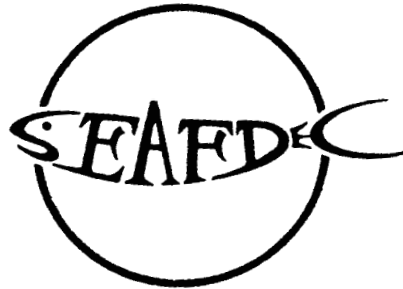


**REPORT OF
THE THIRTY-FIRST MEETING OF THE PROGRAM COMMITTEE
OF THE SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER**

**Singapore
3-5 November 2008**



**THE SECRETARIAT
SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER**

PREPARATION AND DISTRIBUTION OF THIS DOCUMENT

Report of the Thirty-First Meeting of the Program Committee of the Southeast Asian Fisheries Development Center was prepared by the Secretariat of the Southeast Asian Fisheries Development Center (SEAFDEC). The Document is distributed to the SEAFDEC Member Countries, SEAFDEC Departments and concerned institutions.

BIBLIOGRAPHIC CITATION

SEAFDEC. 2009. Report of the Thirty-First Meeting of the Program Committee of the Southeast Asian Fisheries Development Center, Southeast Asian Fisheries Development Center, Singapore. 258 pp.

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EXECUTIVE SUMMARY

1. The Thirty-first Meeting of the Program Committee of the Southeast Asian Fisheries Development Center (SEAFDEC) was held in Singapore from 3 to 5 November 2008, and hosted by the Marine Fisheries Research Department (MFRD). The objective of the Meeting was to review the SEAFDEC programs implemented in 2008 and scrutinize the programs to be implemented in 2009, to ensure that the programs are formulated and implemented in line with the priorities and needs of the Member Countries.

DEPARTMENTAL PROGRAMS

2. The Committee reviewed/endorsed 10 existing Departmental Programs including 1) *Center-wide Information Network (Secretariat)*, 2) *Information and Communications Technology (TD)*, 3) *Tailor Made Training and Study Tour (TD)*, 4) *Integrated Mollusc Production (AQD)*, 5) *Mud Crab and Shrimp Domestication (AQD)*, 6) *Marine Fish (AQD)*, 7) *Small-holder Freshwater Aquaculture (AQD)*, 8) *Seaweed Strain Improvement (AQD)*, 9) *Aquatic Ecology (AQD)*, and 10) *Other R&D Activities (AQD)*.

3. The Committee considered the Program on *Center-wide Information Network* as important in raising the public awareness and visibility of SEAFDEC, therefore dissemination of the information materials to member countries should be continued and increased in number upon the requests. In this regards, to reduce the cost of delivering the information materials to the Member Countries, other means of distribution should be considered. In addition, SEAFDEC website should be developed/improved to include all productions of promotional and technical publication in electronic files for downloading.

4. With regards to the *Departmental Programs implemented by AQD*, most of programs are formulated and implemented cutting across activities under the research, technology verification and demonstration, which are very useful and interested by member countries. However, AQD are requested to implement the activities that have significantly contributed to the Development of Aquaculture in the Region. Committee also suggested AQD to consider on the following aspects:

- enhancing the dissemination of research findings, reports of workshops, training/demonstration activities;
- involving the fisheries private sector in the AQD activities;
- implementing research activities on integrated mariculture or polyculture of marine high value species and protection of ecology;
- developing artificial diets for the abalone;
- sending mud crab experts to Myanmar and providing training on mud crab culture;
- implementing programs to balance the culture of comparatively low-priced species for food security and local development, and the high-priced species for improving the national economies; and
- considering bio-economic aspects in the planning and implementation of AQD R&D activities

5. Consideration for the approach on economic viability and adaptability of the technologies in aquaculture and current global economic crisis, therefore the Committee suggested that the SEAFDEC Secretariat in collaboration with the Departments and Member Countries to develop a regional strategy incorporating economic approaches to fisheries development.

PROGRAMS UNDER THE FISHERIES CONSULTATIVE GROUP OF THE ASEAN-SEAFDEC STRATEGIC PARTNERSHIP (FCG/ASSP)

6. The Committee reviewed the progress and achievements of ASEAN-SEAFDEC Strategic Partnership (ASSP) and Fisheries Consultative Group (FCG) Mechanism programs in 2008 (totally 21 programs), endorsed activities for 2009 (totally 26 programs), and took note of the status of non-funded programs (totally 5 programs).

Existing ASSP-FCG Programs

- 1) Support to the Implementation of Code of Conduct for Responsible Fisheries (Secretariat)
- 2) Assistance for Capacity Building in the Region to Address International Trade Related Issues (Secretariat)
- 3) Promotion of Rights-based Fisheries and Co-management towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management (TD)
- 4) Improvement of Fishery Statistics and Information for Planning and Management of Fisheries in the ASEAN Region (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) Development of Technologies and Human Capacity Building for Sustainable Aquaculture (AQD)
- 8) Quality Assurance Systems for Small and Medium-sized Fish Processing Establishments in ASEAN Member Countries (MFRD)
- 9) Environmental Related Tasks in Southeast Asia (Secretariat)
- 10) Establishment of Disease Surveillance System of Aquatic Animals (AQD)
- 11) Chemical and Drug Residues in Fish and Fish Products in Southeast Asia (MFRD)
- 12) Research and Development (R&D) of Stock Enhancement of Species under International Concerns (AQD)
- 13) Research for Stock Enhancement of Sea Turtles (MFRDMD)
- 14) Capacity Improvement of Fisheries Community for Fisheries Management and Alleviation of Poverty (TD)
- 15) Support to Tsunami Rehabilitation of Affected Countries in the ASEAN Region (Secretariat)
- 16) Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2 (TD)
- 17) Deep Sea Fisheries Resources Exploration in the Southeast Asia (TD)
- 18) Tagging Program for Economically Important Pelagic Species in the South China Sea and Andaman Sea (MFRDMD)
- 19) Promotion of “One Village, One Fisheries Products (FOVOP)” System to Improve the Livelihood for the Fisheries Communities in ASEAN Region (Secretariat)
- 20) Information Collection of Highly Migratory Species in Southeast Asia Waters (TD)
- 21) Development of Regional Database for Fishery Management (TD)

New Proposed ASSP-FCG Programs

- 1) Human Resource Development (HRD) for Poverty Alleviation and Food Security by Fisheries Intervention in the ASEAN Region (Secretariat)

Non-funded ASSP-FCG Programs

- 1) Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement (TD)
- 2) The Use of Indicators for Sustainable Development and Management of Capture Fisheries in the ASEAN Region (MFRDMD)
- 3) Development of Integrated Inland Fisheries Management in ASEAN Countries (MFRDMD)
- 4) Utilization of Freshwater Fish in ASEAN Member Countries (MFRD)
- 5) Good Laboratory Quality Management in ASEAN Member Countries (MFRD)

SEAFDEC Secretariat

7. On the establishment of the ASEAN Regional Fisheries Management Mechanism (ARFMM) which were supported under the “Support to the Implementation of Code of Conduct for Responsible Fisheries”, the representative from the ASEAN Secretariat, expressed his appreciation to SEAFDEC to develop the ARFMM framework, which was submitted by Thailand to the preparatory SOM30th-AMAF. The Meeting was also informed that the ARFMM has been changed to the ASEAN Fisheries Consultative Forum (AFCF)

8. Refer to implementation under the ASEAN Foundation on FOVOP and HRD on poverty alleviation, the Committee Member from Vietnam requested SEAFDEC to give more priority to the less developed countries in implementing the activities that contribute to livelihood, and poverty alleviation.

9. On the activities related to international trade, the Committee Member from Thailand initially sought the support of the other SEAFDEC Member Countries for the FAO Technical Guidelines for Aquaculture Certification.

Training Department

10. In connection with the TD project on *Fishery Resources Survey Utilizing the M.V. SEAFDEC 2*, Indonesia proposed to use MV SEAFDEC2 for fisheries resources survey in the Suulawesi sea during the same period (May 2009) of World Ocean Conference in Manado, . The Committee Member from Myanmar also informed the Meeting that the proposed collaborative resources survey in Myanmar utilizing the M.V. SEAFDEC 2 since 2008 and postponed to 2009 was dropped.

11. The Committee suggested that the activities undertaken by Indonesia in relevant to tuna observation could be coordinated with the program on *Information Collection of Highly Migratory Species in Southeast Asia Waters*.

12. With regards to the program on *Promotion of Rights-based Fisheries and Co-management towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management*, the Committee Member from the Philippines suggested that the outcomes from several workshops and consultations conducted on issues relevant to the programs should be followed-up by the respective Member.

13. The Meeting noted that under the Non-funded ASSP-FCG Programs on *Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement* will be implemented again with the support by the Japanese Trust Fund starting in 2010.

Marine Fisheries Research Department

14. The meeting noted that the program on *Chemical and Drug Residues in Fish and Fish Products in Southeast Asia*, from 2009-2012 will focus on the analysis of biotoxins, while the meeting suggested to include pesticides particularly organophosphate group. However, due to no capacity and limited fund, therefore the Meeting suggested to invite Japanese experts to conduct the training on above subjects and ask SEAFDEC Secretariat to seek more funding support.

15. The Committee Member from Thailand informed the Meeting that there are no Inter-Laboratories Proficiency Testing agencies in the region and the participation in international programs is very costly, the Meeting therefore suggested that issue should be presented for further discussion during the forthcoming ASWGF Meeting.

16. The Committee Member from Thailand proposed to conduct the training program for Fluoroquinolone and Nitromidazole in shrimp products determination for all ASEAN Member Countries and sought the possibility for SEAFDEC to provide financial support for international travel, accommodation, and DSA of the participants.

17. The Meeting suggested that MFRD should consider implementing a program similar to the national residue control plan, and continue monitoring the antibiotic substances in aquaculture products from the region to ensure the safety of aquaculture products as required by imported countries

18. The ASEAN Secretariat encouraged SEAFDEC to compile the outcomes and the information related to the use of chemicals in aquaculture and measures to eliminate the use of harmful chemicals.

OTHER PROGRAMS

19. The Meeting took note of the other SEAFDEC programs/activities implemented in 2008 and proposed for 2009 as follows:

- 1) Promotion of Set-Net: an Eco-friendly Fishing Gear of Sustainable Coastal Fisheries Management
- 2) Information Collection for Economical Important Species: as Surimi Raw Materials
- 3) Cetacean Research in Southeast Asian Waters: Whale Sighting Program
- 4) Collection of Information about International Support in the Region
- 5) Promotion of Sustainable Freshwater Aquaculture for Rural Communities
- 6) Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Approaches

20. The Committee suggested that precautionary approach and the possible impacts from Set-Net operation to the fishery resources should also be considered by TD in the promotion of Set-Net in the region.

21. On the *Cetacean Research in Southeast Asian Waters (Whale Watching Program)*, the Meeting agreed to change the title to *Cetacean Sighting Program*. In this regard, the Committee Member from the Philippines requested TD to train BFAR staffs on cetacean sighting activities by providing the necessary expertise and data to be collected.

22. The Meeting also observed that the linkage of the small pelagic resources with the existing whale and dolphin population in the region should be further investigated under this proposed program.

23. The Meeting also expressed concerns on the difficulties faced by the poor people in remote rural areas in accessing funding support and microcredit in the development of rural aquaculture. In response, the SEAFDEC Secretariat would consider the possibility of including the issue of microcredit in the training programs.

24. The Meeting suggested that activities to be implemented by ASEAN and SEAFDEC to support the implementation of the ASEAN Roadmap for Integration of Fisheries Sector, should also take into account the impact of small-scale capture fisheries and small-scale aquaculture in the remote rural areas.

PIPELINE PROJECTS AND EMERGING NEEDS FOR PREPARATION OF FUTURE PROJECT PROPOSALS

25. The Meeting took note of the two pipeline projects which are still under discussion and negotiation process with potential donor agencies.

- 1) Community Fisheries – Strengthening Organization of Communities for Sustainable Livelihoods in Coastal Areas (Secretariat/Islamic Development Bank-IDB)
- 2) Managing Fish Habitat and Fish Stock in the South China Sea (Secretariat/UNEP-GEF-South China Sea) (*new project proposed at this Program Committee Meeting*)

26. On the project on *Community Fisheries – Strengthening Organization of Communities for Sustainable Livelihoods in Coastal Areas* which was proposed for possible funding from the IDB, the representative from the ASEAN Secretariat suggested that Indonesia as the project ASEAN Lead Country in consultation with SEAFDEC should prepare the preliminary project proposal using the ASEAN format, and submit the proposal to the IDB through the ASEAN Secretariat.

27. The meeting was informed on the involvement of SEAFDEC, particularly technical support to the UNEP/GEP/SCS project on *Managing Fish Habitat and Fish Stock in the South China Sea*, at the 1st Phase which end in 2009. However, at the 2nd Phase proposed proposals now in the process of endorsement by the relevant member countries to the GEP/Secretariat. In this 2nd Phase, SEAFDEC was proposed as a Executive Agency of the Project. The main activities in the 2nd Phase is to establish Fishery Refugia sites in various sites as identified in the proposal. With regards to this SEAFDEC is requested to coordinate with UNEP-GEF-South China Sea, other stakeholders and national project focal points to confirm the concept of fishery refugia and marine protected areas.

OUTCOMES OF THE FIRST MEETING OF THE REGIONAL ADVISORY COMMITTEE ON FISHERIES MANAGEMENT IN SOUTHEAST ASIA (RAC)

28. The Program Committee and the existing donors (e.g. the JTF and Sida) could start considering the linkages between the existing SEAFDEC programs and the emerging fisheries management issues based on the outcomes for First RAC Meeting, which was organized from 22 to 24 September 2008 in Bangkok, Thailand, in order to ensure that the activities under the

Program Committee and RAC frameworks would be complementary with each other, and the benefits to the Member Countries could be maximized within the available budget.

OTHER MATTERS

Adjustment of SEAFDEC Program Framework

29. The Meeting suggested that the SEAFDEC Secretariat and Departments would modify and finalize the program framework to appropriately address the priorities and needs of the region, reflecting the existing competence of SEAFDEC. The draft proposal was provided to the members of the Program Committee during the meeting for their review and consideration and to send their feedbacks to the SEAFDEC Secretariat before the end of January 2009 for consideration and endorsement at the 41st the SEAFDEC Council.

SEAFDEC Special Event in 2010

30. The Meeting suggested that SEAFDEC Secretariat and the Departments prepare a more detailed proposal taking into consideration the funding requirements and the progress of implementation of the ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region and further circulate to the Member Countries for their in-country consultation. In this connection, the Committee Member from Thailand suggested that the special event might be organized in 2011 instead.

31. AQD requested the Secretariat or other partners to consider providing financial support in convening a regional consultation in 2009 or 2010 to review and identify the R&D activities under its Departmental Programs based on the needs of Member Countries

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

Singapore, 3-5 November 2008

I. INTRODUCTION

1. The Thirty-first Meeting of the Program Committee of the Southeast Asian Fisheries Development Center (SEAFDEC) was held in Singapore from 3 to 5 November 2008, and hosted by the Marine Fisheries Research Department (MFRD). The Meeting was attended by the National Coordinators from Brunei Darussalam, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam, together with their respective delegations, as well as the representatives from the ASEAN Secretariat, the FAO Regional Office for Asia and the Pacific (FAO/RAP), and the Swedish Board of Fisheries (SBF). The SEAFDEC Secretary-General, Deputy Secretary-General, Department Chiefs and Deputy Department Chiefs as ex-officio members also attended the Meeting together with officers from the Secretariat and the Departments. The List of Participants appears as **Annex 1**.

II. OPENING OF THE MEETING

2. The Secretary-General of SEAFDEC, Dr. Siri Ekmaharaj in his capacity as Chairman of the Program Committee, welcomed the participants to the Meeting. He emphasized on the importance of the Meeting for reviewing the SEAFDEC programs implemented in 2008 and scrutinizing the programs to be implemented in 2009, to ensure that the programs are formulated and implemented in line with the priorities and needs of the Member Countries. He also informed the Meeting on the establishment of the Regional Advisory Committee on Fisheries Management in Southeast Asia (RAC) and that the outcomes of the first RAC Meeting in September 2008 would be presented for information to the Meeting. He encouraged the Program Committee members and representatives from the Member Countries to actively participate in the deliberations to ensure the effectiveness of the Program Committee Meeting, and then declared the Meeting open. His Opening Address appears as **Annex 2**.

III. ADOPTION OF THE AGENDA

3. The Agenda which appears as **Annex 3** was adopted.

IV. REVIEW OF SEAFDEC PROGRAM IMPLEMENTATION FOR THE YEAR 2008 AND PROPOSED PROGRAMS FOR THE YEAR 2009

4.1 Departmental Programs

4. The Meeting took note of the Departmental Programs implemented in 2008 and proposed for 2009 (**Annex 4**), and endorsed the programs after recommending ways and means to ensure that such programs address the needs of the Member Countries.

Departmental Programs

- 1) Center-wide Information Network (Secretariat)
- 2) Information and Communications Technology (TD)

- 3) Tailor Made Training and Study Tour (TD)
- 4) Integrated Mollusc Production (AQD)
- 5) Mud Crab and Shrimp Domestication (AQD)
- 6) Marine Fish (AQD)
- 7) Small-holder Freshwater Aquaculture (AQD)
- 8) Seaweed Strain Improvement (AQD)
- 9) Aquatic Ecology (AQD)
- 10) Other R&D Activities (AQD)

5. The Meeting considered the Program on *Center-wide Information Network* as important in raising the public awareness and visibility of SEAFDEC, and in providing useful fisheries information to the Member Countries. As it was still considered necessary to further enhance the visibility of SEAFDEC in the region, the Meeting requested that the dissemination of information materials to the Member Countries through the National Coordinators should be continued as such materials are distributed further within their respective countries. The Meeting also suggested that in order to reduce the cost of delivering the information materials to the Member Countries, other means of distribution should be considered, e.g. through the M.V. SEAFDEC 2 or during SEAFDEC activities.

6. The Committee Member from the Philippines while commending SEAFDEC for its efforts in enhancing visibility in the region through its information-related activities, requested for more copies of the SEAFDEC publications, particularly the SEAFDEC Newsletter, the Special Publication “Fish for the People”, and the 10-Year JTF Achievement Booklet, for distribution to various academic institutions and fisheries-related events in his country. In addition, he suggested that AQD should also obtain copies of the promotional and information materials produced by the other SEAFDEC Departments and the Secretariat in order that the programs and activities implemented by SEAFDEC could be widely promoted.

7. The Committee Member from Vietnam expressed appreciation to SEAFDEC for the information materials produced and requested for more copies of the information for distribution in Vietnam. He also informed the Meeting of his country’s initiative and efforts in translating relevant SEAFDEC information materials, e.g. the Regional Guidelines for Responsible Fisheries in Southeast Asia and other policy-related documents, into the national languages to facilitate the access and usage of the information by fisheries officers at the local level as well as by the fishermen and fisheries communities. In this regard, the Meeting also suggested that SEAFDEC should also consider providing assistance to the other member countries to translate the SEAFDEC information materials into their respective national languages.

8. With regards to the Program on *Information and Communications Technology (ICT)*, it was informed that the ICT program is aimed at promoting the activities of TD and its visibility in particular, with support from the host country and other non-traditional fund sources. As for the production of other promotional materials of the Center, the Meeting was clarified that activities are implemented under the Program on Center-wide Information Network mobilizing the Minimum Regular Contribution (MRC). The Meeting was also informed that in addition to the Center-wide Information Network and ICT Programs, the other SEAFDEC Departments also implement their respective information-related activities, e.g. development of departmental websites, production of promotional and technical publications which could be downloaded from such websites, etc.

9. Under the Program on *Tailor-made Training and Study Tour*, it was clarified that Member and Non-member Countries of SEAFDEC could participate in the various activities. However, the costs for organizing and conduct of certain activities at pre-agreed rates would be charged to the requesting countries.

10. The Meeting was also informed that AQD has been conducting training courses for the SEAFDEC Member Countries with limited support from the Japanese Trust Fund. Moreover, AQD could also organize training courses based on the Member Countries' interest for pre-agreed fees.

11. With regards to the departmental programs undertaken by AQD, the Meeting was informed that the programs are formulated and implemented cutting across activities under research, technology verification and demonstration, and training dimensions. While commending AQD for implementing activities that have significantly contributed to the development of aquaculture in the region, the Meeting suggested that AQD should consider enhancing the dissemination of research findings as well as reports of workshops, training/demonstration activities to the Member Countries and the possibility of involving the fisheries private sector in the AQD activities.

12. The Committee Member from Vietnam requested AQD to consider implementing research activities on integrated mariculture or polyculture of marine high value species and protection of ecology as such activities could serve as livelihood opportunities for fishers relocated from their fishing operations in coastal waters. In addition, the Committee Member from Vietnam also inquired on the Agree-Build-Operate-Transfer of Aquabusiness (ABOT) program of AQD. In this regard, AQD agreed to communicate with the National Coordinator for Vietnam on the activities under the ABOT program.

13. Regarding the outcomes from the abalone research conducted by AQD, the Committee Member from the Philippines commented that as the growth rate of abalone is very slow resulting in very long culture period, AQD should focus its abalone research on reducing the culture period of abalone, e.g. improving growth rate and metabolism. The Committee Member from Thailand also provided the observation that disease infection could occur after giving artificial diets to the abalone as experienced in Thailand. In this regard, the Meeting suggested that AQD should take this into consideration in the development of artificial diets for the abalone.

14. As for the culture of *Penaeus vannamei* in lakes, the Committee Member from Thailand also expressed concern on the possible impact to the biodiversity and the indigenous species from the release of such alien species into the natural waters, which should also be considered.

15. The Committee Member from Myanmar informed the Meeting on the dwindling mud crab resources of his country, particularly in the southern part of Myanmar. As an initial effort to address the concern, the Department of Fisheries of Myanmar implemented measures to conserve and manage the mud crab resources, e.g. banning the catching of mud crab in some areas, etc. He then requested AQD to continue transferring the technologies on mud crab seed production and grow-out culture to his country. In this regard, AQD would consider sending mud crab experts to Myanmar and providing training on mud crab culture. The Meeting was also informed by the representative from FAO/RAP that FAO is currently developing projects for the rehabilitation of the Ayeyarwaddy Delta of Myanmar which has been affected by Cyclone Nargis, and that such projects could provide the opportunity for collaboration between FAO and SEAFDEC in the implementation of such activities.

16. The Meeting suggested that in the planning and implementation of future research and development activities, AQD should consider the economic viability of the technologies and the adaptability of the technologies by the small-scale fish farmers. In addition, the Meeting also suggested that AQD should implement programs that aim to balance the culture of comparatively low-priced species (e.g. carp, tilapia, milkfish, etc.) for food security and local development, and high-priced species (e.g. shrimps, grouper, seabass, snapper, etc.) for improving the national economies.

17. In relation to the suggestion of the Committee Member from Indonesia for AQD to consider conducting bio-economic studies, the Meeting suggested that bio-economic aspects should also be considered in the planning and implementation of AQD R&D activities. The Meeting was informed that the socio-economic studies are part of the impact assessment of the AQD R&D framework.

18. The Meeting reiterated that the current global economic crisis could affect the development of fisheries in the region, and suggested that the SEAFDEC Secretariat in collaboration with the Departments and Member Countries should consider developing a regional strategy incorporating economic approaches to fisheries development.

19. The Committee Member from Thailand suggested that regional technical consultation should be conducted to discuss the direction and plan to hasten the dissemination of information from activities implemented by AQD; and identify the future R&D needs of the Member Countries.

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

20. The Meeting considered and endorsed the progress and achievements in 2008 as well as the proposed activities for 2009 including the new programs proposed for 2009 under the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (FCG/ASSP) (**Annex 5**), after providing recommendations that could be incorporated in the corresponding programs.

Existing FCG/ASSP Programs

- 1) Support to the Implementation of Code of Conduct for Responsible Fisheries (Secretariat)
- 2) Assistance for Capacity Building in the Region to Address International Trade Related Issues (Secretariat)
- 3) Promotion of Rights-based Fisheries and Co-management towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management (TD)
- 4) Improvement of Fishery Statistics and Information for Planning and Management of Fisheries in the ASEAN Region (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) Development of Technologies and Human Capacity Building for Sustainable Aquaculture (AQD)
- 8) Quality Assurance Systems for Small and Medium-sized Fish Processing Establishments in ASEAN Member Countries (MFRD)
- 9) Environmental Related Tasks in Southeast Asia (Secretariat)

- 10) Establishment of Disease Surveillance System of Aquatic Animals (AQD)
- 11) Chemical and Drug Residues in Fish and Fish Products in Southeast Asia (MFRD)
- 12) Research and Development (R&D) of Stock Enhancement of Species under International Concerns (AQD)
- 13) Research for Stock Enhancement of Sea Turtles (MFRDMD)
- 14) Capacity Improvement of Fisheries Community for Fisheries Management and Alleviation of Poverty (TD)
- 15) Support to Tsunami Rehabilitation of Affected Countries in the ASEAN Region (Secretariat)
- 16) Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2 (TD)
- 17) Deep Sea Fisheries Resources Exploration in the Southeast Asia (TD)
- 18) Tagging Program for Economically Important Pelagic Species in the South China Sea and Andaman Sea (MFRDMD)
- 19) Promotion of “One Village, One Fisheries Products (FOVOP)” System to Improve the Livelihood for the Fisheries Communities in ASEAN Region (Secretariat)
- 20) Information Collection of Highly Migratory Species in Southeast Asia Waters (TD)
- 21) Development of Regional Database for Fishery Management (TD)

New Proposed FCG/ASSP Programs

- 1) Human Resource Development (HRD) for Poverty Alleviation and Food Security by Fisheries Intervention in the ASEAN Region (Secretariat)

Non-funded Programs

- 1) Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement
- 2) The Use of Indicators for Sustainable Development and Management of Capture Fisheries in the ASEAN Region
- 3) Development of Integrated Inland Fisheries Management in ASEAN Countries
- 4) Utilization of Freshwater Fish in ASEAN Member Countries
- 5) Good Laboratory Quality Management in ASEAN Member Countries

SEAFDEC Secretariat

21. On the establishment of the ASEAN Regional Fisheries Management Mechanism (ARFMM), the representative from the ASEAN Secretariat, expressed his appreciation to SEAFDEC for the support provided specifically in the organization of the Ad-hoc Working Group on ARFMM Meeting to develop the ARFMM framework, which was submitted by Thailand to the preparatory SOM30th-AMAF. The Meeting was informed that the ARFMM has been changed to the ASEAN Fisheries Consultative Forum (AFCF), and that more detailed information on AFCF would be reported by Thailand during the Meeting of ASEAN-SEAFDEC ASSP-FCG.

22. The Committee Member from Vietnam supported the implementation of the ASEAN Foundation funded programs on *FOVOP* and *HRD on Poverty Alleviation* that contribute to livelihood, and poverty alleviation. He further requested SEAFDEC to give more priority to the less developed countries (e.g. Cambodia, Lao PDR, Myanmar and Vietnam) in implementing the activities. In addition, the Committee Member from Thailand also raised the significance of the promotion of gender when implementing the activities.

23. On the activities related to international trade issues implemented by the SEAFDEC Secretariat, the Committee Member from Thailand informed the Meeting on progress of the FAO Technical Guidelines for Aquaculture Certification, the draft of which was discussed during the Fourth Session of the FAO/COFI Sub-Committee on Aquaculture in October 2008 in Chile. However, since the Sub-committee requested FAO to accommodate more views and conduct further technical consultation with the members and stakeholders, Thailand initially sought the support of the other SEAFDEC Member Countries for this issue, which would be presented in details during the ASEAN-SEAFDEC FCG-ASSP Meeting.

Training Department

24. With regards to the program on *Responsible Fishing Technologies and Practices* conducted by the Training Department (TD), the Committee Member from the Philippines commended TD for the activities implemented during the past years in reducing the by-catch of juveniles and trash fish from fishing activities which has significantly contributed to sustainable utilization of fishery resources in the region. He informed the Meeting that the Philippines is now drafting a policy on the use of JTEDs in trawl operations, and that several dialogues and consultations with the stakeholders have been conducted in 2008 in order that the policy could be reviewed and endorsed by the National Fisheries and Aquatic Resources Management Council to the Secretary of Agriculture for approval by December 2008. It is envisaged that upon the promulgation of the regulation, fishing operators would comply to use the JTEDs and a workshop to support the enforcement of JTEDs would also be organized.

25. In connection with the TD project on *Fishery Resources Survey Utilizing the M.V. SEAFDEC 2*, the Committee Member from Indonesia proposed to use the M.V. SEAFDEC 2 to conduct a research survey in Sulawesi Sea in 2009 and such activity could be implemented in collaboration with the Philippines. The survey is preferable to be conducted before the World Ocean Conference in Manado, 11-15 May 2009 during which the vessel may berth and open for exhibition. The Committee Member from the Philippines also informed the Meeting that the Philippines would also submit a proposal on the use of the M.V. SEAFDEC 2 in 2009 for the survey in selected waters in the Philippines in collaboration with neighboring countries such as Malaysia, Indonesia and Vietnam. In this connection, the Meeting suggested that TD should consult Indonesia and the Philippines in planning the survey cruises using the M.V. SEAFDEC 2. The Committee Member from Myanmar also informed the Meeting that the country's financial resources have been channeled to the rehabilitation of the areas affected by the Cyclone Nargis, thus, the proposed collaborative resources survey in Myanmar utilizing the M.V. SEAFDEC 2 in 2009 was dropped.

26. The Committee Member from Indonesia informed the Meeting that Indonesia is establishing a tuna observation center in Bitung, North Sulawesi in preparation for the country's forthcoming membership in the Western Central Pacific Fisheries Commission (WCPFC). In this regard, the Meeting suggested that the activities undertaken by Indonesia could be coordinated with the TD program on *Information Collection of Highly Migratory Species in Southeast Asia Waters*.

27. With regards to the program on *Promotion of Rights-based Fisheries and Co-management towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management*, the Committee Member from the Philippines while expressing strong support to such programs, suggested that the focal point persons assigned by the Member Countries for these programs should take initiatives to sustain the implementation of the activities, therefore the organizers of the Workshop and Consultation should follow-up actions with the focal point persons and national coordinators. He also suggested that the outcomes

from several workshops and consultations conducted on issues relevant to the programs should be followed-up by the respective Member Countries to ensure the sustainable management of fisheries in the region.

28. The Committee Member from Thailand while also commending SEAFDEC for the implementation of rights-based fisheries and co-management, expressed the willingness of Thailand to share its experience and expertise from the Coastal Habitats and Resources Management (CHARM) project under the current relevant SEAFDEC program.

29. The Committee Member from Malaysia expressed his appreciation to SEAFDEC for co-sponsoring the recently held Regional Seminar on Integrated Coastal Resources Management Approach in Southeast Asia in Langkawi Malaysia, which aimed to review the impacts from the implementation of the Integrated Coastal Resources Management (ICRM) project in Pulau Langkawi, Malaysia. Considering the successful outcome of the project activities, the Department of Fisheries Malaysia plans to also implement the ICRM concept in the other areas of Malaysia.

Marine Fisheries Research Department

30. Under the MFRD program on *Chemical and Drug Residues in Fish and Fish Products in Southeast Asia*, the Meeting was informed that from 2009 to 2012 this program would focus on the analysis of biotoxins with support from the Japanese Trust Fund II. In this regard, the Committee Member from Thailand suggested that MFRD should also consider conducting training courses on the analysis of pesticides particularly the organophosphate group. In response, the MFRD Chief informed the Meeting that since the Department has no capacity in this area, MFRD could invite Japanese experts to conduct the training if funding could be made available. The Meeting suggested that MFRD should coordinate with Thailand for the detailed activities and discuss with SEAFDEC Secretariat to seek funding support for such activity.

31. The Committee Member from Thailand informed the Meeting that there are no Inter-Laboratories Proficiency Testing agencies in the region and the participation in international programs is very costly. In this regard, Thailand sought the possibility for MFRD to perform as Inter-Laboratories Proficiency Testing Provider for the region. Considering however that being an Inter-Laboratories Proficiency Testing Provider requires very specialized skills, the MFRD Chief suggested that more appropriate institutes within the ASEAN region could also be identified. In this regard, the Meeting suggested that this issue should be presented for further discussion during the forthcoming ASWGFi Meeting.

32. The Committee Member from Thailand reiterated on the background of the project on Recognition of Regulatory Inspection and Control System of Antibiotic Residues in Cultured Shrimp Products in ASEAN which was endorsed by the 15th ASWGFi Meeting held in Singapore. Under such project, it was originally proposed that training on the determination of steroid hormone, Fluoroquinolone and Nitromidazole in shrimp products be conducted for all ASEAN Member Countries. However, the training was conducted only in Thailand due to limited budget from the EU. Thailand therefore proposed to conduct the training program for Fluoroquinolone and Nitromidazole determination for all Member Countries and sought the possibility for SEAFDEC to provide financial support for international travel, accommodation, and DSA of the participants while the Department of Fisheries of Thailand would be responsible for the other expense incurred during the training.

33. The Committee Member from Indonesia emphasized on the importance of ensuring the safety of aquaculture products in the region, particularly in monitoring the antibiotic substances in aquaculture products. As currently required by the EU, countries exporting products to the EU should establish their respective national residual control plans in order to be included in the list of permitted countries. In this regard, the Meeting suggested that MFRD should consider implementing a program similar to the national residue control plan, and continue monitoring the antibiotic substances in aquaculture products from the region.

34. The representative from the ASEAN Secretariat informed the Meeting that since the implementation of the ASEAN Economic Community Blueprint is a priority of the ASEAN, there is the need to formulate guidelines on the use of chemicals in aquaculture and measures to eliminate the use of harmful chemicals. Such guidelines and measures could contribute to enhancing the competitiveness and ensure the safety of aquaculture products from the region. In this regard, the ASEAN Secretariat encouraged SEAFDEC to explore the possibility of compiling the outcomes and the information derived from the relevant projects implemented by AQD and MFRD related to the above issues.

35. In response to the inquiry made by the representative from FAO regarding the report summarizing the outcomes of the project on Chemical and Drug Residues in Fish and Fish Products, the Chief of MFRD explained that the Technical Report on Chemical and Drug Residue is being prepared for publication by the end of 2008. Once available, the report will be disseminated to the Member Countries, FAO and the stakeholders.

Marine Fishery Resources Development and Management Department

36. With regards on *Research and Stock Enhancement of Sea Turtles*, the Meeting was informed on the evidence of poaching of sea turtles in the region's waters. The detailed information related to this issue would be presented for discussion during the forthcoming Meeting of the ASEAN-SEAFDEC ASSP-FCG.

Non-Funded Programs

37. The Meeting took note of the programs that were recommended by the 30th PCM to be dropped from the list of the FCG/ASSP Programs considering that such programs are non-funded. However, the ASWGF_i during 16th ASWGF_i Meeting requested that the following Non-Funded Programs (2008 and 2009) should be retained in the program framework, and requested the ASEAN Lead Country for each respective program and the other countries to seek possible funding support for the implementation of such programs.

- 1) Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement
- 2) The Use of Indicators for Sustainable Development and Management of Capture Fisheries in the ASEAN Region
- 3) Development of Integrated Inland Fisheries Management in ASEAN Countries
- 4) Utilization of Freshwater Fish in ASEAN Member Countries
- 5) Good Laboratory Quality Management in ASEAN Member Countries

38. The Meeting noted that the program on *Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement* will be implemented with the support by the Japanese Trust Fund starting in 2010.

39. In connection with the program on *Good Laboratory Quality Management in ASEAN Member Countries*, the representative from the ASEAN Secretariat informed the Meeting on the possibility of obtaining financial support from the ASEAN-Australian Development Cooperation Program (AADCP) Phase II, which is currently under the formulation process. He added that the ASEAN Lead Country in collaboration with SEAFDEC Lead Department should start preparing the necessary program proposal. The ASEAN Secretariat would also coordinate with the SEAFDEC Secretariat on the progress of the AADCP Program and on the right timing for the submission of the proposal.

4.3 Other Programs

40. The Meeting took note of the other SEAFDEC programs/activities implemented in 2008 and proposed for 2009 (**Annex 6**), as follows:

- 1) Promotion of Set-Net: an Eco-friendly Fishing Gear of Sustainable Coastal Fisheries Management
- 2) Information Collection for Economical Important Species: as Surimi Raw Materials
- 3) Cetacean Research in Southeast Asian Waters: Whale Sighting Program
- 4) Collection of Information about International Support in the Region
- 5) Promotion of Sustainable Freshwater Aquaculture for Rural Communities
- 6) Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Approaches

41. With regards to the program on the *Promotion of Set-Net: an Eco-friendly Fishing Gear of Sustainable Coastal Fisheries Management*, the Meeting was informed that the technology and the experiences of TD in the implementation of the Set-Net in Thailand would be transferred to other countries through the production/dissemination of publications, and that similar activities would be implemented in Indonesia and Malaysia.

42. The Meeting noted that since Indonesia is planning to develop a Set-Net technology in the country, the Set Net technology transferred by SEAFDEC could be incorporated in such plan. The Meeting was also informed that AQD has implemented a study on the use of a type of set-net by small-scale fishers in Iloilo Strait in Western Philippines under the project on Aquatic Ecology, where the outcomes showed that the major portion of the catch are juveniles and trash fish used mainly for the culture of other high-value species. In this regard, precautionary approach and the possible impacts from Set-Net operation to the fishery resources should also be considered by TD in the promotion of Set-Net in the region.

43. The Meeting suggested that in the implementation of the Set-Net activities in the participating countries, an evaluation of the project impacts (e.g. on socio-economic, fisheries and resources aspects) should also be conducted, and the guidelines on the sustainable operation and management of Set-Net in the region, should be prepared to transfer the Set-Net technology to other countries in the region.

44. With regards to the program on *Information Collection for Economical Important Species: as Surimi Raw Materials*, the Chief of MFRD suggested that in the production of “posters on important species for surimi materials” proposed by TD for 2009, the species to be included in the posters should be those that have been shown to be appropriate for use as Surimi raw materials, and that focus should be on low-value and under-utilized species. In this regard, The Meeting suggested that TD should further communicate with MFRD on the

outcomes from the information collection, and ensure that only the appropriate species are included in the posters.

45. On the *Cetacean Research in Southeast Asian Waters (Whale Watching Program)*, the Meeting agreed to change the title to *Cetacean Sighting Program*. In this regard, the Committee Member from the Philippines expressed the willingness to assist in the collection of data related to cetacean sighting through the existing research cruises of the M.V. DA/BFAR, and requested TD to train BFAR staffs on cetacean sighting activities by providing the necessary expertise and data to be collected. Moreover, TD plans to conduct the internal training course for TD staff on cetacean sighting program before the end of November 2008, and the outcome from such training and other related information could be provided to the Member Countries to enable them to support the cetacean sighting activities.

46. The Meeting was informed that the currently available information on whales and dolphins in the Member Countries, e.g. information collected in the coastal areas and rivers, which could not be covered by the cruises of M.V. SEAFDEC 2, and the experience and knowledge from the national/regional experts of the region, are being integrated with the data collected under this program to enhance the cetaceans information in the region.

47. The Meeting also observed that the original program aimed to collect information on the evidence of whales during the research survey cruises undertaken by SEAFDEC without creating additional burden in terms of funding requirement. The linkage of the small pelagic resources with the existing whale and dolphin population in the region should be further investigated under this proposed program.

48. With regards to the program on the *Collection of Information about International Support in the Region* which will be terminated in 2008, the Meeting was informed that TD would provide the outcomes from the program to all the Member Countries. Moreover considering the importance of the activity, the Meeting was also informed that starting in 2009 the activity to collect information on international support would be incorporated under the program on Center-wide Information Network. The Secretariat would further seek support from the Member Countries to provide the necessary information for this activity, e.g. through the questionnaire surveys, and the outcomes from the information collection would be summarized and provided to all countries.

49. While strongly supporting the program on *Promotion of Sustainable Freshwater Aquaculture for Rural Communities*, the Meeting recommended that the Joint Regional Training on Community-based Aquaculture in the Remote Rural Areas of the Region should be conducted in 2009 and the following years. The Meeting also expressed concerns on the difficulties faced by the poor people in remote rural areas in accessing funding support and microcredit in the development of rural aquaculture. In response, the SEAFDEC Secretariat would consider the possibility of including the issue of microcredit in the training programs. The Program Committee Member from Thailand also requested that SEAFDEC should continue the implementation of the program on rural aquaculture development particularly for inland areas in the future.

50. The Committee Member from Thailand expressed the willingness to share the expertise of Thailand in the implementation of the abovementioned program, and that a pilot project should also be implemented in such countries as Lao PDR and Myanmar, where self-sufficiency, self-reliance and participatory approaches could also be promoted. These pilot projects could also serve as learning centers in the respective countries. In addition to the experiences of Thailand, the Meeting also suggested that the experiences of other

organizations, e.g. Mekong River Commission (MRC), Asian Institute of Technology (AIT) and Network of Aquaculture Centre in Asia-Pacific (NACA), should also be mobilized in the implementation of the program.

51. The Meeting suggested that activities to be implemented by ASEAN and SEAFDEC to support the implementation of the ASEAN Roadmap for Integration of Fisheries Sector, should also take into account the impact of small-scale capture fisheries and small-scale aquaculture in the remote rural areas.

52. The representative from the ASEAN Secretariat subscribed to the initiatives that enhance contribution of fisheries to poverty alleviation and sustainable livelihood as guided by the ASEAN Socio-cultural Community Blueprint. He further proposed possible strategies to address such issues, including: 1) mainstreaming the experiences of relevant international/regional organizations in poverty alleviation and livelihood in the national poverty reduction strategies of the respective countries, 2) enhancing the capacity of local institutions in maximizing the utilization of institutional resources, and 3) conducting capacity building for personnel working in support of small-scale fisheries and aquaculture in the region.

53. In order to further address the issues of common interest in small-scale aquaculture, the Meeting suggested that collaboration should be sustained in exchanging experiences in rural development and rural aquaculture to promote livelihood, with possible funding support from the SEAFDEC-Sida Project and Japanese Trust Fund.

54. The representative from FAO emphasized on the great potentials of aquaculture in remote rural areas in contributing to food security and income generating for the people. While expressing the willingness of FAO to collaborate in the future activities of SEAFDEC, he also informed the Meeting on the shift of the donors' area of interest from fisheries to agriculture development as in the case of the International Fund for Agricultural Development (IFAD). Since aquaculture projects in remote rural areas could be funded under the general agricultural development framework, he also suggested that SEAFDEC could explore the possibility of seeking financial support from IFAD for the implementation of aquaculture projects in the remote rural areas.

55. With regards to the program on *Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management towards Institutional Building and Participatory Approaches*, the Meeting suggested that the existing experiences and information of the Mekong River Commission (MRC) should be mobilized in the implementation of this program. In response, it was clarified that TD has been closely coordinating with MRC in the planning and the implementation of this program but since the baseline information in the project area (Ngam-Nguem Reservoir) has not been collected by MRC, TD would collaborate with MRC in the collection of the baseline data and in the implementation of this project.

V. PIPELINE PROJECTS AND EMERGING NEEDS FOR PREPARATION OF FUTURE PROJECT PROPOSALS

56. The Meeting took note of the five pipeline projects (**Annex 7**), of which three have been held in abeyance while two are still under discussion and negotiation process with potential donor agencies.

- 1) Community Fisheries – Strengthening Organization of Communities for Sustainable Livelihoods in Coastal Areas (Secretariat/Islamic Development Bank-IDB)
- 2) Managing Fish Habitat and Fish Stock in the South China Sea (Secretariat/UNEP-GEF-South China Sea) (*new project proposed at this Program Committee Meeting*)

57. On the project on *Community Fisheries – Strengthening Organization of Communities for Sustainable Livelihoods in Coastal Areas* which was proposed for possible funding from the IDB, the representative from the ASEAN Secretariat provided the updated progress on the discussion between the Secretary-General of ASEAN and the President of IDB and added that the Memorandum of Understanding (MOU) between ASEAN Secretariat and IDB has already been signed. He then suggested that Indonesia as the project ASEAN Lead Country in consultation with SEAFDEC should prepare the preliminary project proposal using the ASEAN format, and submit the proposal to the IDB through the ASEAN Secretariat. The ASEAN Secretariat expressed willingness to provide assistance in furnishing the guidelines for preparing the proposal and agreed to facilitate the proposal submission process. In addition, the ASEAN Secretariat would also keep close communication with SEAFDEC and Indonesia, on any other possible funding support from IDB.

58. With regards to the project on *Managing Fish Habitat and Fish Stock in the South China Sea*, the Committee Member from Vietnam requested clarification on the possible areas of overlaps in management between the fisheries management agencies and others. In this regard, SEAFDEC would coordinate with UNEP-GEF-South China Sea and other stakeholders and further communicate with the project focal points of participating countries to confirm the concept of fishery refugia and marine protected areas.

VI. OUTCOMES OF THE FIRST MEETING OF THE REGIONAL ADVISORY COMMITTEE ON FISHERIES MANAGEMENT IN SOUTHEAST ASIA (RAC)

59. The Meeting was informed on the establishment of the Regional Advisory Committee on Fisheries Management in Southeast Asia (RAC) as a subsidiary body of the SEAFDEC Council, to assist SEAFDEC Member Countries in achieving the sustainable utilization of fisheries resources by providing technical/scientific advice to the SEAFDEC Council for the improvement of fisheries management. The Meeting also took note of the outcomes from the First Meeting of RAC organized from 22 to 24 September 2008 in Bangkok, Thailand, where recommendations were made on a number of priority issues relevant to fisheries management. Suggestions were also made on the need for SEAFDEC to establish coordination and partnership with other international/regional organization in future development of recommendations on priority fisheries management issues, and seek funding support from external budgetary sources to support the conduct of required activities.

60. The Meeting noted that the outcomes of the First RAC Meeting which would be reported to the SEAFDEC Council during its meeting in 2009. In this connection, the Program Committee and the existing donors (e.g. the JTF and Sida) could start considering the linkages between the existing SEAFDEC programs and the emerging fisheries management issues based on the outcomes for First RAC Meeting in order to ensure that the activities under the Program Committee and RAC frameworks would be complementary with each other, and the benefits to the Member Countries could be maximized within the available budget.

VII. OTHER MATTERS

7.1 Adjustment of SEAFDEC Program Framework

61. The Meeting reviewed the background of the development of the Program Framework (originally proposed as Program Thrusts during the 29th PCM), in view of the change in SEAFDEC funding arrangements. In order to be able to tap non-traditional donors, the formulation of program thrusts which could be more relevant to the donors' interest would eventually facilitate the sourcing of extra budgetary funding by the SEAFDEC and Member Countries for the regional activities. The development of the Program Thrust could also facilitate the scrutiny of SEAFDEC programs, the clarification on linkages among the SEAFDEC programs, and raising the SEAFDEC profile at regional and international levels.

62. The Meeting suggested that the SEAFDEC Secretariat and Departments would modify and finalize the program framework to appropriately address the priorities and needs of the region, reflecting the existing competence of SEAFDEC. The draft proposal would be provided to the members of the Program Committee for their review and consideration and to send their feedbacks to the SEAFDEC Secretariat before the end of January 2009 for consideration and endorsement at the 41st the SEAFDEC Council.

7.2 SEAFDEC Special Event in 2010

63. The Meeting, while taking note of the concept proposal made by SEAFDEC to organize the special event in 2010, suggested that the SEAFDEC Secretariat and Departments should conduct internal consultation on the possibility of conducting the special event, taking into consideration the funding requirements and the progress of implementation of the ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region. The Meeting suggested that SEAFDEC Secretariat and the Departments prepare a more detailed proposal to be circulated to the Member Countries for further internal consultation in their respective countries. In this connection, the Committee Member from Thailand informed the Meeting that since a number of fisheries-related events (e.g. NACA Millennium + 10, COFI Sub-committee on Aquaculture, Global Conference on the Socio-economic of Small-scale Fisheries, etc.) would be organized in Thailand in 2010, the special event might be organized in 2011 instead.

64. AQD reiterated the proposal to convene a regional consultation in 2009 or 2010 to review and identify the R&D activities under its Departmental Programs based on the needs of Member Countries. AQD requested the Secretariat or other partners to consider providing financial support for such activity.

7.3 IMT-GT Fisheries Seminar and Expo 2008

65. The Committee Member from Thailand informed the Meeting that Thailand will host the IMT-GT¹ Fisheries Seminar and Expo 2008 from 20 to 23 November 2008 in Phuket, Thailand. Although the IMT-GT is envisaged to provide the cooperation platform between Indonesia, Malaysia and Thailand, the other Member Countries were also invited to take part in the event.

¹ IMT-GT refers to Indonesia, Malaysia, Thailand Growth Triangle

7.4 Others

66. The Committee Member from Malaysia requested SEAFDEC that in the future Program Committee Meetings, all meeting documents should be made available and circulated to the Program Committee members two weeks in advance, in order to provide time for the Member Countries to conduct internal discussions prior to the Meeting.

VIII. COOPERATION WITH DONORS, NON-MEMBER GOVERNMENT AND INTERNATIONAL/REGIONAL ORGANIZATIONS

67. The representative from the ASEAN Secretariat congratulated SEAFDEC for the good progress and achievements from its Programs of Activity in 2008. He informed the Meeting of the on-going ASEAN Community integration process as guided by the ASEAN Charter and the ASEAN Community Blueprints. He conveyed the appreciation expressed by the ASEAN Member States to SEAFDEC, including the Government of Japan, for their continued cooperation and support in fisheries, which is crucial in the realization of the ASEAN Community. Under the ASEAN-SEAFDEC Strategic Partnership (ASSP), he highlighted on the key activities implemented in 2008 related to implementation of ASEAN Roadmap for Integration of Fisheries Sector, formulation of the concept on an ASEAN Regional Fisheries Management Mechanism, the Executive Report on International Fisheries Related Issues, and the establishment of ASEAN-SEAFDEC portal website. He emphasized on the need for continued implementation of activities under the ASSP-FCG Program and wished SEAFDEC greater success in its future undertakings. His statement appears as **Annex 8**.

68. The representative from the Swedish Board of Fisheries (SBF), while expressing his appreciation to SEAFDEC for extending the invitation to SBF to this Meeting, congratulated SEAFDEC for the important and active role it has been playing in the region, as reflected in the programs implemented in the year 2008 and proposed for the year 2009. He reiterated the cooperation between SEAFDEC and the SBF through several programs, e.g. capacity building to support the implementation of the Code of Conduct for Responsible Fisheries, promotion of fisheries management through vessel registration, monitoring of coastal fisheries, integration of habitat and fisheries management, etc. He then informed the Meeting that in early 2008, the Board of Fisheries recommended continued regional support to activities linked to fisheries and marine environment issues in Southeast Asia, including support to SEAFDEC. However a new government strategy for Swedish support to Southeast Asia is under preparation and future support will have to be in line with this strategy once it is adopted. His Statement appears as **Annex 9**.

69. The representative from FAO expressed appreciation to SEAFDEC for the collaborative activities between SEAFDEC and FAO in 2008, particularly in organizing the Global Conference on Small-scale Fisheries, and the SEAFDEC-FAO-APFIC Regional Workshop on Off-shore Resources in Southeast Asia. He then congratulated SEAFDEC for the progress in implementation of programs and the initiative in formulation of program framework to ensure that the activities address the priority and needs of countries, and contribute to the development of fisheries in the region. The formulation of such programmatic approach would facilitate the future collaboration between SEAFDEC and FAO. He also outlined the particular regional programs currently undertaken by FAO, of which future collaboration with SEAFDEC could be explored, e.g. the Bay of Bengal Large Marine Ecosystem Project, the Reduction of By-catch Project (Phase II), Coral Triangle Initiative, and Fisheries Livelihood Project, etc.

70. He also congratulated SEAFDEC for collaborating with the ASEAN in the development of the regional fisheries management mechanism, which is in line with the FAO directions to support the establishment of sub-regional fisheries management bodies. He expressed particular interest in the activities undertaken by SEAFDEC on fishery statistics, development of databases for tuna and other fishery resources, and promotion of aquaculture in the remote rural areas, which are also in line with the initiatives promoted by FAO. He then encouraged SEAFDEC Member Countries to collectively provide information as well as status of rural aquaculture activities undertaken in the region as inputs to the FAO/COFI to be organized in 2009 in order to ensure that the COFI appropriately address the priorities and needs of the region.

IX. RECOMMENDATIONS OF THE THIRTY-FIRST MEETING OF THE PROGRAM COMMITTEE

9.1 Adoption of Report of the Meeting

71. The Committee adopted the report of the Thirty-first Meeting on 5 November 2008, which would be submitted to the next SEAFDEC Council Meeting and high authority of the ASEAN through the ASEAN-SEAFDEC Fisheries Consultative Group (FCG).

9.2 Date and Venue of the Thirty-second Meeting of the Program Committee

72. The Chief of MFRDMD expressed her Department's willingness to host the Thirty-second Meeting of the Program Committee in Kuala Lumpur, Malaysia. She would further seek the guidance of the Secretariat in finalizing the schedule and related arrangements for the Meeting including the date and venue of the Meeting.

X. CLOSING OF THE MEETING

73. The SEAFDEC Secretary-General, Dr. Siri Ekmaharaj in his capacity as Chairman of the Program Committee, thanked the Committee Members and other participants for their active participation and contributions to the Meeting. As this would be the final Program Committee Meeting that Dr. Kato would be attending since he is leaving SEAFDEC in December for better opportunities, the Secretary-General thanked Dr. Kato on behalf of SEAFDEC, for his excellent services during his more than 10 years with SEAFDEC, and most especially for his efforts in promoting sustainable fisheries in the region and enhancing the visibility of SEAFDEC. He then declared the Meeting closed. His closing speech appears as **Annex 10**.

Annex 1

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OPENING STATEMENT

By Dr. Siri Ekmaharaj, SEAFDEC Secretary-General

Distinguished Members of the SEAFDEC Program Committee,
SEAFDEC Deputy Secretary-General,
SEAFDEC Department Chiefs, and Senior Officials,
Representatives from our Partner Organizations,
Ladies and Gentlemen,

Good morning! I am very pleased to be here and welcome you all to the Thirty-First Meeting of the SEAFDEC Program Committee. On behalf of the SEAFDEC Program Committee and as the Committee Chairman, I would like to start by thanking MFRD for hosting this year's Meeting and for all the arrangements of this Meeting.

I reckon that everyone here is aware of the changing SEAFDEC financial situation in the past few years. However, we never give up and continue providing technical services to the Member Countries. This considerably important Meeting is convened every year to allow the Member Countries to take part in reviewing and scrutinizing our past and future programs and activities. At this Meeting, we will review the activities of SEAFDEC during the year 2008 to 2009. This would ensure that our efforts contribute to the sustainable fisheries development aspect and respond to the interests of the SEAFDEC Member Countries.

As shown in our meeting program, we will start with the review of SEAFDEC program implementation for the year 2008 and the proposed programs for the year 2009. Our programs include the Departmental Programs, the ASSP-FCG programs, and other programs. SEAFDEC would also present some pipeline projects and emerging needs for the preparation of future project proposals.

In addition to the program matters, SEAFDEC will also present the outcomes of the First Meeting of the Regional Advisory Committee on Fisheries Management in Southeast Asia (RAC) organized in Bangkok in September 2008. Although this will be provided as information for the Meeting, particular focus is given on the technical issues that could be further addressed within the SEAFDEC programming exercises.

Ladies and Gentlemen,

The outcome of this Program Committee Meeting including the recommendations will be submitted to the forthcoming Meeting of the SEAFDEC Council for final endorsement. Moreover, our outcomes would also be endorsed to the ASWGFi through the Meeting of the ASSP-FCG which will be convened starting Thursday of this week.

Being a subsidiary body of the SEAFDEC Council, the Program Committee is expected to carefully scrutinize the SEAFDEC programs of activity. This would assure all of us that the issues and concerns that hold back the sustainable development of fisheries in the region are being addressed.

With this note, I wish to declare the 31st Meeting of the SEAFDEC Program Committee open. Thank you and good day!

AGENDA

- Agenda 1:** Opening of the Meeting
- Agenda 2:** Adoption of Agenda and Arrangement of the Meeting
- Agenda 3:** Review of SEAFDEC Program Implementation for the Year 2008 and Proposed Programs for the Year 2009

3.1 Departmental Programs¹

3.1.1 Secretariat

- Center-wide Information Network

3.1.2 Training Department

- Information and Communications Technology
- Tailor Made Training and Study Tour

3.1.3 Aquaculture Department

- Integrated Mollusc Production
- Mud Crab and Shrimp Domestication
- Marine Fish
- Small-holder Freshwater Aquaculture
- Seaweed Strain Improvement
- Aquatic Ecology
- Other R&D Activities

3.2 Programs under ASEAN-SEAFDEC Strategic Partnership (ASSP) and Fisheries Consultative Group (FCG) Mechanism

3.2.1 Secretariat

- Support to the Implementation of Code of Conduct for Responsible Fisheries
- Assistance for Capacity Building in the Region to Address International Trade Related Issues
- Improvement of Fishery Statistics and Information for Planning and Management of Fisheries in the ASEAN Region
- Environmental Related Tasks in Southeast Asia
- Support to Tsunami Rehabilitation of Affected Countries in the ASEAN Region
- Promotion of “One Village, One Fisheries Products (FOVOP)” System to Improve the Livelihood for the Fisheries Communities in ASEAN Region
- Human Resource Development (HRD) for Poverty Alleviation and Food Security by Fisheries Intervention in the ASEAN Region (New)

¹ Marine Fisheries Research Department (MFRD) and Marine Fishery Resources Development and Management Department (MFRDMD) have no Departmental Programs.

