately depressed fishes which differ from the related rays or batoids in having lateral gill opening (or gill slits) and pectoral fins not fused to the sides of the head over the gill openings. Sharks have eyes on the dorsal surface or sides of head and spiracles (when present) on its dorsal or dorsolateral surfaces. The tail and caudal fin are always well developed and serve to propel the animal by lateral undulations; the pectoral fins are mostly not used for propulsion through the water but aid in stabilizing and steering the shark. There are usually 5 gill openings on each side of the head, rarely 6 or 7. The mouth is usually ventral or subterminal on the head, but terminal or nearly so in a few species. Most sharks have 2 (rarely 1) dorsal fins, sometimes with spines on their front edges; an anal fin is usually present, but missing in several families. The teeth on the jaws are set in numerous transverse rows and are constantly replaced from inside the mouth. All shark species are more or less covered by small (occasionally enlarged) tooth-like placoid scales or dermal denticles. Shark lateral view and shark ventral view are shown in Figure 3a, b.



a)



b)

Figure 3. Shark lateral view (a) and ventral view (b)

Male sharks have cylindrical copulatory organs or claspers on their pelvic fins, used for internal fertilization of eggs in females; about 1/3 of the species of sharks have females that deposit eggs in rectangular or conical capsules, formed of a horn-like material (oviparity); the remainder are livebearers. Some livebearing sharks,

including many houndsharks (Triakidae), most requiem shark (Carcharhinidae), and all weasel sharks (Hemigaleidae) and hammerheads (Sphyrnidae) are viviparous (placental viviparous), with yolk sacs of fetuses forming a placenta with the maternal uterus for nutrient transfer; other livebearing sharks are ovoviviparous (aplacental viviparous), without a placenta.

Mature sharks vary in total length from about 15 to 19 cm (dwarf species of Squalidae and Proscylliidae) to 12.1 m or more (Whale shark, family Rhincodontidae) and range in weight from between 10 to 20 g to several metric tons. Most sharks are of small or moderate size; about 50% are small, between 15 cm and 1 m; 32% between 1 and 2 m; 14% between 2 and 4 m; and only 4% are over 4 m in total length.

All sharks are predators, with their prey ranging widely, from planktonic crustaceans and benthic invertebrates to pelagic cephalopods, small to large bony fishes, other sharks and rays, marine mammals, and other marine and terrestrial vertebrates.

Sharks are primarily marine, no sharks are known to be confined to fresh water. Sharks are widely distributed in all oceans, from the Arctic to subantarctic islands, and from close inshore on reefs, off beaches, and in shallow, enclosed bay to the lower continental slopes, the abyssal plains, sea mounts and ridges, and the high seas. They are most diverse in continental waters of tropical and warm-temperate seas, from inshore waters down to upper continental slopes, but are less so in colder waters, at great depths (below 1,500 to 2,000 m), in the open ocean and off oceanic islands. Worldwide there are 33 families, 101 genera, and between 379 to 478 species of sharks.

3.2 Rays or Batoids

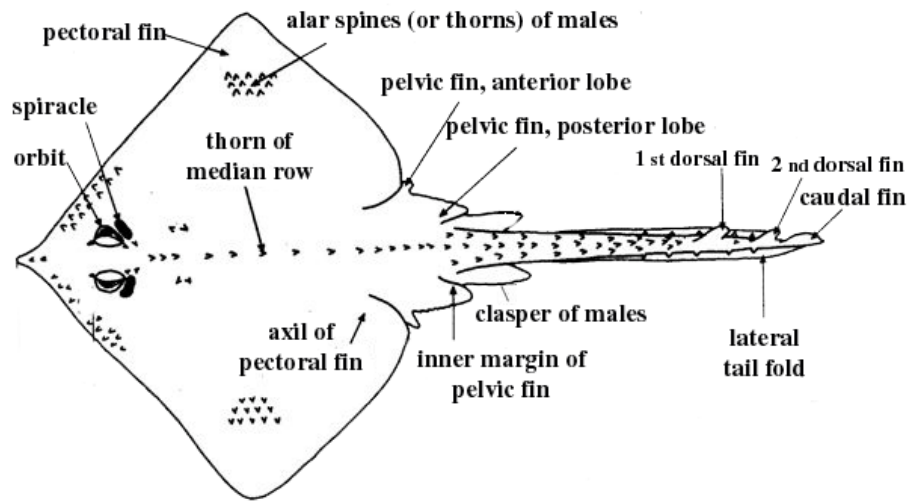
The batoids or rays are highly successful flattened variations on the basic sharky theme. Body flattened dorsoventrally, with eyes and spiracles located on top of the head (the spiracles are often large and well-developed, being the major route for water intake during breathing while lying on the bottom). Mouth ventral and transverse, often covered by a fleshy, curtain-like nasal flap. Five pairs of gill slits are in most forms (rarely 6), located on the ventral surface. Pectoral fins greatly expanded and attached to the side of the head anterior to the gill openings, giving the body a round or diamond shape. Anal fin absent, caudal fin often reduced or absent (many of the rays have a long, whip-like tail lacking any vestige of fins). In skates and stingrays the tail and caudal fin are variably reduced and lose their locomotor function. Many batoids have 2 dorsal fins (never with spines on their front edges in living species), but some stingrays, skates, and torpedo rays have a single dorsal fin or none; an anal fin is always absent. The teeth on the jaws are set in the transverse rows and are constantly replaced from inside the mouth; some rays have these laterally fused to form large tooth plates. Rays vary from being more or less covered by small (occasionally enlarged) tooth-like placoid scales or dermal denticles to completely lacking external denticles; many species have enlarged thorns or bucklers on their dorsal surfaces. Ray lateral view and Ray ventral view are shown in Figure 4 a,b.

Male batoids have cylindrical copulatory organs or claspers on their pelvic fins, used for internal fertilization of eggs in females; skates deposit eggs on the bottom, which are inside rectangular capsules of a horn-like material (oviparity); the remainder are livebearers with varied modes of reproduction. Live-bearing batoids do not have yolk-sac placentas, as do certain sharks, nor do they practice uterine cannibalism. Some live-bearing batoids, including the sawfishes and guitarfishes, are like many ovoviviparous sharks in that their fetuses derive nutriment primarily from the contents of their yolk sacs. Fetuses of stingrays and their relatives tend to exhaust their yolk early in development and subsist on histotroph or “uterine milk” secreted by the mother’s uterus until they are born.

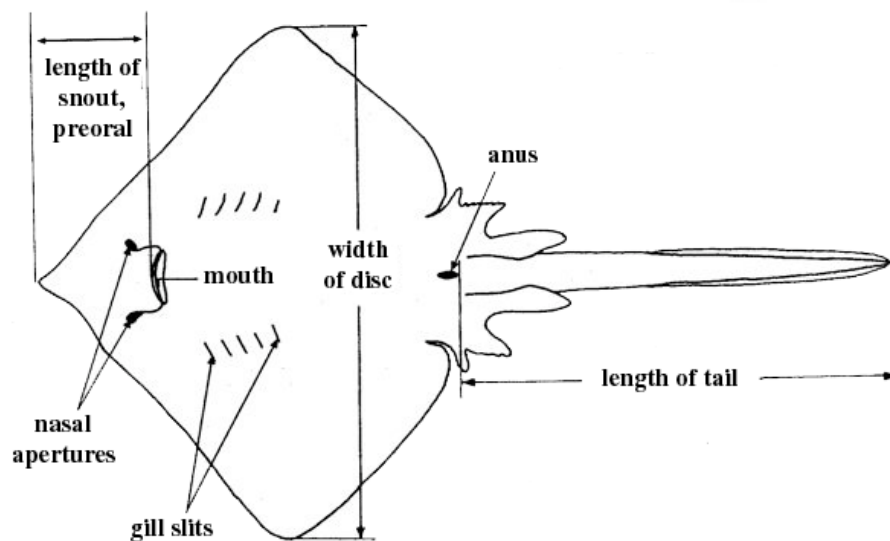
Mature batoids vary in total length from about 5 to 6 cm wide and about 10 cm long (dwarf electric rays of the family Narkidae) to at least 6.1 m wide (*Manta*, family Mobulidae) and 6 to 7 or more metres long (some species of *Pristis*, family Pristidae), and range in weight from 10 to 20 g to between 1 to 3 t. Most batoids are of small or moderate size, below 1 m long and 60 cm wide.

All batoids are predators, but usually have small grasping or crushing teeth and tend to take relatively small prey. They range from planktonic animals and benthic invertebrates to small to moderately large bony

fishes, other chondrichthyans, and cephalopods. No rays have developed large cutting teeth as in many sharks, and none can dismember large marine vertebrates.



a)



b)

Figure 4. Ray lateral view (a) and Ray ventral view (b)

Batoids are primarily marine, but many species can tolerate fluctuating salinities in estuaries and shallow bays and may travel into freshwater to a greater or lesser extent. A variety of stingrays live only in freshwater while others stingrays and some sawfishes are euryhaline and readily live in freshwater and the sea. Batoids are widely distributed in all oceans, from the tropics to the Arctic and the Antarctic continent. They occur close inshore on reefs, off beaches, in shallow, enclosed bays and lagoons, and in rivers and lake to the lower continental slopes and the abyssal plains. Most batoids are found on or near the bottom, but a few species including some devil rays and the pelagic stingray occur in the high seas in the epipelagic zone. Batoids are diverse in shallow continental waters of tropical and warm-temperate seas, cold temperate to boreal waters, but are less diverse at great depths (below 1,500 to 2,000 m), off oceanic islands, and in the

open ocean. Worldwide there are 13 orders, 45 families, and between 507 and 621 species of sharks and batoids.

4. Species Compositions of Elasmobranchs in the Southeast Asian waters (see Annex 1)

The elasmobranch biodiversity of this region is among the richest in the world. The “Region” as define here includes the tropical waters of the South China Sea and adjacent waters with those countries fronting the South China Sea (including freshwater habitats): Thailand (Gulf of Thailand and Andaman Sea), Malaysia (Peninsular Malaysia, Sarawak and Sabah) Singapore, Cambodia, Vietnam, Philippines, Indonesia (Kalimantan and Brunei Darussalam). Furthermore here includes the Andaman Sea: Myanmar. Based on the references from serveral literatures and key taxonomy, we could summarize that there are 13 orders including 35 families of elasmobranchs, in-which 166 species of sharks and 85 rays or batoids are recorded in the Southeast Asian waters. Annex 1 shows the check list of each species found in different sea areas of the EEZ of Southeast Asia countries.

5. Elasmobranchs Fisheries in the Southeast Asian Region

As appeared in Figure 1, elasmobranchs fisheries in the Southeast Asian region make up only a small percentage of the species targeted by the world’s fisheries. But over the past two decades, human exploitation of sharks has substantially increased worldwide. They are of primary importance in some regions of the world, sustaining important fisheries in some countries.

The larger part of sharks and rays in the Southeast Asian region catches are taken incidentally as by-catch from several types of gears such as bottom trawl net, longline targeting tuna, purse seine net, gill net, although there are some specific fisheries for elasmobranchs. Among species that are usually targeted by directed fisheries are picked dogfish, smooth-hounds, shortfin mako shark, thresher shark, porbeagle, dusky shark, silky shark, sandbar shark, oceanic whitetip shark, blue shark, whitetip reef shark, basking shark and tope sharks.

5.1 Catch of Elasmobranchs by Country

In the Southeast Asian region, Western Central Pacific was the major fishing area for elasmobranchs followed by Eastern Indian Ocean. The total landings from 1987 to 2006 is based on the data from Fishery Statistical Bulletin For South China Sea Area (SEAFDEC), excepting for Cambodia, Brunei Draussalam, Myanmar and Vietnam are calculated from the total productions using the proportion based on SEAFDEC landing survey in 2005. The proportion values for those countries are 0.59%, 12.72%, 0.2% and 0.4%, respectively. Figure 5 shows the total catch of elasmobranchs increased considerably from 108,216 tons in 1987 to 167,016 tons in 2006. Fisheries statistics indicate that sharks and rays are caught throughout the Southeast Asian region between 1987 to 2006 was almost 3 million ton, representing 50% of sharks and 50% of rays, respectively. Indonesia is the top harvester whereas its harvesting trend is increasing from 58,800 metric tons in 1987 to 110,628 metric tons in 2006, the average annual increasing from 1987 to 2003 is about 4%. Malaysia is the second with the overall total production of 449,603 metric tons with an average of 22,480 metric tons/year. Thailand is the third with a total landing of 352,644 metric tons and an average of 17,632 metric tons/year. The Philippines is the fourth with a total landing about 186,168 metric tons and an average of 9,308 metric tons/year. However, the annual production from the statistic in the Philippines shows decreasing since 1992 from 19,800 metric tons in 1991 to about 8,800 metric ton in 1992 and continued decreasing to about 5,000 metric ton in 2005. This trend is different from other top three countries where the production keeps increasing trends. Vietnam is the fifth with a total landing about 87,461 metric tons and an average of 4,373 metric tons/year. Brunei and Cambodia are the least country with a total contribution of about 8,099 and 4,186 metric tons (from 1987 to 2006) and average of 400 and 200 metric tons/ year.

Figure 6 shows the total annual catch of shark and rays from 1997 to 2006. Regarding this it is noted that the total catch was not included the data from Myanmar with in a period from 1987-1992 and 1995-1996.

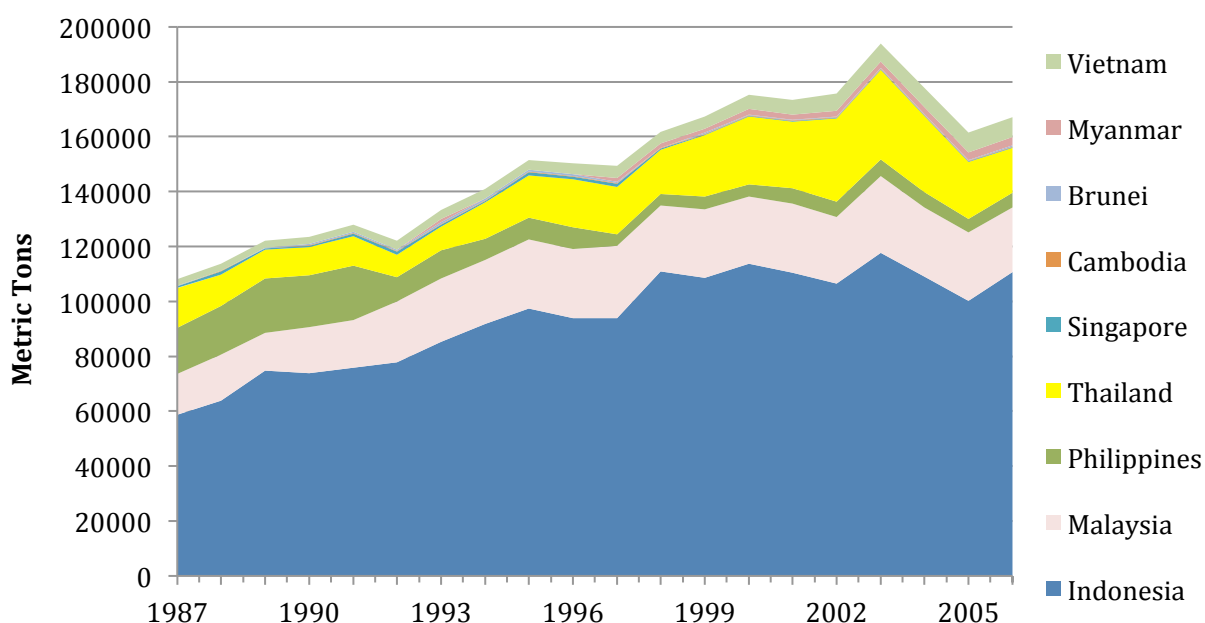


Figure 5 Total elasmobranchs production by countries from 1987-2006

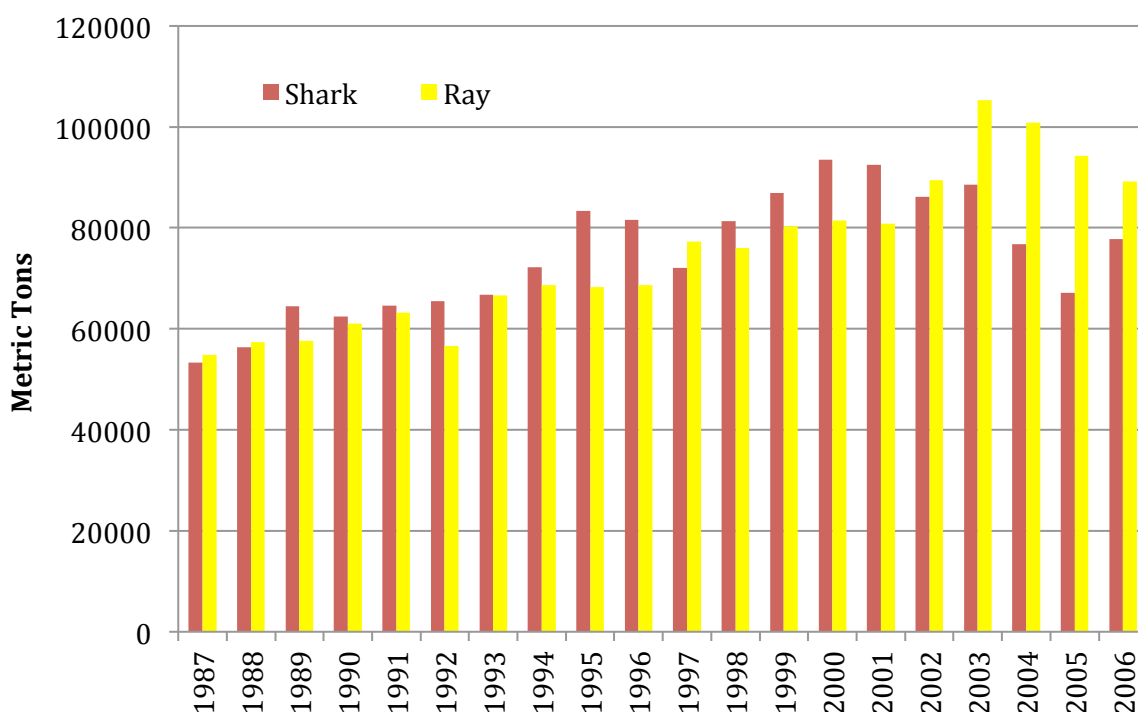


Figure 6 Ratio of total sharks and rays productions in the Southeast Asian region from 1987-2006

Figure 7 shows the percentage of total elasmobranchs production landed in the Southeast Asian region in 2006, where the total elasmobranchs production was 167,016 metric tons. Regarding this, Indonesia was the leading fishing nation, where representing 66% or around 110,628 metric tons of the total catch in the Region. Malaysia and Thailand represented 14% and 10% of the total elasmobranchs landed in the region or

around 23,700 and 16,200 metric tons. Less than 11% of the total production in the region came from Vietnam, Myanmar, Singapore, Brunei Drausslam and Cambodia.

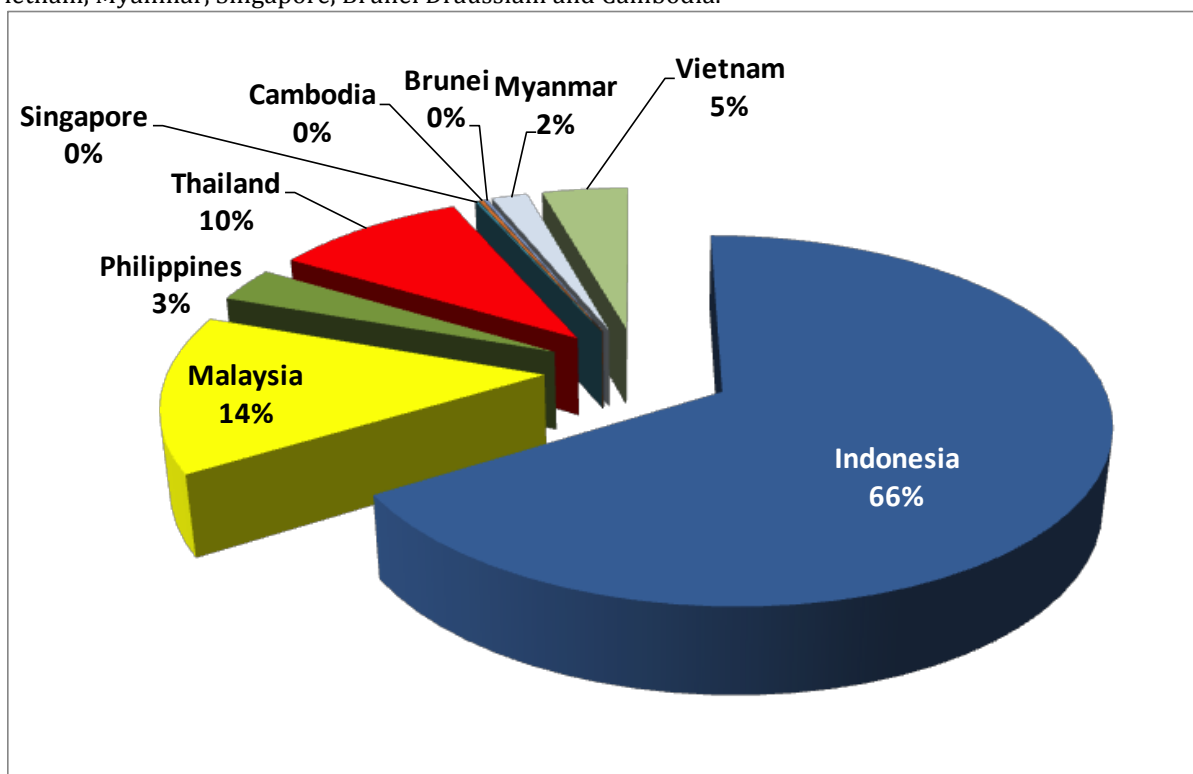


Figure 7 Percentage of elasmobranchs productions by countries in 2006

5.2 Catch of Elasmobranchs by Type of Fishing Gear

Fisheries for elasmobranchs are common throughout the world and differ in both the species taken and in the type of gears and vessels used. The number of fisheries which primarily target sharks or rays is few. The majority of fisheries taking sharks and rays are targeted at other species. Most of the sharks are obtained as bycatch both large-scale and small-scale fisheries, gear for large-scale fisheries includes trawl, gill net and purse seine, and small-scale gears are gill net and hook-and-line. As same as the rays, gear for large-scale fisheries are trawl and small-scale gears are gill net, hook-and-line, longline and trap.

In this paper, the authors used the existing data on catch of elasmobranchs by type of fishing gear from two countries namely Malaysia and Thailand due to none available data from other countries.

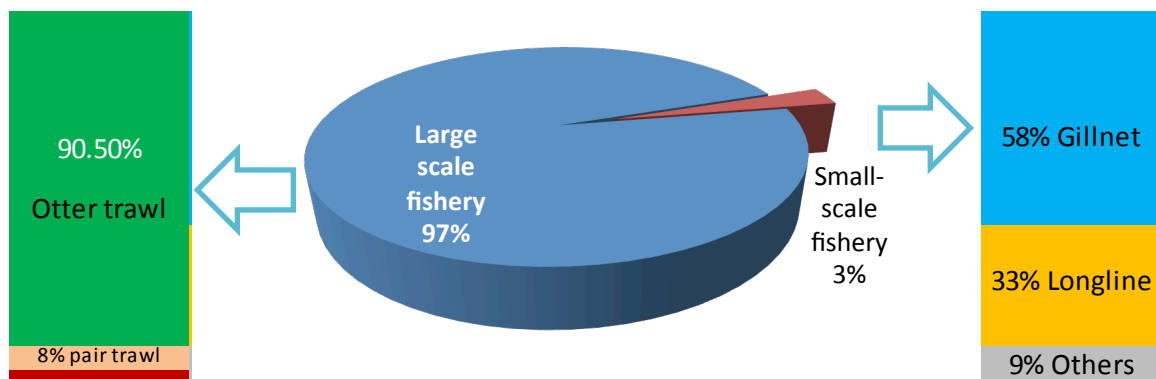


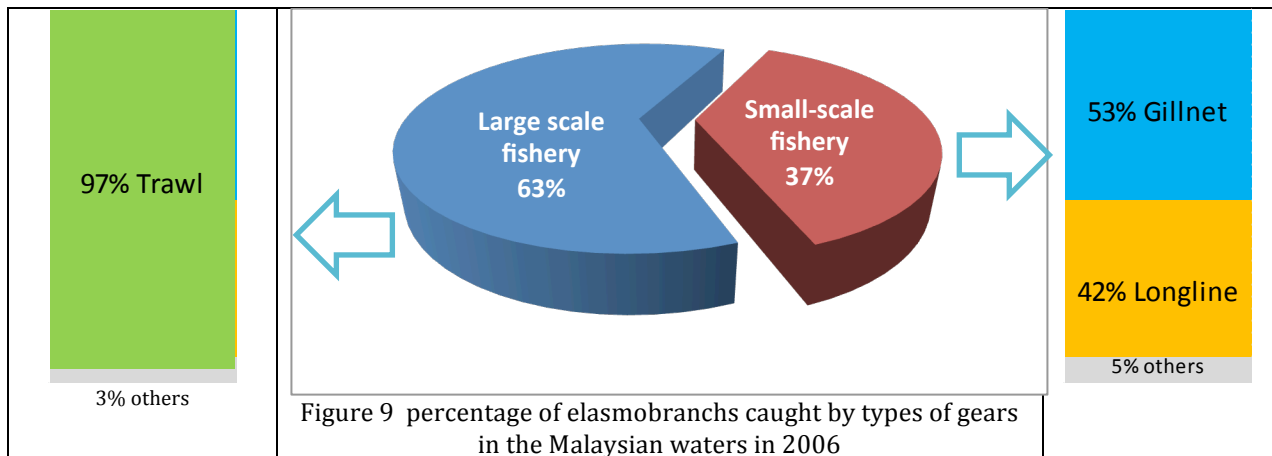
Figure 8 Percentage of elasmobranchs caught by types of fishing gears in Thai waters in 2006

Thailand is one of the more modest major elasmobranch fishing countries in Southeast Asia. From 1987 to 2006, the catch of elasmobranchs from Thai waters was 352,644 metric tons contributed only 0.67% of the total national catches. This amount sharks and rays represents 0.25% and 0.38% respectively. Rays are more important than sharks in the catches. The important fishing ground for the elasmobranchs in Thailand is the Gulf of Thailand and Andaman Sea. Thai elasmobranch fisheries are chiefly a large-scale activity. The main large-scale fishing gear for sharks and rays are otter trawls, pair trawls, while the main small-scale fishing gear are gillnets, hook-and-line and longlines respectively.

Figure 8 shows the percentage of elasmobranchs caught by types of gears in the Thai waters in 2006. 97% of total elasmobranchs were come from commercial fisheries while only 3% from the small scale fisheries. The data shows most of elasmobranchs from commercial fisheries were caught incidentally by major trawl fisheries especially otter trawl, the figure shows 90% by trawl, 8 % by pair trawl and less than 1.5% by other types of gear such as mackerel gillnet, purse seine. In small scale fisheries, main fishing gears were gillnet and bottom longline where most of catch are rays rather than sharks.

Malaysia is the second elasmobranchs landing in this region, between 1987 to 2006 Malaysia had total elasmobranchs landing 449,603 metric tons. Elasmobranchs currently represent 2.09% of the total catch of Malaysia. Rays are more important than sharks in the catches, rays represents 1.37% and sharks remaining 0.66% of the elasmobranch catch. Elasmobranch caught in Malaysia are predominantly bycatch of trawl fisheries, only a small amount taken in directed fisheries. Malaysian small-scale fisheries for elasmobranchs are not as important as large-scale fisheries for their contribution to total elasmobranch catches. In this area, trawl fisheries were the most important, while sharks and rays taken by small-scale fisheries were caught by hook-and-lines, longlines and gillnets. The main species in the ray catches are *Rhyncobatis djiddensis*, *Gymnura* sp. and *Dasyatis* sp. *Scoliodon laticaudus*, *Chiloscyllium indicum* and *Sphyrna* sp. are the most common shark species caught. In both coasts of Peninsular Malaysia, Sabah and Sarawak are the most important fishing grounds. Some of the important ports that land a large quantity of shark are LKIM Kuantan, LKIM Batu Maung (Peninsular Malaysia), Kota Kinabalu and Sandakan in Sabah and Tg. Manis in Sarawak.

Figure 9 shows the percentage of elasmobranchs caught by types of gears in the Malaysian waters in 2006. Percentage of elasmobranchs catch between large-scale and small scale fisheries were 63:37 in 2006. The composition of gears are similar to Thailand in which most of elasmobranchs were come from trawl fisheries (97%) in large scale fisheries. In addition, Gillnet and Longline are the main fishing gears catch elasmobranch in Malaysia. Other types of gear such as seine net, pushnet, etc.



Indonesia has considerably largest elasmobranchs landing in this region, between 1987 to 2006 Indonesia had total elasmobranchs landing 1,874,384 metric tons, while represents only 2.91 % of the total Indonesia

catches. This amount sharks and rays represents 1.61% and 1.21% respectively. Most of Indonesia elasmobranchs fisheries are small-scale fisheries using relatively small canoes and simple gear. Most of these activities occur in shallow water of coral reef and coastal environments. However, sharks are also captured as bycatch by industrial fisheries. When using set gillnets, set longlines and handlines, sharks and rays are caught along with other species. The most important fishing grounds in Indonesia are situated in the western part of the country, i.e. Java, Sumatra and Kalimantan with the eastern provinces of Bali-Nusa Tenggara, Sulawesi and Molluca-Irian Jaya. Recently, there have been developed a couple of fishing gears and fishing methods that aim to catch shark as target species. For example, dogfish sharks of the family Squalidae are as target species of bottom longline in the Indian Ocean South of Java and a number of pelagic sharks as target species of shark longline. Target fishing for shark is now focused on area such as Nusa Tenggara, Timor sea, North Sulawesi, Northern Maluku and Northern Irian Jaya.

Philippines's elasmobranch catches were also important, from 1987 to 2006 they comprised only 186,168 metric tons or only 0.56% of the total national catches. Rays to be slightly more important than sharks in the catches representing 0.30% and 0.23% of the elasmobranch yields. In Philippines, Small-scale fisheries provide the large majority of elasmobranch catches. The main gears used in small-scale catching elasmobranchs are hook-and-line, longline and gillnet, while trawls and purse seines are the main gear of large-scale fisheries. The elasmobranchs were also caught as bycatch in gear that are used to catch the large and small pelagic. Mindanao is the main harvesting area for the catches of both sharks and rays followed by Luzon and Visayas.

Singapore's fishing fleets is not large, between 1987 and 2006 Singapore's had total elasmobranchs landing 11,413 metric tons or 7.37% of the total nation catches. Rays to be slightly more important than sharks in the catches representing 4.12% and 1.87% of the elasmobranch yields. Although Singapore is the fifth elasmobranchs landing in this region, nevertheless, she is the second largest shark fin trading nation after Hong Kong.

Elasmobranchs caught in Brunei are normally as bycatch. From 1987 to 2006, the catch of elasmobranchs from Brunei was 8,099 metric tons or 12.72% of the total catch of Brunei. Shark is not the primary target species with trawl as the main gear employed in the harvesting of shark. Other gears used in catching sharks are hook-and-line and handline. The important ports that land a large quantity of shark is Muara and Jerudung.

From 1987 to 2006, fishery statistical bulletin for the South China Sea area lack of data in amount of elasmobranchs landing in Cambodia, Myanmar and Vietnam. However, recently some fishing operations such as drift gillnet operated by Vietnam are used to catch several large fishes including sharks and manta rays in the South China Sea.

6. Trade and Utilization of Elasmobranchs

6.1 Utilization of Elasmobranchs

Sharks and rays have become increasingly important in several fisheries industries in the Southeast Asian region, they are extremely versatile and humans can use much of the carcass. Shark's fins have become one of the world's most lucrative fisheries commodities, particularly appreciated in Chinese cuisine. Although the value varies according to color, size, thickness and fin needle content, but nearly all species have commercially valuable fins. Table 1 show shark species used for fin.

For most species, four fins are used from each shark; the first dorsal fin, the two pectoral fins, and the lower lobe of the caudal fin. In dorso-ventrally compressed species, the two dorsal fins and the caudal fin are most valued. Other fins, including the upper caudal, second dorsal, pelvic and anal fin (if present), may also be taken but are not mixed with the other fins and command a much lower market value. Figure 10 shows the shark fins and shark fins soup.

Shark cartilage has been claimed to be beneficial in a great variety of diseases, such as arthritis, psoriasis, colitis, acne, enteritis, phlebitis, rheumatism, peptic ulcers, haemorrhoids, herpes simplex, melanoma,

recently also AIDS, and above all cancer. Even though its benefits are unproved, a new market for cartilage as an alternative therapy for cancer treatment and prevention has been created. Shark cartilage products are formed from either dried or frozen vertebrae, heads, jaws or gills, or from cartilage extracted from fins during processing. Sharks are also valued for their liver oil, specially vitamin A and the hexaunsaturated isoprenoid alkene squalene. It is estimated that one ton of squalene could require the livers of 2,500 to 3,000 sharks. Although sharks that have a high squalene level tend to have a lower vitamin A content in their liver oil. Nowadays liver oil is mainly used in the textile and tanning industries and in the production of cosmetics as hand lotion, sunscreen, skin healing products, pharmaceutical products as health foods, and lubricants included lighting oil, machine oil and anti-foulant hull coating. Photo of Squalen capsules and shark cartilage capsules were shown below (Figure 11).

Table 1. Shark species used for fin

Common Name	Scientific name
Basking shark	<i>Cetorhinus maximus</i>
Bigeye thresher	<i>Alopias superciliosus</i>
Blue shark	<i>Prionace glauca</i>
Bull shark	<i>Carcharhinus leucas</i>
Creek whaler	<i>Carcharhinus fitzroyensis</i>
Dusky shark	<i>Carcharhinus obscurus</i>
Great hammerhead	<i>Sphyrna mokarran</i>
Great white shark	<i>Carcharodon carcharias</i>
Lemon shark	<i>Negaprion brevirostris</i>
Oceanic whitetip shark	<i>Carcharhinus longimanus</i>
Pelagic thresher	<i>Alopias pelagicus</i>
Porbeagle	<i>Lamna nasus</i>
Salmon shark	<i>Lamna ditropis</i>
Sandbar shark	<i>Carcharhinus plumbeus</i>
Sandtiger shark	<i>Eugomphodus taurus</i>
Scalloped hammerhead	<i>Sphyrna lewini</i>
Shortfin mako	<i>Isurus oxyrinchus</i>
Sicklefin lemon shark	<i>Negaprion acutidens</i>
Silky shark	<i>Carcharhinus falciformis</i>
Smooth hammerhead	<i>Sphyrna zygaena</i>
Snaggletooth shark	<i>Hemipristis elongata</i>
Spinner shark	<i>Carcharhinus brevipinna</i>
Spot-tail shark	<i>Carcharhinus sorrah</i>
Tawny nurse shark	<i>Nebrius ferrugineus</i>
Thresher shark	<i>Alopias vulpinus</i>
Tiger shark	<i>Galeocerdo cuvier</i>
Tope shark	<i>Galeorhinus galeus</i>
Whale shark	<i>Rhincodon typus</i>

Consumption and trade of elasmobranch meat is rather limited. A greater variety of sharks are utilized for a greater number of products in Asia. Shark meat is usually dried (Figure 12) and salted, about 20-40% of shark meat was normally added to the cheaper varieties of fish balls, used in the production of tempura,

surimi, fish sausage, fish ham, fish cake and fish paste. The quality of shark meat varies both by species and according to handling practices. In developed countries, shark meat is generally sold as fillets and usually only the more desirable pelagic species, such as shortfin mako (*Isurus oxyrinchus*), common thresher (*Alopias vulpinus*), and porbeagle (*Lamna nasus*) are marketed. Other edible shark products are derived from shark stomach (e.g. smoked thresher shark stomach in Taiwan), heart (e.g. salmon shark sashimi in Japan), or other organs. Blue shark (*Prionace glauca*) meat is often smoked, and meat from the whale shark (*Rhinocodon typus*), known as the “tofu shark” in Chinese, is popular in Taiwan.



Figure 10. Shark fins and shark fins soup



Figure 11. Squalene capsules and shark cartilage capsules



Figure 12 Dried shark meat

The skins can be manufactured to produce high quality leather for handbags, wallets, watchstraps and belts or used as an abrasive (Figure 13 and Figure 14). The preferred species for shark skin production appears to be the tiger shark (*Galeocerdo cuvier*). Discards are also used for the production of fishmeal and fertilizer. In addition, shark teeth and jaws are marketed and sold as curios or collectables such as the rostrums of sawfishes (*Pristis sp.*) are sold for decoration.



Figure 14 Product from elasmobranch skin leather, shark skin

6.2 Trade of Elasmobranchs in the Southeast Asian Region

In the Southeast Asian Region, elasmobranchs productions for export were prepared in several forms such as Shark fins, dried, salted, unsalted or preserved, shark fins, salted and in brine but not dried or smoked, shark liver oil, fresh or chilled, and frozen. Figure 15 presents the trends of total elasmobranchs export and a total value of export from Southeast Asian countries since 1986 to 2006. During a period from 1976 to 1990 the exported productions were slightly increased within 2000 MT where the values were in a range of 10-30 Million USD. The trend of export was rapidly increased after 1991 from 3,000MT to 12,000MT in 1996 where the total value was increased to 70 Million USD. After 1997 the trend of exporting was reducing rapidly till 2006 remaining at 3,000MT. 74% of productions by weight were frozen, fresh and chilled products, while only 26% were in forms of shark fins including dried in salted and unsalted, and in brine. Figure 16 present the percentage of type of shark and rays productions exporting from the region in 2006.

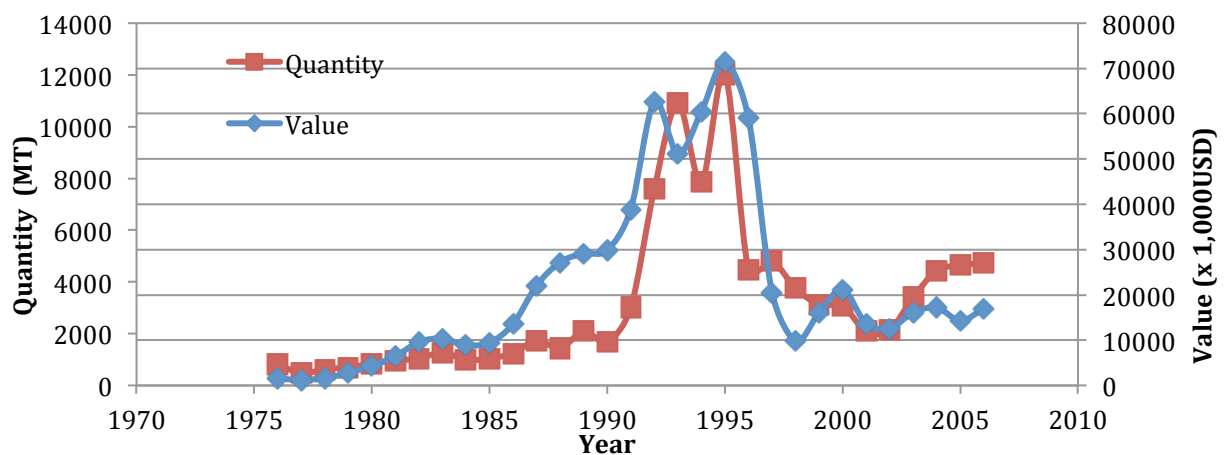


Figure 15 Quantity of elasmobranchs export from Southeast Asian countries and its value

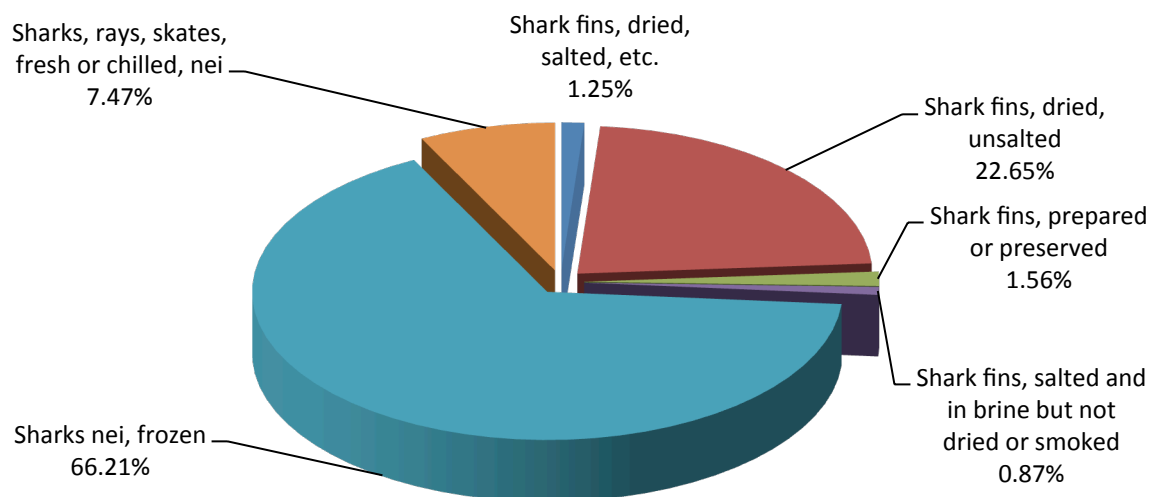


Figure 16 Export quantities of elasmobranchs productions from Southeast Asia in 2006

6.2.1 Shark fins

Shark fins are one of the most expensive fish products in the world. They are used to prepare shark fin soup and have a traditional and virtually exclusive market among Chinese ethnic groups established in different parts of the world, but little elsewhere. Thus, domestic sales in primary producing countries, such as India, Indonesia, Japan and the USA, are negligible. Their production is almost totally exported to major markets, especially Hong Kong and Singapore, where shark fin fetch very good prices.

The economic and political changes in the Chinese market and the reduction in Chinese tariffs on shark fins in the mid 1980s to a sharp increase in consumption, price and trade in shark fins during the late 1980s and 1990s. According to FAO statistics, world production of shark fin has increased from 1,800 tons in 1976 to 6,030 tons in 1997, peaking at 6,400 tons in 1989. In 1997 production of dried, unsalted shark fins was of 2,900 tons and that of dried, salted, etc. shark fins of nearly 3,100 tons.

Shark fin trade data for the Southeast Asian region are published in shark's fin dried, salted or smoked. Between 1987 to 1997, Singapore is the largest shark fins imported in metric tons and US\$, at 12,415 metric tons worth US\$ 305 million (Figure 17 and Figure 18). According to the statistics reported by fishery statistical bulletin for the South China Sea area, imports of shark's fin dried, salted or smoked peaked in 1988 at 1,900 tons and were 820 tons in 1997, while trend of imports value is increasing from US\$ 16 million in 1987 to peaked at US\$ 35 million in 1997. Singapore is an important center for trade and consumption of shark fin. The highest demand for this product comes from the Chinese banquets held at major restaurants and hotels. The main suppliers to the Singapore's market are Hong Kong, Thailand, India, Yemen, Japan, Spain and Taiwan Province of China. The quantities of dried or salted shark fin imported from Hong Kong, India, Japan, Pakistan and Yemen account for more than half the quantity imported and about half of the total cost. While Hong Kong and Thailand were most consistent throughout prepared shark fin to Singapore. Of the many species of fins imported into Singapore, the fin of brown shark and blue shark are most popular. Species such as hammerhead shark, tiger shark, white sandbar shark are also common. There is no import tax on shark fin, only a 3% sales tax.

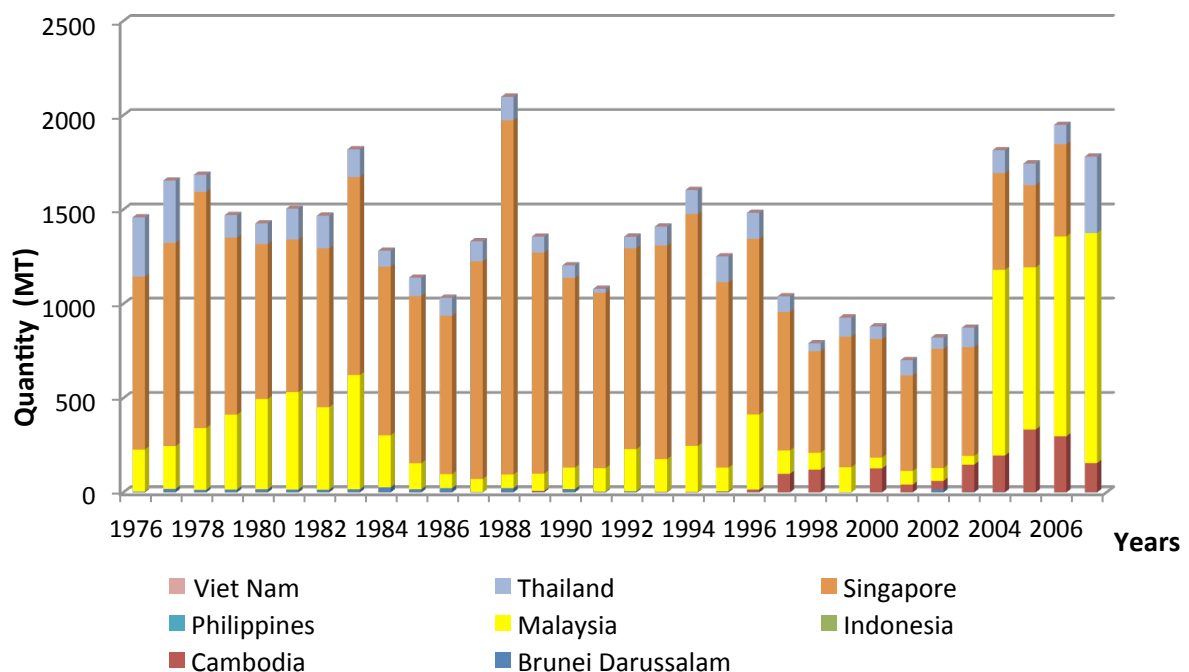


Figure 17 Total shark fins imported to Southeast Asia countries from 1976 to 2006.

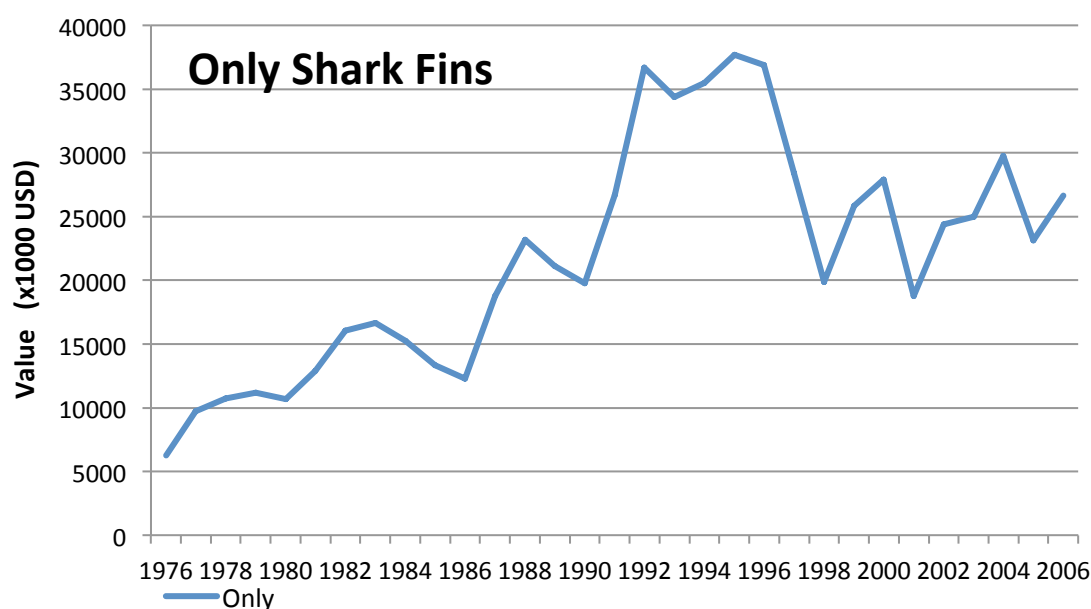


Figure 18 Value of shark fins imported to Southeast Asian (data from 1976 to 2006)

Malaysia is the second large shark products imported with 600 metric tons in 1983, worth US\$ 7 million. Malaysia imports shark fins from more than 25 countries. Singapore and Indonesia are the main suppliers to the Malaysian market followed by Australia, Hong Kong, Fiji, Philippines and Maldives. Malaysia imported shark products into 3 forms, “Shark fin dried whether or not salted but not smoked”, “Shark fin salted but not dried or smoked and in brine” and “Shark fin prepared”. Before 1993 the Malaysian import tax on shark fin was 50%. In 1993 this was reduced to 30% and in the following year fell again to 20% but importers were then required to pay another 5% sales tax.

Thailand is the third with 1,051 metric tons, worth US\$ 14.9 million. From 1990, Canada has consistently been the biggest exporter of the shark fin products into the country. Between 1990 -1992, the Netherlands, Norway and United Kingdom are also exported shark fin products to Thailand. In 1996 Thailand imported 138 metric tons, 80.8% of which came from Hong Kong. Other major supplier were the USA, India, Pakistan, Indonesia, United Arab Emirates, Japan, Spain and Norway. In 1997 Thailand imported 83 metric tons, value at US\$ 966,000.

Only very small amounts of shark products are imported into Indonesia with 29 metric tons, worth US\$ 348,000. These include dried fins and fins in brine. Japan was the major supplier, followed by UK, Curacao, Singapore and Spain. Imports from Singapore have the highest unit value (US\$ 33.6 /Kg), followed by those from Spain (US\$ 14.6 /Kg) and the USA (US\$ 12.5 /Kg).

Above data show, Singapore is the largest shark fin trading nation in the Southeast Asian region. Although Singapore’s fishing fleets is very small, nevertheless, she is able to imports, process and export a wide variety of fish products that including shark’s meat and fins.

6.22 Shark Skin, Liver Oil, Cartilage and Teeth

In addition to their harvest for meat and fins, shark are also utilized for their skin, liver oil, cartilage and teeth but no statistics exist on trade, production or consumption of the other edible and non-edible parts of shark.

The markets for these products have fluctuated over the past few decades and, based on a available information, do not appear to be major components of the marine products trade. In most cases, the value of shark skin, liver oil, cartilage and teeth do not appear to be high enough to drive fishing effort on their own; they are more likely to be secondary products of sharks caught either as bycatch or as targets for higher value shark products such as fins or meat.

7. Regional Constraints

Even though the Southeast Asian region has one of the richest elasmobranchs diversity in the world with at least 256 species of sharks and rays (and Indonesia being the country with the richest biodiversity worldwide), the status of these resources and their fisheries is still largely unknown. There is a serious lack of available data on catch, landings and trade data as well as limited information on the biological parameters of many species and on their taxonomy, partly caused by the by-catch nature of shark fishing as mentioned above.

There are however other factors in cause for this lack of understanding of shark populations in the region. To start with, few Southeast Asian nations have the capacity to develop and conduct research activities on sharks, being relatively poor and with many more urgent priorities. Often, these countries rely on external funding to ultimately conduct research activities on their fisheries. Such support is limited and existing resources tough to allocate since the need is great. Consequently, knowledge on shark biology, on the size and status of their stocks, on the real volume of their captures, and on their population dynamics is often insufficient and non-existent. This is a severe constraint to proper fishery management. Furthermore, the few ambitious studies on sharks undertook in the past in the region have been seriously hampered by a general lack of research and reference collection for the species, a lack of access to the regional management and information data systems, the near absence of a comprehensive regional identification guide to the shark species, and a clear shortage of taxonomists.

The absence of conservation and management measures at the national level is a major cause for concern. Without an extensive program for research and management in place, risks of over-exploitation of shark fisheries will always exist and pose a serious threat to the population of sharks on the short and long-term, since little is known on the sustainable level of fishing pressure that can be carried-on. Furthermore, repeatedly one has noticed that when there is a problem at the national level with data collection, development and implementation of a national plan for the management of sharks, there is often a similar management problem with other fishery sectors.

8. SEAFDEC's Initiatives on Technical Support on Sharks Data Collection

Shark fisheries are considered as one of the unregulated fisheries in the region. However, it was identified that the management of shark fisheries might be difficult due to that they are not caught as target species. In some locations, sharks are considered as secondary target catch in the fishing activities using long line, gillnet, fish trawl, purse seine, and other fishing gears.

ASEAN SEAFDEC Member Countries recognize these problems on shark fisheries and their management, and are aware of the international requirement to urgently reconcile such problems in line with the "International Plan of Action for Conservation and Management of Shark (IPOA-Shark)". In this connection, Member Countries are taking appropriate actions including formulation of the National Plan of Action on Shark as suggested in the IPOA.

To support ASEAN Member countries dealing on sharks managements and avoid impacts occurred to the regional fisheries, SEAFDEC/SEC has developed a supporting program with the aims to improve data collection for sharks in the Southeast Asian countries through the field survey and transferring knowhow on shark's species identification to all relevant member countries. **Annex 2** shows the Species Identification Sheet of Major Shark Species found in Southeast Asian Region for field survey at landing sites and on board commercial vessels to estimate the status and trend of sharks and rays productions in the regaion.

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Annex 1.. List of elasmobranchs species found in the Southeast Asian Region

NO.	ORDER	FAMILY		GENUS	SPECIES	COUNTRY									
						BRU	IND	MAL	PHI	SIN	THA	VN	CAM	MYN	
1	HEXANCHIFORMES	CHLAMYDOSELA	Frilled Sharks												
		HEXANCHIDAE	Cow sharks	<i>Heptanchias</i>	<i>perlo</i>		*				*				
				<i>Hexanchus</i>	<i>griseus</i>		*	*	*	*	*	*			
				<i>Hexanchus</i>	<i>nakamurai</i>		*		*						
2	SQUALIFORMES	ECHINORHINIDAE	Bramble sharks	<i>Echinorhinus</i>	<i>cookei</i>				*						
		SQUALIDAE	Dogfish sharks	<i>Centrophorus</i>	<i>moluccensis</i>		*		*						
				<i>Centrophorus</i>	<i>squamosus</i>				*						
				<i>Centroscymnus</i>	<i>crepidator</i>		*								
				<i>Dalatis</i>	<i>profundorum</i>				*						
				<i>Etmopterus</i>	<i>brachyurus</i>				*						
				<i>Etmopterus</i>	<i>lucifer</i>				*						
				<i>Etmopterus</i>	<i>spinax</i>						*				
				<i>Etmopterus</i>	<i>splendidus</i>		*								
				<i>Isistius</i>	<i>brasilensis</i>							*			
				<i>Squaliolus</i>	<i>aliae</i>				*						
				<i>Squaliolus</i>	<i>laticaudus</i>				*						
				<i>Squalus</i>	<i>acanthias</i>						*				
				<i>Squalus</i>	<i>japonicus</i>			*	*						
				<i>Squalus</i>	<i>megalops</i>		*								
				<i>Squalus</i>	<i>mitsukurii</i>				*		*	*			
				OXYNOTIDAE	Rough sharks										
3	PRISTIOPHORIFORMES	PRISTIOPHORIDAE	Saw sharks												
4	SQUATINIFORMES	SQUATINIDAE	Angle sharks	<i>Squatina</i>	<i>japonica</i>		*		*			*			
5	HETERODONTIFORMES	HETERODONTIDAE	Bullhead sharks	<i>Heterodontus</i>	<i>zebra</i>	*	*	*			*	*			
6	ORECTOLOBIFORMES	PARASCYLLIDAE	Collared Carpetsharks	<i>Cirrhoscyllium</i>	<i>expolium</i>				*						
		BRACHAELURIDAE	Blind sharks												
		ORECTOLOBIDAE	Wobbegong sharks	<i>Eucrossorhinus</i>	<i>dasyopogon</i>		*								
				<i>Orectolobus</i>	<i>japonicus</i>				*			*			
				<i>Orectolobus</i>	<i>maculatus</i>		*								
				<i>Orectolobus</i>	<i>ornatus</i>		*								
		HEMISCYLLIDAE	Longtail carpet sharks	<i>Chiloscyllium</i>	<i>griseum</i>	*	*	*	*		*	*	*	*	
				<i>Chiloscyllium</i>	<i>hasselti</i>		*	*			*		*		
				<i>Chiloscyllium</i>	<i>indicum</i>		*	*	*	*	*	*	*		
				<i>Chiloscyllium</i>	<i>plagiosum</i>	*	*	*	*	*	*	*	*		
				<i>Chiloscyllium</i>	<i>punctatum</i>		*	*	*	*	*	*	*		
				<i>Hemiscyllium</i>	<i>freycineti</i>		*					*			
				<i>Hemiscyllium</i>	<i>hallstromi</i>		*								
				<i>Hemiscyllium</i>	<i>ocellatum</i>		*								
				<i>Hemiscyllium</i>	<i>strahani</i>		*								
				<i>Hemiscyllium</i>	<i>trispiculare</i>		*								
			GINGLYMOSTOMATIDAE	Nurse sharks	<i>Nebrius</i>	<i>ferrugineus</i>	*	*	*	*	*	*	*	*	*
			STEGOSTOMATIDAE	Zebra sharks	<i>Stegostoma</i>	<i>fasciatum</i>	*	*	*	*	*	*	*	*	*
			RHINCODONTIDAE	Whale sharks	<i>Rhincodon</i>	<i>typus</i>	*	*	*	*	*	*	*	*	*
7	LAMNIFORMES	ODONTASPIDIDAE	Sand Tiger sharks												
		PSEUDOCARCHARIDAE	Crocodile sharks	<i>Pseudocarcharias</i>	<i>kamoharai</i>		*								
		MITISURINIDAE	Goblin sharks												
		MEGACHASMIDAE	Megamouth sharks												
		ALOPIDAE	Thresher sharks	<i>Alopias</i>	<i>pelagicus</i>		*							*	
				<i>Alopias</i>	<i>superciliosus</i>		*				*				
				<i>Alopias</i>	<i>vulpinus</i>		*				*				
		CETORHINIDAE	Basking sharks												
		LAMINIDAE	Mackerel sharks	<i>Isurus</i>	<i>oxyrinchus</i>	*	*	*	*	*	*	*	*	*	
				<i>Isurus</i>	<i>paucus</i>		*								
8	CARCHARHINIFORMES	SCYLORHINIDAE	Catsharks	<i>Apristurus</i>	<i>herklotsi</i>				*						
				<i>Apristurus</i>	<i>longicephalus</i>				*						
				<i>Apristurus</i>	<i>sibogae</i>		*								
				<i>Apristurus</i>	<i>spongiceps</i>		*								
				<i>Apristurus</i>	<i>verweyi</i>		*	*							
				<i>Atelomycterus</i>	<i>marmoratus</i>		*	*	*	*	*	*			
				<i>Cephaloscyllium</i>	<i>fasciatum</i>							*			
				<i>Galeus</i>	<i>sauteri</i>				*						
				<i>Galeus</i>	<i>schultzi</i>				*						
				<i>Halaehurus</i>	<i>boesemani</i>		*		*			*			
				<i>Halaehurus</i>	<i>buergeri</i>						*				
				<i>Halaehurus</i>	<i>hispidus</i>						*				
				<i>Pentanchus</i>	<i>profundicolus</i>				*						
				<i>Scyliorhinus</i>	<i>garmani</i>	*	*	*	*	*	*	*			
				<i>Scyliorhinus</i>	<i>torazame</i>				*						
		PROSCYLLIDAE	Finback Catsharks	<i>Eridacnis</i>	<i>radcliffei</i>				*			*			
				<i>Proscyllium</i>	<i>habereri</i>		*					*			
		PSEUDOTRIAKIDAE	False Catsharks												
		LEPTOCHARIIDAE	Barbeled Houndsharks												
		TRIAKIDAE	Houndsharks	<i>Hemitriakis</i>	<i>sp.</i>	*		*			*				
				<i>Mustelus</i>	<i>sp.</i>	*	*								
				<i>Mustelus</i>	<i>antarcticus</i>		*								
				<i>Mustelus</i>	<i>griseus</i>	*		*					*		
				<i>Mustelus</i>	<i>manazo</i>		*					*			

NO.	ORDER	FAMILY		GENUS	SPECIES	COUNTRY									
						BRU	IND	MAL	PHI	SIN	THA	VN	CAM	MYN	
		HEMIGALEIDAE	Weasel sharks	<i>Chaenogaleus</i>	<i>macrostoma</i>		*				*	*			
				<i>Hemigaleus</i>	<i>microstoma</i>		*	*	*		*	*			
				<i>Hemipristis</i>	<i>elongatus</i>		*		*		*	*			
				<i>Paragaleus</i>	<i>tengi</i>						*	*			
		CARCHARHINIDAE	Requiem sharks	<i>Carcharhinus</i>	<i>sp.</i>			*				*			
				<i>Carcharhinus</i>	<i>albimarginatus</i>		*	*	*		*				
				<i>Carcharhinus</i>	<i>altimus</i>						*				
				<i>Carcharhinus</i>	<i>amblyrhynchoidea</i>	*	*	*	*		*	*			
				<i>Carcharhinus</i>	<i>amblyrhynchus</i>		*	*	*		*				
				<i>Carcharhinus</i>	<i>amboinensis</i>		*				*				
				<i>Carcharhinus</i>	<i>borneensis</i>			*							
				<i>Carcharhinus</i>	<i>brachyurus</i>	*	*	*			*				
				<i>Carcharhinus</i>	<i>brevipinna</i>		*	*	*		*	*			
				<i>Carcharhinus</i>	<i>cautus</i>		*								
				<i>Carcharhinus</i>	<i>dussumieri</i>	*	*	*	*		*	*			
				<i>Carcharhinus</i>	<i>falciformis</i>		*	*	*						
				<i>Carcharhinus</i>	<i>fitzroyensis</i>		*								
				<i>Carcharhinus</i>	<i>hemiodon</i>	*	*	*	*			*			
				<i>Carcharhinus</i>	<i>leucas</i>	*	*	*	*		*				
				<i>Carcharhinus</i>	<i>limbatus</i>	*	*	*	*		*	*			
				<i>Carcharhinus</i>	<i>longimanus</i>	*	*	*	*		*	*			
				<i>Carcharhinus</i>	<i>macroti</i>		*	*				*			
				<i>Carcharhinus</i>	<i>melanopterus</i>	*	*	*	*		*	*			
				<i>Carcharhinus</i>	<i>menisorrah</i>		*				*	*			
				<i>Carcharhinus</i>	<i>mullori</i>		*	*			*				
				<i>Carcharhinus</i>	<i>obscurus</i>						*	*			
				<i>Carcharhinus</i>	<i>plumbeus</i>	*	*	*			*	*			
				<i>Carcharhinus</i>	<i>sealei</i>	*	*	*	*		*	*			
				<i>Carcharhinus</i>	<i>sorrah</i>	*	*	*	*		*				
				<i>Galeocerdo</i>	<i>arcticus</i>				*			*			
				<i>Galeocerdo</i>	<i>cuvier</i>	*	*	*	*		*	*			
				<i>Loxodon</i>	<i>macrorhinus</i>	*	*	*	*						
				<i>Negaprion</i>	<i>acutidens</i>		*	*	*		*				
				<i>Prionace</i>	<i>glauca</i>	*	*	*	*		*	*			
				<i>Rhizoprionodon</i>	<i>acutus</i>	*	*	*	*		*	*			
				<i>Rhizoprionodon</i>	<i>oligolinx</i>		*	*			*	*			
				<i>Rhizoprionodon</i>	<i>taylori</i>		*								
				<i>Scoliodon</i>	<i>sp.</i>			*	*						
				<i>Scoliodon</i>	<i>laticaudus</i>	*	*	*			*	*			
				<i>Scoliodon</i>	<i>longurio</i>			*							
				<i>Scoliodon</i>	<i>palasorrh</i>							*			
				<i>Scoliodon</i>	<i>sorrahkawah</i>							*			
				<i>Scoliodon</i>	<i>walbehmi</i>		*								
				<i>Triaenodon</i>	<i>obesus</i>	*	*	*	*		*	*			
		SPHYRNIDAE	Hammerhead sharks	<i>Eusphyrna</i>	<i>blochii</i>	*	*	*	*		*	*			
				<i>Sphyrna</i>	<i>lewini</i>	*	*	*	*		*	*			
				<i>Sphyrna</i>	<i>mokarran</i>	*		*			*	*			
				<i>Sphyrna</i>	<i>tudes</i>						*	*			
				<i>Sphyrna</i>	<i>zygaena</i>		*	*	*		*	*			
9	PRISTIFORMES	PRISTIDAE	Sawfishes	<i>Anoxypristis</i>	<i>cuspidata</i>	*	*	*	*	*	*	*	*	*	
				<i>Pristis</i>	<i>microdon</i>	*	*	*	*	*	*	*	*	*	
				<i>Pristis</i>	<i>pectinata</i>				*		*	*	*	*	
				<i>Pristis</i>	<i>zijsron</i>	*	*	*	*	*	*	*	*	*	
10	RHINOBATIFORMES	RHINIDAE	Wedgefishes	<i>Rhina</i>	<i>ancylostoma</i>	*	*	*	*	*	*	*	*	*	
				<i>Rhynchobatus</i>	<i>australiae</i>	*		*	*		*				
				<i>Rhynchobatus</i>	<i>djiddensis</i>		*	*	*		*		*		
		RHINOBATIDAE	Guitarfishes	<i>Rhinobatos</i>	<i>formosensis</i>				*						
				<i>Rhinobatos</i>	<i>granulatus</i>		*	*	*	*	*		*	*	
				<i>Rhinobatos</i>	<i>halavi</i>			*	*	*	*	*	*	*	
				<i>Rhinobatos</i>	<i>obtusius</i>			*	*	*	*		*	*	
				<i>Rhinobatos</i>	<i>schlegelii</i>				*		*	*			
				<i>Rhinobatos</i>	<i>thouin</i>	*	*	*	*	*	*	*	*		
				<i>Rhinobatos</i>	<i>typus</i>	*	*	*	*	*	*				
		PLATYRHINIDAE	Thornback Rays												
11	TORPEDINIFORMES	NARCINIDAE	Numbfishes	<i>Narcine</i>	<i>brunnea</i>		*	*			*	*	*	*	
				<i>Narcine</i>	<i>indica</i>	*		*			*		*	*	
				<i>Narcine</i>	<i>lingula</i>								*	*	
				<i>Narcine</i>	<i>maculata</i>	*		*	*		*		*	*	
				<i>Narcine</i>	<i>prodorsalis</i>	*	*	*		*	*	*	*	*	
				<i>Narcine</i>	<i>timlei</i>		*	*	*		*	*	*	*	
		NARKIDAE	Sleepy rays	<i>Narke</i>	<i>dipterygia</i>		*	*		*	*	*	*	*	
				<i>Temera</i>	<i>hardwickei</i>			*		*	*	*		*	
		HYPNIDAE	Coffin rays									*			
		TORPEDINIDAE	Torpedo Rays	<i>Torpedo</i>	<i>macneilli</i>							*			
				<i>Torpedo</i>	<i>marmorata</i>							*			