3.2.2 Training Department

- Responsible Fishing Technologies and Practices (Fishing in Harmony with Nature)
- Sustainable Utilization of Potential Fisheries Resources and Reduction of Post-harvest Losses
- Capacity Improvement of Fisheries Community for Fisheries Management and Alleviation of Poverty
- Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2
- Deep Sea Fisheries Resources Exploration in Southeast Asia
- Information Collection of Highly Migratory Species in Southeast Asian Waters
- Development of Regional Database for Fishery Management
- Promotion of Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management

3.2.3 Marine Fisheries Research Department

- Quality Assurance Systems for Small and Medium-sized Fish Processing Establishments in ASEAN Member Countries
- Chemical and Drug Residues in Fish and Fish Products in Southeast Asia

3.2.4 Aquaculture Department

- Development of Technologies for Sustainable Aquaculture/Human Capacity Building for Sustainable Aquaculture
- Establishment of Disease Surveillance System of Aquatic Animals
- Research and Development (R&D) on Stock Enhancement for Species under International Concerns

3.2.5 Marine Fishery Resources Development and Management Department

- Research on Stock Enhancement of Sea Turtles
- Tagging Program for Economically Important Pelagic Species in the South China Sea and Andaman Sea

3.2.6 Non-funded Programs²

- Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement
- The Use of Indicators for Sustainable Development and Management of Capture Fisheries in the ASEAN Region
- Development of Integrated Inland Fisheries Management in ASEAN Countries
- Utilization of Freshwater Fish in ASEAN Member Countries
- Good Laboratory Quality Management in ASEAN Member Countries

3.3 Other Programs

- Promotion of Set-Net: an Eco-friendly Fishing Gear of Sustainable Coastal Fisheries Management
- Information Collection for Economical Important Species: as Surimi Raw Materials

² As agreed by the lead countries at the 16th ASWGFi Meeting, the program that has been no progress of activities will be put under a list of 'Non-funded Programs'.

- Cetacean Research in Southeast Asian Waters: Whale Sighting Program
- Collection of Information about International Support in the Region
- Promotion of Sustainable Freshwater Aquaculture for Rural Communities
- Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Approaches

Agenda 4: Pipeline Projects and Emerging Needs for Preparation of Future Project Proposals

- Community Fisheries – Strengthening Organization of Communities for Sustainable Livelihoods in Coastal Areas (SEC/IDB³)
- Awareness Building on Sustainable Development of Fisheries in the ASEAN Region (SEC/AF⁴)
- Transboundary Collaborative Arrangement Supporting Aquatic Resources and Habitat Management for Sustainable Fisheries (TD/WAP⁵)
- Managing Fish Habitat and Fish Stocks in the South China Sea (SEC/UNEP-GEF⁶)

Agenda 5: Outcomes of the First Meeting of the Regional Advisory Committee on Fisheries Management in Southeast Asia (RAC)

Agenda 6: Other Matters

- SEAFDEC Program Framework (Adjustment)

Agenda 7: Cooperation with Donors, Non-Member Government and International/Regional Organizations

Agenda 8: Recommendations of the Thirty-first Meeting of the Program Committee

8.1 Adoption of Report of the Meeting

8.2 Date and Venue of the Thirty-second Meeting of the Program Committee

Agenda 9: Closing of the Meeting

³ Islamic Development Bank

⁴ ASEAN Foundation

⁵ Wetland Alliance Program

⁶ United Nations Environment Programme-Global Environment Facility (South China Sea Project)

Annex 4

**SEAFDEC DEPARTMENTAL PROGRAMS OF ACTIVITY
FOR THE YEAR 2008-2009**

INTRODUCTION

SEAFDEC departmental programs for the year 2008-2009 are listed below and proposed activities which detailed of their projects appears in *Appendix 1*, *Appendix 2* and *Appendix 3*.

Programs	Responsible Departments
Programs Implemented in the year 2008	
1. Center-wide Information Network	SEC
2. Information and Communications Technology	TD
3. Tailor Made Training and Study Tour	TD
4. Integrated Mollusc Production	AQD
5. Mud Crab and Shrimp	AQD
6. Marine Fish	AQD
7. Small-Holder Freshwater Aquaculture	AQD
8. Seaweed Strain Improvement	AQD
9. Aquatic Ecology	AQD
Proposed Programs Implemented in the Year 2009	
1. Center-wide Information Network	SEC
2. Information and Communications Technology	TD
3. Tailor Made Training and Study Tour	TD
4. Integrated Mollusc Production	AQD
5. Mud Crab and Shrimp	AQD
6. Marine Fish	AQD
7. Small-Holder Freshwater Aquaculture	AQD
8. Seaweed Strain Improvement	AQD
9. Aquatic Ecology	AQD

**SEAFDEC DEPARTMENTAL PROGRAM OF ACTIVITY
FOR THE YEAR 2008-2009**

THE SECRETARIAT

Program Category: Departmental Program
Program Title: Center-wide Information Network
Responsible Department: SEAFDEC Secretariat
Total Duration: Since 1998

1. INTRODUCTION

Considering vital role of information as a tool in the development and management of fisheries sector, a program on Center-wide Information Network was initiated and adopted by the Council of SEAFDEC in 1998. Since then, based on SEAFDEC Information and Communication Policies, the Secretariat has developed several information and statistics programs and services to support management and development of sustainable fisheries in the region. In addition, during the 38th Meeting of SEAFDEC Council, the Council endorsed the Information Strategies for Enhancing SEAFDEC Visibility and Communication which is envisaged to streamline information activities in a more cost-effective manner, and enhance visibility of the organization. Framework and activities under the program has been adjusted to be in-line with the Information Strategy.

2. PROGRAM

The program on Center-wide Information Network aims at keeping the Member Countries, other organizations and public well informed of SEAFDEC activities; raising public awareness and visibility of SEAFDEC; and providing various forms of fisheries information to support decision-making, management and development of fisheries sector. In order to achieve the objectives, the programs aims to produce materials to promote activities and visibility of the Center, enhance communication among the SEAFDEC staffs and communication with the Member Countries and other organizations, as well as providing HRD opportunities for the relevant SEAFDEC staffs in order to improve the activities.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Information-related activities undertaken by the Secretariat in collaboration with all SEAFDEC Departments during the year 2008 under the Center-wide Information Network framework are as follow:

Project/Activity Title	Duration	Remarks
Production and dissemination of reports of SEAFDEC annual meetings <ul style="list-style-type: none"> • Report of the 30th SEAFDEC Program Committee Meeting • Report of the 10th ASEAN-SEAFDEC FCG Meeting • Report of the 40th SEAFDEC Council Meeting 	<p align="center">Feb 2008</p> <p align="center">Feb 2009</p> <p align="center">June 2008</p>	<p>100%</p> <p>100%</p> <p>100%</p>
Production and dissemination of Annual Report 2007 SEAFDEC Annual Report publishes highlighted activities and achievement of SEAFDEC, as well as summary of progress of	June 2008	100%

SEAFDEC programs, activities undertaken in a year. Number of production is 1,000 copies, distributed to Member Countries, Network Libraries, fisheries-related institutions/organizations, collaboration organizations, and interested people.		
<p>Production and dissemination of Newsletter Volume 30 Number 1 and Volume 31 Number 1-3</p> <p>SEAFDEC Newsletter publishes activities of SEAFDEC in promoting fisheries development in Southeast Asia, with inputs from all SEAFDEC Departments and Member Countries (if any). Current production is 1,600 copies, distributed to Member Countries, Network Libraries, fisheries-related institutions/organizations, collaboration organizations, and interested people. Newsletter is also available through SEAFDEC Integrated Website. In addition to the English version, approx 200 copies of Japanese version Newsletter were also produced for distribution in Japan.</p>	Q1, Q2, Q3, Q4	75% (Volume 31 Number 3 is now under compilation process)
<p>Production and dissemination of Special Publication “Fish for the people” Volume 6, Number 1-3</p> <p>The Special Publication will be in easy reading style, targeting not only the technical people but also the non-technical including policy makers, young scientists and managers and others who are interested in the fisheries issues in ASEAN region. Number of production is 1,300 copies per issue. The Special Publication is available through SEAFDEC Integrated Website.</p>	Q2, Q3, Q4	80% (Volume 6 Number 3 is now under compilation process)
<p>Production and dissemination of the Ten-Year JTF Achievement Booklet</p> <p>The publication presented a summary of the impacts of the projects and activities implemented by SEAFDEC with funding support from the JTF on the sustainable development of fisheries in the Southeast Asian region.</p>	Jan-April	100%
<p>Fishery Statistical Bulletin for the South China Sea Area</p> <ul style="list-style-type: none"> • Production of Statistical Bulletin for 2005 • Development of New Framework for the Fishery Statistical Bulletin for Southeast Asia (for Bulletin 2008 and onwards) • Development of Questionnaire and Note of Completion for the Fishery Statistical Bulletin 	Jan-April Jan-Aug Q4	100% 100% 80%
<p>Maintaining and improving of the Websites</p> <ul style="list-style-type: none"> • <i>SEAFDEC Integrated Homepage (www.seafdec.org)</i> <p>SEAFDEC Integrated Homepage was restructured based on recommendation at the 6th Information Staff Exchange Program Meeting. In the future, the Homepage will contain information on progress of SEAFDEC programs, updated news, regional fisheries issues, SEAFDEC publications, event calendar, and press release from SEAFDEC meetings. Information e.g. brochures, exhibition posters, meeting reports, etc. is also available for download.</p>	Q1-Q4 2007	On-going

<ul style="list-style-type: none"> • Regional Website on Small-scale Fisheries (http://sea.rsnssf.net/) <p>The website contains information on global/regional small-scale fisheries to support and promote sustainable development of small-scale fisheries.</p>		On-going
<ul style="list-style-type: none"> • Portal Website for the ASEAN-SEAFDEC Strategic Partnership (under construction) <p>The website was developed in response to the request made at the 14th ASWGF Meeting for SEAFDEC to develop the Portal Website for the ASEAN-SEAFDEC Strategic Partnership to enhance the visibility on cooperation between ASEAN and SEAFDEC under the ASSP framework.</p>		50%
<p>Other promotional activities</p> <ul style="list-style-type: none"> • Exhibition at the 6th Meeting of the AEG-CITES • Exhibition at the RTC on HRD for Poverty Alleviation (on the ASEAN Foundation supported Activities) • Exhibition at the Global Conference on Small-scale Fisheries • Promotional events/exhibition display conducted at the national/regional levels by SEAFDEC Departments • SEAFDEC Calendar 2009 	<p>21-23 May</p> <p>3-5 July</p> <p>13-17 Oct</p> <p>Jan-Dec</p> <p>October</p>	<p>100%</p> <p>100%</p> <p>100%</p> <p>100%</p> <p>100%</p>
<p>Ninth SEAFDEC Information Staff Exchange Program Meeting</p> <p>ISEP is organized annually on a rotation basis (hosted by Secretariat and each SEAFDEC Department) Main objectives of the 9th ISEP Meeting are: 1) To review the achievements and monitor the progress of implementation of SEAFDEC information activities, and the Information Strategy for Enhancing SEAFDEC Visibility and Communication in 2008; 2) To discuss and conclude activities to be incorporated under the Center-wide Information Network Program framework in 2009; 3) To review and make appropriate revision to the Information Strategy for Enhancing SEAFDEC Visibility and Communication; and 4) To introduce initiatives in information aspects undertaken by MFRD.</p>	30 October – 1 November 2008	100%
<p>Regional Fisheries Policy Network (RFPN)</p> <p>In early 2008, the Regional fisheries Policy Network comprises members from Cambodia, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam to station at the SEAFDEC Secretariat (with support from Sida); and virtual members from Japan, Myanmar and Singapore have also been designated by their respective countries. The main roles of the RFPN are to identify fisheries-related issues related which may have potential impacts on fisheries in the region, initiate studies and activities, and promote the formulation of regional fisheries policies and recommendations on the issues. The RFPN also assist in coordination with Member Countries, and to promote closer collaboration between SEAFDEC and Member Countries. However, due to the unavailability of funding support, in late 2008, there is no RFPN members stationed at the Secretariat, and only virtual members are retained.</p>	Jan-Dec	On-going

4. PROPOSED ACTIVITIES FOR THE YEAR 2009

The Information activities proposed to be undertaken in the year 2009 are:

	Remarks
1. Production of SEAFDEC Annual Report 2008	1,000 copies
2. Information Compilation CD Rom 2008	50 copies
3. Production of SEAFDEC Newsletter Vol. 31 No. 4, Volume 32 No,1-3	1,600 copies
4. Production of the reports of SEAFDEC Annual Meetings (PCM, FCG, Council)	150 copies each
5. Production of Special Publication: "Fish for the People" Vol. 7 No. 1-3	1,300 copies
6. SEAFDEC Information Catalogue 2009	1,000 copies
7. Developing and maintaining Websites <ul style="list-style-type: none"> • SEAFDEC Integrated Homepage • Regional Website on Small-scale Fisheries • ASSP Portal Website 	(web-based)
8. Production of SEAFDEC Calendar 2010	3,000 copies
9. Compilation and Production of Fishery Statistical Bulletin 2006-2007	400 copies each
10. Production of Questionnaire for Fishery Statistical Bulletin	30 copies
11. Production of Note of Completion for Fishery Statistical Bulletin	300 copies
12. Conduct of the Tenth SEAFDEC Information Staff Exchange Program (ISEP) Meeting	(to be hosted by TD)
13. Production of other promotional materials e.g. brochures, posters, etc.	
14. Regional Fisheries Policy Network (RFPN)	

In addition, based on the discussion and recommendation at the 9th Meeting of the SEAFDEC Information Staff Exchange Program, other activities would also be explored and may be accommodated under the Program on Center-wide Information Network, based on availability of budget, e.g. planning/preparation for SEAFDEC campaign events proposed to be conducted in 2010.

Tentative Timeframe

Activity	J	F	M	A	M	J	J	A	S	O	N	D
1. Annual Report 2008												
2. Information Compilation CD Rom												
3. Newsletter (4 issues)												
4. 31 th PCM Report												
5. 11 th FCG Report												
6. 41 th Council Meeting Report												
7. Special Publication (3 issues)												
8. Information Catalogue 2009												
9. Developing and maintaining Websites												
10. SEAFDEC Calendar 2010												
11. Statistical Bulletin 2006 and 2007												
12. Questionnaire and Note of Completion for Fishery Stat. Bulletin												
13. 10 th ISEP Meeting												
14. Other promotional materials/activities	Based on events/requirement											
15. Regional Fisheries Policy Network	RFPN to be stationed at SEAFDEC is based on availability of budget											

**SEAFDEC DEPARTMENTAL PROGRAM OF ACTIVITY
FOR THE YEAR 2008-2009**

TRAINING DEPARTMENT

1. OVERALL REVIEW

In the year 2008, TD strengthens public relation TD organization and activities via multi channel as exhibition, souvenir, radio, newsletter and electronic newsletter. The several productions of promotion material and multimedia packages were produced and disseminated to worldwide. The technology media as website was used to promote TD activities and information online. The target audience and publicity was assessed TD information via Information and Communication Technology implementation. Moreover, TD organized 8 tailor made training courses and study tour programs and also another 3 tailor made study tour programs which TD are requested by CRMP-Sri-Lanka, DOF of Bangladesh to conduct them in November -December 2008.

In the year 2009, TD continues to implement a program related to Information and Communication Technology under the Departmental program. However, some program activities will continues and some of them will adjust and modify. Under the program, the public relation promote TD activities still emphasize and implement. TD online, information communication and technology internal and external were improved and developed. TD will produce an electronic newsletter to disseminate reports and the progress of TD activities to organization network and member. The production Multimedia Packages to support TD project and activities including server other department as a requirement will be continued and developed. Moreover, At least five tailor made training courses and study tour programs will be conducted in the year 2009, the training course and study tour program which event where all aspects are defined by the partner in consultation with the training partners. This includes the choice of subjects, duration, location, and the target group). Courses/programs can be constructed by combining existing training programs or a totally new topic will be developed.

2. LIST OF PROGRAMS

1. Information and Communication Technology
 - Public Relation
 - Information and Communication Development
 - Development and Production Multimedia Packages
 - Database Management
2. Tailor made Training and Study Tour Program
 - University Student training course 2009
 - A training course on skipper study and fishing vessels operation for Pramong Tinasulanon College
 - Other demand training and study tour programs

PROGRAM DOCUMENT

Program Category: Departmental Program

Program Title: Information and Communication Technology

Responsible Department: TD

Total Duration: 1 year (Jan-Dec 2009)

1. INTRODUCTION

Presently, Information Technology (IT) is essential for communication inside and outside the organization and worldwide. IT has been developed as a high technology to support the implementation of activities in the organization. Information and Communication Technology as information service, the Internet and multimedia in Training Department have to be developed and improved to support SEAFDEC and Training Department activities.

The Department will develop and carry out information activities such as compiling, designing, producing, disseminating, acquiring and exchanging of printed and non-printed information. Various databases and information files will be designed and compiled to serve as effective tools. The Department's website will be updated in time to present its activities worldwide. Moreover, SEAFDEC Public Relations will be emphasized and promoted via every channel.

2. PROGRAM

2.1 Objectives

1. To publicize TD's role and activities in sustainable fisheries development to promote the Department
2. To manage and develop TD's information communication technology
3. To produce and disseminate multimedia information to all SEAFDEC member countries and worldwide.
4. To manage the Intranet and Internet database
5. To collaborate with other related institutes/organizations in sustainable fisheries.

2.2 Program description

In 2009, an information and communication technology program will be continued with emphasis on the implementation of activities related to the department's strategy of enhancing the organization's visibility worldwide. For this purpose, five main activities are designed. The first is public relations to promote TD's activities via multimedia equipment such as website, publications and active participation in fisheries events and exhibitions at both national and international levels. The second is ICT development. The activity will cover updating, reviews and improvement of TD's online website, online library and TD's news as well as producing and disseminating TD's electronic newsletter to its network and the public. The third is to continue the design and production of multi audio-visual materials and brochures in the forms of printed matters and other medias to disseminate to member/non-member countries. The fourth is Intranet database management. The fifth is collaboration with other international organization.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

In 2008, the Training Department continued to implement a project on Information and Communications Technology under the Departmental Program. The following activities were implemented:

3.1 Public Relations

To enhance SEAFDEC visibility, TD took part in a number of exhibitions relating to fisheries to present and promote SEAFDEC roles in sustainable fisheries development in the ASEAN region as follows:

Exhibition Title	Date
Children's Day Exhibition	12 January 2008
Fisheries Exhibition for Suan-Kulab Pratumthani High School	25 January 2008
National Fisheries Exhibition	4-13 July 2008
Organic Agriculture to Sufficient Economy Exhibition	23-27 July 2008
Marine Science Exhibition 2008	25-27 August 2008
Global Small-scale Fisheries Conference Exhibition	13-17 October 2008
IMT-GT Fisheries Seminar and Expo 2008	20-23 November 2008

Moreover, this year, TD promoted an organization via media channel. The sport to raise awareness about responsible fishing among fisherman was arranged and broadcast by radio. An article focusing on fisheries was written and appeared in the column titled "Open fishery in the world" of local newspaper every month.

TD always extends a warm welcome to delegations and guests from member countries and other organizations. TD considers it as an important channel for public relations of SEAFDEC. Visitors to TD total 363 so far in the year 2008.

3.2 Information and Communication Technology Development

New TD website was designed and modified and is not available for users in every part of the world. The information database, data links, news and activities/events on TD website was updated in time. The Internet bandwidth was modified and developed to support intranet and Internet network system in TD. Moreover, four TD electronic newsletters were produced to disseminate reports and the progress of TD activities to organization networks and worldwide via e-mail and TD website. In 2008, more web travelers in the world showed an interest in TD website. From September 2007 until September 2008, 7,507 web travelers visited TD website and 5,570 web travelers downloaded TD databases

3.3 Development and Production Multimedia Packages

TD produced bookmarks, T-shirts and VCDs associated with TD project as well as posters, brochures and stickers as public relations materials about resource conservation and sustainable fishing technology. All promotion medias are disseminated to the public via exhibitions, training courses, seminars, and workshops.

Twelve VCDs on training courses and meetings were also produced to promote TD organization and activities. Moreover, two documentary VCDs on set net fishing and SEAFDEC activities relevant to the alleviation of global warming are in process if production. Twenty-seven technical publications and reports were printed and served as new information

to develop capacity of those who are engaged in the fisheries field. They were distributed in all occasions to share and exchange information among fisheries related organizations and through networks.

3.4 Collaboration between SEAFDEC and AMC-Australia on Human Capacity Building

The collaborative program of “Master of Applied Science in Living Marine Resources” between TD and AMC and another program for the human capacity building through the e-learning on the Marine Ecology and Coastal Fisheries Management for Southeast Asian Student are under discussion and negotiation.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
1) Public Relation		
• Exhibition	Jan-Dec 09	
• Public Relations of TD and SEAFDEC via radio	June-Oct 09	
• Public Relations of TD and SEAFDEC via newspaper	Jan-Dec 09	
2) Information and Communication Technology Development		
• Development of e-mail system in TD	Jan 09	
• Design and creation of new template of TD website	Feb 09	
• Development and installation of wireless in TD	Apr 09	
• Development of security of TD network	May 09	
• Cooperation with other organizations to promote TD website	Jan-Dec 09	
3) Development and Production of Multimedia Packages		
• Production of TD promotion materials	May 09	
• Documentary VCD to support TD projects	Feb-Dec 09	
4) Database Management		
• Design and creation of network database	Jan-Dec 09	
• Development of TD intranet database	Jan-Dec 09	
5) Collaboration between SEAFDEC and other international organizations		
• Collaboration with FAO in production of illustration of Global fishing gear classification	Jan-Dec 09	
• Collaboration with FAO/GEF in REBYC 2 project	Jan-Dec 09	

4.2 Expected Outcomes

- Roles of TD and SEAFDEC in sustainable fisheries will receive worldwide publicity.
- Information Communication Technology in TD will be developed and used to promote TD projects and support working in TD to enhance TD and SEAFDEC's visibility
- Collaboration between TD and other international organizations in information exchange and information technology such as website linkage and project implementation will be promoted.

PROGRAM DOCUMENT

Project Title: Tailor made training courses and study tour programs

Responsible Department: TD

Duration: 1 year (January-December 2009)

Funding Sources: Partner organizations

1. BACKGROUND/INTRODUCTION

In each year TD has conducted several regional training courses, that are a channel to transfer activities outcomes and technology which are found out or developed by SEAFDEC to its member countries, therefore the participants will come home with knowledge about “how they learn and how they do in SEAFDEC/TD, Thailand”. However in recent years, SEAFDEC/TD has requested to conduct some tailor made courses and study tour programs that are a direct follow-up of its advisory activities with and for, organizations in this region. Such courses/programs are referred to as tailor-made courses/programs because they are set up at the request of organizations and their content is tailored to the specific training needs of the requesting organization's staff. The tailor-made training courses and study tour programs which are conducted by TD emphasize learning by doing, observing. This is an approach that relies heavily on the participants' active involvement. An important part of learning by doing and seeing are that lecturers act more often as facilitators than as teachers in the traditional sense. The course will not focus on the theory but more dealing with practical application.

2. OBJECTIVES

1. To provide a wide range of tailor-made training course and study tour programs in the field of fisheries and other relevance aspects at the national and inter national levels
2. To fully utilize the training facilities of the TD and make use of them for the member countries and the region
3. To raise fund which support from other donors/organizations

3. PROJECT DESCRIPTION

As training is at the heart of developing human and institutional capacity, So TD propose to continue a part of the training activities as the tailor-made courses and study tours program (on demand training and study tour program). At the request of individual countries and/or in partnership with intergovernmental organizations, TD will organize and implement specifically designed courses on themes related to the demand /need of the partner organization. The duration, content and structure of the courses are tailored to the specific needs and level of the participants, and defined in close consultation with the beneficiaries and partner organizations.

4. PROGRESS OF ACTIVITIES IN THE YEAR 2008

In the year 2008, there are about 10 tailor made training courses and study tour programs are conducted by TD and also another 3 tailor made study tour programs which TD are requested by CRMP-Sri-Lanka, DOF of Bangladesh to conduct them in November -December 2008. The tailor-made programs summaries are as follow:

- The young fisheries evolution workshop, The workshop was designed for the young fisheries generation from high schools which are located at the Samutprakan province, There were 42 high school student from six different high school attended on the workshop. The workshop was conducted from 8-10 April 2008. The workshop aim to encourage the students on the responsible utilization as well as the applicable management on the natural resources. There was an opportunity for students from different schools to meet and shred their idea as well as to present and discussed on each of their idea projects.
- Short term training courses for University students, there were two training courses on this title were held at SEAFDEC/TD, there were conducted from 21 April – 2 May, and 20-29 October, 2008. The courses focused on the awareness raising and the understanding on Sustainable coastal fisheries management to the new generation as young university students. Courses were consisted of the presentation/discussion sessions and the ship board training. There were about 45 University students attended on each training course.
- A training workshop on Juvenile and Trash Excluder Device (JTEDs). The workshop was conducted from 20-25 June 2008. The course was aimed to learn the participants with the concept and approach on responsible fisheries specially on shrimp trawling as well as to practice them to install and operate the JTEDs. The course covered theoretical, practical as well as the demonstration on the used of JTEDs. There were 10 fishing gear technologists from DOF/Thailand and another 10 fishermen attended on this workshop.
- The training course on Coastal Fisheries Management and Extension Methodologies (in Thai version). This course was designed for the Thai extension officers (DOF), The course was conducted from 7-16 July 2008. There were about 10 days of the training duration. This course aim to familiarize participants in principles, concepts and need for radical change to coastal fisheries management and the role of fishing communities in the sustainable development and management of coastal resources. And to impart participants with the principles, concepts techniques and methodologies in extension, communication and media production. There were 26 of participants attended on this training course.
- Two training course on Electricity system and marine engineering for the Industrial and community education college, Samutprakan. This two training courses were held at SEAFDEC/TD from 21 July to 19 September 2008. There were totally 9 students attended on these courses. During the course students were trained to work on boat engine, refrigeration system, electricity system as well as the basic skill which they need to know for their future work such as the workshop on arc welding, measuring tools, lathe machine, etc.
- A training course on Navigation and safety at sea. The course was designed for 20 Thai participants (DOF/Thailand) who work on the boats. The course was conducted from 18-22 August 2008. The course aimed to give the knowledge and skill to the participants on the safety at sea practice as well as to give them the information on the law and regulation which are related to the fishing boats operations. There was a period for participants to practice on navigation and fishing simulators.
- On the job training on Marine and coastal fisheries management and technologies for one student from Walailuk University. The program is held at the SEAFDEC/TD from 3 September to 17 December 2008. The course was covered on the aspect of water nutrient distribution and analysis, as well as technology to present the result by using the Ocean Data View Program.

- A short term training course on fishing technology for Ubonrathchathani University, the course was conducted from 29 October to 3 November 2008. The course focused on the offshore fisheries, oceanographic survey and the eco-friendly aquaculture. Students were introduced to responsible fishing gears designed and methods as well as to practice on the oceanographic survey. There were 41 student attended on this training course.
- A training course on fishing vessels operation for Pramong Tinasulanon College, this four months training course is designed for students from a fisheries college. The aim of this tailor made training course is as being a part to produce the effective seamen and navigators for the fisheries industrial or other related sectors both at the national and international levels. The course is conducted from 6 October 2008 – 27 February 2009. There are 13 student attend on this training course for this year.
- A training course on Coastal fisheries management in Thailand, the course is planed to be conducted from 18 November to 3 December 2008. There will be 15 participants from the Aquatic Resources and Ministry of Fisheries in Sri-Lanka attends to the training course. The training course will focus upon the concepts and case studies of coastal and resource management; The approaches to work towards co-management, involving local communities and applying eco-system principles to coastal fisheries management; code of conduct for responsible fisheries as well as exited selective fishing gears in Southeast Asia; new approaches on fishery extension concepts and methods. The training course will cover the presentation/discussion, practical and visit to related places. The course will be sponsored by the CRMP-Sri-Lanka.
- A short term training course in MCS approaches and activities in Thailand
The course will be conducted from 17-25 December 2008. There will be four participants of the Department of Fisheries in Bangladesh attend on this training course. The course will focus upon the Monitoring Control and Surveillance approaches, the appropriated procedures and methods as well as the lesson learnt from the activities. The study cases of visit and the demonstration practices will be also covered on this training course.

There are about 271 participants were completed and/or going to be completed on the tailor-made training courses at SEAFDEC/TD in the year of 2008.

5. PROPOSE FUTURE ACTIVITIES FOR THE YEAR 2009

At least five tailors made training courses and study tour programs will be conducted in the year 2009, the training course and study tour program which event where all aspects are defined by the partner in consultation with the training partners. This includes the choice of subjects, duration, location, and the target group). Courses/programs can be constructed by combining existing training programs or a totally new topic will be developed.

The following activities will be implemented in the year 2009.

Projects/Activities Title	Period (Month)												Remarks
	J	F	M	A	M	J	J	A	S	O	N	D	
1. University student training course 2009													
• University student training course' 47													
• University student training course' 48													
2. A training course on skipper study and fishing vessels operation for Pramong Tinasulanon College													5 months: From October 2009 – March 2010
3. Other demand training and study tour programs													

SEAFDEC DEPARTMENTAL PROGRAMS OF ACTIVITY FOR THE YEAR 2008-2009

AQUACULTURE DEPARTMENT

1. OVERALL REVIEW

In 2008, the Southeast Asian Fisheries Development Center Aquaculture Department (SEAFDEC/AQD) continued to provide focus on generating and transferring aquaculture technologies which are environment-friendly and suitable to the needs of the region. These activities which are in line with the Regional Guidelines for Responsible Fisheries in Southeast Asia and supports the SEAFDEC Fisheries Consultative Group Programs in the ASEAN region cover the following Programs: (i) Marine Fish; (ii) Mud Crab and Shrimp; (iii) Mollusk; (iv) Small-holder Freshwater Aquaculture (v) Seaweeds and (vi) Aquatic Ecology. The following provide the highlights of the activities implemented under such Programs:

a. Marine Fish

The Program aims to refine broodstock management, seed production, and grow-out technologies for marine fishes and promote marine fish hatcheries for livelihood in coastal areas. Research in 2008 continued to focus on activities that will address the remaining technology gaps identified for important marine fishes such as the groupers, the Asian sea bass, mangrove red snapper, rabbitfish, milkfish, and pompano.

Significant progress was made in development of AQD formulated feed for various growth phases of the marine fishes. Larval production of the 5 marine fishes (groupers, the Asian sea bass, mangrove red snapper, rabbitfish, and milkfish) was improved by using SEAFDEC formulated larval feeds. Potential substitutes for brine shrimp (e.g. copepods, shrimp mysids) and for trash fish were also explored and tested. Progress was also made in identification of molecular marker that could be used for assessing egg quality in cultured marine fish. During nursery rearing, the use of tryptophan -supplemented diets gave encouraging results and found that this could mitigate cannibalism in juvenile groupers and sea bass. Studies also revealed that stocking larger marine fish in nursery cage culture and fed high protein SEAFDEC diet could result in improved growth and food conversion ratio. The Program also investigated the application of compensatory growth mechanisms for milkfish reared in cages and found that the alternate 2 week starvation and re-feeding cycle might work. Verification studies were conducted to evaluate the application of integrated pest management to control snail infestation in ponds. The use of SEAFDEC formulated diet was also evaluated in various marine fishes cultured in ponds. Results showed that SEAFDEC diet was comparable if not better than the commercial diet. In grouper, immunostimulants such as ginger, onion, ascorbic acid, and beta-glucan were tested to improve production. Concerning the pompano, *Trachinotus blochii*, successful spawning induction and seed production trials were achieved for the first time in AQD in June. Spawning induction trials have been continued.

b. Mud Crab and Shrimp

The Program aims to develop viable technology for the production of good quality seed and captive broodstock of native species, particularly, *P. monodon*, *P. indicus* and *P. merguensis* for shrimps and *Scylla* spp. for crabs.

Concerning the mud crab, the focus of activities in 2008 were on domestication, refinement of broodstock management and seed production techniques, and improving the culture techniques during nursery and grow-out phases and in different production systems. Wild stocks collected from various sites in the Philippines were bred. Experiments were initiated to examine the growth and reproduction performance of progeny, including their genetic quality. Since mud crabs are heavily dependent on trash fish, experiments were continued to develop the AQD formulated feed and explore alternative protein sources. As part of the strategy to enhance technology adoption, a project was initiated in Northern Samar, Philippines. Activities in this project include improving the capacity of various stakeholder groups on nursery and grow-out rearing, assessing the status of wild stocks, and socio-economic impact of adoption of mud crab technology in fisherfolk communities.

With regard to shrimps, the Program continued developing the technology to produce viable *P. monodon* and *P. indicus/P. merguensis* broodstock in captivity. In the Philippines, *P. monodon* broodstocks from the wild were examined to assess their genetic variation. To improve the maturation of pond-reared broodstocks and growth at various stages, AQD formulated diets were developed and tested for their effectiveness. Substitutes for shrimp meal were also explored and evaluated. To monitor the possible impact of *P. vannamei* introduction in the Philippines, AQD supported a national meeting convened to identify issues and assess the status of its farming.

c. Mollusk

In 2008, the program continued R&D activities on donkey's ear abalone, *Haliotis asinina* to address the following objectives: (1) refine management and spawning techniques for captive broodstock, (2) improve seed production technology through environment manipulations and enhancement of growth of natural food; (3) to determine the nutritional requirements of juveniles in line with the strategy to develop alternative feeds for nursery and grow-out; (4) compare the economic viability of producing advanced juveniles in tanks and sea cages set in open waters and develop viable technology package for the intermediate nursery culture and marketable abalone production.

Experiments showed that gonadal maturation was not affected whether broodstock were kept in indoor or outdoor tanks. Progress was also made in developing the techniques for larval management. Stocking of larvae immediately after collection or 6 hours later could improve survival and that the loading density and temperature of oxygenated plastic bags during transport had influence on larval survival rates. Experiments were also continued to improve larval settlement and juvenile production. Techniques for rearing both in land-based nursery tanks and floating net cages were refined. Apart from nursery, the grow-out rearing techniques of abalone juveniles in floating sea cages were verified. Experimental trials on hybridization of Philippine native abalone species were initiated as part of the future strategy to improve stocks and enhance its market potentials.

d. Small-holder Freshwater Aquaculture

The main objective of the Program is to improve the seed production and grow-out technologies for tilapia, catfishes, carps, and freshwater prawn and promote freshwater aquaculture for livelihood. With regard to freshwater prawn, activities were continued to assess the wild stocks in terms of their genetic variation and the breeding and reproduction performance (including the seed production and larval rearing requirements). Investigation on the use of green and clear water for rearing freshwater prawn was completed and showed that the use of green water could improve production performance. Studies on important indigenous species - climbing perch and snakeskin gourami have been initiated. Stocks collected from the wild were bred for feeding trials. Experiments on bighead carps in Laguna de Bay at different stocking densities and feeding regimes were continued. Concerning the tilapias, experiments were continued to improve the fillet yield through farm-based selection. Another study on Nile tilapia reared in cages in the lake (Lake Bato) showed that the application of various feeding management strategies had significant effects on growth and survival. Research was also continued to verify the grow-out culture of Asian catfish *Clarias macrocephalus* in net cages in Laguna de Bay.

e. Seaweed

The Program focuses on production of 'new' and improved varieties of *Kappaphycus* through tissue culture, sporulation, and protoplast fusion techniques. Despite the limited number of research staff working on the Program, significant progress was made in the Program during 2008. Successful techniques were developed in regenerating young plants of *Kappaphycus* from spores or through tissue culture. *Kappaphycus* were outplanted in tanks and in open waters to attain sufficient biomass for nursery rearing. Sporelings from carposporophyte and tetrasporophyte plants from farmed and wild *Kappaphycus* proved to be good sources of 'new' cultivars. The resistance of these 'new' plants vs. the commercially farmed *Kappaphycus* was tested and the former showed better heat-resistance characteristics.

f. Aquatic Ecology

The program focused on assessing the environmental capacity of the sites, developing protocols to assess the sediment quality of the sites and addressing issues related to sustainability of the aquatic environment. In 2008, AQD continued studies which monitored the water quality in mariculture park using chemical and biological indicators. Activities were also initiated to develop sediment quality assessment and monitoring protocols in mariculture areas.

Preliminary findings showed that fish cages had significant effect on sedimentation rates in mariculture area. Experiments were also carried out to assess the ammonium uptake of *Gracilaria bailinae* and its impact on the combined culture with abalone, and *G. bailinae* in a recirculating system. Concerning the study which aims to evaluate the economic importance and ecological impact of the tangab fishery in Iloilo Strait, a local workshop was convened to assess the status and identify issues on the subject.

g. Other R&D Activities

Institutional Capacity Development on Sustainable Aquaculture. To complement the research activities, AQD also provided greater focus on initiatives that would facilitate the transfer of viable technologies. The collaborative project "Institutional Capacity Development for Sustainable Aquaculture" (ICDSA) which is being implemented in partnerships with local

government units and other stakeholder groups serves as R&D platform for the demonstration of the technical and economic feasibility of aquaculture technologies developed by AQD. It also provides a mechanism for the assessment of socioeconomic and environmental impacts of AQD aquaculture technologies and, for building the capacity of beneficiary communities.

The project has achieved significant progress and is now on-going in five provinces (Antique, Capiz, Guimaras, Northern Samar, and Misamis Occidental) of the Philippines. The participating five provinces have benefited from several season long training courses and actual production and demonstration runs conducted in these sites for the farming of important commodities (i.e. seabass, grouper, milkfish, mud crab, abalone, freshwater fishes).

ABOT AquaNegosyo. Apart from ICDSA, the ABOT (Agree-Build-Operate-Transfer) AquaNegosyo is another initiative that has provided a 'vehicle' for transferring the viable aquaculture technologies developed by AQD. The initiative on 'Agree-Build-Operate-Transfer' (ABOT) AquaNegosyo showcases the complete packages on viable aquaculture technologies (hatchery, nursery and grow-out culture of various economically important aquatic species) developed by AQD for private sector investors and aquaculture farmers in the Philippines. In 2008, ABOT extended technical assistance to 15 clients (private entrepreneurs, commercial farmers from the Philippines). Technical assistance rendered included initial farm site assessment, assessment of existing culture system, preparation of facility design and project feasibility, supervision of facility construction, transport & stocking of fish, and monitoring of culture system and stocks.

The Project also responded to queries of at least 57 more clients in the Philippines and a few from other countries such as Tobago, Maldives, Greece, and Cook Island

Training and Information. Significant efforts were also made to facilitate the transfer of viable technologies to various stakeholder groups through training and information dissemination.

As of October 2008, AQD has conducted 17 formal training programs on various aspects of aquaculture and has trained over 300 participants, mainly government workers, private sector practitioners from the Philippines and representatives of partner countries from the ASEAN region. Apart from this, 200 students, mainly from the Philippines, and some foreign interns have also been trained during the year.

To enhance visibility locally and internationally and disseminate viable technologies, AQD participated in seven exhibits/fairs in the Philippines. Apart from publication in peer-reviewed journals, AQD produced four farmer-friendly how-to manuals on various commodities, six flyers and nine large-format posters. About 23 news articles on AQD have also appeared in the Philippine mass media. AQD also published in-house information materials such as the AQD annual report (*Highlights 2008*), newsletter (*AQD Matters*) and contributed news articles of *SEAFDEC Newsletter*. Apart from publications, significant efforts were also made to improve the AQD website. During the year, this was updated twelve times and received an average of 6,749 web hits per month.

PLANS IN 2009

AQD conducted the second part of its in-house Strategic Planning in August 2008. The meeting identified the thrusts and prioritized activities of AQD in the next 4 years. The year 2009 will see the continuation of most of the activities conducted in 2008. To help address the issues on fisheries sustainability and food security, AQD will provide greater focus on R&D initiatives that are in line with responsible aquaculture and will support fisheries management and development of rural aquaculture.

To facilitate the widespread transfer of viable aquaculture technologies to targeted stakeholders groups in the ASEAN region, emphasis will be given to verification and packaging of these technologies. The ICDSA initiative and ABOT Aqua Negosyo are expected to play a more active role in this activity.

The Departmental Programs for 2009 will comprise the following: (i) Marine Fish; (ii) Mud Crab and Shrimp; (iii) Mollusk; (iv) Seaweed; (v) Small holder Freshwater Aquaculture; and (vi) Aquatic Ecology.

2. LIST OF PROGRAMS

Departmental Programs Implemented by AQD in the year 2008:

- a) Marine Fish
- b) Mud Crab and Shrimp
- c) Mollusk
- d) Small-holder Freshwater Aquaculture
- e) Seaweed
- f) Aquatic Ecology

Proposed Departmental Programs of AQD for the year 2009:

- a) Marine Fish
- b) Mud Crab and Shrimp
- c) Mollusk
- d) Small-holder Freshwater Aquaculture
- e) Seaweed
- f) Aquatic Ecology

PROGRAM DOCUMENT

Program Category: Departmental Program

Program Title: Marine Fish

Responsible Department: AQD

Duration of Program: 2006-2009

1. INTRODUCTION

The Marine Fish Program of the SEAFDEC Aquaculture Department (AQD) aims to continually improve the technologies for broodstock management, hatchery, nursery, and grow-out culture of marine fishes for sustainable aquaculture development, poverty alleviation in the countryside, and reinforcement of aquatic resources and food security in the Southeast Asian region. Marine fishes such as milkfish, grouper, sea bass, mangrove red snapper, rabbit fish, and pompano are among the species being studied in 19 research topics in the Program.

2. PROGRAM

2.1. Objectives

The objectives are to: (a) improve the technologies for broodstock management, seed production, nursery, and grow-out culture of marine fishes such as groupers (*Epinephelus coioides* and *E. fuscoguttatus*), the Asian sea bass (*Lates calcarifer*), mangrove red snapper (*Lutjanus argentimaculatus*), rabbitfish (*Siganus guttatus*) and milkfish (*Chanos chanos*); and (b) develop breeding and seed production technologies for pompano (*Trachinotus blochii*).

2.2. Program Description

The program in 2007 comprises 19 studies that fall under Research and Development and Technology Verification and Dissemination. They span the various stages in culture involving, broodstock, seed production, nursery, and grow-out culture of marine fishes. Some projects involve the production of marine fishes in brackish water ponds and in floating net cages. The studies are done in laboratory, broodstock, and hatchery/nursery facilities at the Tigbauan Main Station, brackish water ponds in Dumangas Brackishwater Station, and in floating net cages at the Igang Marine Station.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Seed production (broodstock and hatchery management)

As part of the initiative to develop strategies to extend the spawning season of sea bass in captivity, a study was conducted to evaluate the effects of temperature on reproductive performance. Broodstock fish that were reared at elevated temperature experienced early maturation and higher fecundity and larval production. Spawning induction yielded higher total egg production in treated fish (13.7million) compared with control fish (3.4 million) from June to August.

In addition, IGF-II mRNA was identified as a good molecular marker for egg quality in cultured marine species which could pave the way for the development of an accurate, reliable, simple, and rapid assessment of egg quality in marine fish broodstock.

In April, the diet of milkfish broodstock was changed from the old formulated diet to the fortified diet to improve the quantity and quality of eggs. The milkfish broodstock diet was fortified with vitamins and lipids. Egg production and the quality of larvae improved after the diet change. The use of fortified larval diet, as well as emulsion to enrich the rotifer, reduced the incidence of abnormal larvae.

In June, pompano, *Trachinotus blochii*, broodstock was induced to spawn in captivity. Larvae had 19% survival rate after 60 days culture. Another spawning occurred in August but with fewer good eggs collected. The eggs were hatched and normal larvae were obtained with 63% survival.

Larval production of the 5 marine fish species has been improved largely by using SEAFDEC formulated larval feeds to reduce the use of natural food especially brine shrimp during larval rearing and consequently reduce the cost of production.

Studies have also shown that mysids are potential live food substitute for *Artemia* in grouper larval culture because they improved the profile of highly unsaturated fatty acids (HUFA) specifically DHA and EPA and digestive enzyme levels in larval grouper.

Furthermore, PUFA-rich thraustochytrids can be used as enrichment diet for rotifers and *Artemia* that are used as natural food for marine fish larvae.

Nursery

Hatchery-bred milkfish fry from AQD's hatchery facilities in Tigbauan were successfully reared to fingerlings in brackish water ponds with good growth, survival, feed conversion ratio and < 1% abnormalities.

In addition, studies on mitigation of cannibalism in juvenile marine fish showed that growth and survival were significantly better for marine fish in nursery cages in pond given tryptophan (TRP)-supplemented diets than those given trash fish.

Stocking larger marine fish in nursery cage culture in ponds and fed high protein SEAFDEC diet generally resulted in higher growth and survival rates and improved FCR.

Grow-out

Studies on alternative feeding strategies were conducted to improve the growth of milkfish. The results suggested that in tank experiments compensatory growth mechanisms might be at work in the fish subjected to alternate 2 week starvation and refeeding cycle. Studies in simulated cage environment are underway.

Studies were also done to improve the nutritional value of locally available feed resources for practical aquatic feeds by submerged fermentation and solid substrate fermentation using milkfish gut bacteria and/or selected fungi are on-going. Two isolates from milkfish gut, presumptive *Bacillus cereus* and *Lactobacillus sp.* were able to ferment a variety of sugar substrates and produced a variety of extracellular enzymes such as protease, lipase, cellulase, carbohydrase, and phytase which could help in modifying the biochemical characteristics of feed ingredients for practical feeds. Confirmatory tests on the identity of these isolates by 16S rRNA analysis are on-going.

IPM (integrated pest management) strategy in brackish water pond using ducks as predators, manual handpicking as the mechanical means and application of commercially available

molluscicides such as nicotinamine sulfate, metaldehyde and Terminator is an effective way to control snail infestation in milkfish ponds. Nicotinamine sulfate powder was effective as molluscicide despite its low nicotine concentration. However, tests revealed that it had a tin level of 62 mg/kg (ppm), higher than the estimated environmental concentration of 5 ppm. The test does not rule out the possibility that this preparation contains organotin (triphenyltin, tributyltin or other derivative).

Verification studies on various marine fishes using SEAFDEC formulated diet compared with commercial diet showed that the SEAFDEC diet was comparable if not better than the corresponding commercial diet.

Grouper (*E. fuscoguttatus*) were cultured in Igang Marine Station floating net cages at a stocking density of 17 fish m³ and fed SEAFDEC grouper diet beginning with starter diet, grower diet, and finisher diet. After 120 days of culture, fish had average body weight gain of 550%, survival of 75%, and FCR of 2.7.

In finding alternatives to fish meal in aquaculture feed, white cowpea has been tried to partially replace fish meal in grouper diets. Initial results of feeding trial in floating net cages have shown that a cowpea level of 20% of the diet could result in growth and survival that compares well with those obtained with a fish meal based diet.

Several immunostimulants such as ginger, onion, ascorbic acid, and beta-glucan are being tested in grouper, *E. fuscoguttatus*. Resistance to *Vibrio* sp challenge was better in ascorbic acid-, ginger-, and onion-supplemented diets but not in the beta-glucan supplemented diets. When the fish were subjected to sampling stress (second lot), and then challenged with *Vibrio* sp., resistance to the challenge was better in beta-glucan, onion, ginger, and beta-glucan groups but not in the ascorbic acid group.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1. Planning of the Project Activities

Milkfish and rabbitfish

- Studies on seed production techniques of milkfish and rabbitfish
- Development of the IGF-II mRNA diagnostic assay (simple and rapid assay)
- Improvement of nutritional value of locally available feed ingredients for milkfish feed by fermentation technology
- Refinement and dissemination of intensive grow-out technique for the polyculture of milkfish and white shrimps
- Alternative feeding strategies to improve milkfish production
- Milkfish fingerling production in floating cages
- Use of integrated pest management to control snail infestation in brackish water ponds

Grouper, sea bass, snapper, pompano

- Strategies to extend spawning season of sea bass in captivity
- Studies on the seed production techniques of high value marine species such as grouper, red snapper, sea bass, and pompano
- Use of PUFA-rich thraustochytrids as enrichment diets for live foods (rotifers and *Artemia*) in the larviculture of sea bass
- Assessment of the potential of mysid shrimps as live food in marine fish culture
- White cowpea as alternative source of protein for grouper

- Evaluation of some nutritional and microbial derivatives as immunostimulants in grouper
- Improvement in the nursery rearing techniques and feeding strategies to mitigate cannibalism in the nursery cage culture of grouper, sea bass, and snapper in brackish water ponds
- Improvement in the nursery culture techniques for groupers, sea bass, and snappers in cages and in pond: assessment of performance of fish fed different diets
- Production and intensive culture of sea bass in brackish water ponds using SEAFDEC formulated diet
- Verification of sea bass, grouper, and snapper grow-out diets in cages in pond
- Net cage culture of sea bass in freshwater farm reservoir using SEAFDEC formulated diet and commercial feed
- The use of phased diets (starter, grower, and finisher) for grouper cultured in floating net cages
- Culture grow-out production of high value finfish in floating cages

Other studies (new plans)

- Economics and grow-out production of siganid for fingerling production
- Grow-out polyculture of organic milkfish and shrimp
- Nutrient requirements and feed development for pompano
- Studies on pompano nursery and grow-out culture
- Development of practical broodstock feeds for marine fish (grouper, pompano, sea bass, snapper)
- Investigation of potential of breeding of other groupers (giant grouper, red grouper, hybrid groupers)
- Breeding and seed production of other marine fishes (wrasse, flounder)
- Polyculture of marine fishes in ponds and floating net cages
- Studies on terrestrial or aquatic sources of oils for marine fish feed
- Studies on polyculture with kikiero, spadefish (*Scatophagus argus*)

Training and Information

- Marine Fish Hatchery Training Course
- Production of manuals, videos, and other info materials

PROGRAM DOCUMENT

Program Category: Departmental Program

Program Title: Mud Crab and Shrimp

Responsible Department: AQD

Duration of the Program: since 2003

1. INTRODUCTION

The main focus of the program is the domestication of both shrimp and mud crab, aimed at ultimately having reliable seed supply.

Shrimps and mud crabs support one of the most valuable fisheries in the region. However, the culture of *Penaeus monodon* has continued to rely totally on the use of wild-caught broodstock and spawners which results in unpredictable production outcomes attributable to inconsistent quality of the source of larvae. Similarly, mud crab culture has relied on wild seeds resulting in overexploitation and habitat losses. This has led to the lack in supply of nauplii source in *P. monodon* and to both reduced landings and smaller mean capture size in *Scylla* spp. The significant decrease highlights the need to manage the resources and develop seed production techniques. Domestication of shrimp and mud crab is a prerequisite to selective breeding program, which allows for the strict disease prevention and control, and present other opportunities for the improvement of farmed stock.

In the process of developing techniques for the production of broodstock and spawners, optimal nutrition will also be considered. Although the grow-out technique of crab has been established for decades, the use of formulated diet has not been developed to reduce the dependence on natural food such as fish and mollusks.

2. PROGRAM

2.1 Objectives

The long term objective of the Shrimp and Mud Crab Program is to develop a viable technology for the production of good quality seed and captive broodstock of native species, particularly, *P. monodon*, *P. indicus* and *P. merguensis* for shrimps and *Scylla* spp. for crabs that can be genetically selected for desired heritable characteristics, particularly disease resistance and/or fast growth.

For shrimps, the short term goals are: 1) to generate baseline information on the genetic diversity of shrimp stocks; 2) to develop the technology to produce viable *P. monodon*, *P. indicus* and *P. merguensis* broodstock in captivity; 3) to maintain different family lines of *P. monodon*, *P. indicus* and *P. merguensis*; 4) to refine techniques for *P. indicus* and *P. merguensis* hatchery and grow-out culture and evaluate the economic viability of each phase of culture; and 5) to adopt environment-friendly methods.

For mud crabs, the short term objectives are: 1) to generate baseline information on the genetic diversity of mud crab species from various sources; 2) to use molecular genetic tools in the effective management and selective breeding; 3) to maintain family lines; 4) to improve survival of *Scylla* spp. through refinement of broodstock management and hatchery rearing techniques; 5) to reduce cannibalism of crab juveniles through physiological, nutritional and environmental approaches; 6) to reduce the use of fish by-catch in the nursery, grow-out and

fattening; 7) to accelerate the adoption of improved mud crab technologies; and 8) to assess the the seasonal and long-term trend in seed stock in natural habitat.

2.2 Program Description

The program consists of studies on genetics, husbandry, socio-economics of each culture phase and stock assessment. The genetic structure of the base population of shrimps and mud crabs will be determined as this is a prerequisite for any domestication program. The husbandry, which includes all phases of culture such as broodstock management, larval rearing, nursery and grow-out, will focus on strategies to improve reproductive performance, survival and growth, including the provision of adequate nutrition through use of formulated diets, provision of optimal environmental conditions and prevention of disease.

The activities are linked with the regional programs under the ASEAN-SEAFDEC Fisheries Consultative Group such as Sustainable Aquaculture.

3. PROGRESS OF ACTIVITIES

3.1 Shrimp

Development of Specific Pathogen Free (SPF) shrimp (*Penaeus monodon* and *Penaeus vannamei*) broodstock

a) Information exchange on status of *P. monodon* captive broodstock development in Southeast Asian region and the possible impact of the introduction of *P. vannamei* in the region

A 2-day Shrimp Summit was held in August 2008 in Pangasinan, Philippines. The meeting discussed the issues facing the industry in the country since the implementation of the Fisheries Administrative Order (FAO) 225 allowing the entry of *P. vannamei* in the country. One of the major problems in the hatchery is the high cost of broodstock maintenance. Hence, the meeting recommended the establishment of breeding centers for Luzon, Visayas, and Mindanao.

b) Genetic characterization of *P. monodon* broodstock

Several DNA samples from Palawan, Agusan (in Surigao del Sur) and Antique stocks of *P. monodon* were analysed for mtDNA-RFLP. As for the progress of the microsatellite marker analysis, an initial trial run to set the appropriate matrix standard file for microsatellite marker analysis on the ABI sequencer was performed. The matrix file that will be obtained shall be applied to all the shrimp DNA samples to be processed for microsatellite analysis. Trial runs on the ABI sequencer for the microsatellite marker analysis of some samples from *P. monodon* stocks from Bohol were initiated.

c) Studies on improvement of maturation of pond-reared *P. monodon* broodstock

A diet was formulated containing the marine annelid *Perinereis nuntia* to substitute for 6% of shrimp meal. Incorporation of annelids increased the crude protein from 48.23% and crude fat from 13.57% in the basal diet to 57.61% and 14.39%, respectively. The two diets are now being fed to pre-broodstock shrimp to compare effects on growth rate, and later on reproductive performance. After a month, the animals will be ablated to assess the reproductive performance.

The 3 batches of F₁ are still being reared in concrete tanks and the first batch has attained a size range of 40-75 g. The other batches have been sorted into 2 size ranges (10-20 g, and 40-60 g).

P. indicus* / *P. merguensis* broodstock development: I Refinement of broodstock management and larval rearing of *P. indicus* / *P. merguensis

P. indicus F₃ are now being produced. Wild postlarvae that gathered from Antique have grown to broodstock size and are now matched with the F₂s to produce another family. A series of studies were conducted to determine the effect of Beta-glucan on the survival of larvae until PL5, and survival of younger and older postlarvae after simulated transport. However, older postlarvae subjected to simulated transport showed a significantly higher survival when treated a day before compared to untreated postlarvae and those treated continuously for a week with Beta-glucan.

Culture of marine annelid *Perinereis* sp. and its use as substitute for fish meal, shrimp meal and squid meal in shrimp feeds

The commonly found seaworms used as crustacean broodstock feed is now tentatively identified as a member of *Perinereis nuntia* group. Samples were collected from Buyuan Tigbauan and Nanga Guimbal weekly since June and species occurrence was also determined at three other sites. Based on dry matter, Buyuan seaworms contained 48% crude protein, 16% crude fat and 11% HUFA.

Feeding experiment for *P. indicus* juveniles is ongoing. Six diets were formulated to replace 0, 20, 40, 60, 80, & 100% of animal protein mix (fish meal, shrimp meal and squid meal mix) with seaworm meal. Proximate analysis of diets has been completed.