NO.	ORDER	FAMILY		GENUS	SPECIES	COUNTRY								
						BRU	IND	MAL	PHI	SIN	THA	VN	CAM	MYN
12	RAJIFORMES	RAJIDAE	Skates	<i>Gurgesiella</i>	<i>sibogae</i>	*	*	*			*	*	*	
				<i>Raja</i>	<i>boesemani</i>			*				*		
				<i>Raja</i>	<i>annandalei</i>		*							
		ARHYNCHOBATIDAE	Softnose skates	<i>Notoraja</i>	<i>subtilispinosa</i>		*		*					
		ANACANTHOBATIDAE	Legskates	<i>Anacanthobatis</i>	<i>borneensis</i>			*						
				<i>Anacanthobatis</i>	<i>melanosoma</i>				*					
13	MYLIOBATIFORMES	PLESIOBATIDAE	Deepwater stringrays											
		UROLOPHIDAE	Round stringrays											
		HEXATRYGONIDAE	Sixgill stringray	<i>Hexatrygon</i>	<i>bickelli</i>				*					
		DASYATIDAE	Whiptail stringrays	<i>Dasyatis</i>	<i>akaei</i>						*	*	*	
				<i>Dasyatis</i>	<i>annotata</i>							*	*	
				<i>Dasyatis</i>	<i>bennetti</i>			*	*		*	*	*	*
				<i>Dasyatis</i>	<i>brevicaudata</i>						*			
				<i>Dasyatis</i>	<i>fluviourum</i>								*	
				<i>Dasyatis</i>	<i>kuhlii</i>	*	*	*	*	*	*	*	*	*
				<i>Dasyatis</i>	<i>laosensis</i>						*			
				<i>Dasyatis</i>	<i>microps</i>		*	*			*		*	*
				<i>Dasyatis</i>	<i>zugei</i>	*	*	*	*	*	*	*	*	*
				<i>Himantura</i>	<i>bleekeri</i>		*				*			
				<i>Himantura</i>	<i>chaophraya</i>		*	*			*			
				<i>Himantura</i>	<i>fai</i>	*	*	*		*	*	*	*	*
				<i>Himantura</i>	<i>gerrardi</i>	*	*	*	*	*	*	*	*	*
				<i>Himantura</i>	<i>granulata</i>		*							
				<i>Himantura</i>	<i>imbricata</i>	*	*	*	*		*		*	*
				<i>Himantura</i>	<i>jenkinsii</i>	*	*	*		*	*		*	*
				<i>Himantura</i>	<i>krempfi</i>						*			
				<i>Himantura</i>	<i>marginata</i>		*							*
				<i>Himantura</i>	<i>oxyrhynchus</i>		*	*			*		*	
				<i>Himantura</i>	<i>signifer</i>		*	*			*			
				<i>Himantura</i>	<i>toshi</i>		*							
				<i>Himantura</i>	<i>uarnacoides</i>	*	*	*		*	*		*	*
				<i>Himantura</i>	<i>uarnak</i>	*	*	*	*	*	*	*	*	*
				<i>Himantura</i>	<i>undulata</i>	*	*	*	*	*	*	*	*	*
				<i>Himantura</i>	<i>walga</i>	*	*	*			*		*	*
				<i>Pastinachus</i>	<i>sephen</i>	*	*	*	*	*	*	*	*	*
				<i>Pteroplatytrygon</i>	<i>violacea</i>							*		
				<i>Taeniura</i>	<i>lymma</i>	*	*	*	*	*	*	*	*	*
				<i>Taeniura</i>	<i>meyeni</i>	*	*	*	*	*	*	*	*	*
				<i>Urogymmus</i>	<i>asperrimus</i>	*	*	*		*	*			*
		GYMNURIDAE	Butterfly rays	<i>Aetoplatea</i>	<i>zonura</i>		*			*	*			
				<i>Gymnura</i>	<i>japonica</i>								*	
				<i>Gymnura</i>	<i>micrura</i>	*	*	*	*	*	*	*	*	*
				<i>Gymnura</i>	<i>poecilura</i>	*	*	*	*	*	*	*	*	*
				<i>Gymnura</i>	<i>tentaculata</i>						*			
		MYLIOBATIDAE	Eagle rays	<i>Aetobatus</i>	<i>flagellum</i>		*							*
				<i>Aetobatus</i>	<i>guttatus</i>		*	*			*			*
				<i>Aetobatus</i>	<i>narinari</i>	*	*	*	*	*	*	*	*	*
				<i>Aetomylaeus</i>	<i>maculatus</i>		*	*		*	*	*	*	*
				<i>Aetomylaeus</i>	<i>mihvus</i>	*	*	*	*	*	*	*	*	*
				<i>Aetomylaeus</i>	<i>nichofii</i>	*	*	*	*	*	*	*	*	*
				<i>Aetomylaeus</i>	<i>vespertilio</i>	*	*	*			*		*	
		RHINOPTERIDAE	Cownose rays	<i>Rhinoptera</i>	<i>adspersa</i>		*	*						*
				<i>Rhinoptera</i>	<i>javanica</i>	*	*	*	*	*	*	*	*	*
				<i>Rhinoptera</i>	<i>neglecta</i>						*			
		MOBULIDAE	Devil rays	<i>Manta</i>	<i>birostris</i>	*	*	*	*	*	*	*	*	*
				<i>Manta</i>	<i>eregoodootenke</i>	*	*	*	*	*	*	*	*	*
				<i>Mobula</i>	<i>japanica</i>			*			*	*	*	*
				<i>Mobula</i>	<i>kuhlii</i>			*			*			*
				<i>Mobula</i>	<i>mobular</i>			*						
				<i>Mobula</i>	<i>tarapacana</i>	*		*						
				<i>Mobula</i>	<i>thurstoni</i>			*			*		*	*

Ref : proceeding 1,2,4,

International plan of action for the conservation and management of sharks and the shark fisheries of Thailand

The living marine resource of the western central pacific Volume 2 Cephalopods, crustaceans, holothurians and sharks



Species Identification Sheet of Major Shark Species found in Southeast Asian Region

Annex 2

Class Chondrichthyes
Sub-Class Elasmobranchii

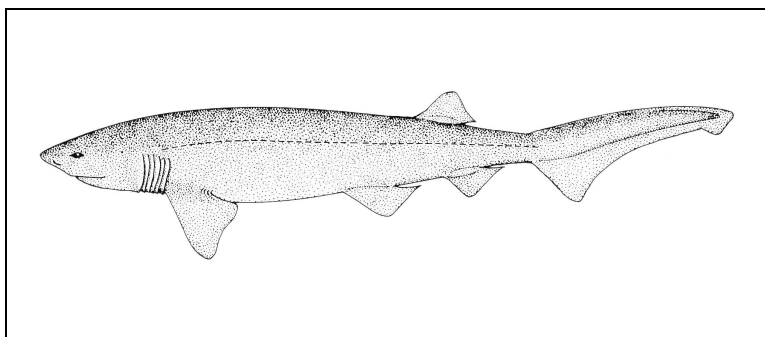
Order Hexanchiformes

Family Hexanchidae

Hexanchus griseus

(Bluntnose sixgill shark)

Snout short, blunt and broad; lower jaw with 6 rows of large comb-like teeth on each side; 6 gill slits. Dorsal fin about as far from beginning of caudal fin as its own base length. A large species, reaching 470 cm TL; mostly found in deep water, but comes to surface.



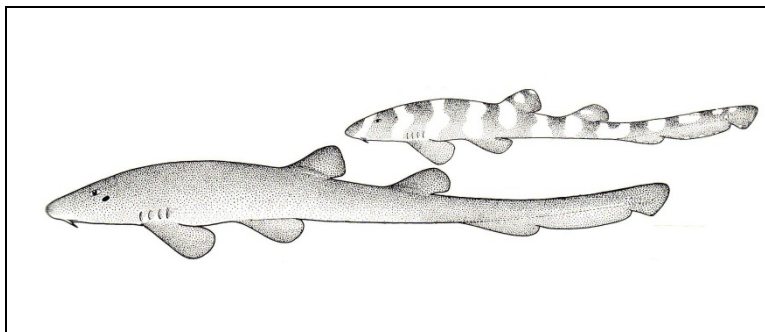
Order Orectolobiformes

Family Hemiscylliidae

Chiloscyllium griseum

(Grey bamboo shark)

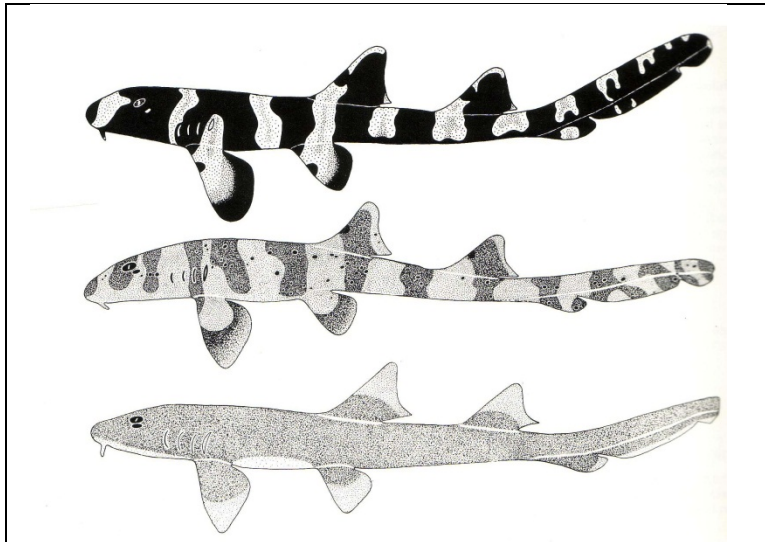
Juveniles with light grey-brown and dark grey-brown bands; adults become uniformly tan to light brown; belly cream to light tan. First dorsal fin base longer than that of second. A mid dorsal ridge present; origin of anal fin only a little behind second dorsal fin.



Chiloscyllium punctatum

(Brown-banded bambooshark)

Juveniles are strongly banded in alternating black and white bands. With age these bands fade and a more uniform color appears with small black spots over body. At maturity the body color is uniformly light brown. Anal fin origin below end of second dorsal fin.

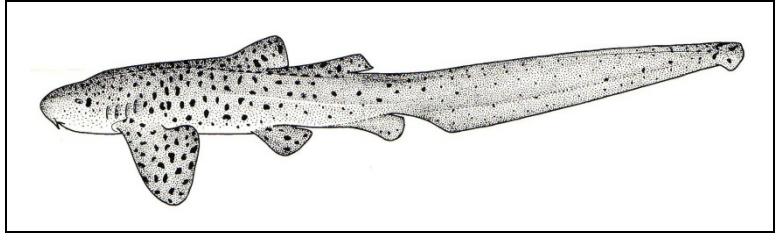


Family Stegostomatiidae

Stegostoma fasciatum

(Zebra shark)

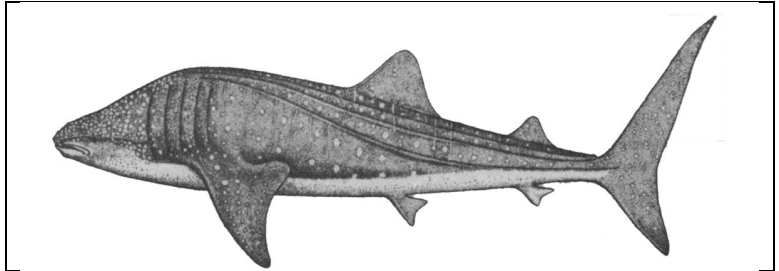
Juveniles with dark brown saddle – shaped bands on upper part of body, gradually changing to spots or blotches in adults.



Family Rhincodontidae

Rhincodon typus

(Whale shark)



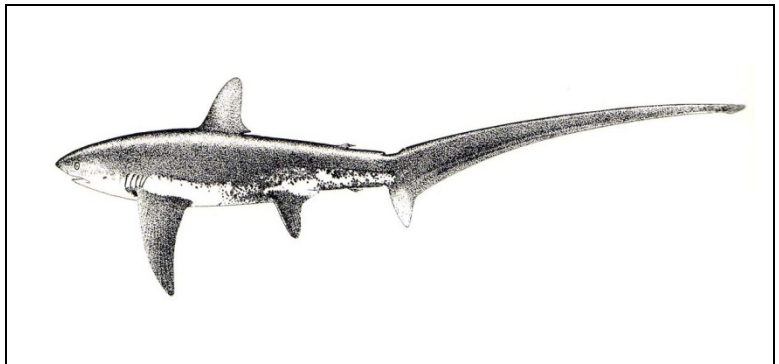
Order Lamniformes

Family Alopiidae

Alopias vulpinus

(Thresher shark)

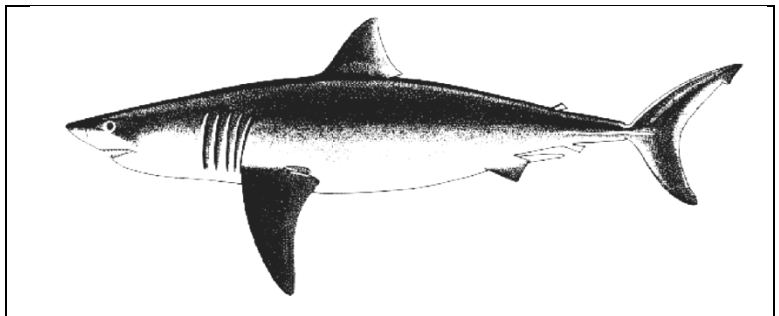
No horizontal grooves at nape, forehead not indented over eyes, which are small. Teeth small, usually more than 29 rows in each jaw, First dorsal fin about equidistant between pectoral and ventral fin bases; pectoral fins long and falcate, with pointed tips in adults. White of belly expanded over pectoral fin base.



Family Lamnidae

Carcharodon carcharias

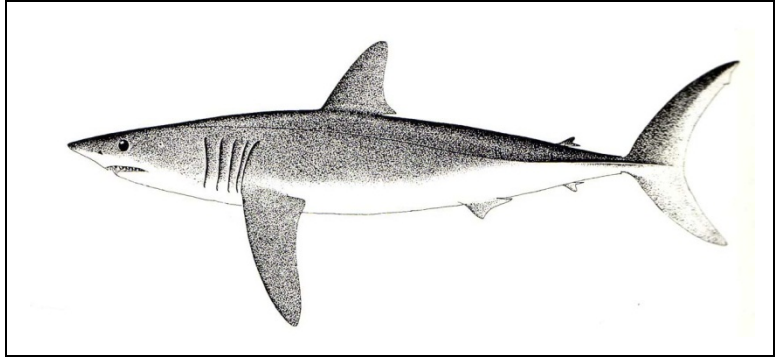
(Great white shark)



Isurus oxyrinchus

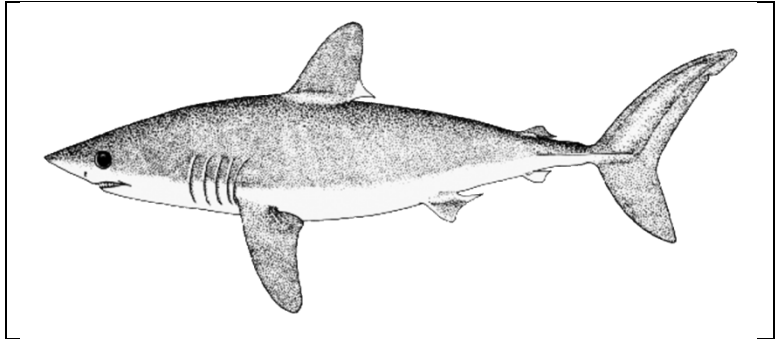
(Mackerel shark)

Snout acutely pointed. Teeth moderately slender, without cusplets at side, edges smooth. First dorsal fin origin just behind inner corner of pectoral fin; pectoral fin falcate, shorter than head, tip pointed in adults. Underside of snout and around mouth pale.



Lamna nasus

(Probeagle, Mackerel shark)



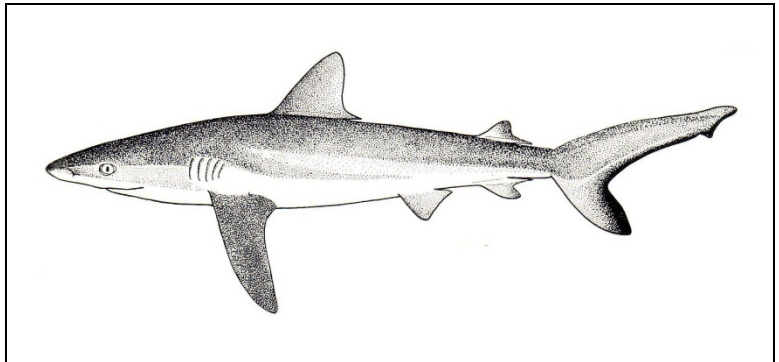
Order Carcharhiniformes

Family Carcharhinidae

Carcharhinus amblyrhynchos

(Grey reef shark)

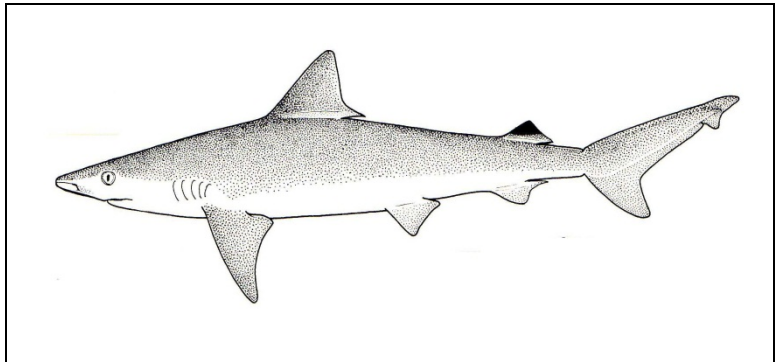
Snout broadly rounded, less than mouth width. Upper teeth narrowly triangular, high, erect at front but becoming oblique further back. Dermal ridge between dorsal fins weak or absent. Posterior margin of caudal fin distinctly blackish.



Carcharhinus dussumieri

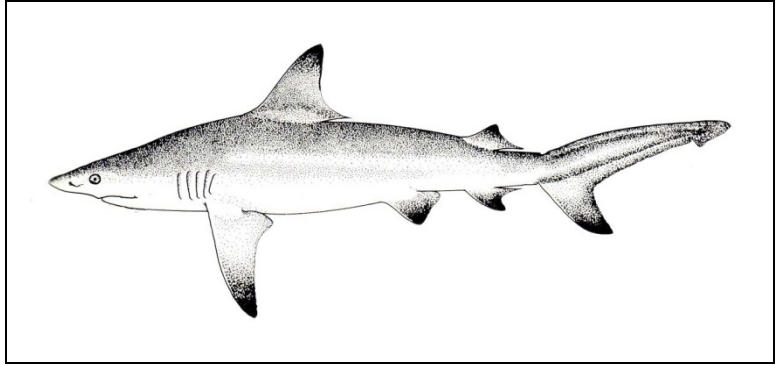
(Whitecheek shark)

Snout moderately long and broadly parabolic or wedge-shaped. Upper teeth with a narrow-based strongly oblique cusp and strong, serrated cusplets. First dorsal fin not falcate. A dermal ridge between dorsal fins (occasionally absent). Black spot on second dorsal fin.



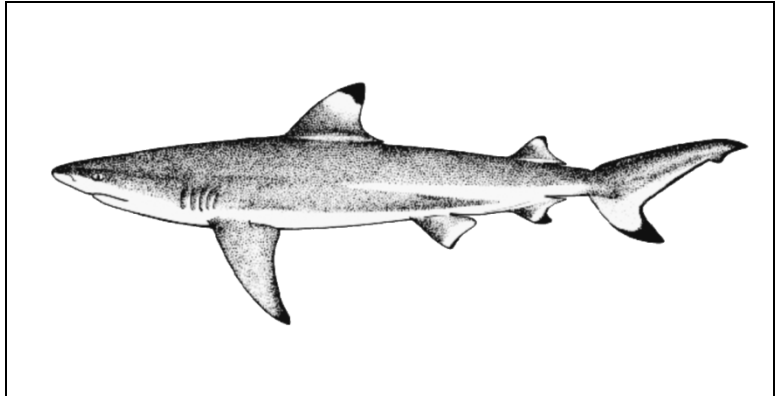
Carcharhinus limbatus
(Small black-tipped shark)

Snout long. Upper and lower teeth nearly symmetrical, with an erect, narrow and serrated cusp. First dorsal fin more or less pointed, its origin above or just behind pectoral fin base. No dermal ridge between dorsal fins. Dark and along flank to about ventral fins, tips of latter persistently black.



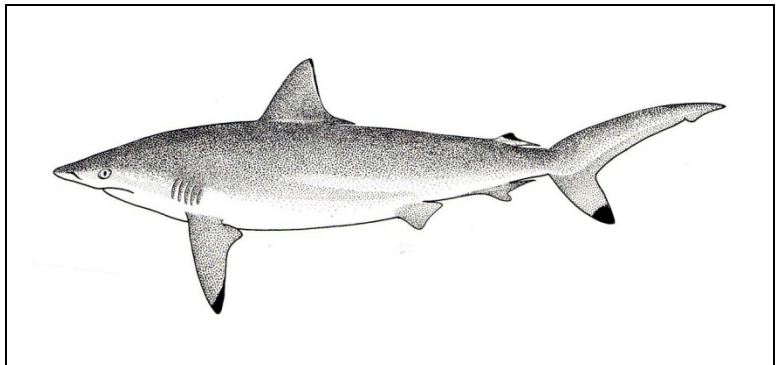
Carcharhinus melanopterus
(Blacktip reef shark)

Snout very short and broadly rounded, its length less than mouth width. Upper teeth more or less oblique, with a narrow cusp and low basal cusplets. Second dorsal fin fairly high. No dermal ridge between dorsal fins. Back yellow-brown; all fins with black tips, that of first dorsal fin with a whitish band below.



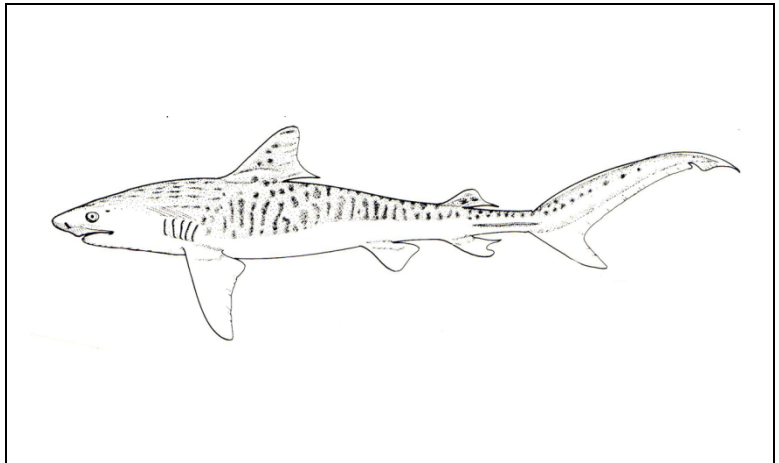
Carcharhinus sorrah
(Spottail shark)

Snout moderately pointed, parabolic and long. Upper teeth with a more or less oblique, narrow, serrated cusp and strong cusplets. Second dorsal fin low, with elongate lower tip over twice fin height. A dermal ridge between dorsal fins. Pectoral, second dorsal and lower caudal fin lobe black.



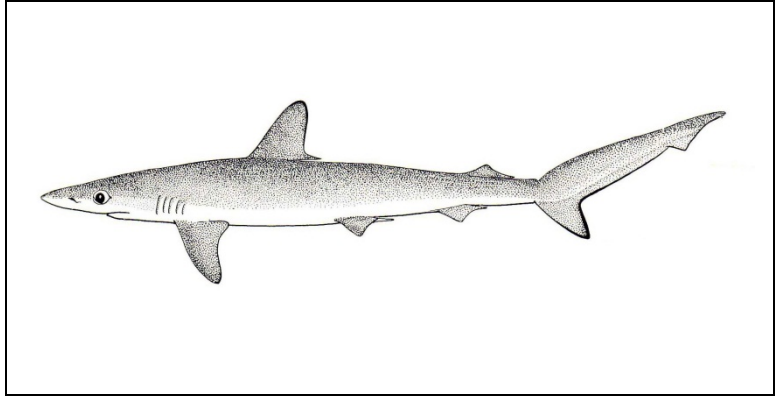
Galeocerdo cuvieri
(Tiger shark)

Snout very short and bluntly rounded, much less than mouth width. Spiracles present, small but easily visible. Teeth closely serrated, outer edges deeply notched, tips directed oblique outward, thus essentially cockscomb-shaped. Low rounded keel on each side of caudal peduncle. Smaller specimens with dark spots on upper body and fins, often forming bars, fading with growth.



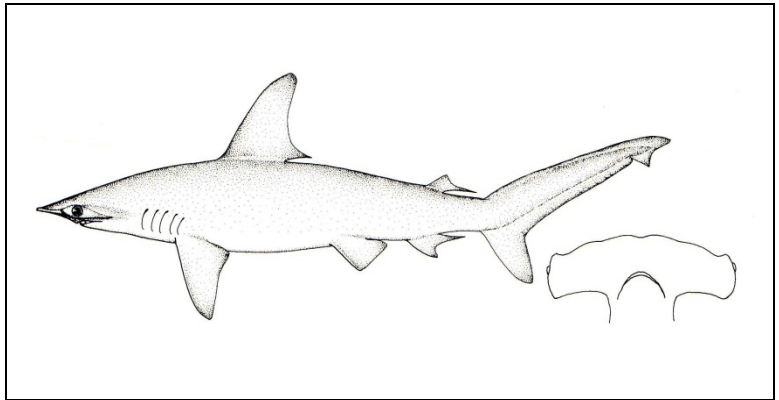
Loxodon macrorhinus
(Sliteye shark)

Small slender species (usually to about 70-80 cm TL). Snout very long, parabolic in shape; hind edge of eye with distinct notch. Teeth low, cusp narrow, oblique, smooth, no cusplets. First dorsal fin small, second dorsal fin beginning just behind anal fin base. Usually no dermal ridge between dorsal fins.



Family Sphyrnidae
Sphyrna lewini
(Scalloped hammerhead)

Body elongate, subcylindrical, lateral expansions of head hammer-shaped. 1st dorsal much larger than pectorals and behind pectoral axil. 2nd dorsal base much less than anal base. Anal base equal to pectoral base. Hind tip of 2nd dorsal reaches upper caudal pit. Ash-grey above and yellowish below. Found in coastal water and open seas.

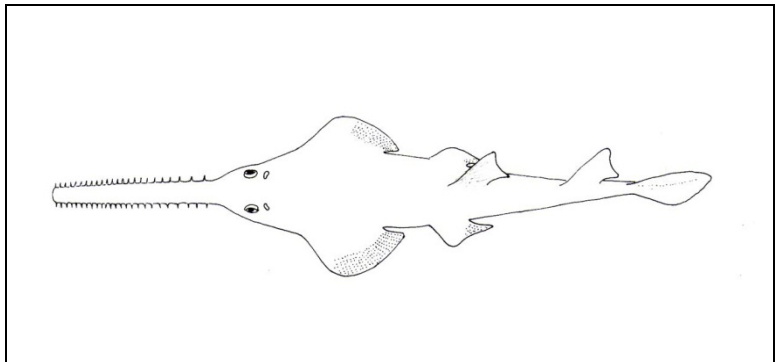


Order Pristiformes

Family Pristidae

Pristis zijsron
(Longcomb sawfish)

Color grayish brown. First dorsal fin originates about half way above the ventral fin. The last 2 or 3 pairs of rostral teeth are separated by a much larger distance than all of the preceding ones. The species is mainly marine; rarely entering rivers and is only found in the Indo-Pacific region.



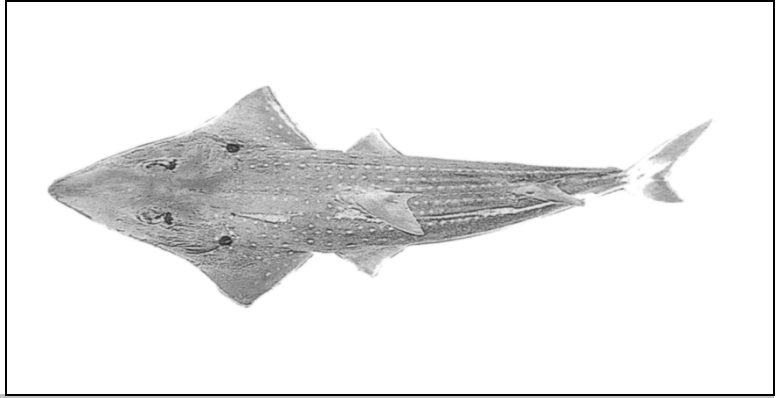
Order Rajiformes

Family Rhinobatidae

Rhynchobatus djiddensis

(White spotted wedgefish)

Body elongate, depressed, snout pointed, head broad and depressed. Spiracles large, close to eyes, behind which are single rows of backwardly directed tubercles. A row of tubercles along midline of back, 2 short rows on each shoulder. Teeth blunt, modified for crushing its food, mainly crustaceans. Common, often caught in shallow water and trawling grounds.



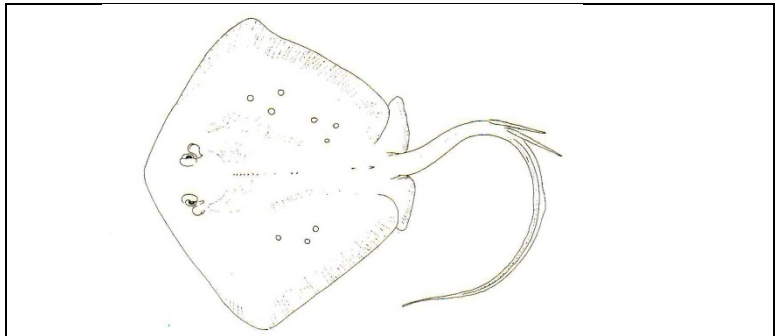
Order Myliobatiformes

Family Dasyatidae

Dasyatis kuhlii

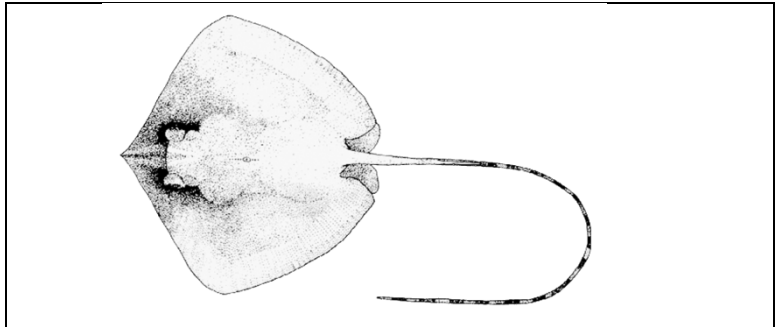
(Spotted stingray)

Disc rhombic, broader than long. Tail about as long as disc, with black tip and 2 blackish cross-bands. Adults with large blue ocelli. It is a small ray, growing to about 150 cm in width. Buries itself in the sand in coral areas.



Himantura gerrardi

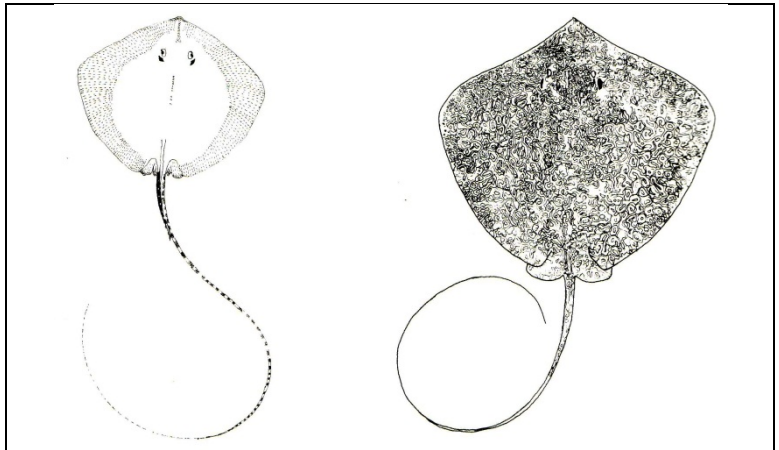
(Sharpnose stingray)



Himantura uarnak

(Honeycomb stingray)

Rhombic shaped; snout pointed; dorsal surface smooth in young, one or more large tubercles placed among flattened smaller ones on middle of disc in larger specimens; tail very long, 2.2-3 times disc length; usually one functional tail spine; 4 mouth papillae, outer 2 smaller than inner 2. Tail with many alternating black and white bands.

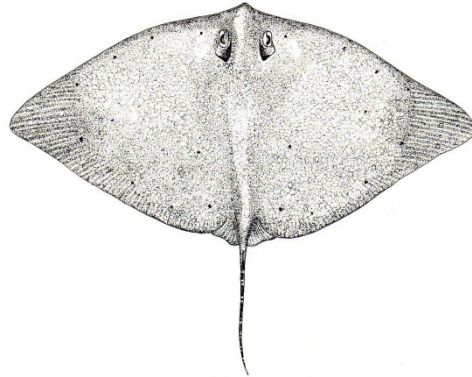


Family Gymnuridae

Gymnura poecilura.

(Long-tailed butterfly ray)

Disc very broad and depressed. Tail about as long as length of disc, white with 9-12 black bands. A serrated spine close to base of tail. Usually caught by trawl. Usual size 22-36 cm wide. Attains 180 cm in width.



Family Hemiscylliidae

Chiloscyllium plagiosum

(White spotted bamboo shark)

Mouth well in front of eyes; spineless dorsal fins far posterior on tail, greatly elongated thick precaudal tail, long and low anal fin just anterior to caudal fin, lateral ridges on trunk, dorsal fins with straight or convex posterior margins, first dorsal-fin origin opposite or just behind pelvic-fin insertions; colour pattern of numerous white or bluish spots and dark spots, dark bands and saddles on a light background.



Carcharhinus falciformis (Silky shark)

[Dorsal spines](#) (total): 0-0; [Anal spines](#): 0-0.

A large, slim shark with a moderately long, flat and rounded snout, large eyes, small jaws, and oblique-cusped teeth with serrations; 2nd dorsal fin low and with greatly elongated rear tip. Grey or bluish-grey above, white below; no conspicuous fin markings. Only *Carcharhinus* species with an interdorsal ridge that has the dorsal fin origin behind the free rear tip of the pectoral fin

Biology: Found abundantly near the edge of continental and insular shelves, but also in the open sea and occasionally inshore. Often found in deepwater reefs and near insular slopes. It is quick-moving and aggressive. Solitary; often associated with schools of tuna. Feeds mainly on fishes, but also squid, paper nautiluses, and pelagic crabs. Regarded as dangerous to humans. Flesh utilized fresh and

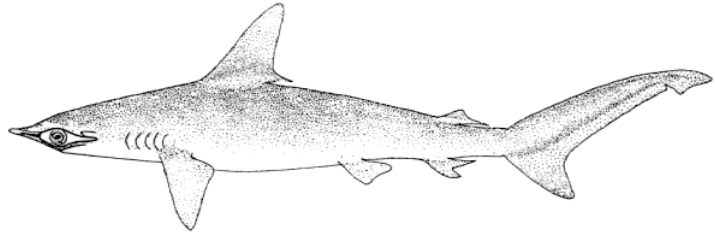


dried-salted for human consumption; its hide for leather; its fin for shark-fin soup; its liver for oil. 2 to 14 young, 73 to 87 cm, are born per litter.

Sphyrna zygaena (smooth head shark)

[Dorsal spines](#) (total): 0-0; [Anal spines](#): 0-0. A large hammerhead with a notch at the center of head; 1st dorsal fin moderately high, 2nd dorsal and pelvic fins low. Olive-grey or dark grey above, white below. Fins nearly plain, dusky or blackish tipped.

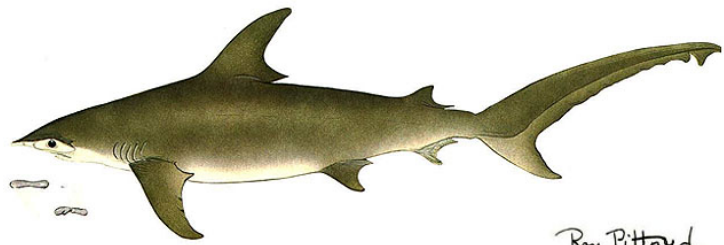
Biology: Occurs inshore and well offshore, over continental and insular shelves. Migrates northward in summer; young often in large aggregations of hundreds of individuals. Prefers to feed on small sharks, skates and stingrays, but also preys on bony fishes, shrimps, crabs, barnacles and cephalopods. Regarded as being dangerous to people, though only few can be tentatively attributed to this species due to its occurrence in temperate waters. Reported to cause poisoning. Meat utilized fresh, dried-salted, and possibly smoked for human consumption; liver oil for vitamins, fins for soup, hide for leather, and carcasses for fishmeal. Used in Chinese medicine. Become sexually mature when 250 to 300 cm long. The female gives birth to 30 -40 young.



Sphyrna mokarran (Great head shark)

[Dorsal spines](#) (total): 0-0; [Anal spines](#): 0-0. A very large hammerhead also with a notch at the center of the head. Front margin of head gently curved in juveniles, becoming nearly straight in adults, with slight median notch. 1st dorsal fin very high and curved; 2nd dorsal and pelvic fins high and with deeply concave rear margins. Light grey or grey-brown above, white below; fins without conspicuous markings.

Biology: A coastal-pelagic, semi-oceanic shark, found close inshore and well offshore, over the continental shelves, island terraces, and in passes and lagoons. Prefers to feed on stingrays and other batoids, groupers and sea catfishes, but also preys on other small bony fishes, crabs, squid, other sharks, rays, and lobsters. A viviparous species, produces 13-42 of 56 to 70 cm young a litter. Potentially dangerous to people but only few, if any, of the attacks on people can be definitely attributed to it because of the apparent difficulty of distinguishing large hammerhead species involved in attacks. Meat utilized for human consumption (fresh, fresh-frozen, dried-salted, and smoked), liver oil for vitamins, fins for soup, hides for leather, and carcasses for fishmeal.



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Scoliodon laticaudus (spade nose shark)

[Dorsal spines](#) (total): 0-0; [Anal spines](#): 0-0. Bronze grey above, white below, fins sometimes darker than body; no conspicuous markings.

Biology: Found on rocky substrates of coastal waters and lower reaches of tropical rivers. It is uncertain, however, if this species can live in perfectly fresh water for extended periods. Forms large schools. Feeds on small bony fishes, shrimps and cuttlefish. Utilized fresh for human consumption; processed into fishmeal and used as bait for other sharks and bony fishes. Maximum sizes up to 120 cm unconfirmed.





Forty-fourth Meeting of the Council
Southeast Asian Fisheries Development Center
Nay Pyi Taw, the Republic of the Union of Myanmar
2-6 April 2012

REF07b

Summary on the Status of Tuna Fisheries in the Western Central Pacific Ocean

Summary on the Status of TUNA Fisheries in the Western Central Pacific Ocean

Compiled by

Somboon Siriraksophon

Policy and Program Coordinator of SEAFDEC

I. Introduction

The Western and Central Pacific Fisheries Commission (WCPFC) was established by the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (WCPFC Convention) which entered into force on 19 June 2004. There are 26 member countries, 8 participating Territories and 9 cooperating non-members.

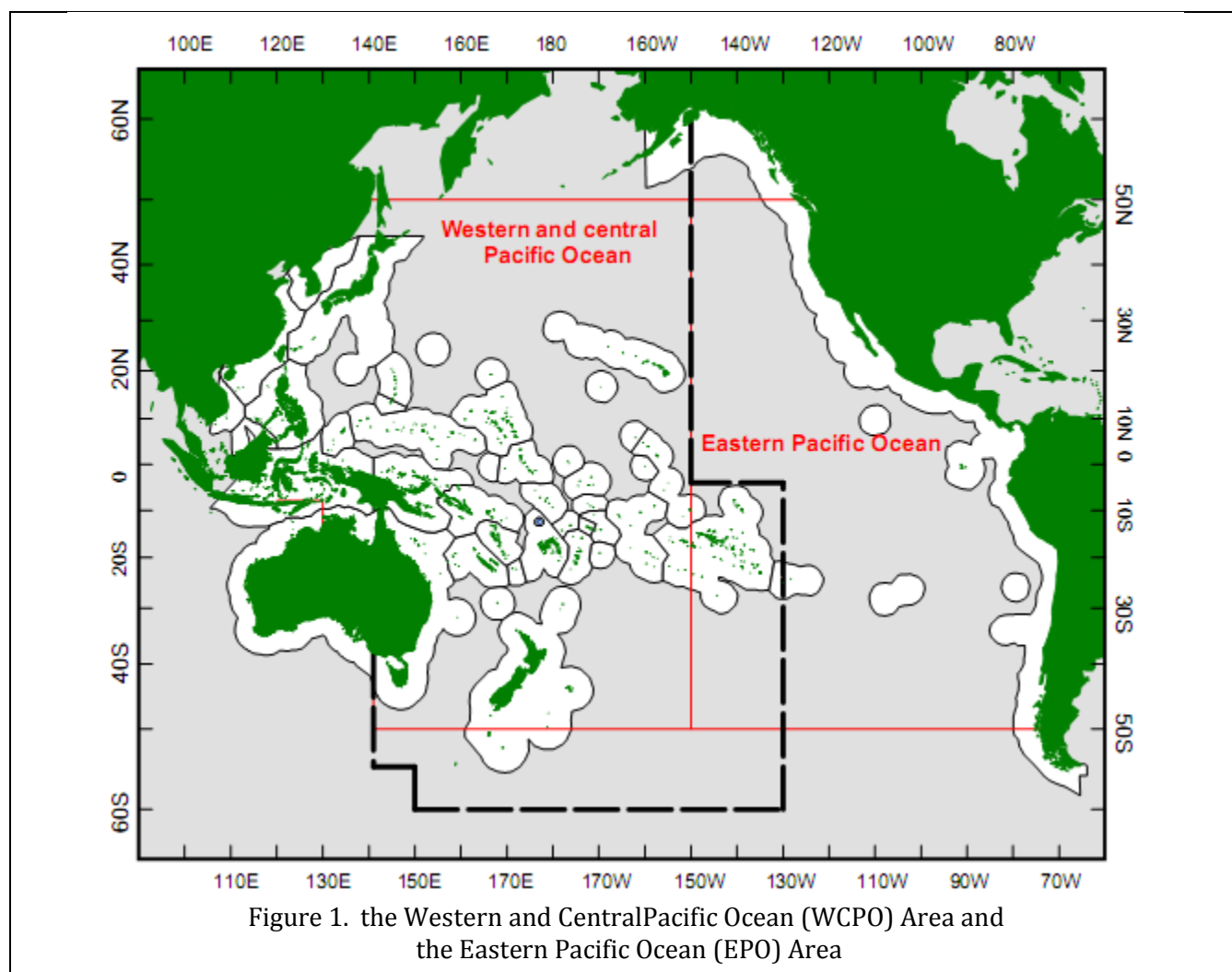
This paper is drafted based on SEAFDEC's participation to the 7th Regular Session of the Scientific Committee (SC7) held from 9-17 August 2011 with the aims to observe the WCPFC's works on the Assessment of Tuna in the WCP Ocean (West Central Pacific Ocean) in which the Philippines as members while Indonesia, Vietnam and Thailand as Cooperating Non-member(s). The paper summarizes the outcomes assessment of tuna stock focusing bigeye tuna, yellow fin tuna, skipjack and albacore tuna and the proposed management advice for further consideration of its commission. The paper also concludes the view/requirement of SEAFDEC member countries in term of human resources development and implication to the measures adopted by the WCPFC and others RFMOs.

This paper will be presented at the Special Meeting on Improvement of Tuna Information and Data Collection in the Southeast Asia organized by SEAFDEC/TD from 7-9 September 2011 at BP Samilar Beach Hotel & Resort, Songkhla, Thailand as well as at another SEAFDEC event with the aims to seek advice from SEAFDEC member countries on the establishing the tuna working group under the Regional Advisory Committee framework to support long-term assessment for both oceanic and neritic tuna at sub-regional areas such as the South China Sea and the Andaman Sea, etc.

II. Status of and Trends of Tuna Fisheries in WCPO and WCP-CA

Assessment of tuna stock in the Western and Central Pacific Ocean (WCPO) and WCP-Convention Area (CA) (Figure 1) has been done annually by groups of scientist using the scientific data available provided by members and cooperating non-members. Attempts by WCPFC to improve the data collection and methodology of stock assessment from the past to present make major changes to better understanding the status and trends of tuna stock and how developing of the tuna fisheries in the WCPO. Target species are 4 major tuna, i.e., bigeye (*Thunnus obesus*), yellowfin (*Thunnus albacares*), albacore (*Thunnus alalunga*), skipjack (*Katsuwonus pelamis*), and

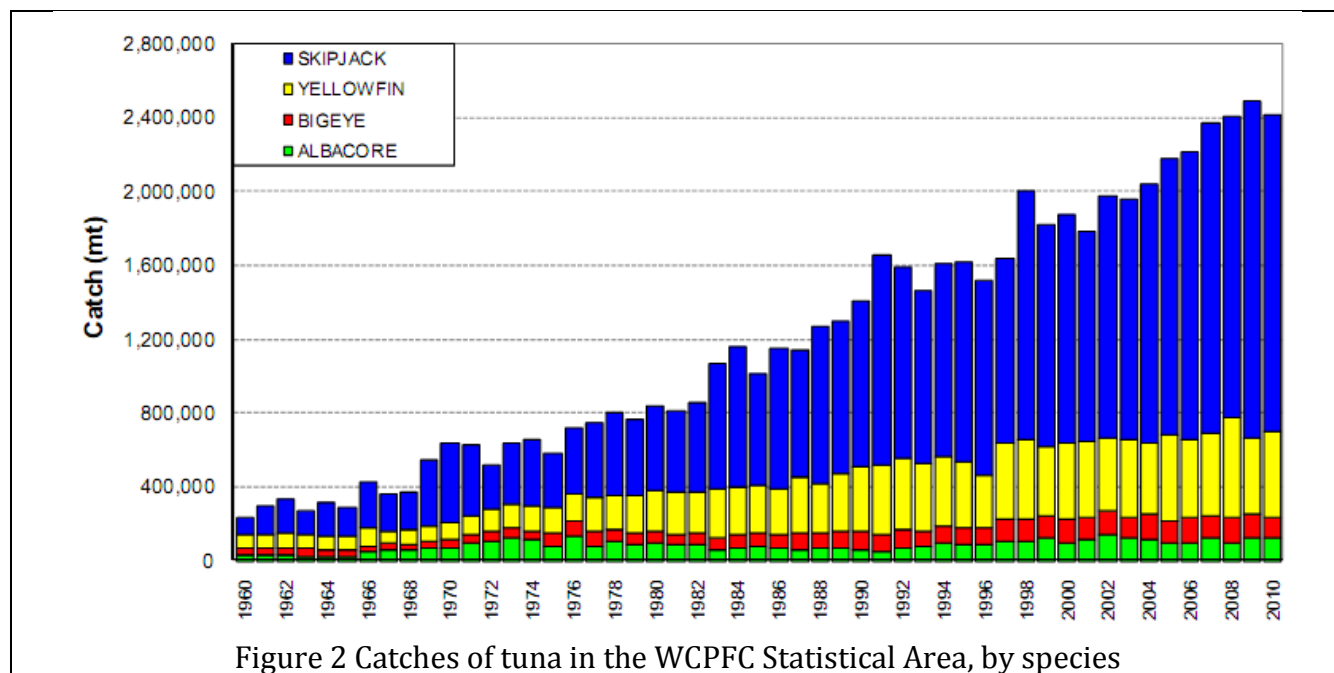
tuna like species such as major billfish species, i.e., black marlin (*Makairaindica*), blue marlin (*Makairamazara*), striped marlin (*Tetrapturusaudax*) and swordfish (*Xiphiasgladius*). Main fishing gears for tuna fisheries in the WCPFO are purse seine (associated with drifting Fish Aggregating Devices (FAD), log, and free school), longline, pole and line, troll and others. Different types of fishing gear are used for different tuna species, however number of By-catch from tuna fisheries are also taken into consideration by the WCPFC on how fishing interaction to those by-catch species. In this paper, by-catch and tuna like-species are not included.



2.1 Annual Catches in the WCPFC Statistical Area

Estimates of annual catches in the WCPFC Statistical Area are presented for target tuna species, and major billfish species. Estimates of catches of southern bluefin tuna (*Thunnusmaccoyii*) are compiled by the Commission for the Conservation of Southern Bluefin Tuna (CCSBT). The compilation of estimates of catches of Pacific bluefin tuna (*Thunnusorientalis*) commenced only recently and will be presented in future editions of this report once the gaps in the provision of

historical catch estimates for this species have been resolved. Recent annual catches of tuna in the domestic fisheries of Vietnam may have amounted to about 19,000 tonnes of skipjack, 18,000 tonnes of yellowfin and 5,500 tonnes of bigeye, for a total of 42,500 tonnes (Lewis 2005). Regarding this, SEAFDEC under the JTF has supported on improving data collection particular oceanic tuna since 2008 in order to estimate the catch and effort of tuna fisheries and improving the tuna statistical system in Vietnam as well as the WCPFC also provided its capacity building on data collection on port samplings since 2009 till present. This year, Vietnam compiled and provided an annual catch estimate for their longline fishery for 2010, and will endeavour to compile historical estimates in the coming years. Since there is a catch estimate for only one year covering the Vietnamese fisheries at this stage, their 2010 longline catch estimate has been ignored in the tables and figures presented below.



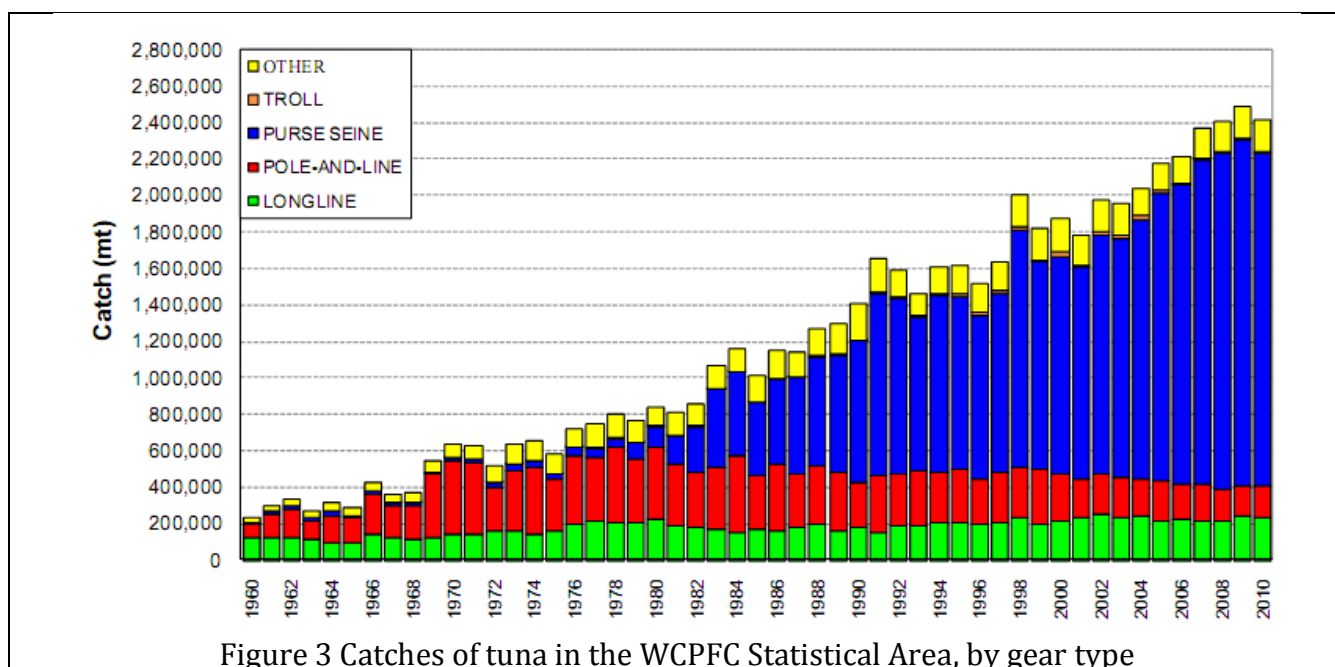


Figure 2 and 3 present estimates of annual catches of target tunas and a breakdown of recent catch estimates by gear in the WCPFC Statistical Area, respectively. Annual total catches of the four main tuna species (skipjack, yellowfin, bigeye and albacore) in the WCP-CA increased steadily during the 1980s as the purse seine fleet expanded and remained relatively stable during most of the 1990s until the sharp increase in catch during 1998. Over the past 6 years, there has been an increasing trend in total tuna catch, primarily due to increases in purse-seine fishery catches. The provisional total WCP-CA tuna catch for 2010 was estimated at 2,414,994 mt, the second highest annual catch recorded and 80,000 mt lower the previous record in 2009 (2,494,112 mt). During 2010, the purse seine fishery accounted for an estimated 1,820,844 mt (75% of the total catch), with pole-and-line taking an estimated 171,604 mt (7%), the longline fishery an estimated 239,853 mt (10%), and the remainder (7%) taken by troll gear and a variety of artisanal gears, mostly in eastern Indonesia and the Philippines. The WCP-CA tuna catch (2,414,994 mt) for 2010 represented 84% of the total Pacific Ocean catch of 2,875,909 mt, and 60% of the global tuna catch (the provisional estimate for 2010 is 4,017,660 mt, which is the lowest for 8 years).

The 2010 WCP-CA catch of skipjack (1,706,166 mt – 71% of the total catch) was the second highest recorded, and 115,000 mt less than the previous record catch of 2009 (1,821,770 mt). The WCP-CA yellowfin catch for 2010 (470,161 mt – 19%) was more than 50,000 mt higher than the 2009 catch level, but still 70,000 mt lower than the record catch taken in 2008 (541,262 mt). The WCP-CA bigeye catch for 2010 (108,997 mt – 5%) was the lowest since 1996, mainly due to a drop in 2010 provisional estimates for the longline fishery. The 2010 WCP-CA albacore catch (129,670 mt - 5%) was the second highest on record, with very good catches from the longline fishery.

2.2 Fleet and Effort in the WCPO

Taking into accounts theprovisional 2010 purse-seine catch of 1,820,844 mt was the third highest on record for this fishery, at more than 80,000 mt lower than the record attained in 2009. The 2010 purse-seine skipjack catch (1,476,819 mt) was the second highest on record, but significantly lower (130,000 mt) than the record catch in 2009; the proportion of skipjack tuna in the logsheet-reported total catch (81%) was in line with the average for recent years. The 2010 purse-seine catch of yellowfin tuna (300,339 mt – 16%) rebounded (by 54,000 mt) from the relatively low catch of 2009, but was still significantly lower than the record catch taken in 2008 (391,152 mt). The provisional catch estimate for bigeye tuna for 2010 (43,389 mt) was the third highest on record but may be revised once all observer data for 2010 have been received and processed

Figure 4 present comparison between the annual purse seine effort and catches for the five main purse seine fleets operating in the tropical WCPFC Convention Area (WCP-CA) in recent years. The combined-fleet 2010 total catch and effort was the highest ever. The Chinese-Taipei fleet had been the highest producer in the tropical purse seine fishery until 2004, when it was surpassed by the combined Pacific Islands purse seine fleets fishing under the Federated States of Micronesia (FSM) Arrangement; from 2006/2007, the Korean and FSM Arrangement fleets were the highest producers. There was a hiatus in the FSM Arrangement fleet development in 2008 (when some vessels reflagged to the US purse-seine fleet) but catch/effort has since picked up again in 2009/2010. The fleet sizes and effort by the Japanese and Korean purse seine fleets have been relatively stable for most of this time series. Several Chinese-Taipei vessels reflagged in 2002, dropping the fleet from 41 to 34 vessels, with fleet numbers stable since. The increase in annual catch by the FSM Arrangement fleet until 2005 corresponded to an increase in vessel numbers, and coincidentally, mirrors the decline in US purse seine catch, vessel numbers and effort over this period. However, the US purse-seine fleet commenced a significant rebuilding phase in late 2007, with vessel numbers more than doubling in comparison to recent years, but still below the fleet size in the early-mid 1990s. The increase in vessel numbers in the US purse seine fleet is reflected in the sharp increase in their catch and effort since 2007, which is now in line with the other major purse seine fleets.

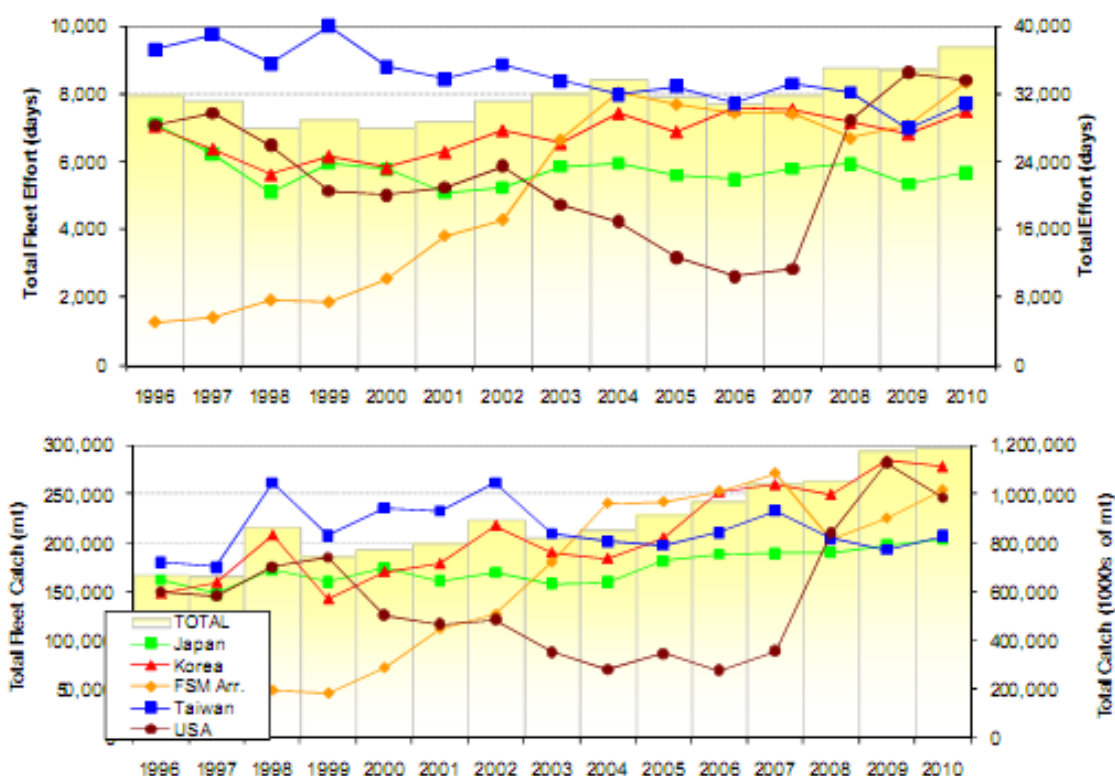


Figure 4 Trends in annual effort (top) and catch (bottom) estimates for the top five purse seine fleets operating in the tropical WCP-CA, 1996–2010.

WCPFC did not include the fleets and efforts operated by the Philippines and Indonesia in figure 4. There are a large number of ringnet and small purse seine vessels in the Indonesian, Philippines including Japan domestic fisheries which are not included in this total.

For the Philippines, as a member, the domestic Philippine purse-seine and ring-net fleets operate in Philippine and northern Indonesian waters, and prior to 2010, the high seas pocket between Palau, Indonesia, FSM and PNG, and have taken a combined catch of around 200,000 t in recent years (OFP 2011a). The high seas FADs closure in 2009 resulted in a decline in the domestic Philippine purse-seine catch for 2010, but with an increase in activities by Philippine-flagged vessels fishing in PNG under bilateral arrangements. The domestic Indonesian purse-seine fleet takes a similar catch level to the Philippines domestic fishery which means that these two domestic fisheries account for about 20-25% of the WCP-CA total purse seine catch.

2.3 Status of Tuna Stock in WCPO

The status of tuna stock in WCPO was assessed and discussed at the At the SC7 with the aim to project the real stock status of target tuna species based on many of the fundamental inputs to the models. This would lead for developing the management advise to the Technical Compliances Committee to come up with management measures under the WCPFC monitoring. In general of the Assessment, the data requires consist of catch, effort, length-

frequency and weight-frequency data for the fisheries defined in the analysis, and tag release-recapture data conducted by either WCPFC or other agencies.

❖ Bigeye Tuna

Bigeye tuna are an important component of tuna fisheries throughout the Pacific Ocean and are taken by both surface gears, mostly as juveniles, and longline gear, as valuable adult fish. They are a principal target species of both the large, distant-water longline fleets of Japan, Korea, China and Chinese Taipei and the smaller, fresh sashimi longline fleets based in several Pacific Island countries and Hawaii. Prices paid for both frozen and fresh product on the Japanese sashimi market are the highest of all the tropical tunas. Total annual catch of bigeye tuna from the WCPO by fishing methods from 1952 to 2010 is appeared in Figure 5.

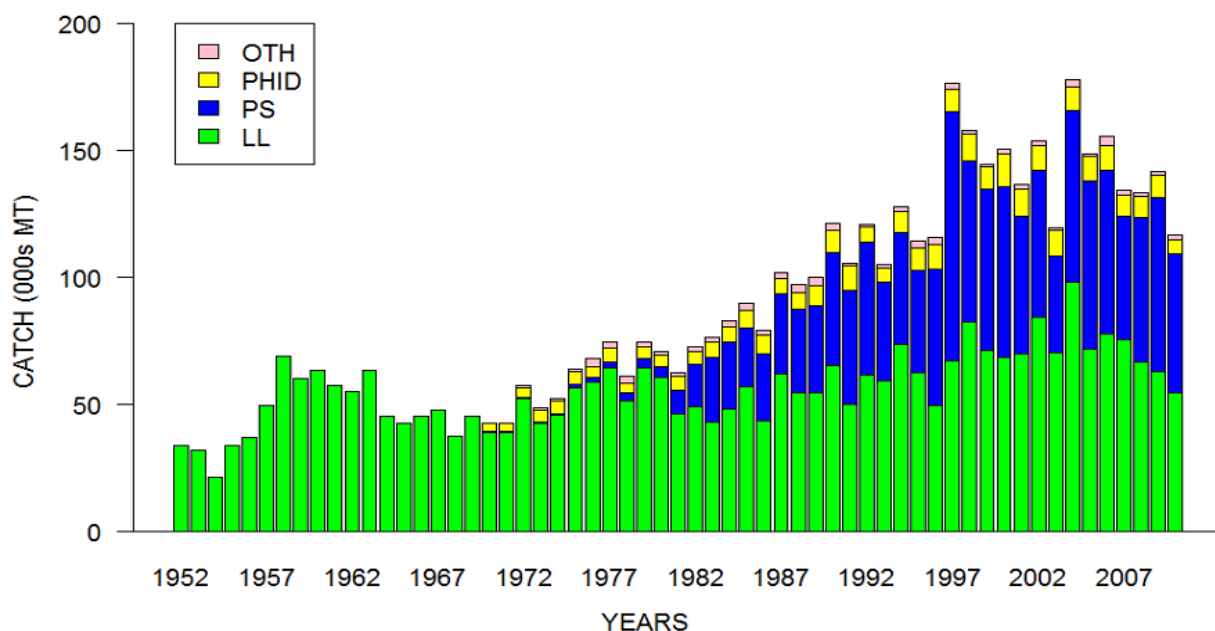


Figure 5. Total annual catch (1000s mt) of bigeye tuna from the WCPO by fishing method from 1952 to 2010 assumed in Run3j. These include purse seine catch estimates which have been corrected for grab sample bias.

Refer to the executive summary of the WCPFC-SC7-2011/SA- WP-02 by Nick Davies et al. (2011) presents the 2011 assessment of bigeye tuna in the western and central Pacific Ocean. The assessment is supported by several other analyses which are documented separately, but should be considered when reviewing this assessment as they underpin many of the fundamental inputs to the models. These include evaluation of paired spill / grab sample trials leading to observer-based species composition estimates with spill sampling correction for purse seine catch histories and size compositions, reviews of the catch statistics of the component fisheries, standardized CPUE analyses of operational level Japanese longline catch and effort data, standardized CPUE analyses of Taiwanese longline CPUE, an analysis of tag reporting rates for the RTTP and PTTP programs, and the guidance of the Pre-Assessment Workshop held in April, 2011 by WCPFC.

The assessment includes a series of model runs describing stepwise changes from the 2010 assessment (run 3d) to develop a new —reference case model (Run3j — Ref.case) and then a

series of —one-off|| sensitivity models that represent a single change from the Ref.case model run. A sub-set of key model runs was taken from the sensitivities that represent a set of plausible model runs and were included in a structural uncertainty analysis (grid) for consideration in developing management advice.

Besides updating the input data, the main developments to the inputs compared to the 2010 assessment were: including tagging data from the 2007-2010 PTTP program; standardized CPUE time series derived from operational-level catch-effort data for Japanese longline fisheries; weighting the Japanese longline size frequency data according to the estimated population relative abundance within regions; adjusting purse seine size frequency data using spill-samples to correct for grab-sample bias; and, including more reliable size composition data for Philippines and Indonesian domestic purse seine catches in offshore waters. The main developments to model structural assumptions were to define a separate Indonesian Philippines-based domestic purse seine fishery that operates beyond the national archipelagic waters and to the east of 125° E longitude.

The key assumptions from the “base case” model from the 2010 assessment were reviewed in light of the developments proposed for the Ref.case model for the 2011 assessment. These and the alternative assumptions in the other key model runs are provided below:

Component	2010 assessment (run 3d)	2011 assessment (run 3j)	2011 alternatives
Longline CPUE	Aggregate indices	Operational indices, temporal weighting of standardized effort	- Exclude all CPUE prior to 1975 - Aggregate indices
Steepness	Estimated	Fixed = 0.8	0.65, 0.95, and estimated
Purse-seine catches	Spill sample corrected	Spill sample corrected (including size data)	Grab sample (SBEST)
Tagging data	Excluded PTTP	Included PTTP	Exclude PTTP
Longline size data	Down-weighted	Full weight	Down -weighted
Natural mortality	Base	Base	Increased for juveniles

Taking into accounts, the Run3j is designated the “reference case” model for the purpose of structuring the modellinganalyses, the most appropriate model run(s)for consideration in developing management advice.

The main conclusions of the current stock assessment of bigeye tuna (based upon WCPFC-SC7-2011/SA- WP-02 and recommendation by SC7) are as follows.

- The estimated increasing trend in recruitment from recent bigeye assessments appears to have been addressed to a small extent in the current assessment, but remains an issue in region 3 and is primarily the result of conflict (disagreement) among the various data sources, in particular between the longline CPUE indices and the reported catch histories, and between and within some of the size composition data sets. The current assessment has indentified some of these conflicts and includes some model runs that begin to address them.

- As in previous assessments, recruitment in almost all models is estimated to have been high during 1995-2005. As suggested in the 2010 assessment, an analysis is presented that estimates the stock-recruitment relationship (with steepness fixed) for this latter period and applied it in the yield analyses. If one considers the recruitment estimates in the second half of the time series to be more plausible and representative of the overall productivity of the bigeye stock, the results of this analysis (Run21) could be used for formulating management advice. In this case $F_{\text{current}}/F_{\text{MSY}}$ was 1.58 and $SB_{\text{current}}/SB_{\text{MSY}}$ was 0.61 indicating that we would conclude that the stock is overfished and overfishing is occurring under this productivity assumption. The main reason for the much lower estimate of $SB_{\text{current}}/SB_{\text{MSY}}$ is that SB_{MSY} is approximately doubled because of the higher levels of recruitment being used to estimate it.
- Total and spawning biomass for the WCPO are estimated to have declined to about half of their initial levels by the mid-1970s, with total biomass remaining relatively constant since then ($B_{\text{current}}/B_0 = 44\%$), while spawning biomass has continued to decline ($SB_{\text{current}}/SB_0 = 35\%$). Declines are larger for models that exclude the early periods of the CPUE time series.
- The attribution of depletion to various fisheries or groups of fisheries indicates that the purse seine and other surface fisheries have an equal or greater impact than longline fisheries on the current biomass. The purse seine and Philippines/Indonesian domestic fisheries also have substantial impact in region 3 and to a lesser extent in region 4. For the sensitivity analysis with lower purse seine catches, the longline fisheries are estimated to have a higher impact.
- Recent catches are well above the MSY level of 74,993 mt, but this is mostly due to a combination of above average recruitment and high fishing mortality. When MSY is re-calculated assuming recent recruitment levels and recent mix of fisheries persist, catches are still around 7% higher than the re-calculated MSY (131,400 mt). **Based on these results, we conclude that current levels of catch are unlikely to be sustainable in the long term even at the recent [high] levels of recruitment estimated for the last two decades.**
- Fishing mortality for adult and juvenile bigeye tuna is estimated to have increased continuously since the beginning of industrial tuna fishing. For all of the model runs $F_{\text{current}}/F_{\text{MSY}}$ is considerably greater than 1. For the grid median, the ratio is estimated at 1.42 indicating that a 30% reduction in fishing mortality is required from the 2006-09 level to reduce fishing mortality to sustainable levels. Using the Ref.case, if we consider historical levels of fishing mortality, a 39% reduction in fishing mortality from 2004 levels is required, and a 28% reduction from average 2001-04 levels. Larger reductions in fishing mortality are indicated when lower values of steepness are assumed. **Based on these results, we conclude that overfishing is occurring in the bigeye tuna stock**(Figure 6).
- The reference points that predict the status of the stock under equilibrium conditions are $B_{F_{\text{current}}}/B_{\text{MSY}}$ and $SB_{F_{\text{current}}}/SB_{\text{MSY}}$. The model predicts that biomass would be reduced to 65% and 60% of the level that supports MSY. In terms of the reduction against virgin biomass the declines reach as low as 15% of spawning potential. Current stock status compared to these reference points indicate the current total and spawning biomass are higher than the associated MSY levels ($B_{\text{current}}/B_{\text{MSY}} = 1.34$ and $SB_{\text{current}}/SB_{\text{MSY}} = 1.37$). The structural uncertainty analysis indicates a 13% probability that $SB_{\text{current}} < SB_{\text{MSY}}$. Based on these results above, and the recent trend in

spawning biomass, **we conclude that bigeye tuna is approaching an overfished state**. We note however, that if recent recruitment is assumed to represent the true productivity of the bigeye stock (Run21), then the higher levels of B_{msy} and SB_{msy} implied would mean that bigeye tuna is already in an overfished state ($B_{current}/B_{MSY} = 0.67$ and $SB_{current}/SB_{MSY} = 0.61$).

- Analysis of current levels of fishing mortality and historical patterns in the mix of fishing gears indicates that MSY has been reduced to less than half its levels prior to 1970 through harvest of small juveniles. Because of that and overfishing, considerable potential yield from the bigeye tuna stock is being lost. **Based on these results, we conclude that MSY levels would rise if mortality of small fish were reduced which would allow greater overall yields to be sustainably obtained**(Figure 7).

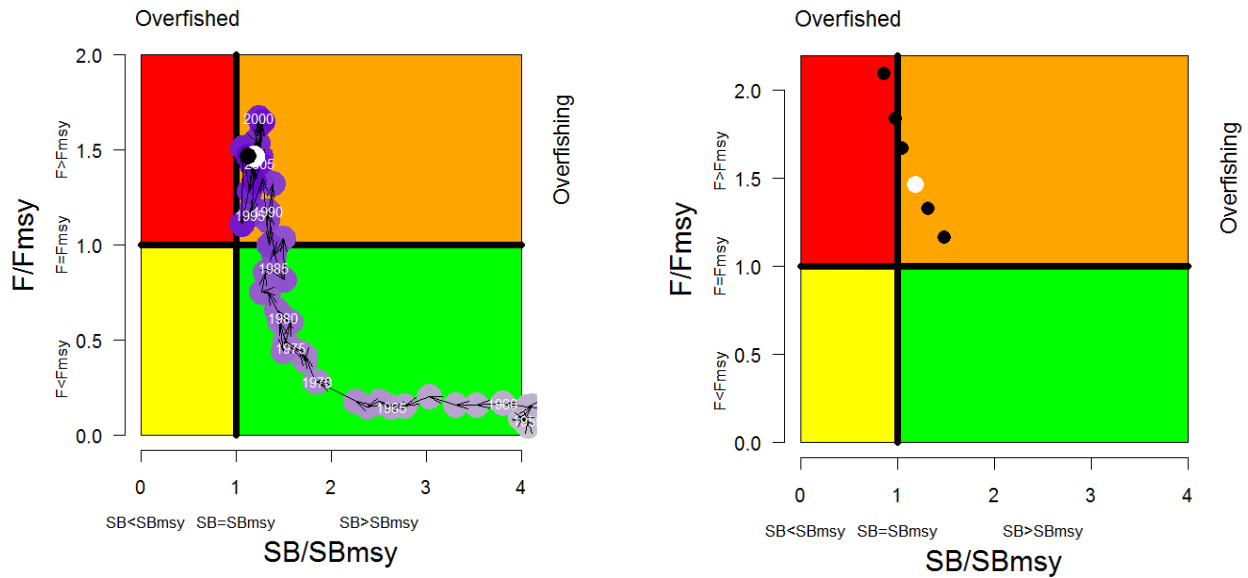
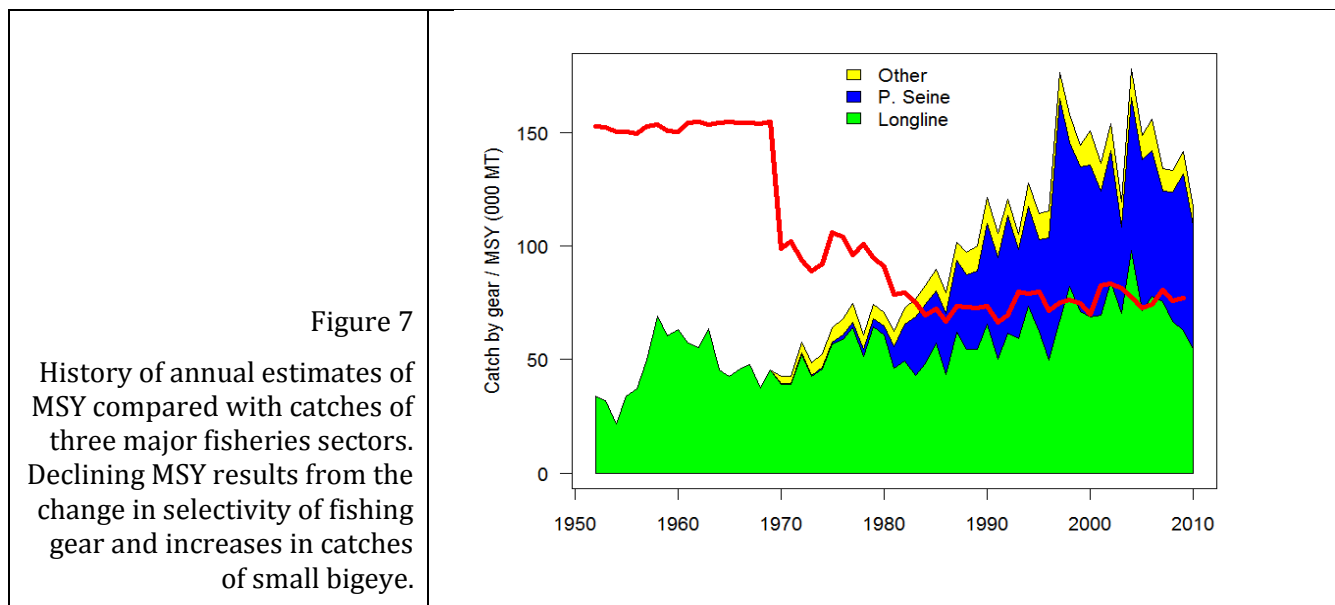


Figure 6: Temporal trend in annual stock status, relative to SB_{MSY} (x-axis) and F_{MSY} (y-axis) reference points for the reference case model (run 3j, top) and $F_{current}/F_{MSY}$ and $SB_{current}/SB_{MSY}$ for the reference case (run 3j – white circle) and the five combinations of steepness and longline CPUE series.



❖ Yellowfin Tuna

Yellowfin tuna, an important component of tuna fisheries throughout the WCPO, are harvested with a diverse variety of gear types, from small-scale artisanal fisheries in Pacific Island and Southeast Asian waters to large, distant-water longliners and purse seiners that operate widely in equatorial and tropical waters. Purse seiners catch a wide size range of yellowfin tuna, whereas the longline fishery takes mostly adult fish. Figure 8 presents total annual catches (1000s mt) of yellowfin from the WCPO based on main fishing gears.

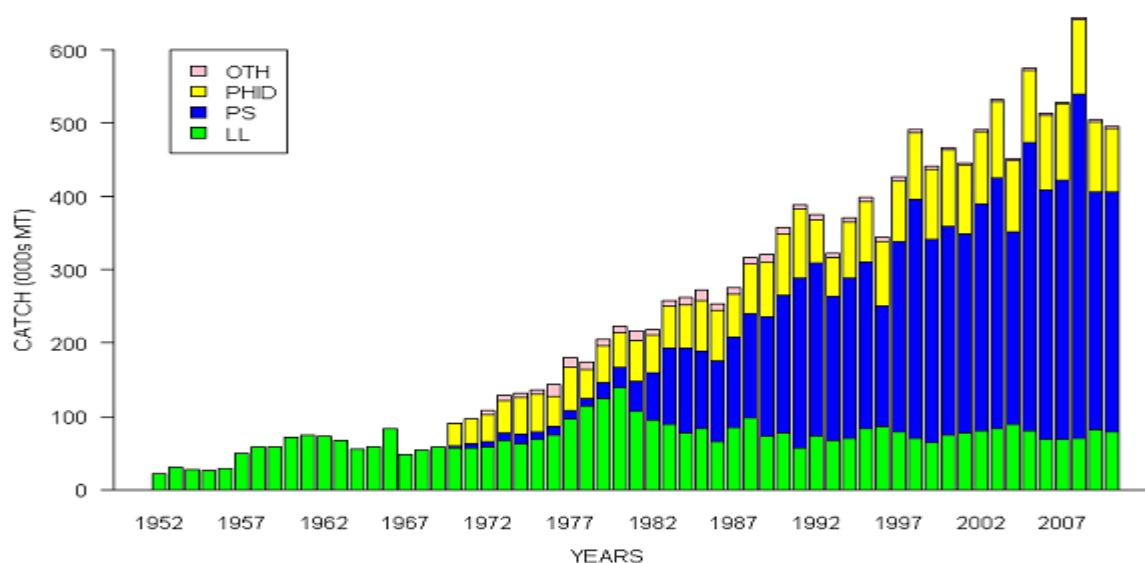


Figure 8: Total annual catches (1000s mt) of yellowfin from the WCPO included within the assessment model by fishing method from 1952 to 2010. The purse seine (PS) catches are the best available catch estimates (corrected for sampling bias). The annual catches from 2010 are incomplete.

The industrial purse-seine fishery accounts for a large proportion of the total yellowfin tuna catch. However, there remains considerable uncertainty regarding the accuracy of the purse-seine catch and official catch statistics may significantly under-estimate actual catch levels. Reported catches have been corrected for the known sources of bias and the revised catches represent the primary catch data incorporated in the stock assessment.

The annual yellowfin tuna catch in the WCPO increased from 100,000 mt in 1970 to about 550,000 mt in recent years, with the exception of a record catch of 650,000 mt in 2008 (corrected catches). Purse seiners harvest the majority of the yellowfin tuna catch (68% in 2005-2009), while the longline fleet accounted for 13% of the catch in recent years. The remainder of the catch is dominated by the domestic fisheries of the Philippines and Indonesia, principally catching smaller fish using a variety of small-scale gear types (e.g. pole-and-line, ringnet, gillnet, handline and seine net) but also including small to medium sized purse seiners based in those countries and catching fish of sizes more typical of purse seine fisheries elsewhere.

Since the mid 1980s, annual catches by longline have remained relatively stable, at about 70,000–80,000 mt. This is well below the level of catch in the late 1970s – early 1980s (which peaked at about 110,000 mt), presumably partly related to changes in targeting practices by some of the larger fleets. Annual catches from the domestic fisheries of the Philippines and eastern Indonesia, are highly uncertain, particularly prior to 1990. Catches from these fisheries increased steadily from the 1970s, reaching approximately 100,000 mt in 2000 and remaining at that level in subsequent years.

This paper presents the 2011 assessment of yellowfin tuna in the western and central Pacific Ocean. The assessment uses the stock assessment model and computer software known as MULTIFAN-CL. The yellowfin tuna model is age (28 age-classes) and spatially structured (6 regions) and the catch, effort, size composition and tagging data used in the model are classified by 24 fisheries and quarterly time periods from 1952 through 2010. The assessment included a range of model options and sensitivities that were applied to investigate key structural assumptions and sources of uncertainty in the assessment. (see details in **WCPFC-SC7-2011/SA-WP-03**, Adam Langley, et al., 2011).

The main conclusions of the current assessment of yellowfin tuna are as follows.

- i. For all analyses, there are strong temporal trends in the estimated recruitment series. Initial recruitment was relatively high but declined during the 1950s and 1960s. Recruitment remained relatively constant during the 1970s and 1980s, declined steadily from the early 1990s and then recovered somewhat over the last decade. Recent recruitment is estimated to be lower than the long-term average (approximately 85%).
- ii. Fishing mortality for adult and juvenile yellowfin tuna is estimated to have increased continuously since the beginning of industrial tuna fishing. A significant component of the increase in juvenile fishing mortality is attributable to the Philippines and Indonesian surface fisheries, which have the weakest catch, effort and size data. There has been recent progress made in the acquisition of a large amount of historical length frequency data from the Philippines and these data were incorporated in the assessment. However, there is an ongoing need to improve estimates of recent and historical catch from these fisheries and maintain the current fishery monitoring programme within the Philippines. Previous analyses

have shown that the current stock status is relatively insensitive to the assumed level of catch from these fisheries, although yield estimates from the fishery vary in accordance to the assumed levels of historical catch. **Therefore, improved estimates of historical and current catch from these fisheries are important in the determination of the underlying productivity of the stock.**

- iii. The ratios $B_t/B_{t,F=0}$ provide a time-series index of population depletion by the fisheries. Depletion has increased steadily over time, reaching a level of about 50-55% of unexploited biomass (a fishery impact of 45-50%) in 2006-2009. This represents a moderate level of stock-wide depletion although the stock remains considerably higher than the equivalent equilibrium-based reference point ($\tilde{B}_{MSY}/\tilde{B}_0$ of approximately 0.35-0.40). However, depletion is considerably higher in the equatorial region 3 where recent depletion levels are approximately 0.30 for total biomass (a 70% reduction from the unexploited level). Impacts are moderate in region 4 (37%), lower (about 15-25%) in regions 1, 5, and 6 and minimal (9%) in region 2. **If stock-wide over-fishing criteria were applied at the level of our model regions, we would conclude that region 3 is fully exploited and the remaining regions are under-exploited.** (Figure 9 and 10).
- iv. The attribution of depletion to various fisheries or groups of fisheries indicates that the associated purse-seine fishery and Philippines/Indonesian domestic fisheries have the highest impact, particularly in region 3, while the unassociated purse seine fishery has a moderate impact. These fisheries are also contributing to the fishery impacts in all other regions. Historically, the coastal Japanese pole-and-line and purse-seine fisheries have had a significant impact on biomass levels in their home region (1). In all regions, the longline fishery has a relatively small impact, less than 5%.

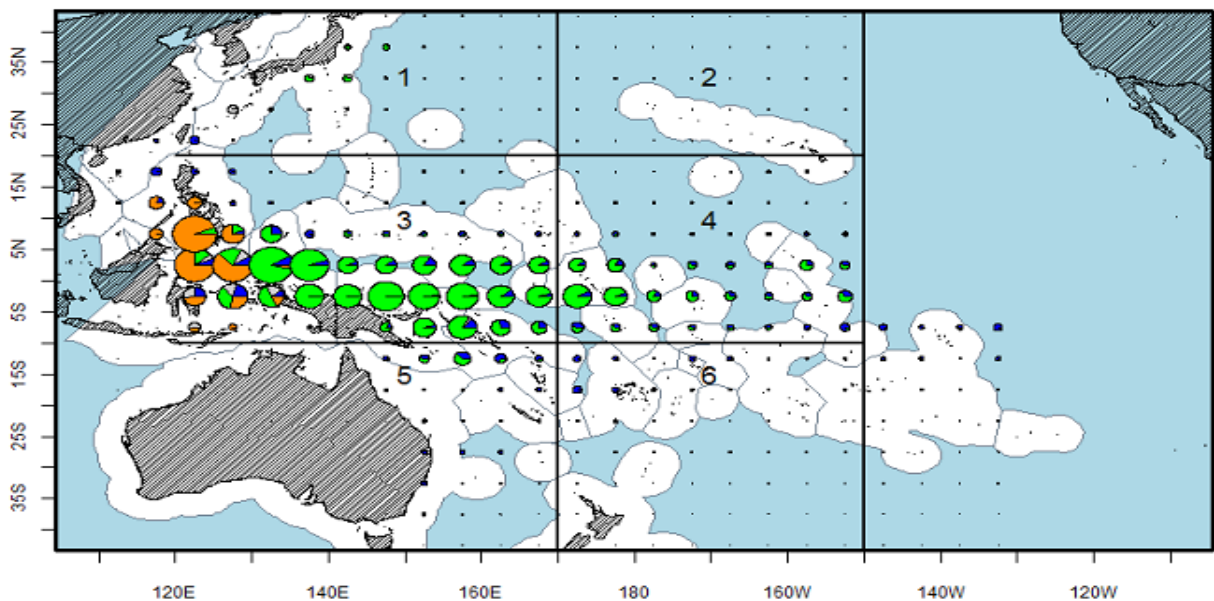


Figure 9: Figure 6. Distribution of cumulative WCPFC yellowfin tuna catch from 2000–2009 by 5 degree squares of latitude and longitude and fishing gear; longline (blue), purse-seine (green), pole-and-line (grey) and other (principally Indonesia and Philippines, dark orange). The grey lines indicate the spatial stratification of the assessment models.

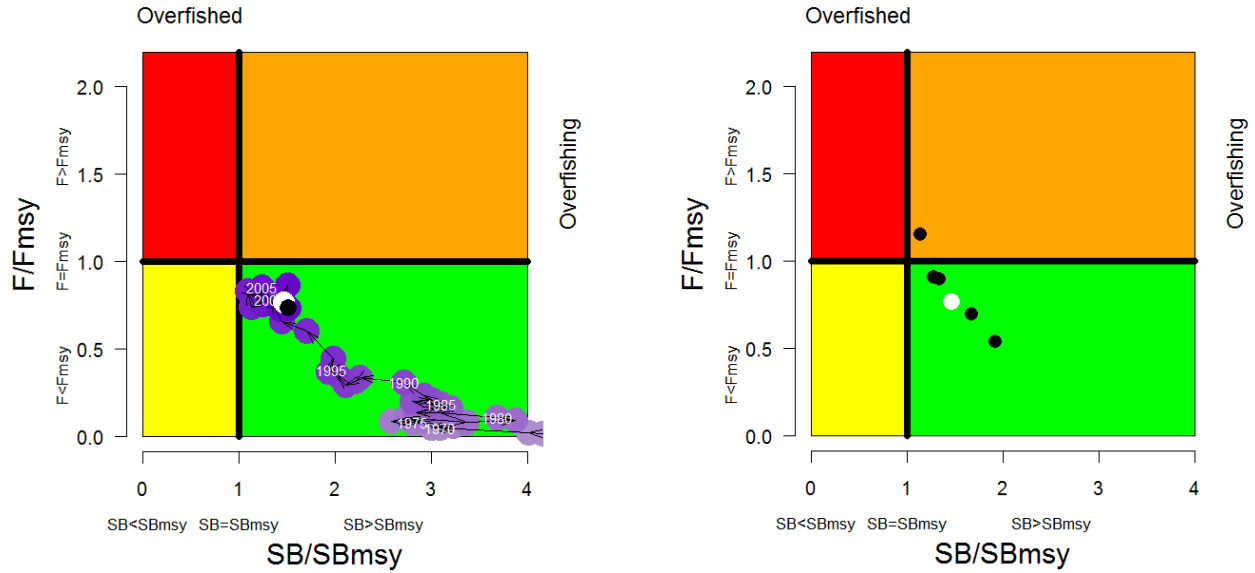


Figure 10: Temporal trend in annual stock status, relative to SB_{MSY} (x-axis) and F_{MSY} (y-axis) reference points for the reference case model (LLcpueOP_TWcpueR6_PTP, top) and $F_{current}/F_{MSY}$ and $SB_{current}/SB_{MSY}$ for the reference case (LLcpueOP_TWcpueR6_PTP – white circle) and the five combinations of steepness and tagging data sets included.

- v. For the most plausible range of models, the fishing mortality based reference point $F_{current}/\tilde{F}_{MSY}$ is estimated to be 0.56–0.90 and on that basis conclude that **overfishing is not occurring**. The corresponding biomass based reference points $B_{current}/\tilde{B}_{MSY}$ and $SB_{current}/\tilde{SB}_{MSY}$ are estimated to be above 1.0 (1.25–1.60 and 1.34–1.83, respectively) and, therefore, the stock is **not in an overfished state**. The stock status indicators are sensitive to the assumed value of steepness for the stock-recruitment relationship. A value of steepness greater than the default value (0.95) yields a more optimistic stock status and estimates considerably higher potential yields from the stock. Conversely, for a lower (0.65) value of steepness, the stock is estimated to be approaching the *MSY* based fishing mortality and biomass thresholds.
- vi. The estimates of *MSY* for the principal model options (480,000-580,000 mt) are comparable to the recent level of (estimated) catch from the fishery (550,000 mt). Further, under equilibrium conditions, the predicted yield estimates ($YF_{current}$) are very close to the estimates of *MSY* indicating that current yields are at or above the long-term yields available from the stock. Further, while estimates of current fishing mortality are generally below, any increase in fishing mortality would most likely occur within region 3 — the region that accounts for most of the catch. This would further increase the levels of depletion that is occurring within that region (see Figure 11).

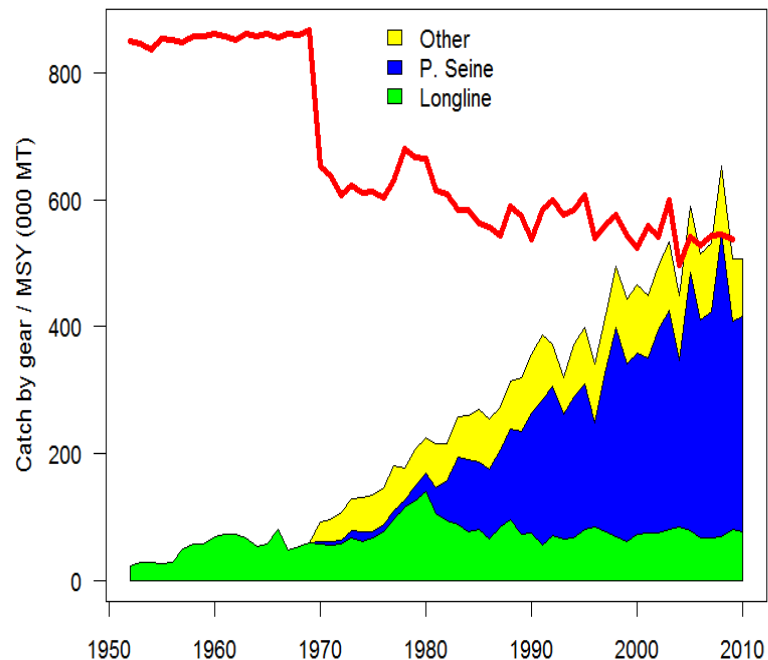


Figure 11:
History of annual estimates of
MSY compared with catches
of three major fisheries
sectors. Declining MSY results
from the change in selectivity
of fishing gear and increases
in catches of small yellowfin.

❖ Skipjack Tuna

Skipjack tuna are harvested with a wide variety of gear types. Fisheries can be classified into the Japan distant-water and offshore pole-and-line fleets, domestic pole-and-line fleets based in island countries, artisanal fleets based in the Philippines, eastern Indonesia and the Pacific Islands, and distant-water and Pacific-Island-based purse seine fleets.

The Japanese distant-water and offshore pole-and-line fleets operate over a large region in the WCPO. A domestic pole-and-line fishery occurred in PNG from 1970 to 1985 and active fisheries have occurred in Fiji and the Solomon Islands since 1974 and 1971, respectively.

A variety of gear types (e.g. gillnet, hook and line, longline, purse seine, ring net, pole-and-line and unclassified) capture skipjack in the Philippines and Indonesia. Small but locally important artisanal fisheries for skipjack and other tuna (using mainly trolling and traditional methods) also occur in many of the Pacific Islands.

Purse seine fleets usually operate in equatorial waters from 10N to 10S; although a Japan offshore purse seine fleet operates in the temperate North Pacific. The distant-water fleets from Japan, Korea, Taiwan and the USA capture most of the skipjack in the WCPO, although catches by fleets flagged to or chartered by Pacific Island countries have increased considerably in recent years. The purse seinefishery is usually classified by set type categories - sets on floating objects such as logs and fish aggregation devices (FADs), which are termed “associated sets” and sets on free-swimming schools, termed “unassociated sets”. These different set types have

somewhat different spatial distributions, catch per unit effort (CPUE) and catch different sizes of skipjack and other tuna (see Figure 12 and 13).

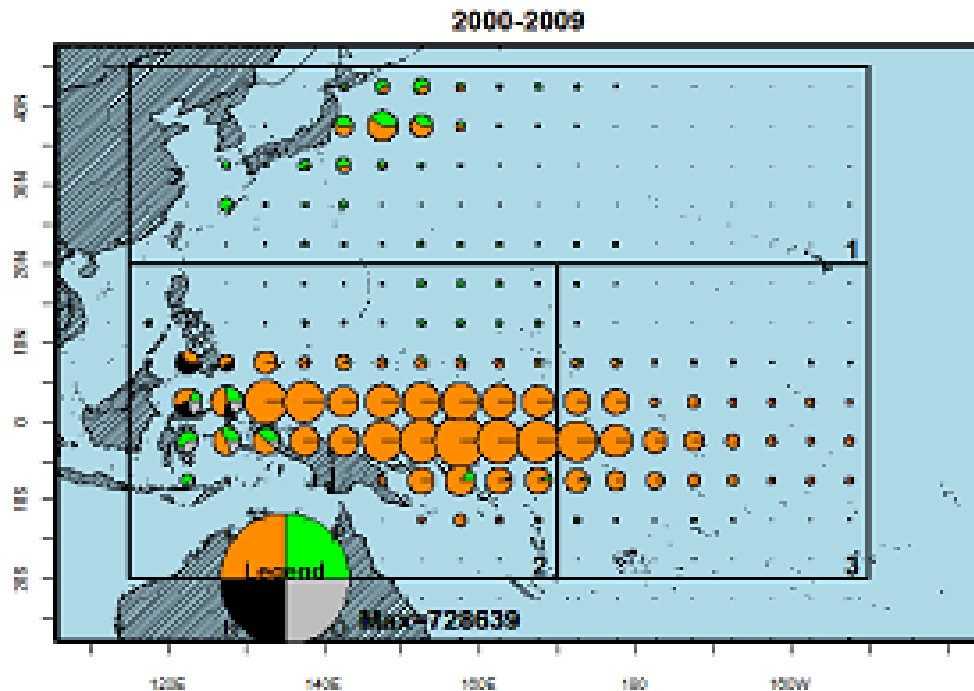


Figure 12: Distribution of total skipjack catches by method during 2000-2010 in relation to the 3-region spatial stratification used in the MULTIFAN-CL analysis. Method colours: Green, pole-and-line; Orange, purse-seine; Black: handline (small-scale); Gray, other.

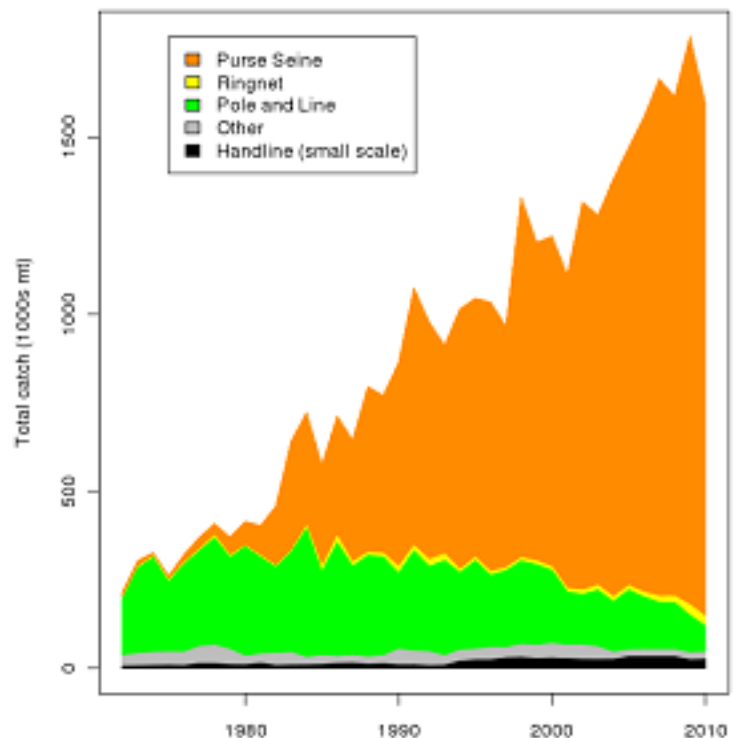


Figure 13:
Annual skipjack tuna catch in the
WCPO by method, 1972-2010.

Skipjack in the western and central Pacific Ocean (WCPO) are considered a single stock for assessment purposes (Wild and Hampton 1994). In the western Pacific, warm, poleward-flowing currents near northern Japan and southern Australia seasonally extend their distribution to 40°N and 40°S. These limits roughly correspond to the 20°C surface isotherm. A substantial amount of information on skipjack movement is available from tagging program. In general, skipjack movement is highly variable (Sibert et al. 1999) but is thought to be influenced by large-scale oceanographic variability (Lehodey et al. 1997).

Estimates of natural mortality rate have been obtained using a size-structured tag attrition model (Hampton 2000), which indicated that natural mortality was substantially larger for small skipjack (21-30 cm FL, $M=0.8 \text{ mo}^{-1}$) than larger skipjack (51-70 cm FL, $M=0.12\text{-}0.15 \text{ mo}^{-1}$). The longest period at liberty for a tagged skipjack was 4.5 years. Skipjack tuna reach sexual maturity at about 40 cm FL.

Assessment of skipjack tuna in the western and central Pacific Ocean are based on the Simon Hoyle et al., (2011). The assessment uses the stock assessment model and computer software known as MULTIFAN-CL. The skipjack tuna model is age (16 quarterly age-classes) and spatially structured. The catch, effort, size composition, and tagging data used in the model are grouped into 18 fisheries (a change from the 17 fisheries used in the 2010 assessment) and quarterly time periods from 1972 through 2010.

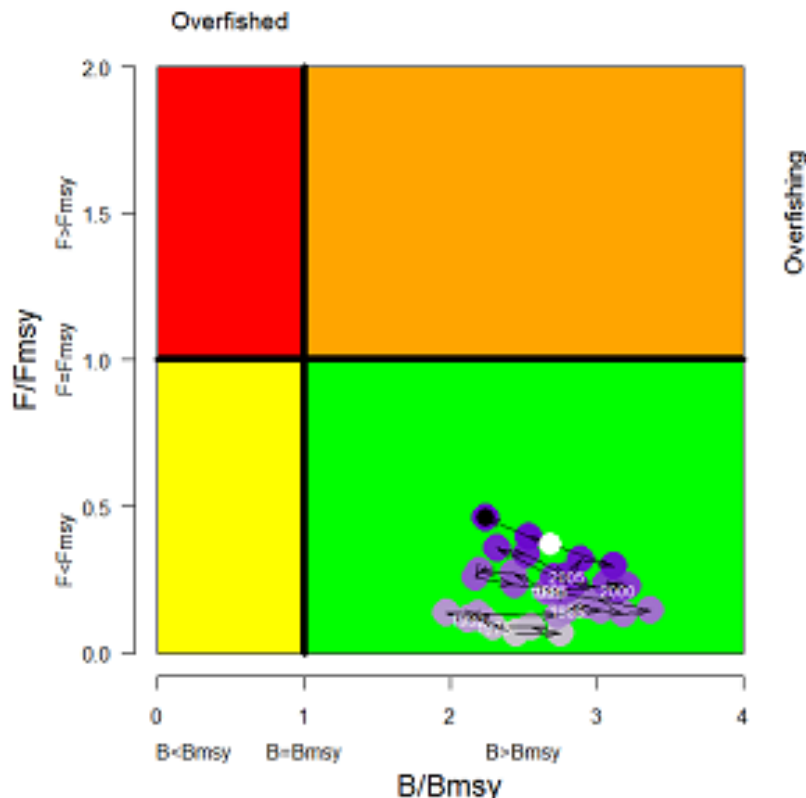
Overall, the main assessment results of skipjack and conclusions are as follows.

- Estimates of natural mortality are strongly age-specific, with higher rates estimated for younger skipjack.
- The model estimates significant seasonal movements between the western and eastern equatorial regions. The performance of the fishery in the eastern region has been shown to be strongly influenced by the prevailing environmental conditions with higher stock abundance and/or availability associated with El Niño conditions (Lehodey et al. 1997). This is likely to be at least partly attributable to an eastward displacement of the skipjack biomass due to the prevailing oceanographic conditions, although this dynamic cannot be captured by the parameterisation of movement in the current model.
- Recruitment showed an upward shift in the mid-1980s and is estimated to have remained at a higher level since that time. This change in estimated recruitment is driven in the model by the CPUE data, and also by the tagging data, given the relative tag return rates from the SSAP and the RTTP tagging programmes. Recruitment in the eastern equatorial region is more variable with recent peaks in recruitment occurring in 1998 and 2004-2005 following strong El Niño events around those times. Conversely, the lower recruitment in 2001-2003 followed a period of sustained La Nina conditions. Recent recruitment is estimated to be at a high level, but is poorly determined due to limited observations from the fishery.
- The biomass trends are driven largely by recruitment and fishing mortality. The highest biomass estimates for the model period occurred in 1998-2001 and in 2005-2007, immediately following periods of sustained high recruitment within the eastern equatorial region (region 3).
- The biomass trajectory is influenced by the underlying assumptions regarding the treatment of the various fishery-specific catch and effort data sets within the model. The

Japanese pole-and-line fisheries are all assumed to have constant catchability, with any temporal trend in efficiency assumed to have been accounted for by the standardization of the effort series. The CPUE trends are influential regarding the general trend in both recruitment and total biomass over the model period. In all regions there is a relatively good fit to the observed CPUE data, with some deterioration when PTPP tagging data are introduced.

- The model also incorporates a considerable amount of tagging data that provides information concerning absolute stock size during the main tag recovery periods. Including the PTPP tagging data in the model resulted in higher estimates of recent biomass and MSY. Initial analyses of the data suggest some conflict with inferences from the CPUE time series about trends in abundance. Further work on both data sources is recommended.
- Within the equatorial region, fishing mortality increased throughout the model period and is estimated to be highest in the western region in the most recent years. The impact of fishing is predicted to have reduced recent biomass by about 47% in the western equatorial region and 21% in the eastern region. For the entire stock, the depletion is estimated to be approximately 35%.
- The principal conclusions are that skipjack is currently exploited at a moderate level relative to its biological potential. Furthermore, the **estimates of $F_{current}/\tilde{F}_{MSY}$ and $B_{current}/\tilde{B}_{MSY}$ indicate that overfishing of skipjack is not occurring in the WCPO, nor is the stock in an overfished state.** These conclusions appear relatively robust, at least within the statistical uncertainty of the current assessment. Fishing pressure and recruitment variability, influenced by environmental conditions, will continue to be the primary influences on stock size and fishery performance.
- For the model assumptions investigated, there was only moderate variation in the estimates of stock status. The most influential assumptions involved steepness and growth. There are insufficient data to estimate steepness reliably within the assessment model and many of the key management quantities are strongly influenced by the values assumed. Growth and its variation in space, through time, and among individuals is not well understood. However, only a limited range of assumptions was investigated in this assessment, and as a result the true level of uncertainty is likely to be under-estimated. A range of other assumptions in the model should be investigated either internally or through directed research. Further studies are required to refine our estimates of growth and reproductive potential, including spatio-temporal variation; to examine in detail the time-series of size frequency data from the fisheries, which may lead to refinement in the structure of the fisheries included in the model; to consider size-based selectivity processes in the assessment model; to continue to improve the accuracy of the catch estimates from a number of key fisheries; to refine the methods used to adjust catch and size data in the purse seine fisheries; to refine the methodology and data sets used to derive CPUE abundance indices from the pole and line fishery; to refine approaches to integrate the recent tag release/recapture data into the assessment model; and to develop more formal and rigorous methods for prioritizing the many available research options.

Figure 14:
Temporal trend in annual stock status, relative to B_{MSY} (x-axis) and F (y-axis) reference points, for the model period (1972-2010). The colour of the points is graduated from pale (1972) to dark purple (2010). The black circle represents the B_{2010}/B_{MSY} and the F_{2010}/F_{MSY} , and the white circle represents the $B_{2006-2009}/B_{MSY}$ and $F_{2006-2009}/F_{MSY}$.



❖ Albacore Tuna

Albacore tuna comprise a discrete stock in the South Pacific (Murray 1994). Mature albacore — above a minimum fork length (FL) of about 80 cm — spawn in tropical and sub-tropical waters between latitudes 10S and 25S during the austral summer (Ramon & Bailey 1996). Juveniles are recruited to surface fisheries in New Zealand's coastal waters, and in the vicinity of the sub tropical convergence zone (STCZ, at about 40S) in the central Pacific, about one year later at a size of 45-50 cm FL.

From this region, albacore appear to gradually disperse to the north (Figure 15), but may migrate seasonally between tropical and sub-tropical waters. These seasonal migrations have been inferred from monthly trends in longline catch rates in subequatorial waters (Langley 2004). Catch rates in subequatorial waters peak during December–January and May–July, indicating that albacore migrate south during early summer, and north during winter. This movement tends to correspond with the seasonal shift in the 23-28C sea surface temperature isotherm location. Daily otolith growth increments indicate that initial growth is rapid, with albacore reaching 45-50cm (FL) in their first year (Leroy & Lehodey 2004; Kerandel et al. 2006). Subsequent growth is slower, at approximately 10 cm per year from ages 2–4, declining thereafter (Labelle et al. 1993; Farley & Clear 2008). Maximum recorded length is about 120 cm

(FL). Analyses of new biological data (SPC-CSIRO unpublished data) suggest that males grow to a larger size than females.

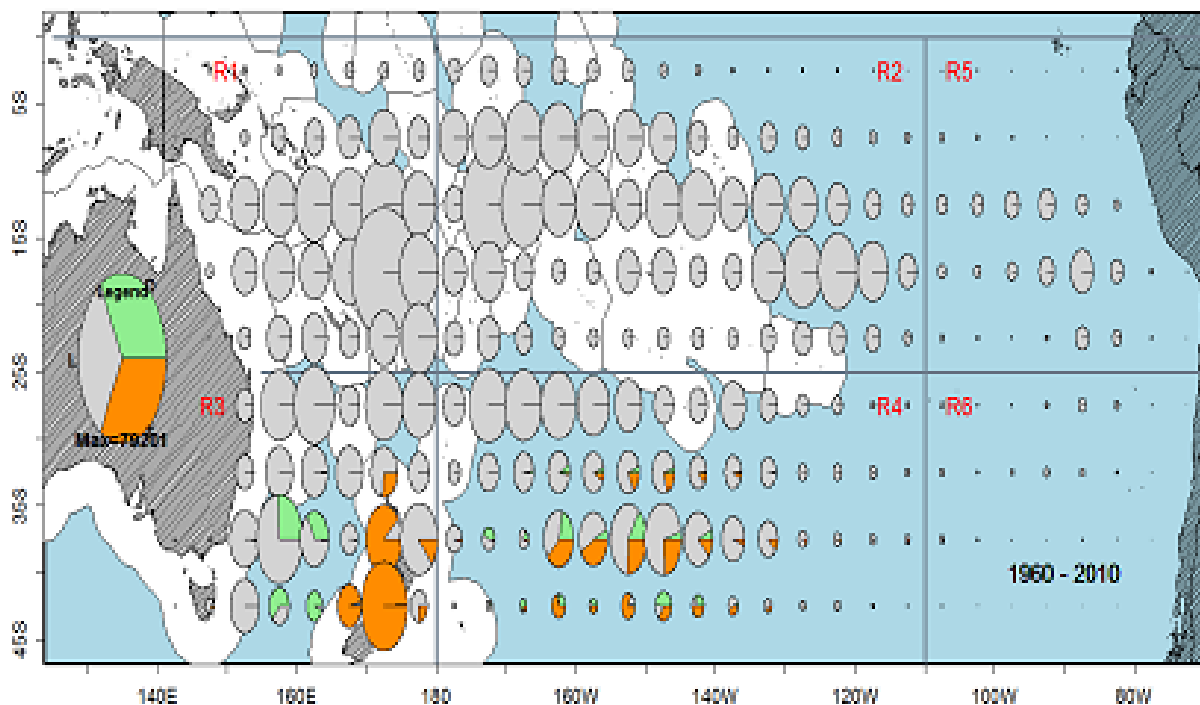


Figure 15: Map showing model regions 1 to 6, and the total catches (1960 to 2008) by 5° squares of latitude and longitude by the longline, troll, and driftnet fisheries.

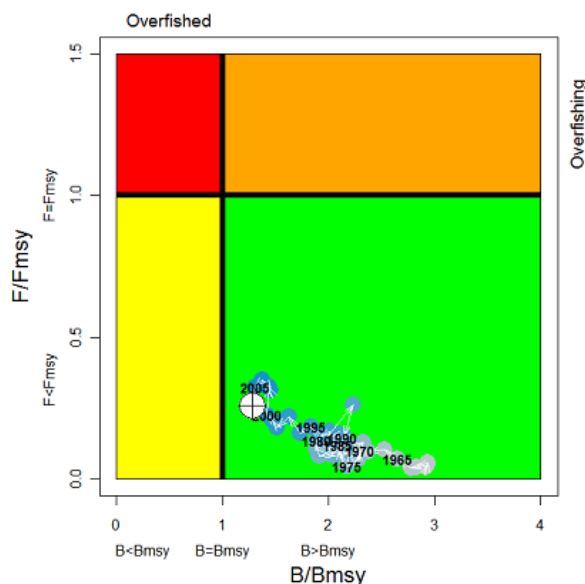
The current stock assessment of albacore tuna (*Thunnus alalunga*) in the South Pacific Ocean was reported by Simon Hoyle (2011). The stock status was summarized in terms of well-known reference points, such as the ratios of recent stock biomass to the biomass at maximum sustainable yield (MSY) ($B_{2007-2009} / B_{MSY}$) and recent fishing mortality to fishing mortality at MSY ($F_{2007-2009} / F_{MSY}$). The methodology used for the assessment is commonly known as MULTIFAN-CL (or MFCL). MFCL is a software program that implements a size-based, age- and spatially-structured population model. Model parameters are estimated by maximising an objective function, consisting of both likelihood (data) and prior information components.

The following conclusion on the Stock status of Albacore tuna in the South Pacific are:

- Biological research indicates that male and female albacore have quite different growth curves, which are not included in the model. Growth curve errors can bias estimates of biomass and fishing mortality. Estimated management parameters should therefore be viewed with caution.
- There is considerable uncertainty about the early biomass trend, but this has negligible effect on the management parameters, or advice to managers regarding the status of the stock.
- Estimates of $F_{2007-2009} / F_{MSY}$ and SB_{2009} / SB_{MSY} do not indicate overfishing above F_{MSY} , nor an overfished state below SB_{MSY}

- Results from the 2009 assessment suggest that much variation in management parameters
- MSY is attributable to steepness, which we have no information about. This variation makes management advice based on MSY relatively uninformative. Alternative metrics such as the expected CPUE, relative to a target CPUE, may be less affected by uncertainty. They may also be more relevant to the management needs of the fishery.
- There is no indication that current levels of catch are causing recruitment overfishing, particularly given the age selectivity of the fisheries.
- Longline catch rates appear to be declining, and catches over the last 10 years have been at historically high levels. This CPUE trend may be significant for management.

Figure 16
Temporal trend in annual stock status, relative to B_{MSY} (x-axis) and F_{MSY} (y-axis) reference points, for the model period (starting in 1960). The color of points is graduated from pale blue (1960) to blue (2009), and points are labeled at five-year intervals. The last year of the model (2010) is excluded because it is highly uncertain.



III. Conservation and Management Measures of the Western and Central Pacific Fisheries Commission

Symbol	Title	Date of Issue
CMM 2004-01	Record of Fishing Vessels and Authorization to Fish (Replaced by CMM 2009-01)	8 December 2004
CMM 2004-02	Cooperating Non-Members (Replaced by CMM 2008-02)	8 December 2004
CMM 2004-03	Specifications for the Marking and Identification of Fishing Vessels	8 December 2004
CMM 2004-04	Resolution on Conservation and Management Measures	8 December 2004
CMM 2005-01	Conservation and Management Measures for Bigeye and Yellowfin Tuna in the Western and Central Pacific Ocean (Replaced by CMM 2008-01)	16 December 2005

Symbol	Title	Date of Issue
CMM 2005-02	Conservation and Management Measure for South Pacific Albacore (replaced by CMM 2010-05)	16 December 2005
CMM 2005-03	Conservation and Management Measure for North Pacific Albacore	16 December 2005
CMM 2006-01	Conservation and Management Measures for Bigeye and Yellowfin Tuna in the Western and Central Pacific Ocean (Replaced by CMM 2008-01)	15 December 2006
CMM 2006-02	Conservation and Management Measure to Mitigate the Impact of Fishing For Highly Migratory Fish Stocks on Seabirds (Revised and replaced by CMM 2007-04)	15 December 2006
CMM 2006-03	Conservation and Management Measure for Swordfish in the South West Pacific (Replaced by CMM 2008-05)	15 December 2006
CMM 2006-04	Conservation and Management Measure For Striped Marlin in the Southwest Pacific	15 December 2006
CMM 2006-05	Conservation and Management Measure for Sharks in the Western and Central Pacific Ocean (Replaced by CMM 2008-06)	15 December 2006
CMM 2006-06	Commission Vessel Monitoring System (Revised and replaced by CMM 2007-02)	15 December 2006
CMM 2006-07	Conservation and Management Measure for the Regional Observer Programme	15 December 2006
CMM 2006-08	Western and Central Pacific Fisheries Commission Boarding and Inspection Procedures	15 December 2006
CMM 2006-09	Conservation And Management Measure To Establish A List Of Vessels Presumed To Have Carried Out Illegal Unreported And Unregulated Fishing Activities In The Western And Central Pacific Ocean (replaced by CMM 2007-03)	10 December 2006
CMM 2007-01	Conservation and Management Measure for the Regional Observer Programme	7 December 2007
CMM 2007-02	Commission Vessel Monitoring System	7 December 2007
CMM 2007-03	Conservation and Management Measure to Establish a List of Vessels presumed to Have Carried out Illegal, Unreported and Unregulated Fishing Activities in the WCPO (Replaced by CMM 2010-06)	7 December 2007
CMM 2007-04	Conservation and Management Measure to Mitigate the Impact of Fishing for Highly Migratory Fish Stocks on Seabirds	7 December 2007
CMM 2008-01	Conservation and Management Measure for Bigeye and Yellowfin Tuna in the Western and Central Pacific Ocean	12 December 2008
CMM	Cooperating Non-Members (Replaced by CMM 2009-11)	12 December

Symbol	Title	Date of Issue
2008-02		2008
CMM 2008-03	Conservation and Management of Sea Turtles	12 December 2008
CMM 2008-04	Conservation and Management Measure to Prohibit the use of Large Scale Driftnets on the High Seas in the Convention Area	12 December 2008
CMM 2008-05	Conservation and Management of Swordfish (Replaced by CMM 2009-03)	12 December 2008
CMM 2008-06	Conservation and Management of Sharks (Replaced by CMM 2009-04)	12 December 2008
CMM 2009-01	WCPFC Record of Fishing Vessels and Authorization to Fish	9 November 2010
CMM 2009-02	Conservation and Management Measure on the Application of High Seas FAD Closures and Catch Retention	11 December 2009
CMM 2009-03	Conservation and Management for Swordfish	11 December 2009
CMM 2009-04	Conservation and Management for Sharks (Replaced by 2010-07)	11 December 2009
CMM 2009-05	Conservation and Management Measure Prohibiting Fishing on Data Buoys	11 December 2009
CMM 2009-06	Conservation and Management Measure on Regulation of Transshipment	11 December 2009
CMM 2009-07	Conservation and Management Measure for Pacific Bluefun Tuna (Replaced by CMM 2010-04)	11 December 2009
CMM 2009-08	Charter Notification Scheme	11 December 2009
CMM 2009-09	Conservation and Management Measure for Vessels without Nationality	11 December 2009
CMM 2009-10	Conservation and Management Measure to Monitor Landings of Purse Seiners at Ports so as to Ensure Reliable Catch Data by Species	11 December 2009
CMM 2009-11	Cooperating Non-Members	11 December 2009
CMM 2010-01	Conservation and Management Measure for North Pacific Striped Marlin	10 December 2010
CMM 2010-02	Conservation and Management Measure for the Eastern High-Seas Pocket Special Management Area 04112011	10 December 2010
CMM	Conservation and Management Measure for Compliance Monitoring Scheme	10 December

Symbol	Title	Date of Issue
2010-03		2010
CMM 2010-04	Conservation and Management Measure for Pacific Bluefin Tuna 04112011	10 December 2010
CMM 2010-05	Conservation and Management Measure for South Pacific Albacore 04112011	10 December 2010
CMM 2010-06	Conservation and Management Measure to establish a List of Vessels presumed to have carried out Illegal, Unreported and Unregulated fishing activities in the WCPO 04112011	10 December 2010
CMM 2010-07	Conservation and Management Measure for Sharks	10 December 2010

IV. JTF Support to WPEA under the WCPFC Frameworks (2010-2011)

Beneficiary Member(s)	Contact	Title Summary	US\$
Indonesia and Vietnam (2010)	SungKwonSoh Sungkwon.soh@wcpfc.int	Data collection of tuna catches from port sampling in Indonesia and Viet Nam West Pacific East Asia Oceanic Fisheries Management Project (WPEA) has, in its work plan for 2010, detailed port sampling programmes in Indonesia, Philippines and Viet Nam. Because of budget limits, data collection from port sampling and review of data collection and catch estimation was planned partially at each country. Supplementary funding support from Japanese Trust Fund will be applied to extend port sampling and review catch estimates, two areas of primary focus for the WPEA project.	30,000.00
Philippines (2011)	Alma Dickson alma_dickson@yahoo.com	Training Program for the Operationalization and Implementation of the Vessel Monitoring System This project aims to develop a competent manpower complement for the operation of the Vessel Monitoring System in the Philippines and in Regional level for the proper implementation of fisheries management conservation measures.	31,809.00

		This project will hold one VMS training workshop in Manila and budget requested will cover travel costs of VMS experts and workshop facilities.	
Indonesia (2011)	AgusBudhiman Budhiman@indosat.net.id	Pilot project of Indonesian observer training programme As a cooperating non-member, Indonesia would like to contribute to the efforts of implementing observer programme and proposed to have an observer workshop to design the programme consistent with WCPFC requirements and a 10-day training course to train ten observers as a pilot study. The budget proposed will support travel cost of the invited international experts and workshop facilities.	29,500.00
Indonesia, Philippines, Vietnam (2011)	SungKwonSoh sungkwon.soh@wcpfc.int	Capacity Building in Tuna Data Monitoring and Ecosystem Monitoring and Stock Assessment through the West Pacific East Asia Oceanic Fisheries Management Project The Commission supports WPEA Project for the collection of tuna catch data and capacity building in science to the WPEA participating countries. Since 2009, JTF supported WPEA and this is the extension of the support for their capacity building in data collection and understanding in tuna science. The requested budget supports travel cost of the WPEA member staff to the Tuna Data WS and stock assessment WS hosted by the SPC.	18,000.00

V. Conclusion

- ✓ **For bigeye tuna** based on model Run3j adopted by SC7, we concluded that **overfishing is occurring in the bigeye tuna stock**. However taking into account the model Run 21, where predicting that the bigeye tuna is approaching an overfished state, this result could be used for formulating management advice.
- ✓ **For yellowfin tuna**, conclude that **overfishing is not occurring**. The corresponding biomass based reference points $B_{current}/\tilde{B}_{MSY}$ and $SB_{current}/\tilde{SB}_{MSY}$ are estimated to be above 1.0 (1.25–1.60 and 1.34–1.83, respectively) and, therefore, the stock is **not in an overfished state**. However a significant component of the increase in juvenile fishing mortality is attributable to the Philippines and Indonesian surface fisheries, which have

the weakest catch, effort and size data. Therefore, improved estimates of historical and current catch from these fisheries are important in the determination of the underlying productivity of the stock.

- ✓ **For skipjack** is currently exploited at a moderate level relative to its biological potential. Furthermore, the **estimates of $F_{current}/\tilde{F}_{MSY}$ and $B_{current}/\tilde{B}_{MSY}$ indicate that overfishing of skipjack is not occurring in the WCPO, nor is the stock in an overfished state.**
- ✓ **For Albacore**, estimates of $F_{2007-2009}/F_{MSY}$ and SB_{2009}/SB_{MSY} **do not indicate overfishing above FMSY, nor an overfished state below SBMSY**
- ✓ Continuation of the work to refine both the species composition and total catches from the domestic fisheries that occur in Indonesia and the Philippines.
- ✓ Noting the uncertainty in purse-seine species composition, the SC7 urged the commission to continue improving estimates of PS composition data. SC7 requested CCMs, Port states, flag states and vessel operations to support efforts for paired spill and grab sampling together with the effort to collect landing cannery data.

VI. References

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- 9) Sibert,J.R., Hampton,J., Fournier,D.A., and Bills,P.J. 1999. An advection-diffusion-reaction model for the estimation of fish movement parameters from tagging data, with application to skipjack tuna (*Katsuwonus pelamis*). Can.J.Fish.Aquat.Sci. 56: 925-938.

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- 11)Simon Hoyle, 2011. Stock Assessment of Albacore Tuna in The South Pacific Ocean, **WCPFC-SC7-2011/SA-WP-06**.
- 12)Lehodey,P., Bertignac,M., Hampton,J., Lewis,A., and Picaut,J. 1997. El Nino Southern Oscillation and tuna in the western Pacific. Nature 389: 715-718.





STATUS AND ISSUES RELEVANT TO SEA CUCUMBER FISHERIES IN SOUTHEAST ASIA

SEAFDEC Secretariat

I. INTRODUCTION

Sea cucumbers, especially of the families Holothuriidae and Stichopodidae form important components of multi-species invertebrate group, the products of which are aimed at supporting international market demands. With the emerging global concerns on the declining and diminishing sea cucumber resources, the issue on conservation and management of sea cucumbers has been one of the popular matter of discussion in the international community, particularly at the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and several fora of the Food and Agriculture Organizations of the United Nations (FAO).

It is anticipated that the listing of sea cucumber species would be brought up again for discussion during the forthcoming COP16-CITES in 2013, considering that the proposed listing of various species of sea cucumbers in the CITES Appendices had been rejected in previous COP-CITES. It is therefore necessary for countries in the Southeast Asian region to seriously look into the issues and prepare the relevant scientific/technical information which could justify the conservation and management efforts that have been carried out by the countries in the region towards the sustainable development of sea cucumber fisheries for the socio-economic well-being of small-scale coastal fishers in the region.

II. BACKGROUND

2.1 Relevant Discussions and Decisions at the COP-CITES

CoP12-CITES (Chile, 2002)

The United States of America submitted a discussion document (CoP12 Doc.45 on Trade in Sea Cucumbers in the Families Holothuriidae and Stichopodidae) to the CITES Secretariat. The Document highlighted the issues to be taken into account when considering whether a CITES listing is appropriate that can contribute to the conservation of holothurians, including taxonomic uncertainties, ability to distinguish taxa in the form traded, adequacy of biological information for making non-detrimental findings, and the ability to determine legal acquisition.