Comparative reproductive performance of pond-sourced *P. monodon* adults fed natural and artificial diets in floating cages

Procurement of adult broodstock and examination of their health status have been started. The shrimps are now being acclimatized in the laboratory condition for the feeding experiment.

Verification of *P. indicus* grow-out diets in ponds using environment-friendly schemes

After a series of unsuccessful runs of *P. indicus* due to white spot syndrome virus, milkfish fry have been reared to 'hatirin' size intended for Igang Marine Station cage culture. The ponds are being prepared as part of the 'rest' and 're-conditioning' of ponds for *P. indicus* culture while waiting for the availability of postlarvae.

3.2 Mud Crabs

Domestication of mud crab *Scylla serrata*

First generation (F₁) families of *S. serrata* were produced from the four sites (Cagayan, Camarines Norte, Northern Samar and Surigao del Norte) where the base population (P₀) were sourced. Three second generation (F₂) families from Northern Samar have been produced 11-12 months after hatching (F₁).

The reproductive performance of females from the four sites from early 2007 to mid 2008 is as follows:

Third hatching from a single female was obtained from Samar. There was not enough data from Cagayan due to limited crab samples. Additional crabs will be obtained this year.

Antennae and muscle tissues of crabs sourced from the four sites were extracted for DNA and tested for various PCR conditions. Results showed no distinction between sources. Other enzymes will also be tried and if no distinction is still observed, the use of microsatellite markers will be considered.

Seed Production of mud crab *Scylla* spp.

Survival rate of *S. serrata* from zoea 1 to megalopa/crab instar in two runs was low due to luminescent bacterial infection in the zoea stage. Broodstock were obtained from Northern Samar. Nine crabs had so spawned but only 4 females gave viable larvae.

Nursery culture of mud crab, *Scylla serrata* in net cages fed formulated diet

Verification run was conducted at DBS ponds using 12 units 20 m² net cages installed in 800 m² pond for the nursery rearing of megalopae to crablet. Megalopae were stocked at 30 ind/m² and fed 25% natural food (mussel meat) and 75% formulated diet based on the best results of previous experiment. After 30 days, the survival rate of crablets (1.4 cm carapace width) was 65%.

Production of juvenile mud crab, *Scylla serrata* in brackishwater ponds

Production run was conducted at DBS ponds using 12 units 20 m² net cages installed in 800 m² nursery pond. Megalopae were stocked at 30 ind/m² and fed mussel meat at satiation. Ribbon-like net substrates were installed at the bottom of the net cages. After 30 days, the survival rate of crablets (1.6 cm carapace width) was 59%.

Another production run in cages is on-going.

Development of practical feed for the grow-out culture of mud crab *Scylla serrata*

The second run is on-going.

Production of marketable-size mud crab *S. serrata* using AQD formulated diet

Hatchery-reared *S. serrata* were stocked in ponds with tilapia fry. Mud crabs were fed AQD formulated starter diet for the first two months, grower diet for the 3rd month and fattening diet for the 4th and 5th month in combination with fish, mussel or chicken lungs. Tilapia were fed natural food and AQD tilapia diet. All crabs harvested were fat and were sold easily.

Enhancing Adoption of Mud Crab Production Technologies in Northern Samar

Adoption

Training course on mud crab nursery and grow-out systems was held in September 2008 in Northern Samar. The training course (lectures and demonstration) was attended by representatives from the local government units, private sectors, non-government organizations and academe.

Stock assessment

Mud crab stock assessment in Rosario and Pambujan, Northern Samar will be determined for at least a year. Stock samplings from December 2007 to August 2008 were conducted. Mud crabs ranged from 1.2 to 10.2% and 0-100% of the total catch composition in Pambujan using bamboo tube traps and lift nets, respectively.

In Rosario, the oceanic paddler and crenate crabs, and prawns dominated the total catch using bamboo tube traps. Catch using lift nets was dominated by crenate crabs. In Pambujan, crenate crabs and prawns dominated the total catch using bamboo tube traps and lift nets.

Socio-economic impact of adoption of sustainable aquaculture technologies in selected fisherfolk communities

Northern Samar is a major source of *S. serrata* crablets in the country. Some local government units (LGUs) entered into a co-management agreement with the Department of Environment and Natural Resources (DENR) because the latter has jurisdiction over the mangrove trees for a sustainable estuarine resource management including aqua-silviculture in mangrove areas. This allowed the culture of mud crab in mangrove areas for the benefit of the members of the People's Organizations (POs). Mud crab culture (fattening, grow-out and nursery) in two study sites (Pambujan and Laoang) were communally operated by PO members. The sharing of benefits is based on member's participation on the POs' project operation. The implementation of mud crab culture in the other two sites (Lavezares and Rosario) is per household depending on household members' interest.

Interviews with PO members in four sites revealed that increase in household income was the primary motivation for joining the association. However, it was noted that only one household operate the Pambujan mud crab project of the PO. Most members (76%) are new (<5 years) in mud crab culture (fattening). More than half (57%) of them, however, are long time gatherers or gleaners of wild crablets and market size mud crabs, but only 43% of them have other household members who also gather crablets. Most members (88%) are married with an average household size of six. Most members are poorly educated (47%, elementary and 28% high school).

4. PROPOSED FUTURE ACTIVITIES FOR 2009

All the above activities will be continued in 2009 except for the study on 'Information exchange on status of *P. monodon* captive broodstock development in Southeast Asian region and the possible impact of the introduction of *P. vannamei* in the region'.

4.1 Planning of the Project Activities

Shrimp

Project/Activity Title	Duration	Remarks
Domestication and production of high health <i>P. monodon</i> broodstock <ul style="list-style-type: none"> • Genetic characterization of broodstock • Monitoring of genetic changes of stocks • Maintenance of family lines • Refinement of formulated diet for reproduction 	2006-2009	On-going study under GOJ TF; Selective breeding to be continued under GOJ TF5 (2010-2014)
Domestication of <i>P. indicus</i> and <i>P. merguensis</i> <ul style="list-style-type: none"> • Survey of sources • Monitoring of genetic changes • Maintenance of families • Formulation of diet to improve reproductive performance • Pilot testing 	2006-2008	On-going study; 2009-2010-selective breeding
Reproductive performance of pond-sourced <i>P. monodon</i> fed natural and artificial diets in floating cages	2008-2009	On-going study

Shrimp hatchery assessment <ul style="list-style-type: none"> • Survey of hatcheries • Workshop on best management hatchery practices 	2009	New study to be funded by DOST
Demonstration of efficiency of environment-friendly scheme for <i>P. indicus</i> , <i>P. vannamei</i> and <i>P. monodon</i>	2007-2009	On-going study
Determination of differences/similarities in IHHNV infecting <i>P. vannamei</i> and <i>P. monodon</i>	2009	New study

Mud crab

Project/Activity Title	Duration	Remarks
Domestication of <i>S. serrata</i> <ul style="list-style-type: none"> • Husbandry • Monitoring of genetic changes • Maintenance of family lines 	2007-2010	On-going study under GOJ TF
Mass seed production of <i>S. serrata</i> <ul style="list-style-type: none"> • Refinements of broodstock and larval rearing techniques • Pilot testing 	2008-2010	On-going study
Nursery rearing <ul style="list-style-type: none"> • Production of juveniles 	2008-2010	On-going study
Development and improvement of formulated diets for nursery, grow-out and fattening	2008-2009	On-going study
Strategies to reduce cannibalism	2009	New study
Demonstration on the technical and economic feasibility of mud crab culture in mangrove pens	2008-2009	On-going study
Adoption of mud crab production technologies <ul style="list-style-type: none"> • Establishment of demo sites • Assessment of crab stock 	2007-2009	On-going study funded by CAPT/ACE
Socioeconomic impact of adoption of sustainable aquaculture technologies in selected fisherfolk communities	2008-2010	On-going study

4.2 Expected Outcomes

1. Protocol for the domestication of shrimp and mud crab
2. Improved reproductive performance of captive broodstock
3. Improved diets for all phases of culture
4. Reduction in the use of fish and other food items consumed by humans
5. Reliable strategies to reduce cannibalism
6. Increase in the production of juveniles and marketable size mud crabs
7. Information on the characteristics of IHHNV in *P. monodon* and *P. vannamei*
8. Updated list of operational hatcheries and practices
9. Number of demonstration sites adopting technologies on mud crab
10. Manual on hatchery and nursery of mud crab and poster on different white shrimp species
11. Information on the seasonal abundance of crabs that will serve as basis to formulate policies that govern crab collection
12. Information on the socio-economic impact of adoption of aquaculture technologies generated by ADQ

PROGRAM DOCUMENT

Program Category: Departmental Program

Program Title: Mollusk

Responsible Department: AQD

Duration of Program: Five years (2009-2010)

1. INTRODUCTION

As one of the most valuable sea food commodities in the world abalone has a great demand in the world market. The Philippines is one of the principal countries harvesting abalones from the fishery mainly for export to other Asian countries and the United States. In recent years however, there was a fast decline in the abalone production from the natural fishery in many abalone producing countries including the Philippines due to heavy exploitation of the resource. The country's abalone fishery harvest in 2006 was 61% lower (175 mt) compared to the harvest in 1996 (448 mt) (FISHTECH, 2008). The decreasing commercial catch and the high price of abalone both in the domestic and export markets have stimulated interests in the development of its aquaculture for commercial production and for restocking purposes to enhance its fishery resource.

The Southeast Asian Fisheries Development Center Aquaculture Department has been in the forefront of developing the technology for controlled hatchery seed production and culture of the tropical abalone, *Haliotis asinina*. In addition to abalone, other marine mollusk species of interest include the window-pane oyster *Placuna placenta*, top shell *Trochus niloticus*, green shell *Turbo marmoratus*, angelwing *Pholas orientalis*, among others. These species were selected based on the criteria provided during the ADSEA '99. As the leading agency in aquaculture research in the region, SEAFDEC/AQD is mandated to serve the needs of the other member-countries as well.

2. PROGRAM

2.1 Objectives

The main objective of the Program is to develop and demonstrate economically viable mollusk production technologies and make mollusk production an important aquaculture industry in suitable coastal communities. The specific objectives are to: (1) refine management and spawning techniques for captive broodstock, (2) improve seed production technology through environment manipulations and enhancement of growth of natural food (mainly diatoms) favored by the abalone, and by understanding the role of microbial communities in the survival of newly settled larvae; (3) to determine the nutritional requirements of juveniles in view of the development of alternative feeds for nursery as well as for grow-out; (4) compare the economic viability of producing advanced juveniles in tanks and sea cages set in open waters and develop viable technology package for the intermediate nursery culture of abalone; and (5) develop a technology package for marketable abalone production.

2.2 Program Description

The Integrated Mollusks Program consists of six components: (1) broodstock management and breeding to refine the spawning and egg and larvae production techniques, (2) primary nursery rearing and natural food production to improve on larval settlement and metamorphosis, increase early juvenile production and develop protocols for sufficient natural food (mainly

epiphytic diatoms) production, (3) intermediate nursery culture to develop a rearing technology package for juveniles and assess its economic viability under land-based nursery tank system as well as in floating net cages in open-waters, (4) nutritional studies to determine the nutritional requirements of abalone juveniles in view of developing artificial diets as replacement for seaweeds; (5) grow-out culture in bottom-set and suspended cages to demonstrate the technical and economic viability of abalone marketable-size production. (6) development of hybrids to improve meat quality and enhance market potentials. The mollusk program is linked with the Stock Enhancement/Sea Ranching Program in that it provides hatchery-produced juveniles or seeds for wild stocking/release.

3. PROGRESS OF RESEARCH ACTIVITIES (JANUARY-SEPTEMBER 2008)

Project/Activity Title	Duration	Remarks (% Completion)
Improvement of hatchery techniques for the donkey's ear abalone <i>Haliotis asinina</i>	2 years (2007-2008)	Results on broodstock maturation in indoor and outdoor holding tanks were similar in terms of gonadal maturation and rematuration frequency, and spontaneous spawning. In larvae management, stocking of larvae immediately after collection or 6 h later showed better survival at day-10 than those larvae held for 12 or 24 hours after retrieval. Delaying the stocking or holding the larvae for 12-24 hours after retrieval induced higher mortalities ranging from 20-40%, respectively. A loading density of 50,000/liter during trocophore larval transport and transport duration within 6 hours in oxygenated plastic bags at 20-22°C had better survival than those loaded at 25 or 100 larvae/liter or when transported at higher temperatures (24-25°C).
Large-scale production of the donkey's ear abalone <i>Haliotis asinina</i> juveniles	1 year (2008)	From Jan-Sept, a total of 1,692 females were spawned producing more than 234.4 million trocophore eggs. With a 54% survival 124 million veliger larvae were produced. Juvenile production during the period amounted to 177,053 pieces of various sizes. So far, the hatchery has generated a combined income of P548,992 from sales of larvae, juveniles and marketable size abalone. Currently, there are 871 abalone breeders (511 females and 360 males, 6.62 cm SL, 84.5 g BW) being maintained in the hatchery. (50%)
The effects of light intensity and photoperiodicity on the settlement rate, feeding behavior, growth and survival of abalone (<i>Haliotis asinina</i>) post-larvae	1 year (2008)	Microscopic examinations to determine the presence of food in the gut of larvae showed that no ingestion was observed from day 1 to day 4 larvae. The presence of food in the gut was observed starting day 5 until day 15. At day 3, some larvae were swimming in the water column but some had settled in plate substrate. At day 4 no larvae can be observed in the water column. The percentage settlement (3-4%) of larvae at different locations or light intensities was not distinct. Ingestion of diatoms starts at day 3. The number of larvae that settled on day3, day 4, day 5, day 10 and day 15 was not significantly different among tanks exposed to different photoperiods: No light, 24-h lighting and 12light:12dark periods. (100%)

Lipid and essential fatty acid requirements of juvenile abalone, <i>Haliotis asinina</i>	2 year 2007-2008	Preliminary results showed the proximate composition of the abalone meat in percent dry basis: 67% protein, 3% crude fat, 16% nitrogen-free extract, and 11.4 crude ash. Water stability tests showed that there was no significant difference among diets with different lipid levels only up to 8h duration. Average percentage recovery rates ranged 90-94%. Diet with no lipid had significantly lower recovery rate of 83 and 76% respectively, after the 12h and 24h tests. Fatty acid analysis of the lipid mixtures in the various dietary treatments showed the predominance of 18:2n-6 fatty acid and high levels of total polyunsaturated fatty acids (20%)
A modular system of culturing the tropical abalone, <i>Haliotis asinina</i> in mesh cages	2 years 2007-2008	<i>H. asinina</i> (1.12 g body weight and 17.1 mm shell length) stocked at 250:125:62.5 pcs m ² shelter surface area (SSA) grew to 45.45 g BW, 54.9 mm after 360 days. Mean daily growth rate in terms of weight (mg ⁻¹) and shell length (µm ⁻¹) were 128 mg ⁻¹ and 104.35 µm ⁻¹ , respectively. Growth performance was significantly higher than the growth of any other abalone species reared in sea-based cages using a single seaweed diet. The target harvest size (cocktail size) of 50 to 70 mm shell length was achieved at DOC 270 (9 months). (80%)
Experimental hybridization between Philippine native abalone species, <i>Haliotis asinina</i> , <i>H. glabra</i> , <i>H. ovina</i> and <i>H. varia</i>	2 years 2007-2008	A hybridization trial was conducted using female <i>H. asinina</i> and male <i>H. planata</i> , <i>glabra</i> or <i>varia</i> . A total of 99 pcs hybrid abalone juveniles (<i>H. asinina</i> female x <i>H. planata</i> male) was produced and reared in the laboratory. These hybrid juveniles will undergo karyotyping to confirm hybridization between <i>H. asinina</i> x <i>H. planata</i> . A total of 10 crossbreeding trials were conducted, mostly between (<i>H. asinina</i> female x <i>H. glabra</i> male) which showed very low fertilization, hatching and settlement rates. Trials on induced spawning were also conducted to determine the timing of natural spawning of male abalone with the time of spawning of <i>H. asinina</i> eggs. A batch of abalone juveniles was also produced from natural spawnings of <i>H. glabra</i> male and female. (20%)

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

a. Donkey's ear abalone (*H. asinina*)

Continuing activities for abalone will include developing techniques for egg quality and hatching efficiency evaluation, refining culture techniques for other species of benthic diatoms, e.g. *Cocconeis*, etc., developing alternative feeds using natural and artificial food sources for early life stages, verifying early nursery rearing techniques in tanks and cages in terms of food and environmental requirements in order to improve survival of juveniles, and developing rearing techniques for co-culture of seaweeds and abalone in sea cages towards developing integrated culture systems.

b. Window-pane oyster (*P. placenta*)

For the window-pane oyster *Placuna placenta* basic studies on broodstock development, induced spawning and larval rearing have already been conducted. However, there is still a need to refine the techniques that were initially developed in order to improve spawning rates, egg fertilization and hatching, and survival of juveniles. Studies on the feeding biology at different growth stages of this species are also important in order to develop natural food production techniques that will complement hatchery production.

c. Topshell, *Trochus niloticus* and green shell, *Turbo marmoratus*

Breeding and seed production techniques for the top shell *Trochus niloticus* as well as the green shell *Turbo marmoratus* have been developed elsewhere and will be adopted and refined to suit local conditions. Efforts to refine hatchery techniques will be aimed at mass producing the juveniles for wild release to enhance natural stocks and increase fishery production.

d. Angelwing clam, *Pholas orientalis*

Development of hatchery techniques for the angel-wing shell *Pholas orientalis* is now on-going. Likewise, fishery conservation and management techniques must also be looked into that will help mitigate population depletion by unregulated harvesting of natural stocks.

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Abalone		
Egg quality assessment for <i>H. asinina</i>	2 years	To develop criteria for egg quality evaluation
Culture techniques for other diatom species such as <i>Cocconeis</i>	2 years	To improve larval feeding techniques
Development of alternative food sources for abalone postlarvae using micro-bound diet	2 years	To enhance growth and survival of early juveniles using formulated feeds
Growth enhancement by chemical and/or nutritional manipulations	2 years	To improve growth rate in grow-out culture
Window-pane Oyster		
Refinement of techniques for broodstock maturation and hatchery production	2 years	To increase hatchery seed production
Top shell, <i>Trochus niloticus</i> and Green shell, <i>Turbo marmoratus</i>		
Seed production of top shell and green shell	2 years	To adopt and refine techniques for broodstock maturation, spawning and larval rearing
Angel-wing, <i>Pholas orientalis</i>		
Fishery and reproductive biology	2 years	To investigate on the natural fishery and reproductive biology of <i>Pholas</i> for hatchery techniques development

4.2 Expected Outcomes of the Proposed Projects/Activities

- 1) A more thorough understanding of the effects of environmental, biological and physical factors regulating spontaneous spawning in captive broodstock. Results of these studies shall explain about the phenomenon of asynchronous but regular and year-round spontaneous spawning among captive broodstock.
- 2) Improved spawning efficiency in terms of higher percentage of successful spontaneous group spawning of tank-held broodstock, thus a corresponding increase in egg, trochophore and veliger larvae production.
- 3) A fast and reliable criteria for egg quality evaluation that will be helpful for efficient hatchery operations.
- 4) Increased percentage of egg hatching and survival of creeping veligers through proper larvae retrieval and improved water management during incubation.
- 5) Improved techniques on larval settlement and metamorphosis through proper feeding techniques using cultured diatoms and proper combinations of some environmental factors conducive to better growth and survival.
- 6) A cost-effective nursery rearing techniques for land-based and sea cage nursery systems by using good quality designed cages and following efficient rearing protocols.
- 7) Improved growth rates during marketable size production that will shorten the growing period and thus improving grow-out rearing more cost-effective.
- 8) Broodstock management and hatchery production technologies for window-pane oyster, top shell and green shell in order to produce juveniles for sea ranching or stock enhancement activities.
- 9) Knowledge and understanding of the fishery and reproductive biology of the angelwing clam will be important in the development of its hatchery technology

PROGRAM DOCUMENT

Program Category: Departmental Programs
Program Title: Small-Holder Freshwater Aquaculture
Responsible Department: AQD
Duration of Program: 2006-2010

1. INTRODUCTION

The Small-Holder Freshwater Aquaculture Program is envisioned to showcase the freshwater aquaculture technologies developed from sound research for the sustainable production of commercially important freshwater species for rural development and improved livelihood. The Program's mission is the sustainable production of various freshwater species through adaptable and transferable technology in improved hatchery and farming of such species and to train and build the capacity of stakeholders in freshwater aquaculture and freshwater aquatic resource management.

2. PROGRAM

2.1 Objectives

The objectives of the Program are: (a) to generate science-based technology for breeding, hatchery and farming of selected freshwater aquaculture commodities; (b) to verify and demonstrate science-based technology for breeding, hatchery and farming of selected freshwater aquaculture commodities and; (c) to disseminate freshwater aquaculture technologies to various stakeholders.

2.2 Program description

The activities being conducted under the Program include research, technology verification and packaging, as well as training in the areas of freshwater aquaculture.

4. PROGRESS OF ACTIVITIES IN THE YEAR 2008

3.1 Research Activities

Genetic characterization of commercially important Philippine stocks of freshwater prawn, *Macrobrachium sp.*, using DNA markers

Results of the mtDNA-RFLP analysis at the cytochrome oxidase I (COI) gene using restriction enzymes showed that genetic variation based on haplotype diversity was highest for the Leganes *M rosenbergii rosenbergii* stock (0.673 with 5 haplotypes) followed by the *M rosenbergii dacqueti* stock from Zambales (0.660, 5 haplotypes), Liguasan Marsh *M rosenbergii rosenbergii* (0.601, 3 haplotypes), Calumpit *M rosenbergii rosenbergii* (0.48, 2 haplotypes), BFAR *M rosenbergii dacqueti* stock (0.282, 2 haplotypes) and the Liguasan Marsh *M mamillodactylus* outgroup stock (0.18, 2 haplotypes). Meanwhile, mtDNA-RFLP variation at the 16sRNA gene is low as many of the restriction enzyme morphs examined were monomorphic. On the other hand, DNA sequence variation data on the same stocks have been completed recently and will soon be analyzed

Refinement of broodstock and hatchery management methods for the commercial production of freshwater prawn *Macrobrachium rosenbergii* seedstock I. Production of *M. rosenbergii* larvae tolerant to reduced salinities

As part of the selection experiment, growth (weight gain) and survival of two generations (F₂ and F₃) of freshwater prawns from each of two lines (12ppt reared larvae and 6ppt-reared larvae) in tank and lake-based cage enclosures were compared. Preliminary statistical analysis showed no significant difference in the growth of individuals from the two lines at each generation. Growth of the two lines was generally better in tanks than in cages especially for the F₃ generation prawns.

Results showed that a reduced larval rearing salinity (6ppt) did not negatively affect subsequent growth in prawns that are normally reared from 12ppt larvae. It is an indication that using 6ppt as a larval rearing salinity can be adopted and practiced in prawn hatcheries where seawater source is a limiting factor.

Domestication and genetic stock evaluation of the indigenous giant freshwater prawn subspecies *Macrobrachium rosenbergii rosenbergii*. (A) Assessment of breeding and reproductive performance

Some potential prawn broodstock collected from Zarraga, Leganes had spawned and hatchlings from these batches are currently being reared at 0, 3, 6 and 12 ppt to determine the ideal larval salinity requirement. Breeding experiment will be conducted using the offsprings (F₁s) of the founder stock.

Domestication and genetic stock evaluation of the indigenous giant freshwater prawn subspecies *Macrobrachium rosenbergii* (B). Determination of larval rearing and seed production requirements

Collection of Freshwater prawn *Macrobrachium rosenbergii* broodstock in Bicol and culture of green water is in progress.

Seed Production of Selected Freshwater Foodfishes : climbing perch *Anabas testudineus* (Bloch 1792) and snakeskin gourami *Trichogaster pectoralis* (Regan 1909)

Climbing perch *Anabas testudineus* and gourami *Trichogaster* sp. were sampled for sex determination and assessment of sexual maturity. The fishes grew faster and attained sexual maturity at smaller size few months after transfer to bigger tanks and feeding with pelleted diet containing 37% crude protein. Spawning of climbing perch was done by injecting the females with 0.5 ul Ovatide. Less than one thousand hatchery-bred fingerlings were produced and feeding scheme for *Anabas* larvae is being developed.

Integrated fisheries resource management (Rinconada Lakes, Philippines and NSW Australia): Aquaculture and Water Quality Component

There were significant effects on the various feeding management used on the growth and survival of Nile tilapia in cages in Lake Bato. Growth of Nile tilapia which received feed daily, regardless of feeding rate grew significantly better than those fish fed intermittently. Growth in the intermittently-fed group in both sites was slower than in the groups fed daily.

Refinement of broodstock and Nursery technology for the commercial production--- of bighead carp *Aristichthys nobilis* (Richardson) fingerlings in cages in Laguna de Bay 1. Reproductive performance and fry production of bighead carp on different feeding regime.

For feeding regime experiment, broodstock were stocked in floating cages for breeding in October. For the stocking density experiment using 300, 400 and 500 per m² as treatments, results of the first trial showed that the stocking density of 300 fry m² gave significantly higher body weight (1.64g). However, in terms of total length, no significant difference among stocking densities was found. Survival was highest (29%) at 500 per m² but no significant difference was found among treatment.

Grow-out of *Penaeus vannamei* in Paoay Lake

Preliminary assessment of the project site has been conducted prior to the start of the experiments.

Improvement of fillet yield in Nile tilapia (*Oreochromis spp*) through farm-based mass selection

Growth parameters gathered from progeny testing experiments indicated higher growth in terms of girth (width), length and weight on the selected strain especially in the third generation. The gain in growth for the selected (F3 generation) was 1619.95 compared to 1312.07 in the control.

3.2 Activities under Technology Verification and Packaging

Grow-out culture of Asian catfish *Clarias macrocephalus* (Gunther) in net cages in Laguna de Bay, Philippines

Experimental trial on the grow-out culture of Asian catfish *Clarias macrocephalus* in net cages in Laguna de Bay was started.

Refinement of broodstock and hatchery management methods for the commercial production of freshwater prawn *Macrobrachium rosenbergii* seedstock II. Bioeconomics of freshwater prawn hatchery production in different larval rearing system.

The performance of freshwater prawn *Macrobrachium rosenbergii* larvae reared in two culture system (green water and clear water) in tank was compared. Results of the last trial showed that larvae reared in green water had significantly higher survival, and post larvae production (19.67 5%, 0.98 L⁻¹ respectively) compared to those reared in clear water which had survival of 7.65% and post-larvae production of 0.38 L⁻¹). Larvae reared in green water also metamorphosed faster (32 days) compared to larvae in clear water which took (41) days to metamorphose.

Mass Production of Catfish native, catfish-hybrid and Tilapia

Spawning trials were conducted for *Oreochromis niloticus* and produced 30,000 Nile tilapia and 4,000 red tilapia fry. At present, the hatchery has 10,000 fry, 10,000 (1 cm), approximately 6,000 (1 inch) Nile tilapia fingerlings and 2,000 fry, approximately 1,500 (1-2 inch) of red tilapia. The average recovery of fry per female was 241.93 fry, which is higher than the optimum (150 – 200/ female

Native and hybrid catfish fingerlings were also produced and sold to smallholder fish farmers. At present the main activity of the freshwater hatchery at Tigbauan Main Station is to produce Nile tilapia and Red tilapia fingerlings at 5,000 – 10,000 (1 inch size) per month.

Freshwater aquaculture seedstock production in Laguna de Bay. I. Advanced bighead carp fingerling production in a small fishpen

Eighteen thousand fingerlings (size 12-14) of bighead carp were stocked in 30 x50 m fishpen in the East Cove of Binganonan Freshwater Station (BFS).

Project Activities

Project/Activity Title	Duration	Remarks (% completion)
Genetic characterization of commercially important Philippine stocks of freshwater prawn, <i>Macrobrachium sp.</i> , using DNA markers	2 yrs	97%; mtDNA sequencing data at the mtDNA COI region have been obtained from the same stocks used in mtDNA RFLP analysis. Some of the sequences obtained could not be aligned hence were repeated to ensure accuracy of the data prior to analysis. Runs on the repeated sequences have been completed recently. to be terminated;
Refinement of broodstock and hatchery management methods for the commercial production of freshwater prawn <i>Macrobrachium rosenbergii</i> seedstock I. Production of <i>M. rosenbergii</i> larvae tolerant to reduced salinities	3 years	95 %; terminal report in preparation
Domestication and genetic stock evaluation of the indigenous giant freshwater prawn subspecies <i>M. rosenbergii rosenbergii</i> . (A) Assessment of breeding and reproductive performance	1.5 yrs	5%; The proposal for this study was approved only last 30 July 2008. Some potential prawn broodstock (30 pcs) from Zarraga, Leganes were collected and are now being maintained in TMS. Some of the stocks that were caught berried had spawned and hatchlings from these batches are currently being reared at 0,3, 6 and 12 ppt to determine the ideal larval salinity requirement for the <i>M rosenbergii rosenbergii</i> . The plan for now is to collect some stocks from Bicol also and rear larvae from berried females into potential broodstock. Once postlarvae from these stocks become available, they will be grown in BFS lake based cages until they become mature. The breeding experiment shall start from the offsprings (F ₁ s) of the founder stock so that the age of the breeders for use in the experiment will be known.

Domestication and genetic stock evaluation of the indigenous giant freshwater prawn subspecies <i>M. rosenbergii</i> (B). Determination of larval rearing and seed production requirements		5%; Collection of Freshwater prawn <i>M. rosenbergii</i> broodstock in Bicol and culture of green water is on-going
Seed Production of Selected Freshwater Foodfishes : climbing perch <i>Anabas testudineus</i> (Bloch 1792) and snakeskin gourami <i>Trichogaster pectoralis</i> (Regan 1909)	3 years	25%; Facilities for spawning and incubation of the eggs will be set-up.
Integrated fisheries resource management (Rinconada Lakes, Philippines and NSW Australia): Aquaculture and Water Quality Component	3 years	70; project is in collaboration with the Bureau of Fisheries and Aquatic Resources and funded by ACIAR
Refinement of broodstock and Nursery technology for the commercial production--- of bighead carp <i>Aristichthys nobilis</i> (Richrandson) fingerlings in cages in Laguna de Bay 1. Reproductive performance and fry production of bighead carp on different feeding regime.	2 yrs	90 % study 1 to be terminated 2008; study 2 on optimum stocking density to be started in 2009
Grow-out of <i>Penaeus vannamei</i> in Paoay Lake	3 yrs	In collaboration with the Bureau of Fisheries and Aquatic Resources; Funds provided by BFAR. Upgrading and rehabilitation of facilities in Paoay is on-going.
Improvement of fillet yield in Nile tilapia (<i>Oreochromis spp</i>) through farm-based mass selection	2 yrs	95 %; waiting for the results from the fourth generation (F4) progeny testing. Final statistical analysis on heritability of increased fillet yield selected trait shall be performed once the fourth generation data become available.
Grow-out culture of Asian catfish <i>Clarias macrocephalus</i> (Gunther) in net cages in Laguna de Bay, Philippines	2 yrs	25%; Experimental trial on the grow-out culture of Asian catfish <i>Clarias macrocephalus</i> in net cages in Laguna de Bay had just took off. However, trial run was pre-terminated 7 days after stocking due to the increasing number of dead and injured fish observed in each net cage. <i>Arius</i> species was found in abundance in the experimental area. The species was lately witnessed in tough competition with the experimental fish on feed at which case during the process may have injured the native catfish. Catfish fingerlings recovered from the cages were held in tanks but did not survive.

Refinement of broodstock and hatchery management methods for the commercial production of freshwater prawn <i>Macrobrachium rosenbergii</i> seedstock II. Bioeconomics of freshwater prawn hatchery production in different larval rearing system.	2 yrs	100% completed
Mass Production of Catfish native, catfish-hybrid and Tilapia	1 yr	40%; At present there is demand of 50,000 Nile tilapia fingerling (1-inch length) per month. To meet this requirement, the hatchery needs to acquire 500 females and 125 male broodstock and 2 units of concrete tanks (5x10x1.5 m).
Freshwater aquaculture seedstock production in Laguna de Bay. I. Advanced bighead carp fingerling production in a small fishpen	2 yrs	15%; All the stocks were lost due to Typhoon Frank in late June but the facilities have been repaired since then.
ABOT AquaNegosyo client service	No duration	Service to various private aquaculture entrepreneurs

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Research Activities		
Breeding & Domestication of native wild stocks for aquaculture of the giant freshwater prawn	1.5 yrs	Continuing activity
Evaluation of native stocks of the giant freshwater prawn for aquaculture	1.5 yrs	To be started
Seed production of selected freshwater foodfishes : climbing perch <i>Anabas testudineus</i> , snakeskin gourami <i>Trichogaster pectoralis</i>	2 yrs	Continuing activity
Farming of forage fishes endemic in freshwater habitats in the Philippines: reproductive biology of selected fish species (<i>Leiopotherapon plumbeus</i> , <i>Barbonymus gonionotus</i>)	3 yrs	To be started; for external funding
Experimental trials for in tank/pond culture of <i>L. vannamei</i> in Paoay, Ilocos Norte	3 yrs	Continuing activity
Screening freshwater microalgae for its potential use in biofuel production; mass production of microalgae	3 yrs	To be started; for external funding
Integrated fisheries resource management (Rinconada Lakes, Philippines and NSW Australia): Aquaculture and Water Quality Component.	1 year	Continuing activity funded by ACIAR

Disease monitoring and surveillance for freshwater aquaculture stocks	3 yrs	To be started
Grow out of ayungin in lake-based cages	3 yrs	To be started; preliminary studies have been conducted
Replacement of fish meal with some essential amino acids in diets of common carp	1 yr	Commissioned research
Technology Verification and Packaging Activities		
Refinement of broodstock, hatchery and nursery techniques for giant freshwater prawn	2 yrs	To be started
Production of advanced fingerlings of tilapia and carp	2 years	Continuing activity
Mass production of red and Nile tilapia fingerlings	1 year	Continuing activity
Demonstrate technology for nursery of <i>Clarias</i> spp. in lake-based facilities	1 year	To be started
Demonstration on broodstock management, hatchery and nursery techniques for bighead carp	2 years	To be started
Field testing of SEAFDEC AQD technologies on freshwater aquaculture in Tibiao, Antique	1 yr	On-going; with external funding
Adoption of viable freshwater aquaculture technologies for sustainable rural development of Agrarian Reform communities (ARC's)	1 yr	To be started; for external funding
Modular system of intensive tilapia culture in Laguna lake netcages	-	To be started
ABOT AquaNegosyo client service	By request	On-going
Training Activities		
Training (OJT, internship training, group training, Aquafresh training, Aquaculture Training Modules)	By request	On-going activities; paying participants
Trainors training	By request	For paying participants
Production/revision of flyers and Manuals	As needed	
Promotion through Techno Fairs and Exhibits and broadcast media	As needed	
On-site training in rural aquaculture with emphasis on Freshwater aquaculture	By request	

4.2 Expected Outcomes

For Research Activities:

- Two strains of local stocks of *M. rosenbergii* domesticated; data for growth performance of domesticated / genetically improved stocks
- Reduced mortalities of aquaculture stocks from disease outbreak and appropriate farm-based health management of freshwater aquaculture stocks
- Breeding techniques for *A. testudineus* and *T. pectoralis* established; some aspects of the reproductive biology of *A. testudineus* and *T. pectoralis* elucidated; Production of fry of *A. testudineus* and *T. pectoralis*; Practical diets for *A. testudineus* and *T. pectoralis* developed
- Reproductive biology of other selected endemic freshwater fish established
- Culture period to reach 20 to 30 grams for silver perch shortened; practical diet for silver perch developed
- High survival in the grow-out of SPR/SPF *L. vannamei* reared in freshwater in tanks/cages; marketable sized shrimps after 90 days culture
- Chemical profile of microalgae with potential as source of biofuel determined; Established protocol for manipulation of fatty acid content of selected microalgae; Microalgae mass produced
- Optimal stocking density, feeding management and cage spacing determined for Lakes Bato and Buhi; Baseline data on water quality in Lakes Bato and Buhi

For Technology Verification and Packaging Activities

- Refined broodstock, hatchery and nursery techniques ready for technology packaging for *M. rosenbergii*; survival rates achieved in research runs translated to verification and demonstration runs; protocols for improved survival of larvae to post-larvae established
- High survival of giant freshwater prawn in the grow-out in lake-based cages; marketable sized-prawns obtained within 5 to 6 months of culture; reduced heterogeneous individual growth
- Technology for advanced fingerling production of various freshwater species established
- Viable nursery of catfish in lake-based facilities
- Lower cost of production of bighead carp broodstock; established protocol for improved survival of fry to fingerling
- Intervention provided by AQD provided sustainable livelihood program to Agrarian Reform Communities (ARC); Capacity building of ARC

For Training Activities

- Successful implementation of training programs
- Published manuals and flyers on freshwater aquaculture technologies
- Trained manpower for freshwater aquaculture in the Philippines and the region.

PROGRAM DOCUMENT

Program Category: Departmental Programs
Program Title: Seaweed Strain Improvement
Responsible Department: AQD
Duration of the Program: 2008-2009

1. INTRODUCTION

The seaweed industry of the Philippines is the leading aquaculture industry in terms of production though ranks number three in export value. Despite several success stories of seaweed farming in the country, this was not spared from problems. The occurrence of 'ice-ice' disease since the early years of commercial farming in the '70s still persists to the present. Likewise, the concomitant occurrence of the endophyte *Neosiphonia* and other harmful epiphytes, aggravate the problem on production. These two problems result to a severe problem of the farmers in sourcing good quality cultivars that are free from 'ice-ice' and endophytes. Even in areas like Zamboanga peninsula and Sitangkai, Tawi-Tawi known to have abundant and diversified strains are not spared from cultivar shortage and inavailability.

Tissue culture is a traditional form of biotechnology that involves the regeneration of plantlets from callus-like structure of plant tissues. Several earlier studies have demonstrated the feasibility of producing plantlets from tissue culture of *Kappaphycus* and *Euchuema* (Dawes and Koch 1991, Dawes et al 1993, Hurtado and Cheney 2003, Reddy et al 2003). Their reports also show the success of outplanting.

The use of regenerants from tissue culture technique and from sporelings as source of cultivars for nursery purposes and consequently for commercial farming could be a possible solution to the shortage and inavailability of cultivars. Terrestrial agriculture has proven the significance of nursery in the propagation of seedlings.

It is in the above context that a Program on strain improvement includes *in vitro* mass propagation of regenerants from tissue culture & mutagenesis and natural sporulation, land-sea-based nursery bank and outplanting to mitigate the problem on cultivar shortage and inavailability.

2. PROGRAM

2.1 Objectives

General objective: The ultimate objective of the Seaweed Program is to obtain strains of *Kappaphycus* with fast growth rate, resistant to diseases, and possess improved carrageenan characteristics as source of 'new' cultivars for land-sea based nurseries and consequently for a pilot commercial farming.

Specific objectives: (i) to optimize development and production of microplantlets and sporeling; (ii) to establish land-sea-based nursery for 'new and improved' strains of *Kappaphycus*; and (iii) to identify improved strains of *Kappaphycus* thru DNA fingerprinting

2.2 Program description

The Program deals primarily with the problem of deteriorating quality of cultivars consequently resulting to a reduced production and productivity of the seaweed farmers. Two strategies are done to address this problem, these are: (1) tissue culture and mutagenesis, and (2) natural sporulation.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Tissue culture: Successful techniques were developed in regenerating young plants of *Kappaphycus* using a novel technique by using Soluble Seaweed Extract Powder + Plant Growth Regulators (PGR). Optimization of concentrations was used either singly or in combination with PGR for each variety of *Kappaphycus*. Mass production of explants for regeneration purposes was done using the optimized concentration and several microplantlets were produced. The green and purple morphotype of *Kappaphycus* were outplanted in circular cages at Igang to initiate biomass for nursery purposes.

Natural sporulation: Sporelings from carposporophyte and tetrasporophyte plants from farmed and wild *Kappaphycus* proved to be good sources of ‘new’ cultivars as evidenced from the initial biomass given to seaweed farmers in Cabalagnan, Guimaras. The resistance of these ‘new’ plants vs. the commercially farmed *Kappaphycus* was tested and the former showed better heat-resistance characteristics.

Project Activities

Project/Activity Title	Duration	Remarks (% completion)
Tissue culture		70%
Natural sporulation		60

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

1. Mass production of microplantlets and sporelings for land-seabased nursery (Continuation)
2. Establishment of sea-based cage nursery in Igang and Zamboanga
3. Field culture trials using plants from the sea-based nurseries

Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Mass production of microplantlets & sporelings (This is a continuing activity to test other available varieties in the field)	Jan ~ 2009	Purchase of bioreactors; additional purchase of glasswares and PGRs
Establishment of sea-based cage nursery (using plants developed in 2008) in Igang & Zamboanga	Jan~ 2009	Cage nursery design is critical
Field culture trials using plants from the sea-based nurseries in other places of Guimaras & Zamboanga	April ~ 2009	Availability of sufficient funds

4.2 Expected Outcomes

- Viability of the different varieties of *Kappaphycus* developed from for tissue culture and natural sporulation for land-sea-based nurseries and pilot demo farms
- Availability of gast growing and disease-resistant varieties.

PROGRAM DOCUMENT

Program Category: Departmental Program

Program Title: Aquatic Ecology

Responsible Department: Aquaculture Program

Duration of Program: 3 years (2007-2010)

1. INTRODUCTION

With the decreasing trend in fisheries production worldwide, aquaculture is being looked upon to feed the increasing demand for fishery products. However, the damaged and degraded state of most aquatic ecosystems worldwide, combined with public concerns about adding new sources of pollution from aquaculture requires the development of ecosystem approaches and sustainable operating procedures.

2. PROGRAM

2.1 Objectives

The objectives of the Program are the following: (a) to determine existing policies, institutions and ordinances to protect and ensure a sustainable aquaculture development in selected local government units in the Philippines, (b) to recommend improvement in existing institutional arrangement in managing coastal resources in support of sustainable aquaculture in the selected local government units, (c) to demonstrate how environmental capacity can be determined in waters around Igang Marine Sub-station and other important aquaculture sites, and (d) to maintain good environmental condition of coastal areas and improve the condition of some degraded areas by growing seaweeds that absorb excess nutrients from the water.

2.2 Program description

The program includes studies on (a) Institutional arrangement in local governance in selected municipalities in the Philippines, (b) Determination of environmental capacity of Igang Bay and other aquaculture sites, and (c) other ecological studies for sustainable aquaculture. Technologies developed from other SEAFDEC/AQD programs will be adapted in the studies under this program. Results of nutrition studies from marine fish and crustacean programs will be considered in estimating the environmental capacity of the sites.

Monitoring Water Quality of Mariculture Park in Humaraon Cove, Igang, Guimaras Using Chemical and Biological Indicators

Nutrient concentrations for ammonia, nitrate, nitrite, and phosphate remained low from January to September. Values for salinity (30-35 ppt), temperature (27.0-30.5 °C) and dissolved oxygen (4.4-15.02 mg/L) also remained within the suitable levels. Total suspended solid (TSS) levels consistently increased from January to September in all sampling points. Chlorophyll a values from January to September ranged from (0-0.01 mg L⁻¹).

The measured water quality of Humaraon Cove in Igang Guimaras for nine month showed that the nutrient concentrations for all physicochemical parameters were still below the critical values for Class C Water (fishery water for propagation of fishes) set by Department of Environment and Natural Resources for Water Quality guidelines and General Effluent Standard (ammonia, 0.5 mg/L; nitrate, 14 mg/L; phosphate, 1 mg/L; TSS, 100 mg/L) except

for TSS. Persistent high results of TSS may suggest high organic loading mostly from uneaten feeds and fish excretion.

Zooplankton and phytoplankton densities from January to September ranged from 3-65 (cells/ml) and 6-67 (10^3 cells/ml), respectively.

Development of sediment quality assessment and monitoring protocols in mariculture areas in the region

Sediments in cage and no-cage sites located in Igang Marine Station, Nueva Valencia, Guimaras were collected from February to July 2008. Sampling months and presence of fishcages, the factors that may affect the sediment quality variables (i.e. sedimentation rates, nutrient concentrations, dissolved oxygen, and presence of polychaetes) were analyzed..

Presence of fishcages had a significant effect on sedimentation rates in the area ($p < 0.05$) while sampling month showed no significant effect ($p > 0.05$). Phosphate and ammonia were significantly affected by both sampling month and presence of fishcages ($p < 0.05$) though values showed an effect of interaction of both factors ($p < 0.05$). Dissolved oxygen (DO) was significantly affected by presence of fishcages and by sampling months ($p < 0.05$). The sediments from cage and no-cage sites in June had significantly higher dissolved oxygen than July. Presence of polychaetes was significantly affected by presence of fishcages and by sampling months ($p < 0.05$) which showed absence of fauna in both sites in the months of May and July.

The higher dissolved oxygen in the month of June may have been contributed by the strong water movements due to Southwest monsoon that may have washed out some of organic matter deposits in the sediments. This seasonality is further enhanced by feeding regime of cage site replicate (Petron cage) which was initially harvested in the month of June.

Determination of ammonium uptake of *Gracilaria bailinae* and its impact on the combined culture of abalone, *Haliotis asinina*, and *G. bailinae* in a recirculating system

Experiment II was carried out using two levels of NH_4 (5 ppm and 10 ppm), two stocking densities (1 kg/m^2 and 2 kg/m^2) and water volume exchange of four per day. Ammonium removals were analyzed.. Specific growth rates were 1.05 to 2% da^{-1} (5ppm, 1 kg/m^2), -0.38 to 1.4% day^{-1} (5 ppm, 2 kg/m^2), 1.1 to 2% day^{-1} (10 ppm, 1 kg/m^2) and -0.85 to 0.86% day^{-1} (10 ppm, 2 kg/m^2). Protein contents of *G. bailinae* were 18.09% (5ppm, 1 kg/m^2), 17.54% (5 ppm, 2 kg/m^2), 16.31% (10 ppm, 1 kg/m^2) and 20.91% (10 ppm, 2 kg/m^2). Initial protein content of *G. bailinae* was 11.86%. Temperature, salinity and ph ranged from 26.1-28°C, 30-34 ppt and 7.58-8.5, respectively.

The *tangab* fishery in Iloilo Strait: operations, catch volume and species composition, economic importance, and ecological impact

A workshop was conducted in August 2008 to discuss the *tangab* fishery in Iloilo Strait. The participants included the *tangab* operators, local government officers, and the regulators at the Bureau of Fisheries and Aquatic Resources (BFAR).

The revised 8-page booklet *What's in a tangab?* was printed in April and disseminated to various stakeholder groups involved in the *tangab* fishery at various sites. This booklet led BFAR to pay more attention to the *tangab* fishery and eventually to holding of the workshop.

The 2008 *tangab* season in Atabayan and Arevalo ended in May after the first storm of the year. Operations in Calumpang and Morobuan ended after Typhoon Frank devastated Iloilo in

June. About a month later, some *tangab* in Calumpang and Morobuan have been set up again for operation during the rest of the year.

3. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

3.1. Planning of the Project Activities

The studies implemented in 2008 will be continued. In addition, the Program will undertake the following projects:

- Assessment of resources (corals, seagrass, fish, benthic animals) of Igang Mariculture Park and Pana-on and Tudela, Misamis Occidental mariculture areas and identification of recruits of the mariculture structures (i.e. sponge, algae, fish)
- Characterization of the biodiversity and community structure in aquaculture farms in the Philippines: brackishwater ponds, marine cages, lake pens.
- Culture of imbao *Anodontia edentula* beneath fish cages in Igang.
- Initiation of mesocosm experiment of integrated aquaculture commodities (e.g. grouper in cage cultured with seaweed, sea cucumber, mussels and oysters, etc in big SEAFDEC tanks) in order to determine their polyculture potential based on production, waste reduction and economic viability.

Annex 5

**PROGRAMS OF ACTIVITIES UNDER THE FISHERIES CONSULTATIVE GROUP
OF THE ASEAN-SEAFDEC STRATEGIC PARTNERSHIP (FCG/ASSP)
FOR THE YEAR 2008-2009**

INTRODUCTION

The program under ASEAN-SEAFDEC Strategic partnership (ASSP) and Fisheries Consultative Group (FCG) for the year 2008-2009 are listed below and the proposed activities of each program appear in the program documents

I. Existing Programs

Existing On-going Programs under the FCG/ASSP Mechanism	Lead ASEAN Country	Lead SEAFDEC Department	2008	2009
1. Support to the Implementation of Code of Conduct for Responsible Fisheries in the ASEAN Region <u>Component I</u> : Mainstreaming Regional Guidelines <u>Component II</u> : Capacity Building for Implementation of the CCRF in the ASEAN Region	Indonesia	SEC	X	X
2. Assistance of Capacity Building in the Region to Address International Trade Related Issues	Thailand	SEC	X	X
3. Promotion of Rights-based Fisheries and Co-management towards Institutional Building and Participatory Mechanism for Coastal Fisheries Management	All Member Countries	TD	X	X
4. Improvement of Fishery Statistics and Information for Planning and Management of Fisheries in the ASEAN Region	Thailand	SEC	X	X
5. Responsible Fishing Technologies and Practices (Fishing in Harmony with Nature)	Thailand	TD	X	X
6. Sustainable Utilization of Potential Fisheries Resources and Reduction of Post-harvest Losses	Thailand	TD	X	X
7. Development of Technologies and Human Capacity Building for Sustainable Aquaculture	Philippines	AQD	X	X
8. Quality Assurance Systems for Small and Medium-sized Fish Processing Establishments in ASEAN Member Countries	Singapore	MFRD	X	X
9. Environmental Related Tasks in Southeast Asia (in collaboration with the Departments)	Malaysia	SEC	X	X
10. Establishment of Disease Surveillance System of Aquatic Animals	Philippines	AQD	X	X

11. Chemical and Drug Residues in Fish and Fish Products in Southeast Asia ¹	Singapore	MFRD	X	X
12. Research and Development (R&D) of Stock Enhancement for Species under International Concerns	Philippines	AQD	X	X
13. Research for Stock Enhancement of Sea Turtles (in collaboration with TD)	Malaysia	MFRDMD	X	X
14. Capacity Improvement of Fisheries Community for Fisheries Management and Alleviation of Poverty	Thailand	TD	X	X
15. Support to Tsunami Rehabilitation of Affected Countries in the ASEAN Region	Thailand	SEC	X	X
16. Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2	All Member Countries	TD	X	X
17. Deep Sea Fisheries Resources Exploration in the Southeast Asia (in collaboration with MFRDMD)	Thailand	TD	X	X
18. Tagging program for economically important pelagic species in the South China Sea and Andaman Sea (in collaboration with TD)	Malaysia	MFRDMD	X	X
19. Promotion of “One Village, One Fisheries Products (FOVOP)” System to Improve the Livelihood for the Fisheries Communities in ASEAN Region	Thailand	SEC	X	X
20. Information Collection of Highly Migratory Species in Southeast Asia Waters	Philippines	TD	X	X
21. Development of Regional Database for Fishery Management	Malaysia	TD	X	X

II. Proposed New Programs for 2009

Program Title	Lead country	Lead Department
1. Human Resource Development (HRD) for Poverty Alleviation and Food Security by Fisheries Intervention in the ASEAN Region (New)	TBD	SEC

¹ Starting from 2009, a follow-up project on Biotoxins Monitoring in Fish and Fish Products in Southeast Asia will be conducted

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Support to the Implementation of the Code of Conduct for Responsible Fisheries

Lead Department: SEAFDEC Secretariat in collaboration with all Departments

Total Duration: 2007-2008 with extension to 2009 (either as an extension or a new phase)

Funding Source: Swedish International Development Cooperation Agency (Sida)

1. INTRODUCTION

Since the adoption of the Code of Conduct for Responsible Fisheries (CCRF) in 1995, SEAFDEC supports the implementation of the CCRF and upholds the general principles and standards provided therein. To fulfill this obligation and to introduce the CCRF in Southeast Asia, SEAFDEC, as a premier fisheries center in the region with a long-term commitment to sustainable development and management of the region's fisheries and coastal resources, has initiated a comprehensive program known as the Regionalization of the Code of Conduct for Responsible Fisheries. As the principles are well accepted, although not fully implemented, suggestions have been made to change the program title to "Support to the Implementation of Code of Conduct for Responsible Fisheries"

2. PROGRAM

2.1 Objectives

The main emphasis during 2008-2009 is to maintain the momentum of the achievements under the SEAFDEC-Sida collaborative project, with the following objectives:

1. Promote continued and increased interest for regional and sub-regional cooperation;
2. Initiate and continue process on establishment of fisheries resources conservation areas (*refugia*);
3. Initiate a process to monitor and record fishing capacity;
4. Provide background information for habitat and fisheries management;
5. Address fishing capacity through studies and consultation

2.2 Program description

The focus and activities during the years 2007 and 2008 was built upon results achieved through the Swedish supported since 2003, incorporating elements of the recommendations provided at the Regional Technical Consultation, Phuket Thailand in October 2006, while at the same time move towards the implementation of the activities under a new collaborative agreement between SEAFDEC and Sweden.

A general thrust in the process of implementation is to support trends among ASEAN and SEAFDEC Member Countries to come to agreement among the countries on matters of importance to fisheries management, such as fishing capacity, conflicts, fish resources conservation areas, etc. and in the short to medium term perspective support the establishment of a regional fisheries management mechanism. Capacity building during 2007 for government staff at various levels and others were, primarily, organized by involvement in activities or learning-by-doing rather than formal training sessions.

The activities in 2007 and 2008 focused primarily on the Gulf of Thailand but also the South China Sea and Sulu Sulawesi Seas. Activities in the area of Andaman Sea and Malacca Strait

planned to be implemented under a post-tsunami related project. However, in addressing the management mechanism, regional cooperation, fishing capacity, vessel registration, etc the whole region would be in focus. Continued co-ordination among regional, international and national organizations and initiatives, such as ASEAN, FAO/APFIC, UNEP/GEF/SCS, MRC, RPOA, NACA and Wetlands Alliance was maintained during the years with a base in the ASEAN Fisheries Consultative Group framework under the ASSP.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2007 and 2008

The years 2007 and 2008 are considered as extension or bridging years, the activities were implemented under the following set of seven headlines: a) process to promote establishment of regional fisheries management body/mechanism; b) integration of fisheries into habitat management; c) incentive for environmental friendly fisheries/eco-labels; d) understand the size and structure of large-scale fisheries; e) systems to monitor and record coastal fisheries; f) local knowledge and safety at sea; and g) project management and coordination.

The activities were established with the aim to initiate /continue the promotion of:

1. A process supported to establish a regional fisheries management body/mechanism in Southeast Asia;
2. Capacity for the management of fisheries and important coastal fisheries (*refugia*) and the protection against natural hazards built up and improved in and around the Gulf of Thailand (Cambodia, Vietnam and Thailand); and
3. Understanding on the size and structure of large-scale (or industrial) fisheries and capacity strengthened to monitor and record active fishing effort in coastal fisheries built up as a basis for development of coordinated plans for management action on fishing capacity among ASEAN-SEAFDEC Member Countries and implemented (large and small scale).

Major achievements and progress of works in 2007 and 2008 can be highlighted as follow:

Regional Fisheries Management Mechanism

With the directives given to SEAFDEC through recommendations provided by the SEAFDEC Council, the ASWGFi, and the ASEAN SOM-AMAF the project could successfully continue the promotion of regional management arrangements. The project could follow up with the organization of an important event “Regional Technical Consultation and Workshop on the Concept and of the Establishment of an ASEAN Fisheries Development and Management Mechanism” (ARFMM) in Bangkok during 6 to 8 November 2007. Based on the results it was recommended, by the SEAFDEC Council and ASEAN, that SEAFDEC should continue to take a lead, together with Department of Fisheries Thailand to further develop the conceptual points together with the recommendations on scope and focus to be applied in the continued process to develop the ARFMM for further consideration by ASEAN, the ASWGFi and the SOM-AMAF in 2007 and 2008.

Based on the positive response and request from the Special SOM-29th AMAF (August 2008) SEAFDEC in collaboration with the Department of Fisheries, Thailand organized an Ad-Hoc Working Group Meeting ASEAN Regional Fisheries Management Mechanism (ARFMM) Meeting from 29 to 30 September 2008 in Bangkok, Thailand. Member Countries, together with resource persons, agreed on recommended changes to the ToR for the ASWGFi together with the development of a “Framework” with the function, scope of work and activities for the ARFMM. The documentation provided will again, by the Thai DOF, be submitted to the ASWGFi and the SOM-AMAF.

Other events in promotion of regional cooperation includes and ASEAN-SEAFDEC Consultation on the ASEAN Roadmap for the Integration of the Fisheries Sector, in held in Bangkok in January 2008. During the Consultation ASEAN Member Countries could agree on targets and specific timelines for the implementation of measures that was laid out by ASEAN in developing the Roadmap outline. SEAFDEC and the SEAFDEC-Sida Project have also been central in the follow up on the RPOA-IUU initiative (see below) and a workshop on vessel registration was organized in July 2008 (see below).