In response, CoP12 directed *the CITES Animal Committee to:*

- a) Review, with the assistance of experts as may be needed, the outcomes of the technical workshop convened by the Secretariat and other available information concerning the biology, catch and by-catch of and trade in sea cucumbers in the Families Holothuriidae and Stichopodidae, and develop appropriate recommendations; and*
- b) Prepare, for consideration at the CoP13, a Discussion Paper on the biological and trade status of sea cucumbers in the above families to provide scientific guidance on the actions needed to secure their conservation status.*

The Animal Committee therefore convened a technical workshop on the conservation of sea cucumbers belonging to the Families Holothuriidae and Stichopodidae in Kuala Lumpur, Malaysia in March 2004. However, many attendee of the CITES Workshop expected to review outputs FAO forum on Advances in Sea Cucumber Aquaculture and Management (ASCAM) in

China in October 2003, but during that time the proceedings of the FAO forum was still unavailable. The Outcomes of the technical workshop were further examined at its 20th Meeting of the Animal Committee in March-April 2004. However, the Animal Committee was unable to formulate recommendations regarding the biology, catch and by-catch of and trade in sea cucumbers in the Families Holothuriidae and Stichopodidae as mandated by CoP12.

CoP13-CITES (Bangkok, 2004)

The Animal Committee requested the CoP13 to consider extending the deadline for completing the Discussion Paper on the biology and trade status of sea cucumbers until CoP14. In line with the request, CoP13 directed *the Animal Committee to:*

- a) *Review the proceedings of the International Technical Workshop on the Conservation of Sea Cucumbers in the Families Holothuriidae and Stichopodidae (March 2004, Kuala Lumpur), as well as those of the forum on Advances in Sea Cucumber Aquaculture and Management (ASCAM) convened by the Food and Agriculture Organization of the United Nations (October 2003, Dalian); and*
- b) *Prepare, for consideration at the CoP14, a Discussion Paper on the biological and trade status of sea cucumbers in the above families to provide scientific guidance on the actions needed to secure their conservation status.*

The Animals Committee, at its 21st Meeting in May 2005, agreed that a draft of the Discussion Paper should be prepared by a consultant for consideration by the Committee at its subsequent meeting. At its 22nd Meeting in July 2006, the Animals Committee reviewed the draft Discussion Paper as prepared by the consultant, and provided comments for finalization of the Discussion Paper to be presented at the CoP14-CITES.

CoP14-CITES (The Netherlands, 2007)

The Animal Committee presented at CoP14 the Discussion Paper (CoP14 Doc.62 on “Biological and Trade Status of Sea Cucumbers in the Families Holothuriidae and Stichopodidae); and prepared draft decision for CoP14. In response the CoP14 directed *the CITES Secretariat to bring to the attention of the FAO, prior to the FAO Workshop on Sustainable Use and Management of Sea Cucumber Fisheries, the Discussion Paper, and the recommendations by the Animals Committee to range States of these taxa and Parties that are engaged in trade in them, as follows:*

- a) *Develop and implement national adaptive management plans for species of high conservation concern, such as those identified as of ‘high concern’ and ‘concern in certain countries of its range’ in Annex 3 of the Discussion Paper on Biological and trade status of sea cucumbers in the Families Holothuriidae and Stichopodidae, including minimum harvest size and total allowable catch, and apply where appropriate a precautionary approach, such as restrictive fisheries measures;*
- b) *Develop regional management strategies to manage the resource;*
- c) *Develop a standardized approach for the collection and reporting of fisheries and trade data, including species collected, locations, habitat, weight, size and number of individuals;*
- d) *Encourage greater communications and cooperation between fisheries and CITES authorities at the national level for the management of and trade in specimens of these species;*
- e) *Increase significantly basic biological and ecological research and stock assessments, particularly for species of high conservation concern, such as those identified as of ‘high concern’ and ‘concern in certain countries of its range’ in the Discussion Paper referred to in paragraph a) above;*
- f) *Conduct socio-economic evaluations of the sea cucumber fisheries, especially in developing countries, to identify clearly their importance and role in the livelihoods of coastal fishing communities;*

- g) *Enhance the enforcement capacity to reduce illegal fishing, transshipment and landings, as well as the capacity to implement the current Appendix-III listing;*
- h) *Explore the potential of mariculture in promoting the sustainable use of the resource, with experience from China, and identify best practices;*
- i) *Consider the merits of inclusion of their species of conservation concern in Appendix III, where appropriate;*
- j) *Support the development of harmonized codes for reporting international trade in sea cucumber products; and*
- k) *Develop and distribute identification guides that clearly distinguish sea cucumbers subject to international trade.*

CoP14 also directed the CITES Secretariat to promote cooperation with FAO concerning the conservation of and trade in sea cucumbers in the Families *Holothuriidae* and *Stichopodidae*, inter alia by bringing the outcomes of the FAO Workshop on Sustainable Use and Management of Sea Cucumber Fisheries to the attention of the Parties and supporting relevant capacity-building activities. In addition, CoP14 directed the Animal Committee to evaluate the outcomes of the FAO Workshop on Sustainable Use and Management of Sea Cucumber Fisheries, to be conducted in 2007, and recommend appropriate follow-up actions at the CoP15 to support this initiative.

In response to CoP14, the CITES Secretariat contacted FAO prior to the Workshop on Sustainable Use and Management of Sea Cucumber Fisheries, and asked FAO to include in its agenda the Discussion Paper and the relevant recommendations by the Animals Committee. In December 2008, FAO brought to the attention of the CITES Secretariat the FAO Fisheries and Aquaculture Technical Paper No. 516 Sea cucumbers: A global review of fisheries and trade that had been published. This publication was part of the outcomes of the FAO Technical Workshop held in Ecuador in November 2007. FAO also informed the Secretariat that FAO was finalizing the technical guidelines on Sustainable management of sea cucumber fisheries, which had also been prepared during the workshop.

CoP15-CITES (Doha, 2010)

CoP15 considered the information on sea cucumbers contained in the report of the Chair of the Animal Committee on the detailed work undertaken and the positive collaboration with the FAO, and highlighted the need for efforts relevant to sea cucumbers to be continued. The CoP15 also revised the Decision made by CoP14 to the ***Animal Committee to evaluate the outcomes of the FAO Workshop on Sustainable Use and Management of Sea Cucumber Fisheries, conducted in 2007, and recommend appropriate follow-up actions at the 16th Meeting of the Conference of the Parties to support this initiative***".

CITES-Animal Committee

CITES through the Animal Committee (AC) which is one of its operational body convened the 25th Meeting on 18-22 July 2011 in Geneva, Switzerland, to evaluate the outcomes of the FAO workshop as well as to recommend proper follow-up actions at the CoP16-CITES. During that Meeting, FAO presented the various publications that have been produced on this issue, the most recent of which is on ***"Managing Sea Cucumber Fisheries with an Ecosystem Approach"***. With the aim of assisting managers navigate regulatory mechanisms, the publication contains draft identification guide for live and dried sea cucumbers which will be finalized by September 2011, and is meant to support the regional training workshop to be conducted in Fiji in November 2011.

That Meeting also suggested that the possibility of listing sea cucumbers on Appendix II should be explored noting that an objection to listing in the past was related to species identification difficulties, and a resolution on sea cucumbers at CoP16 could be explored. However, China

opposed such proposal considering that aquaculture will reduce the collection of sea cucumbers from the wild stock and cited that an evaluation of the effectiveness of sea cucumber listing by Ecuador indicated that effectiveness was not as good as expected. The AC then established an inter-sessional working group to evaluate the outcomes of the FAO workshop and recommend follow-up actions to be presented at CoP16, designating the US representative and Oceania representative as Co-chairs (IISD, 2011).

2.2 Relevant Discussions and Recommendations from FAO

FAO held two important fora to discuss issues on the conservation and management of sea cucumbers. The first forum on “Advances in Sea Cucumber Aquaculture and Management (ASCAM)” was held in China in October 2003. The outputs of the forum contained in **FAO Technical Paper 463 on Advances in sea cucumber aquaculture and management**, include: 1) recommendations on issues concerning sea cucumber resource management and aquaculture; and 2) technical papers on (i) the status of resources and utilization, (ii) resource management, and (iii) aquaculture advances.

The second forum was the FAO Technical Workshop on “Sustainable Use and Management of Sea Cucumber Fisheries”, held in Ecuador in November 2007. As an output, FAO published **FAO Technical Paper 516 on Sea cucumbers: A global review of fisheries and trade** that includes a review of worldwide population status, fishery and trade of sea cucumbers through the collection and analysis of available information from five regions covering known sea cucumber fishing grounds with Philippines being identified among the Sea Cucumber hotspots; and provides a comprehensive and up-to-date evaluation of the global status of sea cucumber population, fisheries, trade, and management.

Another output from the 2007 Workshop is **FAO Technical Paper 520 on Managing sea cucumber fisheries with an ecosystem approach** which includes recommendations that fisheries with healthy or fully exploited stocks of sea cucumbers should apply a broad suite of management regulations and actions, in harmony with an EAF. This technical paper provides decision support through a logical framework, or “roadmap”, for planning the most appropriate regulatory measures and actions for implementing management, given the characteristics of the fisheries. The roadmap directs managers to firstly categorize their fishery based on the scale of the fishing activities, status of stocks, and the capacity of the management agency. Simple indicators can be used to gauge the stock status in the absence of underwater (fishery-independent) stock surveys. This categorization leads to recommended sets of regulatory measures and actions for implementing management.

III. SEA CUCUMBER PRODUCTION IN SOUTHEAST ASIA

3.1 Sea Cucumber Production in Southeast Asia

Based on the FAO statistical reports, the Asian region is the main supplier of sea cucumbers both from natural and man-made sources, contributing about 93% of world’s production of sea cucumbers (**Figure 1**). In 2009, production from capture and aquaculture were 11,533 and 102,888 tons, respectively with the Southeast Asian countries, namely: Indonesia and the Philippines contributing about 5% of the world’s production.

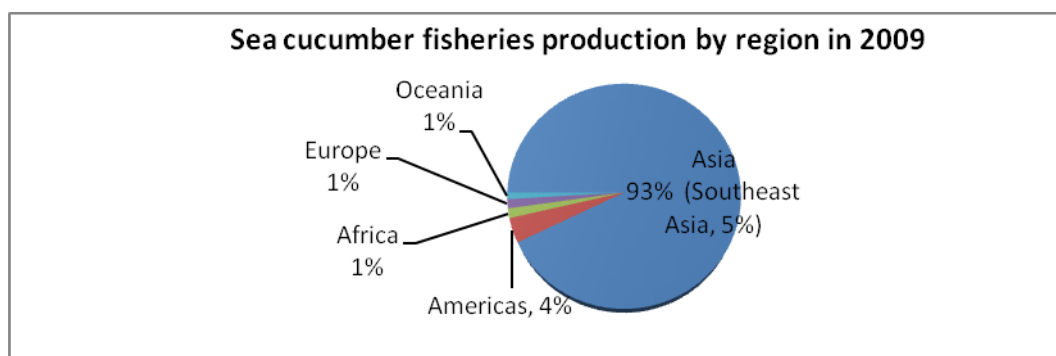


Figure 1. Production from sea cucumber fisheries by region in 2009 (FAO, 2011)

3.2 Capture production

The total capture production from the Asian region however, decreased from 17,052 to 11,533 tons or about 2% annually between 1990 and 2009 (**Figure 2**). From 1990 to 2006, Japan¹ has been the largest producer of sea cucumber from capture fisheries contributing about 10 thousand tons or 54% of the total capture production from the Asian region in 2006. From 2005 to 2009, the top five producers excluding Japan include South Korea, Sri Lanka and Philippines which had increased their capture production by 146%, 66%, and 23% respectively while Maldives and Indonesia had decreased their production by 55% and 48%, respectively. Indonesia and the Philippines were the second and the sixth world largest capture producers of sea cucumbers in 2009, producing 3,750 and 934 tons, respectively. Nevertheless, neither data collected by FAO nor SEAFDEC could be interpreted as landing catches of Holothurians.

Based on the statistics compiled by SEAFDEC from 2000 to 2009 which are shown in the Fishery Statistics Bulletin of Southeast Asia, the data on total sea cucumber production reported by the Southeast Asian countries has been fluctuating from 3,996 to 29,733 metric tons annually. The total marine capture fishery production of the region in 2009 was 14,140,387 metric tons, out of which about 4,684 metric tons or 0.033% of total production was sea cucumber (**Table 1**).

While before Brunei Darussalam, Cambodia, Indonesia and Philippines used to report their respective production data on sea cucumber, only Indonesia and the Philippines continued to report considerable volume of production. However, these countries could provide the figures only by group as “sea cucumbers” due to the limited capacity of local fisheries officers in identifying sea cucumbers at species level. In addition, some countries like Malaysia, Myanmar, Thailand and Vietnam reported their respective sea cucumber production data under the “invertebrates group” or “miscellaneous marine aquatic group”, as the volume of production is insignificant while collection of sea cucumber is not a major fishing activity, making data collection for statistical purposes difficult to undertake.

As for production of sea cucumbers by fishing gear (**Table 2**), the data were provided only by Brunei Darussalam and Malaysia. The available data showed that sea cucumbers could be caught by trawl, gill net, trap, shellfish and seaweed collecting gears and some others gears which were not specified.

¹Data collection on sea cucumber production of Japan was simplified and the data has been included in certain category therefore no specific data on capture production of sea cucumbers of Japan in 2007-2009.

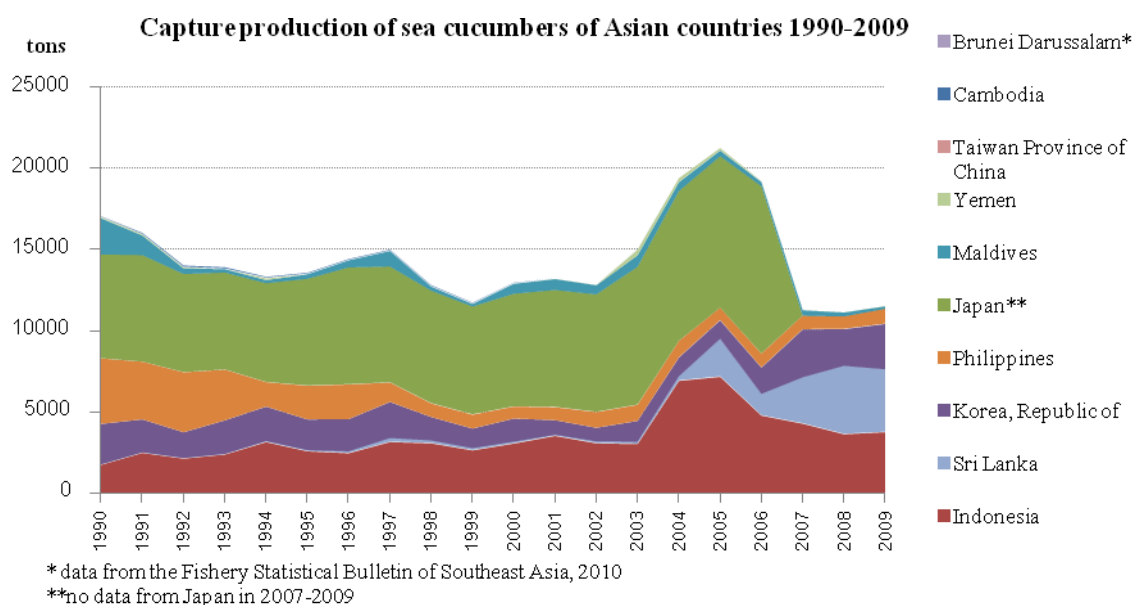


Figure 2. Capture production of sea cucumbers of Asian countries, 1990-2009 (FAO, 2011)

Table 1. Production data of sea cucumbers in Southeast Asian countries* from 2000-2009 (tons)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Brunei Darussalam	...	...	...	...	...	...	...	3	0.9	0.12
Cambodia	...	...	...	3	...	...	...	...	...	...
Indonesia	4,690	3,517	9,116	3,014	6,930	7,178	29,733	4,273	3,623.0	3,750.00
Philippines	...	965	...	979	1,006	761	...	851	777.0	934.00
Total	4,690	4,482	9,116	3,996	7,936	7,939	29,733	5,127	4,400.9	4,684.12

Table 2. Production of sea cucumbers by fishing gear in Southeast Asian countries in 2009 (tons)

Type of Gear	Brunei Darussalam	Malaysia
Trawl	...	41
Gill net	...	2
Trap	...	...
Shellfish and seaweed collecting gear	...	59
Others	0.12	75

* Data on sea cucumber by fishing gear was provided only by Brunei Darussalam and Malaysia

3.3 Aquaculture production

In contrast to capture production, the aquaculture production in Asian increased drastically since 2002 which was firstly recorded by FAO. The total production of sea cucumbers in the Asian region was contributed by China, Indonesia and North Korea with amounted about 321,207.5, 1,074 and 1,000 tons, respectively. In 2009, the total production were about 103,000 tons and valued at US\$357 million, almost all of which was contributed by Mainland China as shown in **Figure 3**.

From 2005-2009, the aquaculture production of the Asian region increased from 57,250 to 102,888 tons or about 16% per annum. Likewise, the production value also had the same increasing trend of about 99% per annum from 2005 to 2009 as indicated in **Figure 4**. Although the production from capture fisheries of sea cucumbers decreased in the last few years, production from aquaculture had enormous increase as shown in **Figure 5**.

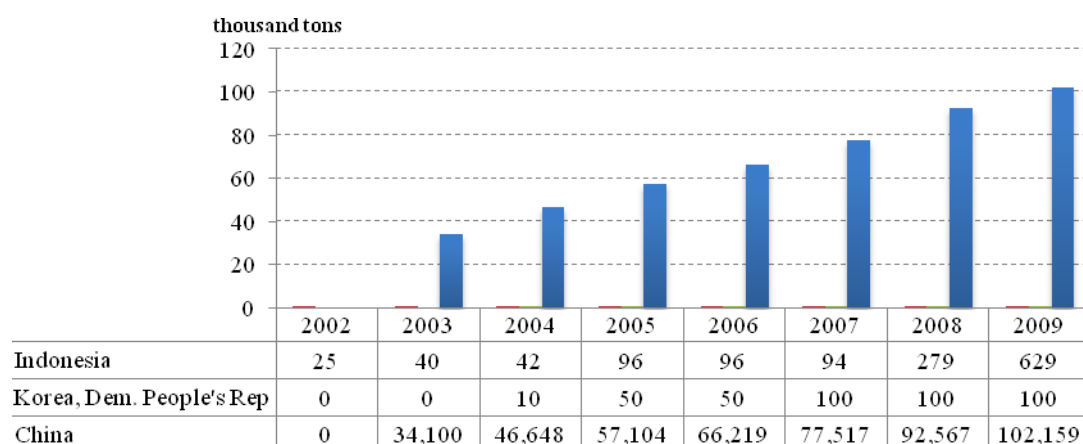


Figure 3. Aquaculture production of sea cucumber from Asian countries, 2002-2009

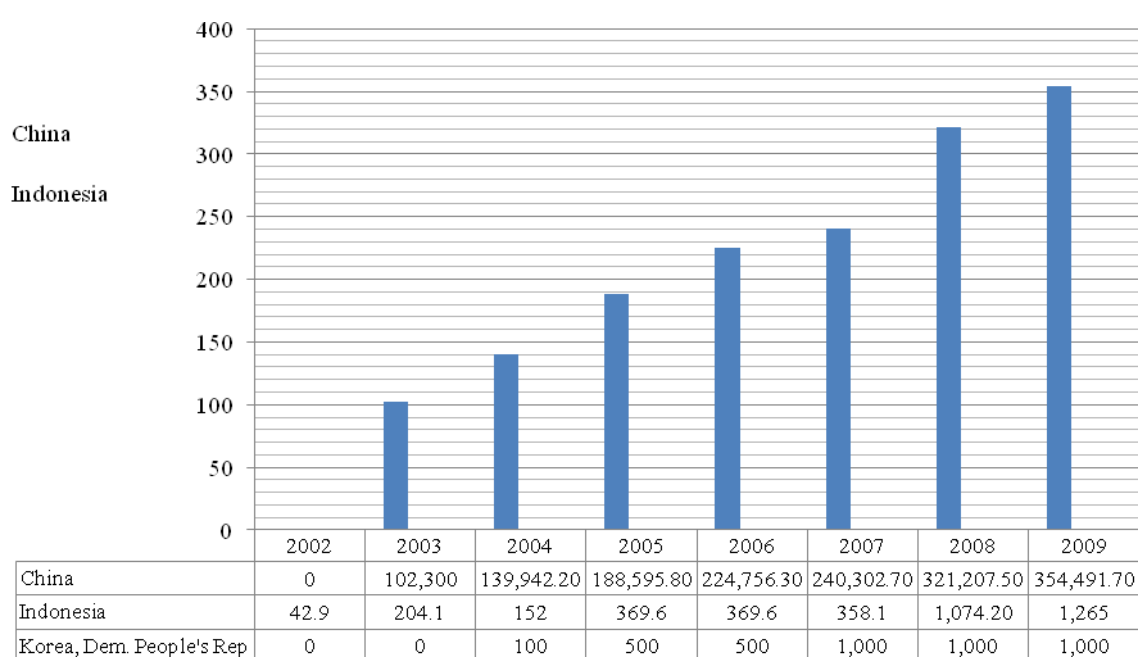


Figure 4. Value of aquaculture production of sea cucumbers from Asian countries, 2002-2009

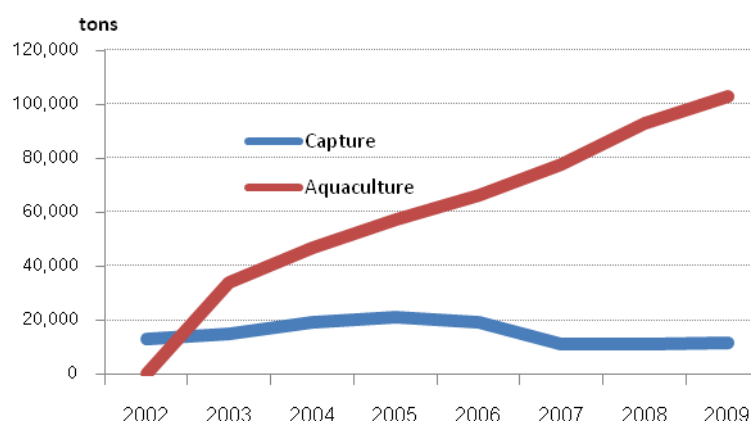


Figure 5. Production of sea cucumbers from capture fisheries and aquaculture in Asian countries (2002-2009)

IV. TRADE ON SEA CUCUMBERS

4.1 Production

The world's sea cucumbers have been traded mostly in the form of 'dried, salted or in brine' as categorized in the FAO Yearbook of Fishery Statistics. In 2008, Indonesia, Philippines and Singapore ranked the 1st, 2nd and 5th among the world's producers contributing about 70%, 16% and 3%, respectively (**Figure 6**).

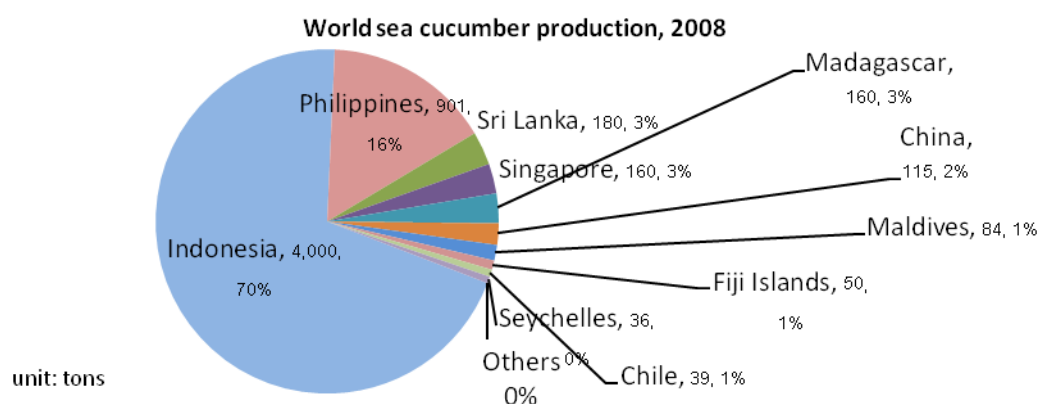


Figure 6. World's production of sea cucumbers in 2008 (FAO, 2011)

4.2 Export

According to the FAO statistical reports, the volume of sea cucumber exported by the Asian countries in 2008 was about 2,048 tons which was valued at about US\$ 30 million contributing about 68% of the world's export products. Between 1990 and 2008, the export production decreased from 6,669 to 2,048 tons or 4% annually although the value increased from US\$24.196 to 30.126 million or 1% annually (**Figures 7 and 8**). In terms of volume, the Philippines was the world's largest exporter of sea cucumbers in 2008 accounting for about 30% of the total export quantity or around 900 tons although in terms of value it ranked the third. Singapore was the biggest exporter in terms of value accounting for about US\$15 million or 35% of the total value in the same year.

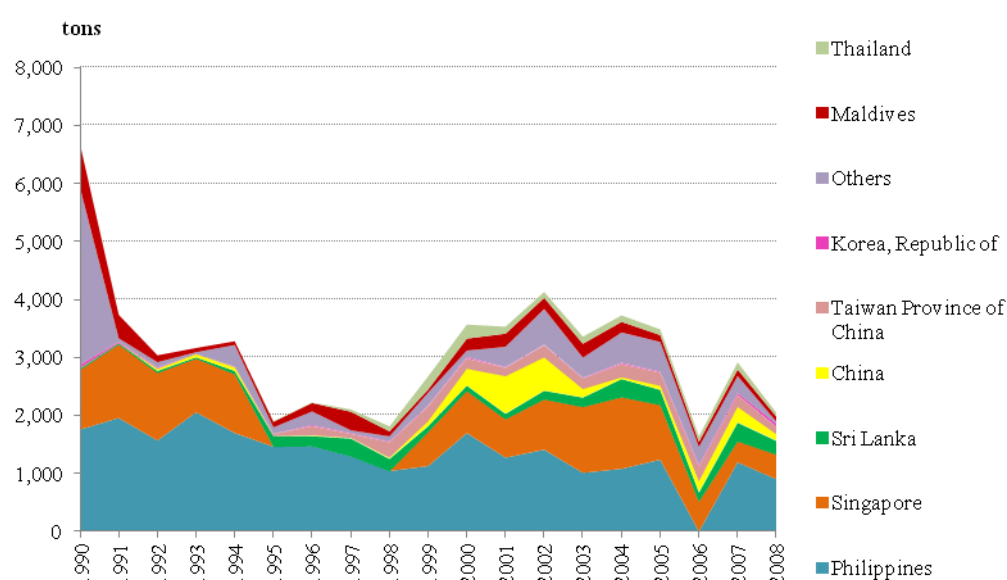


Figure 7. Export volume of sea cucumbers from Asian countries, 1990-2008 (FAO, 2011)

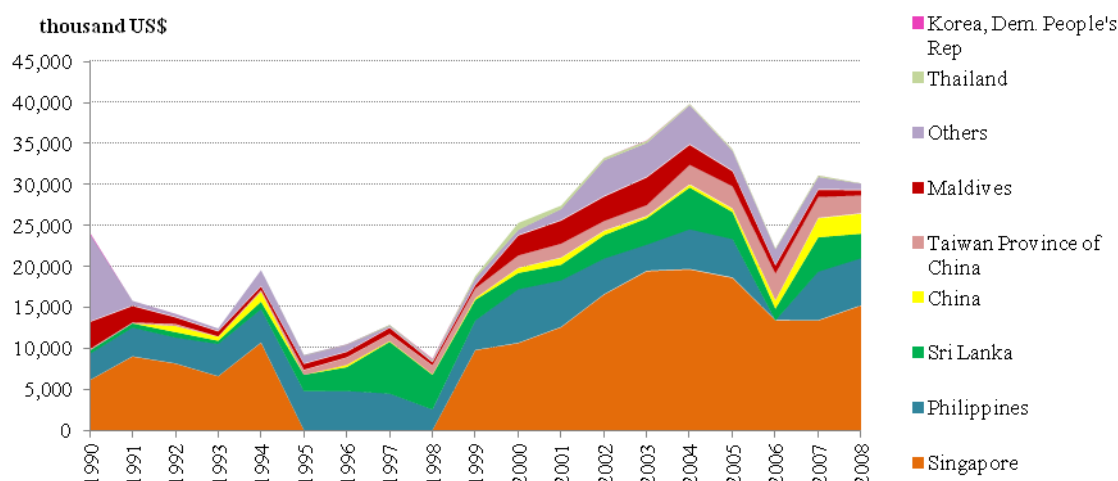


Figure 8. Value of Asian export of sea cucumbers, 1990-2008 (FAO, 2011)

Table 3. Top five world exporters of sea cucumbers, 2008

Country	Category	Quantity (tons)	Value (Thousand US\$)
Singapore	Dried, salted or in brine	426	15,223
Papua New Guinea	Dried, salted or in brine	532	9,455
Philippines	Dried, salted or in brine	901	5,820
Sri Lanka	Frozen	180	2,924
China	Dried, salted or in brine	115	2,446
Total	-	3,001	43,392

Source: FAO, 2011

The sea cucumber products exported were mainly in dried, salted or in brine forms (**Table 3**). Although the Philippines is the world's largest exporter, it appears however the country's trepang industry is more and more utilizing the low value sea cucumber species (Akamine, 2002).

4.3 Import

Based on the statistical records of FAO, in 2008 the Asian region is the major market of sea cucumber products importing about 6,918 tons valued at about US\$239 million. From 1990 to 2008, the import value drastically increased by 374% or 20% annually while the volume decreased from 9,817 to 6,918 tons or 2% per annum (**Figures 9 and 10**). In terms of volume and value, Hong Kong, Taiwan and Singapore were the three major importers in 2008, with Hong Kong solely importing about 4,477 tons valued around US\$202 million accounting for about 65% and 85% of the world's import in volume and value, respectively. The imported sea cucumber products by the Asian countries came in three main categories, namely: 1) dried, salted or in brine; 2) frozen; and 3) live, fresh or chilled and in 2008 the proportion of these product categories were 82%, 17% and 1%, respectively as shown in **Figure 11**.

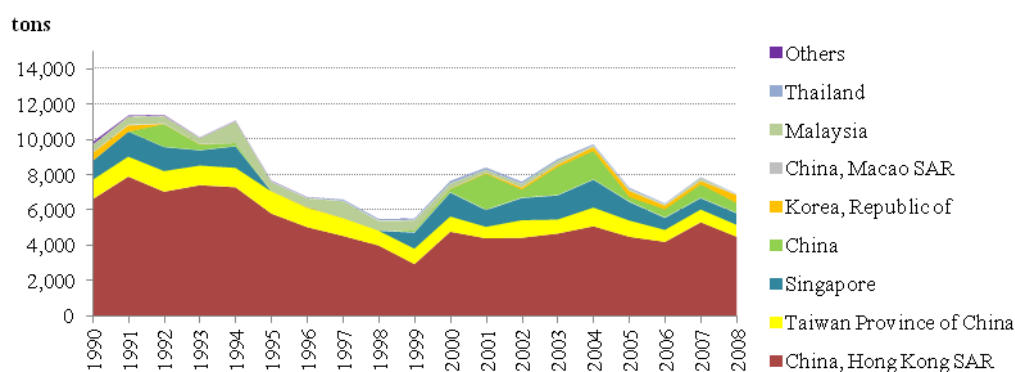


Figure 9. Import volume of sea cucumbers by Asian countries, 1990-2008 (FAO, 2011)

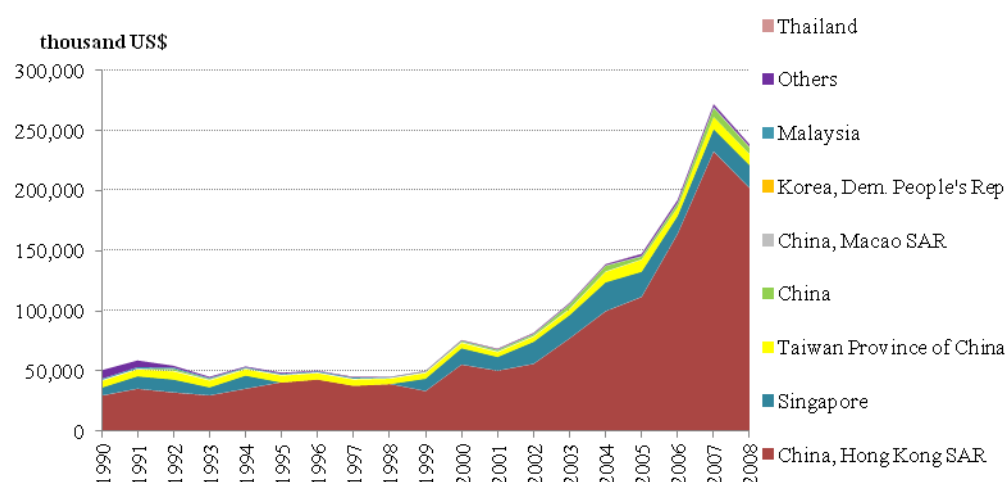


Figure 10. Import value of sea cucumbers by Asian countries, 1990-2008 (FAO, 2011)

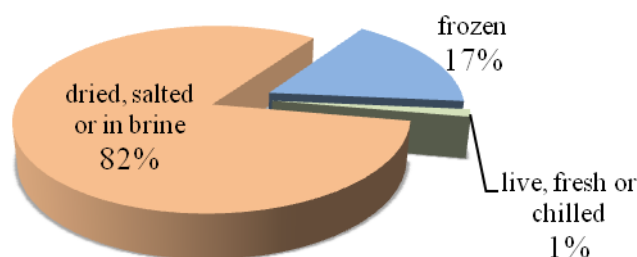


Figure 11. Sea cucumber products imported by Asian countries by categories in 2008 (FAO, 2011)

4.4 Market channel of sea cucumbers

As shown in the previous figures, *beche-de-mer* or *trepang*, a dried form of sea cucumbers are traded internationally and extensively in the Asian countries and to some extent to countries with ethnic Chinese communities outside the Asian region (**Table 4**). There are at least 635 firms worldwide from about 38 countries supplying sea cucumber products (dried, fresh, frozen and preserved), and as shown in the **Table 5**, in the Southeast Asian countries there are 258 firms supplying sea cucumber products accounting for about 41% of the global firms distributing sea cucumber products, most of which are trading companies, distributors/wholesalers and processors. The major markets for the products are Hong Kong, Singapore and Taiwan that also served as re-exporting centers (Con and, 1993). The People's Republic of China is however, the

major consumer drawing supplies largely from its local production. Although sea cucumber fishery is not a main source of income for local fishers in some areas, it contributes a big share in the alternative livelihoods of coastal communities (Tripanichkul, 2007; Choo, 2008). Production value has been increasing in the past two decades, but the value of most species has decreased since 2000 especially in the Philippines. However, some lesser value commercial species of sea cucumbers are gaining relatively more value these days. Therefore, attention should be given to not only to the more commercially important sea cucumber species but also to the so-called less commercially important species (Akamine, 2002).

Based on a Regional Study conducted by SEAFDEC, sea cucumber products in the Southeast Asian region are mostly utilized for local consumption as well as to supply the export market (SEAFDEC, 2008). Sea cucumbers are sold in domestic markets either as fresh, dried or processed products. The local consumption of sea cucumbers circles around the medicinal and nutritional properties of the commodity as well as its attribute in culinary delicacies. Fishermen often sell the products to collectors or buyers in the form of fresh or dried sea cucumbers. After harvesting, the fishers process or dry their catch under the sun or boil with sea water and smoke with charcoal. Marine product collectors or buyers visit directly and collect the products from fishers who are usually based in islands. The collectors then sell the sea cucumbers to manufacturers or further process them into other more advanced processed product form. The manufacturers then export the products overseas or in big cities within a country. The marketing scheme of sea cucumber in many ASEAN countries can be described in **Figure 12**.

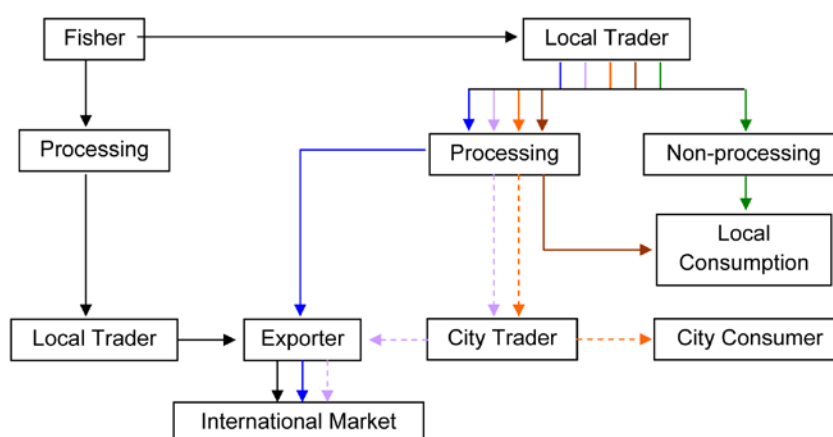


Figure 12.Marketing scheme of sea cucumbers in ASEAN countries (SEAFDEC, 2008)

Table 4. Destination countries of sea cucumber productsexported from Southeast Asian countries in 2007

Destination Country	Brunei Darussalam ¹ (Jan-Aug 2007)		Indonesia ¹	Philippines ²		Thailand ³	
	Volume (kg)	Value (B\$)	Value (US\$)	Volume (kg)	Value (US\$)	Volume (kg)	Value (baht)
Hong Kong	-	-	497,682	627,116	2,976,398	68,201	2,494,676
Singapore	-	-	256,367	51,017	642,446	3,914	548,122
Taiwan	-	-	30,000	3,845	10,132	12,550	1,627,500
Malaysia	400	1,800	71,283	-	-	450	43,194
USA	-	-	13,831	3,132	87,651	3,914	548,122
Vietnam	-	-	288,085	-	-	25,470	819,800
China	-	-	-	160,543	115,171	-	-
Japan	-	-	-	9,609	12,025	-	-
North Korea*	-	-	-	-	-	8,640	561,439
South Korea	-	-	-	59,252	1,015,263	-	-

Source: ¹SEAFDEC, 2008; ²Bureau of Agricultural Statistics (BAS), Philippines; and ³Fisheries Foreign Affairs Division, Department of Fisheries, Thailand

Table 5. Number of supplier firms of sea cucumber products in Southeast Asia

Country	Number of supplier firms by country	% of global firms
Indonesia	81	12.76
Malaysia	61	9.61
Philippines	50	7.87
Singapore	32	5.04
Vietnam	25	4.09
Thailand	9	1.42
Total	258	40.79

Source: Brown *et al.*, 2010

V. CONCERNS OF SOUTHEAST ASIAN COUNTRIES ON THE ISSUES

In response to the emerging concerns and the need to ensure sustainable exploitation of sea cucumbers, particularly as addressed by FAO and CITES, SEAFDEC convened several regional consultations to discuss the relevant issues on sea cucumbers. The results from such consultations included requests for SEAFDEC to conduct a regional comprehensive study on existing available data and information on sea cucumbers. Thus, SEAFDEC carried out the *Regional Study on Sea Cucumber Fisheries, Utilization and Trade in Southeast Asia* which was conducted from 2007 to 2008.

Nonetheless, concerns on data collection of sea cucumbers were expressed by the Southeast Asia countries during the Regional Study that include the following:

Brunei Darussalam: the statistical records do not reflect the actual quantity of sea cucumbers imported by the country because the data is categorized under ‘other mollusks’, thus the amount of imported sea cucumber appears generally small.

Cambodia: the inadequacy of the country’s data and information collection system results in limited statistical data and record.

Indonesia: the trade export values are not properly shown in reports because the volume of sea cucumbers exported is less than 1000 tons at one time. Therefore, Indonesian trade authorities involved in fisheries product include the country’s export value of sea cucumbers in other marine products, such as “exotic marine product”.

Malaysia: the insufficient annual landing of sea cucumbers in the Malaysian Fisheries Statistics could be due to the fact the figures are insignificant compared to the landings of fish and prawns as well as the limited statistics data on fisheries, market and trade.

Myanmar: the lack of or limited basic and statistical data could be due to illegal fishing and lack of expertise to identify the species of both live specimens and cured products at the point of export.

Philippines: the inadequate number of trained field enumerators and limited access to information led to the unavailability of production data in subsequent years as well as socio-economic information such as number of coastal families dependent on sea cucumber fisheries for their livelihoods.

Thailand: there is insufficient record on fisheries, marketing and trade of these species in the country’s national fisheries statistics reports.

Vietnam: the absence of clear import-export statistical data could be due to the unconnected and incomprehensive data through many years as well as the inadequacy of biological data.

In order to address the aforementioned concerns, the ASEAN-SEAFDEC Regional Expert Meeting on Sea Cucumbers organized in March 2008 reviewed the status of sea cucumber fisheries, utilization and trade, and provided recommendations for sustainable utilization (including conservation) of sea cucumbers in Southeast Asia that include the following:

- Improvement of existing information gathering mechanism related to data collection, taxonomic identification and assessment of current status and trend of sea cucumbers at the regional level;
- Establishment of a good landing data collection to be able to determine the trend and status of sea cucumbers while the involvement of traders, importers and exporters in the data collection should also be considered to ascertain the trend of the market and trade of sea cucumbers;
- Management measures of sea cucumbers should be put in place in an effective and efficient manner, which should be accommodated where possible into the national fisheries management framework. These could include the use of appropriate fishing gears and best practices, effective law enforcement, and designation of fishing areas or zones. Development of appropriate management strategies at national and local level should also be taken into consideration; and
- Enhancement of commercial stock should be promoted through the development of aquaculture techniques and restocking program, where each Member Country should recognize and distinguish the economically important species and identify ways for the stock enhancement program of such species.
-

The Meeting also identified future follow-up actions as follows:

- SEAFDEC in close consultation with regional/international organizations sharing similar characteristic of sea cucumber resources should collaborate for the promotion of the sustainable utilization of sea cucumbers;
- Appropriate technical information, *e.g.* identification guide to the highly diverse sea cucumber species in Southeast Asia with focus on the commercial species, their scientific names, local names, Chinese name, and photographs of species in different states or forms as well as proceedings from this Meeting should be published and disseminated in appropriate form and disseminated at appropriate regional and international fora particularly during the CITES CoP15; and
- Fisheries related agencies of the Member Countries should make an effort to closely collaborate with CITES authorized agencies within their respective countries in order to reflect the concerns and seriousness in managing sea cucumbers by the fisheries sector of the region.

VI. CONSIDERATION FOR FUTURE ACTIONS

Fisheries management specifically for this aquatic species would be confronted with difficult challenges since the impact could mean that a number of fishers would have limited income and their dependence on aquatic resources would be reduced. Meanwhile, the limited technical capacity and human resources would also affect the implementation of sustainable management. However, considering that the issue on sea cucumbers could be further brought for discussion during the COP16-CITES, the Meeting is requested to take note the update information reviewed by SEAFDEC and is also requested to provide additional information on landing catch of sea cucumber in the countries, research works in relation to sea cucumber, focal points or experts on sea cucumber of the countries, as well as fisheries management measures on such species in the countries. In addition, the Meeting is requested to discuss on improvement of the technical problems such as the landing data of sea cucumbers at specie level, as well as preparedness of the countries in the management of endanger aquatic species in response to the prospect of proposal on sea cucumber to be listed in CITES appendices.

Based on the outputs from the ***Regional Study on Sea Cucumber Fisheries, Utilization and Trade in Southeast Asia in 2008***, the countries could further identify specific technical problems and provide recommendations to improve the capacity building activities necessary for enhancing conservation and management activities to ensure sustainable sea cucumber fisheries.

In this regard, the recommendations from the FAO Technical Workshop on “Sustainable Use and Management of Sea Cucumber Fisheries” held in 2007 which would be evaluated by the CITES Animal Committee and presented during the forthcoming CoP16-CITES, should be taken into consideration by all the Member Countries.

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SEAFDEC EFFORTS AIMED TO COMBAT IUU FISHING

I. INTRODUCTION

Illegal, Unreported and Unregulated (IUU) fishing and related fishing activities continue to be a major problem, *inter alia*, jeopardizing responsible and sustainable fisheries and frustrating attempts to protect the marine environment. All regions of the world and most fisheries are confronting the difficulties and adverse effects associated with and aggravated by IUU fishing. Many of the underlying conditions that enable and promote IUU fishing are fuelled by lack of transparency and financial incentives which allow illegal activities to go undetected. The situation is further worsened by factors such as inadequate national fishing capacity controls, insufficient resources dedicated to combating IUU fishing, underdeveloped regional cooperation, and widespread corruption, resulting in poor fisheries governance and unacceptable outcomes such as serious damage to biological, human, social, and environmental frameworks. These conditions must be addressed if governance is to be enhanced, outcomes improved and inroads made in order to prevent, deter and eliminate IUU fishing.

Attempts have been becoming more severe all over the world including the ASEAN region, in seeking ways to improve fisheries management with the objective of reducing IUU and destructive fishing. A number of important international instruments, binding or voluntary had been developed and agreed upon globally (*i.e.* 1982 UN Law of the Sea Convention (UNCLOS 1982), the United Nations Fish Stocks Agreement (UNFSA), 1993 FAO Compliance Agreement, 1995 FAO Code of Conduct for Responsible Fisheries, and the 2009 FAO Agreement on Port State Measures). In the ASEAN region, Senior Officials and other decision makers from the ASEAN-SEAFDEC Member Countries have increasingly strengthened their commitments to improve the management of fishing capacity and intensify their efforts to combat IUU fishing. This is also among priority actions for the ASEAN countries especially in the development of the ASEAN Economic Community and the establishment of the ASEAN Community by 2015.

The matter has therefore been seriously addressed by the ASEAN Sectoral Working Group on Fisheries (ASWGFi), ASEAN Fisheries Consultative Forum (AFCF), SEAFDEC Council, and the Indonesia-based RPOA initiative to combat IUU fishing. More particularly, the critical importance to manage fishing capacity as basis for making efforts to combat IUU has been specified in the *2011 ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020* adopted by the ASEAN-SEAFDEC Ministers responsible for fisheries, which provides policy directions for the countries in the ASEAN region.

In improving the management of fishing capacity and ensuring that fishing effort do not exceed the availability of resources in the ASEAN countries, the establishment of good and systematic schemes for the registration of fishing vessels, and the development of processes to issue license to fish are the basic requirements. From the comprehensive records on vessels, gear and people involved in fishing, reliable catch data and report on actual fishing effort could be derived. Information on vessels is also critical in developing effective Monitoring, Control and Surveillance (MCS) networks, which are instrumental for the cooperation on management of fishing capacity and support the efforts to combat IUU fishing, in order to achieve long-term sustainability of marine resources and coastal habitats. National arrangements that would facilitate the control and enforcement of laws and regulations should therefore be developed to ensure, maintain and conserve fisheries resources and habitats.

II. SEAFDEC INITIATIVES

During the past couple of years, SEAFDEC through the support provided by the Japanese Trust Fund and the Swedish International Development Cooperation Agency (Sida) has been working to improve sustainable and responsible fisheries management as well as promote sub-regional cooperation in support of the efforts to combat IUU fisheries in the ASEAN region. Several programs have been conducted including the: (1) promotion of fishing license and boats registration system as tools to support of management and control fishing capacity in ASEAN region; (2) conduct of human resource development on sustainable fisheries and IUU fishing related countermeasures for fisheries managers/officers from the ASEAN region; (3) conduct of regional consultations/workshops to generate actions needed to better manage fishing in support of combating IUU fisheries; (4) conduct of awareness raising activities; and (5) strengthening of the SEAFDEC Network in the SEAFDEC-ASEAN countries for the implementation of sustainable fisheries and IUU fishing related countermeasures.

Furthermore, SEAFDEC continues to strengthen its cooperation with the ASEAN and builds upon the achievements of the lead countries of the “key clusters” under the ASEAN Fisheries Consultative Forum (AFCF) framework in developing common understanding on key issues and problems that need to be addressed by the countries through joint efforts. Such issues could include among others, the encroachment of larger vessels into coastal waters and combating IUU fishing, which could be addressed by highlighting the integration of fisheries with habitat management.

Considering that the Regional Plan of Action to Promote Responsible Fishing Practices including Combating IUU Fishing in the Region (RPOA-IUU) with Indonesia serving as the RPOA Secretariat, has also been significantly implementing activities that aim to enhance and strengthen the overall level of fisheries management in the region, sustain the fisheries resources and marine environment, and optimize the benefit of adopting responsible fishing practices, the 4th Coordination Committee Meeting of the RPOA held in Siem Reap, Cambodia on 1-5 November 2011 suggested that it is important for countries in MCS networks to level up their information that could be shared with the other countries. In this connection, the countries should utilize equivalent information to better identify fishing vessels and improve licensing systems. More focus should also be made in improving the status and role of small-scale fisheries with respect to transboundary issues and in reducing (local) destructive fishing practices. SEAFDEC has also been involved in the process by acting as one of the advisory bodies to RPOA-IUU.

During the 34th Meeting of the SEAFDEC Program Committee in November 2011, SEAFDEC was requested to conduct in-depth study on the impacts of the EC regulations especially on small-scale fisheries and consider inviting experts from the Member Countries that received the EU Evaluation Mission Report to present their cases and share their experiences during the Regional Technical Consultation (RTC) on International Fisheries Trade-related Issues which will be held in 2012. SEAFDEC was also asked to coordinate with RPOA-IUU Secretariat to develop guidelines indicating measures to reduce IUU fishing which could possibly be made compulsory for the Southeast Asian region. In this regard, it would be necessary to conduct capacity building for the Member Countries to make them ready for the implementation of the Port State Measures. However, since some Member Countries are not members of the RPOA-IUU, SEAFDEC should disseminate the information that have been discussed at RPOA fora, to the Member Countries especially information on IUU fishing vessels. In addition, during the 14th Meeting of FCG/ASSP in November 2011, SEAFDEC was asked to continue coordinating with the RPOA-IUU for the formulation and implementation of programs aimed at addressing the issues related to combating IUU fishing to ensure that the SEAFDEC programs and those of the RPOA-IUU are complementary and duplication of efforts is avoided.

III. OTHER REGIONAL INITIATIVES

Taking into consideration the various important regional initiatives/programs that have been implemented in the region, it is important to draw the attention of the Member Countries on the need to collaborate and cooperate among the Member Countries and with regional initiatives. In addition, it is also necessary to boost the cooperation among neighboring countries through bilateral or trilateral arrangements/agreements as recommended at the sub-regional consultations in order to strengthen the implementation and enforcement of legislations related to improved management of fishing capacity and to combat IUU fishing, as well as the implementation of relevant international requirements and conventions. Moreover, efforts should be made to strengthen regional and sub-regional cooperation to more efficiently combat IUU fishing in the region, as well as the sub-regional arrangements by improving strict implementation of fisheries management measures and specifically on the management of fishing capacity.

IV. REQUIRED CONSIDERATION BY THE COUNCIL

The Council is requested to:

- 1) Take note of the initiatives undertaken by SEAFDEC on sustainable and responsible fisheries in support of combating IUU fishing in the ASEAN region;
- 2) Provide guidance to SEAFDEC and the Member Countries on the ways and means of improving the management of fishing license /fishing boat registration and fishing capacity and enhancing collaboration and cooperation to reduce IUU fishing in the ASEAN region;
- 3) To support the Member Countries in sharing and exchanging record on vessels, gear and people involved in fishing, collecting reliable catch data and more accurate information on landings (port monitoring).

XXXXXXXXXXXXXXXXXXXXXXX



DEVELOPMENT OF THE ASEAN CATCH CERTIFICATION SCHEME

I. INTRODUCTION

Marine resources having declined due to over-exploitation and un-controlled fisheries have for many years been recognized with much concern throughout the world. The level of un-sustainability is alarming and many countries in the region have increasingly recognized the intensity of the problem. Attempts to address these problems have been initiated in the Southeast Asian region, at national and regional levels through various efforts mobilized by fisheries agencies and other sectors involved in resources management.

Illegal, Unreported and Unregulated (IUU) fishing which had been identified as one of the causes of the declining fishery resources, can take place in all aspects of capture fisheries, whether within national jurisdictions or in the high seas. Initiatives to conserve and manage fish stocks have been undermined by IUU fishing, the result of which could lead to total collapse of capture fisheries seriously hampering all attempts to rebuild the stocks that have already been overfished. This situation could also lead to the loss of both short- and long-term social and economic opportunities and thus, could have negative impacts on food security.

1) Status of the promotion of fishing management schemes to combat IUU fishing in Southeast Asia

Every country in the Southeast Asian region and regional organizations are now focusing their efforts on the promotion of sustainable fisheries management and countermeasures to combat IUU fishing. This is in cognizant of the role of fishing management schemes, such as co-management, fishing license, and boats registration in controlling active fishing efforts of both large-scale and small-scale fisheries. Such efforts aim to improve fisheries management in order to reduce and combat IUU fishing, as well as promote sustainable utilization and the long-term conservation of the aquatic resources.

2) Measures undertaken by international organizations

On 29 September 2008, the European Union (EU) adopted a regulation to prevent, deter and eliminate illegal, unreported and unregulated (IUU) fisheries. The regulation requires a catch certificate for all imports and landings of fish and fish products into the EU by third countries (*i.e.* countries that are not members of the EU). As one of the main tools of the EC regulation, catch certification scheme is aimed at bringing to an end the export of IUU fishery products into the EU. The scheme places strong emphasis on checking, inspection and verification ‘to be carried out according to common criteria governed by risk management and assessment’, and as a matter of priority, regulates targeted trade flows to the EU. On the other hand, catch documentation scheme known variously as statistical document scheme or trade information scheme, aims to validate catch data and minimize opportunities for products taken by illegal, unreported or unregulated (IUU) fishing to reach the markets. The later schemes are used increasingly by regional fisheries management organizations (RFMOs).

3) Lessons learned by the ASEAN countries on catch certification/catch documentation

The Member Countries were encouraged to exchange their experiences with regards to the implementation of the EC regulation. Malaysia for example, has initiated the development of an electronic-based catch documentation system with the assistance of EU. In addition, Member Countries should also learn lessons from the implementation of catch documentation scheme in accordance with the Magnuson-Stevens Fisheries Conservation and Management

Reauthorization Act imposed by US markets. For example, Indonesia has already adopted a catch documentation scheme for tuna fisheries.

Therefore, based on the experiences from the implementation of catch certification or catch documentation schemes, Member Countries should review and re-think on how to proceed with the development of a common catch certification/documentation scheme for the Southeast Asian region, which should be clearly understood by and implementable in the Member Countries. The lessons learned from the experience of Malaysia in developing an electronic-based catch documentation system and those of Indonesia for tuna, should be reviewed by the other countries as this could serve as reference in developing a common Catch Certification for the Southeast Asian region.

4) Key issues for consideration

- Impacts of the proposed ASEAN Catch Certification/Documentation Scheme on regional trade

The February 2011 RTC suggested that in the development and implementation of an ASEAN documentation/certification scheme, caution should be exercised as such scheme could adversely affect regional trade, particularly since some countries may not be able to comply with the requirements of such scheme.

- Compliance with the requirements of importing countries and RFMOs

The 13th Meeting of the FCG/ASSP recommended that a common catch documentation scheme for the Southeast Asian region should comply with the requirements of RFMOs as well with those imposed by importing countries, *e.g.* USA and EU countries, in order to facilitate intra-regional trade of fish and fishery products.

II. REQUIRED CONSIDERATION BY THE COUNCIL

The Council is requested to provide policy directives on the ways of proceeding with the development of the ASEAN Certification/Documentation Scheme taking into consideration the suggestions made during the Thirteenth Meeting of the FCG/ASSP in December 2010.

POLICY CONSIDERATION ON THE PRODUCTION OF SOUTHEAST ASIAN STATE OF FISHERIES AND AQUACULTURE (SEASOFIA)

I. INTRODUCTION

Information on the status and trends of fisheries are crucial for sustainable development and management of fisheries. The importance of such information has also been well-recognized by the ASEAN-SEAFDEC member countries and thus, had been reflected in the Resolution and Plan of Action for Food Security for the ASEAN Region Towards 2020 which were adopted during the ASEAN-SEAFDEC Conference in June 2011. Specifically, the “Resolution” emphasized the necessity to “*strengthen knowledge/science-based development and management of fisheries*”; while the “Plan of Action” specified the need to “*strengthen national statistical mechanisms for fisheries and aquaculture and the exchange of statistical data and related information; and include other non-routine data and information such as fish consumption surveys as well as mobilizing local and indigenous knowledge with the aim of improving the valuation of fisheries and monitoring their performance, to address the needs of the ecosystem approach to fisheries and adaptation to climate change*”.

Throughout the past decades, SEAFDEC had been undertaking activities to compile various forms of fishery-related data and information. These include the regional fishery statistics based on national statistics data provided by the Southeast Asian countries, as well as other data and information from various SEAFDEC programs/projects, *e.g.* fishery resources surveys in the Southeast Asian waters, information collection of highly migratory species, deep sea fishery resources exploration, tagging of sea turtles and research study on their habitats, tagging of economically-important pelagic species, development and usage of practical indicators for sustainable development and management of capture fisheries, among others. However, the outputs from these initiatives had rarely been integrated or synthesized to come up with information that could be used to support the development and management of sustainable fisheries in the region.

SEAFDEC therefore undertook a pilot exercise in developing the “**Southeast Asian States of Fisheries and Aquaculture**” or “**SEASOFIA**” with the objective of providing a platform for the compilation of synthesized data and information generated from various programs and activities, incorporating other available data and information, in order to provide better understanding of the status and trends of fisheries and aquaculture in the region. Also included in the publication are selected fisheries-related issues and challenges, and an outlook of fisheries and aquaculture in the region, to raise the awareness/preparedness and enhance the capacity of countries in the region in responding to such issues. The Contents of the SEASOFIA appears as **Annex 1**.

It should be noted however that there are also publications produced by other organizations with similar nature and purposes as those of the SEASOFIA, namely:

1) The State of World Fisheries and Aquaculture

Publisher: FAO Fisheries Department

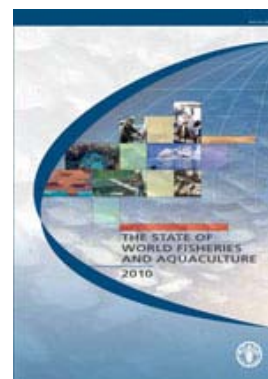
First published: 1996

Timeframe: every 2 years (release at the biennial FAO/COFI Session)

Geographical scope: Global

Contents: World review of fisheries and aquaculture (trend in production, utilization and trade of fishery resources); selected issues facing fisheries and aquaculture, some highlighted FAO studies, and outlook of fisheries (production, consumption, trade and policy aspects) in a global perspective

The Contents of the latest publication appears as **Annex 2**.



2) Status and Potential of Fisheries and Aquaculture in Asia and the Pacific

Publisher: FAO/Regional Office for Asia and the Pacific

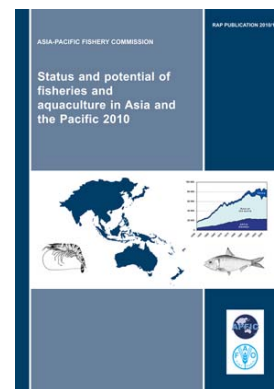
First published: 2004

Timeframe: every 2 years (release at the biennial APFIC Session)

Geographical scope: States, entities and areas of Asia and the Pacific region (i.e. South Asia, Southeast Asia, China, Other Asia and Oceania, including the South China Sea, Gulf of Thailand, Bay of Bengal and Andaman Sea)

Contents: Updated information on emerging issues relevant to fisheries and aquaculture, and regional information to describe some of the key trends that affect the resources and production system

The Contents of the latest publication appears as **Annex 3**.



These publications should therefore be taken into consideration in the future preparation and production of SEASOFIA in order that duplication of efforts is, as much as possible, avoided. Moreover, it should be noted that during the discussion on the production of SEASOFIA at the 14th Meeting of the FCG/ASSP, the SEAFDEC Secretariat was asked to coordinate with FAO so that information of the Southeast Asian region contained in the SEASOFIA could be reflected in the global SOFIA.

II. REQUIRED CONSIDERTION BY THE COUNCIL

The Council is requested to provide policy guidance on issue related to the future production of SEASOFIA.

CONTENTS (SEASOFIA 2012)

PART I. STATUS AND TRENDS OF CAPTURE FISHERIES AND AQUACULTURE IN SOUTHEAST ASIA

- 1. Global Production and Utilization of Fish**
- 2. Fishery Production of Southeast Asia**
- 3. Marine Capture Fisheries Production of Southeast Asia**
 - 3.1 Tuna
 - 3.2 Sharks and Rays
- 4. Production from Inland Capture Fisheries of Southeast Asia**
- 5. Aquaculture Production of Southeast Asia**
 - 5.1 Mariculture
 - 5.2 Brackishwater Culture
 - 5.3 Freshwater Aquaculture
- 6. Fish Trade**
 - 6.1 Global Trading of Fish and Fishery Products
 - 6.2 Southeast Asian Export-Import of Fish and Fishery Products
- 7. Summary**

PART II. ISSUES AND CHALLENGES IN SUSTAINABLE FISHERIES DEVELOPMENT OF THE SOUTHEAST ASIAN REGION

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 - 1.3.4 Sea Cucumbers
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- 3.1.5 Post-harvest technologies and Livelihoods
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 - 4.2.1 Vessel Registration, Licensing, and the FAO Global Record
 - 4.2.2 Catch Documentation Including Logbook Systems
 - 4.2.3 Port Monitoring and Port Inspection
 - 4.2.4 Monitoring, Control and Surveillance Systems and Network
 - 4.2.5 Legal and Institutional Matters
 - 4.2.6 Future Direction
 - 4.3 By-catch Reduction and Management
 - 4.4 Community-based Fishery Management Approach in the Southeast Asian Region
 - 4.4.1 Issues and Concerns
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 - 4.5 Habitats Protection and Coastal Fishery Resources Enhancement
 - 4.5.1 Introduction
 - 4.5.2 Use of Big-size Artificial Reefs: Malaysian Experience
 - 4.6 Responsible Fishing and Practices in Southeast Asia
 - 4.6.1 Key Issues Related to Responsible Fisheries
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 - 5.1.1 Aquaculture and Rural Development in Southeast Asia
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 - 5.2.2 Issues and Concerns
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 - 5.3 Disease Diagnosis, Control, Monitoring and Surveillance of Aquatic Animals
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 - 6.2 Impacts of Climate Change on Capture Fisheries
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 - 6.4 Adaptation Strategies
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 - 2.1 Fish Consumption vs. Potential Food Insecurity
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**STATEMENT BY ASEAN SECRETARIAT
AT THE 44th MEETING OF THE SEAFDEC COUNCIL
3 APRIL 2012, NAY PYI TAW, MYANMAR**

*By Ms. Pouchamarn Wongsanga
Senior Officer, Agriculture Industries and Natural Resources Division*

Honorable SEAFDEC Council Chairperson and Council Directors,
SEAFDEC Secretary-General,
Colleagues from FAO and INFOFISH
Ladies and gentlemen, good morning,

At the outset, allow me once again to take this opportunity to thank SEAFDEC and the host country, Myanmar for kind invitation to the ASEAN Secretariat to participate in this auspicious Meeting and for allowing me to speak before all of you about ASEAN and SEAFDEC collaboration in fisheries.

The ASEAN-SEAFDEC Strategic Partnership (ASSP), which was formalized in 2007 has provided for greater integration of ASEAN and SEAFDEC fisheries program thereby avoid duplication and enable better utilization of resources. Along this line, ASEAN Member States and ASEAN Secretariat would like to extend the profound appreciation and joining other delegates in congratulating SEAFDEC for its achievements made in 2011.

Mr. Chair, Council Directors, realization of an ASEAN Community in 2015 as envisioned by the Leaders is less than four years ahead of us. Fisheries is an important sector of ASEAN, contributing to national development and regional cooperation in the region; and is among the forefront sectors that will help shaping the ASEAN Community. Contribution of fisheries to ASEAN Community Building by 2015 as addressed in the strategic measures related to the fisheries sector outlined in the Blueprints and Initiative for ASEAN Integration (IAI) Work Plan include Food safety/SPS, Fisheries quality management system – HACCP-based systems, good laboratory practices, application for SMEs, Good aquaculture practices (as a regional product standard), including appropriate use of veterinary drugs, Strategic alliances and joint approaches among ASEAN Member States and with the private sectors, Engaging CSOs (fishers' organisations) in the integration of fisheries sector, Combating IUU fishing (considering the economic and security implication), Enhancing food security and safety, Promoting sustainable use of coastal and marine environment, Promoting sustainable management of natural resources and biodiversity, and Responding to climate change and addressing its impacts. The ASEAN-SEAFDEC Strategic Partnership (ASSP) has been perceived as the main vehicle to drive the process of fulfilling the expectation and commitments of the fisheries sector.

ASEAN will continue working closely with SEAFDEC on a number of areas and issues of common interest for the benefits of ASEAN and SEAFDEC Member States. Among others, collective effort of all ASEAN Member States in development of the common/coordinated position on international fisheries related issues to be raised at the international for a is importance in addressing Joint ASEAN Position and Approach on Regional and International Fisheries Issues. ASEAN agreed on the required close collaboration and cooperation among ASEAN Member States, ASEAN Secretariat and SEAFDEC to safeguard common interest on fisheries related issues of the ASEAN region.

Mr. Chair, Council Directors, let me highlight the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security Towards 2020 “Fish for the People: Adaptation to a Changing Environment”, which was organized on 13-17 June 2011. The Conference was the key cooperation with SEAFDEC in the implementation of the ASEAN-SEAFDEC collaborative programme in enhancing the “Strategic Partnership”. On behalf of the ASEAN Member States, I would like to take this opportunity to thank SEAFDEC for untiring effort and cooperation on working for the preparation and successfully conduct of the Conference.

The “Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region Towards 2020” as the key outcomes from the Conference clarified the detailed plan or

roadmap for the sector to contribute the Leaders' vision of realization of one ASEAN Community by 2015. These are an important basis for ensuring sustainable development of the sector and for better livelihoods of those depend on them in the longer term.

Mr. Chair, SEAFDEC Council Directors, from ASEAN side, the Plan of Action and the Resolution were endorsed by the Senior Officials Meeting of the ASEAN Ministers on Agriculture and Forestry (SOM-AMAF) and the ASEAN Ministers on Agriculture and Forestry (AMAF) last year. SOM-AMAF noted the successful outcomes of the ASEAN-SEAFDEC FFP2020 Conference; and commended that the Conference was considered as an important regional platform in addressing emerging challenges faced by the fisheries sector as well as contribution of the fisheries sector in the ASEAN Community building.

The AMAF noted the ASEAN-SEAFDEC "FFP2020" Conference held in June 2011 as an activity in cooperation with international organisations and dialogue partners in the implementation of ASEAN policy and initiatives, and encouraged ASEAN Member States with the assistance from ASEAN Secretariat to further continue the cooperation.

Along this line, the ASEAN Sectoral Working Group on Fisheries (ASWGFi) agreed to use the 2011 Resolution and Plan of Action as outcomes from the FFP2020 Conference as the new Strategic Plan of Action (SPA) on ASEAN Cooperation in Fisheries (2011-2015) and will be used as coordination and monitoring tool for the sector.

With the high-level policy support, we are now in the more important step to drive the process of fulfilling the expectation and commitments of the fisheries sector by implementing the Resolution and Plan of Action as the ASEAN Policy and actions required to address fisheries challenges. These eventually will contribute to the efforts of facing the challenges of food security. To support the implementation of the Resolution and Plan of Action under the ASSP, the programme concept note on sustainable fisheries for food security as endorsed by the ASWGFi last year will be elaborated to cover priority areas and actions and sourcing fund from ASEAN dialogue partners and development partners.

Mr. Chair, ladies and gentlemen, please allows me to conclude my statement by expressing my appreciation on behalf of ASEAN to SEAFDEC Council for your kind continued support to ASSP Programme and particularly for the ASEAN-SEAFDEC Conference. I assure you all of our strong interests in and any possible support to the close collaboration and partnership with SEAFDEC.

Thank you.

**Statement of the Representative of
The Food and Agriculture Organization (FAO) of the United Nations
to the 44th Meeting of the SEAFDEC Council
NayPyiTaw, Myanmar, 2-6th April, 2012**

U. Khin Ko Lay, Chairman of the SEAFDEC Council,
Dr. Chumnarn Pongsiri, Secretary-General of SEAFDEC
Honourable Council Directors and representatives of regional organizations,
Representatives of the SEAFDEC Departments and SEAFDEC Secretariat,
Ladies and Gentlemen;

On behalf of the Food and Agriculture Organization (FAO) of the United Nations, I would like to thank SEAFDEC for the invitation to attend this 44th SEAFDEC Council Meeting in the new Capital city of NayPyiTaw. I would also like to thank our hosts, the Department of Fisheries, Ministry of Livestock & Fisheries, Government of Union of Myanmar for their excellent arrangements and the hospitality which we are enjoying here.

FAO would like to congratulate SEAFDEC on the busy year's activities during 2011 and 2012, and in particular the outcomes of the ASEAN-SEAFDEC conference. FAO was pleased to be able to cooperate in this regional visioning initiative and we hope that we can use this as a framework for cooperation and partnership with both ASEAN and SEAFDEC in the coming years.

We appreciate the effort to produce the SEA SOFIA 2012 and note that it contains comment and regional insight to a range of issues. I anticipate that some of the content will complement the Asia-Pacific Fishery Commission biennial review which will be produced later this year and can contribute to FAO's biennial SOFIA as well.

FAO and SEAFDEC have a long history of cooperation on Regional workshops for training and capacity building. FAO would like to thank SEAFDEC for continuing this productive cooperation and draw particular attention to the Regional workshops on "Marine Protected Areas",

As Secretary of the Asia-Pacific Fishery Commission, I would like to thank SEAFDEC for the support provide to APFIC regional consultative workshops in 2011, and take this opportunity to invite SEAFDE Secretariat and interested council members to participate in the APFIC Regional Consultative Forum Meeting and 32nd Session of the Commission which are being hosted by Government of VietNam and will be convened in Da Nang VietNam, September 12-22, 2012.

In terms of field programme impacts, FAO appreciates SEAFDEC cooperation with the Bay of Bengal Large Marine Ecosystem Project, with activities in Myanmar, and Thailand. This programme is looking to build more concrete partnerships with SEAFDEC as they move in the next two years of the BOBLME work, which seeks to identify sustainable regional mechanisms for cooperation in the management of some key fishery stocks as well as capacity building for ecosystem management

SEAFDEC is seen as a key partner and whilst the SEAFDEC programme activities in the Bay of Bengal area are some times less high profile than the south China Sea, they are still important and have much to contribute to the fishery management of Bay of Bengal and as a coordination mechanisms with the other BOB countries.

FAO notes that SEAFDEC could do much to improve our understanding of key fisheries resources in the region and urges SEAFDEC to look into how to support this process with her members Malaysia, Indonesia, Thailand and Myanmar.

As part of the BOBLME programme there is also under development an ecosystem approach to fishery management training course. FAO hopes that SEAFDEC will take this into account as she develops the SEAFDEC EAF training programme to ensure that approaches meet international standards and can contribute to greater regional and global understanding of the modern management approaches- we note the calls from member countries to strengthen fisheries management capacity building and training in this regard.

Looking forward to the start up of the activities of the FAO/GEF project to be executed in cooperation with SEAFDEC, “Strategies for trawl fisheries bycatch management (REBYC II)”, this \$11 million project will see SEAFDEC member countries, Philippines, Indonesia, Thailand and VietNam, participating in a four year programme to develop more effective trawl management strategies that will reduce the pervasive ecosystem impacts of trawling bycatch of small low values species as well as high value and ecologically important species. The project links both government fishery institutions with linkages to private sector fishing operations and fishmeal and feeds producers will truly see this emerge as a cooperation between the important stakeholders. We hope that this will open the door to more responsible fishery management in the trawl sector, as well as demonstrate our region’s commitment to responsible fishery management and reduction of environmental impacts. At the same time, I expect that this will contribute to answering some of the questions as to how the region’s aquaculture products are produced and demonstrate that we can sustain aquaculture production without excessively compromising the marine environment.

Demonstrating that the region is making progress in the field of responsible fisheries and aquaculture is always a challenge with such diverse fisheries and aquaculture in the region. The diversity of context of each member country means that there is no fixed model for this and each country follows its own priorities within the constraints of budgets, human resources capacity and the global economic environment and there is great diversity of application of the FAO Code of Conduct for Responsible Fisheries.

Despite this there is a need to try to keep track of progress and reporting this into global for a such as the committee on fisheries, as well as regionally to APFIC and SEAFDEC council is an important way to demonstrate the effort being made. In this regard, FAO would urge member countries to report their successes and challenges in the area of responsible fisheries and aquaculture and in this regard APFIC will be contacting members and key respondents in the region to try and evaluate this. I would like to draw your attention to an APFIC online questionnaire and encourage you to return the FAO CCRF questionnaire.

Mr Chairman,

FAO would once again like to thank SEAFDEC and our hosts the, Ministry of Livestock & Fisheries, Government of Union of Myanmar, for this opportunity to participate in the 44th Council Meeting in NayPyiTaw, and looks forward to further partnership and cooperation between FAO and SEAFDEC in the future.

Thank you Mr. Chairman,

**Statement of the Representative of
The Food and Agriculture Organization (FAO) of the United Nations
to the 44th Meeting of the SEAFDEC Council
NayPyiTaw, Myanmar, 2-6th April, 2012**

U. Khin Ko Lay, Chairman of the SEAFDEC Council,
Dr. Chumnarn Pongsiri, Secretary-General of SEAFDEC
Honourable Council Directors and representatives of regional organizations,
Representatives of the SEAFDEC Departments and SEAFDEC Secretariat,
Ladies and Gentlemen;

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Thank you Mr. Chairman,



A PROPOSED ESTABLISHMENT OF THE INLAND FISHERY RESOURCES DEVELOPMENT AND MANAGEMENT DEPARTMENT (IFRDMD) IN INDONESIA

Rationale

Inland fisheries in SEAFDEC Member Countries are a very important source of food and main alternative livelihood for people in the region. However, the sustainability of the resources has been threatened by overfishing and habitat degradation. In this regard, the promotion of responsible fishing practices, fisheries management and conservation, including fisheries community empowerment, are essential to ensure food security and poverty alleviation. Ecosystem approach required to manage fishery resources should be conducted to achieve human and environment well-being.

Amongst SEAFDEC Member Countries, Indonesia has the widest inland waters inhabited by the relatively highest biodiversity in the most unique ecosystems, covering the Sunda shelf, Sahul shelf and Wallace Area. The inland fishery resources in Indonesia have been utilised, managed, conserved and enhanced on the basis of data and information resulted from research undertaken by the Research Institute of Inland Fisheries (RIIF) in Palembang and by the Research Institute for Fisheries Enhancement and Conservation (RIFEC) in Purwakarta. Meanwhile, socio-cultural and economic consideration in the empowerment of inland fisheries communities have been studied by the Research Center for Marine and Fisheries Socio-economic in Jakarta.

To speed up the implementation of ecosystem approach to inland fisheries, regional cooperation amongst SEAFDEC Member Countries in the field of research, management and conservation of inland fishery resources is necessary. Indonesia has proposed to develop the said cooperation and establish **The Inland Fishery Resources Development and Management Department (IFRDMD)**. IFRDMD will be developed by expanding the function of the RIIF in Palembang, Indonesia, that currently undertaking research to support development and management of inland fisheries of Indonesian context, to include and facilitate the regional needs to develop and manage inland fisheries and conserve inland fishery resources.

Proposed Function

1. to provide a regional forum for consultation and cooperation in research, management and conservation of inland fishery resources , and inland fisheries community empowerment.
2. to coordinate and implement research programs to support sustainable development, management and conservation of inland fishery resources in SEAFDEC Member Countries through:
 - monitoring condition and exploitation level of fishery resources and fisheries in the inland waters of mutual interest among SEAFDEC Member Countries.
 - providing scientific basis for policy formulation and appropriate guidelines
 - providing advice on management and conservation of fishery resources, and fisheries community empowerment
3. to provide training in the field of stock assessment and fisheries management and conservation, and fisheries community empowerment towards improving the capacity of SEAFDEC Member Countries in the sustainable development, management and conservation of inland fishery resources.

4. to publish, disseminate, and exchange information through:

- regional fora and consultation in research, management and conservation, and fisheries community empowerment
- intensification of publication
- participate in the extension activities

Vision

To be a center of excellent for sustainable development and management of fisheries, resource conservation and community empowerment in Southeast Asia.

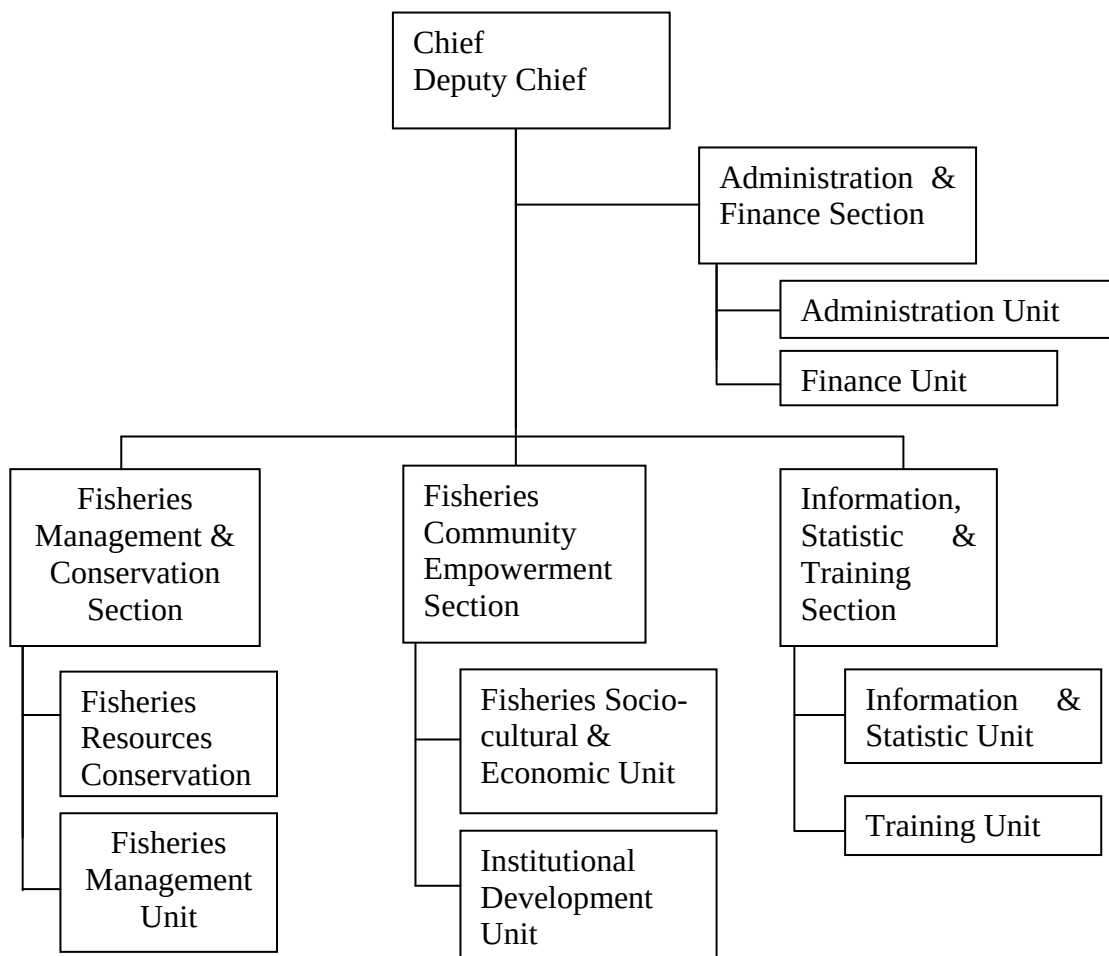
Mission

To provide assistance to SEAFDEC Member Countries in matters leading to the sustainable development and management of the fisheries, resource conservation and community empowerment of inland water ecosystem in Southeast Asia through research, training and information dissemination.

Organisational Structure and Necessary Personnel

Organisational Structure

The proposed organisational structure for the IFRDMD is described in the organisational chart below:



Necessary Personnel

Minimum number of personnel required to run the IFRDMD is presented in the table below:

No	Position	Number of Personnel	Source
1	Chief	1	TBA
2	Deputy Chief	1	Indonesia
3	Head of Administration & Finance Section	1	Indonesia
3.1	Administration Unit	1	Indonesia
3.2	Finance Unit	1	Indonesia
4	Head of Fisheries Management & Conservation Section	1	Indonesia
4.1	Fisheries Management Unit	1	Indonesia
4.2	Fisheries Resources Conservation Unit	1	Indonesia
5	Fisheries Community Empowerment Section	1	Indonesia
5.1	Fisheries Socio-cultural & Economic Unit	1	Indonesia
5.2	Institutional Development Unit	1	Indonesia
6	Information, Statistic & Training Section	1	Indonesia
6.1	Information & Statistic Unit	1	Indonesia
6.2	Training Unit	1	Indonesia
		14	

Program Activities and Facilities

1. to provide a regional forum for consultation and cooperation in research, management and conservation
 - network
 - regular meeting
 - facilities (meeting room, office, land)
 - Administrative and technical staffs
2. to coordinate and implement research programs
 - network
 - meeting
 - facilities (database, laboratories, office, guest house, boat, vehicle, mobile laboratory, research station, land, jetty)
 - research scientists & technicians
3. to provide training in the field of stock assessment and fisheries management and conservation
 - Dormitory
 - Classrooms, theatre room
 - Training facilities
 - Medical clinic
 - Praying room
 - Sport facilities
 - Administrative and technical staffs,
4. to publish, disseminate, and exchange information
 - Internet connection & network
 - Library
 - Publishing facility
 - Graphic designer and administrative staffs

Support for the Operation

NO	ITEMS	COST ESTIMATION (USD)
A.	Assets in Research Institute For Inland Water Fisheries, Palembang, South Sumatera.	
1.	Infrastructure: Office, Laboratory	796.456
2.	Laboratory Equipment	640.984
3.	Speed Boat and Rescue Equipment	56.941
	TOTAL A	1.494.381
B.	Assets in Research Institute For Fisheries Conservation And Fish Stock Enhancement, Jatiluhur West Java	
1.	Infrastructure: Office, Laboratory	587,986
2.	Laboratory Equipment	219,717
3.	Speed Boat and Rescue Equipment	27,246
	TOTAL B	834,949
C.	Annual Basis Operational Support	
1.	Annual Research Budget in Palembang	447,160
2.	Annual Research Budget in Jatiluhur	393,772
	TOTAL C	840.932



PROCEDURES FOR THE ESTABLISHMENT OF NEW SEAFDEC DEPARTMENT

To take progressive steps on the establishment of the Regional Center for Inland fisheries Development, following are the procedures for the Establishment of new SEAFDEC Department that should be undertaken by concerned parties:

1. The Council Director for Indonesia should submit a proposal for the establishment of the new Department in Indonesia, for endorsement by the Council. The proposal should consist of:
 - Rationale, program of activities and the proposed name
 - Proposed national budget for the construction of the proposed Department premises and the location
 - Commitment to host and provide the necessary personnel as well as sustainable financial support for the operations cost of the proposed Department;
2. After consultation, the Council may endorse the proposal. Once endorsed, the Council will suggest to establish a working group to assess the existing structure and activities of all SEAFDEC Departments to make sure that there is no duplication of activities among the Departments with those of the new Department;
3. After the endorsement by the Council, the Indonesian Government should prepare the national legitimacy for issuing the law, regulation and privileges for the establishment of the intergovernmental institution as part of the SEAFDEC organization;
4. The Council Director for Indonesia will also report to the Council on the readiness of the process and request the Council for the official approval and announcement of the establishment of the new SEAFDEC Department;
5. The Council Director for Indonesia will also request the Council to approve the Plan of Operation of the new Department as well as the proposed amendments of the Plan of Operation of other Departments concerned to avoid duplication of activities;
6. The Council Director for Indonesia will submit the nomination for the Chief of the new Department;
7. The Council Director for Indonesia will request the Japanese Government to appoint the Deputy Chief of the new Department; and
8. After the approval for the establishment of the new Department in Indonesia, the Program Committee Member for Indonesia will propose the program of activities of the new Department to the closest Meeting of the SEAFDEC Program Committee.



**SEAFDEC MISSION TO RELEVANT AGENCIES IN CAMBODIA DEALING WITH
INLAND FISHERIES**
**(The MRC Fisheries Programme, The WorldFish Center, and Fisheries Administration
Inland Fisheries Research and Development Institute)**
PHNOM PENH, 23-26 OCTOBER, 2011

Travelers:

1. Dr. Chumnarn Pongsri	Secretary General
2. Dr. Magnus Torell	Senior Advisor
3. Dr. Ahmadi	RFPN Member for Indonesia
4. Mr. Akhane Phomsouvanh	RFPN Member for Lao PDR

Summary

1. To follow up the initiative made by the Minister of Marine Affairs and Fisheries of the Republic Indonesia on the establishment plan of the Inland Fisheries Department under SEAFDEC and to follow the suggestion made during the monthly meeting held on 30 September 2011, the team visited to Phnom Penh to have meeting with MRC Fisheries Programme, WorldFish Center and Fisheries Administration Inland Fisheries Research and Development Institute (IFReDI) as well as MRC/AIMS aquaculture project in Ongtasom village, were aimed at sharing information on the activities and achievements of the concerned agencies to support the establishment of the new Department by gathering information on actions taken in the area of inland fisheries in the broader context and also to build up network for inland fisheries to make sure that there is no duplication effort and complement each other.
2. On 24 October 2011, the team visited the office of MRC Secretariat and was welcomed by *Mr. Xaypladeth Choulamany*, Fisheries Programme Coordinator. Senior Adviser of SEAFDEC-Sida introduced briefly on the establishment plan of new Department of Inland Fishery hosted by Indonesia. Secretary General of SEAFDEC reiterated that this establishment is very initial stage, need more effort and support from SEAFDEC and Council Directors of MCs. SG opened discussion by requesting the Coordinator to explain the status of working which area MRC-FP focused on fisheries and what are the gaps to be fulfilled by SEAFDEC to avoid duplication work of what MRC-FP has done.
3. The Coordinator provided update information on strategic planning for fisheries program implementation during 2011-2015 (Phase-III) that is reflected into four components i.e. (i) packaging information on technical matters to serve planners, policy makers, and academicians. There are a lot of infrastructures developed in different scenarios for fishery planning purpose; (ii) filling the gaps of the technical barriers in capture fishery and aquaculture as well as new emerging issues e.g. climate change since MRC-FP projects more focus at Lower Mekong Basin; (iii) Providing the platform for regional dialogue basis between four countries (Thailand, Cambodia, Vietnam and Lao PDR) to manage sustainable fisheries in transboundary areas; and (iv) capacity building. MRC-FP also promotes fish consumption survey, larval monitoring study, among others.
4. In addition, *Mr. Peng Bun Ngor*, Capture Fisheries Specialist, briefly presented the expected outcomes of fisheries program implementation plan in 2011-2015 are as follows:
 - a) Outcome I. Riparian fisheries decision makers have a good science based understanding of the situation of fisheries in Lower Mekong Basin.

- b) Outcome II. Riparian planning agencies monitor the status and trends in fisheries and aquaculture management and development.
 - c) Outcome III. Key stakeholders maintain a high level of regional and national dialogue as well as dialogue between sectors and programmers relevant to fisheries within a basic wide IWRM framework and guide the implantation of suitable measure to maintain fisheries sustainability.
 - d) Outcome IV. National and local agencies and fishing communities have the capacity necessary for improving fisheries management and development.
5. SA further informed to the meeting that SEAFDEC-Sida project recently conducted the sub-sub regional consultations among member countries such as the Gulf of Thailand and Andaman Sea meetings to discuss specific issues including management of transboundary areas and looking forward to have good lesson learn from MRC-FP on how to develop transboundary areas on the basic of common interests (e.g. socio-economic, regulation, habitat and fisheries management).
6. During discussion, the team found some technical barriers in management of inland fishery, among other:
- Low quality information to serve decision makers, manager or planners. Showing the figures of fisheries statistic is not enough to convince them in understanding the real situation; socio-economic approach (e.g. livelihood profile) should also be qualitatively served with scientific information.
 - Inland fishery globally under estimated. Still difficult to find appropriate methodologies, tools, guidelines, or monitoring system as indicator that simpler, cheaper, readiness and acceptable for member countries. No single method is applicable for any situation.
 - The tools are available but insufficient support of budget, time and capable human resources. How tool and methodology are survival. The country should optimize the existing resources and should not dependence on the donor.
 - For small scale inland fishery, the situation might become complicated and difficult to apply the existing tools from developed country because of multi-species and multi-gear characteristics which directly link to livelihood of the people, and country should aware to this reality.
 - Inland fishery resource is also vulnerable from other activities as it connects to other sectors in term of the multi-use of water body, not only for fishing and aquaculture but also for irrigation, transportation, etc. It is necessary to take actions how to maintain the water quality, and how to communicate with other people around.
 - Lack of local expertise in inland fishery where the government should concern on this critical area. Since there was discrepancy between retirement and recruitment of staff, the government should encourage the young experts and build up their capacity to ensure the availability of human resources in fisheries in the future
7. The meeting also provided additional suggestions for future activities such as:
- Improve phyto-protein to reduce the dependence of fish meal in aquaculture.
 - Conduct qualitative study to enlarge understanding why less number of larvae was found in the north part of Mekong as well as quantitative study.
 - Develop knowledge packaging what is critical information to serve before integrating with other people.
 - Synthesize the existing tools, guidelines, methodologies, training modules related to inland fishery, including methodologies used for Fish Consumption Survey, and also Social Impact Monitoring and Vulnerability Assessment made by MRC.
 - Develop simple monitoring indicator. MRC-FP is improving information on inland capture fishery through larval monitoring, fish catch monitoring, standardized logbook, and valuation of fisheries.

8. On 25 October 2011, the team visited the office of WorldFish Center and was welcomed by *Mr Alan C. Brooks*, Director of Greater Mekong Region and *Ms Yumiko Kura*, Regional Program Manager GMR. Both SG and SA explained succinctly on the role of SEAFDEC/Sida Project to serve member country in the region as well as to facilitate the establishment of Inland Fishery Department in Indonesia. The Director introduced in brief the scope of WFC program and strongly supported the said idea. He also asserted on the importance of personal relationship in building the stronger alliances with other partners/scientists under research program. Currently there are 5 international scientists and 20 national scientists participated in WFC. The present projects included: (a) production evaluation study, where some scientists are working with trammel-nets which links to livelihood program; (b) the existence of Global Fish Alliances with 6 task forces working at different issues on management in Tonle Sap Lake; and also (c) study on the multi-use of water in transboundary areas. This provides good opportunity for collaboration in term of technical enhancement among agencies. SEAFDEC can take lesson learn from WFC in perspective of research methodology.
9. In the second day, the team visited the Fisheries Administration Inland Fisheries Research and Development Institute of Cambodia and was welcomed by *Dr So Nam*, Director and *Ms Hap Navy*, Deputy Director. The Director provided update information on the activities and achievements of the Institute through:
- Fish Consumption Survey in 24 provinces collaboration with National Statistic Cambodia, WorldFish Center and MRC Fishery Program.
 - Fish Catch Monitoring in Northern Mekong and Tonle Sap Lake working with MRC Fishery Programme. Develop standard sampling gear to validate and make baseline for comparison of what fisherman did.
 - Sampling outside to evaluate impact of the closed area, how to link aquatic resource with habitat.
 - Isotop study foodweb work with US scientist
 - Fish Taxonomy Network between four countries with experience from Japan. The project is funded by Japan.
 - Larval Sampling to examine spawning ground of species at transboundary areas.
 - Fish Disease Monitoring in aquaculture
 - Development of DNA laboratory basic equipments, get support from USA
 - Development of breeding technology to produce snake-head fingerlings as well as its value chain. The project is also supported by USA.
 - Transboundary fish trade monitoring between four countries.
10. In the last day, the team visited the fish market in Phnom Penh City and tilapia aquaculture pond under MRC/AIMS project in Ongtasom village, Takeoka District.



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 - Synthesize the existing tools, guidelines, methodologies, training modules related to inland fishery, including methodologies used for Fish Consumption Survey, and also Social Impact Monitoring and Vulnerability Assessment made by MRC.
 - Develop simple monitoring indicator. MRC-FP is improving information on inland capture fishery through larval monitoring, fish catch monitoring, standardized logbook, and valuation of fisheries.

8. On 25 October 2011, the team visited the office of WorldFish Center and was welcomed by *Mr Alan C. Brooks*, Director of Greater Mekong Region and *Ms Yumiko Kura*, Regional Program Manager GMR. Both SG and SA explained succinctly on the role of SEAFDEC/Sida Project to serve member country in the region as well as to facilitate the establishment of Inland Fishery Department in Indonesia. The Director introduced in brief the scope of WFC program and strongly supported the said idea. He also asserted on the importance of personal relationship in building the stronger alliances with other partners/scientists under research program. Currently there are 5 international scientists and 20 national scientists participated in WFC. The present projects included: (a) production evaluation study, where some scientists are working with trammel-nets which links to livelihood program; (b) the existence of Global Fish Alliances with 6 task forces working at different issues on management in Tonle Sap Lake; and also (c) study on the multi-use of water in transboundary areas. This provides good opportunity for collaboration in term of technical enhancement among agencies. SEAFDEC can take lesson learn from WFC in perspective of research methodology.
9. In the second day, the team visited the Fisheries Administration Inland Fisheries Research and Development Institute of Cambodia and was welcomed by *Dr So Nam*, Director and *Ms Hap Navy*, Deputy Director. The Director provided update information on the activities and achievements of the Institute through:
 - Fish Consumption Survey in 24 provinces collaboration with National Statistic Cambodia, WorldFish Center and MRC Fishery Program.
 - Fish Catch Monitoring in Northern Mekong and Tonle Sap Lake working with MRC Fishery Programme. Develop standard sampling gear to validate and make baseline for comparison of what fisherman did.
 - Sampling outside to evaluate impact of the closed area, how to link aquatic resource with habitat.
 - Isotop study foodweb work with US scientist
 - Fish Taxonomy Network between four countries with experience from Japan. The project is funded by Japan.
 - Larval Sampling to examine spawning ground of species at transboundary areas.
 - Fish Disease Monitoring in aquaculture
 - Development of DNA laboratory basic equipments, get support from USA
 - Development of breeding technology to produce snake-head fingerlings as well as its value chain. The project is also supported by USA.
 - Transboundary fish trade monitoring between four countries.
10. In the last day, the team visited the fish market in Phnom Penh City and tilapia aquaculture pond under MRC/AIMS project in Ongtasom village, Takeoka District.



REPORT ON MEMBER COUNTRIES' VIEWS ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC (Revised after receipt of feedback from SEAFDEC Council Directors)

I. INTRODUCTION

Since the establishment of SEAFDEC in 1967, several review exercises had been conducted to evaluate the effectiveness and efficiency of SEAFDEC. The first review exercise was conducted in 1986; and the second in 1991. In addition, the organizational structures and plans of operations of SEAFDEC Secretariat and Departments had also been occasionally reviewed and adjusted in accordance with the changing situation of fisheries in the region and related requirements. During the past decade however, the fisheries situation had continuously undergone changes that led to challenges that could tremendously impact the sustainable development of fisheries in the region. It is therefore envisaged that another review exercise is deemed necessary to enhance the role of SEAFDEC in efficiently and effectively supporting the Member Countries in their continuing efforts towards achieving sustainable fisheries and attaining food security.

During the 43rd Meeting of the SEAFDEC Council, the proposal for the conduct of the Third SEAFDEC Review was presented by the SEAFDEC Secretary-General. While agreeing to have the Third Review on the roles and functions of SEAFDEC, the Council requested the Secretary-General to communicate with the National Coordinators of the respective countries for them to provide information on their countries' views on the activities of SEAFDEC, and to compile the relevant documents/information on SEAFDEC for submission to the Member Countries.

In response to the directives given by the Council, SEAFDEC Secretariat in close coordination with the Departments developed a questionnaire on expected roles, functions and activities of SEAFDEC, which was sent to all Member Countries to gather their respective inputs through the National Coordinators. Responses have been provided by all Member Countries, and used as a basis for preparation of the "*Preliminary Report on Member Countries Views on the Expected Roles, Functions and Activities of SEAFDEC*". The Preliminary Report has been submitted by *ad referendum* to the Council Directors, requesting them to consider sending their feedback by the end of 2011.

The following relevant documents identified by the Council during the 43rd Meeting, were also submitted together with the Preliminary Report:

- 1) Agreement Establishing the Center;
- 2) Roles and Functions/Operations of the SEAFDEC and Its Departments;
- 3) List of SEAFDEC Programs for 2011-2012;
- 4) Number of Staff of SEAFDEC and Organization Structures;
- 5) Financial Regulation and Expenditures;
- 6) Sources of Funds;
- 7) Information on the Japanese Trust Fund and SEAFDEC-Sida Project; and
- 8) Collaborative Projects/Programs with Other Organizations.

II. FEEDBACK FROM MEMBER COUNTRIES ON THE PRELIMINARY REPORT

Based on the "*Preliminary Report on Member Countries Views on the Expected Roles, Functions and Activities of SEAFDEC*" as submitted by the SEAFDEC Secretariat, the Council Directors from Japan, Lao PDR, Malaysia and Thailand provided their respective feedback, which had been taken into consideration in finalizing the Report. Modifications incorporating the feedback and updated information from the countries, were carried out by the SEAFDEC Secretariat while some refinements of the report were made in order to better reflect the views of the Member Countries.

The summary of countries' responses appears as **Annex 1**, while the returned questionnaire (including updated information) from individual countries appears as **Annex 2-12**.

The major modifications and refinements made to the Preliminary Report could be summarized as follows:

- For the “**priority areas that should be addressed/improved in the Member Countries**”, the elements of priority were re-identified (to minimize overlapping as much as possible) and grouped into different scopes of fisheries. It should be noted however that ten priority areas identified by one country could fall under more than ten elements of priority.
- For the “**expected roles and functions of SEAFDEC**”, since some Member Countries indicated “*score*” instead of “*rank*”, such inputs which could still provide indications on their expected roles and functions of SEAFDEC should be acceptable.
- For the “**views on fisheries-related scopes/activities that should be undertaken by SEAFDEC**”, additional inputs provided by Lao PDR have been accommodated in the final report. Moreover, based on the scores given by the countries on particular activities, the SEAFDEC Secretariat deemed it necessary to revise the grouping of “priority activities”, from using “*mode*” (High Priority: mode of 5; Moderate Priority: mode of 4; Low Priority= mode of 3, using the highest mode in case of bi/multi-modal situation) to using “*mean*” (High Priority: means of 5.0-4.5; Moderate Priority: means of <4.5-4.0; Low Priority= means of <4.0) in order to avoid the occurrence of bi/multi-modal values and thus, better reflect the views of all Member Countries.

In addition to their comments on the Preliminary Report, the Council Directors also provided certain views that could be considered in undertaking further steps for the Third SEAFDEC Review and in enhancing the roles and functions of SEAFDEC. Their additional views include the following:

- SEAFDEC should efficiently prioritize its existing and new programs, and re-organize effectively dealing with various issues in accordance with the results of the third review exercise (Japan)
- The Third Review of SEAFDEC should be done in conjunction with the review of the Plans of Operation of the Departments (Malaysia).
- The review on roles and functions of SEAFDEC should be conducted by an independent entity/neutral third party and come up with recommendations/suggestions for improvement (Malaysia and Thailand).
- The report should conclude only the priorities identified by the Member Countries (Brunei Darussalam).

III. SUMMARY ON MEMBER COUNTRIES’ VIEWS ON EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Based on the inputs from the National Coordinators through the questionnaire issued by the SEAFDEC Secretariat and subsequent feedback from the Council Directors, the views of the Member Countries on the expected roles, functions and activities of SEAFDEC, could be summarized as follows:

1. Priority areas that should be addressed/improved in the Member Countries

Based on the returned questionnaires, the Member Countries identified ten fisheries priority areas that should be addressed and/or improved in the respective countries¹. The common elements were identified from a wide range of priority areas, and grouped into different scopes of fisheries. The scope and common elements² are as follows:

Fishery resources

- Fishery resource survey/assessment and researches on species, biology, ecology, etc. (6 countries)
- Fisheries impact assessment and mitigation/reduction (2 countries)

¹ For countries that identified more than ten priority areas, only the first ten areas were used

² Elements that are common for at least 2 countries

Fisheries management and policy planning

- Combating IUU fishing (incl. MCS, Port State Measures) (7 countries)
- Fisheries policy planning and management (6 countries)
- Improving fishery statistics, information, inventories, STF (5 countries)
- Habitat conservation and resources enhancement (5 countries)
- Over-fishing capacity (3 countries)
- Ecosystem Approach to Fisheries (2 countries)
- Enhancing sustainable small-scale fisheries (2 countries)

Responsible fishing technologies/practices

- Responsible fishing technologies and practices (5 countries)

Aquaculture

- Aquaculture development (8 countries)
- Aquaculture disease and aquatic animal health (5 countries)
- Aquaculture broodstock and seed production (4 countries)
- Aquaculture feed (low-cost, fishmeal substitution, etc.) (3 countries)
- Good/environment-friendly aquaculture practices (3 countries)
- Aquaculture impact monitoring and assessment (2 countries)

Fishery post-harvest

- Post-harvest technologies and product safety (8 countries)
- Product development (3 countries)
- Safety and quality systems and standards for fishery products (2 countries)

Trade in Fish and Fisheries Products

- Fish Trade (2 countries)
- Traceability and certification of fish and fishery products (2 countries)
- Product distribution system (2 countries)
- Marketing and market information exchange (2 countries)

Others

- Climate change (4 countries)
- HRD and transfer of knowledge and technologies (4 countries)
- Food security (3 countries)
- Rice field fisheries (2 countries)
- Emerging requirements (2 countries)
- Regional coordination and cooperation in fisheries (2 countries)

2. Views on expected roles and functions of SEAFDEC

The Member Countries provided the following views on the *expected roles and functions of SEAFDEC*, which had been ranked³ from high to the low priorities:

1. Research, development and verification of relevant technologies (4.3);
2. Transfer of technologies through training and HRD activities to government officers (4.1);
3. Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc. (3.6);
4. Awareness raising, and generation/dissemination of information package and toolkits (3.2); and
5. Facilitate coordination and networking with other regional/international organizations (2.6).

³ **Priority roles/functions** of SEAFDEC are ranked based on “means” of the priority ranked by the Member Countries. Although some countries gave “score” instead of “rank”, the inputs could still provide indications on the expected roles and functions of SEAFDEC and thus, were accepted.

3. Views on fisheries-related scopes/activities that should be undertaken by SEAFDEC

While noting that several sectors/institutions/organizations are working at the national/regional/global levels but undertake different roles and functions to contribute to sustainable fisheries development in the region; this part of the questionnaire was intended to gather the views of the Member Countries on what should be the priority scopes/activities to be undertaken specifically by SEAFDEC. The questionnaire also categorized the fisheries-related scopes into: i) Fishery Resources; ii) Fisheries Management and Policy Planning (General, Coastal/Marine, and Inland); iii) Responsible Fishing Technologies and Practices; iv) Aquaculture; v) Post-harvest of Fish and Fishery Products; vi) Trade in Fish and Fishery Products; and vii) Emerging Requirements, with list of activities under the respective scopes. The Member Countries were requested to prioritize each activity under the different scopes using the range from 1 to 5 (with 1=lowest priority and 5= highest priority).

Based on the responses given by the Member Countries, the **priority scopes**⁴ and **priority activities**⁵ that should be undertaken by SEAFDEC could be ranked as follows:

i. Fisheries Management: General Policy Planning and Management (4.44)

Priority	Activities
High	i. Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management (4.5)
Moderate	i. Promote the implementation and regionalization of International Agreements/ Instruments (4.4) ii. Facilitate development of common/coordinated positions on international fisheries-related issues (4.4)
Low	-

ii. Responsible Fishing Technologies and Practices (4.29)

Priority	Activities
High	i. Improving fish quality through on-board handling technologies and good practices (4.7) ii. Improving safety and working conditions of fishers on-board fishing vessels (4.5)
Moderate	i. By-catch reduction including the implementation of international by-catch guidelines (4.4) ii. Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices (4.3) iii. Reduction of impacts from fisheries to the inland/coastal/marine ecosystems (4.0)
Low	i. Mitigation of impacts from fisheries to climate change (including energy saving/optimization) (3.9)

iii. Fisheries Management: Coastal/Marine Fisheries (4.16)

Priority	Activities
High	i. Management of fishing capacity and combating IUU fishing (4.6)
Moderate	i. Regional, Sub-regional coordination for fisheries management (4.4) ii. Ecosystem approach to fisheries (4.2) iii. Indicators for sustainable fisheries development (4.2) iv. Co-management, rights-based fisheries, strengthening institutions, alternative livelihood (4.1)

⁴ **Priority scopes** are ranked based on the “means” of the priority scores of all activities within a certain scope. However, it should be noted that the scopes with higher “means” may not necessarily be more important than those with lower “means”.

⁵ **Priority activities** are grouped based on the “mean” of the priority score (means of 5.0-4.5: High Priority; means of <4.5-4.0: Moderate Priority; means of <4.0: Low Priority).

	v. Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources) (4.1)
	vi. Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i> , ARs, MPAs) (4.1)
	vii. Measures to mitigate impacts of climate change and to build adaptive capacity (4.1)
	viii. Conservation and management of species under international concerns (4.0)
Low	i. Maximizing utilization of by-catch (3.8)

iv. Trade in Fish and Fishery Products (4.16)

Priority	Activities
High	i. Preventing trade of IUU fishing products (4.5)
Moderate	i. Traceability and certification (4.4) ii. ASEAN standards for fishery and aquaculture products (4.2)
Low	i. Product eco-labeling, branding (3.5)

v. Aquaculture (4.15)

Priority	Activities
High	i. Advancing aquaculture technologies (broodstock management to grow out phase) (4.7) ii. Regional Guidelines for good aquaculture practices (4.6) iii. Minimizing impacts of aquaculture on the environment/biodiversity (4.5) iv. Development of aquaculture feeds to reduce dependence on fish meal and fish-based products (4.5)
Moderate	i. Aquaculture for rural development, food security and poverty alleviation (4.2) ii. Genetic improvement of aquaculture species (4.1) iii. Regional collaboration on disease diagnosis, surveillance and control (4.1) iv. Regional Guidelines on Aquaculture Certification (4.1) v. Capacity building in responsible aquaculture practices (4.1) vi. Impacts of climate change on aquaculture (4.0)
Low	i. Stock enhancement of endangered species (3.7) ii. Energy saving/optimization for aquaculture (3.1)

vi. Emerging Requirements (4.04)

Priority	Activities
High	i. Requirements relevant to combating IUU fishing (4.5)
Moderate	i. Emerging requirements from the ASEAN Community Building (4.2) ii. CITES-related issues and requirements (4.0)
Low	i. Requirements on safety and working conditions of fisheries workers (3.7) ii. Requirements relevant to Fishery Subsidies (3.7)

vii. Post-harvest of Fish and Fishery Products (4.03)

Priority	Activities
High	i. Improving post-harvest technologies and safety/quality of products for export (4.5)
Moderate	i. Capacity building on analysis of chemicals, drugs, toxins, etc. (4.4) ii. Improved handling and preservation, product development and innovation (4.4) iii. Improving post-harvest technologies and safety/quality of local/traditional fishery products (4.1)
Low	i. Optimize utilization of catch, and reduction of post-harvest losses (3.9) ii. Optimizing socio-economic returns from fisheries/post-harvest activities (3.8) iii. Promotion of “One Village, One Fisheries Products” (3.0)

viii. Fishery Resources (3.80)

Priority	Activities
High	i. Improvement of information on status and trends of fishery resources (4.5)
Moderate	i. Study on impacts of climate change on fishery resources (4.2) ii. Data collection on shared stocks (4.1)
Low	i. Data collection on species under international concerns (3.9) ii. Fishery resources survey in the territorial seas and EEZs (3.8) iii. Fishery resources survey in the inland waters (3.5) iv. Fishery resources survey in the high-sea and deep-sea areas (3.2) v. Fish species identification (<i>e.g.</i> deep-sea fishes) (3.0)

ix. Fisheries Management: Inland Fisheries (3.53)

Priority	Activities
High	-
Moderate	-
Low	i. Habitat conservation/rehabilitation and resource enhancement for inland fisheries (3.9) ii. Co-management, rights-based fisheries, strengthening institutions, alternative livelihood (3.8) iii. Enhancing awareness on the importance of inland fisheries (3.6) iv. Ecosystem approach to inland fisheries (3.5) v. Indicators for sustainable inland fisheries (3.5) vi. Management of fishing capacity and combating IUU fishing (3.4) vii. Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure (3.4) viii. Measures needed to mitigate effects of climate change and to build adaptive capacity (3.4) ix. Addressing multiple use resources, and conflict resolution/mitigation (3.3)

4. Other views on roles and functions of SEAFDEC

Through the questionnaire, some Member Countries also provided additional views on the roles and functions of SEAFDEC, which could be summarized as follows:

- SEAFDEC should implement activities in efficient and cost-effective manner;
- SEAFDEC should actively follow-up international fisheries-related issues/fora, and safeguard the interest of countries in the region;
- SEAFDEC should assist in the development and implementation of regional plans of actions to enhance and improve sustainable fisheries development;
- SEAFDEC should undertake more work on CITES-related issues and requirements in order to support the Member Countries in evaluating proposals on the listing of aquatic species in the CITES Appendices;
- SEAFDEC should incorporate in its activities the aspects related to the possible impacts from natural disasters (including Tsunami);
- SEAFDEC should promote the role of aquaculture for food security and poverty alleviation, particularly for least developed countries;
- SEAFDEC should promote collaboration and sharing of existing scientific information/knowledge among the countries, including those on inland fisheries research methodologies, and inland development and management;
- SEAFDEC should keep monitoring and provide information on relevant regional/international meetings in advance, and share the outcomes from these meetings to the Member Countries;
- Training courses conducted by SEAFDEC should not be for free of charge on regular basis, but under cost-recovery policy. Some funds could be sourced to subsidize the training fees. In addition, follow-up and assessment should be undertaken, *e.g.* on the outcomes and benefits that could be derived from the training; and

- Activities should cater first to the requirements of individual member countries, to be developed later into regional activity/activities.

IV. REQUIRED CONSIDERATION BY THE COUNCIL

During the 44th Meeting of the SEAFDEC Council, the Council is requested to:

- 1) Consider the “Member Countries’ Views on the Expected Roles, Functions and Activities of SEAFDEC”, and provide further suggestion for the modification and finalization of the Report; and
- 2) Provide guidance on further steps to be taken for the Third SEAFDEC Review.

COMPILATION OF COUNTRIES' VIEWS ON ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

		Bru	Cam	Indo	Japan	Lao	Malay	Myan	Phil	Sing	Thai	Viet			
1	List ten fisheries-related priority areas that should be addressed/improved in your country	Country													
	(Scopes/Elements)														
	Fishery resources														
	• Fishery resources, including resource survey/assessment and researches on species, biology, ecology etc.		1		1	1	1	1		1				6	
	• Fisheries impact assessment and mitigation/reduction					1		1						2	
	Fisheries management and policy planning														
	• Combating IUU fishing (incl. MCS, Port State Measures)	1		1				1	1	1	1	1		7	
	• Fisheries policy planning and management		1		1	1	1		1			1		6	
	• Improving fishery statistics, information, inventories, STF					1	1	1			1	1		5	
	• Habitat conservation and resources enhancement	1	1	1		1		1						5	
	• Over-fishing capacity	1						1			1			3	
	• Ecosystem Approach to Fisheries		1	1										2	
	• Enhancing sustainable small-scale fisheries			1			1							2	
	• Vessel registration, fishing gear licensing										1			1	
	Responsible fishing technologies/practices														
	• Responsible fishing technologies/practices				1		1	1	1	1				5	
	Aquaculture														
	• Aquaculture development		1	1	1	1	1	1	1	1				8	
	• Aquaculture disease and aquatic animal health			1		1			1	1		1		5	
	• Aquaculture broodstock and seed production	1		1					1	1				4	
	• Aquaculture feed (low-cost, fishmeal substitution, etc.)	1									1	1		3	
	• Good/environment-friendly aquaculture practices							1		1	1			3	
	• Aquaculture impact monitoring and assessment	1										1		2	
	• Genetic improvement for aquaculture species											1		1	
	Fishery post-harvest														
	• Post-harvest technologies and product safety		1		1	1	1	1	1	1	1			8	
	• Product development								1	1	1			3	
	• Safety and quality systems and standards for fishery products									1	1			2	
	• Reduction of post-harvest losses		1											1	

		Bru	Cam	Indo	Japan	Lao	Malay	Myan	Phil	Sing	Thai	Viet			
	Trade in fish and fishery products														
	• Fish Trade				1		1							2	
	• Traceability and certification of fish and fishery products							1		1				2	
	• Product distribution system			1						1				2	
	• Marketing and market information exchange			1					1					2	
	• Compliance with importing countries' requirements on combating IUU fishing	1												1	
	• Micro-credit					1								1	
	Others														
	• Climate change		1	1			1		1					4	
	• HRD and transfer of knowledge and technologies		1	1					1	1				4	
	• Food security		1					1	1					3	
	• Rice field fisheries		1			1								2	
	• Emerging requirements				1		1							2	
	• Regional coordination and cooperation in fisheries		1									1		2	
	• Awareness raising on sustainable fisheries									1				1	
	• Creating opportunities in fishery industry	1												1	
2	Views on roles and function of SEAFDEC														Avg.
1	Research, development and verification of relevant technologies (research and development center)	5	4	4	5	5	3	5	4	5	4	3		4.3	
2	Transfer of technologies through training and HRD activities to government officers (training center)	4	5	3	5	4	5	4	4	5	3	3		4.1	
3	Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)	3	3	5	3	3	2	4	3	4	2	3		3.2	
4	Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.	3	4	2	5	2	4	4	3	3	5	5		3.6	
5	Facilitate coordination and networking with other regional/international organizations	2	4	1	3	1	1	5	4	3	1	4		2.6	
3	Views on scopes/activities that should be undertaken by SEAFDEC														
	Fishery Resources												Scope Mean	Activity Mean	Activity Mode
1	Fishery resources survey in the inland waters	3	4	5	3	5	1	4	4	3	2	4	3.80	3.5	4
2	Fishery resources survey in the territorial seas and EEZs	5	4	5	3	-	1	5	4	4	4	3		3.8	4
3	Fishery resources survey in the high-sea and deep-sea areas	4	3	3	3	-	5	3	3	1	3	4		3.2	3
4	Fish species identification (e.g. deep-sea fishes)	3	3	3	3	-	4	3	3	2	4	2		3.0	3
5	Data collection on shared stocks	4	5	3	5	-	4	3	3	5	4	5		4.1	5
6	Data collection on species under international concerns	4	4	5	5	-	1	3	3	5	4	5		3.9	5
7	Improvement of information on status and trends of fishery resources	5	5	5	5	5	4	5	4	5	4	3		4.5	5
8	Study on impacts of climate change on fishery resources	4	5	3	3	4	5	5	5	4	3	5		4.2	5

		Bru	Cam	Indo	Japan	Lao	Malay	Myan	Phil	Sing	Thai	Viet			
9	Others (specify)	-	-		-	-	-	-	-	-	-	-			
	- Marine Fish assessment							✓							
	- Fish Stock Recovery program			5											
	Fisheries Management and Policy Planning														
	<i>General Policy Planning and Management</i>												Scope Mean	Activity Mean	Activity Mode
1	Promote the implementation and regionalization of International Agreements/Instruments	5	4	5	3	4	5	4	5	5	4	4	4.44	4.4	5, 4
2	Facilitate development of common/coordinated positions on international fisheries-related issues	3	5	5	5	3	5	4	4	5	4	5		4.4	5
3	Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	4	4	5	5	5	4	5	4	5	4	5		4.5	5
4	Others (specify)	-	-	-	-		-	-	-	-	-	-			
	- Develop regional guidelines and technologies for inland fisheries research, management and development					5									
	- Promote ecosystem approaches to fisheries management											✓			
	<i>Coastal/Marine Fisheries Management</i>												Scope Mean	Activity Mean	Activity Mode
1	Regional, Sub-regional coordination for fisheries management	4	5	5	5	-	3	4	4	5	4	5	4.16	4.4	5
2	Management of fishing capacity and combating IUU fishing	5	4	5	5	-	4	5	4	5	4	5		4.6	5
3	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	3	5	5	3	-	5	5	4	3	4	4		4.1	5
4	Sustainable exploitation of resources (e.g. under-utilized and deep-sea resources)	4	3	5	5	-	4	5	4	4	3	4		4.1	4
5	Maximizing utilization of by-catch	4	4	4	5	-	1	4	4	3	5	4		3.8	4
6	Habitat conservation/rehabilitation and resources enhancement (e.g. Refugia, ARs, MPAs)	4	4	5	3	-	5	5	4	3	3	5		4.1	5
7	Conservation and management of species under international concerns	3	4	5	5	-	5	3	4	3	3	5		4.0	5, 3
8	Ecosystem approach to fisheries	5	4	5	3	-	5	4	4	3	4	5		4.2	5, 4
9	Indicators for sustainable fisheries development	4	3	4	3	-	5	5	4	4	5	5		4.2	5, 4
10	Measures to mitigate impacts of climate change and to build adaptive capacity	3	4	5	3	-	5	4	4	4	4	5		4.1	4
11	Others (specify)	-	-	-	-	-	-	-	-	-	-	-			
	<i>Inland Fisheries Management</i>												Scope Mean	Activity Mean	Activity Mode
1	Management of fishing capacity and combating IUU fishing	2	4	3	5	1	3	5	4	3	4	3	3.53	3.4	3
2	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	3	4	5	3	5	3	4	4	3	3	5		3.8	3
3	Addressing multiple use resources, and conflict resolution/ mitigation	3	4	4	3	4	1	4	3	3	3	4		3.3	4
4	Enhancing awareness on importance of inland fisheries	3	5	4	3	5	1	4	4	3	5	3		3.6	3
5	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	4	4	5	3	5	3	5	4	3	4	3		3.9	4, 3
6	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	4	4	4	3	3	1	3	4	3	5	3		3.4	3
7	Measures needed to mitigate effects of climate change and to build adaptive capacity	3	3	3	3	5	2	3	4	3	4	4		3.4	3
8	Ecosystem approach to inland fisheries	4	3	3	3	4	3	4	4	4	3	3		3.5	3

		Bru	Cam	Indo	Japan	Lao	Malay	Myan	Phil	Sing	Thai	Viet			
9	Indicators for sustainable inland fisheries	3	4	4	3	4	1	5	4	5	3	3		3.5	4, 3
10	Others (specify)	-	-	-	-	-	-	-	-	-	-	-			
		Bru	Cam	Indo	Japan	Lao	Malay	Myan	Phil	Sing	Thai	Viet			
	Responsible Fishing Technologies and Practices												Scope Mean	Activity Mean	Activity Mode
1	Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	4	4	5	5	5	3	5	4	4	3	5	4.29	4.3	5
2	By-catch and by-catch reduction including the implementation of international by-catch guidelines	4	5	5	5	5	5	4	4	4	3	4		4.4	5, 4
3	Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	3	4	4	3	5	4	4	4	4	5	4		4.0	4
4	Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	4	3	3	3	5	5	4	4	3	4	5		3.9	4, 3
5	Improving fish quality through on-board handling technologies and good practices	5	5	5	5	5	5	4	4	5	4	5		4.7	5
6	Improving safety and working conditions of fishers onboard fishing vessels	4	5	5	5	5	5	4	4	5	3	4		4.5	5
7	Others (specify)	-	-	-	-	-	-	-	-	-	-	-			
	Aquaculture												Scope Mean	Activity Mean	Activity Mode
1	Advancing aquaculture technologies (broodstock management to grow out phase)	5	5	5	5	5	4	4	5	5	5	4	4.15	4.7	5
2	Minimizing impacts of aquaculture on the environment/biodiversity	5	5	5	5	3	5	4	5	3	5	4		4.5	5
3	Genetic improvement of aquaculture species	3	5	4	3	5	5	3	4	5	5	3		4.1	5
4	Regional Guidelines for good aquaculture practices	5	5	4	5	4	3	5	5	5	5	5		4.6	5
5	Regional collaboration on disease diagnosis, surveillance and control	4	5	4	3	3	5	3	4	5	4	5		4.1	5, 4
6	Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	4	5	5	5	5	5	4	4	5	4	4		4.5	5
7	Aquaculture for rural development, food security and poverty alleviation	3	5	4	3	5	5	5	4	4	4	4		4.2	4
8	Energy saving/optimization for aquaculture	3	4	4	3	1	3	2	4	3	3	4		3.1	3
9	Regional Guidelines on Aquaculture Certification	4	4	4	3	3	5	4	4	5	4	5		4.1	4
10	Stock enhancement of endangered species	3	5	3	5	5	4	3	4	2	4	3		3.7	3
11	Impacts of climate change on aquaculture	4	4	3	3	4	5	4	4	4	4	5		4.0	4
12	Capacity building in responsible aquaculture practices	4	5	4	3	5	5	4	4	4	4	3		4.1	4
13	Others (specify)	-	-		-	-	-	-	-	-	-	-			
	- Information exchange on aquaculture			5											
	Post-harvest of Fish and Fishery Products												Scope Mean	Activity Mean	Activity Mode
1	Improving post-harvest technologies and safety/quality of products for export	5	5	5	3	5	5	5	4	5	3	5	4.03	4.5	5
2	Improving post-harvest technologies and safety/quality of local/traditional fishery products	5	4	5	3	5	4	3	4	5	3	4		4.1	5, 4
3	Optimize utilization of catch, and reduction of post-harvest losses	4	4	4	5	1	5	3	4	5	4	4		3.9	4
4	Optimizing socio-economic returns from fisheries/post-harvest activities	4	3	-	3	4	3	4	4	4	5	4		3.8	4
5	Capacity building on analysis of chemicals, drugs, toxins, etc.	4	5	4	5	5	4	5	3	5	4	4		4.4	5, 4
6	Improved handling and preservation, product development and innovation	4	5	4	5	5	4	4	4	5	4	4		4.4	4

		Bru	Cam	Indo	Japan	Lao	Malay	Myan	Phil	Sing	Thai	Viet			
7	Promotion of "One Village, One Fisheries Products"	3	3	-	3	5	1	5	3	1	3	3		3.0	3
8	Others (specify)	-	-	-	-	-	-	-	-	-	-	-			
	- <i>Risk assessment concerning seafood safety/safety of fishery products</i>										4				
	Trade in Fish and Fishery Products												Scope Mean	Activity Mean	Activity Mode
1	Preventing trade of IUU fishing products	5	4	5	5	3	5	5	4	5	4	5	4.16	4.5	5
2	ASEAN standards for fishery and aquaculture products	4	5	5	3	5	2	4	4	5	5	4		4.2	5
3	Traceability and certification	4	5	5	3	3	5	5	4	5	4	5		4.4	5
4	Product eco-labeling, branding	4	4	4	3	3	3	3	3	3	4	4		3.5	3
5	Others (specify)	-	-		-	-	-	-	-	-	-	-			
	- <i>Information Exchange of National Residue Control Plan (NRCP)</i>			5											
	Emerging Requirements												Scope Mean	Activity Mean	Activity Mode
1	Requirements relevant to IUU fishing (e.g. port-state measures, etc.)	4	5	5	5	3	5	4	4	5	5	4	4.04	4.5	5
2	CITES-related issues and requirements	4	4	5	5	3	5	3	4	3	5	3		4.0	5, 3
3	Requirements on safety and working conditions of fisheries workers	3	5	5	5	1	3	5	4	3	3	4		3.7	5, 3
4	Requirements relevant to Fishery Subsidies	4	5	5	5	1	3	5	3	3	3	4		3.7	5, 3
5	Emerging requirements from the ASEAN Community Building	4	5	4	3	5	5	4	4	4	4	4		4.2	4
6	Others (specify)	-	-	-	-	-		-	-	-	-	-			
	- <i>FAO Global Record on Fishing Vessel</i>						5								

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name: Country: **BRUNEI DARUSSALAM**

1. List ten fisheries-related priority areas that should be addressed/improved in your country:

1. Protection from impacts of overfishing, land use and pollution.....
2. Reduction of Overfishing and Mitigation activities.....
3. Establishment of MPAs.....
4. Develop and create opportunities in fisheries industry.....
5. Production of SPF fries.....
6. Production of low-cost feeds.....
7. Compliance to importing country requirements including PSM, Catch Certification, EU import requirement etc.....
8. Monitoring, Control and Surveillance.....
9. Aquaculture environmental impact assessment.....
10. Production of fish seeds supply.....

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- ...5...Research, development and verification of relevant technologies (research and development center)
- ...4...Transfer of technologies through training and HRD activities to government officers (training center)
- ...3...Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- ...3...Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- ...2...Facilitate coordination and networking with other regional/international organizations

Other views:
.....

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
3	• Fishery resources survey in the inland waters	
5	• Fishery resources survey in the territorial seas and EEZs	
4	• Fishery resources survey in the high-sea and deep-sea areas	
3	• Fish species identification (e.g. deep-sea fishes)	
4	• Data collection on shared stocks	
4	Data collection on species under international concerns	
5	• Improvement of information on status and trends of fishery resources	

4	Study on impacts of climate change on fishery resources	
	Others (specify)	
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
5	Promote the implementation and regionalization of International Agreements/Instruments	
3	Facilitate development of common/coordinated positions on international fisheries-related issues	
4	Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	
	Others (specify)	
	Coastal/Marine Fisheries Management	
4	Regional, Sub-regional coordination for fisheries management	
5	Management of fishing capacity and combating IUU fishing	
3	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
4	Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	
4	Maximizing utilization of by-catch	
4	Habitat conservation/rehabilitation and resources enhancement (<i>e.g. Refugia</i>, ARs, MPAs)	
3	Conservation and management of species under international concerns	
5	Ecosystem approach to fisheries	
4	Indicators for sustainable fisheries development	
3	Measures to mitigate impacts of climate change and to build adaptive capacity	
	Others (specify)	
	Inland Fisheries Management	
2	Management of fishing capacity and combating IUU fishing	
3	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
3	Addressing multiple use resources, and conflict resolution/ mitigation	
3	Enhancing awareness on importance of inland fisheries	
4	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
4	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
3	Measures needed to mitigate effects of climate change and to build adaptive capacity	
4	Ecosystem approach to inland fisheries	
3	Indicators for sustainable inland fisheries	
	Others (specify)	

Responsible Fishing Technologies and Practices		
4	• Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
4	• By-catch and by-catch reduction including the implementation of international by-catch guidelines	
3	• Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
4	• Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
5	• Improving fish quality through on-board handling technologies and good practices	
4	• Improving safety and working conditions of fishers onboard fishing vessels	
	• Others (specify)	
		
Aquaculture		
5	• Advancing aquaculture technologies (broodstock management to grow out phase)	
5	• Minimizing impacts of aquaculture on the environment/biodiversity	
3	• Genetic improvement of aquaculture species	
5	• Regional Guidelines for good aquaculture practices	
4	• Regional collaboration on disease diagnosis, surveillance and control	
4	• Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
3	• Aquaculture for rural development, food security and poverty alleviation	
3	• Energy saving/optimization for aquaculture	
4	• Regional Guidelines on Aquaculture Certification	
3	• Stock enhancement of endangered species	
4	• Impacts of climate change on aquaculture	
4	• Capacity building in responsible aquaculture practices	
	• Others (specify)	
		
Post-harvest of Fish and Fishery Products		
5	• Improving post-harvest technologies and safety/quality of products for export	
5	• Improving post-harvest technologies and safety/quality of local/traditional fishery products	
4	• Optimize utilization of catch, and reduction of post-harvest losses	
4	• Optimizing socio-economic returns from fisheries/post-harvest activities	
4	• Capacity building on analysis of chemicals, drugs, toxins, etc.	
4	• Improved handling and preservation, product development and innovation	
3	• Promotion of “One Village, One Fisheries Products”	
	• Others (specify)	
		

Trade in Fish and Fishery Products		
5	• Preventing trade of IUU fishing products	
4	• ASEAN standards for fishery and aquaculture products	
4	• Traceability and certification	
4	• Product eco-labeling, branding	
	• Others (specify)	
Emerging Requirements		
4	• Requirements relevant to IUU fishing (<i>e.g.</i> port-state measures, etc.)	
4	• CITES-related issues and requirements	
3	• Requirements on safety and working conditions of fisheries workers	
4	• Requirements relevant to Fishery Subsidies	
4	• Emerging requirements from the ASEAN Community Building	
	• Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

- (i) need to be more open to individual member country requirements and then develop these to become a regional activity / activities

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name: Mr. Sam Nouv and Mr. Em Puthy

Country: **CAMBODIA****1. List ten fisheries-related priority areas that should be addressed/improved in your country:**

1. Aquaculture Development: Increase in aquaculture production in line with food security and export demands.
2. Post-Harvest of Fish and Fishery Products and Trade in Fish: Reduction of post-harvest losses.
3. Co-management: Community Fishery and Rice field fisheries production.
4. Habitat Conservation: Rehabilitation and Resources Enhancement.
5. Human Resource Development.
6. Climate Change: Adaptation and Mitigation of Changing Environment.
7. Research and Development: Ecology and Biology Research.
8. Coordination at Regional level: Application of fishery management; Ecosystem Approach to Fisheries.
9. The development and Implementation of Fisheries Cantonment Plans.
10. Rural aquaculture development for poor farmer to improve their livelihood.