In support of the ASEAN wide cooperation sub-regional activities has been implemented in the promotion of the integration of fisheries management into habitat management with a focus on trans-boundary areas in primarily the Gulf of Thailand but with aim to also to address Andaman Sea, Sulu Sulawesi Seas, Mekong, etc. The SEAFDEC-Sida project also organized a workshop for the Gulf of Thailand Countries (see below)

Habitat and Fisheries Management

In consultation with regional partners and countries criteria was developed to determine the size of national, sub-regional and trans-boundary areas of the significance. The recommended criteria were:

- To build upon an aggregation of smaller management areas, which established for local fisheries or habitat management;
- To recognize the existing zoning schemes such as trawling free zones; and
- To take note of the seasonality in fishing and fish migration/spawning, etc.

Furthermore, the project organized “On-site training/workshop on the Integration of Fisheries Management into Habitat Management” in Koh Kong Province, Cambodia, from 6 to 9 August 2007. During the workshop, idea on larger management areas and boundaries was discussed. In principle, it was agreed and should be further followed up by developing a set of maps. After that, the project team has initiated the process, starting with Cambodia and Thailand to collect information available on maps to get a summarized view on location and size of different management areas. A set is available for Cambodia. During 2008 there has been follow up with working groups of UNEP/GEF/SCS project in the development of (project) plans for the establishment of refugia in the Gulf of Thailand and South China Sea. Through them information on status of important nursery grounds, spawning areas and coastal habitats in the Gulf of Thailand and South China Sea is available. The project has also been to promote the concept of “Integration of Fisheries Management into Habitat Management” in international fora, such as the AEHMS Conference on Ecosystems Approach to Fisheries in Hanoi, 18 – 20 February 2008. The project also, jointly with the Japanese Trust Fund, supported a RTC, 15 – 16 July 2008, on emerging policy issues with a special focus on climate change with inputs on impacts to fisheries and habitats.

Incentive for sustainable fishing/eco-labels

Preparation for pilot activities on eco-labels through organization of the meeting and participation of staff to relevant events was conducted. To build up the pilot activity, the project could come up with the three major candidates, including: crabs (mangrove) in Trat, Koh Kong and Kampot; mackerel (Pla Tu) and other species in Chumporn and Eastern Gulf of Thailand; and Prara/Prahok in Cambodia, Laos and Thailand.

Results in summary from the various events with respect to the role of government on eco-labeling in Southeast Asia are:

- On the role of the government: The message is clear in that there is a role for the government;
- The critical element is the process of certification, the setting of standards and criteria and the establishment of certifying body that would not be too costly; and
- Certification schemes could be developed out of less “ambitious” schemes and not necessarily directly aim for “third party” schemes and in various ways it is assumed that the government would play an important role.

Activities during 2008 have basically been to follow up with international organizations and member countries and seek confirmation on the main approach to be taken (focus at the certification process rather than the label as such) – with a focus on small-scale producers – while at the same get a feedback on the “candidates”. The responses has been positive so far and to be followed up during next phase.

Size and structure large-scale fisheries

To review available information on the size and structure of large-scale fisheries, project staff participated in the series of events, including APFIC IUU Meeting in Phuket, June 2007, and the “Regional Workshop to Support the Implementation of the Regional Plan of Action (RPOA) to Promote Responsible Fishing Practice including Combating IUU Fishing in the Region”, November 2007, in Bangkok. The general result is that there is not any reliable or aggregated information on the size and structure of large-scale fisheries – especially in the Southeast Asian region. Through the participation in the RPOA meeting on MCS, held in Bali from 4-6 March 2008, the lack of information on key elements of size and structure was confirmed. SEAFDEC-Sida project has in connection with these events, been involved in the review on MCS practices. These are often weak with unclear institutional responsibilities. A recommendation is to look at the institutional responsibilities among member countries for the different elements of the M-C-S process. As Gulf of Thailand had been identified as a sub-regional SEAFDEC organized a Gulf of Thailand Workshop (end of March 2008). The scope was broader than just MCS and a broad set of recommendations were provided. The result was well acknowledged by the RPOA Coordinating Committee (Manila, April 2008) and the (advisory) involvement of SEAFDEC was recognized. To further promote work on sub-regional arrangements for the Gulf of Thailand the project, with DOF, Thailand, will organize a second Gulf of Thailand Meeting by (tentatively) December 2008.

From 30 June-2 July 2008, SEAFDEC with support from the Swedish International Development Cooperation Agency, Sida, hosted the “Expert Meeting on Fishing Vessel Registration” held in Phuket, Thailand, attended with experts from both fisheries agencies as well as maritime transport agencies from ASEAN countries plus Australia, Papua New Guinea and Timor-Leste together with an IT expert on vessel registration supported by the Swedish Board of Fisheries (SBF), IMO as well as SEAFDEC. A lot of information regarding the systems, routines and status of fishing vessel registration development from each country were revealed. It was noted that, ideally, functions of vessel registration (safety at sea, etc) and licensing for fishing should be handled by the same institution like in Malaysia, however, there are some legal limitations in how far countries can move in this direction. In addition, fishing vessel registration could be an area for regional cooperation, while taking note that diversity and limitations of national structures would be something to address. A first step could be to find out common elements and information that is publicly available. In preparation for the meeting documentation on “official” information on vessels and people involved in fishing in a selected number of countries were presented.

Monitor and record coastal fisheries

Based on the output from organization of the training/workshop in Koh Kong, it gave a good indication that the Community Fisheries in Cambodia could be involved with their area – outside their areas they could be of limited, or no, support. They also clearly stated problems with not having enough funds for monitoring. As mentioned above on the participation of the staff to RPOA IUU workshop, the inputs provided based on the experience from the project activities and an understanding developed in that SEAFDEC will cooperate in further developing RPOA IUU, and MCS.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

During 2008 there has been continued push for the process to establish a Regional Fisheries Management Mechanism by ASEAN Ministers and in support of that SEAFDEC-Sida Project will with individual countries (esp. Cambodia) and trans-boundary regions give further emphasis to the promotion of integration of fisheries management into habitat management with a focus on trans-boundary areas such as the Gulf of Thailand, the Andaman Sea, the Sulu Sulawesi Seas, the Mekong, etc – while in the process ensure that a poverty focus is maintained and common understanding are reached between countries and institutions in each of the countries.

In coming year 2009, a number of events will be conducted for in the region that aim to support improve cooperation and mutual understanding among ASEAN-SEAFDEC Member Countries, thereby paving the way for the Regional Fisheries Management Mechanism. These events include:

- Attempt in promoting the regional cooperation among the countries in boundaries of the Gulf of Thailand, to be organize the Sub Regional- Gulf of Thailand Meeting in the end of 2008.
- Review of selected international fisheries conventions and other conventions with a view to how they are implemented in ASEAN-SEAFDEC Member Countries. Preparations will be completed to be able to organise a regional technical consultation (RTC) on the implications of international conventions and their implementation as relevant to fisheries in the region. The RTC to be held in early 2009.
- Meetings and coordination maintained with APFIC/FAO, UNEP/GEF South China Sea Project, CONSRN, IUCN and Mangroves for the Future (MFF), RPOA IUU, MRC, Wetlands Alliance, AIT, CORIN, World Fish Centre, IUCN, WWF, CBNRM-LI, ICSF, COBSEA, etc

The project activities in 2009 will be implemented in continuing and maintain the momentum of works having the same category of activities as mentioned for 2007 and 2008.

4.2 Expected Outcomes

The following are activities and their major expected outcomes for the year 2009 based on the proposal submitted to Sweden:

Activities	Expected Outcomes
1. Promote Regional Fisheries Management Mechanism	
1.1 Regional Consultations on common ASEAN-SEAFDEC approaches to mitigate problems within the fishing sector (promoting steps towards a regional fisheries management mechanism)	<p>Consultations organized with results on topics of relevance to the ARFMM process and in support of DOF Thailand in the process. Results recognized by SEAFDEC Council, the ASWGF, the ASEAN SOM-AMAF, APFIC, MRC, etc</p> <p>Reported outcomes on sub-regional consultations (Gulf of Thailand)</p>
1.2 Recommendation on results from project activities to ASEAN and ASEAN-SEAFDEC Member Countries and to policy making mechanisms	Recommendation and updates provided on the ARFMM and cooperation in trans-boundary areas. Further endorsement by ASEAN Ministers expected.
1.3 National legislation and institutional arrangements pertaining to management of exploitation of fisheries and critical habitats	<p>Recommendations provided from consultation among lawyers within the fisheries administrations</p> <p>Reports on the studies and analysis on the relevance of existing legal framework completed.</p>
1.4 Review of selected international fisheries conventions and other conventions with a view to how they are implemented in ASEAN-SEAFDEC Member Countries	Reference collection and the matrix on conventions ratified by ASEAN Member Countries
	Preparation and further organization of the regional technical consultation on the implications of international conventions and their implementation as relevant to fisheries in the region – prospectus and background prepared
2. Habitat and Fisheries Management	
2.1 Follow up on the regionally determined criteria to determine the national, regional and transboundary significance of specific areas (for spawning, etc and protection against natural hazards)	The criteria being confirmed by countries, UNEP/GEF and others throughout the continued definition of spatial boundaries for fisheries resources conservation areas (<i>refugia</i>)
2.2 Define (by year one) and monitor (continuously) relevance of spatial boundaries for the process to establish fisheries resources conservation areas (<i>refugia</i>) in Koh Kong, Kampot, Trat, Kien Giang, Quang Binh and Haipong provinces in consultation with UNEP/GEF SCS project, based on the regionally defined criteria	Areas and spatial boundaries for the process to establish fisheries resources conservation areas (<i>refugia</i>) defined and indicated on agreed maps. The relevance to be monitored and referred to, and documented in conjunction with SEAFDEC-Sida events and on-site training and UNEP/GEF//SCS follow up.
2.3 Review fisheries and habitat management systems in identified provinces in Cambodia, Vietnam and Thailand, and gradually widen to cover the whole Gulf of Thailand (as input to regional and on-site events)	Continuous activity: Background to be provided as input to regional and on-site events through resources persons (see reports from events) and a map of “management areas) in the Gulf of Thailand to be produced.

<p>2.4 Regularly, update surveys on data sources and resource persons, available on important nursery grounds, spawning areas and coastal habitats with a focus on the Gulf of Thailand and the Sulu-Sulawesi Seas and an agreement to be reached on the use and link to key databases. Extract from time to time information on key areas-such as, for year one, priority areas in need for restoration in the Gulf of Thailand and coastal Vietnam</p>	<p>-A list of key sources and resource persons to be maintained; An understand/agreement with UNEP/GEF on the use and links to their database on habitats and important fishing areas; -Priority areas in need for restoration in the Gulf of Thailand</p>
<p>2.7 Explore (with a view on climate change) the need to restore selected features (mangroves, etc) in the provinces of Trat, Koh Kong, Kampot, Kien Giang and Quang Binh (year one) and follow up with some restoration measures (year two to four)</p>	<p>Results in three stages: - Based on existing indications and identified areas by each country define restoration needs with suggested actions; - Use the definition exercises as an input to capacity building to define priorities further - Areas resorted and indicated in local maps</p>
<p>2.8 With national partners, improve management of crabs and selected fishing practices in at least Trat, Koh Kong, Kampot (link to eco-labelling)</p>	<p>Indications, through field surveys and reports, of improved management of crabs and more selective fishing practices and ways this has/can be used to provide incentives to promote good practices</p>
<p>2.9 Initiate, in conjunction with UNEP/GEF/SCS proj. the development of management regimes based on the integration of fisheries management into habitat management (<i>refugia</i>) in selected (border) areas of Cambodia, Vietnam and Thailand</p>	<p>Indicators of progress are to e found in agreements of joint statement by countries in the Eastern Gulf of Thailand to cooperate on fisheries and habitat management. Gradual progress to be document through joint adopted reports on progress and achievements</p>
<p>2.13 By year one, initiate work with regional and national partners, on simple assessments on how levels of productivity in coastal areas and <i>refugia</i> might/will change over time due to changes in geographical and hydrological features in coastal areas (implying need to adjust allowed fishing effort) due to environmental degradation and climate change</p>	<p>In the light of scenarios of changes in productivity due to environmental degradation and climate change a position paper by key regional and national institutions on what can be done, and what does it make, to come up with simple assessments on how levels of productivity in coastal and inland areas might/will change over time due to changes in geographical and hydrological features</p>
<p>2.14 Initiate a process, starting with a survey of available arrangements (year one), with Indonesia, Malaysia and he Philippines on the interest to develop fisheries resources conservation areas (<i>refugia</i>) in the Sulu-Sulawesi Seas (year one to four) and in the process ensure links with the UNEP/GEF and as relevant with the RPOA-IUU</p>	<p>A review and summary on available arrangements produced and documented to be provided as an input to a sub-regional meeting (year two) to come up with recommendations on future action, in conjunction with UNEP/GEF and RPOA-IUU</p>
<p>3. Incentive for sustainable fisheries including eco-labelling</p>	
<p>3.1 Initiate/prepare for pilot activities in at least four areas/ fisheries sub-sectors or product, with the initial focus being on the criteria and standard setting processes</p>	<p>- Feedback received on relevance suggested areas, species and products - Links to relevant projects and/or activities for pilot work established Framework developed, with partners (FAO,NACA, MRC) for process to focus on criteria and standard setting processes of suggested products, with action plan</p>
<p>3.2 Provide result and information to ASEAN-SEAFDEC Member Countries from SEAFDEC activities as well as on experience gained from other sources</p>	<p>Continuous activity: Indications on the results and impacts reflected in ASEAN, ASWGF, SEAFDEC Council and other schemes</p>

3.3 In consultation with ASEAN and/or other organizations assess eco-labeling, and other “labels” in a regional context	Activity to be revisited from time to time: information, documented and/or during consultation provided on implications of various types of labels and certification schemes (existing and upcoming schemes)
3.4 As concepts develop in the region, assess the practicability and value of any labeling scheme together with a reference to the readiness of the fisheries sub-sectors and/or fishery products, including various stages of processing (environmental and social values)	As international and local schemes develop information should be made available to regional events on the practicality and value (cost implications) including indication who are to benefit and who are to pay the costs
3.5 Keep an update and inform member countries on upcoming requirements in terms of standards (and labeling) to be addressed by countries of the region (climate change, labour conditions, fair trade, etc)	Continuous activity: Reports from events (SEAFDEC and others) on information provided to member countries on upcoming requirements on standards to be addressed by member countries
3.6 Promote active participation by ASEAN-SEAFDEC Member Countries in international events of relevance to the development of initiatives with regards to criteria setting, certification processes and (eco-) labels.	As relevant international events occur supported participant to be indicated with reference to the list of participants
4. Monitoring, Record and Control – large scale and small scale (coastal) fishing	
4.1 Follow-up on recommendations and action plans of the RPOA-IUU to ensure cooperation and defined roles of SEAFDEC	Roles and inputs expected from SEAFDEC(-Sida) defined in corresponding RPOA-IUU documentation
4.2 Initiate a process to establish a MCS network in the Gulf of Thailand in conjunction with the RPOA-IUU by fourth quarter year 1	Indications of the initiation provided through agreed report from meeting with GoT countries by GoT countries stating their commitment to the process
4.3 Initiate, with member countries, review, description and recommended on practicalities and revisions on MCS practices for large-scale and small-scale fisheries, respectively and initially for the Gulf of Thailand (year one and two and as recommended for subsequent year(s))	<ul style="list-style-type: none"> - A set of background material on some practices to be provided to a Gulf of Thailand expert meeting to review and recommend on those practices. - The results as reflected in the report of the meeting should include recommendations on continued reviews and revisions needed. Both large –scale and small-scale/coastal to be addressed - SEAFDEC will continuously provide updates on an institutional and legal matrix on elements of M. C. and S - Outcomes of the June Meeting on vessel registration will, as recommended, be included in the process to review and revise MCS practices
4.4 Review (year one and continuously as new information arrives) existing or planned trans-boundary and sub-regional agreements and arrangements (Gulf of Thailand and Sulu-Sulawesi Seas) in terms of the usefulness as a framework trans-boundary monitoring and control of fishing activities, work with the UNEP/GEF/SCS and the RPOA-IUU in the process	<ul style="list-style-type: none"> - A list to provided on existing arrangements together with a feedback (documented) from UNEP/GEF/SCS and the RPOA-IUU on how to, strategically, build upon those agreements - Updated lists, with comments on their relevance to be provided as new information becomes available to the project

<p>4.5 Provide background information, as needed from time to time, on large-scale and small-scale fisheries to provide understanding on key elements of the sector as background to improve systems to monitor, record and control the fisheries (size, structure, people involved, etc)</p>	<p>Background information on large-scale fisheries, small-scale fisheries, IUU fisheries, conflicts within the fishing sector, conflicts with other sectors, etc to be compiled and made available as needed to consultations, expert meetings and other events (also non-SEAFDEC). The documented version to be obtained through the proceedings or, occasionally as stand alone papers.</p>
<p>4.7 Based on the defined sub-regions (RPOA-IUU and SEAFDEC) map and describe fishing areas and fishing practices for industrial(large scale fisheries by year three, including as applicable non-ASEAN vessels</p>	<p>A set of “annotated” maps on fishing areas and fishing practices to be available by the third year of project implementation</p>
<p>4.8 Organise assessment of level and type of fishing capacity in small-scale/coastal fisheries in at least Trat, Koh Kong, Kampot and Kien Giang , Quang Binh and Haiphong Provinces including incidences of illegal (IUU) fisheries by large-scale vessels in coastal waters, with priority on those selected for <i>refugia</i> Ready by early year two.</p>	<p>By building upon a dialogue with ongoing projects, activities and local institutions provide a reference point on assessments being made up to date. While doing have a group of national resource persons identified for capacity building</p>
<p>4.9 In the process of assessing the status of small-scale/coastal fisheries include staff capacity building at provincial/district level in at least Cambodia Vietnam and Thailand (in provinces selected for <i>refugia</i>) by mid-year two on the ability to monitor, record and control active fishing capacity in small scale/coastal fisheries, including incidences of illegal (IUU) fisheries by large-scale vessels in coastal waters. Link with UNEP/GEF/SCS and the RPOA-IUU</p>	<p>Lists of participants, reference documents and presentations will be included in reports from capacity building and on-site training events The events should be forward looking and recommendations for future action to be included in the outcome of events</p>
<p>4.12 Continue the process to promote, in dialogue with national and regional partners (RPOA-IUU, UNEP/GEF/SCS and FAO), further improvements, preparations and implementation of activity plans to manage fishing capacity and to reduce IUU fishing in near coastal waters</p>	<p>Indications provided, by fisheries agencies, on ambitions to improve plans to manage fishing capacity, including allocation of resources. References to proceedings from regional and national events, including events in cooperation with ASEAN, RPOA-IUU, APFIC and UNEP/GEF/SCS together with statements from agencies</p>
<p>4.13 In cooperation with the RPOA-IUU Initiate capacity building on how to assess and report on indications of IUU by large and small vessels as well as conflicts between groups of fishermen in at least Cambodia, Vietnam, Thailand, Malaysia and the Philippines (year one and two)</p>	<p>Lists of participants, reference documents and presentations will be included in reports from capacity building and on-site training events The events should be forward looking and recommendations for future action to be included in the outcome of events</p>
<p>4.14 Follow up on the SEAFDEC workshop on fishing vessel registration (July 2008) in order to support processes to build up, or improve registration of fishing vessels, both large and small scale</p>	<p>To be further elaborated after the July 2008 workshop</p>

<p>4.16 Provide awareness on the need to develop alternative or supplementary livelihoods, including possible alternatives, to facilitate exit from fishing for national, provincial and district authorities</p>	<p>Continuous activity: Inputs on need for alternative or supplementary livelihoods to be included in various events organised under different headings throughout the project period (see reports from events). – and to be addressed also in events organised by others in which project staff take part</p>
<p>4.18 Inform the ASEAN-SEAFDEC Member Countries and provide inputs to the ASEAN policy making mechanism on the status, profile and practices of large-scale industrial as well as small-scale fisheries together with recommendations on the need to improve monitoring, record and control measures</p>	<p>Continuous activity: Indications on the results and impacts reflected ASEAN, ASWGF, SEAFDEC Council and other documented events</p>
<p>5 Local Knowledge, cross cutting issues and safety at sea</p>	
<p>5.1 Survey local knowledge and actions among ethnic groups and coastal communities in terms of management and responses to natural hazards in Vietnam, Cambodia, Thailand and the Philippines</p>	<p>To have a base of reference from there four countries as to the extent village groups build in responses to hazards in local management systems</p>
<p>5.2 Review documentation on local practices and local traditions in systems to record and register fishing boats and fishing gear (see also 4.12 and 4.13) from at least six countries and outside of “pilot areas”</p>	<p>The expectation is to have a sequence of reference on local systems for registration and recording of fishing activities</p>
<p>5.3 Follow-up on the study by the CBNRM-LI on the role of women in fishing communities in Cambodia by disseminating the result at workshops and on-site training (start with the one in Kampot)-year one. Additional studies, as recommended (year one, two and three)</p>	<p>-The results of dissemination reflected in the report and result from on-site training and other events - Results of follow up and additional studies reflected in study reports and processing from events where studies are presented</p>
<p>5.7 Provide result and information to ASEAN-SEAFDEC Member Countries from SEAFDEC activities as well as on experiences gained from other sources</p>	<p>Continuous activity: Indications on the result and impacts reflected ASEAN, ASWGF, SEAFDEC Council and other documented events</p>

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism
Program Title: Assistance for Capacity Building in the Region to Address International Trade Related Issues
Lead Department: SEAFDEC Secretariat
Lead Country: Thailand
Total Duration: 2008-2012
Proposed 2009 Budget: US\$43,000

1. INTRODUCTION

The program on Assistance of Capacity Building in the Region to Address International Trade Related Issues (formerly refers to 'Fish Trade and Environment') is in line with SEAFDEC's Strategic Plan on Fisheries to effectively safeguard its member countries' interests and welfare against unfair treatment, which may jeopardize the national or regional fisheries resources sustainability. This program has been fittingly identified to enhance and strengthen competitiveness, cooperation and joint approaches in addressing international as well as regional issues and problems affecting fish trade and the environment in Southeast Asia through the formulation of regional fisheries policies.

Through the program, the participation of ASEAN-SEAFDEC member countries particularly the fisheries-related government agencies has become active and visible particularly in the conduct of the preparatory and negotiation works at the country level to strengthen national policy including regional positions and requirements for the trade of fish and fishery products.

The significance of the program was initially collaborated in November 1999 when the SEAFDEC Preparatory Meeting on Issues of International Fish Trade and Environment was convened to discuss about pertinent issues on fish trade and environment in order to meet squarely the demands required of the upcoming WTO Ministerial Meeting in Seattle. During the 1999 Fish Trade Meeting, recommendations were formulated and adopted based on the issues and initiatives that have been discussed internationally that have so much bearing to the region's trade of fish and environment such as Sustainable Fisheries and Sustainable Fish Trade; the US Shrimp Embargo on some ASEAN-SEAFDEC Member Countries; Fisheries Subsidies; SPS; CITES; Eco-labelling; etc.

Since then, SEAFDEC has always gone step ahead to continuously clarify its regional requirements for fish trade and its related issues by means of Regional Consultations, where the ASEAN Member Countries and SEAFDEC identify and discuss on the issues of common interest. Convening of such consultations has produced recommendations to aid ASEAN-SEAFDEC member countries in dealing with these international issues and initiatives.

2. PROGRAM

2.1 Objectives

The objectives of this project are as follows:

- 1) To monitor and review potential international fish trade related issues;
- 2) To identify and analyze potential impacts of international fish trade related issues on sustainable fisheries development in Southeast Asia; and
- 3) To develop regional policy recommendation on international fisheries related issues for ASEAN-SEAFDEC member countries.

2.2 Program description

Recognizing the issues on trade in fish and fish products are greatly discussed and driven by international market and various organizations, which rarely involve with fisheries authorities, and sometimes regardless of contribution to sustainable fisheries development and management aspects. Those market-driven and trade instruments, that have been agreed or enforced by international organizations, would determine impacts on sustainable development of fisheries in Southeast Asian region, particularly developing countries and small-scale fisheries sub-sector. In accordance to this, it is important to reconcile the international driven issues with the promotion on sustainable fisheries development.

Past to present, SEAFDEC has monitored the potential international issues on fish and fish products and provided regional consultative forum to the ASEAN-SEAFDEC member countries, through this mechanism SEAFDEC provides fisheries authority of member countries with necessary information of the trade related issues on international concern such as the issues under UN General Assembly, WTO, FAO and CITES. The outcomes of regional discussions and conclusion were analyzed and came up with future regional action plan as well as common/coordinated position to safeguard the interests of ASEAN-SEAFDEC Member Countries at the global fora.

Therefore, it is crucial that SEAFDEC should keep monitoring the emerging international fisheries related issues and providing support to the Member Countries through appropriate channels in order to reflect the regional collaborative efforts in managing fisheries and assist the Member Countries in development regional common/coordinated positions, as well as push forward integration of views from fisheries agencies into those international instruments.

3. PROGRESS ACTIVITIES IN THE YEAR 2008

Project/Activity Title	Duration	Remarks
1) Regional Technical Consultations	February and July	100% completed
2) In Depth Study on the Issues Identified by the RTC	January-April	100% completed
3) Participation to FAO Sub-committee on Fish Trade	June	100% completed
4) Participation to other Relevant Regional/International Forum	March	100% completed
5) Production of Promotional Brochure and materials for Support the Member Countries	January-April	100% completed

3.1 ASEAN-SEAFDEC Regional Technical Consultation on International Fisheries Related Issues

The ASEAN-SEAFDEC RTC on International Fisheries Related Issues 2008 was organized from 12 to 14 February 2008, in Chiang Mai, Thailand. The objectives were to: 1) review and discuss the identified important international fisheries related issues relevant to the region; 2) formulate policy recommendations and proposed coordinated/common positions on each respective issue among the Member Countries; and 3) identify follow-up actions by ASEAN and SEAFDEC Member Countries, ASEAN Secretariat as well as SEAFDEC Secretariat and Departments. The issues included Legally-binding Instrument on Port State Measures, Traceability, Certification and Labelling, Small-scale Fisheries Issues, Fisheries Subsidies, Endangered Aquatic Species under CITES, Climate Change and Fisheries, and Welfare of Fishing Crew and Fishing Labour.

3.2 In Depth Study on the Issues Identified by the RTC

Through the ASEAN-SEAFDEC Fisheries Consultative Group Meetings and Regional Technical/Expert Consultations as well as the ASEAN-SEAFDEC RTC on International Fisheries Related Issues 2008, SEAFDEC conducted the analysis of potential international fisheries related issues and came up with the 'Executive Summary on International Fisheries Related Issues 2007-2008'. This is to facilitate on policy discussion and update information for the Member Countries on substantive issues. This policy-based paper was then submitted to the 40th Meeting of SEAFDEC Council and the 16th Meeting of ASWGFi respectively.

3.3 ASEAN-SEAFDEC Regional Technical Consultation on Emerging Regional Fisheries Policy

ASEAN-SEAFDEC Regional Technical Consultation on Emerging Regional Fisheries Policy was organized from 15 to 16 July 2008, in Bangkok, Thailand. The Consultation aimed to review and discuss important issues relevant to emerging fisheries policies of the region especially climate changes and its impact to fisheries and aquaculture and the market driven measures and food security through the promotion of fish trade. The Consultation was able to come up with the recommendations and future activities of both issues specifically the measures and activities to mitigate the impacts climate change to be undertaken by SEAFDEC and agencies responsible for fisheries in the Member Countries.

3.4 Participation to other Relevant Regional/International Forum

In order to support the Member Countries following the policy directives given by the SEAFDEC Council and ASWGFi, SEAFDEC dispatched a representative to the FAO COFI Sub-Committee on Fish Trade which was convened in Bremen, Germany from 2 to 6 June 2008. SEAFDEC participation helped facilitate confirmation and consolidation of coordinated positions among the Member Countries, which is considered as a follow-up to the regional recommendations that have been developed among ASEAN and SEAFDEC Member Countries, and safeguard the region's interests as well as monitor the outcome of the meeting which may be of interests/importance to the region.

4. PROPOSED ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
1) Regional Technical Consultation	February	
2) In Depth Study on the Issues Identified by the RTC	Feb.-Nov.	In depth study on the issues follows up the outcome of RTC
3) Participation to Technical Consultation to draft a legally-binding instrument on port State measures to prevent, deter and eliminate illegal, unreported and unregulated fishing (FI-807) (resumed session)	26-30 Jan	Rome, Italy
4) Participation to FAO Committee on Fisheries (COFI)	March	-

5) Production of Promotional Brochure and materials for Support the Member Countries	Feb.- Nov.	Collected information inclusive of actions taken by SEAFDEC will be publicized
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4.2 Expected Outcomes

- Based on the requirement and indicative informed by the Member Countries through SEAFDEC Program Committee Meetings and/or ASEAN-SEAFDEC Fisheries Consultative Group Meetings, it is anticipated that the ASEAN-SEAFDEC Regional Technical Consultation on International Fisheries Related Issues (2009) will be organized, where appropriate;
- Analysis of international fisheries related issues will be produced as one of the main inputs to SEAFDEC policy-base paper namely 'Executive Summary on International Fisheries Related Issues 2008-2009'. This paper will be further submitted to the 41st Meeting of SEAFDEC Council and the 17th Meeting of ASWGFi for their consideration and support;
- SEAFDEC will dispatch a representative to the FAO COFI which will be held in Rome, Italy from 2 to 6 March 2009 in order to support the Member Countries along line with policy directives given by the SEAFDEC Council and ASWGFi; and
- Appropriate information related to regional efforts on international fisheries related issues will be publicized and distributed through various channels.

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Promotion of Rights-based fisheries and co-management towards institutional building and participatory mechanism for coastal fisheries management

Lead Department: TD

Lead Country: SEAFDEC Member Countries

Proposed Budget: USD 38,886 for year 2009

1. INTRODUCTION

The result of the program implemented in year 2008 as seen in the table of progress of activities in the year 2008. Regarding the output of the program and its activities, we recognize that concept of co-management and rights-based fisheries management is new and advance for most of fisheries officials in ASEAN region. The country report of each member country found very rare practice of the co-management and rights-based fisheries management. Thus, this is an evidence to continue the regional training course of co-management and rights-based fisheries management. The regional workshop activity will be a credible opportunity to build and strengthen capacity and comprehension of fisheries officials towards sharing, exchanging and discussing on experiences and knowledge to better practice and implement the co-management and rights-based fisheries management in the ASEAN region.

2. PROGRAM

2.1 Objectives

1. To promote the applicable practice of rights-based fisheries and co-management towards institutional building of stakeholders for coastal fisheries management
2. To introduce the appropriate participatory mechanism of co-management to foster the use of indicator for coastal fisheries management

2.2 Program description

The program composed of two sub-projects are Project I entitles of “Promotion of Rights-based Fisheries through Co-management Approach for Small-scale Fisheries in the Southeast Asian Region” and Project II is “Promotion of participatory mechanism on the use of indicators for coastal fisheries co-management”. Both sub-projects are placing high priority to promote concept of co-management and rights-based fisheries for coastal fisheries management and small-scale fisheries development. Regional training course and workshop is convincing strategy to help fostering the concepts in coastal fisheries management and small-scale fisheries. Regional training course is provided theory, concept and case study for participants coming from SEAFDEC-ASEAN member countries to understand and knowledge the concepts. The workshop is a stage of sharing experience among participants and exchanging opinion and idea with local user and stakeholders and discuss on institutional design of co-management for using indicators for coastal fisheries management. To strengthen participants’ knowledge and practice and including effective budget management, Activity 1.1 of Project I will be conducted as back-to-back activity with Activity 2.2 of Project II detailed as seen in the table of proposed future activities for the year 2009.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Project/Activity Title	Duration	Remarks
I Promotion of Rights-based Fisheries through Co-management Approach for Small-scale Fisheries in the Southeast Asian Region		
<u>Activity 1.1</u> the First inception meeting on small-scale fisheries management in the Southeast Asian Region	29 April to 1 May	Presented an introduction of the regional training course on coastal fisheries management. SEAFDEC member countries were interested in the course and supported that the course would help promoting the concept of co-management group user rights in the region.
<u>Activity 2.1</u> Regional training course in coastal fisheries management	27 October to 7 November	The course curriculum placed an emphasis on concept of co-management group user rights for enhancing small-scale fisheries development and management. Waited for interesting member country requested.
<u>Activity 2.2</u> Training workshop on Co-management, Rights-based fisheries for small scale fisheries at national level	10-day	
II Promotion of participatory mechanism on the use of indicators for coastal fisheries co-management		
<u>Activity 1.1</u> Regional workshop on an implication of indicators using for coastal fisheries management in ASEAN region	22-24 July	Participants actively participated in designing an institution of co-management using indicators for coastal fisheries management. The workshop suggested that the output of the workshop on the institutional design should be promoted towards human resource development program.
<u>Activity3.1</u> Contribute member countries to develop its own national guideline	5-7 and 13-15 August	The national workshop on guideline and standard method of data collection and indicator of large-scale and small-scale fisheries indicators in Thailand as first and second national workshop, respectively. These workshops were a stage for Thai fisheries biological officials to develop the standard method of data collection for fisheries management in Thailand.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
I Promotion of Rights-based Fisheries through Co-management Approach for Small-scale Fisheries in the Southeast Asian Region		
Component 1 Technical assistance transfer through capacity building activities		
<u>Activity 1.1</u> Regional training course on rights-based fisheries and co-management for small-scale fisheries and management	12-day excluded traveling day (in October, 2009)	The course is to provide an opportunity for ASEAN-SEAFDEC participants to comprehend the concept and practice of co-management and rights-based fisheries for small-scale fisheries and management.
<u>Activity 1.2</u> Training workshop on co-management, rights-based fisheries at the national level	8-day excluded traveling day	Local participants will be trained and practice to draft guideline of co-management and rights-based fisheries which is best suited to its respective home country.
II Promotion of participatory mechanism on the use of indicators for coastal fisheries co-management		
Component 2 Regional capacity and awareness building for promotion of using indicators and participation		
<u>Activity 2.1</u> Regional workshop on institutional design of co-management for promotion of using indicators and participation	4-day (in October, 2009)	The draft of regional workshop held in July 2008 will be input. The workshop will be conducted on-site for genuinely practice with local user and group and stakeholder concerned.
Component 3 Guideline development to foster indicators use and participation		
<u>Activity 3.1</u> Contribute member countries to develop its own national guideline	6-day for a time and conduct 2-time	The national workshop is on guideline and standard method of data collection and indicator of large-scale and small-scale fisheries indicators, respectively. These workshops are a stage for fisheries biological officials to develop the standard method of data collection for fisheries management.

4.2 Expected Outcomes

- To increase number of fisheries officials comprehend the concept and practice of co-management and rights-based fisheries management and improve their capacity of implementing the two concepts for a better coastal fisheries management.
- To promote the appropriate participatory mechanism of co-management and rights-fisheries management to particularly contribute the use of indicators for coastal fisheries management

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Improvement of Statistics and Information for Planning and Management of Fisheries in the ASEAN Region

Lead Department: SEAFDEC Secretariat

Lead Country: Thailand

Total Duration: 2007-2009

1. INTRODUCTION

Fishery statistics, data and information in fisheries which generally also include registration, records, reporting, census and surveys, and other data and information including indicators; use of advanced information technology and database that are derived either from routine and non-routine system are widely accepted as basis and being crucial for determination of national fisheries policies, formulation of national management frameworks and actions or even basis for understanding the status and condition of fisheries resources.

SEAFDEC plays a prominent role in fishery statistics in Southeast Asia and has been assembling regional fishery data and information for many decades. SEAFDEC's support and direction on improvement of fishery statistics in the region are strengthening national fishery statistical systems, maximize their use for fisheries planning and management, and develop standard definitions and classifications to facilitate regional fishery statistics and information exchange. SEAFDEC is currently implementing a number of collaborative programs/projects and initiatives related to data and information on fisheries in the region to support member countries in improving statistics, data and information for management and planning of fisheries. However, the implementation of activities and outcomes from each project was planned in isolation resulted in lacking of focus in the improvement of data and information collection, analysis and presentation that lead to the lack of their usage for effective planning and management of fisheries.

It was found that there are still many issues and constraints under current situation in relation to the usage of quality fishery statistics, data and information to support development planning and management of fisheries. They are i.e. framework and direction are not well coordinated and implemented; lack of shared objective and direction to complement each other; need of clear objectives and usage at various levels; statistics for management requirements; and linkages and coordination between routine and non-routine data collection. In addition, problems still exist on quality, timeliness, accuracy of data and information for maximizing their usage for effective planning and management.

SEAFDEC recognized the importance of better understanding and knowledge of fisheries in the region for development planning and management of fisheries to achieve sustainable fisheries and food security purposes. To fulfill this goal, it is generally noted that fishery statistics, data and information are important foundation which required improvement of better national fishery statistical system in terms of quality, availability, reliability, accuracy and timeliness of statistics in line with the minimum requirements and the regionally standardized definitions and classifications for fishery statistics to facilitate regional compilation, analysis and data exchange, as well as ways and means to present information in user-friendly manner for management and decision-making. In addition, data and information from other sources are also crucial important that linkage and integration and harmonization should be promoted in maximizing its utilization for effective planning and management of fisheries.

2. PROGRAM

2.1 Objectives

The overall objective of the project is to improve better understanding and knowledge of fisheries and aquaculture in the region by maximizing usage of data and information for fisheries management, which can be achieved through development of status and trends of fisheries and aquaculture in the region based on effective utilization and harmonization of information for fisheries management at national level under the harmonized definitions, standards and classification of fishery statistics at regional level. The specific objectives are as follows:

1. To improve better knowledge of fisheries for development planning and management through development of status and trend of fisheries and aquaculture in Southeast Asia;
2. To streamline reporting of fishery statistics from the member countries to SEAFDEC and FAO through the new framework of SEAFDEC Fishery Statistical Bulletin of Southeast Asia;
3. To harmonize definitions, standards, and classification of fishery statistics and information to facilitate data sharing and exchange in the region;
4. To improve better utilization and harmonize information from projects implemented by SEAFDEC for fisheries management in Southeast Asia; and
5. To enhance capacity of the member countries in development, integration and maximizing usage of data and information for development planning and management of fisheries through the process, mechanism and outputs to promote in country coordination and inter-countries coordination based on dialogues among agencies and countries concerned.

2.2 Program description

The project will support the Member Countries in achieving sustainable fisheries objectives based on sound fisheries policies and management strategies that will be derived from quality statistics, data and information. The project aimed to address these issues to better utilization and harmonized information to support development planning and management of fisheries through development of status and trend of fisheries and aquaculture, through facilitating cooperation in the region both at national and regional levels by mobilizing data and information from various sources. The project will be implemented in collaboration with regional and international organizations.

Based on past achievement and experiences in supporting the member countries in improvement of fishery statistical systems, the project will build on top from the past achievement and develop the linkage/coordination and integration of existing data and information for maximizing its utilization for planning and management of fisheries at national and regional level.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Project/Activity Title	Duration	Remarks
Component 1: Streamline Reporting of Fishery Statistics from the Member Countries to FAO and SEAFDEC through the new framework of SEAFDEC Fishery Statistical Bulletin of Southeast Asia		
<i>Activity 1.1: Streamline Reporting of Fishery Statistics from the Member Countries to key partner agencies and SEAFDEC through harmonized questionnaires</i>		
- The Regional Workshop on Streamlined Reporting of Fishery Statistics in Southeast Asia was organized in Bangkok, Thailand from 28-31 July 2008 to discuss and conclude the harmonized questionnaire and streamlined reporting of fishery statistics from Member countries as well as to create common understanding and awareness building of the Member Countries.	Jan.-July	Completed
- The Framework for Fishery Statistics of Southeast was finalized and published at the end of August and distributed to the Member Countries in September 2008.	Jan.-Sept.	Completed
- Consultation Meeting with FAO to conclude the preparation for the Regional Workshop on Streamlined reporting system for Fishery Statistics (28-31 July) was conducted on 10-11 July 2008, and follow-up work was done.	Jan.-July	Completed
Component 2: Harmonization of Standards/Norms, Classification and Definition of Fishery Statistics and Information in the Region		
<i>Activity 2.1: Participation in relevant international, regional and national development of standards, norms, classification and definition for fishery statistics and information at the international and regional levels</i>		
- Participation and presentation of SEAFDEC to the Inter Sessional Meeting of the Coordinating Working Party on Fishery Statistics; and the 5 th Session of the FIRMS Steering Committee, that was held from 5-9 July 2008 to present on-going SEAFDEC activities relating to fishery statistics, data and information, as well as providing inputs for discussion to the meetings on respective agenda items on behalf of the region.	July	Completed
- Participation to the Stakeholder Consultation Meeting of FAO/DOF Fishery Information Gathering for Fishery Policy and Management was conducted in Thailand, from 22-24 January 2008 to provide inputs and coordinate the related issues of fishery statistics and information for fisheries development planning and management, as collaborating agency with FAO in the implementation of the project of DOF Thailand (2007-2009) to improve fishery information for planning and management that in line with SEAFDEC project.	Jan.	Completed
- Participation to the National Stakeholder Consultation for Master Plan of marine Fishery Management was conducted in Thailand, from 30 Jan. to 1 Feb. 2008 to provide inputs and coordinate the related issues of the Framework for fishery statistics and information for fisheries development planning and management.	Jan.-Feb.	Completed

Component 3: Status and Trends of Fisheries and Aquaculture in Southeast Asia (STF)		
<p><i>Activity 3.1: Visits the Member Countries for the Planning Consultation and Following-up work</i></p> <p>Thailand:</p> <ul style="list-style-type: none"> - A Planning Consultation Meeting was organized on 10 March 2008 to discuss between SEAFDEC and the DOF Thailand on the project activities. The Consultation among national agencies concerned to identify the agencies' focal points as well as to elaborate detailed process, and respective role and responsibility in developing a national STF report was implemented. The project proposal was approved, with the identification of national focal point and the establishment of working committee in the DOF Thailand. - A Meeting was organized on 11 August 2008 to discuss the outline of the STF Report, and identify officer in charge in preparation of the draft content. - Preparation of the Draft National STF Report (in Thai and English), through information gathering, and analysis. Summarizing the experience learned through the preparation process, i.e. areas of difficulties, information gap, and recommendation for future preparation of national STF from June to November. <p>Vietnam:</p> <ul style="list-style-type: none"> - Based on a visit to Vietnam was conducted in December 2007 for the Planning Consultation. The Proposal for National STF of Vietnam is under finalization by Vietnam. It was delayed due to the reorganization of the Ministry of Fisheries to the Ministry of Agriculture and Rural Development. The proposal plan to be ready for formalization process by both sides by November 2008. <p>Indonesia:</p> <ul style="list-style-type: none"> - The Informal Consultation on concept idea for development of National STF Indonesia was conducted on 15 July 2008. The national Proposal is under preparation and will be finalized by both sides by October. The Planning Workshop among national agencies concerned to identify the agencies' focal points as well as to elaborate detailed process, and respective role and responsibility in developing a national STF report plan to be held in November. 	<p>Mar.</p> <p>Aug.</p> <p>Jun.-Dec.</p> <p>Jan.-Dec.</p> <p>Jul.-Dec.</p>	<p>Completed</p> <p>Completed</p> <p>On-going</p> <p>On-going</p> <p>On-going</p>
<p><i>Activity 3.2: Identification of national focal points/experts</i></p> <ul style="list-style-type: none"> - The appointment of the national focal points/experts of Thailand was done, and preparation of outline of the national STF Report and inputs by respective officers concerned to develop the national STF is going on. - For Indonesia, the appointment of national focal point will be done in October together with formalization of the proposal. 		<p>100% Completed</p> <p>On-going</p>
<p><i>Activity 3.3: National Consultations</i></p> <ul style="list-style-type: none"> - The National Workshop on National STF Philippines was organized from 27-28 January 2008, in the Philippines with participation of SEAFDEC to discuss and conclude the National STF Draft Report. The Report of National STF is under finalization. - The National Workshop on National STF Thailand plans to be conducted in early December 2008. 		<p>80% Completed</p> <p>On-going</p>

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Component 1: Streamline Reporting of Fishery Statistics from the Member Countries to FAO and SEAFDEC through the new framework of SEAFDEC Fishery Statistical Bulletin of Southeast Asia		
<p><i>Activity 1.1: Streamline Reporting of Fishery Statistics from the Member Countries to key partner agencies and SEAFDEC through harmonized questionnaires</i></p> <ul style="list-style-type: none"> - The process to Streamlined Reporting of Fishery Statistics in Southeast Asia will be continued, making use of the regional framework and questionnaire developed. - Database on fishery statistics in Southeast Asia based on the Framework will be developed to facilitate data reporting and query and analysis on status and trend of fisheries - New set of Questionnaires that harmonized with FAO will be dispatch to the ASEAN Member Countries. And outcomes of returned statistics and the process for compilation and analysis need to be monitored and follow-up in 2009 and beyond. 	Jan.– Dec.	
Component 2: Harmonization of Standards/Norms, Classification and Definition of Fishery Statistics and Information in the Region		
<p><i>Activity 2.1: Participation in relevant international, regional and national development of standards, norms, classification and definition for fishery statistics and information at the international and regional levels</i></p> <ul style="list-style-type: none"> - SEAFDEC will represent the region to participate in the CWP Meeting and FIRMS Steering Committee Meeting to provide inputs in the development of standards/norms, improving better analysis and presentation; as well as to discuss and follow-up on-going/new issues/initiatives related to data and information for fisheries management that are concerned for the region. 	Jan.-Dec.	
Component 3: Status and Trends of Fisheries and Aquaculture in Southeast Asia (STF)		
<p><i>Activity 3.1: Visits the Member Countries for the Planning Consultation and Following-up work</i></p> <ul style="list-style-type: none"> • <i>Philippines:</i> <ul style="list-style-type: none"> - Follow-up the Report of National STF. • <i>Thailand:</i> <ul style="list-style-type: none"> - Monitor the progress of work on the Draft National STF Report (in Thai and English) and participate in the National Workshop on National STF Thailand to discuss and conclude the activity. • <i>Vietnam:</i> <ul style="list-style-type: none"> - Follow-up and finalize the proposal as well as formalization of the activity; and involve in the process to develop National STF by participate in the National Consultation. • <i>Indonesia:</i> <ul style="list-style-type: none"> - Follow-up and finalize the proposal as well as formalization of the activity; and involve in the process to develop National STF by participate in the National Consultation. 	Jan.-Sept.	

<p><i>Activity 3.2: Identification of national focal points/experts</i> - Coordinate with Vietnam for the appointment of the National Focal Point</p>	<p>Jan.-Mar.</p>	
<p><i>Activity 3.3: National Consultations</i> - National Workshop to conclude the National STF of Indonesia and Vietnam</p>	<p>Jan.-Sept.</p>	
<p><i>Activity 3.4: Regional Technical Consultation</i> - The Regional Technical Consultation will be organized to present, discuss and conclude the outcomes of the National STF of 3-4 pilot countries experience. The direction and recommendation for future development of STF at regional level will be identified. The Consultation will also assess the current status and improvement of fishery statistics system of the ASEAN Countries.</p>	<p>Oct./Nov.</p>	

4.2 Expected Outcomes

1. Streamlined data reporting from the Member Countries to SEAFDEC and FAO, including the harmonized questionnaires;
2. Norms/standards definitions and classifications of fishery statistics and information better harmonized, and issues/areas of regional uniqueness and specification harmonized at regional and international levels;
3. Better utilization and harmonized information from projects implemented by SEAFDEC relevant to fisheries management in Southeast Asia.
 Framework/concept, process, and mechanism for production of STF from 3 pilot countries to be applied at regional level and other countries in Southeast Asia.

PROGRAM DOCUMENT

Program Category: Programs under the ASSP-FCG Mechanism

Program Title: Responsible Fishing Technologies and Practices (Fishing in harmony with nature)

Lead Department: TD

Lead Country: Thailand

Duration: 2009

1. INTRODUCTION

SEAFDEC Training Department has implemented the Project on Responsible Fishing Technologies and Practices in collaboration with Southeast Asian countries based on the project formulation prescribed by the Resolution and Plan of Action endorsed at the Millennium Conference in 2001 and also the regional program planning meeting in 2005 for the Special 5-year Program on Sustainable Fisheries for Food Security in the ASEAN Region (2006-2010)

The activities on the development of and experiment on Juvenile and Trash Excluder Devices (JTEDs) have been conducted in the Asian region with the support of Japanese Trust Fund III in conjunction with the additional support of FAO/UNEP/GEF Project on Reduction of Environmental Impact from Tropical Shrimp Trawling through the Introduction of By-catch Reduction Technologies and Change of Management. Through those activities JTEDs have been recognized in the region as effective devices in the reduction of juveniles of commercial species caught by trawl fishing. As a result, several countries have already adopted the compulsory use of JTEDs in trawl fishing.

The research and study on the impact of fishing on the environment and ecosystem have been conducted in cooperation with the Department of Fisheries, Thailand, and the Bureau of Fisheries and Aquatic Resources (BFAR) of the Philippines with the support of Tokyo University of Marine Science and Technology, Japan, and Kasetsart University, Thailand.

The interaction between threatened species of international concern and fisheries has also been studied and investigated, whose focus is particularly on the effectiveness of the use of TEDs in reducing sea turtle mortality. Besides, the information and data on sea turtle mortality has been collected in the region in collaboration with member countries of SEAFDEC and with the assistance of countries of IOSEA/MOU in providing them. SEAFDEC has made a great contribution to many international meetings and conference through the presentation of its achievement in the promotion of the use of TEDs and circle hooks.

Another work is the compilation on fishing gear and methods in Southeast Asia. The survey for this purpose was conducted in most of member countries and found that fishing gear monographs of SEAFDEC are used as handbooks for fishermen and gear technologists in the region.

Under the current situation of high cost of fuel and increasing concern about global warming that most likely affects the environment, SEAFDEC Training Department proposed the development and promotion of energy saving technologies in fishing operations.

The above-mentioned activities under this Project should be evaluated and continued in the year 2009 in order to further promote responsible fishing technologies and practices under the Regional Guideline for Responsible Fishing Technologies and the FAO Code of Conduct for

Responsible Fisheries along with the Resolution and Plan of Action for Food Security in the ASEAN region.

2. PROGRAM

2.1 Objectives

- 1) To promote responsible fishing technologies and practices through the introduction, demonstration, experiment and training in fishing gear selectivity and devices to reduce the capture of juveniles of commercial species, trash fish and by-catch of endangered species
- 2) To review, investigate and study the effects of fishing such as light fishing on ecosystem and other effects of fishing on the bottom of the sea and environment
- 3) To promote the reduction of mortality of threatened species such as sea turtles and other animals due to interactions with fisheries and collect the information on the interactions
- 4) To promote technologies in order to save energy and the use of alternative sources of energy in fisheries, including the issue of safety at sea
- 5) To raise awareness on responsible fishing by producing and disseminating promotional materials and working in cooperation with SEAFDEC member countries and other organizations at the regional and international level

2.2 Program description

Since the year 2008, the implementation of the project has been supported by Japanese Trust Fund III, in conjunction with GEF/UNEP/FAO Project on Sustainable Tropical Shrimp Trawl and others such as Tokyo University of Marine Science and Technology (TUMSAT). TD will manage and continue all project activities as a responsible Department for this project. Collaborative arrangements with FAO, TUMSAT and DOF of member countries and other organizations and institutes will be made through the implementation of the project. They will include staff exchanges, the dispatch of experts and participation in meetings/workshops.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

3.1 Research and development of selective fishing gears and devices for reduced discards and by-catch of juvenile and trash in the region

The questionnaires for JTEDs assessment were designed and prepared to be used in Malaysia and Indonesia. A discussion on the schedule was made during the fishing gear survey in Jakarta from 21-22 August 2008. JTEDs assessment was conducted in Indonesia from 7-11 October 2008. Moreover, the questionnaires of crab trap were designed and developed. The program of research survey in Thailand was conducted to collect data and analyze them in October 2008.

3.2 Research and study of the assessment of impacts of various kinds of fishing gear and practice on fisheries resources, sea beds, environment and ecosystem

Concerning the impact of light fishing, questionnaires were designed and developed. The research and collection of data in the Philippines and Thailand were conducted in March 2008. As well, a workshop on impact of fishing including light fishing in Southeast Asia will be organized in November 2008.

3.3 Interaction between threatened species of international concern and fisheries

The information on interactions of sea turtles and fisheries from the IOSEA meeting in Bali 18-22 August 2008 was compiled and a focal point meeting is under preparation to be organized in November 2008. In order to exchange information in the network concerned, the representative of the project participated in six international meetings that are related to responsible fisheries. They are:

- WIO-Marine Turtle Task Force in Tanzania, 26 February-2 March 2008.
- The Regional Workshop on Fish Trawling Management in Iran, 14-17 April 2008
- National Coordinators Meeting and ICES-FAO Working Group on Fishing Technology and Fish Behavior in Faroe Islands, 18-27 April 2008
- A Workshop on Monitoring, Control and Surveillance in Bangladesh, 5-9 June 2008
- Tropical Shrimp Experts Workshop in Darwin, Australia, 21-26 July 2008
- The 5th SSS/IOSEA in Indonesia, 18-23 August 2008

3.4 Review and categorization of the compilation of fishing gear and methods in Southeast Asia

A monograph of fishing gear in Myanmar is in process of finalization for publishing. Fishing gear survey and data collection were conducted in Bali and Jakarta in August 2008.

3.5 Production of promotion materials and technical papers

A video of Reduction of Environmental Impact from Tropical Shrimp Trawling in Southeast Asia and the Study of Luring Light Effects on the Squid Behavior are in process of production. Promotion materials such as polo shirts and mouse pads were produced and distributed to target groups for awareness building on responsible fisheries.

Project Activities

Program/Project /Activities	Duration	Remark
1. Research and development of selective fishing gears and devices for reduced discards and by-catch of juvenile and trash in the region		
▪ Assessment of JTEDs implementation	Jan-Aug.	80%
• Research and development on selective devices in trawl and other fishing gears	Jan-Nov	On going
• Promotion on the use of selective fishing gears and selective devices	Jan-Oct	90%
2. Research and study of the assessment of impacts of various kinds of fishing gear and practice on fisheries resources, sea beds, environment and ecosystem		
• Research and study on impacts of light fishing on fisheries resources in Southeast Asia	Mar.-Nov.	80%
• Research and study on impacts of bottom trawl net, dredges, traps and others	Jan-Dec	On going
• Workshop on impacts of fishing including light fishing in Southeast Asia	Jan-Nov.	On going
3. Interaction between threatened species of international concern and fisheries		
• Information collection on interaction of endangered species and fisheries	Jan.-Nov.	70%

<ul style="list-style-type: none"> • Study on the assessment of the implementation on interaction guidelines and its impact on fisheries 	Apr.-Nov.	70%
<ul style="list-style-type: none"> • Participation in international meetings for information exchange on interaction of endangered species and fisheries 	Feb-Aug.	Completed
4. Review and categorization of the compilation of fishing gear and methods in Southeast Asia		
<ul style="list-style-type: none"> • Finalization of the Myanmar Publication 	Jan.-Dec	80%
<ul style="list-style-type: none"> • Field survey and data collection in Indonesia 	Aug	Completed
5. Production of promotion materials and technical papers		
<ul style="list-style-type: none"> • 1.5.1 Production and dissemination of information package 	Jan.-Dec.	70%

1. PROPOSED ACTIVITIES FOR THE YEAR 2008

4.1 Planning of the Project Activities

Program/Project /Activities	Duration	Remark
1. Research and development of selective fishing gears and devices for reduced discards and by-catch of juvenile and trash in the region		
<ul style="list-style-type: none"> • Assessment of JTEDs implementation 	Feb-Nov 09	
<ul style="list-style-type: none"> • Research and development on gear selectivity and devices 	Feb-Nov 09	
<ul style="list-style-type: none"> • Promotion on the use of selective fishing gears and selective devices 	Mar-Apr, Sep-Nov 09	
2. Research and study of the assessment of the impacts of various kinds of fishing gear and practice on fisheries resources, sea beds, environment and ecosystem		Collaboration with TUMSAT
<ul style="list-style-type: none"> • Research and study on impacts of light fishing on fisheries resources in Southeast Asia 	Mar-Nov 09	
<ul style="list-style-type: none"> • Research and study on impacts of bottom trawl net, dredges, traps and others 	Mar-Nov 09	
3. Interaction between threatened species of international concern and fisheries		
<ul style="list-style-type: none"> • Information collection on interaction of endangered species and fisheries 	Jan-Nov 09	
<ul style="list-style-type: none"> • Study on the assessment of the implementation on interaction guidelines and its impact on fisheries 	Apr-Nov 09	
<ul style="list-style-type: none"> • Participation in international meetings for information exchange on interaction of endangered species and fisheries 	Feb-Mar 09	
4. Study and promotion on energy saving technology and alternative energy sources for fishing operations in Southeast Asia		
<ul style="list-style-type: none"> • Review on energy saving technology and alternative energy sources for fishing operations 	Jan-Apr 09	
<ul style="list-style-type: none"> • Promotion on the use of wind energy for sail boats 	Mar-Dec 09	

<ul style="list-style-type: none"> • Study on the use of natural gas for fishing boats 	Mar-Dec 09	
5. Production of promotion materials and technical papers		
<ul style="list-style-type: none"> • Production and dissemination of information package 	Jan-Jun 09	
<ul style="list-style-type: none"> • Preparation of FAO/ICEC FTFB meeting in Bangkok 2010 	Mar-May 09	Collaboration with FAO/ICEC

4.2 Expected Outcome

- Responsible fishing technologies and practices will be promoted in SEAFDEC member countries and worldwide through the introduction, demonstration, experiment and training in fishing gear selectivity and devices to reduce the capture of juveniles of commercial species, trash fish and by-catch of endangered species.
- The investigation and study of the effects of fishing such as light fishing on ecosystem and other effects of fishing on the bottom of the sea and environment will be implemented and the result of those activities will be distributed to SEAFDEC member countries.
- The reduction of mortality of threatened species such as sea turtles and other animals due to interactions with fisheries will be promoted in the region through activities including the collection of the information on the interactions
- The technologies in order to save energy and the use of alternative sources of energy in fisheries, including the issue of safety at sea will be promoted among fishermen in the region to save cost of fishing operation.
- The promotion materials on responsible fishing will be produced and disseminated to SEAFDEC member countries and other organizations inside and outside the region.