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- 4 Research, development and verification of relevant technologies (research and development center)
- 5 Transfer of technologies through training and HRD activities to government officers (training center)
- 3 Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- 4 Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- 4 Facilitate coordination and networking with other regional/international organizations

Other views:

.....

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
4	• Fishery resources survey in the inland waters	
4	• Fishery resources survey in the territorial seas and EEZs	
3	• Fishery resources survey in the high-sea and deep-sea areas	
3	• Fish species identification (e.g. deep-sea fishes)	
5	• Data collection on shared stocks	

4	• Data collection on species under international concerns	
5	• Improvement of information on status and trends of fishery resources	
5	• Study on impacts of climate change on fishery resources	
	• Others (specify)	
Fisheries Management and Policy Planning		
General Policy Planning and Management		
4	• Promote the implementation and regionalization of International Agreements/Instruments	
5	• Facilitate development of common/coordinated positions on international fisheries-related issues	
4	• Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	
	• Others (specify)	
Coastal/Marine Fisheries Management		
5	• Regional, Sub-regional coordination for fisheries management	
4	• Management of fishing capacity and combating IUU fishing	
5	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
3	• Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	
4	• Maximizing utilization of by-catch	
4	• Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i> , ARs, MPAs)	
4	• Conservation and management of species under international concerns	
4	• Ecosystem approach to fisheries	
3	• Indicators for sustainable fisheries development	
4	• Measures to mitigate impacts of climate change and to build adaptive capacity	
	• Others (specify)	
Inland Fisheries Management		
4	• Management of fishing capacity and combating IUU fishing	
4	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
4	• Addressing multiple use resources, and conflict resolution/ mitigation	
5	• Enhancing awareness on importance of inland fisheries	
4	• Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
4	• Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
3	• Measures needed to mitigate effects of climate change and to build adaptive capacity	
3	• Ecosystem approach to inland fisheries	

4	Indicators for sustainable inland fisheries	
	Others (specify)	
Responsible Fishing Technologies and Practices		
4	Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
5	By-catch and by-catch reduction including the implementation of international by-catch guidelines	
4	Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
3	Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
5	Improving fish quality through on-board handling technologies and good practices	
5	Improving safety and working conditions of fishers onboard fishing vessels	
	Others (specify)	
Aquaculture		
5	Advancing aquaculture technologies (broodstock management to grow out phase)	
5	Minimizing impacts of aquaculture on the environment/biodiversity	
5	Genetic improvement of aquaculture species	
5	Regional Guidelines for good aquaculture practices	
5	Regional collaboration on disease diagnosis, surveillance and control	
5	Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
5	Aquaculture for rural development, food security and poverty alleviation	
4	Energy saving/optimization for aquaculture	
4	Regional Guidelines on Aquaculture Certification	
5	Stock enhancement of endangered species	
4	Impacts of climate change on aquaculture	
5	Capacity building in responsible aquaculture practices	
	Others (specify)	
Post-harvest of Fish and Fishery Products		
5	Improving post-harvest technologies and safety/quality of products for export	
4	Improving post-harvest technologies and safety/quality of local/traditional fishery products	
4	Optimize utilization of catch, and reduction of post-harvest losses	
3	Optimizing socio-economic returns from fisheries/post-harvest activities	
5	Capacity building on analysis of chemicals, drugs, toxins, etc.	
5	Improved handling and preservation, product development and innovation	
3	Promotion of “One Village, One Fisheries Products”	
	Others (specify)	

Trade in Fish and Fishery Products		
4	• Preventing trade of IUU fishing products	
5	• ASEAN standards for fishery and aquaculture products	
5	• Traceability and certification	
4	• Product eco-labeling, branding	
	• Others (specify)	
Emerging Requirements		
5	• Requirements relevant to IUU fishing (<i>e.g.</i> port-state measures, etc.)	
4	• CITES-related issues and requirements	
5	• Requirements on safety and working conditions of fisheries workers	
5	• Requirements relevant to Fishery Subsidies	
5	• Emerging requirements from the ASEAN Community Building	
	• Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

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QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name: Ministry of Marine Affairs and Fisheries

Country: **INDONESIA**

1. List ten of fisheries-related priority areas that should be addressed/improved in Indonesia:

1. Ecosystem approach to fisheries
2. Marine conservation and rehabilitation
3. Sustainable aquaculture
4. Fish disease management
5. Climate change mitigation and adaptation
6. Marketing and distribution of fish and fisheries products
7. Fish/Shrimp broodstock management
8. Human resource development
9. Small scale fisheries sustainability
10. IUU fishing

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- 4... Research, development and verification of relevant technologies (research and development center)
- 3... Transfer of technologies through training and HRD activities to government officers (training center)
- 5... Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- 2... Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- 1... Facilitate coordination and networking with other regional/international organizations

Other views:

(Rank 1-5: 1=least important, 5= most important)

- 3... Research, development and verification of relevant technologies (research and development center)
- 3... Transfer of technologies through training and HRD activities to government officers (training center)
- 5... Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- 5... Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- 5... Facilitate coordination and networking with other regional/international organizations

Other views:

SEAFDEC should give recommendations to anticipate international fisheries/aquacultures issues for all members and has better known all member countries policy in their policy/perspectives

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
5	• Fishery resources survey in the inland waters	
5	• Fishery resources survey in the territorial seas and EEZs	
3	• Fishery resources survey in the high-sea and deep-sea areas	
3	• Fish species identification (<i>e.g.</i> deep-sea fishes)	
3	• Data collection on shared stocks	
5	• Data collection on species under international concerns	
5	• Improvement of information on status and trends of fishery resources	
3	• Study on impacts of climate change on fishery resources	
5	• Others (specify) Fish Stock Recovery Program	one man one thousand fries, fish apartment
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
5	• Promote the implementation and regionalization of International Agreements/Instruments	
5	• Facilitate development of common/coordinated positions on international fisheries-related issues	
5	• Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	
	• Others (specify)	
	Coastal/Marine Fisheries Management	
5	• Regional, Sub-regional coordination for fisheries management	
5	• Management of fishing capacity and combating IUU fishing	
5	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
5	• Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	
4	• Maximizing utilization of by-catch	
5	• Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i> , ARs, MPAs)	1. Greenbelt plantation as a natural breakwater 2. Turtle habitat rehabilitation
5	• Conservation and management of species under international concerns	Arrangement Regional Plan of Action to conserve the species under international concern
5	• Ecosystem approach to fisheries	
4	• Indicators for sustainable fisheries development	

5	Measures to mitigate impacts of climate change and to build adaptive capacity	- Socialization and community awareness (including workshop, seminars and training) on coastal disaster mitigation, for government, NGO and Coastal community - Dissemination materials on coastal disaster mitigation - Promote guidelines and management plan on disaster mitigation in coastal and small islands - System information about climate change and other disaster in coastal area (including tsunami) - Infrastructure development to mitigate the impact of marine and coastal disaster
	Others (specify)	
Inland Fisheries Management		
3	Management of fishing capacity and combating IUU fishing	
5	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
4	Addressing multiple use resources, and conflict resolution/ mitigation	
4	Enhancing awareness on importance of inland fisheries	
5	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
4	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
3	Measures needed to mitigate effects of climate change and to build adaptive capacity	
3	Ecosystem approach to inland fisheries	
4	Indicators for sustainable inland fisheries	
	Others (specify)	
Responsible Fishing Technologies and Practices		
5	Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
5	By-catch and by-catch reduction including the implementation of international by-catch guidelines	
4	Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
3	Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
5	Improving fish quality through on-board handling technologies and good practices	
5	Improving safety and working conditions of fishers onboard fishing vessels	
	Others (specify)	

Aquaculture		
5	Advancing aquaculture technologies (broodstock management to grow out phase)	Broodstock Center development for a few commodities : tilapia, catfish (<i>Pangasius, clarias sp</i>), carp, <i>P. monodon</i> , <i>L. vannamei</i> , <i>Macrobranchium</i> , freshwater lobster, grouper, asian seabass, milkfish, seaweed, etc.
5	Minimizing impacts of aquaculture on the environment/biodiversity	Planting mangroves in shrimp ponds area (green belt); use of reservoir for wastewater treatment before discharge into the sea (shrimp ponds); using probiotic for aquaculture; using no antibiotic for aquaculture (in hatchery and grow out); Implementation of good aquaculture practice to small scale fisheries.
4	Genetic improvement of aquaculture species	Individual and Family selection ; selective breeding program for high potential species i.e. humpback grouper.
4	Regional Guidelines for good aquaculture practices	GAP for hatcheries (seed production) and grow out (ponds)
4	Regional collaboration on disease diagnosis, surveillance and control	Fish disease services using the car around, fish vaccination, monitoring fish health and the environment periodically, monitoring and antibiotic residues in fish farmers, fish disease surveillance periodically, propagation of fish disease laboratories, accreditation of testing laboratories.
5	Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	Use of local feed raw materials, the use of vegetable raw materials, the use of feed raw materials that are environmentally friendly.
4	Aquaculture for rural development, food security and poverty alleviation	Development of catfish, tilapia, carp, gourami aquaculture in the countryside, and others; “minapadi” fish programme, stocking fish in lakes and reservoirs (CBF: culture based fisheries)
4	Energy saving/optimization for aquaculture	Extensification of organic shrimp farming, shrimp polyculture system, the use of low oxygen consumption of fish (eg catfish), the development of seaweed farming.
4	Regional Guidelines on Aquaculture Certification	Certification of Good growouts practices and good hatcheries practices.
3	Stock enhancement of endangered species	Stocking fish in reservoirs and public waters,
3	Impacts of climate change on aquaculture	Decreased reproduction, decreased water quality, high temperature fluctuations, natural food production disrupted, many diseases of fish, slow fish growth etc.

4	Capacity building in responsible aquaculture practices	GAP training programs, technical training of fish and shrimp hatcheries, technical training in aquaculture fish and shrimp ponds, environmental management training for fish farmers, entrepreneurship for fish farmers, fish farmers' empowerment group,
5	Others (specify)	
5	(1) Aquaculture Information exchange to promote investment in members countries	
5	(2) Information exchange related to give figure on perspective & profile aquaculture development among member countries	
Post-harvest of Fish and Fishery Products		
5	Improving post-harvest technologies and safety/quality of products for export	-
5	Improving post-harvest technologies and safety/quality of local/traditional fishery products	Developing standards and guidelines for post-harvest technologies and safety/quality of local/traditional fishery products
4	Optimize utilization of catch, and reduction of post-harvest losses	Conducting baseline studies on post-harvest losses.
-	Optimizing socio-economic returns from fisheries/post-harvest activities	-
4	Capacity building on analysis of chemicals, drugs, toxins, etc.	-
4	Improved handling and preservation, product development and innovation	Developing traditional and indigenous materials for packaging and better preserve the product.
-	Promotion of "One Village, One Fisheries Products"	-
-	Others (specify)	
Trade in Fish and Fishery Products		
5	Preventing trade of IUU fishing products	Promote implementation of Catch Certification
5	ASEAN standards for fishery and aquaculture products	Harmonization products standard and requirements
5	Traceability and certification	-
4	Product eco-labeling, branding	Development of MSC certification
5	Others (specify)	Information exchange of National Residue Control Plan (NRCP)
Emerging Requirements		
5	Requirements relevant to IUU fishing (e.g. port-state measures, etc.)	
5	CITES-related issues and requirements	
5	Requirements on safety and working conditions of fisheries workers	
5	Requirements relevant to Fishery Subsidies	
4	Emerging requirements from the ASEAN Community Building	
	Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

- a. Southeast Asia countries are very vulnerable to a hazard such as tsunami, this aspect needs to be consider regarding fisheries development in this area
- b. SEAFDEC should active to follow every international fisheries forum to influence international statement/issue that brings benefit for ASEAN countries.
- c. SEAFDEC should provide aquaculture regional/international event/meeting that member has possibility to prepare some budget to follow this event/meeting (at least 1 years before its meeting) and act as coordinator to response/distribute the result of its meeting.
- d. SEAFDEC should provide information for international aquaculture event or meeting that informed at least 1 year before its events.

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name: Tekeshi MWA

Country: JAPAN

1. List ten fisheries-related priority areas that should be addressed/improved in your country:

1. Emerging requirements
2. General policy planning and management (Fisheries management and policy planning)
3. Responsible Fishing Technologies and Practices
4. Coastal/Marine fisheries management (Fisheries management and policy planning)
5. Post-harvest of Fish and Fishery Products
6. Aquaculture
7. Fisheries Resources
8. Trade in fish and fisheries products
9. Inland fisheries (Fisheries management and policy planning)
10.

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- 5... Research, development and verification of relevant technologies (research and development center)
- 5... Transfer of technologies through training and HRD activities to government officers (training center)
- 3... Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- 5... Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- 3... Facilitate coordination and networking with other regional/international organizations

Other views:
.....

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
3	• Fishery resources survey in the inland waters	
3	• Fishery resources survey in the territorial seas and EEZs	
3	• Fishery resources survey in the high-sea and deep-sea areas	
3	• Fish species identification (e.g. deep-sea fishes)	
5	• Data collection on shared stocks	Collecting scientific data is basic element for realizing sustainable fisheries.
5	• Data collection on species under international concerns	Collecting scientific data is basic element for realizing sustainable fisheries.
5	• Improvement of information on status and trends of fishery resources	Collecting scientific data is basic element for realizing sustainable fisheries.

3	Study on impacts of climate change on fishery resources	
1	Others (specify)	
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
3	Promote the implementation and regionalization of International Agreements/Instruments	
5	Facilitate development of common/coordinated positions on international fisheries-related issues	
5	Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	
1	Others (specify)	
	Coastal/Marine Fisheries Management	
5	Regional, Sub-regional coordination for fisheries management	This issue is essential for sustainable fisheries.
5	Management of fishing capacity and combating IUU fishing	This issue is essential for sustainable fisheries.
3	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
5	Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	
5	Maximizing utilization of by-catch	
3	Habitat conservation/rehabilitation and resources enhancement (<i>e.g. Refugia</i>, ARs, MPAs)	
5	Conservation and management of species under international concerns	
3	Ecosystem approach to fisheries	
3	Indicators for sustainable fisheries development	
3	Measures to mitigate impacts of climate change and to build adaptive capacity	
1	Others (specify)	
	Inland Fisheries Management	
5	Management of fishing capacity and combating IUU fishing	This issue is essential for sustainable fisheries.
3	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
3	Addressing multiple use resources, and conflict resolution/ mitigation	
3	Enhancing awareness on importance of inland fisheries	
3	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
3	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
3	Measures needed to mitigate effects of climate change and to build adaptive capacity	
3	Ecosystem approach to inland fisheries	
3	Indicators for sustainable inland fisheries	
1	Others (specify)	

Responsible Fishing Technologies and Practices		
5	• Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
5	• By-catch and by-catch reduction including the implementation of international by-catch guidelines	
3	• Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
3	• Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
5	• Improving fish quality through on-board handling technologies and good practices	
5	• Improving safety and working conditions of fishers onboard fishing vessels	
1	• Others (specify)	
Aquaculture		
5	• Advancing aquaculture technologies (broodstock management to grow out phase)	
5	• Minimizing impacts of aquaculture on the environment/biodiversity	
3	• Genetic improvement of aquaculture species	
5	• Regional Guidelines for good aquaculture practices	
3	• Regional collaboration on disease diagnosis, surveillance and control	
5	• Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
3	• Aquaculture for rural development, food security and poverty alleviation	
3	• Energy saving/optimization for aquaculture	
3	• Regional Guidelines on Aquaculture Certification	
5	• Stock enhancement of endangered species	
3	• Impacts of climate change on aquaculture	
3	• Capacity building in responsible aquaculture practices	
1	• Others (specify)	
Post-harvest of Fish and Fishery Products		
3	• Improving post-harvest technologies and safety/quality of products for export	
3	• Improving post-harvest technologies and safety/quality of local/traditional fishery products	
5	• Optimize utilization of catch, and reduction of post-harvest losses	
3	• Optimizing socio-economic returns from fisheries/post-harvest activities	
5	• Capacity building on analysis of chemicals, drugs, toxins, etc.	
5	• Improved handling and preservation, product development and innovation	
3	• Promotion of “One Village, One Fisheries Products”	
1	• Others (specify)	

Trade in Fish and Fishery Products		
5	• Preventing trade of IUU fishing products	
3	• ASEAN standards for fishery and aquaculture products	
3	• Traceability and certification	
3	• Product eco-labeling, branding	
1	• Others (specify)	
Emerging Requirements		
5	• Requirements relevant to IUU fishing (e.g. port-state measures, etc.)	
5	• CITES-related issues and requirements	As Japan mentioned at the conference in June, Japan would like to cooperate with ASEAN counties.
5	• Requirements on safety and working conditions of fisheries workers	
5	• Requirements relevant to Fishery Subsidies	
3	• Emerging requirements from the ASEAN Community Building	
1	• Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

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**QUESTIONNAIRE ON
THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC
(Revised as of 13 January 2012)**

Respondents:

Name: Mr. Akhane PHOMSOUVANH

Country: **LAO PDR****1. List ten fisheries-related priority areas that should be addressed/improved in your country:**

1. Aquatic resources identification, assessment and management;
 - Fisheries statistics (methods for data collection, data analysis, database);
 - Assessment and inventory of indigenous fish species in Lao PDR;
 - Assessment and inventory of other aquatic animals and aquatic plants in Lao PDR;
 - GIS mapping of potential inland water bodies for fisheries enhancement;
 - GIS mapping of potential areas for aquaculture development;
2. Reservoir fisheries inventory, assessment and management;
3. Floodplain and wetland inventory, assessment and management;
4. Study of aquatic biodiversity in rain-fed rice fields;
5. Aquaculture research, management and development;
6. Fish diseases and aquatic animal health;
7. Post-harvest technologies, control and regulations (Fish handling, processing, preservation and marketing);
8. Micro-credit schemes for small-scale fisheries;
9. Fisheries Impact Assessment (FIA) and mitigation;
10. Fisheries enhancement methodologies (stocking, habitat rehabilitation/improvement, etc.)

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- 5 Research, development and verification of relevant technologies (research and development center)
- 4 Transfer of technologies through training and HRD activities to government officers (training center)
- 3 Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- 2 Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- 1 Facilitate coordination and networking with other regional/international organizations

Other views:

- Develop recommendations and provide technical assistance for inland fisheries management and development that contribute to food security and poverty alleviation in the region;
- Develop technologies and provide technical assistance for aquaculture research and development for least developed countries in the region.

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	scopes/activities	Remarks/Examples
Fishery Resources		
5	Fishery resources survey in the inland waters	Mekong river and tributaries, reservoir, floodplains, wetlands and rain-fed rice fields.
	Fishery resources survey in the territorial seas and EEZs	
	Fishery resources survey in the high-sea and deep-sea areas	
	Fish species identification (e.g. deep-sea fishes)	
	Data collection on shared stocks	
	Data collection on species under international concerns	
5	Improvement of information on status and trends of fishery resources	Methodologies for collection and analysis of inland fisheries statistics
4	Study on impacts of climate change on fishery resources	Impact assessment, adaptation and mitigation measures
	Others (specify)	
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
4	Promote the implementation and regionalization of International Agreements/Instruments	CCRF, ASEAN-SEAFDEC Resolution and Action Plan up to 2020
3	Facilitate development of common/coordinated positions on international fisheries-related issues	
5	Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	Improve SEAFDEC Fishery Bulletin
5	- Others (specify): - Develop regional guidelines and technologies for Inland Fisheries Research, Management and Development	
	Coastal/Marine Fisheries Management	
	Regional, Sub-regional coordination for fisheries management	
	Management of fishing capacity and combating IUU fishing	
	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
	Sustainable exploitation of resources (e.g. under-utilized and deep-sea resources)	
	Maximizing utilization of by-catch	
	Habitat conservation/rehabilitation and resources enhancement (e.g. <i>Refugia</i>, ARs, MPAs)	
	Conservation and management of species under international concerns	
	Ecosystem approach to fisheries	
	Indicators for sustainable fisheries development	

	Measures to mitigate impacts of climate change and to build adaptive capacity	
	Others (specify)	
	Inland Fisheries Management	
1	Management of fishing capacity and combating IUU fishing	
5	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
4	Addressing multiple use resources, and conflict resolution/ mitigation	
5	Enhancing awareness on importance of inland fisheries	
5	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
3	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
5	Measures needed to mitigate effects of climate change and to build adaptive capacity	
4	Ecosystem approach to inland fisheries	
4	Indicators for sustainable inland fisheries	
	Others (specify)	
Responsible Fishing Technologies and Practices		
5	Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
5	By-catch and by-catch reduction including the implementation of international by-catch guidelines	
5	Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
5	Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
5	Improving fish quality through on-board handling technologies and good practices	
5	Improving safety and working conditions of fishers onboard fishing vessels	
	Others (specify)	
Aquaculture		
5	Advancing aquaculture technologies (broodstock management to grow out phase)	
3	Minimizing impacts of aquaculture on the environment/biodiversity	
5	Genetic improvement of aquaculture species	
4	Regional Guidelines for good aquaculture practices	
3	Regional collaboration on disease diagnosis, surveillance and control	
5	Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
5	Aquaculture for rural development, food security and poverty alleviation	
1	Energy saving/optimization for aquaculture	
3	Regional Guidelines on Aquaculture Certification	
5	Stock enhancement of endangered species	

4	• Impacts of climate change on aquaculture	
5	• Capacity building in responsible aquaculture practices	
	• Others (specify)	
Post-harvest of Fish and Fishery Products		
5	• Improving post-harvest technologies and safety/quality of products for export	
5	• Improving post-harvest technologies and safety/quality of local/traditional fishery products	
1	• Optimize utilization of catch, and reduction of post-harvest losses	
4	• Optimizing socio-economic returns from fisheries/post-harvest activities	
5	• Capacity building on analysis of chemicals, drugs, toxins, etc.	
5	• Improved handling and preservation, product development and innovation	
5	• Promotion of “One Village, One Fisheries Products”	
	• Others (specify)	
Trade in Fish and Fishery Products		
3	• Preventing trade of IUU fishing products	
5	• ASEAN standards for fishery and aquaculture products	
3	• Traceability and certification	
3	• Product eco-labeling, branding	
	• Others (specify)	
Emerging Requirements		
3	• Requirements relevant to IUU fishing (e.g. port-state measures, etc.)	
3	• CITES-related issues and requirements	
1	• Requirements on safety and working conditions of fisheries workers	
1	• Requirements relevant to Fishery Subsidies	
5	• Emerging requirements from the ASEAN Community Building	
	• Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

- SEAFDEC as a regional organization should promote better collaboration and sharing of scientific information/knowledge that exist in the region regarding alternative approaches and methodologies on inland fisheries research, management and development.
- SEAFDEC should better promote the role of aquaculture research and development for food

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name: Mr. Mohamad Shaupi bin Derahman (National Coordinator) Country: **MALAYSIA**
 Mr. Razali bin Lajis
 Mr. Hussin bin Mat Ali
 Mr. Abdullah bin Jaafar
 Mr. Munir bin Mohd. Nawi
 Mrs. Maznah bt. Othman
 Mr. Mohd. Zin bin Saad
 Mrs. Siti Norita bt. Mohamad
 Mr. Abu Talib bin Ahmad
 Mrs. Tan Geik Hong
 Mr. Abdul Rahman bin Abdul Wahab
 Mrs. Ong See Ling

1. List ten fisheries-related priority areas that should be addressed/improved in your country:

1. Marine Fisheries Management
2. Sustainable Aquaculture
3. Small Scale Fisheries
4. Emerging Requirements
5. Post Harvest and Safety of Fish and Fishery Products
6. Fisheries Resources
7. Fisheries Technology
8. Fish Trade
9. Climate Change
10. Improving Fisheries Information System

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- 3** Research, development and verification of relevant technologies (research and development center)
5 Transfer of technologies through training and HRD activities to government officers (training center)
2 Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
4 Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
1 Facilitate coordination and networking with other regional/international organizations

Other views:

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
1	• Fishery resources survey in the inland waters	
1	• Fishery resources survey in the territorial seas and EEZs	
5	• Fishery resources survey in the high-sea and deep-sea areas	
4	• Fish species identification (<i>e.g.</i> deep-sea fishes)	
4	• Data collection on shared stocks	
1	• Data collection on species under international concerns	
4	• Improvement of information on status and trends of fishery resources	
5	• Study on impacts of climate change on fishery resources	
	• Others (specify)	
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
5	• Promote the implementation and regionalization of International Agreements/Instruments	
5	• Facilitate development of common/coordinated positions on international fisheries-related issues	
4	• Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	
	• Others (specify)	
	Coastal/Marine Fisheries Management	
3	• Regional, Sub-regional coordination for fisheries management	
4	• Management of fishing capacity and combating IUU fishing	global record to be accepted by MC -facilitate regional forum on IUU
5	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
4	• Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	
1	• Maximizing utilization of by-catch	
5	• Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i> , ARs, MPAs)	
5	• Conservation and management of species under international concerns	
5	• Ecosystem approach to fisheries	
5	• Indicators for sustainable fisheries development	
5	• Measures to mitigate impacts of climate change and to build adaptive capacity	
	• Others (specify)	
	Inland Fisheries Management	
3	• Management of fishing capacity and combating IUU fishing	
3	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
1	• Addressing multiple use resources, and conflict resolution/ mitigation	

1	• Enhancing awareness on importance of inland fisheries	
3	• Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
1	• Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
2	• Measures needed to mitigate effects of climate change and to build adaptive capacity	
3	• Ecosystem approach to inland fisheries	
1	• Indicators for sustainable inland fisheries	
	• Others (specify)	
Responsible Fishing Technologies and Practices		
3	• Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
5	• By-catch and by-catch reduction including the implementation of international by-catch guidelines	
4	• Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
5	• Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
5	• Improving fish quality through on-board handling technologies and good practices	
5	• Improving safety and working conditions of fishers onboard fishing vessels	
	• Others (specify)	
Aquaculture		
4	• Advancing aquaculture technologies (broodstock management to grow out phase)	
5	• Minimizing impacts of aquaculture on the environment/biodiversity	
5	• Genetic improvement of aquaculture species	
3	• Regional Guidelines for good aquaculture practices	
5	• Regional collaboration on disease diagnosis, surveillance and control	
5	• Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
5	• Aquaculture for rural development, food security and poverty alleviation	
3	• Energy saving/optimization for aquaculture	
5	• Regional Guidelines on Aquaculture Certification	
4	• Stock enhancement of endangered species	
5	• Impacts of climate change on aquaculture	
5	• Capacity building in responsible aquaculture practices	
	• Others (specify)	
Post-harvest of Fish and Fishery Products		
5	• Improving post-harvest technologies and safety/quality of products for export	
4	• Improving post-harvest technologies and safety/quality of local/traditional fishery products	
5	• Optimize utilization of catch, and reduction of post-harvest losses	

3	Optimizing socio-economic returns from fisheries/post-harvest activities	
4	Capacity building on analysis of chemicals, drugs, toxins, etc.	
4	Improved handling and preservation, product development and innovation	
1	Promotion of “One Village, One Fisheries Products”	
	Others (specify)	
Trade in Fish and Fishery Products		
5	Preventing trade of IUU fishing products	
2	ASEAN standards for fishery and aquaculture products	
5	Traceability and certification	
3	Product eco-labeling, branding	
	Others (specify)	
Emerging Requirements		
5	Requirements relevant to IUU fishing (e.g. port-state measures, etc.)	
5	CITES-related issues and requirements	
3	Requirements on safety and working conditions of fisheries workers	
3	Requirements relevant to Fishery Subsidies	<i>Common position</i>
5	Emerging requirements from the ASEAN Community Building	
5	Others (specify) FAO Global Record on Fishing Vessel	

4. Other views/comment on the roles and functions of SEAFDEC:

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QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name: Mr. Win Myint Maung, National Coordinator of SEAFDEC for Myanmar Country: **MYANMAR**

1. List ten fisheries-related priority areas that should be addressed/improved in your country:

1. Aquaculture for rural development, food security and poverty alleviation
2. Improving post-harvest technologies and safety/quality of products for export
3. Fishery resources survey in the territorial seas and EEZs
4. Management of fishing capacity and combating IUU fishing
5. Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices
6. Traceability and certification
7. Habitat conservation/rehabilitation and resources enhancement for inland fisheries
8. Regional Guidelines for good aquaculture practices
9. Improvement of information on status and trends of fishery resources
10. Reduction of impacts from fisheries to the inland/coastal/marine ecosystems

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

5: Research, development and verification of relevant technologies (research and development center)

4: Transfer of technologies through training and HRD activities to government officers (training center)

4: Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)

4: Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.

5: Facilitate coordination and networking with other regional/international organizations

Other views:

.....

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
	• Fishery resources survey in the inland waters	4: Inland waters fisheries are important role in Myanmar especially for food and income of rural community.
	• Fishery resources survey in the territorial seas and EEZs	5: It is needed to measure for sustainable Fisheries Management.
	• Fishery resources survey in the high-sea and deep-sea areas	3: Myanmar vessels are not able to operate in high –sea and deep- sea areas.
	• Fish species identification (e.g. deep-sea fishes)	3: Myanmar will collaborate with SEAFDEC.
	• Data collection on shared stocks	3: Myanmar will collaborate with SEAFDEC.

	Data collection on species under international concerns	3: Myanmar will collaborate with SEAFDEC.
	Improvement of information on status and trends of fishery resources	5: Myanmar need to apply the scientific data and information
	Study on impacts of climate change on fishery resources	5: Present time our region effect impacts of climate change frequently so we need to study the impact of climate change on fishery
	Others (specify) ...Marine fish Assessment	We need to conduct, it's essential
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
	Promote the implementation and regionalization of International Agreements/Instruments	4: Myanmar will pursue the International agreements/ Instrument.
	Facilitate development of common/coordinated positions on international fisheries-related issues	4: Myanmar will pursue the International agreements/ Instrument.
	Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	5: As fishery statistics are a key component of a fishery information system to provide for making the appropriate policy, planning and monitoring and management of fisheries, the projects of improvements to national and regional fisheries statistical system and harmonization and compilation of fishery statistics as well as the enhancing the collection data including non-routine data and indigenous knowledge for policy planning and management are greatly needed in our region.
	Others (specify)	
	Coastal/Marine Fisheries Management	
	Regional, Sub-regional coordination for fisheries management	4: Myanmar has been cooperating with regional and sub –regional organization.
	Management of fishing capacity and combating IUU fishing	5: It is urgently needed to measure for sustainable Fisheries Management.
	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	5: Myanmar is implementing poverty alleviation according to the national guide line.
	Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	5: To introduce capture technology and market of under-utilization of fisheries resources
	Maximizing utilization of by-catch	4: To use responsible fishing Gear and practices (BRDs and JTEDs)
	Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i>, ARs, MPAs)	5: It is needed to promote the function of habitat conservation
	Conservation and management of species under international concerns	3
	Ecosystem approach to fisheries	4: Myanmar adopted guide line for enhancing closed area and closed season.
	Indicators for sustainable fisheries development	5: DoF needs to enhance the using of Fisheries indicators for resources conservation and management.

	Measures to mitigate impacts of climate change and to build adaptive capacity	4: Recently, Climate Change is facing in most of countries around the world. In this scenario, Myanmar also would like to concern with how to mitigate the Climate Change in this region.
	Others (specify)	
Inland Fisheries Management		
	Management of fishing capacity and combating IUU fishing	5: It is needed to measure for sustainable Fisheries Management.
	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	4: To improvement of fishery conservation and awareness of self administration on livelihood.
	Addressing multiple use resources, and conflict resolution/ mitigation	4: Inland water is losing and it is needed to conduct preservation.
	Enhancing awareness on importance of inland fisheries	4: To improvement of fishery conservation and awareness of self administration on livelihood.
	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	5: It is needed to measure for resources conservation. Myanmar will establish the Resources Conservation Association in state and division.
	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	3
	Measures needed to mitigate effects of climate change and to build adaptive capacity	3
	Ecosystem approach to inland fisheries	4: Myanmar will establish the Resources Conservation Association in state and division.
	Indicators for sustainable inland fisheries	5: It is needed to conduct for fisheries resources conservation and management.
	Others (specify)	
Responsible Fishing Technologies and Practices		
	Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	5: For the sustainable fisheries development, need training, introduce use of new fishing technologies and selective fishing gears.
	By-catch and by-catch reduction including the implementation of international by-catch guidelines	4: To improve the use of by-catch reduction devices etc; TEDs and JTEDs
	Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	4: For the sustainable fisheries development, need training, introduce new fishing technology and selective gears.
	Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	4: To reduce of using light fishing
	Improving fish quality through on-board handling technologies and good practices	4: To get quality of catch and enhance value of catch
	Improving safety and working conditions of fishers onboard fishing vessels	4: To reduce onboard accident of fishermen vessel personnel at sea (according to the STCW-F 1995) to provide safety training.
	Others (specify)	

Aquaculture		
	Advancing aquaculture technologies (broodstock management to grow out phase)	4: We need more advanced culture techniques for broodstock management
	Minimizing impacts of aquaculture on the environment/biodiversity	4: Reduce the risks of negative environmental impacts, loss of biodiversity and disease transfer by regulating the introduction and transfer of aquatic organism in accordance with the Regional Guidelines on the Responsible Movement of Live Aquatic Animals and Plants.
	Genetic improvement of aquaculture species	3: We are conducting on Rohu (<i>Labeo rohita</i>) genetic improvement program.
	Regional Guidelines for good aquaculture practices	5: Myanmar is starting conduct on the GAqP System.
	Regional collaboration on disease diagnosis, surveillance and control	3: Myanmar DOF established Disease Section and implemented Level I, Level II and Level III in accordance with collaboration with NACA, OIE, SEAFDEC. On the other side, SEAFDEC-AQD assisted in sending its experts to Myanmar to study some important viral diseases. However, zoning is not yet implemented as the culture systems are not so intensive and developed.
	Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	4: Myanmar is Regional lead country among ASEAN Region.
	Aquaculture for rural development, food security and poverty alleviation	5: This fact is highlight of National policy.
	Energy saving/optimization for aquaculture	2: Fossil energy using in Myanmar's Aquaculture system is not so intensive.
	Regional Guidelines on Aquaculture Certification	4: We have already certification system but more need the advanced regional guideline
	Stock enhancement of endangered species	3: We have little amount of endangered species.
	Impacts of climate change on aquaculture	4: Climate change is important factor for all round sectors
	Capacity building in responsible aquaculture practices	4: It is important factor for HRD program and sustainable fisheries sector.
	Others (specify)	
Post-harvest of Fish and Fishery Products		
	Improving post-harvest technologies and safety/quality of products for export	5: Due to commitment to establish AEC before 2015 and importing countries requirement.
	Improving post-harvest technologies and safety/quality of local/traditional fishery products	3: To support consumer protection law.
	Optimize utilization of catch, and reduction of post-harvest losses	3: To fully utilize the catch
	Optimizing socio-economic returns from fisheries/post-harvest activities	4: To fully utilize the catch
	Capacity building on analysis of chemicals, drugs, toxins, etc.	5: Due to commitment to establish AEC before 2015 and importing countries requirement.

	Improved handling and preservation, product development and innovation	4: To improve quality
	Promotion of “One Village, One Fisheries Products”	5: Target to reduce poverty alleviation to reach millennium development goal.
	Others (specify) inadequate Regulation in Fishery Sector of Myanmar	Sustainable development of fishery sector
Trade in Fish and Fishery Products		
	Preventing trade of IUU fishing products	5: Especially for EU market requirement
	ASEAN standards for fishery and aquaculture products	4: Due to commitment to establish AEC before 2015 and importing countries requirement.
	Traceability and certification	5: Due to commitment to establish AEC before 2015 and importing countries requirement.
	Product eco-labeling, branding	3: Sustainable of fishery sector by providing by manufacturing environment friendly technology
	Others (specify)	
Emerging Requirements		
	Requirements relevant to IUU fishing (e.g. port-state measures, etc.)	4: To strengthen MCS
	CITES-related issues and requirements	3: Awareness of CITES
	Requirements on safety and working conditions of fisheries workers	5: To reduce onboard accident of fishermen vessel personnel at sea (according to the STCW-F 1995) to provide safety training.
	Requirements relevant to Fishery Subsidies	5: There is no program of fisheries subsidies for small scale fisheries. They need it to substitute the selected fishing gears for responsible fishing practice.
	Emerging requirements from the ASEAN Community Building	4: To improve regional network program.
	Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Country: **PHILIPPINES**

1. List of fisheries-related priority areas in the country

1. Training on Entrepreneurial Application of Technology
2. Fish Health Management
3. Market Information and Product Development
4. Upgrading of Post harvest technology towards global competitiveness
5. Sustainable Resource and Technology Utilization
6. Climate Change adaptation and Mitigation
7. Monitoring Control and Surveillance (MCS): Law Enforcement
8. Food Security
9. Sustainable Aquaculture, Fish Breeding and Hatchery
10. Co-management of Fisheries: Strengthening of Fisheries and Aquatic Resources Management Council (FARMC) and Fisherfolk Assn.
11. Safety of Fishery Products (HACCP, GMP, Catch Certification, etc.)
12. Improvement of Fishery Statistics Systems
13. Integrated Inland Fisheries Management and Conservation of Indigenous Species
14. Enhancing Governance in Fisheries
15. Community-Based Risk Assessment in Coastal Areas
16. Upgrading of Post Harvest technology towards global competitiveness
17. Research on Post Harvest Losses and Fisheries Resources in the EEZ
18. Coastal Resource Management
19. Municipal Water Delineation
20. Marine finfish, Abalone, Sea urchin, Sea cucumber, Mudcrab, seaweed production and Hatchery
21. Capability Building Training of Stakeholders
22. Breeding of fish and hatchery operation/management
23. Fisheries Management Using Ecosystem Approach to Fisheries
24. Responsible Fishing Technology
25. Environmental Protection
26. Organic Fish Farming
27. Genetic improvement of aquaculture species
28. Stock enhancement for threatened species in inland waters

2. Views on roles and functions of SEAFDEC

(Rank 1-5: 1 = least important, 5 most important)

- ...4... Research, development and verification of relevant technologies (research and development center)
- ...4... Transfer of technologies through training and HRD activities to government officers (training center)
- ...3... Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- ...3... Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- ...4... Facilitate coordination and networking with other regional/international organizations

Other views: SEAFDEC to act as fisheries technical arm of ASEAN to generate common position during international meetings/fora.

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/Activities	Remarks/Examples
Fishery Resources		
4	• Fishery resources survey in the inland waters	Survey of indigenous species
4	• Fishery resources survey in the territorial seas and EEZs	Bluefin tuna survey in Northeast of Cagayan
3	• Fishery resources survey in the high-sea and deep-sea areas	
3	• Fish species identification (<i>e.g.</i> deep-sea fishes)	
3	• Data collection on shared stocks	Should be done in coordination with other member countries
3	• Data collection on species under international concerns	
4	• Improvement of information on status and trends of fishery resources	It should be a priority area of concern for SEAFDEC at this moment
5	• Study on impacts of climate change on fishery resources	
Fisheries Management and Policy Planning		
General Policy Planning and Management		
5	• Promote the implementation and regionalization of International Agreements/Instruments	Should be in consultation with the member countries
4	• Facilitate development of common/coordinated positions on international fisheries-related issues	
4	• Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	SEAFDEC can also include this activity but it should be in coordination with BAS
Coastal/Marine Fisheries Management		
4	• Regional, Sub-regional coordination for fisheries management	For discussion with member countries
4	• Management of fishing capacity and combating IUU fishing	
4	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	Intensify involvement of the stakeholders
4	• Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	Strengthen R & D activity of SEAFDEC
4	• Maximizing utilization of by-catch	
4	• Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i> , ARs, MPAs)	Priority area of concern
4	• Conservation and management of species under international concerns	
4	• Ecosystem approach to fisheries	
4	• Indicators for sustainable fisheries development	
4	• Measures to mitigate impacts of climate change and to build adaptive capacity	
Inland Fisheries Management		

Score	Scopes/Activities	Remarks/Examples
4	Management of fishing capacity and combating IUU fishing	Strengthening MCS
4	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	Strengthening of FARMC and other fisherfolk associations
3	Addressing multiple use resources, and conflict resolution/ mitigation	
4	Enhancing awareness on importance of inland fisheries	
4	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
4	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
4	Measures needed to mitigate effects of climate change and to build adaptive capacity	
4	Ecosystem approach to inland fisheries	
4	Indicators for sustainable inland fisheries	
Responsible Fishing Technologies and Practices		
4	Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
4	By-catch and by-catch reduction including the implementation of international by-catch guidelines	
4	Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
4	Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	Energy saving equipment for sustenance fishermen
4	Improving fish quality through on-board handling technologies and good practices	
4	Improving safety and working conditions of fishers onboard fishing vessels	
Aquaculture		
5	Advancing aquaculture technologies (broodstock management to grow out phase)	
5	Minimizing impacts of aquaculture on the environment/biodiversity	Study on impact of alien species
4	Genetic improvement of aquaculture species	
5	Regional Guidelines for good aquaculture practices	Priority are of concern
4	Regional collaboration on disease diagnosis, surveillance and control	
4	Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
4	Aquaculture for rural development, food security and poverty alleviation	Needs focus to encourage local investors to invest
4	Energy saving/optimization for aquaculture	Tap alternative energy source; R & D Study on renewable energies
4	Regional Guidelines on Aquaculture Certification	
4	Stock enhancement of endangered species	Should be undertaken in close coordination with other institutions
4	Impacts of climate change on aquaculture	

Score	Scopes/Activities	Remarks/Examples
4	Capacity building in responsible aquaculture practices	
Post-harvest of Fish and Fishery Products		
4	Improving post-harvest technologies and safety/quality of products for export	
4	Improving post-harvest technologies and safety/quality of local/traditional fishery products	
4	Optimize utilization of catch, and reduction of post-harvest losses	
4	Optimizing socio-economic returns from fisheries/post-harvest activities	
3	Capacity building on analysis of chemicals, drugs, toxins, etc.	
4	Improved handling and preservation, product development and innovation	
3	Promotion of “One Village, One Fisheries Products”	Product branding (Bonuan Bangus etc)
Trade in Fish and Fishery Products		
4	Preventing trade of IUU fishing products	
4	ASEAN standards for fishery and aquaculture products	
4	Traceability and certification	
3	Product eco-labeling, branding	Organic farmed fish
Emerging Requirements		
4	Requirements relevant to IUU fishing (<i>e.g.</i> port-state measures, etc.)	Vessel Monitoring System
4	CITES-related issues and requirements	
4	Requirements on safety and working conditions of fisheries workers	SEAFDEC should include in their training programs
3	Requirements relevant to Fishery Subsidies	
4	Emerging requirements from the ASEAN Community Building	SEAFDEC should stand as focal point for the ASEAN community

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name:

Country: **SINGAPORE****1. List ten fisheries-related priority areas that should be addressed/improved in your country:**

1. Industry awareness towards IUU and capability building to combat illegal, unregulated and unreported fishing (IUU) *e.g.* inspection procedures and promotion/prevention methodologies.
2. Capability building in advanced aquaculture technologies (broodstock management), disease diagnosis and surveillance
3. Good Aquaculture Practices, Use of Technology use and Optimal resource utilization
4. Traceability and certification of fish and fisheries products
5. Post-harvest handling to maintain quality and safety from port to retail (*e.g.* cold chain management)
6. Production and processing cost reduction through technology, chemical free and novel processing and preservation methods
7. Develop quality standards to support market access
8. Capability building in fish species/marine resources identification.
9. Create consumer awareness on sustainable fisheries and frozen fish
10. Capability building in commercial and small-scale fishing technologies and practices (*e.g.* use of appropriate fishing gears and equipment, work safety)

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- ...5 Research, development and verification of relevant technologies (research and development center)
- ...5 Transfer of technologies through training and HRD activities to government officers (training center)
- ...4 Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- ...3 Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- ...3 Facilitate coordination and networking with other regional/international organizations

Other views:

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
	• Fishery resources survey in the inland waters	3
	• Fishery resources survey in the territorial seas and EEZs	4
	• Fishery resources survey in the high-sea and deep-sea areas	1
	• Fish species identification (<i>e.g.</i> deep-sea fishes)	2
	• Data collection on shared stocks	5

	• Data collection on species under international concerns	5
	• Improvement of information on status and trends of fishery resources	5
	• Study on impacts of climate change on fishery resources	4
	• Others (specify)	
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
	• Promote the implementation and regionalization of International Agreements/Instruments	5
	• Facilitate development of common/coordinated positions on international fisheries-related issues	5
	• Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	5
	• Others (specify)	
	Coastal/Marine Fisheries Management	
	• Regional, Sub-regional coordination for fisheries management	5
	• Management of fishing capacity and combating IUU fishing	5
	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	3
	• Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	4
	• Maximizing utilization of by-catch	3
	• Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i> , ARs, MPAs)	3
	• Conservation and management of species under international concerns	3
	• Ecosystem approach to fisheries	3
	• Indicators for sustainable fisheries development	4
	• Measures to mitigate impacts of climate change and to build adaptive capacity	4
	• Others (specify)	
	Inland Fisheries Management	
	• Management of fishing capacity and combating IUU fishing	3
	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	3
	• Addressing multiple use resources, and conflict resolution/ mitigation	3
	• Enhancing awareness on importance of inland fisheries	3
	• Habitat conservation/rehabilitation and resource enhancement for inland fisheries	3
	• Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	3
	• Measures needed to mitigate effects of climate change and to build adaptive capacity	3
	• Ecosystem approach to inland fisheries	4

	• Indicators for sustainable inland fisheries	5
	• Others (specify)	
Responsible Fishing Technologies and Practices		
	• Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	4
	• By-catch and by-catch reduction including the implementation of international by-catch guidelines	4
	• Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	4
	• Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	3
	• Improving fish quality through on-board handling technologies and good practices	5
	• Improving safety and working conditions of fishers onboard fishing vessels	5
	• Others (specify)	
Aquaculture		
	• Advancing aquaculture technologies (broodstock management to grow out phase)	5
	• Minimizing impacts of aquaculture on the environment/biodiversity	3
	• Genetic improvement of aquaculture species	5
	• Regional Guidelines for good aquaculture practices	5 Provide certifiable regional guidelines for good aquaculture practices in industry
	• Regional collaboration on disease diagnosis, surveillance and control	5 Sharing of data, workshops for emerging diseases, treatment and disease control/vaccination
	• Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	5
	• Aquaculture for rural development, food security and poverty alleviation	4
	• Energy saving/optimization for aquaculture	3
	• Regional Guidelines on Aquaculture Certification	5
	• Stock enhancement of endangered species	2
	• Impacts of climate change on aquaculture	4
	• Capacity building in responsible aquaculture practices	4
	• Others (specify)	
Post-harvest of Fish and Fishery Products		
	• Improving post-harvest technologies and safety/quality of products for export	5
	• Improving post-harvest technologies and safety/quality of local/traditional fishery products	5
	• Optimize utilization of catch, and reduction of post-harvest losses	5
	• Optimizing socio-economic returns from fisheries/post-harvest activities	4
	• Capacity building on analysis of chemicals, drugs, toxins, etc.	5

	• Improved handling and preservation, product development and innovation	5
	• Promotion of “One Village, One Fisheries Products”	1
	• Others (specify)	
Trade in Fish and Fishery Products		
	• Preventing trade of IUU fishing products	5
	• ASEAN standards for fishery and aquaculture products	5 Come up with regional safety limits and guidelines for parameters similar to Codex and GAP
	• Traceability and certification	5
	• Product eco-labeling, branding	3
	• Others (specify)	
Emerging Requirements		
	• Requirements relevant to IUU fishing (<i>e.g.</i> port-state measures, etc.)	5
	• CITES-related issues and requirements	3
	• Requirements on safety and working conditions of fisheries workers	3
	• Requirements relevant to Fishery Subsidies	3
	• Emerging requirements from the ASEAN Community Building	4
	• Others (specify)	

4. **Other views/comment on the roles and functions of SEAFDEC:**
SEAFDEC would take on more work in CITES-related issues and requirements to support us in evaluating CITES listing proposals for fishery species.

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name: Department of Fisheries

Country: **THAILAND****1. List ten fisheries-related priority areas that should be addressed/improved in your country:**

1. Environmental Friendly Coastal Aquaculture
2. Fish handling and quality preservation
3. Seafood safety, quality management system and Fish processing technology
4. Fisheries database
5. Implementation on port state measures
6. Aquaculture on aquatic feed i.e. alternative use of protein source
7. Fishing vessel registration and fishing gear licensing
8. Overfishing
9. Improve used monitoring inspection for preventing IUU (PSM)
10. Fish processing in term of quality safety and characteristics of the product

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- ...4 Research, development and verification of relevant technologies (research and development center)
- ...3 Transfer of technologies through training and HRD activities to government officers (training center)
- ...2 Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- ...5 Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- ...1 Facilitate coordination and networking with other regional/international organizations

Other views:

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
2	• Fishery resources survey in the inland waters	
4	• Fishery resources survey in the territorial seas and EEZs	
3	• Fishery resources survey in the high-sea and deep-sea areas	
4	• Fish species identification (e.g. deep-sea fishes)	Species migrate from coastal area, population and
4	• Data collection on shared stocks	
4	• Data collection on species under international concerns	Sea horse, Sea cucumber, Sea snake
4	• Improvement of information on status and trends of fishery resources	Sea snake

3	Study on impacts of climate change on fishery resources	Initiate the program on impacts of climate change
	Others (specify)	
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
4	Promote the implementation and regionalization of International Agreements/Instruments	
4	Facilitate development of common/coordinated positions on international fisheries-related issues	Organize the consultation meeting
4	Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	
	Others (specify)	
	Coastal/Marine Fisheries Management	
4	Regional, Sub-regional coordination for fisheries management	
4	Management of fishing capacity and combating IUU fishing	
4	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
3	Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	
5	Maximizing utilization of by-catch	Develop the model and distribute to member countries
3	Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i>, ARs, MPAs)	Capacity building
3	Conservation and management of species under international concerns	
4	Ecosystem approach to fisheries	
5	Indicators for sustainable fisheries development	
4	Measures to mitigate impacts of climate change and to build adaptive capacity	
	Others (specify)	
	Inland Fisheries Management	
4	Management of fishing capacity and combating IUU fishing	
3	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
3	Addressing multiple use resources, and conflict resolution/ mitigation	
5	Enhancing awareness on importance of inland fisheries	Capacity building
4	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
5	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
4	Measures needed to mitigate effects of climate change and to build adaptive capacity	
3	Ecosystem approach to inland fisheries	experiences sharing among MCs
3	Indicators for sustainable inland fisheries	
	Others (specify)	

Responsible Fishing Technologies and Practices		
3	• Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
3	• By-catch and by-catch reduction including the implementation of international by-catch guidelines	
5	• Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
4	• Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
4	• Improving fish quality through on-board handling technologies and good practices	
3	• Improving safety and working conditions of fishers onboard fishing vessels	
	• Others (specify)	
Aquaculture		
5	• Advancing aquaculture technologies (broodstock management to grow out phase)	
5	• Minimizing impacts of aquaculture on the environment/biodiversity	
5	• Genetic improvement of aquaculture species	
5	• Regional Guidelines for good aquaculture practices	
4	• Regional collaboration on disease diagnosis, surveillance and control	
4	• Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
4	• Aquaculture for rural development, food security and poverty alleviation	
3	• Energy saving/optimization for aquaculture	
4	• Regional Guidelines on Aquaculture Certification	
4	• Stock enhancement of endangered species	
4	• Impacts of climate change on aquaculture	
4	• Capacity building in responsible aquaculture practices	
	• Others (specify)	
Post-harvest of Fish and Fishery Products		
3	• Improving post-harvest technologies and safety/quality of products for export	Development of training modules, develop manuals, conduct training for trainers programs, conduct workshop, conferences for research work presentation and sharing experiences and knowledge.
3	• Improving post-harvest technologies and safety/quality of local/traditional fishery products	
4	• Optimize utilization of catch, and reduction of post-harvest losses	
5	• Optimizing socio-economic returns from fisheries/post-harvest activities	
4	• Capacity building on analysis of chemicals, drugs, toxins, etc.	Conduct training for the member countries
4	• Improved handling and preservation, product development and innovation	
3	• Promotion of “One Village, One Fisheries Products”	
4	• Others (specify) Risk assessment concerning seafood safety/safety of fishery products.....	

Trade in Fish and Fishery Products		
4	• Preventing trade of IUU fishing products	
5	• ASEAN standards for fishery and aquaculture products	
4	• Traceability and certification	
4	• Product eco-labeling, branding	
	• Others (specify)	
Emerging Requirements		
5	• Requirements relevant to IUU fishing (<i>e.g.</i> port-state measures, etc.)	
5	• CITES-related issues and requirements	
3	• Requirements on safety and working conditions of fisheries workers	
3	• Requirements relevant to Fishery Subsidies	
4	• Emerging requirements from the ASEAN Community Building	
	• Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

- 4.1 To be efficient and cost effectiveness for work serving the member countries. Also to be more proactive for international-related issues.
- 4.2 SEAFDEC should not provide free of charge training on a regular basis but should be cost recovery basis. Some fund should be subsidized such as training fee. Should also follow-up and assess the outcome and benefits from the training provided.

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name:

Country: **VIETNAM****1. List ten fisheries-related priority areas that should be addressed/improved in your country:**

1. Strengthening governance and management in capture fisheries
2. Development of environment monitoring system and aquatic animal health management
3. Genetic improvement for main cultured species
4. Fishery statistics
5. Development of effective compound feed for aquaculture
6. Strengthen international and regional cooperation to effectively manage migratory species and combat IUU fishing
7. Enhance MCS activities
8.
9.
10.

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- 3 Research, development and verification of relevant technologies (research and development center)
- 3 Transfer of technologies through training and HRD activities to government officers (training center)
- 3 Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- 5 Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- 4 Facilitate coordination and networking with other regional/international organizations

Other views: Development and implementation coordination of regional plans of action to enhance and improve sustainable fisheries development

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
4	• Fishery resources survey in the inland waters	
3	• Fishery resources survey in the territorial seas and EEZs	
4	• Fishery resources survey in the high-sea and deep-sea areas	
2	• Fish species identification (e.g. deep-sea fishes)	
5	• Data collection on shared stocks	
5	• Data collection on species under international concerns	
3	• Improvement of information on status and trends of fishery resources	

5	Study on impacts of climate change on fishery resources	
	Others (specify)	
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
4	Promote the implementation and regionalization of International Agreements/Instruments	
5	Facilitate development of common/coordinated positions on international fisheries-related issues	
5	Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	
	Others (specify)	Promote Ecosystem Approach to fisheries management
	Coastal/Marine Fisheries Management	
5	Regional, Sub-regional coordination for fisheries management	
5	Management of fishing capacity and combating IUU fishing	
4	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
4	Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	
4	Maximizing utilization of by-catch	
5	Habitat conservation/rehabilitation and resources enhancement (<i>e.g. Refugia</i>, ARs, MPAs)	
5	Conservation and management of species under international concerns	
5	Ecosystem approach to fisheries	
5	Indicators for sustainable fisheries development	
5	Measures to mitigate impacts of climate change and to build adaptive capacity	
	Others (specify)	
	Inland Fisheries Management	
3	Management of fishing capacity and combating IUU fishing	
5	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
4	Addressing multiple use resources, and conflict resolution/ mitigation	
3	Enhancing awareness on importance of inland fisheries	
3	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
3	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
4	Measures needed to mitigate effects of climate change and to build adaptive capacity	
3	Ecosystem approach to inland fisheries	
3	Indicators for sustainable inland fisheries	
	Others (specify)	

Responsible Fishing Technologies and Practices		
5	• Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
4	• By-catch and by-catch reduction including the implementation of international by-catch guidelines	
4	• Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
5	• Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
5	• Improving fish quality through on-board handling technologies and good practices	
4	• Improving safety and working conditions of fishers onboard fishing vessels	
	• Others (specify)	
		
Aquaculture		
4	• Advancing aquaculture technologies (broodstock management to grow out phase)	
4	• Minimizing impacts of aquaculture on the environment/biodiversity	
3	• Genetic improvement of aquaculture species	
5	• Regional Guidelines for good aquaculture practices	
5	• Regional collaboration on disease diagnosis, surveillance and control	
4	• Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
4	• Aquaculture for rural development, food security and poverty alleviation	
4	• Energy saving/optimization for aquaculture	
5	• Regional Guidelines on Aquaculture Certification	
3	• Stock enhancement of endangered species	
5	• Impacts of climate change on aquaculture	
3	• Capacity building in responsible aquaculture practices	
	• Others (specify)	
		
Post-harvest of Fish and Fishery Products		
5	• Improving post-harvest technologies and safety/quality of products for export	
4	• Improving post-harvest technologies and safety/quality of local/traditional fishery products	
4	• Optimize utilization of catch, and reduction of post-harvest losses	
4	• Optimizing socio-economic returns from fisheries/post-harvest activities	
4	• Capacity building on analysis of chemicals, drugs, toxins, etc.	
4	• Improved handling and preservation, product development and innovation	
3	• Promotion of “One Village, One Fisheries Products”	
	• Others (specify)	
		

Trade in Fish and Fishery Products		
5	• Preventing trade of IUU fishing products	
4	• ASEAN standards for fishery and aquaculture products	
5	• Traceability and certification	
4	• Product eco-labeling, branding	
	• Others (specify)	
Emerging Requirements		
4	• Requirements relevant to IUU fishing (<i>e.g.</i> port-state measures, etc.)	
3	• CITES-related issues and requirements	
4	• Requirements on safety and working conditions of fisheries workers	
4	• Requirements relevant to Fishery Subsidies	
4	• Emerging requirements from the ASEAN Community Building	
	• Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

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**REPORT ON MEMBER COUNTRIES' VIEWS
ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC**
(Revised after receipt of feedback from SEAFDEC Council Directors)

I. INTRODUCTION

Since the establishment of SEAFDEC in 1967, several review exercises had been conducted to evaluate the effectiveness and efficiency of SEAFDEC. The first review exercise was conducted in 1986; and the second in 1991. In addition, the organizational structures and plans of operations of SEAFDEC Secretariat and Departments had also been occasionally reviewed and adjusted in accordance with the changing situation of fisheries in the region and related requirements. During the past decade however, the fisheries situation had continuously undergone changes that led to challenges that could tremendously impact the sustainable development of fisheries in the region. It is therefore envisaged that another review exercise is deemed necessary to enhance the role of SEAFDEC in efficiently and effectively supporting the Member Countries in their continuing efforts towards achieving sustainable fisheries and attaining food security.

During the 43rd Meeting of the SEAFDEC Council, the proposal for the conduct of the Third SEAFDEC Review was presented by the SEAFDEC Secretary-General. While agreeing to have the Third Review on the roles and functions of SEAFDEC, the Council requested the Secretary-General to communicate with the National Coordinators of the respective countries for them to provide information on their countries' views on the activities of SEAFDEC, and to compile the relevant documents/information on SEAFDEC for submission to the Member Countries.

In response to the directives given by the Council, SEAFDEC Secretariat in close coordination with the Departments developed a questionnaire on expected roles, functions and activities of SEAFDEC, which was sent to all Member Countries to gather their respective inputs through the National Coordinators. Responses have been provided by all Member Countries, and used as a basis for preparation of the "*Preliminary Report on Member Countries Views on the Expected Roles, Functions and Activities of SEAFDEC*". The Preliminary Report has been submitted by *ad referendum* to the Council Directors, requesting them to consider sending their feedback by the end of 2011.

The following relevant documents identified by the Council during the 43rd Meeting, were also submitted together with the Preliminary Report:

- 1) Agreement Establishing the Center;
- 2) Roles and Functions/Operations of the SEAFDEC and Its Departments;
- 3) List of SEAFDEC Programs for 2011-2012;
- 4) Number of Staff of SEAFDEC and Organization Structures;
- 5) Financial Regulation and Expenditures;
- 6) Sources of Funds;
- 7) Information on the Japanese Trust Fund and SEAFDEC-Sida Project; and
- 8) Collaborative Projects/Programs with Other Organizations.

II. FEEDBACK FROM MEMBER COUNTRIES ON THE PRELIMINARY REPORT

Based on the "*Preliminary Report on Member Countries Views on the Expected Roles, Functions and Activities of SEAFDEC*" as submitted by the SEAFDEC Secretariat, the Council Directors from Japan, Lao PDR, Malaysia and Thailand provided their respective feedback, which had been taken into consideration in finalizing the Report. Modifications incorporating the feedback and updated information from the countries, were carried out by the SEAFDEC Secretariat while some refinements of the report were made in order to better reflect the views of the Member Countries.

The summary of countries' responses appears as **Annex 1**, while the returned questionnaire (including updated information) from individual countries appears as **Annex 2-12**.

The major modifications and refinements made to the Preliminary Report could be summarized as follows:

- For the “**priority areas that should be addressed/improved in the Member Countries**”, the elements of priority were re-identified (to minimize overlapping as much as possible) and grouped into different scopes of fisheries. It should be noted however that ten priority areas identified by one country could fall under more than ten elements of priority.
- For the “**expected roles and functions of SEAFDEC**”, since some Member Countries indicated “*score*” instead of “*rank*”, such inputs which could still provide indications on their expected roles and functions of SEAFDEC should be acceptable.
- For the “**views on fisheries-related scopes/activities that should be undertaken by SEAFDEC**”, additional inputs provided by Lao PDR have been accommodated in the final report. Moreover, based on the scores given by the countries on particular activities, the SEAFDEC Secretariat deemed it necessary to revise the grouping of “priority activities”, from using “*mode*” (High Priority: mode of 5; Moderate Priority: mode of 4; Low Priority= mode of 3, using the highest mode in case of bi/multi-modal situation) to using “*mean*” (High Priority: means of 5.0-4.5; Moderate Priority: means of <4.5-4.0; Low Priority= means of <4.0) in order to avoid the occurrence of bi/multi-modal values and thus, better reflect the views of all Member Countries.

In addition to their comments on the Preliminary Report, the Council Directors also provided certain views that could be considered in undertaking further steps for the Third SEAFDEC Review and in enhancing the roles and functions of SEAFDEC. Their additional views include the following:

- SEAFDEC should efficiently prioritize its existing and new programs, and re-organize effectively dealing with various issues in accordance with the results of the third review exercise (Japan)
- The Third Review of SEAFDEC should be done in conjunction with the review of the Plans of Operation of the Departments (Malaysia).
- The review on roles and functions of SEAFDEC should be conducted by an independent entity/neutral third party and come up with recommendations/suggestions for improvement (Malaysia and Thailand).
- The report should conclude only the priorities identified by the Member Countries (Brunei Darussalam).

III. SUMMARY ON MEMBER COUNTRIES’ VIEWS ON EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Based on the inputs from the National Coordinators through the questionnaire issued by the SEAFDEC Secretariat and subsequent feedback from the Council Directors, the views of the Member Countries on the expected roles, functions and activities of SEAFDEC, could be summarized as follows:

1. Priority areas that should be addressed/improved in the Member Countries

Based on the returned questionnaires, the Member Countries identified ten fisheries priority areas that should be addressed and/or improved in the respective countries¹. The common elements were identified from a wide range of priority areas, and grouped into different scopes of fisheries. The scope and common elements² are as follows:

Fishery resources

- Fishery resource survey/assessment and researches on species, biology, ecology, etc. (6 countries)
- Fisheries impact assessment and mitigation/reduction (2 countries)

¹ For countries that identified more than ten priority areas, only the first ten areas were used

² Elements that are common for at least 2 countries

Fisheries management and policy planning

- Combating IUU fishing (incl. MCS, Port State Measures) (7 countries)
- Fisheries policy planning and management (6 countries)
- Improving fishery statistics, information, inventories, STF (5 countries)
- Habitat conservation and resources enhancement (5 countries)
- Over-fishing capacity (3 countries)
- Ecosystem Approach to Fisheries (2 countries)
- Enhancing sustainable small-scale fisheries (2 countries)

Responsible fishing technologies/practices

- Responsible fishing technologies and practices (5 countries)

Aquaculture

- Aquaculture development (8 countries)
- Aquaculture disease and aquatic animal health (5 countries)
- Aquaculture broodstock and seed production (4 countries)
- Aquaculture feed (low-cost, fishmeal substitution, etc.) (3 countries)
- Good/environment-friendly aquaculture practices (3 countries)
- Aquaculture impact monitoring and assessment (2 countries)

Fishery post-harvest

- Post-harvest technologies and product safety (8 countries)
- Product development (3 countries)
- Safety and quality systems and standards for fishery products (2 countries)

Trade in Fish and Fisheries Products

- Fish Trade (2 countries)
- Traceability and certification of fish and fishery products (2 countries)
- Product distribution system (2 countries)
- Marketing and market information exchange (2 countries)

Others

- Climate change (4 countries)
- HRD and transfer of knowledge and technologies (4 countries)
- Food security (3 countries)
- Rice field fisheries (2 countries)
- Emerging requirements (2 countries)
- Regional coordination and cooperation in fisheries (2 countries)

2. Views on expected roles and functions of SEAFDEC

The Member Countries provided the following views on the *expected roles and functions of SEAFDEC*, which had been ranked³ from high to the low priorities:

1. Research, development and verification of relevant technologies (4.3);
2. Transfer of technologies through training and HRD activities to government officers (4.1);
3. Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc. (3.6);
4. Awareness raising, and generation/dissemination of information package and toolkits (3.2); and
5. Facilitate coordination and networking with other regional/international organizations (2.6).

³ **Priority roles/functions** of SEAFDEC are ranked based on “means” of the priority ranked by the Member Countries. Although some countries gave “score” instead of “rank”, the inputs could still provide indications on the expected roles and functions of SEAFDEC and thus, were accepted.

3. Views on fisheries-related scopes/activities that should be undertaken by SEAFDEC

While noting that several sectors/institutions/organizations are working at the national/regional/global levels but undertake different roles and functions to contribute to sustainable fisheries development in the region; this part of the questionnaire was intended to gather the views of the Member Countries on what should be the priority scopes/activities to be undertaken specifically by SEAFDEC. The questionnaire also categorized the fisheries-related scopes into: i) Fishery Resources; ii) Fisheries Management and Policy Planning (General, Coastal/Marine, and Inland); iii) Responsible Fishing Technologies and Practices; iv) Aquaculture; v) Post-harvest of Fish and Fishery Products; vi) Trade in Fish and Fishery Products; and vii) Emerging Requirements, with list of activities under the respective scopes. The Member Countries were requested to prioritize each activity under the different scopes using the range from 1 to 5 (with 1=lowest priority and 5= highest priority).

Based on the responses given by the Member Countries, the **priority scopes**⁴ and **priority activities**⁵ that should be undertaken by SEAFDEC could be ranked as follows:

i. Fisheries Management: General Policy Planning and Management (4.44)

Priority	Activities
High	i. Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management (4.5)
Moderate	i. Promote the implementation and regionalization of International Agreements/ Instruments (4.4) ii. Facilitate development of common/coordinated positions on international fisheries-related issues (4.4)
Low	-

ii. Responsible Fishing Technologies and Practices (4.29)

Priority	Activities
High	i. Improving fish quality through on-board handling technologies and good practices (4.7) ii. Improving safety and working conditions of fishers on-board fishing vessels (4.5)
Moderate	i. By-catch reduction including the implementation of international by-catch guidelines (4.4) ii. Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices (4.3) iii. Reduction of impacts from fisheries to the inland/coastal/marine ecosystems (4.0)
Low	i. Mitigation of impacts from fisheries to climate change (including energy saving/optimization) (3.9)

iii. Fisheries Management: Coastal/Marine Fisheries (4.16)

Priority	Activities
High	i. Management of fishing capacity and combating IUU fishing (4.6)
Moderate	i. Regional, Sub-regional coordination for fisheries management (4.4) ii. Ecosystem approach to fisheries (4.2) iii. Indicators for sustainable fisheries development (4.2) iv. Co-management, rights-based fisheries, strengthening institutions, alternative livelihood (4.1)

⁴ **Priority scopes** are ranked based on the “means” of the priority scores of all activities within a certain scope. However, it should be noted that the scopes with higher “means” may not necessarily be more important than those with lower “means”.

⁵ **Priority activities** are grouped based on the “mean” of the priority score (means of 5.0-4.5: High Priority; means of <4.5-4.0: Moderate Priority; means of <4.0: Low Priority).

	v. Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources) (4.1)
	vi. Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i> , ARs, MPAs) (4.1)
	vii. Measures to mitigate impacts of climate change and to build adaptive capacity (4.1)
	viii. Conservation and management of species under international concerns (4.0)
Low	i. Maximizing utilization of by-catch (3.8)

iv. Trade in Fish and Fishery Products (4.16)

Priority	Activities
High	i. Preventing trade of IUU fishing products (4.5)
Moderate	i. Traceability and certification (4.4) ii. ASEAN standards for fishery and aquaculture products (4.2)
Low	i. Product eco-labeling, branding (3.5)

v. Aquaculture (4.15)

Priority	Activities
High	i. Advancing aquaculture technologies (broodstock management to grow out phase) (4.7) ii. Regional Guidelines for good aquaculture practices (4.6) iii. Minimizing impacts of aquaculture on the environment/biodiversity (4.5) iv. Development of aquaculture feeds to reduce dependence on fish meal and fish-based products (4.5)
Moderate	i. Aquaculture for rural development, food security and poverty alleviation (4.2) ii. Genetic improvement of aquaculture species (4.1) iii. Regional collaboration on disease diagnosis, surveillance and control (4.1) iv. Regional Guidelines on Aquaculture Certification (4.1) v. Capacity building in responsible aquaculture practices (4.1) vi. Impacts of climate change on aquaculture (4.0)
Low	i. Stock enhancement of endangered species (3.7) ii. Energy saving/optimization for aquaculture (3.1)

vi. Emerging Requirements (4.04)

Priority	Activities
High	i. Requirements relevant to combating IUU fishing (4.5)
Moderate	i. Emerging requirements from the ASEAN Community Building (4.2) ii. CITES-related issues and requirements (4.0)
Low	i. Requirements on safety and working conditions of fisheries workers (3.7) ii. Requirements relevant to Fishery Subsidies (3.7)

vii. Post-harvest of Fish and Fishery Products (4.03)

Priority	Activities
High	i. Improving post-harvest technologies and safety/quality of products for export (4.5)
Moderate	i. Capacity building on analysis of chemicals, drugs, toxins, etc. (4.4) ii. Improved handling and preservation, product development and innovation (4.4) iii. Improving post-harvest technologies and safety/quality of local/traditional fishery products (4.1)
Low	i. Optimize utilization of catch, and reduction of post-harvest losses (3.9) ii. Optimizing socio-economic returns from fisheries/post-harvest activities (3.8) iii. Promotion of “One Village, One Fisheries Products” (3.0)

viii. Fishery Resources (3.80)

Priority	Activities
High	i. Improvement of information on status and trends of fishery resources (4.5)
Moderate	i. Study on impacts of climate change on fishery resources (4.2) ii. Data collection on shared stocks (4.1)
Low	i. Data collection on species under international concerns (3.9) ii. Fishery resources survey in the territorial seas and EEZs (3.8) iii. Fishery resources survey in the inland waters (3.5) iv. Fishery resources survey in the high-sea and deep-sea areas (3.2) v. Fish species identification (<i>e.g.</i> deep-sea fishes) (3.0)

ix. Fisheries Management: Inland Fisheries (3.53)

Priority	Activities
High	-
Moderate	-
Low	i. Habitat conservation/rehabilitation and resource enhancement for inland fisheries (3.9) ii. Co-management, rights-based fisheries, strengthening institutions, alternative livelihood (3.8) iii. Enhancing awareness on the importance of inland fisheries (3.6) iv. Ecosystem approach to inland fisheries (3.5) v. Indicators for sustainable inland fisheries (3.5) vi. Management of fishing capacity and combating IUU fishing (3.4) vii. Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure (3.4) viii. Measures needed to mitigate effects of climate change and to build adaptive capacity (3.4) ix. Addressing multiple use resources, and conflict resolution/mitigation (3.3)

4. Other views on roles and functions of SEAFDEC

Through the questionnaire, some Member Countries also provided additional views on the roles and functions of SEAFDEC, which could be summarized as follows:

- SEAFDEC should implement activities in efficient and cost-effective manner;
- SEAFDEC should actively follow-up international fisheries-related issues/fora, and safeguard the interest of countries in the region;
- SEAFDEC should assist in the development and implementation of regional plans of actions to enhance and improve sustainable fisheries development;
- SEAFDEC should undertake more work on CITES-related issues and requirements in order to support the Member Countries in evaluating proposals on the listing of aquatic species in the CITES Appendices;
- SEAFDEC should incorporate in its activities the aspects related to the possible impacts from natural disasters (including Tsunami);
- SEAFDEC should promote the role of aquaculture for food security and poverty alleviation, particularly for least developed countries;
- SEAFDEC should promote collaboration and sharing of existing scientific information/knowledge among the countries, including those on inland fisheries research methodologies, and inland development and management;
- SEAFDEC should keep monitoring and provide information on relevant regional/international meetings in advance, and share the outcomes from these meetings to the Member Countries;
- Training courses conducted by SEAFDEC should not be for free of charge on regular basis, but under cost-recovery policy. Some funds could be sourced to subsidize the training fees. In addition, follow-up and assessment should be undertaken, *e.g.* on the outcomes and benefits that could be derived from the training; and

- Activities should cater first to the requirements of individual member countries, to be developed later into regional activity/activities.

IV. REQUIRED CONSIDERATION BY THE COUNCIL

During the 44th Meeting of the SEAFDEC Council, the Council is requested to:

- 1) Consider the “Member Countries’ Views on the Expected Roles, Functions and Activities of SEAFDEC”, and provide further suggestion for the modification and finalization of the Report; and
- 2) Provide guidance on further steps to be taken for the Third SEAFDEC Review.

COMPILATION OF COUNTRIES' VIEWS ON ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

		Bru	Cam	Indo	Japan	Lao	Malay	Myan	Phil	Sing	Thai	Viet			
1	List ten fisheries-related priority areas that should be addressed/improved in your country	Country													
	<i>(Scopes/Elements)</i>														
	Fishery resources														
	• Fishery resources, including resource survey/assessment and researches on species, biology, ecology etc.		1		1	1	1	1		1				6	
	• Fisheries impact assessment and mitigation/reduction					1		1						2	
	Fisheries management and policy planning														
	• Combating IUU fishing (incl. MCS, Port State Measures)	1		1				1	1	1	1	1		7	
	• Fisheries policy planning and management		1		1	1	1		1			1		6	
	• Improving fishery statistics, information, inventories, STF					1	1	1			1	1		5	
	• Habitat conservation and resources enhancement	1	1	1		1		1						5	
	• Over-fishing capacity	1						1			1			3	
	• Ecosystem Approach to Fisheries		1	1										2	
	• Enhancing sustainable small-scale fisheries			1			1							2	
	• Vessel registration, fishing gear licensing										1			1	
	Responsible fishing technologies/practices														
	• Responsible fishing technologies/practices				1		1	1	1	1				5	
	Aquaculture														
	• Aquaculture development		1	1	1	1	1	1	1	1				8	
	• Aquaculture disease and aquatic animal health			1		1			1	1		1		5	
	• Aquaculture broodstock and seed production	1		1					1	1				4	
	• Aquaculture feed (low-cost, fishmeal substitution, etc.)	1									1	1		3	
	• Good/environment-friendly aquaculture practices							1		1	1			3	
	• Aquaculture impact monitoring and assessment	1										1		2	
	• Genetic improvement for aquaculture species											1		1	
	Fishery post-harvest														
	• Post-harvest technologies and product safety		1		1	1	1	1	1	1	1			8	
	• Product development								1	1	1			3	
	• Safety and quality systems and standards for fishery products									1	1			2	
	• Reduction of post-harvest losses		1											1	

		Bru	Cam	Indo	Japan	Lao	Malay	Myan	Phil	Sing	Thai	Viet			
	Trade in fish and fishery products														
	• Fish Trade				1		1							2	
	• Traceability and certification of fish and fishery products							1		1				2	
	• Product distribution system			1						1				2	
	• Marketing and market information exchange			1					1					2	
	• Compliance with importing countries' requirements on combating IUU fishing	1												1	
	• Micro-credit					1								1	
	Others														
	• Climate change		1	1			1		1					4	
	• HRD and transfer of knowledge and technologies		1	1					1	1				4	
	• Food security		1					1	1					3	
	• Rice field fisheries		1			1								2	
	• Emerging requirements				1		1							2	
	• Regional coordination and cooperation in fisheries		1									1		2	
	• Awareness raising on sustainable fisheries									1				1	
	• Creating opportunities in fishery industry	1												1	
2	Views on roles and function of SEAFDEC													Avg.	
1	Research, development and verification of relevant technologies (research and development center)	5	4	4	5	5	3	5	4	5	4	3		4.3	
2	Transfer of technologies through training and HRD activities to government officers (training center)	4	5	3	5	4	5	4	4	5	3	3		4.1	
3	Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)	3	3	5	3	3	2	4	3	4	2	3		3.2	
4	Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.	3	4	2	5	2	4	4	3	3	5	5		3.6	
5	Facilitate coordination and networking with other regional/international organizations	2	4	1	3	1	1	5	4	3	1	4		2.6	
3	Views on scopes/activities that should be undertaken by SEAFDEC														
	Fishery Resources												Scope Mean	Activity Mean	Activity Mode
1	Fishery resources survey in the inland waters	3	4	5	3	5	1	4	4	3	2	4	3.80	3.5	4
2	Fishery resources survey in the territorial seas and EEZs	5	4	5	3	-	1	5	4	4	4	3		3.8	4
3	Fishery resources survey in the high-sea and deep-sea areas	4	3	3	3	-	5	3	3	1	3	4		3.2	3
4	Fish species identification (e.g. deep-sea fishes)	3	3	3	3	-	4	3	3	2	4	2		3.0	3
5	Data collection on shared stocks	4	5	3	5	-	4	3	3	5	4	5		4.1	5
6	Data collection on species under international concerns	4	4	5	5	-	1	3	3	5	4	5		3.9	5
7	Improvement of information on status and trends of fishery resources	5	5	5	5	5	4	5	4	5	4	3		4.5	5
8	Study on impacts of climate change on fishery resources	4	5	3	3	4	5	5	5	4	3	5		4.2	5

		Bru	Cam	Indo	Japan	Lao	Malay	Myan	Phil	Sing	Thai	Viet			
9	Others (specify)	-	-		-	-	-	-	-	-	-	-			
	- Marine Fish assessment							✓							
	- Fish Stock Recovery program			5											
	Fisheries Management and Policy Planning														
	<i>General Policy Planning and Management</i>												Scope Mean	Activity Mean	Activity Mode
1	Promote the implementation and regionalization of International Agreements/Instruments	5	4	5	3	4	5	4	5	5	4	4	4.44	4.4	5, 4
2	Facilitate development of common/coordinated positions on international fisheries-related issues	3	5	5	5	3	5	4	4	5	4	5		4.4	5
3	Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	4	4	5	5	5	4	5	4	5	4	5		4.5	5
4	Others (specify)	-	-	-	-		-	-	-	-	-	-			
	- Develop regional guidelines and technologies for inland fisheries research, management and development					5									
	- Promote ecosystem approaches to fisheries management											✓			
	<i>Coastal/Marine Fisheries Management</i>												Scope Mean	Activity Mean	Activity Mode
1	Regional, Sub-regional coordination for fisheries management	4	5	5	5	-	3	4	4	5	4	5	4.16	4.4	5
2	Management of fishing capacity and combating IUU fishing	5	4	5	5	-	4	5	4	5	4	5		4.6	5
3	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	3	5	5	3	-	5	5	4	3	4	4		4.1	5
4	Sustainable exploitation of resources (e.g. under-utilized and deep-sea resources)	4	3	5	5	-	4	5	4	4	3	4		4.1	4
5	Maximizing utilization of by-catch	4	4	4	5	-	1	4	4	3	5	4		3.8	4
6	Habitat conservation/rehabilitation and resources enhancement (e.g. Refugia, ARs, MPAs)	4	4	5	3	-	5	5	4	3	3	5		4.1	5
7	Conservation and management of species under international concerns	3	4	5	5	-	5	3	4	3	3	5		4.0	5, 3
8	Ecosystem approach to fisheries	5	4	5	3	-	5	4	4	3	4	5		4.2	5, 4
9	Indicators for sustainable fisheries development	4	3	4	3	-	5	5	4	4	5	5		4.2	5, 4
10	Measures to mitigate impacts of climate change and to build adaptive capacity	3	4	5	3	-	5	4	4	4	4	5		4.1	4
11	Others (specify)	-	-	-	-	-	-	-	-	-	-	-			
	<i>Inland Fisheries Management</i>												Scope Mean	Activity Mean	Activity Mode
1	Management of fishing capacity and combating IUU fishing	2	4	3	5	1	3	5	4	3	4	3	3.53	3.4	3
2	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	3	4	5	3	5	3	4	4	3	3	5		3.8	3
3	Addressing multiple use resources, and conflict resolution/ mitigation	3	4	4	3	4	1	4	3	3	3	4		3.3	4
4	Enhancing awareness on importance of inland fisheries	3	5	4	3	5	1	4	4	3	5	3		3.6	3
5	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	4	4	5	3	5	3	5	4	3	4	3		3.9	4, 3
6	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	4	4	4	3	3	1	3	4	3	5	3		3.4	3
7	Measures needed to mitigate effects of climate change and to build adaptive capacity	3	3	3	3	5	2	3	4	3	4	4		3.4	3
8	Ecosystem approach to inland fisheries	4	3	3	3	4	3	4	4	4	3	3		3.5	3

		Bru	Cam	Indo	Japan	Lao	Malay	Myan	Phil	Sing	Thai	Viet			
9	Indicators for sustainable inland fisheries	3	4	4	3	4	1	5	4	5	3	3		3.5	4, 3
10	Others (specify)	-	-	-	-	-	-	-	-	-	-	-			
		Bru	Cam	Indo	Japan	Lao	Malay	Myan	Phil	Sing	Thai	Viet			
	Responsible Fishing Technologies and Practices												Scope Mean	Activity Mean	Activity Mode
1	Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	4	4	5	5	5	3	5	4	4	3	5	4.29	4.3	5
2	By-catch and by-catch reduction including the implementation of international by-catch guidelines	4	5	5	5	5	5	4	4	4	3	4		4.4	5, 4
3	Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	3	4	4	3	5	4	4	4	4	5	4		4.0	4
4	Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	4	3	3	3	5	5	4	4	3	4	5		3.9	4, 3
5	Improving fish quality through on-board handling technologies and good practices	5	5	5	5	5	5	4	4	5	4	5		4.7	5
6	Improving safety and working conditions of fishers onboard fishing vessels	4	5	5	5	5	5	4	4	5	3	4		4.5	5
7	Others (specify)	-	-	-	-	-	-	-	-	-	-	-			
	Aquaculture												Scope Mean	Activity Mean	Activity Mode
1	Advancing aquaculture technologies (broodstock management to grow out phase)	5	5	5	5	5	4	4	5	5	5	4	4.15	4.7	5
2	Minimizing impacts of aquaculture on the environment/biodiversity	5	5	5	5	3	5	4	5	3	5	4		4.5	5
3	Genetic improvement of aquaculture species	3	5	4	3	5	5	3	4	5	5	3		4.1	5
4	Regional Guidelines for good aquaculture practices	5	5	4	5	4	3	5	5	5	5	5		4.6	5
5	Regional collaboration on disease diagnosis, surveillance and control	4	5	4	3	3	5	3	4	5	4	5		4.1	5, 4
6	Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	4	5	5	5	5	5	4	4	5	4	4		4.5	5
7	Aquaculture for rural development, food security and poverty alleviation	3	5	4	3	5	5	5	4	4	4	4		4.2	4
8	Energy saving/optimization for aquaculture	3	4	4	3	1	3	2	4	3	3	4		3.1	3
9	Regional Guidelines on Aquaculture Certification	4	4	4	3	3	5	4	4	5	4	5		4.1	4
10	Stock enhancement of endangered species	3	5	3	5	5	4	3	4	2	4	3		3.7	3
11	Impacts of climate change on aquaculture	4	4	3	3	4	5	4	4	4	4	5		4.0	4
12	Capacity building in responsible aquaculture practices	4	5	4	3	5	5	4	4	4	4	3		4.1	4
13	Others (specify)	-	-		-	-	-	-	-	-	-	-			
	- Information exchange on aquaculture			5											
	Post-harvest of Fish and Fishery Products												Scope Mean	Activity Mean	Activity Mode
1	Improving post-harvest technologies and safety/quality of products for export	5	5	5	3	5	5	5	4	5	3	5	4.03	4.5	5
2	Improving post-harvest technologies and safety/quality of local/traditional fishery products	5	4	5	3	5	4	3	4	5	3	4		4.1	5, 4
3	Optimize utilization of catch, and reduction of post-harvest losses	4	4	4	5	1	5	3	4	5	4	4		3.9	4
4	Optimizing socio-economic returns from fisheries/post-harvest activities	4	3	-	3	4	3	4	4	4	5	4		3.8	4
5	Capacity building on analysis of chemicals, drugs, toxins, etc.	4	5	4	5	5	4	5	3	5	4	4		4.4	5, 4
6	Improved handling and preservation, product development and innovation	4	5	4	5	5	4	4	4	5	4	4		4.4	4

		Bru	Cam	Indo	Japan	Lao	Malay	Myan	Phil	Sing	Thai	Viet			
7	Promotion of "One Village, One Fisheries Products"	3	3	-	3	5	1	5	3	1	3	3		3.0	3
8	Others (specify)	-	-	-	-	-	-	-	-	-	-	-			
	- Risk assessment concerning seafood safety/safety of fishery products										4				
	Trade in Fish and Fishery Products												Scope Mean	Activity Mean	Activity Mode
1	Preventing trade of IUU fishing products	5	4	5	5	3	5	5	4	5	4	5	4.16	4.5	5
2	ASEAN standards for fishery and aquaculture products	4	5	5	3	5	2	4	4	5	5	4		4.2	5
3	Traceability and certification	4	5	5	3	3	5	5	4	5	4	5		4.4	5
4	Product eco-labeling, branding	4	4	4	3	3	3	3	3	3	4	4		3.5	3
5	Others (specify)	-	-		-	-	-	-	-	-	-	-			
	- Information Exchange of National Residue Control Plan (NRCP)			5											
	Emerging Requirements												Scope Mean	Activity Mean	Activity Mode
1	Requirements relevant to IUU fishing (e.g. port-state measures, etc.)	4	5	5	5	3	5	4	4	5	5	4	4.04	4.5	5
2	CITES-related issues and requirements	4	4	5	5	3	5	3	4	3	5	3		4.0	5, 3
3	Requirements on safety and working conditions of fisheries workers	3	5	5	5	1	3	5	4	3	3	4		3.7	5, 3
4	Requirements relevant to Fishery Subsidies	4	5	5	5	1	3	5	3	3	3	4		3.7	5, 3
5	Emerging requirements from the ASEAN Community Building	4	5	4	3	5	5	4	4	4	4	4		4.2	4
6	Others (specify)	-	-	-	-	-		-	-	-	-	-			
	- FAO Global Record on Fishing Vessel						5								

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name: Country: **BRUNEI DARUSSALAM**

1. List ten fisheries-related priority areas that should be addressed/improved in your country:

1. Protection from impacts of overfishing, land use and pollution.....
2. Reduction of Overfishing and Mitigation activities.....
3. Establishment of MPAs.....
4. Develop and create opportunities in fisheries industry.....
5. Production of SPF fries.....
6. Production of low-cost feeds.....
7. Compliance to importing country requirements including PSM, Catch Certification, EU import requirement etc.....
8. Monitoring, Control and Surveillance.....
9. Aquaculture environmental impact assessment.....
10. Production of fish seeds supply.....

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- ...5...Research, development and verification of relevant technologies (research and development center)
- ...4...Transfer of technologies through training and HRD activities to government officers (training center)
- ...3...Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- ...3...Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- ...2...Facilitate coordination and networking with other regional/international organizations

Other views:
.....

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
3	• Fishery resources survey in the inland waters	
5	• Fishery resources survey in the territorial seas and EEZs	
4	• Fishery resources survey in the high-sea and deep-sea areas	
3	• Fish species identification (e.g. deep-sea fishes)	
4	• Data collection on shared stocks	
4	Data collection on species under international concerns	
5	• Improvement of information on status and trends of fishery resources	

4	Study on impacts of climate change on fishery resources	
	Others (specify)	
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
5	Promote the implementation and regionalization of International Agreements/Instruments	
3	Facilitate development of common/coordinated positions on international fisheries-related issues	
4	Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	
	Others (specify)	
	Coastal/Marine Fisheries Management	
4	Regional, Sub-regional coordination for fisheries management	
5	Management of fishing capacity and combating IUU fishing	
3	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
4	Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	
4	Maximizing utilization of by-catch	
4	Habitat conservation/rehabilitation and resources enhancement (<i>e.g. Refugia</i>, ARs, MPAs)	
3	Conservation and management of species under international concerns	
5	Ecosystem approach to fisheries	
4	Indicators for sustainable fisheries development	
3	Measures to mitigate impacts of climate change and to build adaptive capacity	
	Others (specify)	
	Inland Fisheries Management	
2	Management of fishing capacity and combating IUU fishing	
3	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
3	Addressing multiple use resources, and conflict resolution/ mitigation	
3	Enhancing awareness on importance of inland fisheries	
4	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
4	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
3	Measures needed to mitigate effects of climate change and to build adaptive capacity	
4	Ecosystem approach to inland fisheries	
3	Indicators for sustainable inland fisheries	
	Others (specify)	

Responsible Fishing Technologies and Practices		
4	• Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
4	• By-catch and by-catch reduction including the implementation of international by-catch guidelines	
3	• Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
4	• Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
5	• Improving fish quality through on-board handling technologies and good practices	
4	• Improving safety and working conditions of fishers onboard fishing vessels	
	• Others (specify)	
		
Aquaculture		
5	• Advancing aquaculture technologies (broodstock management to grow out phase)	
5	• Minimizing impacts of aquaculture on the environment/biodiversity	
3	• Genetic improvement of aquaculture species	
5	• Regional Guidelines for good aquaculture practices	
4	• Regional collaboration on disease diagnosis, surveillance and control	
4	• Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
3	• Aquaculture for rural development, food security and poverty alleviation	
3	• Energy saving/optimization for aquaculture	
4	• Regional Guidelines on Aquaculture Certification	
3	• Stock enhancement of endangered species	
4	• Impacts of climate change on aquaculture	
4	• Capacity building in responsible aquaculture practices	
	• Others (specify)	
		
Post-harvest of Fish and Fishery Products		
5	• Improving post-harvest technologies and safety/quality of products for export	
5	• Improving post-harvest technologies and safety/quality of local/traditional fishery products	
4	• Optimize utilization of catch, and reduction of post-harvest losses	
4	• Optimizing socio-economic returns from fisheries/post-harvest activities	
4	• Capacity building on analysis of chemicals, drugs, toxins, etc.	
4	• Improved handling and preservation, product development and innovation	
3	• Promotion of “One Village, One Fisheries Products”	
	• Others (specify)	
		

Trade in Fish and Fishery Products		
5	Preventing trade of IUU fishing products	
4	ASEAN standards for fishery and aquaculture products	
4	Traceability and certification	
4	Product eco-labeling, branding	
	Others (specify)	
Emerging Requirements		
4	Requirements relevant to IUU fishing (<i>e.g.</i> port-state measures, etc.)	
4	CITES-related issues and requirements	
3	Requirements on safety and working conditions of fisheries workers	
4	Requirements relevant to Fishery Subsidies	
4	Emerging requirements from the ASEAN Community Building	
	Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

- (i) need to be more open to individual member country requirements and then develop these to become a regional activity / activities

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name: Mr. Sam Nouv and Mr. Em Puthy

Country: **CAMBODIA****1. List ten fisheries-related priority areas that should be addressed/improved in your country:**

1. Aquaculture Development: Increase in aquaculture production in line with food security and export demands.
2. Post-Harvest of Fish and Fishery Products and Trade in Fish: Reduction of post-harvest losses.
3. Co-management: Community Fishery and Rice field fisheries production.
4. Habitat Conservation: Rehabilitation and Resources Enhancement.
5. Human Resource Development.
6. Climate Change: Adaptation and Mitigation of Changing Environment.
7. Research and Development: Ecology and Biology Research.
8. Coordination at Regional level: Application of fishery management; Ecosystem Approach to Fisheries.
9. The development and Implementation of Fisheries Cantonment Plans.
10. Rural aquaculture development for poor farmer to improve their livelihood.

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- 4 Research, development and verification of relevant technologies (research and development center)
- 5 Transfer of technologies through training and HRD activities to government officers (training center)
- 3 Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- 4 Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- 4 Facilitate coordination and networking with other regional/international organizations

Other views:
.....

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
4	• Fishery resources survey in the inland waters	
4	• Fishery resources survey in the territorial seas and EEZs	
3	• Fishery resources survey in the high-sea and deep-sea areas	
3	• Fish species identification (e.g. deep-sea fishes)	
5	• Data collection on shared stocks	

4	• Data collection on species under international concerns	
5	• Improvement of information on status and trends of fishery resources	
5	• Study on impacts of climate change on fishery resources	
	• Others (specify)	
Fisheries Management and Policy Planning		
General Policy Planning and Management		
4	• Promote the implementation and regionalization of International Agreements/Instruments	
5	• Facilitate development of common/coordinated positions on international fisheries-related issues	
4	• Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	
	• Others (specify)	
Coastal/Marine Fisheries Management		
5	• Regional, Sub-regional coordination for fisheries management	
4	• Management of fishing capacity and combating IUU fishing	
5	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
3	• Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	
4	• Maximizing utilization of by-catch	
4	• Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i> , ARs, MPAs)	
4	• Conservation and management of species under international concerns	
4	• Ecosystem approach to fisheries	
3	• Indicators for sustainable fisheries development	
4	• Measures to mitigate impacts of climate change and to build adaptive capacity	
	• Others (specify)	
Inland Fisheries Management		
4	• Management of fishing capacity and combating IUU fishing	
4	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
4	• Addressing multiple use resources, and conflict resolution/ mitigation	
5	• Enhancing awareness on importance of inland fisheries	
4	• Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
4	• Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
3	• Measures needed to mitigate effects of climate change and to build adaptive capacity	
3	• Ecosystem approach to inland fisheries	

4	Indicators for sustainable inland fisheries	
	Others (specify)	
Responsible Fishing Technologies and Practices		
4	Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
5	By-catch and by-catch reduction including the implementation of international by-catch guidelines	
4	Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
3	Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
5	Improving fish quality through on-board handling technologies and good practices	
5	Improving safety and working conditions of fishers onboard fishing vessels	
	Others (specify)	
Aquaculture		
5	Advancing aquaculture technologies (broodstock management to grow out phase)	
5	Minimizing impacts of aquaculture on the environment/biodiversity	
5	Genetic improvement of aquaculture species	
5	Regional Guidelines for good aquaculture practices	
5	Regional collaboration on disease diagnosis, surveillance and control	
5	Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
5	Aquaculture for rural development, food security and poverty alleviation	
4	Energy saving/optimization for aquaculture	
4	Regional Guidelines on Aquaculture Certification	
5	Stock enhancement of endangered species	
4	Impacts of climate change on aquaculture	
5	Capacity building in responsible aquaculture practices	
	Others (specify)	
Post-harvest of Fish and Fishery Products		
5	Improving post-harvest technologies and safety/quality of products for export	
4	Improving post-harvest technologies and safety/quality of local/traditional fishery products	
4	Optimize utilization of catch, and reduction of post-harvest losses	
3	Optimizing socio-economic returns from fisheries/post-harvest activities	
5	Capacity building on analysis of chemicals, drugs, toxins, etc.	
5	Improved handling and preservation, product development and innovation	
3	Promotion of “One Village, One Fisheries Products”	
	Others (specify)	

Trade in Fish and Fishery Products		
4	• Preventing trade of IUU fishing products	
5	• ASEAN standards for fishery and aquaculture products	
5	• Traceability and certification	
4	• Product eco-labeling, branding	
	• Others (specify)	
Emerging Requirements		
5	• Requirements relevant to IUU fishing (<i>e.g.</i> port-state measures, etc.)	
4	• CITES-related issues and requirements	
5	• Requirements on safety and working conditions of fisheries workers	
5	• Requirements relevant to Fishery Subsidies	
5	• Emerging requirements from the ASEAN Community Building	
	• Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

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QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name: Ministry of Marine Affairs and Fisheries

Country: **INDONESIA**

1. List ten of fisheries-related priority areas that should be addressed/improved in Indonesia:

1. Ecosystem approach to fisheries
2. Marine conservation and rehabilitation
3. Sustainable aquaculture
4. Fish disease management
5. Climate change mitigation and adaptation
6. Marketing and distribution of fish and fisheries products
7. Fish/Shrimp broodstock management
8. Human resource development
9. Small scale fisheries sustainability
10. IUU fishing

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- 4... Research, development and verification of relevant technologies (research and development center)
- 3... Transfer of technologies through training and HRD activities to government officers (training center)
- 5... Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- 2... Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- 1... Facilitate coordination and networking with other regional/international organizations

Other views:

(Rank 1-5: 1=least important, 5= most important)

- 3... Research, development and verification of relevant technologies (research and development center)
- 3... Transfer of technologies through training and HRD activities to government officers (training center)
- 5... Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- 5... Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- 5... Facilitate coordination and networking with other regional/international organizations

Other views:

SEAFDEC should give recommendations to anticipate international fisheries/aquacultures issues for all members and has better known all member countries policy in their policy/perspectives

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
5	• Fishery resources survey in the inland waters	
5	• Fishery resources survey in the territorial seas and EEZs	
3	• Fishery resources survey in the high-sea and deep-sea areas	
3	• Fish species identification (<i>e.g.</i> deep-sea fishes)	
3	• Data collection on shared stocks	
5	• Data collection on species under international concerns	
5	• Improvement of information on status and trends of fishery resources	
3	• Study on impacts of climate change on fishery resources	
5	• Others (specify) Fish Stock Recovery Program	one man one thousand fries, fish apartment
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
5	• Promote the implementation and regionalization of International Agreements/Instruments	
5	• Facilitate development of common/coordinated positions on international fisheries-related issues	
5	• Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	
	• Others (specify)	
	Coastal/Marine Fisheries Management	
5	• Regional, Sub-regional coordination for fisheries management	
5	• Management of fishing capacity and combating IUU fishing	
5	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
5	• Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	
4	• Maximizing utilization of by-catch	
5	• Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i> , ARs, MPAs)	1. Greenbelt plantation as a natural breakwater 2. Turtle habitat rehabilitation
5	• Conservation and management of species under international concerns	Arrangement Regional Plan of Action to conserve the species under international concern
5	• Ecosystem approach to fisheries	
4	• Indicators for sustainable fisheries development	

5	Measures to mitigate impacts of climate change and to build adaptive capacity	- Socialization and community awareness (including workshop, seminars and training) on coastal disaster mitigation, for government, NGO and Coastal community - Dissemination materials on coastal disaster mitigation - Promote guidelines and management plan on disaster mitigation in coastal and small islands - System information about climate change and other disaster in coastal area (including tsunami) - Infrastructure development to mitigate the impact of marine and coastal disaster
	Others (specify)	
Inland Fisheries Management		
3	Management of fishing capacity and combating IUU fishing	
5	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
4	Addressing multiple use resources, and conflict resolution/ mitigation	
4	Enhancing awareness on importance of inland fisheries	
5	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
4	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
3	Measures needed to mitigate effects of climate change and to build adaptive capacity	
3	Ecosystem approach to inland fisheries	
4	Indicators for sustainable inland fisheries	
	Others (specify)	
Responsible Fishing Technologies and Practices		
5	Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
5	By-catch and by-catch reduction including the implementation of international by-catch guidelines	
4	Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
3	Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
5	Improving fish quality through on-board handling technologies and good practices	
5	Improving safety and working conditions of fishers onboard fishing vessels	
	Others (specify)	

Aquaculture		
5	Advancing aquaculture technologies (broodstock management to grow out phase)	Broodstock Center development for a few commodities : tilapia, catfish (<i>Pangasius, clarias sp</i>), carp, <i>P. monodon</i> , <i>L. vannamei</i> , <i>Macrobranchium</i> , freshwater lobster, grouper, asian seabass, milkfish, seaweed, etc.
5	Minimizing impacts of aquaculture on the environment/biodiversity	Planting mangroves in shrimp ponds area (green belt); use of reservoir for wastewater treatment before discharge into the sea (shrimp ponds); using probiotic for aquaculture; using no antibiotic for aquaculture (in hatchery and grow out); Implementation of good aquaculture practice to small scale fisheries.
4	Genetic improvement of aquaculture species	Individual and Family selection ; selective breeding program for high potential species i.e. humpback grouper.
4	Regional Guidelines for good aquaculture practices	GAP for hatcheries (seed production) and grow out (ponds)
4	Regional collaboration on disease diagnosis, surveillance and control	Fish disease services using the car around, fish vaccination, monitoring fish health and the environment periodically, monitoring and antibiotic residues in fish farmers, fish disease surveillance periodically, propagation of fish disease laboratories, accreditation of testing laboratories.
5	Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	Use of local feed raw materials, the use of vegetable raw materials, the use of feed raw materials that are environmentally friendly.
4	Aquaculture for rural development, food security and poverty alleviation	Development of catfish, tilapia, carp, gourami aquaculture in the countryside, and others; “minapadi” fish programme, stocking fish in lakes and reservoirs (CBF: culture based fisheries)
4	Energy saving/optimization for aquaculture	Extensification of organic shrimp farming, shrimp polyculture system, the use of low oxygen consumption of fish (eg catfish), the development of seaweed farming.
4	Regional Guidelines on Aquaculture Certification	Certification of Good growouts practices and good hatcheries practices.
3	Stock enhancement of endangered species	Stocking fish in reservoirs and public waters,
3	Impacts of climate change on aquaculture	Decreased reproduction, decreased water quality, high temperature fluctuations, natural food production disrupted, many diseases of fish, slow fish growth etc.

4	Capacity building in responsible aquaculture practices	GAP training programs, technical training of fish and shrimp hatcheries, technical training in aquaculture fish and shrimp ponds, environmental management training for fish farmers, entrepreneurship for fish farmers, fish farmers' empowerment group,
5	Others (specify)	
5	(1) Aquaculture Information exchange to promote investment in members countries	
5	(2) Information exchange related to give figure on perspective & profile aquaculture development among member countries	
Post-harvest of Fish and Fishery Products		
5	Improving post-harvest technologies and safety/quality of products for export	-
5	Improving post-harvest technologies and safety/quality of local/traditional fishery products	Developing standards and guidelines for post-harvest technologies and safety/quality of local/traditional fishery products
4	Optimize utilization of catch, and reduction of post-harvest losses	Conducting baseline studies on post-harvest losses.
-	Optimizing socio-economic returns from fisheries/post-harvest activities	-
4	Capacity building on analysis of chemicals, drugs, toxins, etc.	-
4	Improved handling and preservation, product development and innovation	Developing traditional and indigenous materials for packaging and better preserve the product.
-	Promotion of "One Village, One Fisheries Products"	-
-	Others (specify)	
Trade in Fish and Fishery Products		
5	Preventing trade of IUU fishing products	Promote implementation of Catch Certification
5	ASEAN standards for fishery and aquaculture products	Harmonization products standard and requirements
5	Traceability and certification	-
4	Product eco-labeling, branding	Development of MSC certification
5	Others (specify)	Information exchange of National Residue Control Plan (NRCP)
Emerging Requirements		
5	Requirements relevant to IUU fishing (e.g. port-state measures, etc.)	
5	CITES-related issues and requirements	
5	Requirements on safety and working conditions of fisheries workers	
5	Requirements relevant to Fishery Subsidies	
4	Emerging requirements from the ASEAN Community Building	
	Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

- a. Southeast Asia countries are very vulnerable to a hazard such as tsunami, this aspect needs to be consider regarding fisheries development in this area
- b. SEAFDEC should active to follow every international fisheries forum to influence international statement/issue that brings benefit for ASEAN countries.
- c. SEAFDEC should provide aquaculture regional/international event/meeting that member has possibility to prepare some budget to follow this event/meeting (at least 1 years before its meeting) and act as coordinator to response/distribute the result of its meeting.
- d. SEAFDEC should provide information for international aquaculture event or meeting that informed at least 1 year before its events.

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name: Tekeshi MWA

Country: JAPAN

1. List ten fisheries-related priority areas that should be addressed/improved in your country:

1. Emerging requirements
2. General policy planning and management (Fisheries management and policy planning)
3. Responsible Fishing Technologies and Practices
4. Coastal/Marine fisheries management (Fisheries management and policy planning)
5. Post-harvest of Fish and Fishery Products
6. Aquaculture
7. Fisheries Resources
8. Trade in fish and fisheries products
9. Inland fisheries (Fisheries management and policy planning)
10.

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- 5... Research, development and verification of relevant technologies (research and development center)
- 5... Transfer of technologies through training and HRD activities to government officers (training center)
- 3... Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- 5... Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- 3... Facilitate coordination and networking with other regional/international organizations

Other views:
.....

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
3	• Fishery resources survey in the inland waters	
3	• Fishery resources survey in the territorial seas and EEZs	
3	• Fishery resources survey in the high-sea and deep-sea areas	
3	• Fish species identification (e.g. deep-sea fishes)	
5	• Data collection on shared stocks	Collecting scientific data is basic element for realizing sustainable fisheries.
5	• Data collection on species under international concerns	Collecting scientific data is basic element for realizing sustainable fisheries.
5	• Improvement of information on status and trends of fishery resources	Collecting scientific data is basic element for realizing sustainable fisheries.

3	Study on impacts of climate change on fishery resources	
1	Others (specify)	
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
3	Promote the implementation and regionalization of International Agreements/Instruments	
5	Facilitate development of common/coordinated positions on international fisheries-related issues	
5	Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	
1	Others (specify)	
	Coastal/Marine Fisheries Management	
5	Regional, Sub-regional coordination for fisheries management	This issue is essential for sustainable fisheries.
5	Management of fishing capacity and combating IUU fishing	This issue is essential for sustainable fisheries.
3	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
5	Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	
5	Maximizing utilization of by-catch	
3	Habitat conservation/rehabilitation and resources enhancement (<i>e.g. Refugia</i>, ARs, MPAs)	
5	Conservation and management of species under international concerns	
3	Ecosystem approach to fisheries	
3	Indicators for sustainable fisheries development	
3	Measures to mitigate impacts of climate change and to build adaptive capacity	
1	Others (specify)	
	Inland Fisheries Management	
5	Management of fishing capacity and combating IUU fishing	This issue is essential for sustainable fisheries.
3	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
3	Addressing multiple use resources, and conflict resolution/ mitigation	
3	Enhancing awareness on importance of inland fisheries	
3	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
3	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
3	Measures needed to mitigate effects of climate change and to build adaptive capacity	
3	Ecosystem approach to inland fisheries	
3	Indicators for sustainable inland fisheries	
1	Others (specify)	

Responsible Fishing Technologies and Practices		
5	• Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
5	• By-catch and by-catch reduction including the implementation of international by-catch guidelines	
3	• Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
3	• Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
5	• Improving fish quality through on-board handling technologies and good practices	
5	• Improving safety and working conditions of fishers onboard fishing vessels	
1	• Others (specify)	
Aquaculture		
5	• Advancing aquaculture technologies (broodstock management to grow out phase)	
5	• Minimizing impacts of aquaculture on the environment/biodiversity	
3	• Genetic improvement of aquaculture species	
5	• Regional Guidelines for good aquaculture practices	
3	• Regional collaboration on disease diagnosis, surveillance and control	
5	• Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
3	• Aquaculture for rural development, food security and poverty alleviation	
3	• Energy saving/optimization for aquaculture	
3	• Regional Guidelines on Aquaculture Certification	
5	• Stock enhancement of endangered species	
3	• Impacts of climate change on aquaculture	
3	• Capacity building in responsible aquaculture practices	
1	• Others (specify)	
Post-harvest of Fish and Fishery Products		
3	• Improving post-harvest technologies and safety/quality of products for export	
3	• Improving post-harvest technologies and safety/quality of local/traditional fishery products	
5	• Optimize utilization of catch, and reduction of post-harvest losses	
3	• Optimizing socio-economic returns from fisheries/post-harvest activities	
5	• Capacity building on analysis of chemicals, drugs, toxins, etc.	
5	• Improved handling and preservation, product development and innovation	
3	• Promotion of “One Village, One Fisheries Products”	
1	• Others (specify)	

Trade in Fish and Fishery Products		
5	• Preventing trade of IUU fishing products	
3	• ASEAN standards for fishery and aquaculture products	
3	• Traceability and certification	
3	• Product eco-labeling, branding	
1	• Others (specify)	
Emerging Requirements		
5	• Requirements relevant to IUU fishing (e.g. port-state measures, etc.)	
5	• CITES-related issues and requirements	As Japan mentioned at the conference in June, Japan would like to cooperate with ASEAN counties.
5	• Requirements on safety and working conditions of fisheries workers	
5	• Requirements relevant to Fishery Subsidies	
3	• Emerging requirements from the ASEAN Community Building	
1	• Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

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**QUESTIONNAIRE ON
THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC
(Revised as of 13 January 2012)**

Respondents:

Name: Mr. Akhane PHOMSOUVANH

Country: **LAO PDR****1. List ten fisheries-related priority areas that should be addressed/improved in your country:**

1. Aquatic resources identification, assessment and management;
 - Fisheries statistics (methods for data collection, data analysis, database);
 - Assessment and inventory of indigenous fish species in Lao PDR;
 - Assessment and inventory of other aquatic animals and aquatic plants in Lao PDR;
 - GIS mapping of potential inland water bodies for fisheries enhancement;
 - GIS mapping of potential areas for aquaculture development;
2. Reservoir fisheries inventory, assessment and management;
3. Floodplain and wetland inventory, assessment and management;
4. Study of aquatic biodiversity in rain-fed rice fields;
5. Aquaculture research, management and development;
6. Fish diseases and aquatic animal health;
7. Post-harvest technologies, control and regulations (Fish handling, processing, preservation and marketing);
8. Micro-credit schemes for small-scale fisheries;
9. Fisheries Impact Assessment (FIA) and mitigation;
10. Fisheries enhancement methodologies (stocking, habitat rehabilitation/improvement, etc.)

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- 5 Research, development and verification of relevant technologies (research and development center)
- 4 Transfer of technologies through training and HRD activities to government officers (training center)
- 3 Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- 2 Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- 1 Facilitate coordination and networking with other regional/international organizations

Other views:

- Develop recommendations and provide technical assistance for inland fisheries management and development that contribute to food security and poverty alleviation in the region;
- Develop technologies and provide technical assistance for aquaculture research and development for least developed countries in the region.

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	scopes/activities	Remarks/Examples
Fishery Resources		
5	Fishery resources survey in the inland waters	Mekong river and tributaries, reservoir, floodplains, wetlands and rain-fed rice fields.
	Fishery resources survey in the territorial seas and EEZs	
	Fishery resources survey in the high-sea and deep-sea areas	
	Fish species identification (e.g. deep-sea fishes)	
	Data collection on shared stocks	
	Data collection on species under international concerns	
5	Improvement of information on status and trends of fishery resources	Methodologies for collection and analysis of inland fisheries statistics
4	Study on impacts of climate change on fishery resources	Impact assessment, adaptation and mitigation measures
	Others (specify)	
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
4	Promote the implementation and regionalization of International Agreements/Instruments	CCRF, ASEAN-SEAFDEC Resolution and Action Plan up to 2020
3	Facilitate development of common/coordinated positions on international fisheries-related issues	
5	Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	Improve SEAFDEC Fishery Bulletin
5	- Others (specify): - Develop regional guidelines and technologies for Inland Fisheries Research, Management and Development	
	Coastal/Marine Fisheries Management	
	Regional, Sub-regional coordination for fisheries management	
	Management of fishing capacity and combating IUU fishing	
	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
	Sustainable exploitation of resources (e.g. under-utilized and deep-sea resources)	
	Maximizing utilization of by-catch	
	Habitat conservation/rehabilitation and resources enhancement (e.g. <i>Refugia</i>, ARs, MPAs)	
	Conservation and management of species under international concerns	
	Ecosystem approach to fisheries	
	Indicators for sustainable fisheries development	

	Measures to mitigate impacts of climate change and to build adaptive capacity	
	Others (specify)	
	Inland Fisheries Management	
1	Management of fishing capacity and combating IUU fishing	
5	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
4	Addressing multiple use resources, and conflict resolution/ mitigation	
5	Enhancing awareness on importance of inland fisheries	
5	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
3	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
5	Measures needed to mitigate effects of climate change and to build adaptive capacity	
4	Ecosystem approach to inland fisheries	
4	Indicators for sustainable inland fisheries	
	Others (specify)	
Responsible Fishing Technologies and Practices		
5	Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
5	By-catch and by-catch reduction including the implementation of international by-catch guidelines	
5	Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
5	Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
5	Improving fish quality through on-board handling technologies and good practices	
5	Improving safety and working conditions of fishers onboard fishing vessels	
	Others (specify)	
Aquaculture		
5	Advancing aquaculture technologies (broodstock management to grow out phase)	
3	Minimizing impacts of aquaculture on the environment/biodiversity	
5	Genetic improvement of aquaculture species	
4	Regional Guidelines for good aquaculture practices	
3	Regional collaboration on disease diagnosis, surveillance and control	
5	Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
5	Aquaculture for rural development, food security and poverty alleviation	
1	Energy saving/optimization for aquaculture	
3	Regional Guidelines on Aquaculture Certification	
5	Stock enhancement of endangered species	

4	• Impacts of climate change on aquaculture	
5	• Capacity building in responsible aquaculture practices	
	• Others (specify)	
Post-harvest of Fish and Fishery Products		
5	• Improving post-harvest technologies and safety/quality of products for export	
5	• Improving post-harvest technologies and safety/quality of local/traditional fishery products	
1	• Optimize utilization of catch, and reduction of post-harvest losses	
4	• Optimizing socio-economic returns from fisheries/post-harvest activities	
5	• Capacity building on analysis of chemicals, drugs, toxins, etc.	
5	• Improved handling and preservation, product development and innovation	
5	• Promotion of “One Village, One Fisheries Products”	
	• Others (specify)	
Trade in Fish and Fishery Products		
3	• Preventing trade of IUU fishing products	
5	• ASEAN standards for fishery and aquaculture products	
3	• Traceability and certification	
3	• Product eco-labeling, branding	
	• Others (specify)	
Emerging Requirements		
3	• Requirements relevant to IUU fishing (e.g. port-state measures, etc.)	
3	• CITES-related issues and requirements	
1	• Requirements on safety and working conditions of fisheries workers	
1	• Requirements relevant to Fishery Subsidies	
5	• Emerging requirements from the ASEAN Community Building	
	• Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

- SEAFDEC as a regional organization should promote better collaboration and sharing of scientific information/knowledge that exist in the region regarding alternative approaches and methodologies on inland fisheries research, management and development.
- SEAFDEC should better promote the role of aquaculture research and development for food

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name: Mr. Mohamad Shaupi bin Derahman (National Coordinator) Country: **MALAYSIA**
 Mr. Razali bin Lajis
 Mr. Hussin bin Mat Ali
 Mr. Abdullah bin Jaafar
 Mr. Munir bin Mohd. Nawi
 Mrs. Maznah bt. Othman
 Mr. Mohd. Zin bin Saad
 Mrs. Siti Norita bt. Mohamad
 Mr. Abu Talib bin Ahmad
 Mrs. Tan Geik Hong
 Mr. Abdul Rahman bin Abdul Wahab
 Mrs. Ong See Ling

1. List ten fisheries-related priority areas that should be addressed/improved in your country:

1. Marine Fisheries Management
2. Sustainable Aquaculture
3. Small Scale Fisheries
4. Emerging Requirements
5. Post Harvest and Safety of Fish and Fishery Products
6. Fisheries Resources
7. Fisheries Technology
8. Fish Trade
9. Climate Change
10. Improving Fisheries Information System

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- 3** Research, development and verification of relevant technologies (research and development center)
5 Transfer of technologies through training and HRD activities to government officers (training center)
2 Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
4 Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
1 Facilitate coordination and networking with other regional/international organizations

Other views:

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
1	• Fishery resources survey in the inland waters	
1	• Fishery resources survey in the territorial seas and EEZs	
5	• Fishery resources survey in the high-sea and deep-sea areas	
4	• Fish species identification (<i>e.g.</i> deep-sea fishes)	
4	• Data collection on shared stocks	
1	• Data collection on species under international concerns	
4	• Improvement of information on status and trends of fishery resources	
5	• Study on impacts of climate change on fishery resources	
	• Others (specify)	
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
5	• Promote the implementation and regionalization of International Agreements/Instruments	
5	• Facilitate development of common/coordinated positions on international fisheries-related issues	
4	• Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	
	• Others (specify)	
	Coastal/Marine Fisheries Management	
3	• Regional, Sub-regional coordination for fisheries management	
4	• Management of fishing capacity and combating IUU fishing	global record to be accepted by MC -facilitate regional forum on IUU
5	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
4	• Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	
1	• Maximizing utilization of by-catch	
5	• Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i> , ARs, MPAs)	
5	• Conservation and management of species under international concerns	
5	• Ecosystem approach to fisheries	
5	• Indicators for sustainable fisheries development	
5	• Measures to mitigate impacts of climate change and to build adaptive capacity	
	• Others (specify)	
	Inland Fisheries Management	
3	• Management of fishing capacity and combating IUU fishing	
3	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
1	• Addressing multiple use resources, and conflict resolution/ mitigation	

1	• Enhancing awareness on importance of inland fisheries	
3	• Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
1	• Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
2	• Measures needed to mitigate effects of climate change and to build adaptive capacity	
3	• Ecosystem approach to inland fisheries	
1	• Indicators for sustainable inland fisheries	
	• Others (specify)	
Responsible Fishing Technologies and Practices		
3	• Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
5	• By-catch and by-catch reduction including the implementation of international by-catch guidelines	
4	• Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
5	• Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
5	• Improving fish quality through on-board handling technologies and good practices	
5	• Improving safety and working conditions of fishers onboard fishing vessels	
	• Others (specify)	
Aquaculture		
4	• Advancing aquaculture technologies (broodstock management to grow out phase)	
5	• Minimizing impacts of aquaculture on the environment/biodiversity	
5	• Genetic improvement of aquaculture species	
3	• Regional Guidelines for good aquaculture practices	
5	• Regional collaboration on disease diagnosis, surveillance and control	
5	• Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
5	• Aquaculture for rural development, food security and poverty alleviation	
3	• Energy saving/optimization for aquaculture	
5	• Regional Guidelines on Aquaculture Certification	
4	• Stock enhancement of endangered species	
5	• Impacts of climate change on aquaculture	
5	• Capacity building in responsible aquaculture practices	
	• Others (specify)	
Post-harvest of Fish and Fishery Products		
5	• Improving post-harvest technologies and safety/quality of products for export	
4	• Improving post-harvest technologies and safety/quality of local/traditional fishery products	
5	• Optimize utilization of catch, and reduction of post-harvest losses	

3	Optimizing socio-economic returns from fisheries/post-harvest activities	
4	Capacity building on analysis of chemicals, drugs, toxins, etc.	
4	Improved handling and preservation, product development and innovation	
1	Promotion of “One Village, One Fisheries Products”	
	Others (specify)	
Trade in Fish and Fishery Products		
5	Preventing trade of IUU fishing products	
2	ASEAN standards for fishery and aquaculture products	
5	Traceability and certification	
3	Product eco-labeling, branding	
	Others (specify)	
Emerging Requirements		
5	Requirements relevant to IUU fishing (e.g. port-state measures, etc.)	
5	CITES-related issues and requirements	
3	Requirements on safety and working conditions of fisheries workers	
3	Requirements relevant to Fishery Subsidies	<i>Common position</i>
5	Emerging requirements from the ASEAN Community Building	
5	Others (specify) FAO Global Record on Fishing Vessel	

4. Other views/comment on the roles and functions of SEAFDEC:

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QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name: Mr. Win Myint Maung, National Coordinator of SEAFDEC for Myanmar Country: **MYANMAR**

1. List ten fisheries-related priority areas that should be addressed/improved in your country:

1. Aquaculture for rural development, food security and poverty alleviation
2. Improving post-harvest technologies and safety/quality of products for export
3. Fishery resources survey in the territorial seas and EEZs
4. Management of fishing capacity and combating IUU fishing
5. Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices
6. Traceability and certification
7. Habitat conservation/rehabilitation and resources enhancement for inland fisheries
8. Regional Guidelines for good aquaculture practices
9. Improvement of information on status and trends of fishery resources
10. Reduction of impacts from fisheries to the inland/coastal/marine ecosystems

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

5: Research, development and verification of relevant technologies (research and development center)

4: Transfer of technologies through training and HRD activities to government officers (training center)

4: Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)

4: Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.

5: Facilitate coordination and networking with other regional/international organizations

Other views:

.....

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
	• Fishery resources survey in the inland waters	4: Inland waters fisheries are important role in Myanmar especially for food and income of rural community.
	• Fishery resources survey in the territorial seas and EEZs	5: It is needed to measure for sustainable Fisheries Management.
	• Fishery resources survey in the high-sea and deep-sea areas	3: Myanmar vessels are not able to operate in high –sea and deep- sea areas.
	• Fish species identification (e.g. deep-sea fishes)	3: Myanmar will collaborate with SEAFDEC.
	• Data collection on shared stocks	3: Myanmar will collaborate with SEAFDEC.

	Data collection on species under international concerns	3: Myanmar will collaborate with SEAFDEC.
	Improvement of information on status and trends of fishery resources	5: Myanmar need to apply the scientific data and information
	Study on impacts of climate change on fishery resources	5: Present time our region effect impacts of climate change frequently so we need to study the impact of climate change on fishery
	Others (specify) ...Marine fish Assessment	We need to conduct, it's essential
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
	Promote the implementation and regionalization of International Agreements/Instruments	4: Myanmar will pursue the International agreements/ Instrument.
	Facilitate development of common/coordinated positions on international fisheries-related issues	4: Myanmar will pursue the International agreements/ Instrument.
	Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	5: As fishery statistics are a key component of a fishery information system to provide for making the appropriate policy, planning and monitoring and management of fisheries, the projects of improvements to national and regional fisheries statistical system and harmonization and compilation of fishery statistics as well as the enhancing the collection data including non-routine data and indigenous knowledge for policy planning and management are greatly needed in our region.
	Others (specify)	
	Coastal/Marine Fisheries Management	
	Regional, Sub-regional coordination for fisheries management	4: Myanmar has been cooperating with regional and sub –regional organization.
	Management of fishing capacity and combating IUU fishing	5: It is urgently needed to measure for sustainable Fisheries Management.
	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	5: Myanmar is implementing poverty alleviation according to the national guide line.
	Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	5: To introduce capture technology and market of under-utilization of fisheries resources
	Maximizing utilization of by-catch	4: To use responsible fishing Gear and practices (BRDs and JTEDs)
	Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i>, ARs, MPAs)	5: It is needed to promote the function of habitat conservation
	Conservation and management of species under international concerns	3
	Ecosystem approach to fisheries	4: Myanmar adopted guide line for enhancing closed area and closed season.
	Indicators for sustainable fisheries development	5: DoF needs to enhance the using of Fisheries indicators for resources conservation and management.

	Measures to mitigate impacts of climate change and to build adaptive capacity	4: Recently, Climate Change is facing in most of countries around the world. In this scenario, Myanmar also would like to concern with how to mitigate the Climate Change in this region.
	Others (specify)	
Inland Fisheries Management		
	Management of fishing capacity and combating IUU fishing	5: It is needed to measure for sustainable Fisheries Management.
	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	4: To improvement of fishery conservation and awareness of self administration on livelihood.
	Addressing multiple use resources, and conflict resolution/ mitigation	4: Inland water is losing and it is needed to conduct preservation.
	Enhancing awareness on importance of inland fisheries	4: To improvement of fishery conservation and awareness of self administration on livelihood.
	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	5: It is needed to measure for resources conservation. Myanmar will establish the Resources Conservation Association in state and division.
	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	3
	Measures needed to mitigate effects of climate change and to build adaptive capacity	3
	Ecosystem approach to inland fisheries	4: Myanmar will establish the Resources Conservation Association in state and division.
	Indicators for sustainable inland fisheries	5: It is needed to conduct for fisheries resources conservation and management.
	Others (specify)	
Responsible Fishing Technologies and Practices		
	Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	5: For the sustainable fisheries development, need training, introduce use of new fishing technologies and selective fishing gears.
	By-catch and by-catch reduction including the implementation of international by-catch guidelines	4: To improve the use of by-catch reduction devices etc; TEDs and JTEDs
	Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	4: For the sustainable fisheries development, need training, introduce new fishing technology and selective gears.
	Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	4: To reduce of using light fishing
	Improving fish quality through on-board handling technologies and good practices	4: To get quality of catch and enhance value of catch
	Improving safety and working conditions of fishers onboard fishing vessels	4: To reduce onboard accident of fishermen vessel personnel at sea (according to the STCW-F 1995) to provide safety training.
	Others (specify)	

Aquaculture		
	Advancing aquaculture technologies (broodstock management to grow out phase)	4: We need more advanced culture techniques for broodstock management
	Minimizing impacts of aquaculture on the environment/biodiversity	4: Reduce the risks of negative environmental impacts, loss of biodiversity and disease transfer by regulating the introduction and transfer of aquatic organism in accordance with the Regional Guidelines on the Responsible Movement of Live Aquatic Animals and Plants.
	Genetic improvement of aquaculture species	3: We are conducting on Rohu (<i>Labeo rohita</i>) genetic improvement program.
	Regional Guidelines for good aquaculture practices	5: Myanmar is starting conduct on the GAqP System.
	Regional collaboration on disease diagnosis, surveillance and control	3: Myanmar DOF established Disease Section and implemented Level I, Level II and Level III in accordance with collaboration with NACA, OIE, SEAFDEC. On the other side, SEAFDEC-AQD assisted in sending its experts to Myanmar to study some important viral diseases. However, zoning is not yet implemented as the culture systems are not so intensive and developed.
	Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	4: Myanmar is Regional lead country among ASEAN Region.
	Aquaculture for rural development, food security and poverty alleviation	5: This fact is highlight of National policy.
	Energy saving/optimization for aquaculture	2: Fossil energy using in Myanmar's Aquaculture system is not so intensive.
	Regional Guidelines on Aquaculture Certification	4: We have already certification system but more need the advanced regional guideline
	Stock enhancement of endangered species	3: We have little amount of endangered species.
	Impacts of climate change on aquaculture	4: Climate change is important factor for all round sectors
	Capacity building in responsible aquaculture practices	4: It is important factor for HRD program and sustainable fisheries sector.
	Others (specify)	
Post-harvest of Fish and Fishery Products		
	Improving post-harvest technologies and safety/quality of products for export	5: Due to commitment to establish AEC before 2015 and importing countries requirement.
	Improving post-harvest technologies and safety/quality of local/traditional fishery products	3: To support consumer protection law.
	Optimize utilization of catch, and reduction of post-harvest losses	3: To fully utilize the catch
	Optimizing socio-economic returns from fisheries/post-harvest activities	4: To fully utilize the catch
	Capacity building on analysis of chemicals, drugs, toxins, etc.	5: Due to commitment to establish AEC before 2015 and importing countries requirement.