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Sustainable Utilization of Potential Fisheries Resources and Reduction of Post-harvest Losses

Lead Department: TD

Total Duration: from 2006 to 2009

1. INTRODUCTION

Regarding fisheries resources in Southeast Asian (SEA) region is currently heavily exploited. Most of the fisheries resources were harvested in the coastal zone of offshore area where the depths of waters lower than 100m. Consideration for the geo-topographic features in the region found that more than 50% of the sea area is classified as deep-sea and most of the fishers in the region have not utilized yet. It is expected that many potential resources such as in the un-trawlable areas, sea mounts, and deep-sea basins are existing in many seas in the SEA region. This is why SEAFDEC/TD proposed to identify these potential resources in cooperation with Member Countries. The activities will be conducted and developed together with the development of appropriate technology.

In addition to maximize the utilization of resources as well as to reduce the post-harvest losses, developing of the appropriate fish handling technology is one of the important issues to support the sustainable utilization of potential. As it was mentioned that onboard fish handling and preservation techniques are main problems in many Member Countries which need to be developed. In Member Countries, there are different designs of fishing boat and different fish handling technologies, SEAFDEC will also look for appropriate and cost-effective technology for fishers to solve the problem of fish freshness/quality. Technology transfer to Member Countries will be one of the activities.

2. PROGRAM

2.1 Objectives

- 1 Conduct/support the actual survey, and analyse the potential fisheries resources of some economically and important species on the un-trawlable grounds in the Southeast Asian (SEA) countries, through the collaborative research programs/activities using MV SEAFDEC2 and/or other research vessels;
- 2 Research and Development (R&D) on the appropriate and responsible fishing gear and practices for sustainable development and management of the fisheries resources on un-trawlable grounds in SEA region;
- 3 R&D on the environmental and user friendly for reduction of the post-harvest losses for fish handling at sea, economically;
- 4 Disseminate information on the potential resources on un-trawlable grounds, and technology transfer technology for reduction of its post-harvest losses.

2.2 Program description

Understanding the potential of under-utilized fisheries resources and promote their exploitation in a precautionary manner in the Member Countries through the collaborative research program among SEAFDEC and the Member Countries will be focused/developed (based on the utilization of MV SEAFDEC2 under the cost-sharing policy. The preliminary results from these collaborative surveys included new findings on the potential resources will be reported to individual concerned

country. From the regional point of view, further step of the programs is technology transferring of the appropriate fishing technology for harvesting of the under-utilized fisheries resources to SEAFDEC Member Countries, together with the technology transfer on the appropriate onboard fish handling technology to reduce the post-harvest losses and improving the fish quality and food safety levels.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Project/Activity Title	Duration	Remarks
Activity1: Consultation Visit	Mar-Nov	100%
Activity2: Supporting of Actual Survey, Data Collection, Data Management System , and Data Analysis	Jan-Dec	50%
Activity3: Develop and promote fishing and fish handling techniques for reduction of post-harvest losses	May-Oct	50%
Activity4: Production of information packages	Aug-Dec	40%

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
<p>Activity 1: Data collection on fishery resources</p> <p>The collaborative research survey on potential of under-utilized resources in member countries will be conducted in cooperation with the national research program of each member country using of MV. SEAFDEC2 (under the cost-shared policy), or carry out by supporting other research vessels in collaboration with the Member Countries. The survey areas will be focused in the EEZ of the Member Countries and/or trans-bordering areas, particularly in un-trawlable grounds. The results of the survey will be analyzed at the national and regional levels. In case that the actual survey by using MV. SEAFDEC2 could not be carried out, data collection will be made through various sources, such as the participation of the staff to the relevant meetings/workshops. Activity plan for this includes consultation visits, and fishery resources data collection through actual survey and/or from the meeting/workshop (either to be organized by SEAFDEC or other relevant initiatives/organizations).</p>	Feb – Dec	

<p>Activity 2: R&D on appropriate sampling gears, and environmental/users friendly fish handling techniques</p> <p>To explore the under-utilized resources in the un-trawlable grounds, R&D on suitable fishing/sampling gears (e.g. deep-sea traps, longline, etc.), fishing operation techniques, and instrument and machineries will be continually carried out through the use SEAFDEC's and/or other research vessels. In addition, environmental/user friendly fish handling and preservation techniques, in particular for the high value species from un-trawlable grounds will also be developed. In addition, fishing trial for testing the gears/instrument will be carried out. For future practical tool that will be used for checking quality of the catch preserved by each techniques, a study/review on freshness detection toolkit will also be conducted under this activity.</p>	<p>Jan – Jul</p>	
<p>Activity 3: Human resources development (HRD)</p> <p>The regional HRD programs/activities on: (i) sampling/fishing gear, techniques, and machineries; and (ii) environmental/user friendly fish handling and preservation techniques, will be carried out through shipboard training activities by SEAFDEC's and/or other research vessels in close collaboration with the Member Countries and other relevant initiatives. Activities under this program include: on-the-job training for research methods on the fisheries resources survey/exploration in the un-trawlable grounds; and onsite training course on the environmental friendly fish handling and preservation techniques.</p>	<p>Feb – Dec</p>	
<p>Activity 4: Information dissemination</p> <p>Information dissemination will be made through various sources, including SEAFDEC's Webpage, brochures, publications, information packages (CDs, DVDs, manual), reports, etc.</p>	<p>Aug – Dec</p>	

4.2 Expected Outcomes

- Evaluation of the potential resources of some economically species on the un-trawlable grounds in the Andaman Sea covering three major countries including Indonesia, Thailand and Myanmar through the collaborative programs using MV SEAFDEC2 and other research vessels;
- Development and promotion of the appropriate sampling gears, and environmental/users friendly fish handling techniques;
- Organization of the workshop on potential resources of some economically species on the un-trawlable grounds in the Andaman Sea (three countries and SEAFDEC); and
- Human capacity building programs/activities on research works concerning harvesting/sampling on the un-trawlable grounds.

1. PROJECT DOCUMENT

Program Category: Programs under the ASSP-FCG Mechanism

Project Title: Development of Technologies and Human Capacity Building for Sustainable Aquaculture

Lead Department: AQD

Lead Country: SEAFDEC Member Countries

Total Duration: 2006-2010

Proposed 2008 Budget: USD 110,600

1. INTRODUCTION

An initial evaluation of the outcome of the Aquaculture Component of the Special Five-year Program, implemented from 2002 to 2005, was done during the Regional Planning Meeting for the Special Five-year Program in February 2005. During the Regional Planning Meeting, the member countries considered the implementation of the Aquaculture Component a success. However, the member countries also identified specific areas that require further development. Some member countries that have ongoing activities on research and technology development for aquaculture still expressed the need for some aspects of aquaculture that should be further developed.

The Planning Workshop for the Special Five-Year Program (Aquaculture Component) 2006-2010 was conducted by AQD in Bangkok, Thailand from 30 November to 2 December 2005 in order to: develop a five-year plan of action for 2006-2010 that would address the various concerns in sustainable aquaculture development (i.e., freshwater aquaculture of indigenous species; integrated aquaculture system; coastal aquaculture and mariculture; and captive broodstock development). The Workshop participants representing the ASEAN-SEAFDEC member countries confirmed and prioritized the activities considering the limited budget for the program.

The output of the Planning Workshop was endorsed for implementation under the FCG collaborative mechanism during the 28th Meeting of the SEAFDEC Program Committee in Bangkok, Thailand in December 2005. The priority activities for 2006 were approved for implementation by the SEAFDEC Council during its 38th Meeting in Brunei Darussalam in April 2006. Specifically, the activities for 2006 were re-prioritized and the budget re-adjusted to correspond to the approved budget allocation for 2006.

Specifically, during the February 2005 Regional Planning Meeting, the member countries raised the following issues that need to be addressed: (1) consistent supply of quality seeds for various priority aquatic commodities to support the aquaculture industry in respective countries; (2) access to developed captive broodstock technology for important aquatic commodities; (3) environment-friendly culture technologies that promote socio-economic development and rural livelihood while optimizing the utilization of resources and inputs; (4) ecologically sound farm management; (5) conservation of ecosystems and biodiversity; (6) development of low fish meal, cost-efficient and environment-friendly aquafeeds; (7) diagnosis and control of aquatic diseases; and (8) monitoring and surveillance of occurrence of aquatic diseases. Although initial efforts have been made to address certain regional aquaculture issues during the implementation of the Special Five-Year Program from 2002 to 2005, there is a need to continue the activities that have been started in order to address the aforementioned concerns.

2. PROGRAM

The program is intended to address regionally relevant technology needs for sustainable aquaculture in the areas of broodstock development, genetic improvement, seed production, and culture systems of various priority species for aquaculture, through research and human capacity building.

2.1 Objectives

Specifically, the Program aims to:

1. Establish consistent supply of quality seeds through the establishment and promotion of captive broodstock of selected species and refinement of larval rearing techniques;
2. Promote ecologically sound aquaculture farm management by refining existing grow-out systems with the aim of increasing production, environmental sustainability and satisfying international trade standards;
3. Establish database on nutrient requirement of priority species and nutrient composition and digestibility of feed ingredients in order to develop cost-efficient feeds utilizing locally available materials that are low in fish meal and environment-friendly;
4. Develop the human resource in the region in sustainable aquaculture through training, farm demonstration, production of training materials like manuals and handbooks, and mobilization of experts within the region.

2.2 Program description

From the outcome of the February 2005 Regional Planning Meeting for the Special Five-Year Program, which were confirmed during the Planning Workshop for the Special Five-Year Program (2006-2010): Aquaculture Component held in Bangkok, Thailand, 30 November-2 December 2005, it was decided that AQD would implement the following activities from 2006 to 2010 as part of the Program on the Promotion of Sustainable Aquaculture in the ASEAN Region under the ASEAN-SEAFDEC Fisheries Consultative Group (FCG) collaborative mechanism: (i) Development of Technologies for Sustainable Aquaculture; and (ii) Human Capacity Building for Sustainable Aquaculture. The focus of the activities has been on the following: (i) freshwater aquaculture of indigenous species; (ii) Integrated aquaculture system; (iii) coastal aquaculture and mariculture; and (iv) captive broodstock development and seed production.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

The project “Development of Technologies for Sustainable Aquaculture” was merged with the project “Human Capacity Building for Sustainable Aquaculture”, and a new project entitled “**Development of Technologies and Human Capacity Building for Sustainable Aquaculture**” has been operational since 2008.

Project/Activity Title	Duration	Remarks
Freshwater Aquaculture of Indigenous Species	All year around	70 % accomplishment
Integrated Aquaculture System	All year around	70 % accomplishment
Coastal Aquaculture and Mariculture	All year around	70 % accomplishment
Captive Broodstock Development and Seed Production	All year around	70 % accomplishment

3.1. Freshwater Aquaculture of Indigenous Species

3.1.1 Genetic improvement of *Macrobrachium rosenbergii*

(1) Improvement for better seed production traits and grow-out characteristics

(a) Domestication and genetic evaluation of the indigenous giant freshwater prawn subspecies *Macrobrachium rosenbergii rosenbergii*

- Research facility was damaged by the typhoon; hence, the study has been temporarily postponed.
- Broodstock prawn from Zarraga, Leganes has been collected. Some have spawned and produced larvae which are being reared at different salinities to determine the optimum salinity.

(b) Genetic characterization of commercially important Philippine stocks of freshwater prawn, *Macrobrachium sp.*, using DNA markers

- mtDNA-RFLP analysis at the cytochrome oxidase gene showed that genetic variation was highest for the Leganes *M. rosenbergii rosenbergii* followed by Zambales stock, Liguasan Marsh stock, Calumpit stock, BFAR *M. rosenbergii dacuquit* stock and Liguasan Marsh *M. mamillodactylus* stock.
- mtDNA-RFLP variation at the 16sRNA is low. DNA-sequence variation data on the same stock have been completed and will soon be analyzed.

(2) Publication of a manual for the identification of commercially important freshwater prawns

- The manual is currently being edited and reviewed and will be published in 2008.

3.2. Integrated Aquaculture System

3.2.1. Rice-Fish Aquaculture (Cambodia)

- Seven villages were selected for appropriate sites based on geographical observation
- Local resources and living condition of the selected sites were investigated.
- The training was conducted for selected 20 farmers.
- After inspecting pond condition, silver barb, silver carp and common carp were stocked in ponds of the selected 10 farmers, according to the geographical and weather conditions.

3.3. Coastal Aquaculture and Mariculture

3.3.1 Development of strategies to extend the spawning season of sea bass (*Lates calcarifer*) under captivity

- During the March sampling, in the group in which temperature is maintained at 29-30 C, 25% of the fish were mature males (with milt) and another 25% were females (with oocytes).
- In April, among the fish kept in tanks with heater, 67% of the males and 50% of the females were mature.
- The female from the heated tanks produced more eggs (2.9 million) than the female from the control tank (0.3million).
- For the May sampling, 87.5% of the fish from the heated tanks were mature. Moreover, 2 previously male fish have changed sex and were sampled as mature females.

- In May, the female from the heated tank produced more eggs and larvae (1.6 million) than the female from the control tank (0.47 million).
- Spawning induction yielded higher egg production in fish in the heated tanks compared with fish in the control tank in June, July and August, respectively.
- Results suggested that a slight change of water temperature affects the gametogenesis and consequently spawning even in tropical fish.

3.3.2 International training course on marine fish hatchery

Funded by GOJ-TF, the training course on Marine Fish Hatchery was conducted from 20 May to 25 June 2008 with nine participants from Lao PDR, Myanmar, Vietnam, Saudi Arabia, France, and Philippines. Of the nine participants, 4 had GOJ-TF fellowship grant and 5 were from the private sector. The course provided the participants with basic technical knowledge and skills in operating marine fish hatcheries with focus on milkfish, grouper, seabass, and rabbitfish.

3.3.3 International training course on abalone hatchery

Funded by the Government of Japan Trust Fund (GOJ-TF), the training course on Abalone Hatchery and Grow-out was conducted on 07-27 May 2008 with nine participants from Indonesia, Malaysia, Myanmar, Sultanate of Omar and the Philippines. Of the 9 participants, 4 had GOJ-TF fellowship grant, and 5 were from the private sector. The 20-day training provided the participants with technical knowledge and skills on the hatchery and grow-out culture of abalone.

3.3.4 Development of tissue culture techniques for mass production of plantlets of 'new and improved' strains of Kappaphycus

- Cell-cultured microplantlets of 4 varieties were transferred to outdoor cages, and they are currently being cultivated.
- 14 varieties were collected, and sections of them have been under cell-culture in the laboratory.
- Young plants presently grown in perforated transparent plastic bottles in tanks.

3.3.5 Socioeconomic impact on the adoption of sustainable aquaculture technologies in fisherfolk communities

- The study covers the four areas in Northern Samar where the Institutional Capacity Development on Sustainable Aquaculture (ICD-SA) project is introducing mud crab culture (nursery to grow out including fattening) among organized groups in coastal communities.
- Literature review on technology adoption was conducted.
- Consultation /meeting with technology specialists and facilitators were conducted.
- Members of the People's Organizations (POs) were interviewed using a revised questionnaire; data on the questionnaire are currently being analyzed.

3.3.6 Technical assistance for pilot demonstration on mud crab grow-out culture in Myanmar

- The Project site was seriously damaged by the Cyclone, and the Project was temporarily postponed. Hence, the project was initiated only in October.

- A trainee from Myanmar participated in the International Training Course on Crab Seed Production in SEAFDEC/AQD (June 10-July 1, 2008)

The training course on Crab Seed Production was conducted on 10 June – 01 July 2008 with participants from Myanmar, USA, and Philippines. One of the participants from Myanmar was funded by GOJ-TF. The course provided the participants with technical knowledge and skills in crab seed production with emphasis on *Scylla serrata* so they can establish or operate a crab hatchery.

3.4 Captive Broodstock Development and Seed Production

3.4.1. Development of specific pathogen free (SPF) shrimp (*P. monodon*, *P. vannamei*) broodstock

(1) Genetic characterization of *P. monodon* broodstock

- Several DNA samples from Palawan, Agusan (in Surigao del Sur), Antique stocks of *P. monodon* were analyzed for mtDNA-RFLP using HaeIII, RsaI, MspI, EcoRI, TaqI and MboI.
- mtDNA-RFLP analysis of five DNA samples each from Negros *P. indicus* and Panguil and Surigao stocks of *P. merguensis* were also done using the same restriction enzymes.

(2) *Penaeus monodon* broodstock development: Studies on improvement of maturation of pond-reared *Penaeus monodon* broodstock

- Seven batches of wild postlarvae from Palawan and from Antique have grown to different sizes in concrete tanks. Body weight ranges were: 2-4g, 2-8g, 6-11g, 7-17g, 21-36g, 21-43g, and 50-80g.
- The first batch F1 has grown to 40 - 75 g and has been paired with the other stocks.
- The other F1 batches now have body weights ranging from 10-20 g and 40-60 g.
- The rest of the stocks are still being grown to broodstock size.
- Experimental diets containing marine annelid *Perinereis nuntia* were prepared.
- Feeding experiments are currently being conducted to compare the effects of the annelid on growth rate, and later on reproductive performance.

(3) Information exchange on status of *P. monodon* captive broodstock development in the region and the possible impact of the introduction of *P. vannamei* in the Region

- Malaysia, Thailand, Vietnam, Philippines and India have gone into domestication of *Penaeus monodon* but commercial scale breeding has been more challenging than *P. vannamei*.
- Domesticated SPF stocks are now available although in a more restricted basis than *P. vannamei*
- Production of *P. monodon* from ponds has decreased significantly as more countries in Asia are switching to *P. vannamei*.
- In the Philippines, there are 7 hatcheries and 38 grow-out farms accredited for *P. vannamei* culture.
- An unknown number of ‘gray hatcheries’, mostly in Luzon and at least two small ones in Mindanao are using F2 breeders.
- SPF and/or SPR broodstock should be sourced from accredited facilities in the U.S.A. At present, there are 10 of these accredited facilities.
- In Southeast Asia, several groups are working on the breeding programs for commercially important traits (growth, disease resistance, overall fitness) of *P. vannamei*.

3.4.2 Domestication of Mud Crab *Scylla serrata*

- First generation (F1) families were produced from Cagayan, Camarines Norte, Northern Samar, and Surigao del Norte.
- Three second generation (F2) families from Northern Samar have been produced 11-12 months after hatching (F1).
- The interval between 1st and 2nd spawnings was 34 - 59 days while interval between 2nd and 3rd spawnings was 33 - 34 days.
- Broodstocks were obtained from Camarines Norte and Surigao del Norte as additional base population.
- Antennae and muscle tissues of crabs from the four sites were extracted for DNA and tested for various PCR conditions.
- The protocol using sar-L and 16sbr-H primers for 16s genes gave better results.
- DNA samples were also subjected to mtDNA-RFLP analysis.
- Preliminary results showed no genetic distinction between sources.

4. PROPOSED ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project activities

The following activities have been identified for implementation in 2009:

Project/Activity Title	Duration	Remarks
Improvement for better seed production traits and grow-out characteristics of <i>Macrobrachium rosenbergii</i>	Jan-Nov 2009	
Rice-fish aquaculture: Economic study on the fish culture production in rice fields	Jan-Nov 2009	In Cambodia
Development of strategies to extend the spawning season of sea bass (<i>Lates calcarifer</i>) under captivity	Jan-Nov 2009	
Development of tissue culture techniques for mass production of plantlets of new and improved strains of <i>Kappaphycus</i>	Jan-Nov 2009	
Socioeconomic impact on the adoption of sustainable aquaculture technologies in fisherfolk communities	Jan-Nov 2009	
Training course on marine fish hatchery	May-June 2009	
Training course on abalone hatchery	June-July 2009	
Technical assistance for pilot demonstration on mud crab grow-out culture in Myanmar	Jan-Nov 2009	In Myanmar
Development of Specific Pathogen Free (SPF) shrimp (<i>P. monodon</i> , <i>P. vannamei</i>) broodstock	Jan-Nov 2009	
Domestication of Mud Crab	Jan-Nov 2009	

4.1.1 Freshwater Aquaculture of Indigenous Species

*4.1.1.1 Genetic Improvement of *Macrobrachium rosenbergii**

- (1) Improvement for better seed production traits and grow-out characteristics
- (a) Domestication and genetic evaluation of the indigenous giant freshwater prawn subspecies *Macrobrachium rosenbergii rosenbergii*:

Assessment of breeding and reproductive performance:

- To refine existing breeding and husbandry techniques for the successful domestication of wild *Macrobrachium rosenbergii rosenbergii* stocks and other closely related species;
- To evaluate and compare the reproductive performance of the different local *M. rosenbergii* stocks and species for use in future genetic improvement work;

Evaluation of performance in grow-out:

- To determine growth and survival of *M. rosenbergii rosenbergii* in lake based cages at different culture conditions.

4.1.2 Integrated Aquaculture System

4.1.2.1 Rice-Fish Aquaculture: Economic study on the fish culture production in rice fields (Cambodia)

Rice-fish culture will be one of the vital small-scale aquaculture systems in Cambodia where the farmers are only engaging in rice production. It is considered as an effective aquaculture system that can be easily integrated with any kinds of rice systems.

In 2009, the following activities will be conducted:

- Continuation of follow-up activities with selected farmers;
- Introduction of rice-fish system to other district of the existing targeted province and apply such tool to other province to improve technology .
- Gathering of more accurate data and information in order to develop the aquaculture technology of one-year rice-fish program;
- Publication of an appropriate technical handbook for the country.

4.1.3 Coastal Aquaculture and Mariculture

*4.1.3.1 Development of strategies to extend the spawning season of sea bass (*Lates calcarifer*) under captivity*

The main objective of the study is to establish fry production technologies which can supply a stable amount of seeds through the year. The following activities will be conducted in 2009:

- Continuation of spawning induction by temperature manipulation especially during winter season;
- Investigation if the temperature affects the gametogenesis and consequently spawning even in tropical fish.

*4.1.3.2 Development of tissue culture techniques for mass production of plantlets of 'new and improved' strains of *Kappaphycus**

Seaweed aquaculture is a big industry in ASEAN countries. However, work has not yet been done on mass production of plantlets to obtain sufficient biomass for possible source of

cultivars for large-scale outplanting. To establish the mass-production technologies of new and improved plantlets, the following activities will be conducted in 2009:

- Optimization of shoot formation of other varieties of *Kappaphycus*;
- Mass production of microplantlets in preparation for land-based nursery;
- DNA fingerprinting of developed *Kappaphycus* plants from tissue culture.

4.1.3.3 *Socioeconomic impact on the adoption of sustainable aquaculture technologies in fisherfolk communities*

This study aims to analyze socio-economically the advantage of promoting sustainable aquaculture technologies in fisherfolk communities. The following activities will be conducted:

- Determination of user rights and identification of potential conflicts with the adoption of the technology;
- Analysis of the socioeconomic impact of technology adoption on the livelihood of fisherfolk household;
- Investigation of the factors influencing the adoption of the technology;
- Assessment of users' attitude towards the technology and recommend measures to ensure sustainable utilization of the resources.

4.1.3.4 *International training course on marine fish hatchery*

The course will provide the participants with technical knowledge on the spawning and larval rearing of marine fishes to enable them to operate a fish hatchery or a multi-species hatchery.

4.1.3.5 *International training course on abalone hatchery*

The course aims to provide participants with technical knowledge and skills on seed production and grow-out culture of abalone and enable them to operate hatchery, nursery or grow-out farm of abalone.

4.1.3.6 *Technical assistance for pilot demonstration on mud crab grow-out culture in Myanmar*

To sustain the livelihood of the fisherfolk and strengthen the export earning of the country, mud crab culture utilizing environment-friendly technologies need to be introduced by setting-up demonstration farms. Hence, the, activities will comprise the following:

- Development of mud crab culture to improve livelihoods of coastal communities;
- Production of good quality seeds for supply to farmers;
- Transfer of seed production and culture techniques to farmers.

4.1.4 **Captive Broodstock Development and Seed Production**

4.1.4.1 *Development of Specific Pathogen Free (SPF) Shrimp (P. monodon, P. vannamei) Broodstock*

Many shrimp farms continue to use wild stocks, and the use of wild shrimp stocks results in unpredictable farm yields caused by inconsistent nauplii quality and source. Domestication and breeding program that considers selection for beneficial heritable traits should be

implemented to improve seed and broodstock quality. This activity will comprise the following studies.

(1) Genetic characterization of *P. monodon* broodstock

This study is aimed at a) identification of potential sources of good quality tiger shrimp broodstock and development of healthy broodstock from highly genetically variable wild stocks, and b) development of effective management and selective breeding of good quality tiger shrimp (*P. monodon*) with molecular genetic tools:

- Genetic characterization of wild as well as existing captive *Penaeus monodon* broodstock;
- Generation of baseline information on the genetic diversity of different hatchery and wild tiger shrimp stocks;
- Monitoring of genetic changes (DNA-level) and reduction of inbreeding in succeeding generations of selectively-bred *P. monodon* stocks (important to effectively manage and sustain the genetic gains obtained through selective breeding.).

(2) *Penaeus monodon* broodstock development: Studies on improvement of maturation of pond-reared *Penaeus monodon* broodstock

This study is aimed at a) producing domesticated broodstock of *P. monodon*, and b) genetically selecting the broodstock for desired heritable characteristics, particularly disease resistance while maintaining or even improving favorable inherent traits:

- Screening of collected broodstock and production of juveniles for diseases;
- Improvement of protocols for the production of good quality high health captive spawners;
- Improvement of fertilization and hatching rates of eggs of pond-reared spawners;
- Continuation of activities to develop broodstock diets.

4.1.4.2 Domestication of Mud Crab *Scylla serrata*

In order to develop a husbandry technology for the sustainable supply of good quality captive broodstock of the mud crab *S. serrata*, the following two studies will be implemented.

- Generation of baseline information on the genetic diversity of mud crab species from various sources;
- Monitoring of genetic changes and reduction of inbreeding in succeeding generations of selectively-bred mud crab stocks;
- Development of protocol for the production of spawners from captive mud crab;
- Improvement of growth and reproductive performance of the succeeding generations of captive mud crabs;
- Maintenance of family lines.

4.1.5 International Workshop

International Workshop will be held to review the Project achievements, alongside the other Japanese Trust Fund Projects (TF4) (“Development of Fish Surveillance System” and “Stock Enhancement for Threatened Species of International Concern”). All study leaders and the Project Leader will attend meetings. Evaluators could be invited to join the Workshop to review the project achievements and to make research plans and project scheme for the next Project (TF5).

* Activities of publication of manual/text book will be continued in 2009.

4.2 Expected Outcomes

The following outputs are expected in the year 2009:

- Giant Freshwater Prawn: Breeding/husbandry and grow-out techniques of indigenous giant freshwater prawn will be refined; genetic traits will be assessed for the domestication program;
- Rice-Fish Culture: Fish culture production in rice fields will be practiced and disseminated in many sites of Cambodia;
- Sea Bass: Techniques of spawning induction by water temperature control will be established;
- Seaweed: Technology for the mass production of plantlets with improved traits will be developed;
- Socioeconomics: Factors that influence the adoption of technologies will be identified; policy recommendation for promoting sustainable aquaculture in fisherfolk will be prepared;
- Mud crab farming in Myanmar; Mud crab culture will be further promoted in Myanmar;
- Training: Technologies of abalone seed production and hatchery and nursery of marine fishes which have been developed by SEAFDEC/AQD will be disseminated further in the SEAFDEC member countries;
- Specific Pathogen-Free Shrimp: 1) Genetic characteristics of *P. monodon* will be elucidated, providing base-line information of selective breeding, and 2) Techniques on reproductive performance and survival/growth of larvae will be improved, and produced family line will be maintained;
- Domestication of Mud Crab: 1) Genetic characteristics of mud crab will be elucidated and will provide baseline information for selective breeding ; 2) Techniques on reproductive performance and survival/growth of larvae will be improved and produced family line will be maintained;
- International Workshop will be held to review the Project achievements and make research plans and project scheme for the next Project (TF5).
- (11) Project achievements will be arranged, and the Report will be prepared.

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Quality Assurance Systems for Small and Medium-sized Fish Processing Establishments in ASEAN member countries

Lead Department: MFRD

Lead Country: Singapore

Total Duration: 2007-2011

Proposed Budget: US\$43,000 (2009)

1. INTRODUCTION

Many small and medium-sized fish processing establishments (SME) in ASEAN member countries find it difficult to implement quality assurance systems due to economic and technical constraints. They comprised largely of pre-processing establishments (PPE) which produce semi-processed raw materials for main processing establishments and traditional products processing establishments (TPE). PPE supply semi-processed raw materials such as shrimp, crab, squid, fish and bivalve mollusc to main fish processing establishments. The processes carried out in these establishments may include peeling, de-heading, degutting, de-skinning, cooking, picking, filleting or shucking depending on the raw materials involved. Thus, PPE can play a significant role in determining the quality and safety of raw materials and subsequently of the finished products. In the ASEAN region, traditional fish products represent a significantly large part of total fish utilization and are a major source of animal protein. As a result, these products are vitally important to food security, especially considering that most of it goes to the marginalized and poorer segments of the population. Considering the importance of these products to the diet in the ASEAN region and the importance of a safe food supply to food security, it is imperative that the TPE apply appropriate Good Manufacturing Practice (GMP) programs to assure quality and safety of these products. The program will develop quality assurance systems for these SME that incorporate GMP as a first step towards the implementation of HACCP and help them meet safety and quality assurance requirements.

The program is proposed based on the following resolution and plan of action as endorsed at the Millennium Conference:

Resolution 14: Improve post-harvest technologies to ensure fish quality assurance and safety management systems which are appropriate for small and medium-sized enterprises in the region, taking into account the importance of traditional fish products and food security requirements.

Plan of Action C4: Develop and apply fish quality and safety management systems that ensure food safety and support the competitive position of ASEAN fish products on world markets through the implementation, validation and verification of Hazard Analysis and Critical Control Point (HACCP) based systems and improved laboratory practices, and adapting quality and safety management systems so that they may be applied to small and medium enterprises in the ASEAN region.

The program is also in line with the ASEAN Roadmap for Integration of Fisheries Sector Measure No. 46 under the ASEAN Framework Agreement for the Integration of Priority Sectors.

2. PROGRAM

2.1 Objectives

1. To develop GMP for Small and Medium-sized Fish Processing Establishments (SME) in ASEAN member countries.
2. To promote the implementation of GMP/SSOP programs in Small and Medium-sized Fish Processing Enterprises (SME) thereby assuring quality and safety of fish products in ASEAN member countries.

2.2 Program description

MFRD will be the responsible SEAFDEC Department for this program and will manage and coordinate all program activities.

ASEAN member countries which have been identified as participating countries will be involved in implementing national projects on a cost-sharing basis to develop GMP guidelines in PPE and TPE, and to conduct pilot projects to implement GMP programs with commercial cooperants in their respective countries.

The program involves the development and implementation of GMP guidelines and programs for PPE and TPE through national projects and pilot projects with commercial cooperants in participating ASEAN member countries. Handbooks on GMP guidelines will also be prepared and distributed to member countries to assist them to conduct national training programs.

The expected outputs for the program include development of GMP guidelines for PPE and TPE, publication of handbooks on GMP guidelines to promote implementation in SME, conduct of pilot projects on GMP implementation in SME and End-of-Activity Workshops.

Program monitoring and evaluation will include annual progress reports, regular monitoring and evaluation of the pilot projects, and End-of-Activity Workshops.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Program Activities in 2008:

Project/Activity Title	Duration	Remarks
Activity 2.2: Publication of GMP handbook for PPE	May – Aug 2008	100% accomplished
Activity 2.3: End-of-Activity (EOA) Workshop on GMP for PPE	2 – 4 Sep 2008	100% accomplished
Activity 3.1: Development of GMP for TPE	Apr 2008 – Mar 2009	50% accomplished

In 2008 three regional activities have been conducted namely, the Publication of GMP handbook for PPE (Activity 2.2), End-of-Activity (EOA) Workshop on GMP for PPE (Activity 2.3) and Development of GMP for TPE (Activity 3.1)

Activity 2.2: MFRD compiled and edited the drafts of the various GMP developed for selected PPE (as in Table below) by the seven participating ASEAN member countries. MFRD then published the various GMP into a handbook, “GMP for Small and Medium-Sized Fish Pre-Processing Establishments in ASEAN”.

Country	PPE
Cambodia	Crab meat (picking)
Indonesia	Fish meat/fillet (for surimi)
Malaysia	Shrimp pre-processing (de-heading/peeling and or de-veining) & Fish meat/fillet (for surimi/ otoshimi)
Myanmar	Shrimp pre-processing (de-heading/peeling and or de-veining)
Philippines	Shrimp salting (for shrimp paste) & Crab meat (picking)
Thailand	Shrimp pre-processing (de-heading/peeling and or de-veining)
Vietnam	Shrimp pre-processing (de-heading/peeling and or de-veining)

Activity 2.3: The End-of-Activity (EOA) Workshop on GMP for PPE was successfully conducted from 2 – 4 Sep 2008 in Manila, Philippines with a total of 23 participants from all ten ASEAN member countries including 4 observers from the Philippines. The 3-day workshop program included presentations on the GMP developed by the seven ASEAN member countries for their selected PPE and study visits to two PPE for shrimps in Manila. The handbook, “GMP for Small and Medium-Sized Pre-Processing Establishments in ASEAN”, published by MFRD was distributed to all ASEAN member countries at the workshop. Discussions on the progress of the project on development of GMP for traditional products processing establishments as well as the ASEAN Roadmap Measure No.46 project were also held on the last day of the workshop.

Activity 3.1: ASEAN member countries (except Cambodia) have initiated their national projects to develop GMP for their selected TPE (as in Table below) from Apr 2008 – Mar 2009 and will submit quarterly progress reports to MFRD.

Country	TPE
Brunei Darussalam	Fermented shrimp paste (<i>belacan</i>)
Indonesia	Salted boiled fish (<i>pindang</i>)
Lao PDR	Fermented fish (<i>prahok</i>) & Dried fish
Malaysia	Fish cracker (<i>keropok lekor</i>) & Dried anchovies
Myanmar	Fermented (pickled) fish & Fish sauce
Philippines	Smoked milkfish & Shrimp sauce
Singapore	Fish balls and fish cakes
Thailand	Fish sauce & Dried fish
Vietnam	Fish sauce & Fermented tiny shrimp paste

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Program Activities

Project/Activity Title	Duration	Remarks
Activity 3.2: Publication of GMP handbook for TPE	Apr – Jul 2009	MFRD will compile and edit the various GMP developed for TPE by the participating ASEAN member countries and publish a handbook on GMP for TPE.

<p>Activity 3.3: End-of-Activity (EOA) Workshop on GMP for TPE</p>	<p>Aug/Sep 2009 (3 days)</p>	<p>MFRD will organize an EOA workshop in Singapore to disseminate the results of the various national projects and the handbook on GMP for TPE to all ASEAN member countries. At the Workshop, the countries that have conducted national projects will present the results and share their experiences and recommendations. The Workshop will also discuss and finalize the pilot projects on GMP implementation to be conducted in ASEAN member countries.</p>
<p>Activity 4.1: Conduct of Pilot Projects (PP)</p>	<p>Sep/Oct 2009 – Dec 2010</p>	<p>After the GMP for PPE and TPE have been established, the pilot projects to showcase their implementation in commercial fish processing establishments will be conducted in ASEAN member countries. These establishments may serve as models for GMP implementation to help them meet safety and quality requirements. The pilot projects will also help to fine-tune and improve the respective GMP programs developed.</p>

4.2 Expected Outcomes

It is envisaged that a handbook on GMP for selected TPE will be published by MFRD by the end of the second quarter of 2009. An End-of-Activity (EOA) Workshop will be organized and conducted by MFRD in Aug/Sep 2009 to disseminate the results of the developmental work on the GMP for TPE carried out by the ASEAN member countries. At the EOA workshop, the GMP handbook will be distributed and countries will have an opportunity to share their experiences and recommendations. The workshop will also discuss any outstanding issues pertaining to the program thus far.

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Environmental Related Tasks in Southeast Asia

Lead Department: The Secretariat in collaboration with MFRD and MFRDMD

Lead Country: Thailand and Malaysia

Total Duration: 2009

Proposed 2009 budget: US\$13,200

1. INTRODUCTION

1.1 Managing sharks fisheries

Considering the discussion on the conservation and management of sharks, and a symbolic species of shark, the great white shark, some species were listed in Appendix II of CITES, the 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)”. As endorsed by the 23rd Senior Official Meeting for ASEAN Ministers on Agriculture and Forestry, the Member Countries committed to establish their respective National Plan of Action on Sharks (NPOA-Shark) in line with the International Plan of Action for the Conservation and Management (IPOA-shark) developed by FAO, to be supported by best scientific evidence. In addition the regional study and other initiatives on shark have been published, the proceedings of the shark study entitled “Shark production, Utilization and Management in the ASEAN”, has been disseminated in March 2006.

At the Convention on International Trade in Endanger Species (CITES) CoP14 held in June 2007 in the Hague, Netherlands, the new draft decisions related to sharks were adopted, which composes of the implementation and effectiveness, commodity codes, species-specific reviews and recommendations, South American freshwater stingrays, capacity building, IPOA-sharks, and IUU fishing. Not only the new proposed measures had been proposed at the international fora, but also the new listing of sharks species under CITES appendices has being increased, these should be aware among the ASEAN-SEAFDEC Member Countries in the future efforts when developing management activities for sharks.

The ASEAN-SEAFDEC Member Countries have realized the important on conservation and management of sharks by fisheries sector. Malaysia has established their NPOA-sharks. Indonesia and Thailand have already completed their NPOA. Brunei Darussalam, Myanmar, and the Philippines have finished a draft NPOA, while Vietnam and Cambodia are still in developing stage of NPOA formulation. In order to maintain the momentum of conservation and management of sharks, SEAFDEC will monitor the progress development of NPOA-sharks and also pay attention to the issue at the international level especially propose of shark species under CITES listing, and when appropriate informing the Member Countries.

1.2 Understanding sea cucumbers fisheries

Sea cucumber in commercial species have been taken into account as a critical issue; especially the families Holothuriidae and Stichopodidae, most of which the product supporting the international market demand. The issue has become the most popular in the international community, particularly at the Convention on International Trade in Endanger Species (CITES) CoP13 held in Bangkok (2004). The concern was made that the sea cucumbers in

commercial species should be included into CITES Appendices, which may give the negative impact on sea cucumber fisheries to the ASEAN and SEAFDEC Member Countries.

At the CITES CoP14, the decisions proposed by CITES Secretariat on behalf of Sea Cucumber Working Group was adopted with suggested that the recommendations by the CITES should be brought for consideration at the FAO workshop on sustainable use and management of sea cucumber fisheries to be organized from 19 to 23 November 2007, most of which the key consideration is drawn to management approach either national or regional level.

In July 2007, SEAFDEC in close collaboration with the Member Countries namely Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Vietnam and Thailand started conducting regional study on sea cucumber fisheries, trade and utilization in Southeast Asia and also established the 'Ad-hoc Regional Working Group on Sea Cucumber Fisheries' for planning and coordination work on status, resources utilization, management and trade. Based on data compilation by member countries, the Regional Expert Meeting on Sea Cucumbers was organized in 18 to 20 March 2008, in Bangkok, Thailand in order to assess possibility in the development of action plan and/or policy consideration based on countries' initiatives.

Along this line, SEAFDEC will continue its effort in executing activities related to regional study on sea cucumbers and its follow-up as well as monitoring these issues under the international movement to ensure regional benefit and efforts have been made by fisheries sector.

2. PROGRAM

2.1 Objectives

The objectives of this project are:

1. To assist Member Countries by monitoring the issues on endanger aquatic species particularly sharks, sea cucumbers, sea turtles, and other commercially exploited-species at international level;
2. To mobilize expert consultation on addressing the development of future action plan and policy recommendation on proposed CITES listing species;
3. To assist Member Countries by providing necessary information on concerned aquatic species of under CITES,
4. To continuously publicize the effort of this region in conservation and management of sharks, sea turtles, and sea cucumbers.

2.2 Program Description

2.2.1 Managing sharks fisheries

Currently, the Member Countries have put their efforts in formulating NPOA-sharks; Malaysia and Thailand has already finalized their NPOA for the Conservation and Management of Sharks, while Brunei Darussalam, Myanmar, Indonesia, and the Philippines have finished their draft NPOA, the rest countries are in developing process. In order to maintain the momentum of conservation and management of sharks, SEAFDEC will monitor the progress development of NPOA-sharks and facilitate in term of technical guidance for the Member Countries. As the proposed shark listing species under CITES has being raised by global

communities, SEAFDEC will also pay attention on the issue at the international level and when appropriate informing the Member Countries.

2.2.2 Understanding sea cucumbers fisheries

In July 2007, SEAFDEC in close collaboration with the Member Countries namely Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, the Philippines, Vietnam and Thailand started conducting regional study on sea cucumber fisheries, trade and utilization in Southeast Asia and also established the ‘Ad-hoc Regional Working Group on Sea Cucumber Fisheries’ for planning and coordination work on status, resources utilization, management and trade. The outcomes of regional study were scrutinized by the member of Regional Working Group at the Regional Expert Meeting on Sea Cucumber Fisheries held in Bangkok, Thailand from 18 to 20 March 2008. The Meeting came up with the policy recommendations and follow-up action by SEAFDEC and the Member Countries related to conservation and management of sea cucumbers. The proceeding of the meeting will also be published within December 2008. However, SEAFDEC shall continue collect more information on sea cucumbers to complete the regional synthesis on the status of sea cucumber fisheries, utilization, and trade in Southeast Asian region.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Project Activities

Project/Activity Title	Duration	Remarks
1. Monitoring Progress of Development NPOA-sharks	2008	Vietnam and Cambodia are in the developing process
2. Regional Expert Meeting on Sea Cucumbers	March 2008	100%
3. Regional Synthesis on Sea Cucumbers	-	On-going
4. Production of Promotional Brochure and Materials for Support the Member Countries	May-Dec	70%

3.1 Monitoring Progress of Development NPOA-sharks

With the view to assist the Member Countries in developing NPOA-sharks, SEAFDEC has communicated with the Member Countries; where the formulation of NPOA-shark is underdeveloped (Cambodia and the Vietnam), in term of facilitation and providing technical service to ensure successfully formulating of NPOA-shark. Regional experts and SEAFDEC staffs could be mobilized for implementing such activities at the national level.

As the requested by the Ministry of Agriculture and Rural Development of Vietnam at the 40th Meeting of SEAFDEC Council, SEAFDEC would support Vietnam to organize the national workshop in order to develop NPOA-shark as a counterpart funding. The status now is in the process of communication.

3.2 Regional Expert Meeting on Sea Cucumbers

Following up the regional initiatives on the desk study on sea cucumber fisheries, utilization, and trade in Southeast Asia launched in July 2007, the National Focal Points and members of an Ad-hoc Regional Experts Group on Sea Cucumber Fisheries of the ASEAN-SEAFDEC Member Countries except Lao PDR, Myanmar, and Singapore; resource persons from Japan, Thailand, and Vietnam as well as SEAFDEC staffs attended the ASEAN-SEAFDEC Regional

Expert Meeting on Sea Cucumber Fisheries held from 18 to 20 March 2008, in Bangkok, Thailand.

The Meeting came up with the conclusion and recommendations on sustainable utilization of sea cucumbers in Southeast Asia including conservation as well as future follow-up actions and a joint approach of ASEAN-SEAFDEC Member Countries at international fora to reflect the concerns and address the effort in conserving and managing such resource from fisheries sector.

3.3 Regional Synthesis on Sea Cucumbers

The regional synthesis on sea cucumbers was conducted and presented at the Regional Expert Meeting in March 2008. Additional outcomes and further required information is being accommodated. Further required information will also collect in 2009.

3.4 Production of Promotional Brochure and Materials for Support the Member Countries

The Secretariat and TD staffs participated in the 6th Meeting of the ASEAN Experts Group on the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) from 21 to 22 May 2008, in Chonburi, Thailand. In this connection, SEAFDEC also organized posters exhibition to promote regional policy and related activities towards sustainable utilization of aquatic resources in ASEAN.

4. PROPOSED ACTIVITIES FOR THE YEAR 2008

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
1. Monitoring Progress of Development NPOA-sharks	Jan-Dec	Cambodia, Vietnam
2. Regional Expert Meeting on proposed listing of CITES species	November	-
3. Regional Synthesis on endangered aquatic species including sea cucumbers	Jan-June	-
4. Production of Promotional Brochure and Materials for Support the Member Countries	Jan-Dec	-

4.2 Expected Outcomes

With the view to assist and promote the development of NPOA-shark, SEAFDEC will close collaborate with the Member Countries; where the formulation of NPOA-shark is underdeveloped, in term of facilitation and providing technical service to ensure successfully formulating of NPOA-shark. Regional experts and SEAFDEC staffs could be mobilized for implementing such activities at the national level. Since a number of commercially-exploited species of under CITES have been increasing, the Secretariat shall also monitor the emerging issues and where appropriate providing a technical support to the Member Countries through international CITES forum or/and Regional forum such as the ASEAN Expert Group on CITES (AEG-CITES) which will be held in ASEAN member countries.

Regarding the issues related to endangered and commercially exploited aquatic species, SEAFDEC will organize the regional expert meeting to review the proposed CITES listing species under CITES CoP-15 to be held in January 2010. It is anticipated that the outcomes of

the meeting to be reflected at the CITES CoP-15. In addition, the complete regional synthesis on sea cucumber is expected to present at this meeting.

Collected information inclusive of actions taken by SEAFDEC would be circulated in SEAFDEC newsletters and/or other new developed materials through appropriate channels to fisheries authorities of member countries in the Southeast Asia and outside the region.

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Establishment of Fish Disease Surveillance System

Lead Department: Aquaculture Department

Lead Country: Philippines

Total Duration: Five Years (2005-2009)

Proposed 2008 Budget: US\$111,274

1. INTRODUCTION

In the last two decades, aquaculture in Southeast Asia grew rapidly and contributed to the increase of food supply and well-being of the people in ASEAN region. However, due to careless health management, large number of infectious diseases emerged and the diseases are threatening sustainable aquaculture.

“The Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region” adopted by the ASEAN-SEAFDEC Senior Officials as a result of the ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: “Fish for the People”, held in Thailand in November 2001, has the following items related to fish-health issues for aquaculture in the region:

- a) Reduce the risks of negative environmental impacts, loss of biodiversity, and disease transfer 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; and
- b) Improve capabilities in the diagnosis and control of fish diseases within the region by developing technology and techniques for disease identification, reliable field-side diagnostics and harmonized diagnostic procedures, and establishing regional and international referral systems, including designation of reference laboratories and timely access to disease control experts within the region.

To counter the disease problems and to implement the above-mentioned two items of the Plan of Action, the Government of Japan funded SEAFDEC for a regional fish disease project entitled “Development of Fish Disease Inspection Methodologies for Artificially-Bred Seeds” from 2000 to 2004. The project focus was on development of diagnostic methods of important viral diseases of aquatic animals in the region. Researches on the development of standardized diagnostic methods, husbandry methods for disease control and a monitoring method for residual chemicals in aquaculture products were conducted and the outputs were disseminated to ASEAN countries. Thus, the project has paved the way for the development of the disease control and surveillance system for the region.

Various infectious diseases due to viruses, bacteria and parasites often cause high mortalities of aquatic animals cultured in the region and still give a serious impact on aquaculture production. Moreover, new diseases are emerging due to the introduction of new aquaculture species to the region. Thus, taking necessary measures against those infectious diseases is an urgent and important issue to aquaculture in the region. The most urgent issue to be tackled for the development of healthy and wholesome aquaculture is to establish the network of resources and facilities for fish health diagnosis and human capacity building in the region. Therefore, the Aquaculture Department (AQD) of the SEAFDEC has proposed to extend the former project as a renewed project entitled “Development of Fish Disease Surveillance System” for five years from 2005 to 2009.

Despite regional and international agreements and precautionary measures on transboundary movement of exotic fish and shrimps, alien species are introduced for aquaculture and disease problems continue to spread. These prove laxity in implementation of existing laws and regulations, absence of political will among concerned government agencies, or unbalanced prioritization between preservation of biodiversity and the economic gains promised by aquaculture of exotic species. Given that exotic species, and in some cases their diseases have been introduced into some parts of Southeast Asia, it is important to conduct surveillance and monitoring to know which areas are free of specific diseases. Information gathered by both passive and active surveillance will become important tools in managing aquaculture of native and exotic species.

2. PROGRAM

2.1 Objectives

The main objective of the program is to develop a surveillance system for diseases of aquatic animals in Southeast Asia through establishment of the network of resources and facilities for fish health diagnosis and human capacity building.

2.2 Program Description

This program consists of 4 components: (1) Research and Development (R & D) on refinement of diagnostic methods and development of new prevention methods for aquatic animal diseases, (2) Surveillance for important viral diseases of fish and shrimps in the region, and mobile clinics, (3) Training on advanced diagnostic techniques and distance-learning course, (4) Annual progress and plan meeting and international workshop on fish disease surveillance in the region.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Project Activities

Project/Activity Title	Duration	Remarks (% completion)
Research and Development (R & D) on refinement of diagnostic methods and development of new prevention methods for aquatic animal diseases	All year around	70
Surveillance for important viral diseases of fish and shrimps in the region, and mobile clinics	All year around	70
E-learning and Hands-on training	All year around	80
Annual progress and plan meeting of 2008	Dec 2008	20

(a) Research and Development (R & D) on refinement of diagnostic methods and development of new prevention methods for aquatic animal diseases

This program component aims to refine established diagnostic methods for viral diseases of aquatic animals, and to develop new control prevention methods for fish diseases in the region. For example, AQD will try to develop immunological prevention methods for white spot syndrome, husbandry technique of grouper broodstock, with eggs, larvae and food fish screening for viral nervous necrosis (VNN), and prevention mechanisms of polyculture technique and probiotics.

(1) *Development of control methods for viral nervous necrosis (VNN) of marine fish*

- Four batches of grouper larvae were artificially infected with the virus and monitored for the viral susceptibility.
- Results of the experiment revealed that viral susceptibility is dependent on the size of the fish.
- Grouper larvae weighing 8 grams and below were highly susceptible to the virus. Fish weighing 30-60 grams has 20% mortality, and fish size of 90 grams and above is no longer susceptible to the virus.
- Viral susceptibility is also affected by water temperature (21°C and 28-29 °C).
- Fish cultured in 21°C died 8-12 days post infection while fish cultured in higher temperature died 3-6 days.
- Asian sea bass exhibited strong immune responses against a single injection of the formalin-inactivated red-spotted grouper nervous necrosis virus.
- When fish were challenged, there were no mortalities in the vaccinated fish.
- The present results indicate the potentiality of the formalin-inactivated RGNNV vaccine against viral nervous necrosis (VNN) of Asian sea bass.
- Efficacy of inactivated nodavirus vaccine against VNN in grouper has been studied.
- None of the vaccinated fish died nor manifested any signs of VNN.
- In addition, DNA vaccination experiment is on-going.

(2) *Development of immunological preventive methods for shrimp: Immunostimulation and vaccination strategies for WSSV prevention*

- The former result showed a need to develop a vaccine preparation that is suited for large-scale vaccination.
- The large-scale vaccine preparation is currently ongoing:
 - A recombinant WSSV viral envelope protein (VP)26 vaccine is being prepared.
 - A pair of primers was used to amplify VP26 DNA from WSSV-infected tissue extracts.
 - SDS-PAGE of total cell lysate showed a strong band at about 30 kilodaltons corresponding to the recombinant protein.

An experiment to test oral delivery of the vaccine by dietary incorporation using different carriers/forms is ongoing.

(3) *Epidemiology of the white spot syndrome virus (WSSV) in different shrimp (Penaeus monodon) culture techniques in the Philippines*

Revised questionnaire was pre-tested by interviewing shrimp farmers.

- A total of 101 *P. monodon* farmers from Aklan, Antique, Bohol, Bulacan, Cebu, Negros, Northern Samar, and Pampanga were interviewed as to farm history, farm management, and disease occurrence using the pre-tested questionnaire.
- The most common disease problem in *P. monodon* monoculture is WSSV which is usually observed after 2 months of culture, during rainy seasons, after a sudden or 2 weeks of heavy rain, and drop in temperature and salinity.
- Farms that had no disease problems are those that are in operation for 5±3 years.
- Statistical analyses showed that the followings are correlated with WSSV infection/outbreak: rainfall, low temperature in combination with low pH for more than 3 consecutive days, pH fluctuation of more than 5 for more than 3 consecutive

days, water temperature fluctuation of 3-4°C for 12+5h, DO below 4.0 ppm, water transparency, water depth below 1 m, and exposure to more than 200 stressors.

(4) *Pilot testing of the “indigenous probiotic” in grow-out shrimp ponds*

- Individual probiotic bacterial isolates were tested for optimum growth in clay pots, plastic jars and glass jars, with and without aeration. Results showed that growth of all test bacteria in the three container types were comparable. Aerated conditions showed higher population than unaerated.
- The experiment in tanks with soil bottom in tanks was conducted for *Penaeus monodon* for 60 days. Results showed the mean survival rate of treated shrimps (93.20%) was higher than the control (71.10%).
- Probiotic inoculation experiment was conducted with WSSV-free *P. monodon* postlarvae stocked in experimental ponds. During the 15 and 30 days of culture, the mean survival rates of the probiotic-treated shrimps were 100% and 96.67%, respectively, while the controls yielded survival rates of 86.33%, and 85%, respectively.
- WSSV was detected in the experimental shrimp and the experiment was aborted.

(5) *Haemorrhage disease on cultured freshwater catfish (Pangasianodon hypophthalmus) in Mekong Delta (RIA2, Vietnam)*

- *Clostridium perfringens* and *Clostridium* spp. were isolated from kidney of diseased fish samples with white spot on kidney.

(6) *Research and analysis of chemical residue in aquaculture*

- Samples gathered from 5 provinces (Guimaras, Iloilo, Aklan, Capiz and Antique) and sourced from various fishponds and marine cages were prepared for pesticide extraction and analysis. To date, 196 sub-samples were processed and analyzed in the gas chromatograph (GC).
- All samples injected, except catfish, showed negative results against the following pesticides: HCH (Hexachlorocyclohexane) and its isomers β -HCH and γ -HCH, HCB (Hexachlorobenzene) 2,4- and 4,4-DDE (dichlorodiphenyldichloroethylene), 2,4-DDD and 4,4-DDD (dichlorodiphenyldichloroethane), 2,4- and 4,4-DDT (dichlorodiphenyltrichloroethane), Dieldrin, Heptachlor, Endrin, and Aldrin.
- Likewise, analysis of water samples did not detect the above-mentioned organochlorine pesticides.
- Catfish samples sourced from one of the fishponds from Iloilo was positive for DDD and Endrin. These samples came from the pond where the owner suspected that the pesticides were intentionally applied.

(b) Surveillance for important viral diseases of fish and shrimps in the region, and mobile clinics

In this component, through the communication with national laboratories, AQD aims to establish a network of surveillance system in the region and play the role of a resource and/or reference laboratory for diagnosis of fish and shrimp viral diseases. These surveillance activities will be coordinated with “mobile clinics,” in which SEAFDEC-AQD Surveillance Team will make an on-site diagnosis and also assist in setting up a fish disease diagnostic capability/facility of SEAFDEC member countries.

(1) *Monitoring and surveillance of transboundary pathogens in cultured shrimps and freshwater prawn*

- Sampling trips were conducted in various towns in Leyte province and at the Binangonan Freshwater Station of SEAFDEC. Samples collected and processed were *Penaeus monodon*, *P. vannamei* and the freshwater prawn *Macrobrachium rosenbergii*.
- Tests conducted for penaeid shrimps included white spot syndrome virus (WSSV), infectious hypodermal and hematopoietic necrosis virus (IHHNV), Taura syndrome virus (TSV), and infectious myonecrosis virus (IMNV).
- For freshwater prawn, white tail disease (WTD) and WSSV are being monitored using PCR methods. Results showed that all samples analyzed for TSV, IMNV, and GAV are negative. For IHHNV and WSSV, however, positive samples were obtained at 7.8 % and 7.6 % respectively.
- The viral diseases TSV, IMNV and WTD are still presumed exotic to the country because all samples obtained from surveillance activities have tested negative for them. Analysis of 22 samples of *Macrobrachium* for WTD showed all negative reactions. Thus, the viral diseases TSV, IMNV and WTD are still presumed exotic to the country because all samples obtained from surveillance activities have tested negative for them.
- A total of 150 oysters (*Crassostrea iredalei*) from Ivisan, Capiz were examined for the presence of parasites. Histological examination revealed that the protozoan, *Nematopsis* sp. was the most prevalent parasite.
- Window-pane oysters, *Placuna placenta* were collected from Trapiche, Oton and were examined for parasites.
- Histological examination revealed that encysted larval cestodes *Tylopcephalum* sp. was the most prevalent parasite found in the intestine lumen and connective tissues.
- Ciliates and metacercariae of trematodes were also observed in the gills and gonads respectively.

(2) *Surveys of giant freshwater prawn viral diseases, MrNV and XSV in Thailand (AAHRI, Thailand)*

- MrNV is still present in the wild prawns with a high prevalence in Ubonrachathani and Surathani provinces and in farmed prawn in 3/4 provinces.
- However the XSV was very rare and found only in a few prawn specimens that gave positive to MrNV.

(3) *Survey of viral diseases of Pacific white shrimp, Litopenaeus vannamei, in Indonesia (Fish Health Research Laboratory, Indonesia)*

- Surveillance shows that TSV was found in Lampung, Banten, West Java, Central Java, East Java, and South Sulawesi.
- Based on the available data, the IMNV was found in East Java and Lampung.

(4) *Surveillance of emerging fish viral pathogens in some Southeast Asian countries*

- A total of 1198 fish samples (koi, common carp, grass carp, silver carp) were collected from 5 countries (Vietnam; Philippines - Davao, Cebu, Pampanga, Laguna; Lao PDR; Cambodia; Myanmar).
- To date, the tests for detection of KHV, SVCV and GCRV showed negative results for the samples from Pampanga, Laguna and Myanmar.
- The study also provided mobile clinic services for Lao PDR (mrigal) and Philippines (catfish from BFS, 6 catfish from Iloilo and 1 snakehead from Iloilo).

- The mrigal fish had slight to heavy infestation of *Oodinium* sp. while the BFS catfish case had bacterial infection.
- Isolation for virus is ongoing.
- In addition, the following cell lines were maintained: KF1, KFC, CO, CK, FHM, EPC, WSSK, NGF-3, BF-2 and E-11.

(c) E-learning and Hands-On Training

The training course focused on basic and advanced (e.g. DNA/RNA-based) diagnostic methods and for shrimp and fish diseases has been conducted.

- E-learning course was arranged and the course started in July.
- Two training courses on fish diseases in Cambodia were conducted in September.
- Editing of Proceeding of International Workshop on Fish Diseases (Dec, 2007), 2 Manuals on Diseases, and textbook on Aquatic Animal Health has been initiated.

(d) Annual progress and planning meeting, and International Workshop

- Annual Meeting of 2008 will be held at SEAFDEC/AQD (Iloilo, Philippines, Dec, 2008).

4. PROPOSED ACTIVITIES FOR THE YEAR 2009

4.1 Planning for the Project Activities

Project/Activity Title	Duration	Remarks
Research and Development (R & D) on development of new prevention methods for aquatic animal diseases	Jan - Nov	
Surveillance for important viral diseases of fish and shrimps in the region, and mobile clinics	Jan - Nov	
Hands-on training and publication of text books/manuals	Jan - Nov	
International Workshop	December 2009	

(a) Research and Development (R & D) on development of new prevention methods for aquatic animal diseases

- Development of control methods for viral nervous necrosis (VNN) of marine fish.
- Development of immunological preventive methods for shrimp: Immunostimulation and vaccination strategies for WSSV prevention (SEAFDEC/AQD).
- Epidemiology of the white spot syndrome virus (WSSV) in different shrimp (*Penaeus monodon*) culture techniques in the Philippines (SEAFDEC/AQD).
- Pilot testing of the ‘indigenous probiotic’ in grow-out shrimp ponds (SEAFDEC/AQD).
- Haemorrhage disease on cultured freshwater catfish (*Pangasianodon hypophthalmus*) in Mekong Delta (RIA2, Vietnam).
- Research and analysis of chemical residue in aquaculture.

(b) Surveillance for important viral diseases of fish and shrimps in the region and mobile clinics

- Monitoring and surveillance of transboundary pathogens in cultured shrimps and freshwater prawn by AQD Shrimp Team.
- Surveys of giant freshwater prawn viral diseases, MrNV and XSV in Thailand (AAHRI, Thailand).
- Survey of viral diseases of Pacific white shrimp, *Litopenaeus vannamei*, in Indonesia (Fish Health Research Laboratory, Indonesia)
 - Accurate description of the distribution and occurrence of TS and IMN diseases of *Litopenaeus vannamei* in Indonesia as baseline data to establish control strategy of the diseases;
 - Assessment of control for selected diseases, particularly to control program for TSV & IMNV spreading around the country by zoning system and limitation of live shrimp movement from an infected area to uninfected ones.
- Surveillance of emerging fish viral pathogens in some Southeast Asian countries (SEAFDEC/AQD).
- Monitoring of the presence of KHV, GCHDV and SVCV will be continued through *in-situ* samplings of affected fish during outbreaks and of carrier fish:
 - To survey the presence and distribution of the KHV, GCHDV and SVCV in Cambodia, Lao PDR, Myanmar, Philippines and Vietnam;
 - To prevent the transboundary movement of KHV, GCHDV and SVCV in Southeast Asia through capacity building of countries with the least developed Fish Virology capability;
 - To provide mobile diagnostic services and training of country staff.

(c) Training (Hands-on and On-site)

- E-learning on “Principles of Health Management in Aquaculture”
- Hands-on training/ on-site training on advanced diagnostic techniques
Hands-on and on-site training courses focused on basic and advanced diagnostic methods and for shrimp and fish diseases will be conducted in the lesser developing countries. At the end of the training course, the participants from SEAFDEC member countries with sufficient skills will act as national trainers or core persons in the diagnosis of important diseases in their respective countries.

(d) International Workshop

- International Workshop will be held to review the Project achievements and to make research plans and project scheme for the next Project (TF5).

(e) Dissemination of output of the project

- To continue activity on publication (proceeding/text book/manual).

4.2 Envisaged Outcomes of the Propose Projects/Activities

1. Viral Nervous Necrosis (VNN) (marine fish): Techniques of vaccine administration and egg disinfection will be developed;
2. White Spot Syndrome (WSS) (shrimps): The methods of large scale vaccine preparation will be further developed;
3. White Spot Syndrome (Epidemiological study): Relationship among WSS outbreak, mangrove ecosystem and physico-chemical environment will be epidemiologically and experimentally elucidated;

4. Probiotic (shrimps): The efficiency and economics of the “indigenous probiotic” will be reconfirmed in grow-out ponds;
5. Haemorrhagic Disease of Freshwater Catfish; the characteristics of the disease and pathogen between Vietnam and Cambodia will be compared and elucidated;
6. Chemical Contamination of Aquaculture Products; Experimental data on the withdrawal period of antibiotics will be obtained;
7. Surveillance Activities: Updated status on prevalence of important diseases of shrimps and fishes in Southeast Asian countries will be revealed;
8. Training: On-site training in the lesser developing countries will lift up diagnostic techniques in the Region;
9. Activity of publication (proceeding/text book/manual) will be continued;
10. Project achievements will be arranged, and a Report will be prepared; and
11. International Workshop will be held to review the Project achievements and make research plans and project scheme for the next Project (TF5).

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Chemical and Drug Residues in Fish and Fish Products in Southeast Asia

Lead Department: MFRD

Lead Country: Singapore

Total Duration: 2004-2008

1 INTRODUCTION

In view of the prevalence presence of chemical contaminants and drug residues in seafood products and the serious implications to trade and human health, there is a need to gain an understanding of current levels of such chemical and drug residues in fish and fish products, as well as building up the capacity for detection of these residues in the region. Only with this science-based knowledge and capability, then can respective countries take appropriate actions to manage the safety of such fish and fish products. Thus this project is proposed and it is envisaged that the information obtained will be valuable to policy makers, technologists and scientists as well as extension and regulatory personnel in the fisheries sector. In addition, this project would also allow SEAFDEC to fulfill part of the recommendations and plan of actions from the Millennium Conference as well as the last Meeting on Fish Trade and the Environment in Bangkok in the area of drug residue in the shrimp and aquaculture industry.

2 PROGRAM

2.1 Objectives

- To obtain an understanding of levels of chemical contaminants in fish and fish products in Southeast Asia.
- To transfer technology in chemical contaminant testing in the region through setting up of methodologies and human resource training.

2.2 Program description

This program is made up of four components as follows:

Component 1: Survey of Heavy Metals in Fish and Fish Products in Southeast Asia

There are two activities under this component, namely Activity 1.1 “Regional survey of heavy metals in fish and fish products” and Activity 1.2 “On-site training on heavy metals analysis “.

In Activity 1.1, regional survey on heavy metals (cadmium, lead and total mercury) in fish and fish products will be conducted in SEAFDEC member countries. Various participating regional laboratories will conduct a survey each in their respective countries. Fish and fish products that are of economical and social importance to the participating countries will be targeted. Samples will be drawn from fish and fish products will be sent to the local/collaborating laboratories where the project is conducted for analysis. The results of the survey will be deposited in the database of the Fish and Fish Products Safety Information Network.

In Activity 1.2, MFRD aims to assist in the upgrading of regional laboratory personnel skills in conducting heavy metals analysis using Atomic Absorption Spectrometry (AAS) through a series of on-site training at project sites where the analytical equipment is available for conducting the training. On-site training will be conducted for 10-15 laboratory officers in that member country.

Component 2: Survey of Pesticide Residues in Fish and Fish Products in Southeast Asia

There are two activities under this component, namely Activity 2.1 “On-site training on pesticide residues analysis” and Activity 2.2 “Regional survey of pesticide residues in fish and fish products”.

Activity 2.1 serves to upgrade the regional laboratory staff in conducting pesticide residues analysis using Gas Chromatography Mass Spectrometry (GC-MS) and to facilitate the execution of the survey under Activity 2.2. The training will be carried out in two ways. Firstly, MFRD with the assistance of an expert from Japan will conduct a regional training course in pesticide residues analysis in MFRD for the participating SEAFDEC member countries. Subsequently, on-site training will be initiated at project sites where the analytical equipment is available for conducting the training. On-site training will be conducted for 6-10 laboratory officers in that member country.

In Activity 2.2, regional survey on the pesticide residues (organochlorines) in fish and fish products will be conducted in SEAFDEC member countries. Various participating regional laboratories will conduct a survey each in their respective countries. Fish and fish products that are of economical and social importance to the participating countries will be targeted. Samples will be drawn from fish and fish products will be sent to their local/collaborating laboratories where the project is conducted for analysis. Dried products from both marine and freshwater species, as well as fish and fish products that are dried or from inland and estuarine waters and rivers will also be targeted. The results of the survey will be deposited in the database of the Fish and Fish Products Safety Information Network.

Component 3: Survey of Histamine Levels in Fish and Fish Products in Southeast Asia

There are two activities under this component, namely, Activity 3.1 “Regional survey of histamine in fish and fish products” and Activity 3.2 “On-site training on histamine analysis”.

In Activity 3.1, a regional survey on the naturally occurring toxin, histamine, in fish and fish products will be conducted in SEAFDEC member countries. Various participating regional laboratories will conduct a survey each in their respective countries. Fish and fish products from scombroid species will be especially targeted. In the Mid-term Review Meeting held in 2007, the Meeting agreed to include the analysis of fermented fish and fish products such as prawn paste and fish sauce in the survey but it would be up to each country to decide on the type of fermented fish and fish products and to work within their allocated budget. The results of the activities will be deposited in the database of the Fish and Fish Products Safety Information Network.

In Activity 3.2, MFRD with assistance from a trainer from Department of Fisheries (DOF), Thailand will conduct on-site training courses for 6-10 laboratory personnel in member countries on histamine analysis using fluorometric and HPLC method. The objective is to upgrade the technical capability in histamine testing in the region and facilitate the execution of Activity 3.1.

Component 4: Survey on Drug Residues in Southeast Asian Fish and Fish Products

There are two activities under this component namely, Activity 4.1 “Activity 4.1: Survey of chloramphenicol and nitrofurans in fish and fish products” and Activity 4.2 “Regional training course in seafood safety for laboratory personnel”.

In Activity 4.1, a survey on the levels of chloramphenicol and nitrofurans will be conducted on fish and fish products from the region. Various participating regional laboratories will conduct a survey each in their respective countries. In the Mid-term Review Meeting held in 2007, the

meeting recommended that Malachite Green and leuco-Malachite Green should be included in the survey. Thus, the title of the Activity 4.1 was changed to “Activity 4.1: Survey of chloramphenicol, nitrofurantoin, malachite green and leuco-malachite green in fish and fish products”. The Meeting also agreed to obtain the samples from processing plants. The results of the activities will be deposited in the database of the Fish and Fish Products Safety Information Network.

The activity 4.2 was initiated after the 1st Planning Meeting for Japanese Trust Fund IV Projects held on 14-16 December 2004 in Singapore. The Meeting agreed that there is a need to train the laboratory personnel on the analysis of antibiotics especially the detection of prohibited drugs such as chloramphenicol and nitrofurantoin used in aquaculture farms. The training is essential for those analyses that require sophisticated instruments such as the Liquid Chromatography Tandem Mass Spectrometry (LC-MS-MS) for detection and determination. Through this regional training course, member countries can share experience and their methods to analyze certain drugs.

As discussed in the Mid-term Review Meeting, Vietnam National Fisheries Quality Assurance & Veterinary Directorate (NAFIQAVED) and MFRD would co-organized this training and an expert from laboratory would be invited to be the trainer for the 3 methods namely Chloramphenicol, Nitrofurantoin and Malachite Green using Liquid Chromatography Mass Spectrometry (LC-MS-MS) method.

New Activities

In 2006, MFRD proposed to hold the JTF II Mid-Term Review Meeting in Singapore under Activity 5.1 (New). The objectives of this meeting were to announce the change of project title as well as the scope of the project to exclude the aquaculture component and to update on the progress of all activities. In 2007, MFRD proposed 2 new activities, namely, Activity 5 “Publication of Report” and Activity 6 “End-of-Project Meeting”. The final results and reports of all SEAFDEC member countries would be published and distributed under Activity 5. In Activity 6, MFRD will hold the End-of- Project Meeting in October 2008. It is envisaged that all key project leaders will be invited to attend this 3-day meeting. The meeting will report on the project since the implementation in 2004, identify the challenges faced in the implementation of the project, and deliberate the future plans.

3 PROGRESS OF ACTIVITIES IN THE YEAR 2008

MFRD conducted six activities under this program in 2008 namely, four regional surveys on heavy metals, pesticide residues, histamine and drug residues (chloramphenicol, nitrofurantoin, malachite green and leuco-malachite green) under Activity 1.1, 2.2, 3.1 and 4.1 respectively, the publication of the technical compilation and one End-of- Project Meeting under Activity 5 and 6 respectively.

For the regional surveys on heavy metals, pesticide residues, histamine, drug residues under Activities 1.1, 2.2, 3.1 and 4.1 respectively, the participating countries and the fish species and fish products surveyed are as listed in Table 1 below.

MFRD collated and edited the survey reports from all participating member countries between July to September 2008 and met with the publisher in September 2008. The Activity 5 “Publication of Report” was successfully completed. The publication was circulated to all SEAFDEC member countries after the End-of- Project Meeting held in October 2008.

The Activity 6 “End-of- Project Meeting” was successfully conducted in Singapore from 22 – 24 October 2008. The objectives of this meeting were for all Key Project Leaders (KPLs) to report on the program since its implementation in 2004, identify the challenges faced in the implementation of the program, and deliberate future plans. A total of 22 participants from SEAFDEC member countries, Cambodia, Indonesia, Japan, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam attended the meeting.

Table 1. List of Participating Countries, Regional Surveys Participated and Fish Species Surveyed

Country	Types of Fish and Fish Products Covered for Heavy Metals (Activity 1.1)	Types of Fish and Fish Products Covered for Pesticide Residues (Activity 2.2)	Types of Fish and Fish Products Covered for Histamine (Activity 3.1)	Types of Fish and Fish Products Covered for Chloramphenicol, Nitrofurans, Malachite Green & Leuco-malachite Green (Activity 4.1)
Cambodia	<ul style="list-style-type: none"> Frozen Iridescent Shark Catfish (<i>Pangasius hypophthalmus</i>) 	<ul style="list-style-type: none"> Frozen Micronema micronema Marbled Sleeper (<i>Oxyeleotris marmorata</i>) 	<ul style="list-style-type: none"> Frozen Iridescent Shark Catfish (<i>Pangasius bocourti</i>) Indo-pacific Mackerel (<i>Scomberomorus guttatus</i>) <i>Epinephelus coioides</i> 	-
Indonesia	<ul style="list-style-type: none"> Fresh/Frozen/Canned/Loin/Baby Tuna Fresh Skipjack Tuna Yellowfin Tuna Bluefin Tuna Red Snapper Grouper Frigate Mackerel Barred Spanish Mackerel Swordfish Striped Marlin Black Marlin Baramundi Oil Fish Leather jacket Sailfish Kingfish Black Tiger Prawns Shrimp 	-	<ul style="list-style-type: none"> Fresh/Frozen/Canned/Loin Tuna Bluefin Tuna Yellowfin Tuna Skipjack Tuna Baby Tuna Striped Marlin Black Marlin Swordfish Red Snapper Butterfish Grouper Leather Jacket Baramundi 	<ul style="list-style-type: none"> Shrimp (<i>Penaeus monodon</i>) Shrimp (<i>Penaeus vannamei</i>)
Malaysia	<ul style="list-style-type: none"> Spanish Mackerel (<i>Scomberomorus commerson</i>) Red Snapper (<i>Lutjanus sp.</i>) Shrimps (<i>Metapeneaus sp.</i>) White Shrimp (<i>P. vannamei</i>) Squid (<i>Loligo sp.</i>) Baramundi (<i>Lates calcarifer</i>) Catfish (<i>Clarius</i>) 	<ul style="list-style-type: none"> Surimi (threadfin bream) Surimi Kintokidai A, Big Eye Snapper Fish ball Black Tiger Prawn Frozen Shrimp Frozen Squid 	-	<ul style="list-style-type: none"> Shrimp (<i>Penaeus monodon</i>)

Country	Types of Fish and Fish Products Covered for Heavy Metals (Activity 1.1)	Types of Fish and Fish Products Covered for Pesticide Residues (Activity 2.2)	Types of Fish and Fish Products Covered for Histamine (Activity 3.1)	Types of Fish and Fish Products Covered for Chloramphenicol, Nitrofuran, Malachite Green & Leuco-malachite Green (Activity 4.1)
	<ul style="list-style-type: none"> <i>batrachus</i>) • Tilapia (<i>O. niloticus</i>) • Green mussel (<i>Perna viridis</i>) • Black Tiger shrimp (<i>Penaeus monodon</i>) • Grouper (<i>Epinephelus sp.</i>) • Cockle (<i>Anadara granosa</i>) • Fishcake • Fishball • Surimi Kintokidai A, Big Eye Snapper • Surimi (Threadfin Bream) • Frozen octopus 			
Myanmar	<ul style="list-style-type: none"> • Tiger Prawn (<i>Penaeus monodon</i>) • Snake Head (<i>Channa striatus</i>) • Striped Catfish (<i>Pangasius Hypophthalmus</i>) • Frozen Squid (<i>Loligo davauceli</i>) • Frozen Cuttlefish (<i>Sepia pharonis</i>) • Rohu (<i>Labeo Rohita</i>) • Grouper (<i>Epinephelus tauvina</i>) • Seabass (<i>Lates Calcarifer</i>) • Giant Fresh-water prawn (<i>Macrobrachium rosenbergii</i>) 	<ul style="list-style-type: none"> • Rohu (<i>Labeo Rohita</i>) • Giant Fresh-water prawn (<i>Macrobrachium rosenbergii</i>) • Tilapia (<i>Oreochromis niloticus</i>) • Catfish (<i>Clarias batrachus</i>) • Mrigal (<i>Cirrhinus mrigala</i>) • Snake Head (<i>Channa striata</i>) • Common Carp (<i>Cyprinus Carpio</i>) • Tarpin (<i>Puntius Chola</i>) • Boal (<i>Wallago atta</i>) • Indian Cat Fish (<i>Clarias batrachus</i>) • Climbing Perch (<i>Anabas testudineus</i>) 	<ul style="list-style-type: none"> • Spanish Mackerel (<i>Scomberomorus commerson</i>) • Canned Sardine (<i>Sardinella gibbosa</i>) • Fresh Sardine (<i>Sardinella gibbosa</i>) • Dried Anchovy (<i>Stolephorus indicus</i>) • Fresh Hilsa (<i>Tenualosa ilisha</i>) • Dried Lotia (<i>Harpodon nehereus</i>) • Canned Hilsa (<i>Tenualosa ilisha</i>) • Fish paste • Shrimp paste 	<ul style="list-style-type: none"> • Fresh/Frozen Tiger Prawn (<i>Penaeus monodon</i>) • Fresh/Frozen Prawn (<i>Macrobrachium rosenbergii</i>) • Tilapia (<i>Oreochromis niloticus</i>) • Rohu (<i>Labeo Rohita</i>) • River Catfish (<i>Sperata seenghala</i>) • Pink (<i>Metapenaeus affinis</i>) • White (<i>Penaeus Indicus</i>)
Philippines	-	<ul style="list-style-type: none"> • Shrimp (<i>Penaeus monodon</i>) • Milkfish (<i>Chanos Chanos</i>) • Mudcrab (<i>Scylla serrata</i>) • Lobster (<i>Pnulinus sp.</i>) 	<ul style="list-style-type: none"> • Yellowfin Tuna (<i>Thunnus albacares</i>) • Blue Marlin (<i>Makaira nigricans</i>) • Skipjack Tuna (<i>Katsuwonus pelamis</i>) • Milkfish (<i>Chanos chanos</i>) • Mackerel (<i>Scomberomorus</i>) • Sardine (<i>Sardinella longiceps</i>) 	<ul style="list-style-type: none"> • Fresh frozen shrimp (<i>Penaeus monodon</i>) • Crab (<i>Scylla serrata</i>) • Lobster (<i>Panulirus sp.</i>) • Grouper (<i>Epinephelus spp</i>)

Country	Types of Fish and Fish Products Covered for Heavy Metals (Activity 1.1)	Types of Fish and Fish Products Covered for Pesticide Residues (Activity 2.2)	Types of Fish and Fish Products Covered for Histamine (Activity 3.1)	Types of Fish and Fish Products Covered for Chloramphenicol, Nitrofurantoin, Malachite Green & Leuco-malachite Green (Activity 4.1)
			<ul style="list-style-type: none"> Dried Anchovies (<i>Stolephorus ronquilloi</i>) 	
Singapore	<ul style="list-style-type: none"> Sea cucumber Blood cockle (<i>Anadara granosa</i>) Mitre squid (<i>Loligo chinensis</i>) Mud crab (<i>Scylla serrata</i>) Longtail tuna (<i>Thunnus tonggol</i>) Barred Spanish mackerel (<i>Scomberomorus commerson</i>) 	<ul style="list-style-type: none"> Spanish Mackerel (<i>Scomberomorus commerson</i>) Snakeskin Gouramy (<i>Trichogaster pectoralis</i>) Mei Ren Yu Sand Whiting (<i>Sillago sihama</i>) Yellow-banded Scad (<i>Selaroides leptolepis Valenciennes</i>) Threadfin (<i>Polynemus indus Shaw</i>) Indian Mackerel (<i>Rastrelliger kanagurta</i>) 	-	-
Thailand	<ul style="list-style-type: none"> Frozen Cuttlefish (<i>Sepia spp.</i>) Frozen Baby Octopus (<i>Octopus spp.</i>) Frozen squid (<i>Loligo spp.</i>) Canned Skipjack Tuna (<i>Katsuwonus pelamis</i>) Canned Albacore Tuna (<i>Thunnus alalunga</i>) Canned Yellowfin Tuna (<i>Thunnus albacares</i>) Frozen Vannamei Shrimp (<i>Penaeus vannamei</i>) Frozen Salmon (<i>Salmon oncorhynchus keta</i>) Ribbon Fish (<i>Trichiurus affinis</i>) Imitation crab meat (<i>Nemipterus spp.</i>) Frozen Nile Tilapia (<i>Tilapia nilotica</i>) Canned Sardinella (<i>Sardinella gibbosa</i>) Frozen Baby clam (<i>Paphia undulate</i>) 	<ul style="list-style-type: none"> Frozen Vannamei Shrimp (<i>Penaeus vannamei</i>) Frozen Nile Tilapia (<i>Tilapia nilotica</i>) Dried Yellowstripe Trevally (<i>Selaroides leptolepis</i>) 	<ul style="list-style-type: none"> Frozen and Canned Skipjack Tuna (<i>Katsuwonus pelamis</i>) Dried Anchovy (<i>Stolephorus spp.</i>) Mackerel (<i>Decapterus maruadi</i>) Sardine (<i>Sardinops gibbosa</i>) Long Tail (<i>Thunnus tonggol</i>) Tuna sauce 	<ul style="list-style-type: none"> Fresh/Frozen Tiger prawn (<i>Penaeus monodon</i>) Freshwater Shrimp (<i>Macrobrachium</i>) Crab (<i>Scylla serrata</i>)

Country	Types of Fish and Fish Products Covered for Heavy Metals (Activity 1.1)	Types of Fish and Fish Products Covered for Pesticide Residues (Activity 2.2)	Types of Fish and Fish Products Covered for Histamine (Activity 3.1)	Types of Fish and Fish Products Covered for Chloramphenicol, Nitrofurantoin, Malachite Green & Leuco-malachite Green (Activity 4.1)
	<ul style="list-style-type: none"> Frozen green mussel (<i>Perna viridis</i>) 			
Vietnam	<ul style="list-style-type: none"> Black Tiger Shrimps (<i>Penaeus monodon</i>) Bigeye tuna (<i>Thunnus albacares</i>) Tra Catfish (<i>Pangasius hypophthalmus</i>) Basa Catfish (<i>Pangasius bocourti</i>) Clam (<i>Meretrix lyrata</i>) Squids (<i>Loligo edulis</i>) Cuttlefish (<i>Sepia spp.</i>) Octopus (<i>Octopus spp.</i>) Marlin Fish (<i>Makaira indica</i>) Swordfish (<i>Xiphias gladius</i>) Ribbon Fish (<i>Xiphias gladius</i>) Mackerel (<i>Acanthocybium solandri</i>) 	<ul style="list-style-type: none"> Black Tiger Shrimps (<i>Penaeus monodon</i>) Clam (<i>Meretrix lyrata</i>) Basa catfish (<i>Pangasius bocourti</i>) Tra catfish (<i>Pangasius hypophthalmus</i>) Tilapia (<i>Oreochromis spp.</i>) 	<ul style="list-style-type: none"> Dried anchovy (<i>Encrasicholina heteroloba</i>) Frozen/canned Skipjack Tuna (<i>Sarda orientali</i>) Frozen/Canned Bigeye Tuna (<i>Thunnus albacares</i>) Canned Sardines (<i>Sardinella gibbosa</i>) 	<ul style="list-style-type: none"> Crabs (<i>Scylla serrata</i>) Frozen/Frozen Boiled/ Fresh Black Tiger Shrimps (<i>Penaeus monodon</i>) Bigeye Tuna (<i>Thunnus albacares</i>) Octopus (<i>Octopus spp.</i>) Squid (<i>Loligo edulis</i>) Cuttlefish (<i>Sepia spp.</i>)

Program Activities in 2008:

Project/Activity Title	Duration	Remarks
Component 1: Survey of Heavy Metals in Fish and Fish Products in Southeast Asia		
Activity 1.1: Regional survey of heavy metals in fish and fish products	Jan - Jun 08	100% accomplished
Activity 1.2: On-site training on heavy metals analysis	-	Not conducted due to budgetary constraint.
Component 2: Survey of Pesticide Residues in Fish and Fish Products in Southeast Asia		
Activity 2.1: On-site training on pesticide residues analysis	-	Not conducted due to budgetary constraint.
Activity 2.2: Regional survey of pesticide residues in fish and fish products	Jan - Jun 08	100% accomplished
Component 3: Survey of Histamine Levels in Fish and Fish Products in Southeast Asia		
Activity 3.1: Regional survey of histamine in fish and fish products	Jan - Jun 08	100% accomplished
Activity 3.2: On-site training on histamine analysis	-	Not conducted due to budgetary constraint.
Component 4: Survey on Drug Residues in Fish and Fish Products in Southeast Asia		
Activity 4.1: Survey of chloramphenicol, nitrofurantoin,	Jan - Jun 08	100% accomplished

malachite green and leuco-malachite green in fish and fish products		
Activity 5: Publication of Report	Jul – Nov 08	100% accomplished
Activity 6: End-of- Project Meeting	22 – 24 Oct 08	100% accomplished

4 PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Program Activities

As a follow-up activity to this project, MFRD proposed to conduct a follow-up project on Biotoxins Monitoring in Fish and Fish Products in Southeast Asia from 2009-2012 and deliberated the details of the new project during the End-of-Activity Meeting held in Singapore on 22 to 24 October 2008.

The implementation schedule for the follow-up Biotoxins Monitoring project is as follows:

Program/Project /Activities	2009				2010				2011				2012			
	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4	Q 1	Q 2	Q 3	Q 4
1 Regional Technical Consultation (RTC)																
2 Biotoxins Analyses Training Courses																
2.1 1 st regional training course in Singapore																
2.2 1 st on-site training course in Country A																
2.3 2 nd on-site training course in Country B																
2.4 3 rd on-site training course in Country C																
3 Biotoxins Survey																
3.1 Setting up of biotoxins analyses methodologies																
3.2 Implementation of biotoxins survey																
4 Publication of technical report																
5 EOP Seminar																

In 2009, MFRD will conduct the Regional Technical Consultation Meeting in Singapore to initiate the project and plan for all the project activities. All the ASEAN-SEAFDEC member countries will be invited to the meeting and to participate in the project activities. ASEAN-SEAFDEC member countries will present country papers on the status of biotoxins monitoring systems in their countries' fisheries industry. A national project leader for each country will be designated to be responsible for implementing and monitoring the project in his/her country. Countries will be identified to conduct surveys in biotoxins detection and monitoring. The meeting also aims to identify the necessary training needs and finalise the details of the training courses to be conducted and the implementation of the survey. In addition, the meeting will also discuss the publication of the technical report for the survey results.

4.2 Expected Outcomes

MFRD will be the responsible SEAFDEC Department for the follow-up project on Biotoxins Monitoring and will manage and coordinate all project activities. Other ASEAN member countries will be involved in implementing the relevant project activities on a cost-sharing basis to develop the methodologies in biotoxins analyses. The participating countries will conduct the biotoxins monitoring in their respective countries. Training courses involving regional expertise will be conducted to build up capacity in ASEAN member countries for biotoxins detection and monitoring implementation.

The expected outcomes for the follow-up project include development of methodologies for biotoxins analyses, biotoxins survey results, training courses and publication of a technical report of biotoxins monitoring in ASEAN.

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Research and Development (R&D) of Stock Enhancement for Species under International Concern

Lead Department: AQD

Lead Country: Philippines

Total Duration: 2005-2009

Proposed 2008 Budget: US\$45,859

1. INTRODUCTION

Many species of marine animals are now considered threatened or endangered, because populations have been depleted by fishing, hunting, and collecting for food and trade. Among these threatened species are the sea horses, giant clams, top shell, corals, sea cucumbers and dolphins, marine turtles, sharks and rays, etc. The capture, collection, trade, and utilization of these species have been regulated under the Convention on the International Trade of Endangered Species of Wild Fauna and Flora (CITES) and/or other international and national mechanisms.

Heightened public interest in environment protection and resource conservation has become an important factor in fisheries development around the world; particularly, in policy formulation for and within the fisheries sector. Public opinion has sometimes exerted unreasonable pressure and restrictions on the fishing and fish farming industries. The Southeast Asian region has a highly diverse marine fauna and flora, many of which have been traditionally used for human food and commerce. Thus, the region is easily targeted by environment-oriented groups, especially those from developed western countries that do not share the same level of dependence on marine life.

In view of above, it is necessary for the fisheries and aquaculture sectors in Southeast Asia, including research and development organizations like SEAFDEC, to address the environmental concerns raised by international public, particularly with regard to threatened or endangered species. Thus, SEAFDEC will undertake the Program on Stock Enhancement for Threatened Species of International Concern. As preparatory activity of the Program, a workshop was convened in 2005 to identify threatened species for stock enhancement and assess the existing hatchery and stock enhancement technologies for the identified species.

2. PROGRAM

2.1 Objectives

The objectives of the Program are to: (1) develop ecologically sound strategies for stock enhancement including hatchery production and release of genetically diverse and disease-free juveniles; (2) encourage participation of local communities in stock enhancement; (3) develop methods and criteria for monitoring and evaluation of stock enhancement and conservation success; (4) transfer the stock enhancement technologies and social strategies to the countries in the region; and (5) review past and present stock enhancement programs to conserve threatened species in Southeast Asia

2.2 Program description

The Program includes the following activities: (1) Regional Workshop to review the status of stock enhancement in Southeast Asia, identify threatened species, and assess the existing technologies for such species; (2) Research on strategies for sea ranching and stock enhancement; (3) Verification of developed and established technologies; and (4) Training and information dissemination on stock enhancement.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Project Activities

Project/Activity Title	Duration	Remarks
Workshop to assess existing technology	No activity was planned in 2008.	
Research and Development on Strategies of Sea Ranching and Stock Enhancement	All year around	% of completion – 70%
Verification of developed and established technologies	All year around	% of completion – 70%
Training and information dissemination	All year around	Training on abalone hatchery was conducted.

3.1 Workshop to Assess Existing Technology

No activity was planned in this category.

3.2 Research and Development on Strategies of Sea Ranching and Stock Enhancement

(1) Conservation of seahorses *Hippocampus barbouri*, *H. comes*, *H. kuda*

Spawning started on January 17 and is still on-going. Mass mortalities were observed on 0-30 days old animals. This may be attributed to the bacterial infection of seawater. Seawater samples submitted to pathogen surveillance reported the presence of bacteria. Chlorinated seawater improved survival of 0-90 days old seahorses. The installation of UV treatment system is still being facilitated. The total numbers of existing seahorses (*Hippocampus barbouri*, *H. comes* and *H. kuda*) reached 1,404 of adults, 55 of 6-8 months old, 112 of 3-6 months old, 5,740 of 1-3 months old and 3,500 of 1-30 days old juveniles (10,811 in total) as of September 2008 .

A preliminary transport experiment was conducted using 45 days old seahorses subjected to 8 hours simulated transport using an electronic shaker at 45 rev/min. Results showed 100% survival. Results will be useful during the actual transport of seahorse juveniles.

Nursery culture of seahorse in Igang Marine Station. is ongoing to compare growth and survival between those reared in net cage and tanks in hatchery.

From water samples of Igang Marine Station, only one type of the copepod *Pseudodiaptomus* at various life stages was identified. However, it was observed that the animals in Igang cages were covered by filamentous algae.

(2) Seed production for stock enhancement of humphead wrasse, *Cheilinus undulates*

Arrangements were made to transport larvae of Napoleon wrasse to Tigbauan, SEAFDEC/AQD. The Palawan Sustainable Development Council requires a permit to

transport anything live from Palawan and the Council would not issue a permit to transport of wrasse larvae because of its CITES status. After submission of several documents, the Council approved the transport. Broodstock spawned, but rearing larvae up to juveniles is not yet successful.

(3) *Experimental release of hatchery-produced donkey's ear abalone, Haliotis asinina, in Carbin Reef, Sagay Marine Reserve, Negros Occidental (SEAFDEC/AQD)*

Hatchery produced abalone juveniles were individually tagged and transported using the transport modules. Samplings were done on Days 1, 2, 3 and 15 after release. Subsequently, monthly monitoring was conducted to record the growth of the abalone on days 0, 30, 60 and 90.

Results showed that the growth of abalone steadily increased from an initial shell length of 3.33 cm to 3.6, 3.75 and 3.93 cm for days 30, 60 and 90, respectively. The cages were monitored for the retrieval of abalone. Results showed a decreasing percentage of abalone retrieved at 65%, 63% and 52% on days 30, 60 and 90, respectively.

(4) *Stock enhancement of the abalone, Haliotis asinina, in Sagay Marine Reserve*

The population structure of wild abalone population was studied from March 2007 to March 2008 by monthly-monitoring shell length, body weight, sex and sexual maturity.

From January to March 2008, 34 pcs. abalone were collected from all 10 transects. Abalone samples measured the mean shell length of 5.56 ± 0.16 cm and the mean body weight of 37.62 ± 3.47 g. Density of abalone ranged from 0 to 0.03 individual m⁻², mean 0.18 ± 0.003 . Of the 34 samples, 47.1 % were females and 52.9 % were males. Of the female samples, 31.3 % had undeveloped gonads, 12.5% with pre-matured gonads, 18.8 % with partially matured gonads and 37.5% with fully matured gonads. Of the male samples, 5.6 % had undeveloped gonads, 5.6 % with pre-matured gonads, 5.6 % with partially matured gonads and 83.3% with fully matured gonads. Catch per unit effort was 2.83 individuals fisherman-1 hour-1.

Diet-tagged abalone juveniles (n=1,010) were transported for release in Carbin Reef of Sagay Marine Reserve last 20 July 2008. Abalone measuring 2.1-3.0 cm shell length (SL) were acclimated in Carbin Reef for 3 days prior to release last 23 July 2008. A total of 856 juveniles were released in 10 transects at 86-88 individuals per transect. Post release monitoring showed that of the released abalone, 18.93% remained in the PVC pipes on day 1, 4.4% on day 2, 2.0% on day 3, 0.7% on day 4, 0.4% on day 5 and 0.2% on day 6. Mortality of released abalone was 1.5% after 1 week.

Last 25 August 2008, sampling was done in Carbin Reef. A total of 19 abalone were collected, 4 released and 15 wild. Mean SL and body weight (BW) of released abalone were 2.8 cm and 3.62 g, respectively.

(5) *Development of techniques for sea ranching of the donkey's ear abalone Haliotis asinina*

A total of around 13,000 abalones have been released in a 30,000m² site and the zero recovery of the abalones during the sampling could be attributed to low abalone density per unit area. Both the low density and unpredictability is expected to contribute to low recovery of the released abalones, and therefore understanding the behavior of the animals is essential.

In March, 2008, 5,500 abalone juveniles were released with pipes in the site. During recovery of the pipes, fishes were commonly found surrounding the pipes. Some abalones were found up to 1 meter distance from the pipes especially from those that landed on sandy substrates. Abalones that remained in the pipes ranged from 3-15 pieces per pipe.

A final inventory of seeded stocks (if any) was conducted on September 1-2, 2008 to determine if there were still remaining abalones that were released. No released hatchery-bred abalones were recovered during the sampling. However, 6 live wild abalones (*H. varia* and *H. ovina*) with sizes ranges from 2.9-3.8 cm SL, 10.2-13.2 g BW, were collected during the sampling.

(6) *Stock enhancement of sea cucumber Holothuria scabra*

RIA3 in Vietnam:

Optimum density in pond nursery is being determined. The 3-size juveniles are being conditioned for release.

SEAFDEC/AQD-UPV:

There was one major induced spawning done in January, 2008. At Day41 post fertilization, >10,000 early visible juveniles were counted. After two month, there were only about 4,500 juveniles left with mean wet weight of 0.3g (n=25). A part of the juveniles was moved to sea pens and monitored one week, 2 weeks, 1 month, 2 months and 2.7 months after transfer.

After 3 months, survival of hatchery produced juveniles in sea pens ranged from 1% to at best 32%. Growth of the juveniles had been relatively rapid. Mean wet weights were 1.2g, then 3.2g, 10.4 g and 17.7g at ~ 2 weeks, 1 month, 2 months and nearly 3 months after transfer to sea pens, respectively. Density has profound effects on growth rate as the preliminary results would bear.

(7) *Fisheries and seed production of the angelwing clam Pholas orientalis for the rehabilitation of depleted wild stock*

New broodstock were collected for new spawning trials. Spawning induction was done on 7 April 2008. Oldest larva obtained from this spawning was the umbo stage. This is also the oldest stage attained so far after several spawning trials.

The clams also spawned naturally last 15 April 2008. Umbo larvae failed to settle after trying different cues. Parasites were observed in broodstock collected last August 2008.

3.3 Verification of developed and established technologies

(1) *Growth and survival of hatchery-reared giant clam, Tridacna gigas, in ocean nurseries in Negros and Panay Islands*

Three batches of giant clams have been stocked in Sagay Marine Reserve (605 clams) from March 2006, in Malalison Island (506 clams) from August 2006, and in Igang Marine Station (300 clams) from February 2007.

Growth performance and environmental condition have been regularly monitored and compared among 3 stocking sites. Depth of ocean nurseries significantly differ among the three sites; Igang was the shallowest and Culasi, the deepest. Growth rates and survival were significantly higher in Igang than in the other sites. Number and size of zooxanthellae were

higher and larger, respectively, in the clams in Igang than in the clams in other sites. So far, growth rate has been higher in Igang than in Sagay and Malalison.

Giant clams stocked in Malalison Island were lost by two typhoons; hence, only 11 clams have survived. Results showed that Malalison Island is not suitable as an ocean nursery site.

(2) Socioeconomic analysis of stock enhancement of abalone and giant clams in Sagay Marine Reserve in the Philippine

The project activities for 2008 mainly focused on the delivery of information, education and communication (IEC) activities to support the stock enhancement of abalone & giant clams in the Sagay Marine Reserve (SMR).

The IEC (information, education and communication) activities included information seminars on the “Biology of Abalone and Giant Clam”. The seminar aimed to prompt better appreciation of marine resources and stimulate environmental consciousness among stakeholder-participants.

The series of IECs overall indicated the importance of information dissemination to various stakeholders prior to resource enhancement activities. The study showed the need to inform the stakeholders of the importance, mechanisms, present trade-offs and future benefits from stock enhancement.

Participatory Action Plan Development (PAPD) was also conducted to complement the baseline survey. The PAPD process identified, as economic problems, the top two problems: 1) low income from fishing due to declining catch, and 2) lack of market outlet and capital among handicraft makers. For the priority economic problems such as small incomes from fishing, the top two solutions voted include: 1) requesting extension of fishing grounds and additional livelihoods, and 2) regulating areas for fishing. Meanwhile the stakeholders voted top two solutions such as: 1) seeking capital, and 2) improving shellcraft quality control to counter problems on marketing.

The study also organized an ecotourism information seminar. The tourist survey results showed that the awareness levels of the tourist-respondents on abalone (13%) and giant clam (42%) are, however, low in comparison with coral (91%), star fish (73%), sea horse (61%) and sea cucumber (36%). The presence of these species in Sagay elicited interest among tourist, either as species to see in diving or snorkeling sites or as food in local restaurants for non-prohibited marketable species.

3.4 Training and information dissemination

- Editing/updating of new stock enhancement web pages has been initiated.
- An international training related to the objectives of this program (e.g. training course of abalone hatchery) was implemented under other Trust Fund Program “Promotion of Sustainable Aquaculture in the ASEAN Region”.

4. PROPOSED ACTIVITIES FOR THE YEAR 2009

4.1 Planning for the project activities

Project/Activity Title	Duration	Remarks
Workshop to Assess Existing Technology	Dec	End-of-Project Workshop
Research and Development on Strategies of Sea Ranching and Stock Enhancement		
(1) Conservation of sea horses <i>Hippocampus barbouri</i> , <i>h. comes</i> and <i>H. kuda</i>	Jan - Nov	Sea horse
(2) Seed production for stock enhancement of humphead wrasse, <i>Cheilinus undulates</i>	Jan-Nov	Napoleon wrasse
(3) Experimental release of hatchery-produced donkey's abalone <i>Haliotis asinina</i> in Carbin Reef, Sagay Marine Reserve, Negros Occidental	Jan-Nov	abalone
(4) Stock enhancement of the abalone <i>Haliotis asinina</i> in Sagay Marine Reserve	Jan-Nov	abalone
(5) Development of sea ranching techniques for the donkey-ear abalone <i>Haliotis asinina</i> and other economically important mollusks	Jan-Nov	abalone
(6) Stock enhancement of sea cucumber <i>Holothuria scabra</i>	Jan-Nov	Sea cucumber
(7) Fisheries and seed production of the angelwing clam <i>Pholas orientalis</i> for the rehabilitation of depleted wild stock	All year around	Angelwing clam
(8) Growth and survival of hatchery-reared giant clams <i>Tridacna gigas</i> in Negros and Panay islands	Jan-Nov	Giant clam
(9) Socioeconomic analysis of stock enhancement of abalone and giant clams in Sagay Marine Reserve in the Philippines	Jan-Nov	Abalone and giant clam Socioeconomic study
Training and information dissemination	All year around	

(a) Activity 1: Workshop to Assess Existing Technology

End-of-Project Workshop (International) will be held in 2009, together with the Workshop of the other Japanese Trust Fund Projects (TF4) (“Development of Fish Surveillance System” and “Development of Technologies and Human Capacity Building for Sustainable Aquaculture”), to review and evaluate the Project achievements.

(b) Activity 2: Research and Development on the Strategies of Sea Ranching and Stock Enhancement

(1) Conservation of seahorses *Hippocampus barbouri*, *H. comes*, *H. kuda* (SEAFDEC/AQD)

- Refinement of management and feeding scheme for improving production of hatchery-bred juveniles;
- Transfer of older hatchery-bred juveniles in net cages;
- Assessment of stocking sites for seahorse juveniles;
- Development of tagging techniques for seahorses;
- Preliminary release of hatchery-bred juveniles in natural condition.

(2) *Seed production for stock enhancement of humphead wrasse, Cheilinus undulates*

The humphead or Napoleon wrasse, *Cheilinus undulates*, is one of the largest and most valuable reef fish. It is considered threatened; hence, it is listed in the Appendix II of CITES in 2004. The breeding and artificial seed production technologies of this species will be developed in 2009;

- Documentation of development of larvae for improving the survival and growth of larvae/fry on day 0-14;
- Evaluation of potential live food for initial feeding of the larvae.

(3) *Experimental release of hatchery-produced donkey's ear abalone, Haliotis asinina, in Carbin Reef, Sagay Marine Reserve, Negros Occidental (SEAFDEC/AQD)*

Hatchery-bred abalone juvenile will be released into cages in wild conditions to determine the growth and survival under the cage-condition (in Carbin Reef, Sagay Marine Reserve, Negros Occidental). The project will determine the survival of hatchery-produced abalone juveniles for the first 3-5 days after release in Carbin Reef, growth rate of shell length and body weight of released abalone juveniles, and survival of released abalone.

(4) *Stock enhancement of the abalone, Haliotis asinina, in Sagay Marine Reserve (SEAFDEC/AQD)*

Hatchery-bred abalone will be released into natural conditions to assess the impact of released abalone on the wild abalone population (in Carbin Reef, Sagay). Activities will comprise:

- Monthly monitoring of wild stocks and juveniles released in 2008;
- Release of second and final batch of hatchery-reared abalone juveniles in the study site;
- Monitoring of growth and survival of released juveniles.

(5) *Development of techniques for sea ranching of the donkey-ear abalone Haliotis asinina (SEAFDEC/AQD)*

This study aims to develop a sustainable utilization and exploitation of natural marine resources through sea ranching of donkey-ear abalone in Nogas Island, Anini-y, Antique. To develop appropriate release strategy and proper harvest or recapture techniques, the following activities will be done in 2009:

- Determination of some bio-physical factors that affect growth and survival of released abalones for sea ranching;
- Development of appropriate release strategies (ie. suitable size, stocking density or season) for sea ranching of abalone;
- Monitoring of the growth performance, survivorship, and recruitment of released abalone;
- Development of proper harvest or recapture techniques (ie. size, quantity or management techniques) that will sustain the enhanced fisheries.

(6) Stock enhancement of sea cucumber *Holothuria scabra* (Research Institute of Aquaculture 3, Vietnam and SEAFDEC/AQD)

Studies on development of seed production method aimed at stock enhancement will be implemented in Vietnam (RIA3) and SEAFDEC/AQD. Information exchange of seed production technologies will be promoted between Vietnam and SEAFDEC/AQD.

RIA3 (Vietnam):

- Development and refinement of seed production methods of sea cucumber for stock enhancement;
- Development of suitable release strategies for sea cucumber;
- Assessment of potential sites for stock enhancement; and
- Preparation of a manual for seed production methods of sea cucumber for stock enhancement.

SEAFDEC/AQD-UPV:

- Identification of appropriate and optimum procedures for sea pen nursery of hatchery produced *H. scabra* juveniles
- Investigation of the impact of nursery and broodstock sea enclosures to the immediate sediment environment and demography of the wildstock in the area;
- Evaluation of the effect of translocation of enclosed breeding stock on recruitment of sea cucumber in Igang and vicinity.

(7) Fisheries and seed production of the angelwing clam *Pholas orientalis* for the rehabilitation of depleted wild stock

This high demand led to indiscriminate harvesting resulting to the depletion of natural stocks of the angelwing clam *Pholas orientalis*. Seed production techniques in the hatchery should be established prior to any attempt of considering resource rehabilitation through stock enhancement. Studies on the biology and fisheries of the angelwing clam should also be conducted while developing seed production techniques:

- Survey of sites for possible sources of broodstock and also possible sites for release;
- Development of technology for seed production in the hatchery;
- Refinement of techniques used in spawning induction and larval rearing (in 2007 & 2008) to produce angelwing clam juveniles;
- Development of technology for keeping angelwing clam broodstock in captivity for longer periods.

(c) Activity 3: Verification of developed and established technologies

(8) Growth and survival of hatchery-reared giant clam, *Tridacna gigas*, in ocean nurseries in Negros and Panay Islands

This study aims to compare growth rates and survival of clams grown in these three different sites. The following studies will be continued;

- Monitoring of growth and survival after attaining the escape size of ≥ 20 cm SL;
- Monitoring of temperature, salinity and turbidity in the stocking sites;
- Comparison of the 3 habitats based on water parameters obtained; correlation of water parameters with growth and survival.

(9) Socioeconomic analysis of stock enhancement of abalone and giant clams in Sagay Marine Reserve in the Philippines

- Determination of range of stakeholders directly and immediately benefiting from stock enhancement initiative of AQD and collaborators;
- Identification of policy implications, especially on access rights to stock-enhanced fisheries, that are acceptable to most stakeholders;
- Identification of socioeconomic indicators and strategies for promoting responsible practices for managing enhanced stocks.

(d) Activity 4: Training and information dissemination

- Stock enhancement web pages of SEAFDEC/AQD will be maintained and updated;
- A manual on seed production of sea cucumber will be prepared;
- Some of the activities related to the objectives of this program (e.g. training course of abalone hatchery) will be implemented under other Trust Fund Program “Promotion of Sustainable Aquaculture in the ASEAN Region”.

4.2 Envisaged Outcomes of the Proposed Projects/Activity

The following outputs are expected in the year 2009:

- Seahorses: Stock release techniques will be developed with site assessment for releasing;
- Humphead (Napoleon) wrasse: Survival and growth of larvae/fry in earlier stage will be improved;
- Abalone: Stock release techniques will be developed by monitoring and comparing behavior, survival and growth of released abalone between different sites and between different conditions;
- Sea cucumber: 1) Preparation of a manual of seed production for stock enhancement (RIA3, Vietnam), 2) Techniques of the pen nursery of hatchery-produced juveniles will be optimized, and the impact of the nursery on sediment environment and wild stock will be assessed (SEAFDEC/AQD-UPV);
- Angelwing clam: Survival and growth after hatching will be improved for stable mass production of seeds;
- Giant clam: A guideline on optimum stocking techniques will be prepared by analyzing the monitoring data;
- Socio-economic activity: Recommendation for a successful stock enhancement activity in the Region will be prepared based on the result of socio-economic analysis.
- End-of Project Report will be prepared.
- End-of-Project Workshop: International Workshop will be held to review the Project achievements and make research plans and project scheme for the next Project (TF5).

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Research for Stock Enhancement of Sea Turtles.

Lead Department: MFRDMD in collaboration with TD

Lead Country: Malaysia

Total Duration: 2004 - 2008

Proposed Budget: USD 92,000

1. INTRODUCTION

Southeast Asian countries had been recognized as one of major nesting sites for sea turtles in the world. These reptiles are highly migratory and most probably share waters of Southeast Asian region. In addition, regional effort should be undertaken to reduce the mortality especially due to accidental catch by fishing gears. Thus, regional cooperation among member countries in conserving sea turtles is vital to ensure their survival. Understanding the discreteness of sea turtles stocks or how the stocks relate to each other, the migration routes and their interaction to fisheries is crucial for a proper regional management of these endangered sea reptiles.

2. PROGRAM

2.1 Objectives

The objectives of this project are:

1. To identify the stock /population of the green turtles in the Southeast Asian region using mtDNA sequence;
2. To determine the stock size of green turtle nesters at Mak Kepit beach of Terengganu, Malaysia;
3. To determine the migration routes and foraging habitats of sea turtles through satellite telemetry study;
4. To obtain the regional biological information such as nesting and foraging ground, inter-nesting interval, nesting frequency, growth rates and migration patterns of sea turtles through tagging activities;
5. To report on the situation of interaction between Sea turtle and fishing operation;
6. To compare study between the uses of Circle hook and J-hook in longline fisheries;
7. To promote the guidelines for reduction of sea-turtle mortality in fishing operations.

2.2 Program description

This program is composed of two components including four projects and seven activities as follows:

Component 1: Meeting/Workshop/Training

Activity 1: The Third Technical Consultation Meeting

The selected Responsible Research Officers from the participating SEAFDEC Member Countries and Resource Persons was invited. The meeting discussed and compiled the results/outcomes of each activity under the Japanese Trust Fund IV Project from 2005 until 2008. The meeting was held in 15-17 October 2008 in Kuala Lumpur..

Component 2: Research

Project 1: DNA study

Activity 1: Identification of the stock/population of sea turtles in the Southeast Asian region

Conservation and enhancement of sea turtle resources requires their ecological and physiological knowledge through life. Detection of subpopulations of sea turtles is a very essential ecological aspect to promote their conservation and enhancement because these resources-protect schemes should be made to the each population unit. In the year 2008, analysis of the tissue samples of hawksbill turtles is to be conducted.

Activity 2: Detection of multiple paternities for estimation of stock size of male sea turtles in a pilot nesting beach

Remaining tissue samples of green turtle hatchlings from 10 nesters in Mak Kepit beach, Redang Island of Terengganu, Malaysia is to be analyzed. The microsatellite DNA markers are to be introduced to identify each individual of the males, which mate with the nesting females during nesting season.

Project 2: Sea turtle tagging and satellite telemetry

Activity 1: Tagging of sea turtles

Tagging of nesters is carried out to get the information of migratory routes, foraging grounds, reproductive biology and growth rates, and to estimate stock size of sea turtle resource for a specified nesting beach. This information is extremely fundamental not only to conserve and enhance the sea turtle resources but also to complement its population identification study with mtDNA method. Implementation of Inconel tagging is to be conducted at the focused nesting sites of sea turtles in participating SEAFDEC Member Countries. Tag recovery is to be monitored to obtain the information on migratory routes, foraging grounds, inter-nesting interval and nesting frequency and growth rates.

Activity 2: Satellite telemetry

Information on long-distance movement, real migratory routes and foraging grounds is very important to consider reduction of incidental catch of sea turtles. This information provides ecological complement for population identification of sea turtles by mtDNA method. The satellite telemetry study is to be conducted at a selected nesting site in Brunei Darussalam for an olive ridley turtle.

Project 3: Interaction between Sea Turtles and Fisheries

Activity 1: Information Collection on the Sea-turtle Mortality in Fishing Operations and Fishing trials on efficiency of Circle Hooks

With the concern on Sea turtle mortality due to fisheries, the collection of Information on Sea Turtle Interaction with Fishing Operation in Southeast Asia was initiated in the year 2005 to determine current status and extent of interaction between Sea turtles and fishing operation. Through the fishing trials, the Information collection in term of technologies, catch compositions and incidental catch of sea turtle will be continued in the Southeast Asian Region in order to prove how impact of the fisheries on the sea turtle mortality. Especially pelagic longline operation in the specific sea areas such as Banda sea of Indonesia, the South China sea by Vietnam and Celebes Sea of the Philippines, Andaman and other sea area where sea turtles are distributed.