	Improved handling and preservation, product development and innovation	4: To improve quality
	Promotion of “One Village, One Fisheries Products”	5: Target to reduce poverty alleviation to reach millennium development goal.
	Others (specify) inadequate Regulation in Fishery Sector of Myanmar	Sustainable development of fishery sector
Trade in Fish and Fishery Products		
	Preventing trade of IUU fishing products	5: Especially for EU market requirement
	ASEAN standards for fishery and aquaculture products	4: Due to commitment to establish AEC before 2015 and importing countries requirement.
	Traceability and certification	5: Due to commitment to establish AEC before 2015 and importing countries requirement.
	Product eco-labeling, branding	3: Sustainable of fishery sector by providing by manufacturing environment friendly technology
	Others (specify)	
Emerging Requirements		
	Requirements relevant to IUU fishing (e.g. port-state measures, etc.)	4: To strengthen MCS
	CITES-related issues and requirements	3: Awareness of CITES
	Requirements on safety and working conditions of fisheries workers	5: To reduce onboard accident of fishermen vessel personnel at sea (according to the STCW-F 1995) to provide safety training.
	Requirements relevant to Fishery Subsidies	5: There is no program of fisheries subsidies for small scale fisheries. They need it to substitute the selected fishing gears for responsible fishing practice.
	Emerging requirements from the ASEAN Community Building	4: To improve regional network program.
	Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Country: **PHILIPPINES**

1. List of fisheries-related priority areas in the country

1. Training on Entrepreneurial Application of Technology
2. Fish Health Management
3. Market Information and Product Development
4. Upgrading of Post harvest technology towards global competitiveness
5. Sustainable Resource and Technology Utilization
6. Climate Change adaptation and Mitigation
7. Monitoring Control and Surveillance (MCS): Law Enforcement
8. Food Security
9. Sustainable Aquaculture, Fish Breeding and Hatchery
10. Co-management of Fisheries: Strengthening of Fisheries and Aquatic Resources Management Council (FARMC) and Fisherfolk Assn.
11. Safety of Fishery Products (HACCP, GMP, Catch Certification, etc.)
12. Improvement of Fishery Statistics Systems
13. Integrated Inland Fisheries Management and Conservation of Indigenous Species
14. Enhancing Governance in Fisheries
15. Community-Based Risk Assessment in Coastal Areas
16. Upgrading of Post Harvest technology towards global competitiveness
17. Research on Post Harvest Losses and Fisheries Resources in the EEZ
18. Coastal Resource Management
19. Municipal Water Delineation
20. Marine finfish, Abalone, Sea urchin, Sea cucumber, Mudcrab, seaweed production and Hatchery
21. Capability Building Training of Stakeholders
22. Breeding of fish and hatchery operation/management
23. Fisheries Management Using Ecosystem Approach to Fisheries
24. Responsible Fishing Technology
25. Environmental Protection
26. Organic Fish Farming
27. Genetic improvement of aquaculture species
28. Stock enhancement for threatened species in inland waters

2. Views on roles and functions of SEAFDEC

(Rank 1-5: 1 = least important, 5 most important)

- ...4... Research, development and verification of relevant technologies (research and development center)
- ...4... Transfer of technologies through training and HRD activities to government officers (training center)
- ...3... Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- ...3... Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- ...4... Facilitate coordination and networking with other regional/international organizations

Other views: SEAFDEC to act as fisheries technical arm of ASEAN to generate common position during international meetings/fora.

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/Activities	Remarks/Examples
Fishery Resources		
4	• Fishery resources survey in the inland waters	Survey of indigenous species
4	• Fishery resources survey in the territorial seas and EEZs	Bluefin tuna survey in Northeast of Cagayan
3	• Fishery resources survey in the high-sea and deep-sea areas	
3	• Fish species identification (<i>e.g.</i> deep-sea fishes)	
3	• Data collection on shared stocks	Should be done in coordination with other member countries
3	• Data collection on species under international concerns	
4	• Improvement of information on status and trends of fishery resources	It should be a priority area of concern for SEAFDEC at this moment
5	• Study on impacts of climate change on fishery resources	
Fisheries Management and Policy Planning		
General Policy Planning and Management		
5	• Promote the implementation and regionalization of International Agreements/Instruments	Should be in consultation with the member countries
4	• Facilitate development of common/coordinated positions on international fisheries-related issues	
4	• Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	SEAFDEC can also include this activity but it should be in coordination with BAS
Coastal/Marine Fisheries Management		
4	• Regional, Sub-regional coordination for fisheries management	For discussion with member countries
4	• Management of fishing capacity and combating IUU fishing	
4	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	Intensify involvement of the stakeholders
4	• Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	Strengthen R & D activity of SEAFDEC
4	• Maximizing utilization of by-catch	
4	• Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i> , ARs, MPAs)	Priority area of concern
4	• Conservation and management of species under international concerns	
4	• Ecosystem approach to fisheries	
4	• Indicators for sustainable fisheries development	
4	• Measures to mitigate impacts of climate change and to build adaptive capacity	
Inland Fisheries Management		

Score	Scopes/Activities	Remarks/Examples
4	Management of fishing capacity and combating IUU fishing	Strengthening MCS
4	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	Strengthening of FARMC and other fisherfolk associations
3	Addressing multiple use resources, and conflict resolution/ mitigation	
4	Enhancing awareness on importance of inland fisheries	
4	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
4	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
4	Measures needed to mitigate effects of climate change and to build adaptive capacity	
4	Ecosystem approach to inland fisheries	
4	Indicators for sustainable inland fisheries	
Responsible Fishing Technologies and Practices		
4	Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
4	By-catch and by-catch reduction including the implementation of international by-catch guidelines	
4	Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
4	Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	Energy saving equipment for sustenance fishermen
4	Improving fish quality through on-board handling technologies and good practices	
4	Improving safety and working conditions of fishers onboard fishing vessels	
Aquaculture		
5	Advancing aquaculture technologies (broodstock management to grow out phase)	
5	Minimizing impacts of aquaculture on the environment/biodiversity	Study on impact of alien species
4	Genetic improvement of aquaculture species	
5	Regional Guidelines for good aquaculture practices	Priority are of concern
4	Regional collaboration on disease diagnosis, surveillance and control	
4	Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
4	Aquaculture for rural development, food security and poverty alleviation	Needs focus to encourage local investors to invest
4	Energy saving/optimization for aquaculture	Tap alternative energy source; R & D Study on renewable energies
4	Regional Guidelines on Aquaculture Certification	
4	Stock enhancement of endangered species	Should be undertaken in close coordination with other institutions
4	Impacts of climate change on aquaculture	

Score	Scopes/Activities	Remarks/Examples
4	Capacity building in responsible aquaculture practices	
Post-harvest of Fish and Fishery Products		
4	Improving post-harvest technologies and safety/quality of products for export	
4	Improving post-harvest technologies and safety/quality of local/traditional fishery products	
4	Optimize utilization of catch, and reduction of post-harvest losses	
4	Optimizing socio-economic returns from fisheries/post-harvest activities	
3	Capacity building on analysis of chemicals, drugs, toxins, etc.	
4	Improved handling and preservation, product development and innovation	
3	Promotion of “One Village, One Fisheries Products”	Product branding (Bonuan Bangus etc)
Trade in Fish and Fishery Products		
4	Preventing trade of IUU fishing products	
4	ASEAN standards for fishery and aquaculture products	
4	Traceability and certification	
3	Product eco-labeling, branding	Organic farmed fish
Emerging Requirements		
4	Requirements relevant to IUU fishing (<i>e.g.</i> port-state measures, etc.)	Vessel Monitoring System
4	CITES-related issues and requirements	
4	Requirements on safety and working conditions of fisheries workers	SEAFDEC should include in their training programs
3	Requirements relevant to Fishery Subsidies	
4	Emerging requirements from the ASEAN Community Building	SEAFDEC should stand as focal point for the ASEAN community

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name:

Country: **SINGAPORE****1. List ten fisheries-related priority areas that should be addressed/improved in your country:**

1. Industry awareness towards IUU and capability building to combat illegal, unregulated and unreported fishing (IUU) *e.g.* inspection procedures and promotion/prevention methodologies.
2. Capability building in advanced aquaculture technologies (broodstock management), disease diagnosis and surveillance
3. Good Aquaculture Practices, Use of Technology use and Optimal resource utilization
4. Traceability and certification of fish and fisheries products
5. Post-harvest handling to maintain quality and safety from port to retail (*e.g.* cold chain management)
6. Production and processing cost reduction through technology, chemical free and novel processing and preservation methods
7. Develop quality standards to support market access
8. Capability building in fish species/marine resources identification.
9. Create consumer awareness on sustainable fisheries and frozen fish
10. Capability building in commercial and small-scale fishing technologies and practices (*e.g.* use of appropriate fishing gears and equipment, work safety)

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- ...5 Research, development and verification of relevant technologies (research and development center)
- ...5 Transfer of technologies through training and HRD activities to government officers (training center)
- ...4 Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- ...3 Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- ...3 Facilitate coordination and networking with other regional/international organizations

Other views:

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
	• Fishery resources survey in the inland waters	3
	• Fishery resources survey in the territorial seas and EEZs	4
	• Fishery resources survey in the high-sea and deep-sea areas	1
	• Fish species identification (<i>e.g.</i> deep-sea fishes)	2
	• Data collection on shared stocks	5

	• Data collection on species under international concerns	5
	• Improvement of information on status and trends of fishery resources	5
	• Study on impacts of climate change on fishery resources	4
	• Others (specify)	
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
	• Promote the implementation and regionalization of International Agreements/Instruments	5
	• Facilitate development of common/coordinated positions on international fisheries-related issues	5
	• Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	5
	• Others (specify)	
	Coastal/Marine Fisheries Management	
	• Regional, Sub-regional coordination for fisheries management	5
	• Management of fishing capacity and combating IUU fishing	5
	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	3
	• Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	4
	• Maximizing utilization of by-catch	3
	• Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i> , ARs, MPAs)	3
	• Conservation and management of species under international concerns	3
	• Ecosystem approach to fisheries	3
	• Indicators for sustainable fisheries development	4
	• Measures to mitigate impacts of climate change and to build adaptive capacity	4
	• Others (specify)	
	Inland Fisheries Management	
	• Management of fishing capacity and combating IUU fishing	3
	• Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	3
	• Addressing multiple use resources, and conflict resolution/ mitigation	3
	• Enhancing awareness on importance of inland fisheries	3
	• Habitat conservation/rehabilitation and resource enhancement for inland fisheries	3
	• Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	3
	• Measures needed to mitigate effects of climate change and to build adaptive capacity	3
	• Ecosystem approach to inland fisheries	4

	• Indicators for sustainable inland fisheries	5
	• Others (specify)	
Responsible Fishing Technologies and Practices		
	• Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	4
	• By-catch and by-catch reduction including the implementation of international by-catch guidelines	4
	• Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	4
	• Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	3
	• Improving fish quality through on-board handling technologies and good practices	5
	• Improving safety and working conditions of fishers onboard fishing vessels	5
	• Others (specify)	
Aquaculture		
	• Advancing aquaculture technologies (broodstock management to grow out phase)	5
	• Minimizing impacts of aquaculture on the environment/biodiversity	3
	• Genetic improvement of aquaculture species	5
	• Regional Guidelines for good aquaculture practices	5 Provide certifiable regional guidelines for good aquaculture practices in industry
	• Regional collaboration on disease diagnosis, surveillance and control	5 Sharing of data, workshops for emerging diseases, treatment and disease control/vaccination
	• Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	5
	• Aquaculture for rural development, food security and poverty alleviation	4
	• Energy saving/optimization for aquaculture	3
	• Regional Guidelines on Aquaculture Certification	5
	• Stock enhancement of endangered species	2
	• Impacts of climate change on aquaculture	4
	• Capacity building in responsible aquaculture practices	4
	• Others (specify)	
Post-harvest of Fish and Fishery Products		
	• Improving post-harvest technologies and safety/quality of products for export	5
	• Improving post-harvest technologies and safety/quality of local/traditional fishery products	5
	• Optimize utilization of catch, and reduction of post-harvest losses	5
	• Optimizing socio-economic returns from fisheries/post-harvest activities	4
	• Capacity building on analysis of chemicals, drugs, toxins, etc.	5

	• Improved handling and preservation, product development and innovation	5
	• Promotion of “One Village, One Fisheries Products”	1
	• Others (specify)	
Trade in Fish and Fishery Products		
	• Preventing trade of IUU fishing products	5
	• ASEAN standards for fishery and aquaculture products	5 Come up with regional safety limits and guidelines for parameters similar to Codex and GAP
	• Traceability and certification	5
	• Product eco-labeling, branding	3
	• Others (specify)	
Emerging Requirements		
	• Requirements relevant to IUU fishing (<i>e.g.</i> port-state measures, etc.)	5
	• CITES-related issues and requirements	3
	• Requirements on safety and working conditions of fisheries workers	3
	• Requirements relevant to Fishery Subsidies	3
	• Emerging requirements from the ASEAN Community Building	4
	• Others (specify)	

4. **Other views/comment on the roles and functions of SEAFDEC:**
SEAFDEC would take on more work in CITES-related issues and requirements to support us in evaluating CITES listing proposals for fishery species.

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name: Department of Fisheries

Country: **THAILAND****1. List ten fisheries-related priority areas that should be addressed/improved in your country:**

1. Environmental Friendly Coastal Aquaculture
2. Fish handling and quality preservation
3. Seafood safety, quality management system and Fish processing technology
4. Fisheries database
5. Implementation on port state measures
6. Aquaculture on aquatic feed i.e. alternative use of protein source
7. Fishing vessel registration and fishing gear licensing
8. Overfishing
9. Improve used monitoring inspection for preventing IUU (PSM)
10. Fish processing in term of quality safety and characteristics of the product

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- ...4 Research, development and verification of relevant technologies (research and development center)
- ...3 Transfer of technologies through training and HRD activities to government officers (training center)
- ...2 Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- ...5 Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- ...1 Facilitate coordination and networking with other regional/international organizations

Other views:

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
2	• Fishery resources survey in the inland waters	
4	• Fishery resources survey in the territorial seas and EEZs	
3	• Fishery resources survey in the high-sea and deep-sea areas	
4	• Fish species identification (e.g. deep-sea fishes)	Species migrate from coastal area, population and
4	• Data collection on shared stocks	
4	• Data collection on species under international concerns	Sea horse, Sea cucumber, Sea snake
4	• Improvement of information on status and trends of fishery resources	Sea snake

3	Study on impacts of climate change on fishery resources	Initiate the program on impacts of climate change
	Others (specify)	
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
4	Promote the implementation and regionalization of International Agreements/Instruments	
4	Facilitate development of common/coordinated positions on international fisheries-related issues	Organize the consultation meeting
4	Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	
	Others (specify)	
	Coastal/Marine Fisheries Management	
4	Regional, Sub-regional coordination for fisheries management	
4	Management of fishing capacity and combating IUU fishing	
4	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
3	Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	
5	Maximizing utilization of by-catch	Develop the model and distribute to member countries
3	Habitat conservation/rehabilitation and resources enhancement (<i>e.g.</i> <i>Refugia</i>, ARs, MPAs)	Capacity building
3	Conservation and management of species under international concerns	
4	Ecosystem approach to fisheries	
5	Indicators for sustainable fisheries development	
4	Measures to mitigate impacts of climate change and to build adaptive capacity	
	Others (specify)	
	Inland Fisheries Management	
4	Management of fishing capacity and combating IUU fishing	
3	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
3	Addressing multiple use resources, and conflict resolution/ mitigation	
5	Enhancing awareness on importance of inland fisheries	Capacity building
4	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
5	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
4	Measures needed to mitigate effects of climate change and to build adaptive capacity	
3	Ecosystem approach to inland fisheries	experiences sharing among MCs
3	Indicators for sustainable inland fisheries	
	Others (specify)	

Responsible Fishing Technologies and Practices		
3	• Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
3	• By-catch and by-catch reduction including the implementation of international by-catch guidelines	
5	• Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
4	• Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
4	• Improving fish quality through on-board handling technologies and good practices	
3	• Improving safety and working conditions of fishers onboard fishing vessels	
	• Others (specify)	
Aquaculture		
5	• Advancing aquaculture technologies (broodstock management to grow out phase)	
5	• Minimizing impacts of aquaculture on the environment/biodiversity	
5	• Genetic improvement of aquaculture species	
5	• Regional Guidelines for good aquaculture practices	
4	• Regional collaboration on disease diagnosis, surveillance and control	
4	• Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
4	• Aquaculture for rural development, food security and poverty alleviation	
3	• Energy saving/optimization for aquaculture	
4	• Regional Guidelines on Aquaculture Certification	
4	• Stock enhancement of endangered species	
4	• Impacts of climate change on aquaculture	
4	• Capacity building in responsible aquaculture practices	
	• Others (specify)	
Post-harvest of Fish and Fishery Products		
3	• Improving post-harvest technologies and safety/quality of products for export	Development of training modules, develop manuals, conduct training for trainers programs, conduct workshop, conferences for research work presentation and sharing experiences and knowledge.
3	• Improving post-harvest technologies and safety/quality of local/traditional fishery products	
4	• Optimize utilization of catch, and reduction of post-harvest losses	
5	• Optimizing socio-economic returns from fisheries/post-harvest activities	
4	• Capacity building on analysis of chemicals, drugs, toxins, etc.	Conduct training for the member countries
4	• Improved handling and preservation, product development and innovation	
3	• Promotion of “One Village, One Fisheries Products”	
4	• Others (specify) Risk assessment concerning seafood safety/safety of fishery products.....	

Trade in Fish and Fishery Products		
4	• Preventing trade of IUU fishing products	
5	• ASEAN standards for fishery and aquaculture products	
4	• Traceability and certification	
4	• Product eco-labeling, branding	
	• Others (specify)	
Emerging Requirements		
5	• Requirements relevant to IUU fishing (<i>e.g.</i> port-state measures, etc.)	
5	• CITES-related issues and requirements	
3	• Requirements on safety and working conditions of fisheries workers	
3	• Requirements relevant to Fishery Subsidies	
4	• Emerging requirements from the ASEAN Community Building	
	• Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

- 4.1 To be efficient and cost effectiveness for work serving the member countries. Also to be more proactive for international-related issues.
- 4.2 SEAFDEC should not provide free of charge training on a regular basis but should be cost recovery basis. Some fund should be subsidized such as training fee. Should also follow-up and assess the outcome and benefits from the training provided.

QUESTIONNAIRE ON THE EXPECTED ROLES, FUNCTIONS AND ACTIVITIES OF SEAFDEC

Respondents:

Name:

Country: **VIETNAM****1. List ten fisheries-related priority areas that should be addressed/improved in your country:**

1. Strengthening governance and management in capture fisheries
2. Development of environment monitoring system and aquatic animal health management
3. Genetic improvement for main cultured species
4. Fishery statistics
5. Development of effective compound feed for aquaculture
6. Strengthen international and regional cooperation to effectively manage migratory species and combat IUU fishing
7. Enhance MCS activities
8.
9.
10.

2. Views on roles and function of SEAFDEC

Taking into consideration the above situation, what should be the most significant roles and functions of SEAFDEC to support the sustainable development of fisheries in the Southeast Asian region?

(Rank 1-5: 1=least important, 5= most important)

- 3 Research, development and verification of relevant technologies (research and development center)
- 3 Transfer of technologies through training and HRD activities to government officers (training center)
- 3 Awareness raising, and generation/dissemination of information package and toolkits (fisheries information center)
- 5 Facilitate regional discussion/collaboration and development of common/coordinated positions, regional standards, etc.
- 4 Facilitate coordination and networking with other regional/international organizations

Other views: Development and implementation coordination of regional plans of action to enhance and improve sustainable fisheries development

3. Views on scopes/activities that should be undertaken by SEAFDEC

(Score 1-5 for each area: 1=lowest priority, 5= highest priority), and if possible, specify example of priority activities that should be undertaken)

Score	Scopes/activities	Remarks/Examples
Fishery Resources		
4	• Fishery resources survey in the inland waters	
3	• Fishery resources survey in the territorial seas and EEZs	
4	• Fishery resources survey in the high-sea and deep-sea areas	
2	• Fish species identification (e.g. deep-sea fishes)	
5	• Data collection on shared stocks	
5	• Data collection on species under international concerns	
3	• Improvement of information on status and trends of fishery resources	

5	Study on impacts of climate change on fishery resources	
	Others (specify)	
Fisheries Management and Policy Planning		
	General Policy Planning and Management	
4	Promote the implementation and regionalization of International Agreements/Instruments	
5	Facilitate development of common/coordinated positions on international fisheries-related issues	
5	Harmonization and compilation of fishery statistics; and enhancing the collection/use of non-routine data and indigenous knowledge for policy planning and management	
	Others (specify)	Promote Ecosystem Approach to fisheries management
	Coastal/Marine Fisheries Management	
5	Regional, Sub-regional coordination for fisheries management	
5	Management of fishing capacity and combating IUU fishing	
4	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
4	Sustainable exploitation of resources (<i>e.g.</i> under-utilized and deep-sea resources)	
4	Maximizing utilization of by-catch	
5	Habitat conservation/rehabilitation and resources enhancement (<i>e.g. Refugia</i>, ARs, MPAs)	
5	Conservation and management of species under international concerns	
5	Ecosystem approach to fisheries	
5	Indicators for sustainable fisheries development	
5	Measures to mitigate impacts of climate change and to build adaptive capacity	
	Others (specify)	
	Inland Fisheries Management	
3	Management of fishing capacity and combating IUU fishing	
5	Co-management, rights-based fisheries, strengthening institutions, alternative livelihood	
4	Addressing multiple use resources, and conflict resolution/ mitigation	
3	Enhancing awareness on importance of inland fisheries	
3	Habitat conservation/rehabilitation and resource enhancement for inland fisheries	
3	Enhancing interconnectivity of habitat and mitigating impacts from water infrastructure	
4	Measures needed to mitigate effects of climate change and to build adaptive capacity	
3	Ecosystem approach to inland fisheries	
3	Indicators for sustainable inland fisheries	
	Others (specify)	

Responsible Fishing Technologies and Practices		
5	• Development of appropriate fishing gears, improvement of technologies and practices including selective fishing gears and devices	
4	• By-catch and by-catch reduction including the implementation of international by-catch guidelines	
4	• Reduction of impacts from fisheries to the inland/coastal/marine ecosystems	
5	• Mitigation of impacts from fisheries to climate change (including energy saving/optimization)	
5	• Improving fish quality through on-board handling technologies and good practices	
4	• Improving safety and working conditions of fishers onboard fishing vessels	
	• Others (specify)	
		
Aquaculture		
4	• Advancing aquaculture technologies (broodstock management to grow out phase)	
4	• Minimizing impacts of aquaculture on the environment/biodiversity	
3	• Genetic improvement of aquaculture species	
5	• Regional Guidelines for good aquaculture practices	
5	• Regional collaboration on disease diagnosis, surveillance and control	
4	• Development of aquaculture feeds to reduce dependence on fish meal and fish-based products	
4	• Aquaculture for rural development, food security and poverty alleviation	
4	• Energy saving/optimization for aquaculture	
5	• Regional Guidelines on Aquaculture Certification	
3	• Stock enhancement of endangered species	
5	• Impacts of climate change on aquaculture	
3	• Capacity building in responsible aquaculture practices	
	• Others (specify)	
		
Post-harvest of Fish and Fishery Products		
5	• Improving post-harvest technologies and safety/quality of products for export	
4	• Improving post-harvest technologies and safety/quality of local/traditional fishery products	
4	• Optimize utilization of catch, and reduction of post-harvest losses	
4	• Optimizing socio-economic returns from fisheries/post-harvest activities	
4	• Capacity building on analysis of chemicals, drugs, toxins, etc.	
4	• Improved handling and preservation, product development and innovation	
3	• Promotion of “One Village, One Fisheries Products”	
	• Others (specify)	
		

Trade in Fish and Fishery Products		
5	• Preventing trade of IUU fishing products	
4	• ASEAN standards for fishery and aquaculture products	
5	• Traceability and certification	
4	• Product eco-labeling, branding	
	• Others (specify)	
Emerging Requirements		
4	• Requirements relevant to IUU fishing (<i>e.g.</i> port-state measures, etc.)	
3	• CITES-related issues and requirements	
4	• Requirements on safety and working conditions of fisheries workers	
4	• Requirements relevant to Fishery Subsidies	
4	• Emerging requirements from the ASEAN Community Building	
	• Others (specify)	

4. Other views/comment on the roles and functions of SEAFDEC:

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PROPOSAL ON POSSIBLE OPTIONS TO ENHANCE THE MODALITY AND INCREASE THE EFFECTIVENESS OF THE FCG/ASSP MECHANISM

I. INTRODUCTION

The ASEAN-SEAFDEC Fisheries Consultative Group (FCG) was established in 1999 as a strategic alliance to enhance the effectiveness of the implementation of fishery programs in the ASEAN. The FCG is mandated to identify important regional/international fisheries issues, provide technical assistance to the ASEAN for the formulation and implementation of common policies, and assist the Member Countries in formulating common positions on regional/international fisheries issues. The mechanism for the implementation of the joint ASEAN-SEAFDEC collaborative programs can be summarized in **Figure 1**.

Later, the ASEAN-SEAFDEC Strategic Partnership (ASSP) was established to further strengthen the cooperation and collaboration on sustainable fisheries development through the signed Letter of Understanding (LOU) between the ASEAN and SEAFDEC on 2 November 2007. The LOU on the ASSP provides a new framework for the ASEAN and SEAFDEC cooperation with formal Terms of Reference (TOR) and Scope of Work, using the existing ASEAN-SEAFDEC FCG as the operating mechanism of the ASSP.

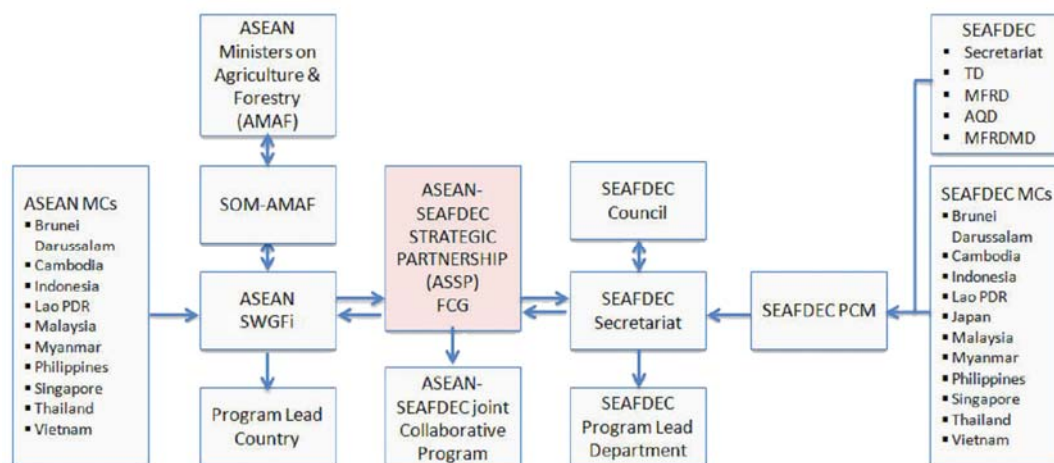


Figure 1. Mechanism of the implementation of the ASEAN-SEAFDEC Strategic Partnership (ASSP)-FCG Programs since 1999

It should be recalled that an adjustment in the working arrangement of the FCG/ASSP Mechanism was made starting in 2007. Specifically, the schedule of FCG/ASSP meetings was adjusted to take into consideration the convenience of the Member Countries as members of the SEAFDEC Program Committee and the FCG/ASSP. Since then, the FCG/ASSP meetings were held back-to-back but **after** the SEAFDEC Program Committee Meeting (PCM) instead of **before** the SEAFDEC Council Meeting as practiced earlier.

The main reasons for such adjustment were: 1) to provide more time for the formulation of any joint ASEAN-SEAFDEC projects/activities, and 2) to provide more time for the SEAFDEC Council Directors and the ASWGFi members to consider the reports and proposed activities adopted and endorsed, respectively during the FCG/ASSP meetings. It should be noted that most of the representatives attending the FCG/ASSP meetings are the same persons attending the

PCM except for Singapore and Thailand, where their representatives at these two are usually different persons.

Moreover, it should also be noted that the ASEAN Fisheries Consultative Forum (AFCF) was established in 2009 with the objective of enhancing regional cooperation in fisheries. During such time, key cluster areas of cooperation were identified by the ASEAN Member States under the AFCF Framework, where each ASEAN Member State is tasked to serve as the lead country for one key cluster area. The progress of implementation of the ASEAN Member States under the AFCF Framework has been included as one of the sub-agenda of the FCG/ASSP meetings since the AFCF was established.

Based on the abovementioned aspects, the yearly timeline of the ASEAN-SEAFDEC collaborative mechanism is summarized in **Figure 2**.

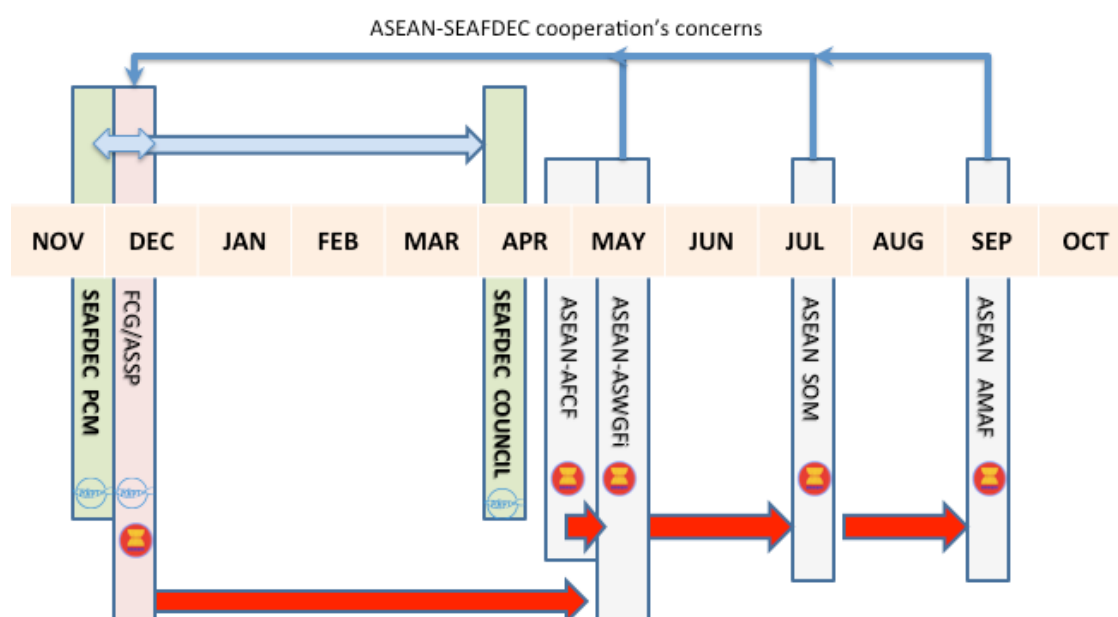


Figure 2. Yearly Timeline of the ASEAN-SEAFDEC Collaborative Mechanism

II. ISSUES FOR CONSIDERATION

2.1 Existing Template of the FCG/ASSP Meeting Agenda

The existing Template of the FCG/ASSP Meeting Agenda has been designed to include 4 main topics as shown in **Box 1**.

Box 1: Existing Template of the FCG/ASSP Meeting Agenda

- A. Follow-up Actions to the Directives Given at SEAFDEC Meetings (Council and FCG/ASSP) and ASEAN Bodies Related to Fisheries
- B. Summary Report of the FCG/ASSP Collaborative Programs Based on the Outputs from PCM.
- C. Progress of the Proposals Implemented under the ASSP
 - a. *Ad-hoc* Program proposed by SEAFDEC in cooperation with ASEAN Secretariat and ASEAN Member Country (such as ASEAN-SEAFDEC Conference)
 - b. ASEAN-SEAFDEC Cooperation in the Implementation of the ASEAN Integrated Food Security (AIFS) Framework by ASEAN Secretariat
 - c. ASEAN Fisheries Consultative Forum (AFCF) by AFCF Secretariat (hosted by an ASEAN Member State on rotation basis)
 - d. ASEAN Shrimp Alliance (ASA) by ASEAN Lead Country
 - e. Others
- D. Policy Consideration on Important Issues: This part is open for SEAFDEC and ASEAN to propose any Regional Policy or coordinated positions for consideration by the ASEAN.

Based on the aforementioned arrangements, SEAFDEC, which is responsible for the organization of the FCG/ASSP meetings, communicates with the ASEAN Secretariat and ASEAN-SEAFDEC Member Countries requesting for updated relevant information that could be used as inputs in the preparation of the necessary working documents for such meetings. However, some problems and difficulties have been encountered in the process that includes the following:

- i) Endorsement of the FCG/ASSP programs and activities by the FCG/ASSP members based on the outcomes of the PCM is required under the FCG/ASSP Mechanism. Thus, recommendations/suggestions raised during FCG/ASSP meetings are only taken note for consideration by the responsible SEAFDEC Departments, to avoid possible delays in the implementation of such programs and activities;
- ii) Issues presented at FCG/ASSP meetings seem to be duplicating. For example, Follow-up Actions to the Directives Given at ASEAN Bodies Related to Fisheries (A) have similar details with those in C(b): ASEAN-SEAFDEC Cooperation in the Implementation of the ASEAN Integrated Food Security (AIFS) Framework by ASEAN Secretariat; and
- iii) Discussion on C(c): ASEAN Fisheries Consultative Forum (AFCF) could not be carried out since the AFCF Secretariat is usually not represented during the FCG/ASSP meetings to report on the progress of the AFCF key cluster areas. In addition, the rotation system among ASEAN Member States to host the AFCF Secretariat makes it difficult for the organizer of the FCG/ASSP meetings which is the SEAFDEC Secretariat, to coordinate/communicate with the responsible persons at the AFCF Secretariat.

2.2 Members Attending FCG/ASSP Meetings

- i) Since the FCG/ASSP meetings had been organized back-to-back (after) with the PCM, most of the FCG/ASSP members are the same persons attending the PCM, who are SEAFDEC National Coordinators except for Singapore and Thailand. Generally, the latter are more familiar with ASEAN and ASSP programs considering that they are also members of the ASWGF;

- ii) In principle, the FCG/ASSP meeting is co-chaired by the SEAFDEC Secretary-General and representative from an ASEAN country who is a member of the ASWGFi and could represent the Chair of the ASWGFi. However, in practice a representative from an ASEAN country particularly the SEAFDEC National Coordinator for such country acts as the Meeting Co-chair for the ASEAN; and
- iii) Therefore, in order to increase the effectiveness of the discussions at FCG/ASSP meetings, representatives attending FCG/ASSP meetings should be different persons from those attending the PCM (except for Japan), and should preferably have some involvement in ASEAN fisheries programs or ASWGFi programs.

2.3 Timing of FCG/ASSP Meetings

- i) The two-day FCG/ASSP meetings were earlier organized back-to-back (**before**) with the SEAFDEC Council Meeting. However, due to the required adequate time for the SEAFDEC Council Directors to consider important issues, the meetings had been organized back-to-back (**after**) with the PCM. Although this could be an advantage since the same participants attend the two consecutive meetings, but this could also be a disadvantage because of possible occurrence of some information gaps with respect to the ASEAN and ASSP activities;
- ii) In addition, SEAFDEC also requires ample time for the preparation of documents on the proposed FCG/ASSP collaborative programs which are generally based on the outputs and recommendations of the PCM. Therefore, it would seem more advantageous if the FCG/ASSP meetings could be separately organized within a certain period of time after the PCM but before the SEAFDEC Council Meeting.

2.4 Agenda of the FCG/ASSP Meetings

- i) Referring to the existing template of the meeting agenda, some topics appear to duplicate with the SEAFDEC efforts, while some participants could encounter certain information gaps especially with regards to the ASEAN and ASSP programs/activities. Thus, this could possibly lead to ineffective discussion during the meeting; and
- ii) Since SEAFDEC had been asked by the PCM to include more policy-oriented issues for discussion, it is therefore proposed that the agenda template be adjusted accordingly in order to have more effective discussion during the FCG/ASSP meetings.

III. SUGGESTIONS FROM THE 14th MEETING OF THE FCG/ASSP

- 3.1 The issue on “Modality to Increase the Effectiveness of the FCG/ASSP Mechanism” was proposed by the SEAFDEC Secretariat during the 14th Meeting of the FCG/ASSP on 17-18 November 2011. This was intended to create a forum for consultation and discussion on the current problems and to find ways of improving the existing practices and working mechanism.
- 3.2 The 14th Meeting of the FCG/ASSP then suggested that “the Proposal for Adjustment of Modality to Increase the Effectiveness of the FCG/ASSP Mechanism” should be put forward during the forthcoming meetings of the SEAFDEC Council and the ASWGFi for consideration and guidance. In addition, the Meeting also provided the following recommendations, which should be taken into consideration in the development of such proposal:

- a. Although the program under the FCG/ASSP Mechanism has been scrutinized at the SEAFDEC Program Committee Meeting (PCM), where the same country representatives usually attend the FCG/ASSP meeting, working documents on the progress and proposed programs to be endorsed at the FCG/ASSP meeting should be developed in a concise manner. However, it should also be detailed enough for deliberation at the meeting;
 - b. The appropriate timing for the conduct of the FCG/ASSP meeting should be revisited, whether this would be held back-to-back with the PCM or back-to-back with the Council Meeting or separately organized; and
 - c. The agenda of the FCG/ASSP meeting should be reviewed and revised to make it more effective but should fulfill the TOR of FCG/ASSP. The SEAFDEC Secretariat could propose a new agenda for the next meeting for circulation to Member Countries for consideration.
- 3.3 The Meeting then requested the **SEAFDEC Secretariat in close coordination with the ASEAN Secretariat to develop a proposal on possible options to enhance the modality and increase the effectiveness of the FCG/ASSP Mechanism.** Such proposal would be submitted to the forthcoming meetings of the SEAFDEC Council and ASWGF for consideration and guidance.

IV. PROPOSED ADJUSTMENT IN THE MODALITY TO INCREASE EFFECTIVENESS OF THE FCG/ASSP MECHANISM

Referring to the issues/problems mentioned in “*para 5-8*”, SEAFDEC in consultation with the ASEAN Secretariat would like to propose adjustment in the modality to increase effectiveness of the FCG/ASSP mechanism by taking into consideration one of the important parameters that need to be changed, which is the template of Meeting Agenda. A new template of the Meeting Agenda is therefore proposed as shown in **Box 2**.

Box 2: Proposed Template of the FCG/ASSP Meeting Agenda

- A. Follow-up Actions to the Directives Given at SEAFDEC Meetings (Council and FCG/ASSP) and ASEAN Bodies Related to Fisheries
- B. The FCG/ASSP Collaborative Programs
 - a. Executive Summary of the Progress of Implementation of the FCG/ASSP Collaborative Programs and Recommendations for Onward Activities
 - b. Executive Report on Issues of Interest by the ASEAN such as:
 - i) IUU fishing;
 - ii) Tuna fisheries;
 - iii) Sustainable inland fisheries; and
 - iv) Others
 - c. Endorsement of the FCG/ASSP Collaborative Programs and Recommendations from the PCM
- C. Progress of the Proposals Implemented under the ASSP
 - a. *Ad-hoc* Program proposed by SEAFDEC in cooperation with ASEAN Member Countries (if any);
 - b. ASEAN-SEAFDEC Cooperation in the Implementation of the ASEAN Integrated Food Security (AIFS) Framework ; and
 - c. Others.
- D. Policy Consideration on Important Issues:
 <This part is open for SEAFDEC and ASEAN Member Countries to propose any Regional Policy or Coordinated Positions for consideration by the ASEAN>

In addition, the timing for the FCG/ASSP meeting is also being proposed with the following three possible options:

Option No.	Proposed Adjustment in the Timing	Advantage	Disadvantage
1.	Certain period between the SEAFDEC PCM and Council Meeting (during the first or second week of February), to be organized in Thailand only	➤ Enough time for preparation of the technical issues and policy consideration under the ASSP programs and activities ➤ Representatives are expected to be the same as those in the ASWGF meeting	➤ Increase country's budget for separate FCG/ASSP and SEAFDEC Program Committee (PC) meetings ➤ Results of FCG/ASSP meetings will be sent directly to ASWGF by the ASEAN Secretariat without having been considered by the SEAFDEC Council ➤ SEAFDEC have to prepare additional budget for organizing the FCG/ASSP Meeting in certain venue such as in Bangkok, Thailand
2.	Certain period between the SEAFDEC Council Meeting and Meeting of ASWGF	➤ Enough time for preparation of the technical issues and policy consideration under the ASSP programs and activities ➤ Regional policies/ coordination positions/ recommendations from SEAFDEC events could be endorsed by the SEAFDEC Council before their submission to ASEAN through the FCG/ASSP mechanism ➤ Option 2 will expand the timeline of the FCG/ASSP mechanism as shown in Figure 1. (flowchart)	➤ Increase country's budget for separate FCG/ASSP and PC meetings ➤ SEAFDEC have to prepare additional budget for organizing the FCG/ASSP Meeting in certain venue such as in Bangkok, Thailand

		➤ Representatives are expected to be the same in FCG/ASSP meetings as those in ASWGFi meetings	
3.	Meeting schedule between the meetings of the SEAFDEC Council and ASWGFi, back-to-back (before) the ASWGFi	➤ Enough time for preparation of the technical issues and policy consideration under the ASSP programs and activities ➤ Regional policy/ coordination position/ /recommendations from SEAFDEC events could be endorsed by SEAFDEC councils before submission to ASEAN through the FCG/ASSP mechanism ➤ Representatives are expected to be the same as those in the ASWGFi meeting	➤ Two events would be held before ASWGFi meetings: (1) AFCF and (2) as proposed the FCG/ASSP, which would be inconvenient for the ASEAN Secretariat to participate in both events conducted at the same period. ➤ SEAFDEC have to prepare additional budget for organizing the FCG/ASSP Meeting following the ASWGFi venue.

Considering the proposed three possible options for the FCG/ASSP meetings, the SEAFDEC Secretariat is considering option 2 when a certain period will be available between the SEAFDEC Council Meeting and the meeting of the ASWGFi. This would make it possible for the SEAFDEC Council to endorse some regional policies/coordinated positions/recommendations from SEAFDEC events/meetings prior to their submission to the ASEAN through the FCG/ASSP Mechanism. Moreover, in the proposed option 2, the period for the FCG/ASSP mechanism could be expanded as shown in **Figure 1**. Furthermore, the members of FCG/ASSP meeting could be the same persons as those in the ASWGFi meetings. Meanwhile Japan could nominate a different high level person to such meetings.

V. REQUIRED CONSIDERATION BY THE COUNCIL

The Council is requested to consider and endorse the proposed Option to Enhance the Modality and Increase the Effectiveness of the FCG/ASSP Mechanism. The Council is also invited to provide policy guidance for enhancing the effective implementation of programs and activities under the FCG/ASSP Mechanism to ensure that highest benefit could be obtained by the Member Countries from the FCG/ASSP meetings.



OPERATION OF SEAFDEC TRAINING AND RESEARCH VESSELS

I. INTRODUCTION

SEAFDEC has been implementing various collaborative programs and activities using its Training and Research Vessels, namely: the M.V. SEAFDEC and M.V. SEAFDEC 2. The main objective of such programs is to provide technical assistance to the SEAFDEC Member Countries to enable them to conduct fisheries resources surveys in their respective EEZs.

In February 1993, the M.V. SEAFDEC, 1,178 GT steel purse seiner was provided by the Government of Japan to SEAFDEC Training Department. The vessel has since then been utilized by the Member Countries through collaborative fisheries resources assessment programs, in regional shipboard training on fishing technology, marine engineering, navigation, and seamanship, and also in the conduct of hydro-acoustic and fishery oceanographic surveys. By the end of 2011, a total of 1,772 days of 76 cruises for fishery resource surveys comprising 84 fishing trials and other relevant activities had been conducted by the M.V. SEAFDEC covering the Andaman Sea, Indian Ocean, South China Sea, Timor Sea, Bay of Bengal, and Gulf of Thailand.

However, the onboard training programs were discontinued since 2002 due to budgetary constraints as a result of the phasing out of the financial support from the Government of Japan for the operation of the vessel. Currently, the utilization of the M.V. SEAFDEC is dependent on request-basis programs, such as the deployment of Tsunami warning system (DART-II system) which was carried out in collaboration with the National Disaster Warning System of Thailand with support from the NOAA; and the offshore fisheries development activities in certain areas of the Andaman Sea and Indian Ocean of the Department of Fisheries of Thailand.

In addition, in order to assist the SEAFDEC Member Countries in the development of sustainable fisheries particularly their respective research activities of the near shore fishery resources within the countries' EEZs, the Government of Japan provided a new research and training vessel, a 200 GT trawler, the M.V. SEAFDEC 2 to replace the M.V. PLATOO which had been in service for more than 15 years. This was also a response to relevant provisions in the 2001 Resolution and Plan of Action which was adopted during the ASEAN-SEAFDEC Millennium Conference in 2001.

M.V. SEAFDEC 2 has since then been used to support the national research activities particularly on fisheries resources assessment, fishery oceanography, environment surveys as well as shipboard training programs in the aspect of promoting the utilization of fishery resources in deep-sea and un-trawlable grounds within the respective EEZs. In a broader sense, the acquisition of the M.V. SEAFDEC 2 has been envisioned to help strengthen technical cooperation in the Southeast Asian region by enhancing the countries' capabilities in research and training aspects.

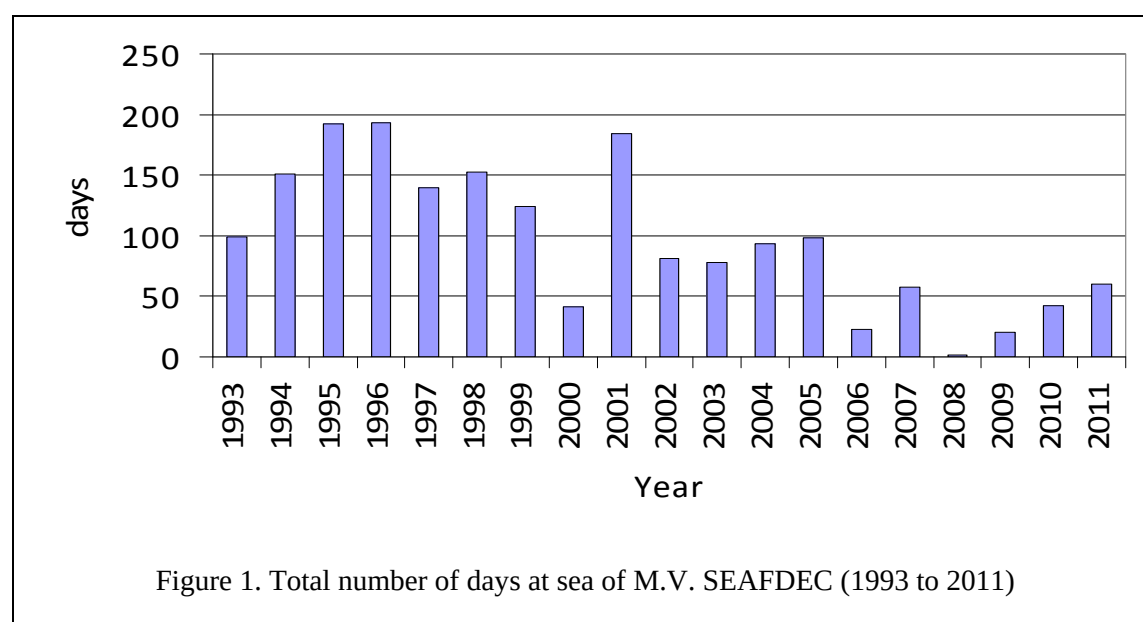
Over the years, the annual plans for the utilization of the M.V. SEAFDEC 2 used to be agreed upon during the annual review/consultation meetings of the *"Eligible Countries Committee and Operations Committee under the cost-sharing policy of SEAFDEC"*. Due to budgetary constraints, the Meeting of the Eligible Countries Committee and Operations Committee for the use of M.V. SEAFDEC 2 was discontinued since 2006 and discussion on the annual plans of the M.V. SEAFDEC 2 has since then been included in the agenda of the SEAFDEC Program Committee meetings.

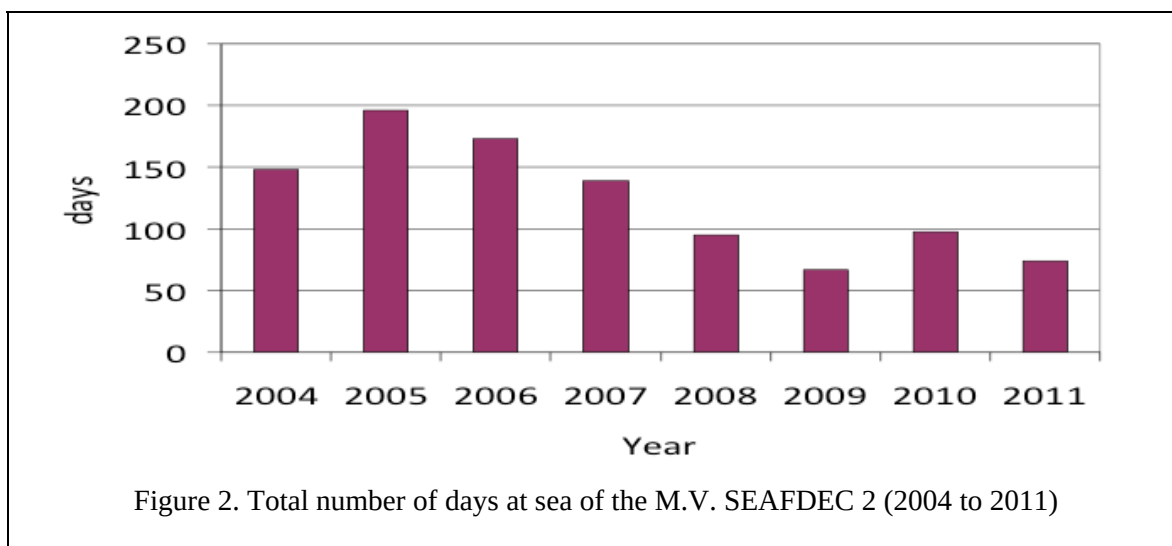
In this regard, the proposed utilization of the M.V. SEAFDEC 2 for fishery resource surveys by the Member Countries is endorsed by the Program Committee Meeting a year before the actual operation of the vessel, and that the plan/schedule of the M.V. SEAFDEC 2 is then submitted to the SEAFDEC Council for information.

Furthermore, funding support for the operation of the M.V. SEAFDEC 2 starting in 2007 has been mainly sourced from the Minimum Regular Contribution (MRC) of SEAFDEC. Such support has enabled SEAFDEC/TD to conduct a number of fishery resource surveys within the EEZs of the Member Country under the Cost-sharing Policy of SEAFDEC.

During the 41st Meeting of SEAFDEC Council in 2009, the Council agreed that the countries that gain the benefit from the use of the M.V. SEAFDEC 2 should be responsible for the cost incurred by the vessel. The Council also agreed to secure the budget for the additional cost of operating the M.V. SEAFDEC 2, while the cost-sharing scheme was modified.

The major change in the cost-sharing scheme for the use of the M.V. SEAFDEC 2 is in **para III (1)** which states that the requesting country will support the fuel supply for the entire duration of the research activity including cruising to and back from the requesting countries. The Revised Guidelines on the Cost-sharing Policy for the Operation of the M.V. SEAFDEC 2 appears as **Annex 1**.





During the discussion of the Program on “**Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2**”, at the 34th Meeting of the SEAFDEC Program Committee in 2011, the Program Committee expressed the concern on the low usage of the M.V. SEAFDEC 2 which could affect the conduct of collaborative projects in the region. Moreover, the Committee Member for Japan also encouraged other Member Countries to make full use of the vessel especially in conducting surveys and exploration activities to be able to compile valuable data that are useful for the analysis of the respective countries’ fishery resources.

Nevertheless, it should be understood that the current high cost of fuel globally and the provision in the cost-sharing policy which indicates that *requesting country has to be responsible for the cost of fuel for the vessel cruising to/from the survey area*, could be the major causes of the reduced utilization of the research and training vessels of SEAFDEC.

Since the first year of their service until the end of 2011, the total working days at sea of the M.V. SEAFDEC and M.V. SEAFDEC 2 are summarized in **Figure 1** and **Figure 2**, respectively.

It could be clearly seen from the above figures that the number of operating days of the SEAFDEC training and research vessels had considerably decreased. It should be noted that the abrupt change occurred around 2006 which could be brought about by the global increasing price of fuel. In addition, the impact should also be due to the revised cost-sharing scheme for the use of the M.V. SEAFDEC 2 which was agreed in 2009 indicating that the requesting countries/agencies should responsible for the fuel expenditure for cursing to/from TD to their respective survey areas.

II. OPERATION OF THE M.V. SEAFDEC AND M.V. SEAFDEC 2 FOR 2012

For the M.V. SEAFDEC, two cruises are planned in 2012 for the maintenance of the tsunami warning system buoy in the Andaman Sea. Meanwhile, for the M.V. SEAFDEC 2, the planned fishery resources survey in Vietnam waters would be conducted from April 2012 for a total of about 146 days. As proposed by Vietnam at the 34th Meeting of the SEAFDEC Program Committee in 2011, the fishery resources survey in Vietnam waters aims to:

- Collect scientific-based information on species composition and the distribution of small pelagic fishery resources in Vietnam waters
- Assess the status of demersal marine fishery resources in Vietnam waters, including collection of data on biomass, demersal stock status, and commercially species distribution;

- Assess the status of small pelagic fishery resources in Vietnam waters using hydro-acoustic survey equipment; and
- Develop fisheries management plan based on the information obtained from the national activities including the 5-year cruise survey by M.V. SEAFDEC 2 for appropriate future program implementation by MARD.

Therefore, the proposed 2012 annual plans for the utilization of the SEAFDEC research and training vessels (M.V. SEAFDEC 2 and M.V. SEAFDEC) are summarized in **Table 1**.

Table 1 Program of Activities of the M.V. SEAFDEC 2 and M.V. SEAFDEC in 2012

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
M.V. SEAFDEC 2												
Fishery resource survey in Vietnam water					73 days				73 days			
Oceanographic survey in the Gulf of Thailand by PMBC								23 days				
M.V. SEAFDEC												
Maintenance of Tsunami Warning System in the Andaman Sea											19 days	

III. ONLINE INFORMATION ON CRUISES AND SURVEYS CARRIED OUT BY THE M.V. SEAFDEC AND M.V. SEAFDEC 2

To date, 663 and 357 fishing operations were conducted by the M.V. SEAFDEC 2 and M.V. SEAFDEC, respectively. Information on the survey locations of the cruises of the SEAFDEC training and research vessels are available online at:

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

http://map.seafdec.org/cftd/mv_seafdec/index.php

IV. REQUIRED CONSIDERATION BY THE COUNCIL

The Council is requested to:

- (1) take note the operational plans of the M.V. SEAFDEC and M.V. SEAFDEC 2 in 2012; and
- (2) provide views and guidance for increased utilization of the M.V. SEAFDEC and M.V. SEAFDEC 2 in the future.

GUIDELINES ON THE COST-SHARING POLICY FOR THE OPERATION OF THE “M.V. SEAFDEC 2”

I. INTRODUCTION

With favorable understanding of the Government of Japan about the function of SEAFDEC to assist in the sustainable development of fisheries of the Member Countries, the Government of Japan agreed to provide a new research vessel, the M.V. SEAFDEC 2 under the Japanese Grant Aid Program to SEAFDEC.

Through a series of consultations with the Government of Japan, SEAFDEC and Japan reached to the agreement that the utilization of the M.V. SEAFDEC 2 should be secured for the benefit of the countries which are eligible to the Japanese Grant Aid Program. On the other hand, it was also agreed among the SEAFDEC Member Countries that the operation of the M.V. SEAFDEC 2 should be based on cost-sharing policy taking into account both aspects, such as the benefits of the operation of the vessel to the Member Countries and the expected budgetary constraints of SEAFDEC in the future. The cost-sharing policy regarding the operation of the M.V. SEAFDEC 2 has also been recognized as an important element to establish the ownership of research activities by the Member Countries and to promote sustainable research activities using the M.V. SEAFDEC 2 in the region.

In exploring the research needs of the Member Countries, SEAFDEC established two mechanisms, namely: the Eligible Countries Committee where the eligible countries could provide or propose their own research needs or plans for the use of the M.V. SEAFDEC 2; and the Operations Committee where the annual plan of operation of the M.V. SEAFDEC 2 would be developed taking into account of needs of the SEAFDEC Member Countries other than the eligible countries as well.

During the 26th Meeting of the SEAFDEC Program Committee held in Manila in 2004, three categories of the expected operation using the M.V. SEAFDEC 2 were presented. It was also recommended that all categories of collaborative operations that are related to the needs of the Member Countries and operation in the national waters would be under the cost-sharing policy except the operation by SEAFDEC to verify the application of standardized research methods using the M.V. SEAFDEC 2, which have been considered through the Technical Consultative Meeting in October 2003 and November 2004.

II. Objectives

This Guideline will provide the outline of the expected cost-sharing policy to be considered by the Member Countries, for the operation of the M.V. SEAFDEC 2 based on the policy arrived at SEAFDEC in early March 2004.

III. Outline of the Proposed Cost-Sharing Policy

Regardless of whether it is in cash or in kind, the following financial items related to the operations cost should be borne as a matter of principle, by the Member Country requesting for the collaborative operation of the M.V. SEAFDEC 2 in her national waters in response to her needs and interests.

- 1) **Supply of fuel** for the entire duration of the research including cruising to and back to the requesting country;
- 2) **Supply of fresh water** that would be consumed by the vessel during the operation of research in the national waters;

- 3) **Salary and necessary DSA of the local or national participants** onboard, who are involved in the research activities should be borne by the Member Country based on its own national standard; and
- 4) **Agency fee and port clearance fee** should be borne by the Member Country when the vessel visits and stays at the port for implementation of the collaborative research program.

IV. Working scheme for the collaborative research with the Member Countries

- 1) Each Member Country is requested to prepare her research proposal, if any, taking into account of the short or medium-term activities. The proposal should be presented to the Eligible Countries Committee and/or Operations Committee to consider the cruise plans for the M.V. SEAFDEC 2.

As a matter of principle, the staying period for the operation of the M.V. SEAFDEC 2 in the national waters could be limited to a maximum period of one month, taking into account of the availability also of the M.V. SEAFDEC 2 for the other member countries.

- 2) Through consultation with the Operations Committee, each proposal from the Member Countries and Departments should be reviewed and finalized based on priority, practicability, readiness and financial background of the proposed research programs. The schedule of the research program of the country finalized by the Operations Committee could be adjusted to cater to the next priority country's needs or could be postponed until financial arrangements become ready by the requesting country.
- 3) Two months prior to the implementation of the individual research program, TD staff in charge of the operation will communicate through E-mail/or visit each beneficiary Member Country to discuss with the concerned staff on the detailed arrangements of the cruise and research program. The concerned members of the Regional Fisheries Policy Network (RFPN) could be mobilized for effective communication with their respective countries, as the case may be.
- 4) Preliminary cruise report including comments on the immediate impacts of the utilization of the M.V. SEAFDEC 2 as well as the results of the national research program should be submitted to SEAFDEC/TD within six months after the cruise.

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COLLABORATIVE ARRANGMENT BETWEEN SEAFDEC AND OTHER ORGANIZATIONS IN 2011

I. RENEWAL OF COLLABORATION IN 2011

1.1. Faculty of Fisheries Sciences of Hokkaido University, Japan

SEAFDEC and the Faculty of Fisheries Sciences of Hokkaido University (**HUFFS**), Japan mutually agreed to extend the existing collaboration. The renewed Agreement, which commenced on 25 February 2011 will be effective until 24 February 2016 and will continue to focus on collaborative research, training and other activities in areas of mutual interest. The cooperation covers: 1) joint research, and education/training; 2) visit or exchange of researchers and students for study, research, education and training to promote cooperation in areas of common concern that are mutually agreed upon; and 3) participation of researchers/students in conferences and meetings on matters of mutual interest.

1.2. Australian Centre for International Agricultural Research

SEAFDEC through its Aquaculture Department (SEAFDEC/AQD) has continued the collaboration with the Commonwealth of Australia represented by the Australian Centre for International Agricultural Research (**ACIAR**), through a contract of agreement signed on 30 May 2011. The agreement which will take effect until 31 May 2015 stipulates that SEAFDEC/AQD as a collaborating institution, would implement the project on 'Improved Seaweed Culture and Post-harvest Utilization in Southeast Asia'. Specifically, AQD is responsible for the conduct and arrangements of the Project including the management of Project funds provided by ACIAR.

1.3. Freshwater Fisheries Research Center/Chinese Academy of Fishery Sciences, China

SEAFDEC Aquaculture Department (SEAFDEC/AQD) and the Freshwater Fisheries Research Center/Chinese Academy of Fishery Sciences (**FFRC/CAFS**) have mutually agreed to strengthen their existing collaboration through the expansion of training, research activities and exchange of research staff by renewing the Memorandum of Understanding signed on 14 May 2009. The renewed MOU which commenced last 1 July 2011 and remains in effect for a period of two years, will involve collaboration in research, training, conduct of workshops, conferences, and lectures as well as exchange visit of staff. The specific collaborative activities are in the areas of feed development and disease control, genetic breeding, water environment for aquaculture activities, and socio-economics.

II. NEW COLLABORATIONS IN 2011

2.1 Vocational Education Commission of Thailand

The Vocational Education Commission of Thailand and SEAFDEC Training Department (SEAFDEC/TD) have entered into a three-year Memorandum of Understanding for academic collaboration which was signed on 29 September 2011 and would take effect until 29 September 2014. The collaboration covers: 1) development of human resources in fisheries and fishing vessels through exchange of staff, experts, officers, lecturers and students for meetings, workshops, seminars, and consultations; 2) promotion and development of joint research, education, and training; 3) exchange of data, documentation and research materials, and to

develop internet link; and 4) building of good connection and cooperation among public and private sectors and organizations.

2.2 Japan International Research Center for Agricultural Sciences

To strengthen the collaboration between SEAFDEC/AQD and Japan International Research Center for Agricultural Sciences (**JIRCAS**) for the promotion of fisheries research and development in Southeast Asia, a Memorandum of Agreement was forged between the two parties on 14 July 2011. The collaboration which will remain effective until March 2016 will involve mutual planning and implementation of research projects of common interests and in accordance with the intended cooperation. It will also facilitate the exchange of scientists through related research projects, seminars, training and site visits.

2.3 Universiti Teknologi Malaysia, Malaysia

SEAFDEC/AQD entered into a three-year Memorandum of Understanding with Universiti Teknologi Malaysia (**UTM**) in December 2011 to collaborate in the following areas: (1) reciprocal exchange of faculty, staff and students, and training programs; (2) joint research projects; (3) exchange of academic publications and information; and (4) promotion of other academic activities. The collaboration is also expected to provide opportunities for UTM postgraduate students and undergraduate students to complete or carry out part of their studies/industrial practical training or research at SEAFDEC.

2.4 Aklan State University, Philippines

SEAFDEC/AQD and Aklan State University (ASU), a government institution in the Philippines of higher learning, have agreed to cooperate in the areas of research, training and information utilizing their joint expertise. The Memorandum of Understanding which was signed in October 2011 and will remain effective for 5 years aims to: (1) develop cooperative activities in the furtherance of the common goals and objectives of SEAFDEC/AQD and ASU; (2) participate in cooperative research and training programs; (3) promote the exchange of scientists and researchers between AQD and ASU for research, training, and other related activities; and (4) strengthen the capabilities of AQD and ASU in the field of aquaculture and fisheries through the cooperative use of materials and facilities.

III. REQUIRED CONSIDERATION BY THE COUNCIL

The Council is requested to provide policy directives on the collaborative arrangements made by SEAFDEC in 2011. The Council is also requested to provide guidance on the ways and means of enhancing the efforts of SEAFDEC to aggressively explore more technical cooperation with institutions and organizations having mutual interests with SEAFDEC.