In addition, to better understand the relative impact of this pelagic and bottom longline fisheries on the sea turtle mortality and having the feasibility study on using of circle hook for reducing of the sea turtle mortality, the fishing trails on the pelagic and bottom longline fishing will be continued on board the research and commercial fishing vessels in collaboration with member countries.

Activity 2: Information dissemination

The outcomes from this study such as the mitigation of sea-turtle mortality in different fishing operations such as pelagic longline, bottom longline, purse seine associated with Fads and others will be revised and promoted in SEAFDEC member countries and at regional and international levels. In additions, promotion of circle hook in longline fisheries namely pelagic longline and bottom longline will also be promoted to fishers replacing the traditional J-hook in Indonesia, Vietnam, and Brunei Darussalam (for Bottom longline only).

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Project/Activity Title	Duration	Remarks
<p>Component 1: Meeting/Workshop/Training Activity 1-1: <i>The 3rd Technical Consultation Meeting</i></p>	<p>15-17 Oct 2008</p>	<p>90% completed The Responsible Research Officers from the participating SEAFDEC Member Countries and Resource Persons were invited and discussed on the results/findings of project activities from the year 2004 to 2008. All participants from the participating SEAFDEC Member Countries as well the project leaders presented their results on the project activities, these are migrating routes, inter-nesting interval and migration patterns in the Southeast Asian region through tagging and satellite telemetry studies. The Progress Report for this meeting and the Terminal Report for this Program will be published in December 2008.</p>
<p>Component 2: Research Project1: DNA Study Activity 2-1-1: <i>Identification of the stock/population of sea turtles in the Southeast Asian region.</i></p>	<p>Jan-Sep 2008</p>	<p>80% completed A total of 136 tissue samples of hawksbill turtle from selected nesting beaches in this region were collected and sent to MFRDMD. Analysis on DNA profiling for these samples was conducted. Although sequencing of all these samples has been finished, clear view of population structure of hawksbill turtle in the ASEAN region was not indicated due to small amount of collected samples.</p>
<p>Activity 2-1-2: <i>Detection of multiple paternities from estimation of stock size of male</i></p>	<p>Jan-Sep 2008</p>	<p>80% completed 300 tissue samples of green turtle hatchlings from 10 nesters in Mak Kepit</p>

<p><i>sea turtles in a pilot-nesting beach.</i></p>		<p>beach, Redang Island of Terengganu, Malaysia were collected. Five microsatellite markers were tested. The gel system on analysis of PCR bands was changed from using methaphor gel to native acylamide gel. The findings suggested high level of multiple paternities occurred in the study beach.</p>
<p>Project 2: Sea turtle tagging and satellite telemetry Activity 2-2-1. <i>Tagging of sea turtles.</i></p> <p>Activity 2-2-2. <i>Satellite Telemetry</i></p>	<p>Jan-Dec 2008</p> <p>Nov-Dec 2008</p>	<p>100% completed Continuously activities on tagging of sea turtles using Inconel tags and it's recovery at selected nesting sites for obtaining the information on migratory routes, foraging grounds, inter-nesting interval and nesting frequency and growth rates were conducted.</p> <p>50% completed A satellite telemetry study will be conducted for an olive ridley turtle from Brunei Darussalam in November 2008. The preparation for attaching PTT to the turtle is now in progress.</p>
<p>Project 3: Interaction between sea turtles and fisheries Activity 2-3-1. <i>A research survey on information collection on the sea-turtle mortality in fishing operation</i></p> <p>Activity 2-3-2. <i>A comparative study on the efficiency of the circle hook and J-hook in longline fishing</i></p>	<p>Jan-Dec 2008</p> <p>Apr-Dec 2008</p>	<p>100% completed</p> <ol style="list-style-type: none"> 1) Fishing Trails and demonstration on Usage of c-hook in longline fisheries (included tuna longline and bottom longline in Vietnam) 2) Fishing Trails and demonstration on Usage of c-hook in tuna longline fisheries in Indonesia 3) Fishing Trails and demonstration on Usage of c-hook in longline fisheries (Bottom Longling only) in Brunei Darussalam 4) Fishing Trails and demonstration on Usage of c-hook in longline fisheries (Bottom Longling only) in Myanmar (incase budget is available) 5) Preparation the 1st draft on the efficiency of C-hook in Bottom Longline Fisheries 6) Information dissemination to the International Symposium at the 5th World Fisheries Congress in October 2008. 7) Publicity on the usage of C-hook replacing J-hook through technical documents and SEAFDEC home page.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Component 1. Meeting/Workshop/Training Activity 1-1: <i>The Regional Core expert Meeting</i>	Oct 2009	The Responsible Research Officers from selected participating SEAFDEC Member Countries and Resource Persons will be invited. The objectives of the meeting are to discuss the results/findings of project activities for the year 2009. Also, all participants will discuss on the formulation of sea turtle program under Japanese Trust Fund V programs from 2010-2014.
Component 2. Research Project 1. DNA Study Activity 2-1-1: <i>Detection of multiple paternities from estimation of stock size of male sea turtles in a pilot nesting beach.</i>	Jan-Dec 2009	Analyzing the remaining tissue samples will be completed and the results will be presented in the Regional Core Expert Meeting in October 2009.
Project 2. Sea turtle tagging and satellite telemetry Activity 2-2-1: <i>Tagging of sea turtles</i>	Jan-Dec 2009	The comprehensive information on tagging activities at the selected sampling sites of the SEAFDEC participating member countries will be presented by Responsible Technical Officers in Regional Core Expert Meeting in October 2009.
Activity 2-2-2: <i>Satellite Telemetry</i>	May-Dec 2009	Satellite telemetry studies will be conducted in Myanmar for an olive ridley turtle and in Malaysia for a leatherback turtle in 2009.
Project 3. Interaction between sea turtles and fisheries Activity 2-3-1: <i>Information Collection on the Sea-turtle Interaction from Fishing Activities</i>	Jan-Dec 2009	1) Fishing trials on the improvement of drift gillnet fishing gears and or bottom longline to avoid sea turtle mortality 2) Study on migration route of sea turtle and distribution of fishing activity to build the awareness: Technical workshop for information gathering and analysis 3) Study on impact of gillnet fisheries to sea turtle mortality: Technical workshop on informational gathering and analysis
Activity 2-3-2: <i>Information dissemination</i>	Apr-Dec 2009	

4.2 Expected Outcomes

The expected outcomes of the project in 2009 are as follows:

- To organize the Regional Core Expert Meeting to discuss and compile the outcomes of the program for 2009 and to formulate research plans for Japanese Trust Fund V program from 2010 to 2014,
- To continue evaluation of multiple paternity of nesting green turtles in the pilot nesting beach,
- To continue tagging studies in major nesting beaches in the region,
- To implement satellite tracking studies in selected Member Countries,
- To build the awareness on the sea turtle interaction from fishing activity,
- To promote the use of C-hook in hook and line Fishing, and carry out R&D to modify/improve Drift gillnet to avoid sea turtle mortality.

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Capacity Improvement of Fisheries Community for Fisheries Management and Alleviation of Poverty

Responsible Department: TD

Total Duration: 6 years (2004 – 2009)

Proposed 2008 Budget: USD 95,000

1. INTRODUCTION

The main objectives of the program are to achieve the community-based management for sustainable coastal fishery resources and to alleviate poverty in coastal communities, with particular emphasis on women's groups. As an implication of Locally Based Coastal Fishery Resource Management projects implemented in Thailand and Malaysia by the end of December 2004, it was confirmed that the capacity building of human resource should place greater emphasis on the progress to ensure the sustainable coastal resource management. The project deployed pragmatic activities to stimulate and encourage people's participation as well as to build people's capacity for involvement in coastal resource management and integrated community development. The people's participation is an initial empowerment to contribute to the institution of a local management body to vigorously lead community development and coastal resource management. The local management body takes the function of establishing local businesses to gradually create job opportunities both inside and outside the fisheries sectors of the community. In addition, the local management body also leads to encouragement of people's participation and creation of activities in resource management to strengthen people's awareness on managing resources at local level.

The proposed program has 3 main components. Component-1 plans to follow up and strengthen the activity on people's capacity building and participation in the two on-going projects under the TF-I; i.e. ICRM-PD (ex-project LBCFM-PD) in Thailand as a sub-component 1: Project 1 and ICRM-PL (the ex-project LBCRM-PL) as a sub-component 2: Project 2 as their 2nd phases. The former project activity and the impact were evaluated in 2004, and based upon the outcome of the evaluation the project action plan was reformulated as phase II to meet the new requirements for the follow-up stages of the basic project concept from 2005 under the financial arrangement of TF-IV. The main emphasis in the phase II ICRM-PD was placed on institutional and human capacity building in the core fishermen groups throughout the remaining project term, while the one in the 2nd phase of ICRM-PL has been put on human capacity building in the deployment of integrated coastal resources management centered on the demarcated zone for community fisheries to be established by DOF Malaysia. The project ICRM-PD had been achieving expected goals toward the end of 2006 as scheduled. The project was taken over by DOF Thailand from January 2007 for the three years tenure under the financial auspices by the Royal Project and the Local Administration. The SEAFDEC/TD has been involved in this follow-up project as the capacity of an observer in a bid to ensure its sustainable execution of the project. Similarly, the project ICRM-PL was terminated in December 2007 in the wake of achieving expected outcomes although they suffered from the devastating tsunami assault in December 2004. Toward the end of project tenure, the project implementation committee was formulated in DOF Malaysia so as to ensure the continuation of the project activity. SEAFDEC/TD has been also continuing its minor follow-up activities to monitor the sound project progress since January 2008. Aimed at review the project activities and impacts given to the communities during its tenure, the regional seminar is held on 21-23 October 2008 in Langkawi.

The Component 2 is the implementation stage of the component 1 concept for other member countries. Since the inception of the project operation of LBCFM-PD and LBCRM-PL in Thailand and Malaysia, respectively under TF-I, a few other member countries have proposed to commence similar CBFM projects in their own countries within the collaboration framework with SEAFDEC/TD. In fact, four other member countries, i.e. Indonesia, Brunei Darussalam, Cambodia and Myanmar, had officially expressed their interest to initiate the similar projects under the collaborative project arrangement before 2004. Among these countries, Cambodia was selected as the 3rd country to start up the project operation. The document formulation for the similar project was completed for in Cambodia entitled “Integrated Coastal Resources Management in Sihanoukville (ICRM-SV)” in July 2005. But the arrangement for its initiation was delayed until November 2005 when the project formally commenced its activity as the 3rd sister project. The project has been progressing in the right track since then demonstrating measurable impacts to the fisheries communities, especially in promotion of local business and embodiment of the coastal resource management institution. The project was expected to terminate its operation in December 2008. Taking the current on-going activity into account and responding to the strong request by the Cambodian authorities, it was decided to further extend the project tenure up to December 2009 so as to ensure substantial project outputs.

As a Component 3, the regional training courses for fishery managers and extension officers were proposed. The role of the fishery managers are provide information to decision maker on formulating and transforming policy into management plans. Extension officers are deal with communities in community development and CBRM. There are vital and the capacity building is urgently called for. More emphasis in this training courses are placed on problem-and-solution analysis and the practical application at the project site level, making best use of experiences and knowledge gained through the ongoing collaborative project operations.

2. PROGRAM

2.1 Component 1: Follow-up of the on-going projects

2.1.1 Project 1: Integrated Coastal Resources Management in Pathew District (ICRM-PD) = LBCFM-PD Phase II (Thailand)

2.1.1.1 Objectives

- 1) To develop capacity building of local human resource to empower the local people involved in vigorous community development to manage and sustain coastal resources.
- 2) To develop systematic voluntary participation from the local people in management of local body and to proactively strengthen community development and resource management
- 3) To encourage people’s participation in creating job opportunities and in establishing local businesses to increase accessible income source to alleviate poverty and to develop the economic base of the community

2.1.1.2 Project description

The SEAFDEC’s Training Department and the Thai DOF agreed that the LBCFM-PD project phase II (2005-2006) as ICRM-PD would place greater emphasis on capacity building and participation of the local people in order to strengthen and lead existing activities resulted from the outcome of the project in phase I. The strengthening of people’s participation was carried out through training courses and extension programs with special topics needed such

as group cooperative management, group book accounting, recording, keeping and management, profit distribution as well as allocating incentives to group members. These combined knowledge and skill can contribute to the local people in sustaining community activities and local businesses.

The original project framework envisaged that the newly created sub-district administrative organization called “Ao.Bo.To.” was to take charge of the function of CBFRM. But through two and a half years’ project operation it was found that this body was not a type of organization which could be involved in such a duty with interests. It was considered so critical thinking in terms of project effectiveness and sustainability that the project basic approach was rectified. In 2005 and 2006, the major project effort was centered at establishment of the fishermen’s group as a core organization by building up their institutional, managerial and functional capacity. As the result, the Pakklong Fishermen’s Group (PFG) consisted of seven sub-groups was established in March 2005 and it was further legally registered with the Provincial authorities concerned in December 2005. Since then, the PFG has been empowered to pursue various functions and activities with its own motivation, and it is very optimistic that it will further strengthen its institutional managerial capacity with continued support by the DOF of Thailand and close monitoring on it progress by SEAFDEC/TD.

It was envisaged from the outset that the SEAFDEC/TD’s involvement in the project’s physical operation would be gradually reduced over time; in the mean time the counterpart organization under the Thai DOF, i.e. Chumphon Marine Fisheries Research and Development Center (CMDEC), would take over the leading role of the project operation step by step. Toward the end of the project in 2006, it was further envisaged that the project management capacity should be transferred to the newly formed Pakklong Fishermen’s Group (PFG). This arrangement is able to maintain the sustainable coastal resources for themselves and community development in the area with continued supports from relevant authorities like CMDEC, Chumphon Marine Coastal Resources Research Center (MCR), Chumphon Fisheries Office and other district and sub-district administration offices. This is the ultimate goal of the project

As such, SEAFDEC/TD has continued its involvement into the follow-up activity of the project operation since January 2007, especially in monitoring capacity embodiment of PFG.

2.1.1.3 Progress of activities in the year 2008

As aforementioned, the major activity in 2008 was the follow-up ones which monitored and supported the activities primarily deployed by DOF Thailand and various local administrative agencies along with the newly organized Phakklong Fishermen’s Group.

Project/ Activity Title	Duration	Remarks
Activity 1:		
Follow-up activity		
- Participation to SC/IC meetings	2 days	Not convened
- Participation to local seminar	1 day	To be convened in December
- Monitoring crab bank activity	1 year	Progresses and continued
- Monitoring fish fingerings releasing	1 year	Progressed and continued
- Publication of the project final report	1 month	Seminar proceedings

2.1.1.4 Proposed future activities

In fact, the project was terminated in December 2006 as initially scheduled and the activity in 2009 is confined to just follow-up works as listed below.

Activity 1: Follow-up activity

- Participation to IC meetings (if and when DOF organizes)
- Participation to the local seminar (if and when DOF organizes)
- Continue specific data collection
- Monitoring human and institutional capacity building of PF
- Monitoring activities being carried out by PFG

2.1.2 Project 2: Integrated Coastal Resources Management in Pulau Langkawi (ICRM-PL) = LBCRM-PL Phase II (Malaysia)

2.1.2.1 Objectives

- 1) To develop capacity building in local human resources to empower the locals to manage and sustain coastal resources and vigorous community development.
- 2) To develop systematic voluntary participation of local people in local management body and to proactively strengthen community development and resource management
- 3) To encourage people's participation in creating job opportunities and in establishing local businesses to increase accessible of income source to alleviate poverty and to develop the economic scale of the community.

2.1.2.2 Project description

Toward the termination of the first phase of the project under the TF-1 in December 2004, the project ICRM-PL had been running very effectively in producing some tangible outputs until the day of 26 December 2004 when the devastating tsunami assaulted the project operational area, leaving very tragic damages behind. Most fishing boats and fishing gear were destroyed or lost, and the fish landing facilities were ruined. Many fishermen's houses collapsed. The Malaysian authorities together with NGOs and foreign aid organizations immediately started the rehabilitation of the tsunami stricken fisheries sector. Resulting from these efforts extensively exerted in 2005 and 2006 some fishing activities have more or less reactivated. This unexpected natural calamity caused major changes and delays of the project in approach and progress. The project work-plan in 2005 was revised drastically so as to meet the acute requirement of the fishing sector and the project tenure was extended for one more year until the end of 2007 to offset the retardation of planned activity. In 2006, some rehabilitation related activities were continued along with the development work originally envisaged. In 2007, the fishermen in the project operational area felt that the rehabilitation stage from tsunami disaster had been over. The project has resumed its development work as originally scheduled in the remaining tenure of the project in 2007. The involvement by SEAFDEC/TD to the project operation was terminated in December 2007 and the Project Implementation Committee was formed within the DOF Malaysia in a bid to continue the project operation. The SEAFDEC/TD continued minor follow-up activities to monitor its sustainable progress in 2008. The regional seminar on "Integrated Coastal Resources Management Approach in Southeast Asia: Review on ICRM-PL" is to be conducted to review the project approach and impacts given to the communities.

2.1.2.3 Progress

The project activity in 2008 is meant for just monitoring project progress and continuing a few minor outstanding activities like crab bank scheme, women's group activity and establishment of zoning demarcation and the promulgation of its fishery management plan. A core body, KPSP (Fishery Resources Management Community), was just established in place of KEN (Fishermen Economic Group) to pursue various fishery resources management activities and therefore continuing such follow-up activity is vital.

The feature event in this 2008 is to hold the regional seminar on 21-23 October 2008 mainly for reviewing the project impacts given to relevant fishing communities, thereby the approach methodology would be disseminated to other fishing communities not only in Malaysia but also in other countries of Southeast Asia.

Project/ Activity Title	Duration	Remarks
Activity 1: Compilation and publication of reports - Several surveys conducted in 2007 are compiled - The project final report is compiled - The project evaluation report is published. - The regional seminar report is compiled.	- 10 months - 3 months - 2 months - 2 months	- Completed - Combined with the seminar report - Completed - After the seminar taken place
Activity 2: Follow-up activity - Participations to SC and IC meetings - Participation in the local seminars and workshops organized by DOF Malaysia or KPSP - Monitoring crab bank activity - Monitoring the women's group activity	- 2 days - 2 days - 1 year - 1 year	- Participated in SC meeting in June - To be organized in December - Continued - Continued
Activity 3: Terminal project evaluation - Final socio-economic survey - Terminal project evaluation - Wrap-up SC meeting	- 1 month - 2 months - 1 day	- Not conducted as insignificant changes from monitoring survey - Completed in May - Completed in June
Activity 4: Regional seminar for project wrap-up - Regional Seminar to review project impacts	- 7 months	- Preparation initiated in April, the seminar is held on 21-23 October.

2.1.2.4 Proposed future activities

The involvement in the project operation by SEAFDEC/TD was withdrawn in December 2007 and the project operation itself has been continued by the DOF Malaysia. The SEAFDEC/TD has to still continue minor essential outstanding activities like local business development by the women's group and the crab bank scheme, and also participation in the project implementation coordination committee (ICC) meeting is vital aimed at monitoring the sustainable project operation. The necessary activities are as listed below.

Activity 1: Publication of reports

- Publication of the proceedings of the Regional Seminar

Activity 2: Follow-up activity

- Participations in ICC meetings
- Participation in the local seminars and workshops organized by DOF Malaysia
- Monitoring crab bank activity
- Monitoring the accounting system of women's group activity

2.2 Component 2: Extension of the project concept to other member countries

2.2.1 Project 3: Integrated Coastal Resources Management in Sihanoukville (ICRM-SV) Cambodia

2.2.1.1 Objectives

- 1) To develop capacity in local human resources to empower the locals to manage and sustain coastal resources and vigorous community development.
- 2) To develop systematic voluntary participation from the local people to manage the local body and to proactively strengthen community development and resource management.
- 3) To encourage people's participation in creating job opportunities and in establishing local businesses to increase accessible of income source to alleviate poverty and to develop the economic scale of the community.

2.2.1.2 Project description

Prior to the official commencement of the project operation, the preliminary site survey was conducted in June 2004 and a suitable site for the CBFMR project was identified in Sihanoukville among a few sites proposed by FiA Cambodia. The plan to initiate the project in Cambodia from 2005 was submitted to the 27th PCM and it was endorsed. The baseline socio-economic survey was conducted in early 2005, and based on the findings of which the project document was formulated and finalized in July 2005. However, the actual project commencement was delayed until November 2005, mainly due to the delayed administrative arrangement within the Steering Committee meeting's structure.

After commencement of the project operation in November 2005, the project coordinated with the Japanese Embassy in Cambodia to grant about USD 11,400 to construct facilities necessary for carrying out mud-crab culturing within the project activity of local business development.

In 2007, the project has been progressing on the right track consistent with the project orientation, particularly in formulation of the fisheries management plan and related document consistent with the contents in the Decree and Sub-decree on community fishery resources management which were promulgated in 2005. The proposed Community Fisheries Area Management Plan (CFAMP) was approved together with other related documents by the authorities. Based on the legal entity endowed to the community fisheries, the project has just entered into the practical implementation stage in line with the provisions of CFAMP.

Under these circumstances, the Cambodian authorities considered the project extension for another year until the end of 2009 should be vital so as to maintain and further accelerate the current impetus of community based movement and the proposal for one-year extension was submitted to SEAFDEC. The proposal was basically agreed upon by the Japanese Trust Fund

and the annual work plan has been prepared for the final endorsement. Then, the total project tenure would become 4 years and 2 months.

2.2.1.3 Progress

The major activity in 2008 focused on particularly in human and institutional capacity building with the community fisheries in the project operational area so as to strengthening the foundation of the project framework, in consolidating mutual working relationships at provincial as well as district levels and encouraging all stakeholders to participate in project operations. The detailed project progress is dealt at length in the first and the second biannual project progress reports in 2008.

Project/Activity Title	Duration	Remarks
Activity 1: Baseline/ Monitoring survey - Continue regular fish landing data collection - Analysis and compilation of data in 2007	- 1 year - 3 months	- Continued - Completed
Activity 2: Encourage CBRM - Coordination in promulgation of the Community Fisheries Area Agreement (CFAA) along with CFAMP, BL, IL and MCFA - Formation of Community Fisheries Coordination Committee (CFCC) - Practical application of CFAMP in close consultation with CFCC - Strengthening the capacity and capability of local enforcement activity	- 5 months - 1 months - 1 year - 1 year	- CFAA approved pending the official promulgation - It was agreed that the project IIC would act as CFCC for the time being. - Continued - Continued
Activity 3: Promotion of local business - Monitoring mushroom production with emphasis on commercially viable management - Identify and initiate other potential local businesses - Continuation of mud-crab culturing with emphasis on commercially viable management - Commencement of tilapia / sea bass culturing in use of mud-crab ponds	- 1 year - 1 year - 1 year - 1 year	- Continued. Mushroom Producers Group was established. - Under trial. - The 2 nd trial was failed and the 3 rd one is under way. - The 1 st trial in sea-bass cage culture is underway.

Activity 4: Enhancement in HRC and participation - Village workshops aimed at increasing awareness on implementation of CFAMP - Conducting a national seminar to review the project progress - Conducting various training courses and study tours - Identify and implement relevant volunteer works for community development and environmental improvement - Publication of reports and manuals and PR materials	- 1 months - 2 months - 1 year - 1 year - 1 year	- To be held in November - To be held in December - Continued - Some have been identified for implementation. - Continued
Activity 5: Rehabilitation and Resources enhancement - Establish and manage fish refugia - Establish and manage Crab Bank - Mangrove reforestation	- 1 year - 1 year - 1 year	- Fish refugia began with blood cockle. - Crab bank scheme commenced. - Continued. To be implemented in December in association with schools.
Activity 6: Fishing technology improvement - Place in lower priority for the time being	- 1 year	- No activity pursued.
Activity 7: Project management meetings - The Steering Committee (SC) meeting is held once a year. - The project Implementation Coordination Committee (ICC) meetings are summoned once every 4 months.	- 1 day - 1 day	- The 4 th SC meeting was convened in February. - The 6 th ICC meeting was held in June. The 7 th ICC will be in November.
Activity 8: Project evaluation - Project evaluation is taken place - Publication of the project evaluation report	- 1 months - 2 months	- Postponed until 2009 consistent with the project extension

2.2.1.4 Proposed future activity

The project would be terminated in December 2009 and it was agreed that the project operation would be continued by FiA from 2010 onward. The phasing-out process by the SEAFDEC/TD component should be proceeded accordingly throughout the project operation in 2009

Activity 1: Monitoring socio-economic survey / data collection

- 1.1. Continuation of the regular fish landing data collection
- 1.2. Analysis and compilation of the results obtained in 2007/2008
- 1.3. Training Cambodian researchers in data analysis and compilation
- 1.4. Monitoring socio-economic survey

Activity 2: Encouragement and extension of locally-based fishery resources management

- 2.1. Formation of Community Fisheries Coordination Committee (CFCC)
- 2.2. Practical application of CFAMP in close consultation with CFCC
- 2.3. Strengthening the capacity and capability of local enforcement activity

Activity 3: Promotion of local business

- 3.1. Monitor mushroom production especially in bookkeeping and accounting
- 3.2. Commercialise mud-crab fattening business
- 3.3. Continue experimental sea bass cage culturing toward its subsequent commercialization

Activity 4: Enhancement in human resources capacity and participation

- 4.1. Increase awareness on CBRM concept
- 4.2. Conduct various training courses and workshops as required
- 4.3. Conduct a local seminar to review the project progress and to discuss the sustainability of the project impact
- 4.4. Publish reports and manuals and prepare extension and PR materials

Activity 5: Rehabilitation and enhancement of coastal resources

- 5.1. Monitor management of fish refugia by Blood Cocker Fishers Group (BCFG)
- 5.2. Monitor operation of the crab bank scheme by Crab Bank Group (CBG)
- 5.3. Mangrove reforestation

Activity 6: Project management meetings

- 6.1. Convene Steering Committee (SC) meeting
- 6.2. Convene Project Implementation Committee (IC) meetings

Activity 7: Project evaluation

- 7.1. Conduct Final Project Evaluation by an outsourced consultant
- 7.2. Publication of the final project evaluation report

Activity 8: Regional seminar

- 8.1. Organize and conduct the regional seminar on the impact of ICRM-SV
- 8.2. Publication of the seminar proceedings

2.3 Component 3: International Training Courses on Coastal Fisheries Management for Fishery Managers and fisheries extension officers

2.3.1 Courses Arrangement

2.3.1.1 Objectives

- 1) To extend the knowledge, skills and attitude of coastal fisheries managers at the central level and fishery officers at field level in the concept of sustainable coastal resources utilization and management
- 2) To introduce and share knowledge/experience of SEAFDEC with collaboration of national DOF pilot projects in ICRM-PD, ICRM-PL and ICRM-SV in Thailand Malaysia and Cambodia respectively and other Coastal fishery management projects which are organized by DOF sectors and other fishery agencies, to the region.

2.3.1.2 Project description

Referring to the Millennium Conference “Fish for the people” organized by SEAFDEC in 2001, addressed the issue and confirmed the emerging co-management concept for fisheries as the new policy thrust for the region. Establishing such co-management systems and making them functional requires capacity building efforts for all key players, to take up their respective responsibilities under such systems. In regarding to this TD has been conducted the two regional training courses in order to build up capacity efforts for all key players: 1) The international training course on coastal fisheries management for fishery managers, this course focus on sharing experiences and lessons from various pilots projects in co-management for policy formulation and designing fishery management plans addressing locally specific management needs. and 2) The international training course on coastal fisheries management and extension methodology, this course designed to familiarize the participants with co-management principles for small scale fisheries and the necessary extension skills for establishing and supporting participatory fisheries mixture of lectures, innovative classroom activities, and extensive field practices that promote active learning, the participants learn to first understand the need for the local level participatory fisheries management approaches. Then they are familiarized with approaches and tool as that can help them facilitate community an stakeholder dialogues for analyzing local resource use patterns and livelihood issues and for formulating solutions for these issues.

2.3.1.3 Progress

In the year 2007, Two Training courses were continued to conduct in order to transfer knowledge to SEAFDEC member countries and interested people as follows.

The International training course on Coastal Fisheries Management for Fishery Managers

The course was conducted between 10th –24th June 2007. There were 10 participants from SEAFDEC fellowships (Brunei Darussalam, Cambodia, Indonesia, Japan, Myanmar, Malaysia, , the Philippines, Thailand and Vietnam) and 5 Sri-Lankan participants from CRMP Project sponsor, 2 participants from SIDA sponsor, 1 from FMO-Thailand and 1 from AIT so in totally we have 19 participants attended this training course. This course aimed to assist the Managers to practice in acquiring and analyzing information from several pilot projects in coastal fisheries management for Policy formulation, and to design coastal fishery management plans that suit their local conditions. The Training was composed of two main parts; there was a part for lectures and another part for pilot project introduction including field trips on Integrated Coastal Resource Management in Chumporn Province, During the lecture session, participants refreshed their knowledge on Responsible Fisheries Aspects in Southeast Asia, a Characteristic of Coastal Fisheries Resource and Management, the Right-based and Co-management systems in Japan. For the session on pilot projects introduction and field trips, the participants were introduced to the background and some other important information of each pilot project, the visits to the pilot projects were made after that. During the visits and observation, participants worked as groups for active research on each project, all information was interpreted and used as cases studied. At the end of the course, a presentation on Management Plans for two pilot projects by four groups of participants proved that the participants were able to meet with the course expectations and the course objectives. Participants believed that the knowledge and experience they gained can be used and applied to their project management plans in their home countries.

International Training Course in Coastal Fisheries Management and Extension Methodology

The course was held on 11th September to 11 October 2007. . There were 12 participants from SEAFDEC fellowships (Brunei Darussalam, Cambodia, Indonesia Japan, Laos, the Philippines, Thailand and Vietnam) and 5 participants from CRMP Project sponsor, 1

participant from FMO so in totally we have 18 participants attended this training course. The course focuses on modern principles and concepts of coastal fisheries and resources management; The need to change fisheries management towards co-management, involving local communities and applying eco-system principles to fisheries management; Small-scale fishery problems and constraints; Facilitation, mediation and conflict resolution skills, Extension concepts, methodologies and implementation; Study/field trips to fishing villages and media centres; Practical involvement and presentation of extension media. After completed, the participants understood modern principles and concepts of coastal fisheries resource Management, extension concepts and methodologies. During field trip to fishing communities in Rayong province participants are trained to use the active extension tools and methods such as semi-interview, mapping, seasonal calendar, historical timeline, Venn's diagram, problem and preference ranking in gathering the ground situation and present problems to the communities leading directly to problem solving. Base on the evaluation session which carrier out at the end period of the training course, the results showed that there were about 85 % of the participants full filled their knowledge expectation and due to this they will be able to use/transfer/apply knowledge, skill and experience which they have gained from the course to their job in their home countries.

2.3.1.4 Proposed future activities

Activity 1: Two-week Regional Training Course on Coastal Fisheries Management for Fishery Managers of SEAFDEC's member countries. (6 -20 May 2008)

Objectives of the course:

- 1) To extend knowledge and experience of the fishery managers of SEAFDEC's member countries on sustainable coastal resource utilization and management
- 2) To introduce the practicable methods and approaches in coastal resource management in different conditions
- 3) To introduce and share experiences of the Integrated Coastal Resource Management (ICRM-PD, ICRM-PL and ICRM-SV) projects of SEAFDEC/TD's and fisheries government pilot projects to the region, specially the ICRM-SV will be used as the case study and site visit for the training course in this year.
- 4) To strengthen practical in competence in planning and implementing the applicable coastal fishery management plans.

Course content:

The training course will be conducted in English. Subjects dealing with coastal fisheries management concept, approaches and case studies.

The course will includes lectures, group discussion, and the pilot projects and case study visits.

The elements of the course will consist of;

- Overview of Coastal Fisheries Management in ASEAN,
- Responsible Fisheries aspects in Southeast Asia,
- Characteristic of Coastal Fisheries Resource and Management,
- Rights-base and co-management for coastal fisheries management,
- Integrated Coastal Resource Management : ICRM-PD, ICRM-PL and ICRM-SV in Thailand, Malaysia and Cambodia respectively
- Case study and the site visit on the Integrated Coastal Resource Management: ICRM-SV, in Cambodia.

Activity 2: Four-week Regional Training Course on Coastal Fisheries Management and Extension Methodology for Extension Officers of SEAFDEC' s member countries. (2 - 20 September 2008)

Objectives of the course:

- 1) To extend the knowledge and skills of extension officers of SEAFDEC member countries in the following areas:
 - Coastal resource management
 - Participatory approach for co-management of fishery resources
 - Extension concept, methodology and participatory research method (PRA)
 - Managerial and conflict resolution skill for managing fishery resources and local organization
 - Communication and extension media production.

- 2) To introduce and share experience of the SEAFDEC with collaboration of national DOF pilot projects in ICRM-PD, Chumporn province, Thailand, ICRM-PL, Lankawi, Malaysia and ICRM-SV, Sihanoukville, Cambodia. Especially the ICRM-SV will be used as the field site visit and case practical session on the PRA tool exercise.

Contents of the course:

- I: Innovative approaches to coastal fisheries management,
- II: Fishery extension concept, methodology for participatory management approach
- III: Essential skill for participatory research and management
- IV: Media production and communication process for extension work

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Support to Tsunami Rehabilitation of Affected Countries in the ASEAN Region

Lead Department: SEAFDEC Secretariat in collaboration with all Departments

Total Duration: 2009-2011

1. INTRODUCTION

Fishing and aquaculture households and coastal communities in the region were especially hard hit by the tsunami in December 2004. The impacts caused the death of fisher-folk as well as loss of fishing and aquaculture assets and related onshore infrastructure, both of which have reduced the ability of households to earn income and sustain livelihoods. This has also directly hit the pre-tsunami most vulnerable groups (poor fisher-folk communities, single headed households, illegal migrant workers, and other).

In the process of implementation the basic strategy is to build upon expressed needs and in the wake of the tsunami, to improve management of fisheries, fishing capacity and to better manage coastal environments, including coastal restoration as needed, as a protection against future hazards while at the same time provide an important element to the sustainability of the fisheries by securing important habitats. Throughout the process of implementation training sessions will be organised. The general approach to be taken is to pay attention to **the interface in moving from restoration and rehabilitation to longer –term management responses**. Co-ordination among regional, international and local organizations is another pillar of the project strategy, including institutions that are concerned with environment and conservation issues, as well as those mandated to consider the production and sustainable use of the natural resources and fisheries in the affected countries.

2. PROGRAM

2.1 Objectives

The immediate objective is to have, “Capacity for the integration of fisheries management into habitat management and for the management of fishing capacity built up/rebuilt and improved in selected areas of ASEAN tsunami affected countries”. Results are to be delivered in four main categories:

1. Management options identified for the management of fisheries with emphasis given to the protection of coastal habitats, important for critical life-cycle stages of fisheries resources as well as for protection of coastal communities against future natural hazards (introduction of the *refugia* concept);
2. Management of fishing capacity in Andaman Sea and in follow up to the post-tsunami rehabilitation addressed;
3. Local knowledge and practices with regards to management and response to natural hazards made available as inputs to work-out programmes on safety at sea and to develop simple early warning systems; and
4. Policy dialogue and information sharing with FAO, ASEAN, ASEAN-SEAFDEC Member Countries in promotion of regional cooperation.

2.2 Program description

In the process of implementation four main aspects that have been highlighted in various *fora* will be addressed and incorporated in the process:

- The vulnerability of poorer coastal communities to natural hazards and the risk of them being (further) marginalized during the restoration process.
- Fishing capacity.
- Maintaining geographical features in the coastal areas, recognizing the importance of features (mangroves, corals, dunes, etc.) in the coastal areas for protection against natural hazards needs to be assessed as well as for fish reproduction.
- Local knowledge and local organization: Several reports have pointed at the way in which certain coastal communities, based on their traditional knowledge, were facing less damage than other communities.

3. ACTIVITIES FOR THE YEAR 2009

The project will not be implemented in isolation but will rely on cooperation with other regional/international and national bodies. With a view to address issues related to fishing capacity and the management of important habitats for fisheries SEAFDEC will work with provinces and districts to support the development of a management framework. This will place SEAFDEC in position to add value and build upon work implemented by other organizations as well as earlier interventions by SEAFDEC in the affected countries. Furthermore, SEAFDEC will also provide an opportunity to lift the perspective from the direct intervention at local level to see how a broad range of more site specific efforts contribute to longer term sustainability and as needed provide advice on changes/adjustments that are needed (such as in the case of over-capacity being built up). The timing should be good as experiences from different localities are emerging.

Co-ordination among regional, international and local organizations is another pillar of the project strategy. It is not envisaged that the project itself should build up any new structures, but rather work with and build up the capacities of already existing units and projects. The links to other organisations and ongoing projects is another factor in assuring adequate support and support capacity. In practical terms, co-ordination at regional level will be maintained through the mechanisms of the CONSRN, spearheaded by FAO Regional Office in Bangkok (and the newly recruited tsunami coordinator). At national level, primarily in the two most affected countries, coordination will be sought with the Ministry of Marine Affairs and Fisheries (MMAF), Indonesia, Department of Fisheries, Thailand, the Rehabilitation and Reconstruction Agency (BRR – Badan Rehabilitasi dan Rekonstruksi) in Indonesia, FAO and ADB. Cooperation will also be sought with local NGO's like the Panglima Laot in Banda Aceh, Yadfon in Thailand and the Mangrove Action Project.

The project activities in the year 2009 will be implemented in corresponding to the following outputs:

1. Management options provided for the sustainable management of fisheries and habitats of importance for fish reproduction and protection against future natural hazards (introduction of the *refugia*² concept) Management options identified for the management of fisheries

² Fisheries refugia in Southeast Asia are commonly understood as: "Spatially and geographically defined marine or coastal areas in which specific management measures are applied to sustain important species (fisheries resources) during critical stages of their lifecycle, for their sustainable use".

with emphasis given to the protection of coastal habitats, important for critical life-cycle stages of fisheries resources as well as for protection of coastal communities against future natural hazards (introduction of the *refugia* concept);

2. Management of fishing capacity in the Andaman Sea and in follow up to the post-tsunami rehabilitation addressed;
3. Local knowledge and practices with regards to management and response to natural hazards made available as inputs to work-out programmes on safety at sea and to develop simple early warning systems;
4. Policy dialogue and information sharing with FAO, ASEAN, ASEAN-SEAFDEC Member Countries including promotion of regional cooperation.

The project will be implemented in matching with the works under the program on the Regionalization of the Code of Conduct for Responsible Fisheries. Details of activities for 2009 in relation to the outputs are showed in the table below:

SEAFDEC-Sida Project on activities in follow up to the tsunami

Proposed First 15 Months

	M 1	M2	M 3	M4	M 5	M 6	M7	M 8	M 9	M 10	M 11	M 12	M13	M14	M15
Schedule for activities to Output 1:															
1. Develop criteria to determine the national, sub-regional and trans-boundary significance of specific areas															
2. Identify at least one area in Indonesia and one in Thailand based on the regionally developed criteria															
3. Review fisheries and habitat management systems in the identified areas in Indonesia and Thailand															
4. Systems to protect important nursery grounds and spawning areas for at least two areas															
5. Information for capacity building on fish stocks conservation and sustainable practices among province and district offices two selected areas															
6. Information and capacity building on the importance to maintain coastal features to province and district offices in Indonesia and Thailand															
7. Management regimes based on the integration of fisheries management into habitat management (refugia) in the two identified areas	Y2														
8. Develop priorities for fisheries management and management of areas of importance as nursery and spawning grounds for the Andaman Sea	Y2														
9. Develop priorities for the restoration and maintenance of geographical features in coastal areas	Y2														
10. Process to develop regional and national action plans to develop a regional system of refugia for maintenance of regionally important fish stocks															

	M 1	M2	M3	M4	M 5	M 6	M7	M 8	M 9	M 10	M 11	M 12	M13	M14	M15
Schedule for activities to Output 2:															
1. Survey, in four selected areas, boats that have been provided during the rehabilitation and restoration process															
2. Review destructive fishing and aquaculture activities in the Andaman Sea region and the four selected areas															
3. Initiate consultative process to identify various options to alleviate problems caused by excess levels of fishing capacity for two selected areas															
4. Action plans on the need to address over-fishing, destructive fishing practices and fishing capacity in the rehabilitation process in two selected areas	Y2														
5. Awareness raising to manage fishing capacity in dialogue with stakeholders															
6. Process to develop systems to determine the level of optimal fishing capacity, based on available information on fishery resources and habitats.	Y2														
7. Work on simple assessments on how levels of optimal fishing capacity might/will change over time	Y2														
8. Promote further improvement, preparation and implementation of activity plans to manage fishing capacity.	Y2														

	M 1	M2	M 3	M4	M 5	M 6	M7	M 8	M 9	M 10	M 11	M 12	M13	M14	M15
Schedule for activities to Output 3:															
1. Survey local knowledge and actions among ethnic groups and coastal communities in two countries															
2. Develop ways to incorporate local responses to natural hazards into a safety-at-sea programme															
3. Develop ways to have smaller fishing vessels providing information to villages on approaching hazards	Y2														
4. Review seaworthiness of boats provided during the rehabilitation and restoration process in four selected areas															
5. Process to improve or establish systems for registration of boats in at least two of the affected countries															
6. Develop a training programme for safety-at-sea and rescue at sea of relevance to the mitigation of effects caused by marine natural hazards															
7. Train trainers from/in selected areas	Y2														
8. Support the process to work out simple early warning system and response packages by facilitating input of local knowledge and practices															

	M 1	M2	M 3	M4	M 5	M 6	M7	M 8	M 9	M 10	M 11	M 12	M13	M14	M15
Schedule for activities to Output 4:															
1. Review the criteria and indicators currently in use for decision making on future use of fisheries and coastal areas, with changes since the Tsunami															
2. Review how poorer fishing households have been affected by the Tsunami and how they have benefited from rehabilitation programmes															
3 Information and advise to ASEAN and ASEAN-SEAFDEC Member Countries on the management of fisheries and important habitats															
4. National legislation and institutional arrangements pertaining to management of the exploitation of fisheries and critical habitats															
5. Review international fisheries conventions and other conventions with a view to how they are implemented in the four affected ASEAN Countries															
6. Regional Technical Consultation with all ASEAN-SEAFDEC member countries on recommendations for protection against future natural disasters	Y2														
7. Other regional FAO-ASEAN-SEAFDEC, etc events organised if called upon to promote policy dialogue and coordination	Y2														

PROGRAM DOCUMENT

Program Categories: Programs under the ASEAN-SEAFDEC FCG Mechanism

Program Title: Fisheries Resource Survey and Operational Plan for M.V. SEAFDEC 2 (in the Sub-regional Areas of the Southeast Asian Countries)

Lead Department: TD

Total Duration: 2007-2009

1. BACKGROUND

With the support of the Government of Japan through a new Fisheries Research and Training Vessel, the M.V. SEAFDEC 2 provided to SEAFDEC/Training Department (TD) in 2004, research studies have been conducted by TD on fisheries stock and fishery oceanography in the waters of the SEAFDEC Member Countries. Until now, 29 cruises have been operated using the M.V. SEAFDEC 2 as requested by the Member Countries with some cruises operated under the SEAFDEC program arrangements and one cruise going to conduct during 24 November to 25 December 2008 (See Table 1, MV SEAFDEC cruise program in 2008). The utilization of the M.V. SEAFDEC 2 for national research surveys is based on a cost-sharing policy adopted at the 37th Meeting of the Council of SEAFDEC in 2005. Based on the cost-sharing policy, the requesting member country would be responsible for fuel and freshwater that would be consumed by the vessel during the research operation in the national waters, the salaries and necessary DSA of the local or national participants on-board who are involved in the research activities as well as the Agency Fee and port clearance fee which should also be borne by the requesting member country.

2. ISSUES AND CONSTRAINTS

Recently the price of fuel in the world market has been increasing as shown in Fig. 1. This has directly affected the local oil prices in the region and impact directly to the national economies in developing as well as developed countries. The impact of the high fuel price is also directly affecting the SEAFDEC programs/activities particularly the operation of its research vessels. Many projects under the JTF Program in SEAFDEC require information collection at national levels in order to further examine the outcomes from the regional points of view.

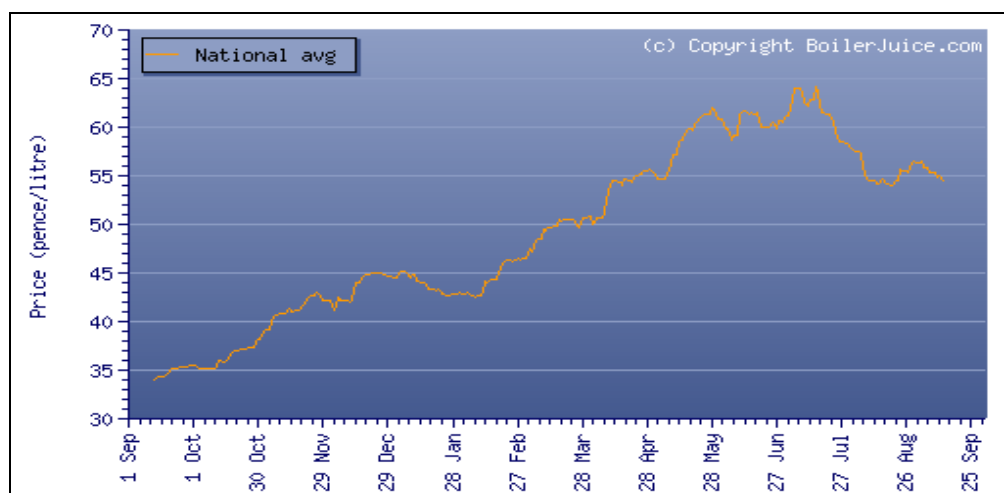


Fig. 1 One-year trend of the price of fuel in the world (pence/litre)(Pence is plural for penny which is equivalent to 100th of a pound)

In considering the utilization of the M.V. SEAFDEC 2 by the Member Countries from 2004 until 2008, the number of operation days was 151, 173, 118 and 64 (until Nov. 08), respectively. The proposal for the utilization of the vessel in 2009 is still subject to the confirmation of the requesting Member Countries.

3. FUTURE CONSIDERATION FOR THE UTILIZATION OF M.V. SEAFDEC 2

Results of single country's information collection and fishery resources survey in the sub-regional seas such as in the Sulu Sea, Sulawesi Sea, Celebes Sea, the South China Sea, Gulf of Thailand, and Andaman Sea may not be sufficient enough for the analysis of the fishery resources in the Southeast Asian waters considering the highly migratory species or/and shared stocks of some pelagic fishes (Fig. 2). In addition, using the M.V. SEAFDEC 2 by a single country could be costly even if the operation is conducted under the cost-sharing policy of SEAFDEC. Therefore, collaborative arrangements between SEAFDEC and Member Countries concerned is proposed for conducting fisheries resources survey in the particular seas as mentioned above where the fish stocks are shared. For example, Sulu Sea is covered by three countries, namely: the Philippines, Malaysia and Indonesia, therefore using the M.V. SEAFDEC 2 under the cost-sharing policy will entail less cost for the countries concerned as the total cost would be shared among the participating countries. In addition, the outcomes from the survey could also be complete as the survey could be undertaken within a single cruise.

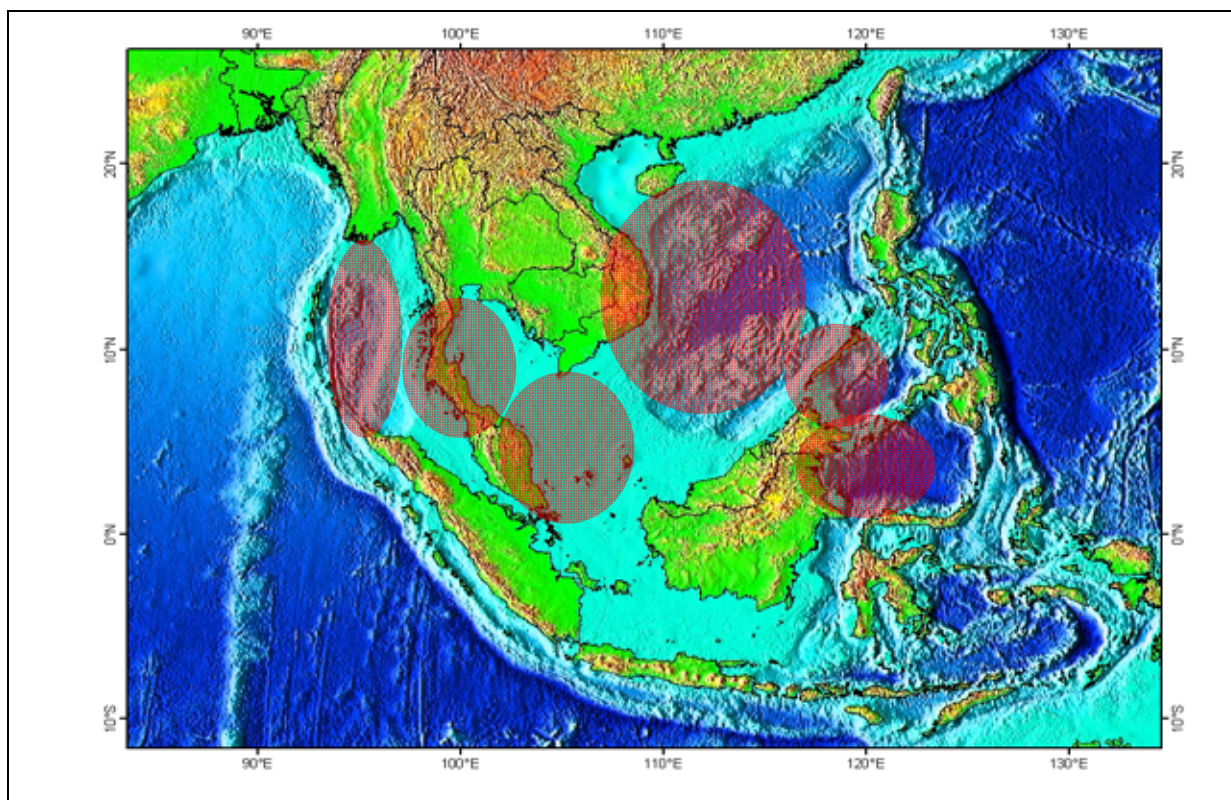


Fig. 2 Highly migratory fish stocks in the sub-regional seas in Southeast Asia shared by a number of SEAFDEC Member Countries

4. RESEARCH/TRAINING PLAN OF THE M.V. SEAFDEC 2008 ACTIVITIES

Research/Training Program	Objectives	Survey Area/ Target Countries	Schedule (Days)	Responsible Department/ Country
28) Survey on Ocean-Reef Coupling and Investigation of Biogeochemical Processes in the Andaman Sea (Thailand)	<ol style="list-style-type: none"> 1) ACDP Mooring (upload) and re-deployment 2) Oceanographic survey by ICTD 3) Water samplings 4) Plankton survey by horizontal and vertical samplings 5) Sediment samplings from Box-Core, (alternative gears: Gravity core) 6) Biosonic experiments during the 1st Leg (option) 	EEZ of Thai waters Andaman Sea	3 Mar – 4 April 08 (33 days)	Research Institutes in Collaboration with DOF/Thailand
29) National Fisheries Resources Survey (Brunei Darussalam)	<ol style="list-style-type: none"> 1. Oceanography: ICTD, IKMT, Bongo net, Neuston net, 2. Demersal Fishes Resources in Zone 3 will be collected by using the Bottom beam trawl and Otter board trawl. 3. Acoustic survey by FQ 80. 4. Whale observation during cruising. 	Bruinei Darussalam waters	4 June – 5 July 2008 (32 days)	DOF/BN
30) National Fisheries Resources Survey (Thailand)	<ol style="list-style-type: none"> 1. Pelagic fisheries Resource survey in the Andaman Sea 2. To deploy and monitoring the fish aggregating devices in the EEZ of the Andaman Sea of Thailand 3. Whale watching training course onboard (during cruising between TD and Andaman sea 	Andaman sea (Thailand)	24 Nov – 25 Dec 2008 (31 days)	DOF/Thailand

5. PURPOSED PLAN IN 2009

NO.	Item	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Country/ Institution	Main activity	Period	Total days	Remark
1	Fishing and hydroacoustic survey along the continental slope and deep water													Brunei/ DOF	Fishing and hydro-acoustic survey		~30 days	Whale sighting will be carried out during cruiseing
2	Monitoing FADs and fishery resource survey using PLL													Thailand / DOF	Monitoring FADs and PLL		~30 days	Whale sighting will be carried out during cruiseing
Total																	~60 days	

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Deep-sea Fisheries Resources Exploration in the Southeast Asia Waters

Lead Department: TD in Collaboration with MFRDMD

Participating Countries: Member Countries

Total Duration: 2007 to 2010

1. INTRODUCTION

Due to the depletion of the inshore/costal fisheries resources in the Southeast Asian (SEA) Countries, in conjunction with the fuel crisis that make many fishers suffering and detrement, some fishers have to stop their operation and change to other business. In other hand this automatically reduces the fishing capacity in the sense, goes in line with national fishery policies in many countries. However, this depletion also reduce the supply of seafood materials to many fish processing industries in the region and will also reduce the food supply to the global market in the near future. In the point of view of fishery policy maker or government, searching of new fishing ground is one of the important research works under the national program and to important this research work it is very much needs to get fully support in both funding and capacity building from government.

Considering the geographic features in the SEA waters, more than 50% of the sea areas are identified as deep-sea whereas utilization of those resources have not been initiated yet. This is due to the lack of information on the species composition and how potential of the resources. In addition, it is clear that research vessels for deep-sea survey seem to be one of the main factors that many countries in the region are facing with. There are not many research scientific instruments, type of fishing gears for fish samplings, and expertise. To encourage members to initiate the deep-sea resources exploration, therefore, modification of sampling gears for those research vessels is essential.

In the point of view of the international concerns on the ecosystem approach for the deep-sea fisheries, to provide better understanding o the Member Countries on the deep-sea issues in the international forum therefore exploration of the deep-sea resources through this program are needed for further consideration and sustainable management.

2. PROGRAM

2.1 Objectives

1. To investigate the deep-sea fisheries resources in collaboration with the SEAFDEC Member Countries through using of MV SEAFDEC2 and under the cost-sharing policy and/or by the national research vessels;
2. To search for new deep-sea fisheries resources and fishing grounds in the SEA;
3. To investigate the impact of deep-sea trawl to the bottom ecosystem through the identification of species composition and underwater observation via VDO camera;
4. To enhance human resource capacity on the deep-sea resources exploration such as on the methodology for samplings of deep-sea fisheries resources, identification of deep-sea fishes and larval fishers: taxonomy and development of appropriate/responsible fishing gear and methods for harvesting/samplings of deep-sea resources; and

5. To support the national resources survey using national research vessel by advice Member Countries on the improving of fishing gear and methods for deep-sea fish samplings

2.2 Program description

There are two main subjects under the deep-sea exploration program as follow:

1. Data/information collection on the deep-sea fisheries resources in the SEA region through the reviewing of the existing data and actual exploration by SEAFDEC research vessel and national research vessel in cooperation with the Member Countries;
2. Investigate/survey on the impact of trawl fisheries to deep-sea ecosystem through the actual survey. Onboard training program on this subject will be also conducted in order to encourage the Member Countries on the deep-sea exploration and study on the deep-sea ecosystem.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Project/Activity Title	Duration	Remarks
Activity 1: Supporting of deep-sea fisheries resources survey	Feb-Oct	100%
Activity 2: Deep-sea ecosystem and its impact from fisheries	Mar-Dec	80%
Activity 3: Development/improvement of the deep-sea fish sampling gears	Jan-Aug	70%
Activity 4: HRD program on deep-sea research and sampling/ecosystem	Xxx	100%
Activity 5: Information dissemination	Aug-Dec	50%

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
<p>Activity 1: Supporting of Deep Sea Fisheries Resources Survey</p> <p>The data collected during the past years (actual surveys by SEAFDEC and other relevant initiatives in the region) will be systematically managed. The activity in 2009 will continued to support the deep sea fisheries resources survey in the EEZ of the Member Countries (by M.V.SEAFFDEC2 under the cost sharing policy, and/or support other research initiatives). However, the capacity of M.V.SEAFFDEC2 in carrying the deep-sea resources survey is less than 500 meters depth. In this connection, the use of other research vessels that have capacity to work in deeper water will be encouraged and supported in terms of sampling gears and other research facilities under the project. Consultation visit and technical workshop will be organized to review available information, and to discuss on the future plan related to deep sea exploration and utilization.</p>	Jan – Nov	

<p>Activity 2: Deep-sea Ecosystem and impact from fisheries Reporting and updating information on the deep-sea specimens – based on the national research program and M.V. SEAFDEC 2, and from others the deep-sea resources survey in the EEZ of the Member Countries, will be made available. At the same time, collaboration and coordination with other relevant initiatives will be strengthening for exchange of information and expertise on the topic related to deep-sea resources exploration.</p>	<p>Feb – Nov</p>	
<p>Activity 3: Development/improvement of the deep-sea fish sampling gears/technology According to the results from the actual fishing trial of deep-sea beam trawl and IKMT (Isac-Kid Mid-Water Trawl) onboard M.V. SEAFDEC2 and based on the recommendations made at the training/workshop on the deep sea fishery resources exploration conducted in the Lingayan Gulf conducted in 2008, the Regional Workshop (R/W) on the Standard Operation Procedure (SOP) on the methodologies for deep sea fishery exploration and development/improvement of appropriated samplings gears will be included under this program. Targeted participants of the R/W include fishery researchers from the Member Countries, specialists and experts on the deep-sea fishing gears.</p>	<p>Jan – Nov</p>	
<p>Activity 4: HRD Programs on Deep Sea Research and Sampling/Eco-system Human resources development programs will be provided to the Member Countries to encourage them on the initiation of deep-sea resources exploration/utilization in the perspective of the international concerns on the ecosystem-based approach for the management of deep-sea fisheries. A regional workshop on the standard operation procedure and development/improvement of sampling gears related to deep-sea resources exploration will be conducted under this program.</p>	<p>Jul – Aug</p>	
<p>Activity 5: Information Dissemination SOP on deep-sea resources survey, field guide book and/or poster (color) of the deep-sea fish in the Southeast Asian Region will be published and introduced to the Member Countries for their future national research survey programs/activities. A regional network for deep sea fisheries is envisaged for strengthen coordination and collaboration among the Member Countries and other relevant initiatives.</p>	<p>Apr – Dec</p>	

4.2 Expected Outcomes

- Investigation of the deep-sea fisheries resources in close collaboration with the SEAFDE Member Countries by using MV SEAFDEC2 and/or by other research vessel;
- Exploration of a new deep-sea fisheries resources and its fishing ground in the SEA waters;
- Investigation of the deep-sea trawling impacts on sea-bottom ecosystem through the identification of species composition and underwater observation using VDO camera, etc;
- Enhance human resource capacity on the deep-sea resources exploration such as sampling methodology for the deep-sea fisheries resources, identification of the deep-sea fishers and larval fishers, taxonomy, and development of appropriate/responsible fishing gear and methods for harvesting/sampling of the deep-sea resources; and
- Support the national resource survey using national research vessel of the Member Countries for improvement of fishing gear and methods for deep sea fish samplings.

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Tagging program for economically important pelagic species in the South China Sea and Andaman Sea

Lead Department: MFRDMD in collaboration with TD

Lead Country: Malaysia

Total Duration: 2007 - 2011

Proposed Budget: USD 145,000

1. INTRODUCTION

It is believed that pelagic fishes migrate for their ecological demand of spawning and feeding habits to the optimum environmental conditions such as current, water temperature, salinity, chlorophyll and prey. Information on migration is most important to consider stock identification and shared stock of pelagic fishes. In the Japanese Trust Fund II (JTF II) project on “Information Collection for Sustainable Pelagic Fisheries in the South China Sea” from 2002 to 2006 the genetic and morphometric analysis were conducted to identify subpopulation and shared stock of the targeted small pelagic fishes. However, subpopulations of these fishes as management unit could not be shown clearly.

Tagging activity is one of the methods to study migration route of small pelagic fishes, which sometimes contributes to good results. In the Gulf of Thailand, about 2,600 Indo Pacific mackerels (*Rastrelliger brachysoma*) were tagged and released by the DoF of Thailand from 1960 to 1965. From the study, about 16% of the tagged fishes were recaptured. The recovery rate is remarkably high for the small pelagic fishes, and gave useful information on the migration pattern of the species. The DoF Malaysia has also carried out tagging activities for pelagic fishes in the Malacca Strait and east coast of peninsular Malaysia from 1990 to 1998. However, information on migration patterns of the small pelagic fishes in the Southeast Asian region is still quite fragmentary and very poor.

Investigation on migration patterns of small pelagic fishes in the region is an urgent subject for consideration for stock identification and clarification of shared stock for important pelagic species. Status of the pelagic resources in the region is still good, judging from the trend of annual catch in the last 20 years. However, the demersal fish resources have experienced an over-exploitation or closed to maximum level exploiting in most part of the region. Therefore, tagging activity of the pelagic fishes is urgently needed for further clarification on the status of the resources / the state of exploitation

2. PROGRAM

2.1 Objectives

The objectives of this project are:

1. To reveal movement and migration routes of targeted pelagic fishes in the Southeast Asian waters;
2. To reveal growth patterns of pelagic fishes;
3. To estimate the stock parameters of F and M using monthly recapture data (if possible).

2.2 Program Description

This program comprises four projects including five activities as follows:

Project 1: Meetings/Workshops/Trainings for Effective Program Implementation

Activity 1: The 2nd Core Expert Meeting

The 2nd Core Expert Meeting was held in 13-14 October 2008 in Kuala Lumpur, Malaysia and discussed progress of the project implementations in 2008 and formulated the draft research plan for tagging in the South China Sea and Andaman Sea for 2009 and onward. The standard data processing procedure was discussed and finalized with participants from all the participating SEAFDEC Member Countries.

Project 2: Tagging Operation in the South China Sea and Andaman Sea

Activity 1: Tagging operation in the South China Sea

Tagging operation is to be conducted in the participating SEAFDEC Member Countries until December 2008 at fifteen tagging sites in the South China Sea in collaboration with SEAFDEC-TD and SEAFDEC-MFRDMD. The targeted species of small pelagic fishes are *Rastrelliger kanagurta*, *R. brachysoma*, *Decapterus maruadsi* and *D. macrosoma*. The number of small pelagic species to be tagged and sites for tagging operation were decided during the 1st Core Expert Meeting held in 2007 with some modification.

Activity 2: Tagging operation in Andaman Sea

Tagging operation is to be conducted in the participating SEAFDEC Member Countries until December 2008 at six tagging sites in the Andaman Sea in collaboration with SEAFDEC-TD and SEAFDEC-MFRDMD. The targeted species of small pelagic fishes are *Rastrelliger kanagurta* and *R. brachysoma*. The number of small pelagic species to be tagged and sites for tagging operation were decided during the 1st Core Expert Meeting held in 2007 with some modification.

Project 3: Data collection and analysis

Activity 1: Data collection and verification

Information for the number of fish tagged and recaptured will carefully be handled at the participating SEAFDEC Member Countries. Data will be verified before entering into the database that developed by SEAFDEC-TD. Work on data verification will be conducted by all Technical Officers of the project.

Project 4: FADs and Sardine Information

Activity 1: Information and data collection

Supplementary information on present status of FADs operation (type, location, distribution, owner and number) and Sardine catch (gear, boat, method of operation and fishing season) in the South China Sea will be compiled based on the collected data in the first phase of Japanese Trust Fund II project from 2002 to 2006 for considering an appropriate management of purse seine fishery in the area.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Project/Activity Title	Duration	Remarks
<p>Project 1: Meetings/Workshops/Onsite training for Effective Program Implementation Activity 1: <i>The 2nd Core Expert Meeting</i></p>	<p>13-14 Oct 2008</p>	<p>100% completed The 2nd Core Expert Meeting was held in October 2008 in Kuala Lumpur, Malaysia to discuss progress of the project implementations in 2008 and to formulate the final research plan for tagging in the South China Sea and Andaman Sea for 2009 and onward. The standard data processing procedure was discussed and finalized with participants from all the participating SEAFDEC Member Countries.</p>
<p>Project 2: Tagging Operation in the South China Sea and Andaman Sea. Activity 1: <i>Tagging operation in the South China Sea</i></p>	<p>Jun-Oct 2008</p>	<p>34% completed Tagging operations were conducted in the participating SEAFDEC Member Countries from June until October 2008 at thirteen tagging sites in the South China Sea in collaboration with SEAFDEC-TD and SEAFDEC-MFRDMD. The targeted species of small pelagic fishes were <i>Rastrelliger kanagurta</i>, <i>R. brachysoma</i>, <i>Decapterus maruadsi</i> and <i>D. macrosoma</i>. The number of small pelagic species to be tagged and sites for tagging operation were decided during the 1st Core Expert Meeting in 2007 with some modification. Totally 21,900 tails of fish are expected to be tagged and currently, 7,242 tails were released (33.5%).</p>
<p>Activity 2: <i>Tagging operation in Andaman Sea</i></p>	<p>May-Sep 2008</p>	<p>22% completed Tagging operations were conducted in the participating SEAFDEC Member Countries from May until September 2008 at six tagging sites in the Andaman Sea in collaboration with SEAFDEC-TD and SEAFDEC-MFRDMD. The targeted species of small pelagic fishes were <i>Rastrelliger kanagurta</i> and <i>R. brachysoma</i>. The number of small pelagic species to be tagged and sites for tagging operation were decided during the 1st</p>

<p>Project 3: Data collection and analysis Activity 1: <i>Data collection and verification</i></p>	<p>May-Dec 2008</p>	<p>Core Expert Meeting held in 2007 with some modification. Totally 8,400 tails of fish are expected to be tagged and currently, 1,831 tails were released (21.8%).</p> <p>80% completed Information for the number of fish tagged and recaptured was carefully handled by the participating SEAFDEC Member Countries. Data was verified before entering into the database that developed by SEAFDEC-TD. Work on data verification was conducted by all Technical Officers of the project. Currently, the tag recovery was about 180 tails released in Vietnam, and 4 tails of <i>R. kanagurta</i> released in Malaysia-Sabah. The current recovery rate of released fish was 2.0%.</p>
<p>Project 4: FADs and Sardine Information Activity 1: <i>Information and data collection</i></p>	<p>Jan-Sep 2008</p>	<p>100% completed Supplementary information on present status of FAD operation and Sardine catch in the South China Sea was compiled based on the collected data in the first phase of JTF II project (2002-2006) for considering an appropriate management of purse seine fishery. The information was presented by the related Member Countries during the 2nd Core Expert Meeting.</p>

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
<p>Project 1: Meetings/Workshops/Trainings</p>		<p>No activity</p>
<p>Project 2: Tagging Operation in the South China Sea and Andaman Sea Activity 1: <i>Tagging operation in the South China Sea</i></p>	<p>Mar-Dec 2009</p>	<p>Tagging operation will be conducted in the participating SEAFDEC Member Countries at 10 tagging sites in the South China Sea in collaboration with SEAFDEC-TD and SEAFDEC-MFRDMD. The targeted species of small pelagic fishes are <i>Rastrelliger kanagurta</i>, <i>R. brachysoma</i>, <i>Decapterus maruadsi</i> and <i>D. macrosoma</i>. The number of small</p>

<p>Activity 2: <i>Tagging operation in the Andaman Sea</i></p>	<p>Mar-Dec 2009</p>	<p>pelagic species to be tagged and sites for tagging operation were decided during the 2nd Core Expert Meeting with some modification from the 2008.</p> <p>Tagging operation will be conducted in the participating SEAFDEC Member Countries at 5 tagging sites in the Andaman Sea in collaboration with SEAFDEC-TD and SEAFDEC-MFRDMD. The targeted species of small pelagic fishes are <i>Rastrelliger kanagurta</i> and <i>R. brachysoma</i>. The number of small pelagic species to be tagged and sites for tagging operation were decided during the 2nd Core Expert Meeting with some modification from the 2008.</p>
<p>Project 3: Data Collection and Analysis Activity 1: <i>Data collection and verification</i></p>	<p>Jan-Dec 2009</p>	<p>Information for the number of fish tagged and recaptured will carefully be handled by all Technical Officers of the project of the participating SEAFDEC Member Countries. Data will be verified before entering into the database that developed by SEAFDEC-TD. Work on data verification will be conducted by all Technical Officers of the project.</p>

4.2 Expected Outcomes

The expected outcomes of the project in 2009 are as follows:

- To conduct tagging operations in the participating SEAFDEC Member Countries
- To compile recovery information of the tagged fish recaptured
- To conduct data handling, updating and processing
- To formulate the final implementation plan of tagging program in 2010 and onwards

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Promotion of “One Village, One Fisheries Products (FOVOP)” System to Improve the Livelihood for the Fisheries Communities in ASEAN Region

Lead Department: SEAFDEC Secretariat

Lead Country: Thailand

Total Duration: 2007-2009

1. INTRODUCTION

One of the serious problems in achieving sustainable fisheries, especially for small-scale fisheries in ASEAN region is over-capacity of the sector; too many fishers competing each other over dwindling fisheries resources. Due to various difficulties on the establishment of appropriate fisheries management system in coastal areas in the ASEAN region, fisheries have been conducted under the open access regime (race to fish) in unregulated manner. The reducing trend of daily catch would worsen their livelihood, and lead to chronic status of poverty in the small-scale fisheries households. It is found that there are not many options to alleviate this status, especially in relation to the lack of alternate income earning opportunities other than fisheries in the rural fishing community. People might continue to be small scale fishers and tend to use illegal and destructive fishing gears and practices to desperately maintain their livelihood. Such vicious cycle would further aggravate their social, economic and financial status of small-scale fishers and ecological status of aquatic/fisheries resource base.

On the other hands, the obtaining maximum benefits out of fish and fisheries products in the fishing community to improve the fisheries livelihood has not effectively been achieved due to social and other problems. Traditional marketing system, in most cases, dominated by so-called “middlemen” purchasing fisher’s catch in the form of fresh in fishing communities for their various disposition purposes of fisheries products through their marketing channels. Fishers do not normally obtain the greater benefit out of their catch, if these are sold simply as fresh fish, especially in peak season. Furthermore, in most cases, they are not in the position to initiate small business using their catch to produce value-added products, considering their limited technical and financial capacity. In addition, even though the person who managed to produce fisheries value-added products, general competitive marketing situation of fisheries product developed in other areas or even by the large fisheries industries would provide negative factor to promote feasible economic activities in the rural areas.

Although it is understood that women is actively participated in fisheries even in the fishing activities, their level of involvement is always kept as informal basis and hardly recognized as important and potential stakeholders in rural economic activities. In this connection, the women’s group can be considered as underutilized valuable human resources in the community. Although the project is not specifically planned only for the women’s participation, but gender sensitive approach to the community members both men and women for the proposed activities will be taken, involvement of women’s group can be motivated and encouraged because these groups are not fully mobilized in various community activities.

In 1979, Mr. Morihiko Hiramatsu, the Governor of Ooita Prefecture, Japan at the time proposed “One Village, One Products (OVOP)” movement to provide greater motivation for the rural potential people being community leaders to activate rural economy mobilizing various inputs unique and available in these rural communities.

Over 25 years, such movements have been successfully developed in either in Ooita and other Prefectures, Japan, recognized as production of differentiated products, “One Village, One Products (OVOP)’ and greatly mobilized rural people including women’s group for the promotion of various vitalization activities of rural communities. It is also proved that women’s groups have taken various leading roles especially from social aspect of the activities. With respect to the productions of handicrafts and food materials through OVOP movement, the women’s groups have normally taken substantial role in the community.

Through the comprehensive Human Resource Development activities, the movements have reviewed specificity of the local community, not in the negative but positive aspects and identified the potential products and activities that can economically, financially and socially activate the respective rural communities. Such principles, especially in its bottom-up approach have been supported by numbers of developing countries as a mean to develop and activate rural communities’ status, motivating the people and mobilizing the unique but locally available technical skills and materials.

These countries in ASEAN region promoted “One Village, One Products (OVOP)” concept as well as movements were Cambodia (One Village, One Product), Indonesia (Back to Village), Lao PDR (Neuang Muang, Neuang Phalittaphan), Malaysia (Satu Kampung, Satu Produk), Philippines (One Barangay, One Product), Thailand (One Tambon, One Product (OTOP)).

Especially, Thailand has developed “One Tambon, One Product (OTOP)” in its effective own way. The OTOP with specific objectives both on the effect to rural development and promotion of internationally tradable products has been successfully integrated and developed in shorter period and achieved special nation-wide supporting system coordinated and supported by the special unit established in Prime-Minister Office.

It might be difficult to promote international trade of fisheries products to be produced in rural fishing communities in their backyard. As safety of the food is a keen concern in the international society, application of stringent and high level trade regulations under WTO such as SPS (Sanitary and Phytosanitary Measures) and recommended measures including HACCP (Hazard Analysis Critical Control Points) will greatly handicapped for the successful promotion of these product in the international market. It is also too ambitious to quickly develop the system to meet the international requirements on sanitary and other related issues (i.e. packaging) considering the current technical and financial capacities and status of the women’s group who would produce appropriate fisheries product in rural fishing communities. In this connection, outputs of the movement will be targeted to promote value-added but differentiated fisheries products and activities in local/ national markets (Aiming only one product rather than number one products). OVOP movement can therefore be more referable and usable than regional success case of OTOP, for the proposed project activities such as motivating the people’s function and mobilizing women’s group through appropriate HRD activities and development/ market policy of the project.

Above problem together with perishable nature of material (harvest from aquatic ecosystem) always provide negative factor to develop value-added product in the fishing communities. In addition, public support (government) tends to focus on the production/management side of small scale fisheries, not on the marketing side, due to the reason that this sector can be solely handled by industry themselves, although it was understood that marketing people involved in the small scale are not always kept good cooperation with fishers (middlemen).

It is understood that the promotion and marketing of value-added fisheries products requires cultural background. As normally, food habit is rather historically developed and conservative nature, special marketing strategy is required. ASEAN region, composed of 10 countries has

developed their culture on fish eating habit in diversified manner in term of acceptance of various types of fisheries products. This has led to the regional directions to promote intra-regional trade as part of the ASEAN Economic Integration Policy and Roadmap for Fisheries Integration. Based on this recognition, regional promotional work of “One Village, One Fisheries Product (FOVOP)” would be accepted. In addition to such cultural background, the most of ASEAN member countries has tested “OVOP” movement with different level of success.

2. PROGRAM

2.1 Objectives

Development Objectives

The development objective is to improve fisheries livelihood through motivation of the potential people in the fishing communities in ASEAN Member Countries through introduction and promotion of “One Village, One Fisheries Product (FOVOP)”.

Project Objectives

In order to achieve the above Development Objectives, the project will focus on the following detailed objectives through various HRD activities.

1. To enhance the awareness on the gender and development in the fishing communities, especially to clarify the role and function of women’s group for the development of small-scale economic activities in the community level;
2. To develop the regional strategy on the development and promotion of “One Village, One Fisheries Product (FOVOP)” especially the policy to support these activities through the government services;
3. To evaluate the needs and problem areas on the introduction and development of “One Village, One Fisheries Product (FOVOP)” in each ASEAN Member Country;
4. To identify the regional mechanism requirement to support the promotional work on “One Village, One Fisheries Product (FOVOP)”;
5. To provide basis to facilitate exchange of experiences among ASEAN Countries and experts, including experience from the case studies to develop recommendation for future FOVOP activities that could be later developed, which are suitable for each local situation in respective ASEAN Country.

2.2 Program description

Currently there are no national policy/framework/guidelines to support the promotion of FOVOP in the ASEAN Region. Based on such similarity in their culture on fish eating habit and other social factors, exchange and sharing their experiences among ASEAN 10 countries in terms of motivation of the people, production of value added products and other activities specific to each locality, can be the regional advantages to promote the proposed movement, rather than promoted separately in respective countries. These can be achieved through development of the regional policy/framework and guidelines to support the initiative through development of the regional strategy on the development and promotion of “One Village, One Fisheries Product (FOVOP)”, especially the policy to support these activities through the government services. After the project completion, the Regional Guidelines and related strategies will be used as basis for the ASEAN Countries to apply and further promote and implement activities under their specificity and local situation.

At present, there is no effective mechanism to improve the livelihoods of fisheries household and initiate small-scale business in rural fishing communities in ASEAN region. The issues also inter-linked with fisheries problems as over-capacity and coastal fisheries management issue. Although the livelihood issues and poverty problem in rural fishing communities in most cases entrusted to the fisheries related government agency, their supporting programs are always very oriented toward and confined in very technical nature (i.e. using appropriate fishing gear, method to manage fisheries). Therefore, it might be appropriate to promote “One Village, One Fisheries Product (FOVOP)” by introducing proved methodologies as OVOP/OTOP with appropriate marketing strategy to the ASEAN Region.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Project/Activity Title	Duration	Remarks
<p>1st Regional Technical Consultation (RTC) on “One Village, One Fisheries Product (FOVOP)”</p> <p>- The 1st Regional Technical Consultation (RTC) on FOVOP was organized from 24 to 27 March 2008 in Bangkok, Thailand mainly to exchange experiences on the development of FOVOP based on the experiences in Japan (“One Village, One Product, (OVOP)” movement in Oita Prefecture), Thailand (One Tambol, One Product, (OTOP)” and other ASEAN countries. The RTC identified a number of preliminary strategies that would be carried out to advance the promotion of FOVOP in the region. The RTC also introduced the project concept and activities to be implemented throughout the project aimed at seeking “Only One, not Number One” fish product.</p>	Mar.	100% Completed
<p>Regional HRD Workshop on Identification of Potentials and Problem Areas for the Promotion of FOVOP in the ASEAN Region</p> <p>-The ASEAN-SEAFDEC Regional HRD Workshop on Identification of Potentials and Problem Areas for the Promotion of “One Village, One Fisheries Product (FOVOP)” in the ASEAN region was held from 18-22 August 2008. The Workshop adopted the Regional Reference for the Promotion of FOVOP in the ASEAN Region which comprises the Potential FOVOP Products and Services in the ASEAN Region and the Regional Strategy for the Promotion of FOVOP in the ASEAN Region. In addition, the Workshop also agreed that individual Country Proposals on the Promotion of FOVOP Products and Services should be developed or enhanced existing similar national activities. The workshop, agreed on the preparatory process and timeframe to the workshop scheduled in 2008 and 2009. Each country should finalize the National Proposal, identification of nation project focal point in the end of September 2008. Formalization of the proposal for both sides should be done by mid of October 2008.</p>	Aug.	100% Completed
<p>Development of the Materials for Training and Awareness Building</p> <p>- The outputs from the Regional HRD Workshop i.e. the Regional Strategy for the Promotion of FOVOP in the ASEAN Region, and Potential FOVOP Products and Services in the ASEAN Region will be translated into the respective national languages to be used as FOVOP HRD materials for the government awareness building. The preparation of the HRD materials including translation will be handled in November to December 2008.</p>	Nov.-Dec.	On-going

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
<p>Case Studies on the Promotion of FOVOP in ASEAN Region (Local HRD Workshop)</p> <ul style="list-style-type: none"> - Under the HRD project, the case studies will be conducted by SEAFDEC in selected sites of Member Countries as Local HRD Workshop with includes the representatives of the identified women's group. 	Jan. –Apr.	
<p>Revision of HRD Materials</p> <ul style="list-style-type: none"> - The responsible officer of the central government will revise the regional HRD materials including strategies and guidelines accommodating the findings through the local consultation meeting. - Based on the revised HRD materials submitted by the responsible officers of the central government that conducted case studies, the Secretariat will revise the regional HRD materials (including Strategies and Guidelines) so as to reflect the outcomes of the case studies. 	May-Jul.	
<p>The 2nd RTC on the Promotion of FOVOP in ASEAN Region</p> <ul style="list-style-type: none"> - The 2nd RTC on the Promotion of FOVOP in ASEAN Region will be organized. Four government officers (two from central government and two from local government) will participate to the 2nd RTC. HRD activities will be conducted using the revised HRD materials accommodating the outcomes of the case studies in the selected countries and localities. Through reviewing the HRD materials and exchanging the experiences of the participants, these HRD materials will be finalized as the regional strategies and guidelines for the promotion of FOVOP movement. - The 2nd RTC will also serve as a forum for sharing experiences among the Member Countries (including experience from both government and non-government representatives during the case studies) to support future national activities to be implemented later in respective country. In addition, the 2nd RTC will also discuss and recommend future possible post-project activities that would be implemented by respective countries (i.e. once specific products are identified, a technical training on proper production/handling -- post-harvest methods/technologies – should be conducted to ensure quality of products). - The 2nd RTC will further discuss the development of regional network to promote FOVOP in ASEAN region, in the long run, after the project implementation. As SEAFDEC develop its technical competence in term of required technologies for the development of FOVOP products including post-harvest technologies, fishing and post harvest technologies, aquaculture technologies and fisheries management and conservation of aquatic environment, it can be acted as core function of the network linking with the respective national networks, if such arrangement is developed by the interested countries on the promotion of FOVOP. 	Aug.	

4.2 Expected Outcomes

Awareness building on how the Fisheries OVOP (FOVOP) can provide impact on the following issues, will be greatly enhanced through the successful project implementation

- Improvement of fisheries livelihood;
- Impact on the over-capacity;
- Gender and development in the fishing community;
- Active participation of women's group on the community based business activities; and
- Recommendation on identified future FOVOP activities to be implemented in respective ASEAN Country.

Through the proposed HRD activities, the following strategies/policy and guidelines will be clarified and understood among the various stakeholders in the region.

- Regional strategy and guidelines for the promotion of FOVOP in ASEAN Region, especially on HRD motivating local people and encouragement for the appropriate institutional set up including women's group;
- Regional strategy and guidelines for the support of government agencies on the promotion of FOVOP;
- Regional guidelines for the mobilization of the micro-credit and marketing promotion in rural areas; and
- Regional guidelines on the Identification of the FOVOP Products.

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Information Collection of Highly Migratory Species in Southeast Asia Waters

Lead Department: TD

Lead Country: The Philippines

Total Duration: 2008-2012

1. INTRODUCTION

Tuna species are ones of the highly migratory species, have the greatest commercial value of the tunas and billfish resource of the World. In the Southeast Asia waters tunas are also commercially important marine resource for exports to the Japan and EC countries, as well as for the domestic consumptions as valuable protein resource. Linkage to the neighboring Regional Fisheries Management Organization (RFMOs) namely IOTC and WCPFC, Southeast Asian Region is identified under those RFMOs. At present, stock structure of tuna distributed in the region particularly in the south china sea are still unclear and without the knowledge of the real stock structure, appropriate resource management at national level cannot be achieved. Tuna longline and artisanal purse seine associated with FADs are the most important gears operated in the in the South China Sea areas and neighboring sea toward to the West Central Pacific Ocean especially in Celebes Sea. Under such a situation of tuna production based on harvesting of concerned countries, therefore SEAFDEC proposed to conduct the information/data collection of the tuna production harvested in the South China Sea covering four main countries namely The Philippines, Vietnam and Indonesia and Thailand for the 1st Phase, and will include the remain member countries in the 2nd phases.

The framework for information/data collection in each country will be developed based on the existing/available data, data accuracy, and available budget for implementation.

2. PROGRAM

2.1 Objectives

1. To evaluate the status of tuna fisheries/productions in the Southeast Asian waters covering many sea areas within the EEZ of the following countries the Philippines, Indonesia, Vietnam and Thailand in 1st phase
2. To evaluate the tuna production in each sub-regional sea areas such as in Celebes sea, Sulu sea and some part of the South China Sea, etc.
3. To support fishery management of tuna at sub-regional areas

2.2 Program description

Information Collection of Highly Migratory Species in Southeast Asia Waters project for 2008 will focus on the information gathering of the tuna species including bigeye, yellow fin, albacore tunas and neritic tunas existed in the Southeast Asian waters. 1st phase of the project will be focused in 4 main countries namely Indonesia, the Philippines, Vietnam and Thailand. Based on new framework on tuna information collection, the origin of tuna caught and landed at port will be investigated. A working group party was established in order to perform discussion and planning for data gathering at national level. Based on tuna production from identified sea areas in each country, a total production by species at each sub regional sea areas will be estimated. In Vietnam, since the existing tuna statistic are not available yet,

therefore oceanic tuna data collection based on tuna longliners, and others commercial fishing gears will be focused for the 1st year data collection. The following year will expand to neritic tuna information collection.

3. PROGRESS ACTIVITIES IN THE YEAR 2008

In 2008, reviewed works on tuna production from the tuna statistic based on landing sites in each concerned member countries has been done, in order to preliminary evaluate on the existing information. To perform the project planning and consultation, a national focal point from each country was nominated as a member of working party. 1st working party meetings were organized separately into two time; Its group meeting for Vietnam and Indonesia in October 2008, and second group for the Philippines and Thailand in November. Tuna information/data collection is implemented as agreed from the 1st working party meetings.

Project/Activity	Duration	Remarks
1. Consultation/Working Party Meeting		
<ul style="list-style-type: none"> • Consultation visit/observation to tuna landing sites in <ul style="list-style-type: none"> ○ General Santos, Davao of the Philippines ○ Banda Ache, West Sumatera of Indonesia 	5-7 September	
<ul style="list-style-type: none"> • Preparatory work for data collection and follow-up/progress implementation 	April - September	
<ul style="list-style-type: none"> • 1st Working party meeting for annual plan finalization <ul style="list-style-type: none"> ○ With Vietnam and Indonesia ○ With the Philippines and Thailand 	8-9 October	
<ul style="list-style-type: none"> • Participation the 10th National Tuna Congress in General Santos, the Philippines 	2-4 September	
2. Development of Tuna Database		
<ul style="list-style-type: none"> • Review data worksheet for information collection and Designing all data inputs and outputs of the outcome 	April-July	
<ul style="list-style-type: none"> • Development of Regional database for Online Access 	July-December	
3. Data collection at national level		
<ul style="list-style-type: none"> • Review works on existing data base on statistic data for 	October-December	
<ul style="list-style-type: none"> • Data Collection at Landing site by assigned Enumerator 	November 08-June 09	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

In 2009, tuna data collection at designed landing sites will be continued; the data from 1st half year collection will be pre-analyzed and discussed at the 2nd Working party meeting which will be held in Vietnam

Program/Project /Activities	J	F	M	A	M	J	J	A	S	O	N	D
Information Collection of Highly Migratory Species in Southeast Asia Waters												
1. Consultation/Working Party Meeting												
<ul style="list-style-type: none"> 2nd Working Group meeting for party one (ID, PH, TH, VN) for progress work on data collection. And finalization of annual plan for 2010 												
<ul style="list-style-type: none"> Participation of the national/international tuna conference/ meeting for data collection: 2ndTuna RFMOs Meeting in Spain 												
2. Development of Regional Tuna Database												
<ul style="list-style-type: none"> Continue Developing of tuna database for Online Access to support data input 												
3. Data collection from Landing/and Analysis												
<ul style="list-style-type: none"> Review Additional Data Collection in Brunei and Malaysia based on statistic data 												
<ul style="list-style-type: none"> Data collection in Vietnam, Philippines, Indonesia and Thailand 												
<ul style="list-style-type: none"> Data analysis for tuna resources in the 1st Party area 												

4.2 Expected Outcomes:

- Status of tuna fisheries/productions in the Southeast Asian waters in particular sea areas such as Sulu sea, Celebes Sea, South China Sea (some part) etc.
- Tuna database to support fishery management in SEAFDEC member countries

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Development of Regional Database for Fishery Management

Lead Department: Training Department

Participating Countries: Member Countries

Total Duration: 2008 to 2012

1. INTRODUCTION

One of the major problems in regional information collection and management of fishery information/data is the available of data management system/database at the national level. SEAFDEC, based on the national data input, has faced many problems in delayed publishing of the regional fisheries statistics long time ago. For example, SEAFDEC has published information were in hard copies format and always delay for 2-4 years. In addition, to use and apply that information the user generally need to reanalyze from the electronic data format. This problem may not occur and waste time of users, if the fishery database is available.

So far, not many Member Countries have developed and utilized their own fisheries database system, in contrast many countries still use to collect data in the electronic worksheet or hard copies. For the later methods, it can reduce opportunity to get the evaluation of annually fishery status within short time compare to those who use fishery database.

To make use of the regional database efficiently and very useful for users in the region and global level, standardization of the data and information from national fisheries data input are need. Appropriate fishery database systems which can be also utilized by the Member Countries, and can automatically generate the general outcome/report are very much required.

Under the Trust Fund 2 on information collection for sustainable small pelagic fisheries in the South China Sea, TD in collaboration with the MFRDMD has initiated development of the regional database to support the data collection of both landing and biological data. The database system could generate the catch landing by areas, period of times, and by species. In addition, from the biological data input, the system could also generate some results of biological parameters. The system was developed for online data input, only the user of the participating Member Countries can access the system through name account and password. Before the terminal the project, in order to support the Member Countries to continue their works by utilizing the database, therefore TD has further developed the software of database system based on the regional version. This database software will include all pelagic species and landing sites up to the users' need. TD had released the 1st version of software by 2007.

With regards to the fishery statistical system, TD has initiated development of the system based on the fisheries statistical bulletin for the South China Sea since 2006 in order to use the regional information collected from the Member Countries. However, the system is not complete yet due to changing of the original worksheet and standardization of data.

2. PROGRAM

2.1 Objectives

1. To further develop/upgrade and promote the regional database of the pelagic in the Southeast Asian Waters based on the actual survey and landing site collection based on the studied outcomes;
2. To develop regional fisheries statistic database in the Southeast Asian region;
3. To enhance human resources capacity in using of the regional database for fishery management through various training program/activity; and
4. To support less developed countries on the use of fisheries statistical database.

2.2 Program description

One of the best fisheries management tools is to have their own database management system in data collection whether fishery statistic system and database for actual fishing activity. In the project make sure of our expertise by developing the regional database and introduce to the Member Countries especially less developed countries will be implemented. This will facilitate the present and future data collection in long-term. In addition, the project will also focus on the database for tagging programs under 'tagging program for economically important species' in the SCS and Andaman Sea managed by MFRDMD in collaboration with TD.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Project/Activity Title	Duration	Remarks
1. Development of Regional Database	Jan – Dec	
2. Building Human Resources Capacity on Utilization of the Database	Oct – Dec	
3. Information Dissemination	Jun – Dec	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
<p>Activity 1: Develop and maintain regional database The project will continue to improve the existing database for economically important species in the Southeast Asian Countries based on data from actual survey, catch landing, and other available information. In response to the request of the member countries on long-term use of fisheries statistic data collected by SEAFDEC, the Regional Fisheries Statistic information system in Southeast Asia Countries will be continually developed/improved. The activity also includes the support the development database for tagging program on economically important pelagic species, and vessels registration. In addition, fishing ground information system for sustainable development/management of pelagic fisheries resources in the SEA will be developed.</p>	Jan – Dec	

<p>Activity 2: Build human resources capacity for utilization of the database</p> <p>To support less developed countries in the region, capacity building of human resources for operationalization/utilization of the fisheries database, particularly HRD program on Regional Fisheries Statistic and Database for economically important pelagic species will be continuously implemented. Formulation/development of the HRD programs will be based upon the request and/or through the consultation process with the Member Countries. Information packages; such as database software, guidelines/handbooks, etc, will also be continued to develop for supporting/promoting the use of the database and information system.</p>	<p>Feb – Mar</p>	
<p>Activity 3: Collaboration with other relevant initiatives, organizations, and partners</p> <p>Collaboration with other relevant initiatives, organizations, and partners, in particular to the issue related to fisheries database and information system. This activity aims to: (i) promote/facilitate technical and scientific cooperation, (ii), promote/facilitate the exchange of information among the Member Countries, and (iii) support the establishment of the clearinghouse¹ to facilitate transfer of information/technology and technically cooperation among Member Countries and other relevant initiatives/organizations. Activity under this program also includes organization of the regional experts meeting, and information collection activity through the discussion and meeting up with other relevant initiatives.</p>	<p>Jan – Dec</p>	
<p>Activity 4: Information Dissemination</p> <p>The developed fisheries database, information system/services will be provided to the Member Countries through various sources, such as internet online service, information/training packages, brochures, booklets, CDs/DVDs, participation of the staff to the meeting/event organize by other relevant initiatives/partners.</p>	<p>Jan – Dec</p>	

4.2 Expected Outcomes

- Develop/promote the Regional Database on Fisheries Resources in South China Sea and Andaman Sea using data collected from actual surveys, fish landing site, and review on available information;
- Develop/improve the Fisheries Statistic Database in the Southeast Asian region to support the less developed countries on the use of fisheries statistical database;
- Enhance human resources capacity in using of the Regional Database for sustainable fishery management through various programs/activities;

¹ a central office/system, as for the collection and dissemination of information.

- Develop/maintain database to support the data analysis of the tagging and other programs;
and
- Develop fishing ground information system for pelagic resource in SEA area.

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism

Program Title: Human Resource Development (HRD) on Poverty Alleviation and Food Security by Fisheries Intervention in the ASEAN Region

Lead Department: SEAFDEC Secretariat

Total Duration: 2008-2012

Approved Budget: US\$463,837

1. INTRODUCTION

Despite overall social and economic development in the ASEAN region, the disparity of the social and economic well-being among/within the most of the Member Countries can be the one of the serious constraints to further promote the countries' development. The low social and economic well-being has led a large number of people in the region, especially in rural area, to live in poverty status. As the fisheries is the one of the potential sector for such coastal and inland communities to improve their livelihoods as well as their source of protein food, the HRD project therefore being developed to focusing on these rural poverty is identified as an urgent requirement in the region.

2. PROGRAM

2.1 Objectives:

To enhance human capacity of fishers of selected rural fishery communities as well as relevant fisheries government officials and those working at the local level in support of fishery communities in order to alleviate the identified poverty status through fisheries intervention covering the areas of co-management, responsible fishing practices, backyard fishery post-harvest and processing, rural aquaculture and inland fisheries development. A special focus will also be given to the rural areas and fishery communities in ASEAN region.

1. Support of requirements on poverty alleviation by fisheries intervention through mobilizing of regional experiences and information exchange in ASEAN region.
2. Identification of prioritized HRD programs on thematic areas based on local needs, and partnership support from national and regional level.
3. Implementation of the appropriate HRD activities to mitigate the rural poor by the fisheries intervention.

2.2 Program Description:

Main activities under this program are as follows:

- 1) First Regional Technical Consultation on Fisheries Human Resources Development (HRD) for Poverty Alleviation

The consultation will be conducted to 1) develop the regional policy on the role of fisheries for the poverty alleviation reflecting the analysis on the respective national problems; 2) identify the technical issues, which will be critical for the poverty alleviation with envisaging practical problems in the specific areas; 3) clarify the role of small and medium-scale enterprises (SMEs) with respect to the poverty alleviation of the rural poor, and 4) identify the seven project sites for the implementation of appropriate on-site HRD activities. In order to identify

the seven project sites, one policy maker and one technical staff who are responsible for the extension work of the central government as well as the relevant NGOs, academic institutions of the ASEAN Member Countries will be invited to the three days RTC.

2) Human Resources Development (HRD) Activities on Thematic Areas

Based on the outcomes of the RTC above, HRD activities in respective technical areas will be conducted in five different sites mobilizing technical experiences and facilities of SEAFDEC Departments. The five technical areas will be proposed as follows:

- 1) Local/indigenous institution and co-management: *Secretariat and Training Department*
- 2) Responsible fishing technologies: *Training Department*
- 3) Backyard fishery post-harvest technology: *Marine Fisheries Research Department*
- 4) Rural aquaculture: *Aquaculture Department*
- 5) Inland fisheries development: *Marine Fishery Resources Development and Management Department*

A 10-day individual HRD activity will be conducted at respective Departments. The government official, who is responsible for the extension work of ASEAN Member Countries and representative from the fishery community, will be invited for the HRD activities. The envisaged activities will be to further identify the specific requirements of the HRD issues in each respective site in collaborative manner (involvement of SEAFDEC, central and provincial government of the respective sites).

Based on the outcomes of discussion, the staff of the Secretariat in collaboration with ASEAN Member Countries will prepare the appropriate HRD materials to be used in the on-site HRD activities.

3) On-site Human Resources Development (HRD) Activities

HRD Activities at seven specific sites as identified at the 1st RTC will be conducted by mobilizing regional expertise both SEAFDEC side and also from the Member Countries. This will enable the Member Countries to be involved in the implementation of on-site activities. The on-site HRD activities for marine coastal fisheries will be proposed at three sites. The following are the required steps to implement the project activities.

- i.) Identification of specific local indigenous institution for the sites.
- ii.) Identification of the types and manners of HRD activities.
- iii.) Identification of the appropriate numbers of beneficiaries.
- iv.) Collaboration mechanism with the host governments.
- v.) Finalization of the Terms of Reference of the staff involved both for national and regional technical staff.
- vi.) Coordination mechanism among the five thematic HRD activities.

4) Second Regional Technical Consultation on Fisheries Human Resources Development (HRD) for Poverty Alleviation

The Consultation will be organized to evaluate the project activities, identify the follow up activities to be conducted with respect to the poverty alleviation by fisheries intervention. Considering the existing regional policy frameworks and priority actions in fisheries and HRD particularly the “Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region” adopted in 2001 and the “Strategy for Human Resource Development in Fisheries in the ASEAN Region”, adopted in 2004, the Consultation is expected to strengthen

these policy directions on fisheries for poverty alleviation. One policy maker and one technical staff who are responsible for the extension work of the central government as well as the relevant NGOs, academic institutions of the ASEAN Member Countries will be invited to the three days RTC. The proceedings of RTC will be used as basis for the project final report.

3. PROGRESS ACTIVITIES IN THE YEAR 2008

Project Activities:

Project/Activity Title	Duration	Remarks
1) Regional Technical Consultation	13-15 July	100% completed
2) Training of the Trainers on Rural Aquaculture in AQD	10-19 November	On preparation
3) Training Course on Responsible Fishing Technology in TD	18-27 November	On preparation

1) Regional Technical Consultation on Fisheries HRD for Poverty Alleviation

The ASEAN-SEAFDEC Regional Technical Consultation on Fisheries HRD for Poverty Alleviation was convened in Bangkok, Thailand from 13 to 17 July 2008. The Consultation was attended by delegates from the ASEAN and SEAFDEC Member Countries namely: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam as well as representatives from ASEAN Secretariat, ASEAN Foundation, MRC and staffs from the SEAFDEC Departments.

The Consultation was conducted with the objective to plan the activities under the project and enhance awareness and create understanding on HRD to alleviate poverty by fisheries intervention. As a result, the Consultation provided suggestion for further improvement of the methodology of HRD activities on thematic areas to be conducted by SEAFDEC Departments and agreed on the responsibilities between participating countries and SEAFDEC as well as criteria for conducting on-site HRD activities.

2) Training of the Trainers on Rural Aquaculture in AQD

AQD is going to organize the HRD Training of Trainers on Rural Aquaculture from 10-19 November 2008 at SEAFDEC/AQD Tigbauan, Iloilo, Philippines. The 10-day training aims to improve the capacity of fisheries government officials in different localities to enable them to promote appropriate aquaculture technology and coastal resources management to fishers and local folks in selected rural fishery communities of their respective countries so as to provide livelihood and uplift the socio-economic conditions of the fishers and other members of the community. The focal point on rural aquaculture under this project from each beneficiary country will be invited to the training.

3) Training Course on Responsible Fishing Technology in TD

The Training course on Responsible Fishing Technologies will be conducted by SEAFDEC/TD from 18 to 27 November 2008 in Samut Prakarn, Thailand. The course will be comprised of lectures, group discussions, workshop practices and on-site visit & demonstration at sea. Main focuses of the course include responsible fishing and practices, fabrication of appropriate fishing gears, a small-scale insulated fish box to improve the fish quality of the catch, safety at sea and fishing sail boat to reduce the cost of fishing investment by cutting down fuel oil expense as well as to reduce the pollution from oil discharged into the

water. The course will also cover new approaches to responsible fisheries extension, its concept and methodologies as well as appropriate technologies and manners to conducted on-site HRD activities in selected countries. The focal point on responsible fishing under this project from each beneficiary country will be invited to the training.

4. PROPOSED ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
1) Training on Local/indigenous Institution and Co-management	12-21 January	Samut Prakarn, Thailand
2) Training on Backyard Fishery Post-harvest Technology	3-11 March	Singapore
3) Training on Inland Fisheries Development	12-21 January	Kuala Teranganu
4) Preparation for On-site HRD activities	February	
5) On-site HRD activities for inland or marine coastal fisheries in 8 countries	March- November	Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand, Vietnam

4.2 Expected Outputs:

Training on Local/indigenous Institution and Co-management will be convened to achieve the following objectives:

- to transfer technical knowledge fisheries officials in order to recognize the importance of local/indigenous institution for poverty alleviation and food security
- to promote local/indigenous institution playing key role to practice and functioning in rights-based fisheries and co-management to achieve poverty alleviation and food security
- to prepare a best-fitted and practical proposal for on-site HRD activities

Training on Backyard Fishery Post-harvest Technology will be convened with the objective to enhance human capacity of fishers of selected rural fishery communities as well as relevant fisheries government officials and those working at the local level in support of fishery communities in order to alleviate the identified poverty status through fisheries intervention covering the areas of co-management, responsible fishing practices, backyard fishery post-harvest and processing, rural aquaculture and inland fisheries development. A special focus will also be given to the rural areas and fishery communities in ASEAN region.

Training on Inland Fisheries Development will be conducted covering areas of fisheries management and conservation, fish culture, livelihood development, and business opportunities. It is expected that the participants would be equipped with comprehensive knowledge and able to develop appropriate HRD materials for their countries.

After the whole process of project activities, it is expected that regional policy for poverty alleviation will be developed, including enhancement of fisheries officials, who responsible for extension work particularly at local community and fishers capacity as well as strengthening of national and local government cooperation. It is also envisaged that the effective implementation of the HRD activities on thematic issues at the local level will be the key to develop the cooperation mechanism within the ASEAN Member Countries.

NON-FUNDED PROGRAMS IN 2008-2009

INTRODUCTION

Non-funded programs are the programs that have been implemented under ASSP-FCG mechanism. Due to unavailability of funding support to the programs since 2007, there has been no progress of activities under the following programs:

Non Funded Programs	Lead Country	Responsible Department
1. Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement	Thailand	TD
2. The Use of Indicators for Sustainable Development and Management of Capture Fisheries in the ASEAN Region	Malaysia	MFRDMD
3. Development of Integrated Inland Fisheries Management in ASEAN Countries	Malaysia	MFRDMD
4. Utilization of Freshwater Fish in ASEAN Member Countries	Singapore	MFRD
5. Good Laboratory Quality Management in ASEAN Member Countries	Singapore	MFRD

Note: Next phase of the program “Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement” will be started in 2010.

CONSIDERATION BY THE PROGRAM COMMITTEE

As suggested by the 16th ASWGFi, the lead countries with support from the ASEAN Secretariat to source funds and other Member Countries to also mobilize national resources and funding to implement activities of their interests. The Committee is requested to provide suggestion in due course.

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism (Non-funded Program)

Program Title: Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement

Lead Department: Training Department

1. INTRODUCTION

The quality of coastal and inshore ecosystems has deteriorated significantly as a result of continued and increasing human activities. These areas are critical to a broad range of aquatic organisms during their life cycles including spawning, nursery areas and feeding zones and many of these species are of economic importance. The areas serve as important sources of recruitment to, and the sustainability of, commercial fisheries. It is suggested that the productivity of these ecosystems can be enhanced through human intervention leading to improved livelihoods for coastal communities.

In many areas, the introduction of man-made structures, including artificial reefs, aquaculture facilities, breakwaters, stationary nets and jetties are shown to enhance local populations of aquatic organisms, provided that there are sufficient numbers of structures to have a significant and positive impact on ecosystem productivity and that they are integrated into coastal zone management regimes. These structures can enhance fisheries resources. To optimize the results of such initiatives, careful impact assessment and planning procedures are required.

Re-stocking may be an effective component in the enhancement of marine resources in inshore waters. Juveniles and seeds produced by hatcheries or collected from the wild in other areas are removed rapidly from the ecosystem by destructive fishing gears such as push nets or small-mesh trawl nets. Furthermore, in order to retain the released stocks within the immediate vicinity and minimize losses through out-migration, suitable habitat must be available to them. Therefore, habitat restoration and/or enhancement and establishment of exclusive fishing rights may be necessary prerequisites for any marine re-stocking exercises.

Immediate action is required to prevent further loss of habitat and damage to fish stocks. A range of effective community-level mechanisms must be developed to assist fishers to restore habitats and rebuild stocks. These mechanisms are likely to be specific to different stocks and habitats. Habitat creation and the establishment of artificial reefs, the use of fish attraction devices and predator removal all have potential in the region.

2. PROGRAM

2.1 Objectives

1. To optimize the use of fishing ground through resource enhancement programs;
2. To enhance the fisheries resources by resource enhancement tools;
3. To assess the feasibility, environmental and socio-economical impact of resource enhancement tools;
4. To develop and design the appropriate resource enhancement tools/models;
5. To evaluate the impact of the fisheries resources enhancement by re-stocking programs;
and
6. To develop human resources for the implementation of resource enhancement programs.

2.2 Program description

TD will be the responsible SEAFDEC Department for this project and will manage and coordinate all project activities. Other ASEAN member countries which have been identified as core countries will be involved in implementing the relevant project activities on a cost-sharing basis to develop Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement program and to conduct pilot projects to implement the program in their respective countries.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2007

3.1 Experiments/Regional Workshop on the suitable designs/models of the resource enhancement tools in collaboration with the Member Countries including its evaluation and promotion.

In order to promote the rehabilitation of fisheries resources and habitats/fishing ground through resources enhancement tools, TD was designed second version of permanent fish aggregating device so call "Fish Enhancing Device (FEDs)". The new device could be using in both coastal and off shore water. SEAFDEC/TD in cooperation program between Integrated Coastal Resource Management in Pulau Langkawi (ICRM-PL) and Rehabilitation of Fisheries Resources and Habitats/Fishing Grounds through Resource Enhancement for habitat and fishing ground development for resources enhancement was conducted a design and performance experiment test of FEDs in Pulau Langkawi, Malaysia. The training/demonstration on FEDs construction to local fishermen was conducted on 19 March 2007 at Kuala Teriang, Langkawi. After the training/demonstration, the KENs, Kuala Teriang were completed construction of 10 units of FED on the end of March 2007. Instalation of FEDs were conducted on 4 April 2007. The FEDs setting position in the zoning demarcation were determined at the Project Steering Committee meeting.

The marine physical and biological survey is one of essential tools to monitor effectiveness of the FEDs environmental and fisheries habitat changes by the installation of FEDs. Prior to the installation of the FEDs, therefore, an identical survey has to be initiated. The survey has been carried out on 20th -21st of March, 2007. The basic oceanographic parameters such as water quality, plankton, benthose (benthic fauna) and catchability of fishes were collected and investigated by available oceanographic equipments prepared by FRI Pinang staffs.

SEAFDEC/TD in cooperation with Department of Marine and Coastal Resources of Thailand was conducted a training /demonstration of FEDs in Phuket, Thailand on 21 August 2007. There are 30 local fish folk participated in the event. Installation of 50 units of FEDs is proposed to conduct on 2008 in coastal of Andaman sea.

SEAFDEC/TD staffs in collaboration with Bureau of Fisheries and Aquatic Resources (BFAR) of the Philippines was conducted demonstration/training and installation of Fish Aggregating Device (FADs) and Fish Enhancing Device (FEDs) in the Coral Garden Area of Tagalan, Aklan, Panay island, the Philippines during 22-27 February 2007. There are 5 units of FADs installed in the off shore area with water depth more than 250 m, while 10 units of FEDs were installed in shallow water, 20-70 meter depth. The consultative meeting on objectives and implementation process of the demonstration/training of FEDs the between SEAFDEC/TD staffs, BFAR officers, the Governor and Congress Man of Aklan was conducted on 22 February 2007. Both of Congress Man and the Governor are showing their highly interest of the program and proposed to expand more activities in Aklan.

Installation of 5 units of FADs were conducted by DA-BFAR research vessel on 23 February 2007. Area of installation is off shore of coral garden of the municipal waters of Tangalan, Aklan where water depth ranging from 250 to 300 m. The demonstration/training on FEDs construction and installation were conducted on 24-26 February at Tangalan. There are 40 participants from local fishermen and fisheries officers participated in the activities. Ten units of FEDs were installed in near shore area of coral garden program. Fisher folk with non-motorize engine boat from five fishing village namely Jawily, Dumatad, Afga, Baybay and Dapdap are authorize for utilization, maintenance and management of FEDs .

The monitoring survey on the Tangalan FEDs performance was conducted during 8-10 October 2007. The survey conducted on species composition observation by underwater camera/VDO record, fish abundance observation by echo-sounder, under-water observation, catching record by hand-line fishing operation, and interview to local fishermen on FEDs utilization. The preliminary result shows that local fishermen are highly appreciated on the installation of FEDs and FADs.

Project Activities

Project/Activity Title	Duration	Remark
1. Experiments/Regional Workshop on the suitable designs/models of the resource enhancement tools in collaboration with the Member Countries including its evaluation and promotion	Feb. – Dec.	90%
2. Workshop/seminar on resource enhancement tools including artificial design and construction.	-	Propose to implement in 2010
3. Development of fisheries resources conservation and enhancing through marine ranching/re-stocking and evaluation of the impact.	-	ditto
3.1 Conservation of endangered species (dugong, whale shark, dolphin, etc.)	-	ditto
3.2 Sea ranching of selected species (sea cucumber, giant clam, sea horse, spiny lobster, abalone, etc.)	-	ditto
3.3 Restocking of indigenous species (freshwater species, shrimp, etc.)	-	ditto
3.4 Marine Protected Areas	-	ditto
4. Ecosystem evaluation: Sea-grass, mangroves, corals, soft-bottom, rivers, reservoirs, wetlands, etc.	-	ditto
5. Capacity Building on Rehabilitation of Fisheries Resources & Habitats/Fishing Grounds to Fisheries Officer of Member Countries	-	ditto
6. Information dissemination on rehabilitation of fisheries resources and habitats/fishing grounds for public awareness	-	ditto

4. PROPOSED ACTIVITIES FOR THE YEAR 2008

No project proposal for 2008

Second phase of project will propose to Japanese Trust Fund for implement in 2010

PROJECT DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism (Non-funded Program)

Program Title: The use of Indicators for Sustainable Development and Management of Capture Fisheries in the ASEAN Region

Lead Department: MFRDMD

1. INTRODUCTION

The first phase of the project (Identification of Indicators for Sustainable Development and Management of Capture Fisheries in the ASEAN Region) has been accomplished at the end of the year 2005. In this phase countries that had implemented the pilot projects have gained the experiences in identification of indicators for sustainable development and management of the capture fisheries. The main output is the adopted Regional Guidelines on the Use of Indicators for Sustainable Development and Management of Capture Fisheries in the ASEAN Region. The knowledge and experience gain from the pilot projects have taken as the main inputs of the Guidelines. The follow-up actions are necessary in order to ensure that these beneficial experiences are successfully transferred and implemented in the large scale.

2. PROJECT

2.1 Objectives

1. To promote the use of indicators for sustainable development and management of capture fisheries in ASEAN region.
2. To enhance capacity building in application of indicators for sustainable development and management of capture fisheries in ASEAN region.
3. To evaluate the applicability of the Regional Guidelines on use of indicators for Sustainable Development and Management of Capture Fisheries in ASEAN region

2.2 Program Description

The Resolution and Plan of Action on Sustainable Fisheries for Food Security in the ASEAN Region has recognized indicators as one of the reliable and practical approaches for sustainable development and management of capture fisheries in this region. SEAFDEC in collaboration with some member countries had initiated the pilot projects to identify some appropriate indicators, in 2002 to 2005. Based on the experiences in the pilot scales, the Regional Guideline on the Use of Indicators for Sustainable Development and Management of Capture Fisheries, has been developed.

In order to ensure that the use of indicators is successfully implemented to support the management of capture fisheries in this region, the follow-up actions to apply the guideline should be promoted through dissemination of this guideline to the users. The users should also be supervised and trained in implementing the guideline especially at the larger scale. In line with the need of the International Plan of Action on the Management of Fishing Capacity, special focusing will be given on development and application of indicators for management of fishing capacity.

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism (Non-funded Program)

Program Title: Good Laboratory Quality Management in ASEAN Member Countries

Lead Department: MFRD

Lead Country: Singapore

1. INTRODUCTION

The harmonization of analytical methods through a network of lead laboratories in the various ASEAN member countries will enhance ASEAN as a coordinated fish-exporting bloc to importing countries such as Canada, USA, Japan and EU. This will help facilitate trade in fish and fish products within and without the ASEAN region. It will then be the onus of the ASEAN member governments to ensure that the methodologies in the other fish inspection laboratories in their respective countries are aligned with their lead laboratory. This program aims to enhance the credibility of the various fish inspection testing laboratories in the ASEAN member countries, and enable them to achieve equivalent results through their national governments support to attain ISO 17025 accreditation and participation in inter-laboratory proficiency testing programs.

The program is proposed based on the following resolution and plan of action as endorsed at the Millennium Conference:

Resolution 15: Strengthen the joint ASEAN approaches and positions on international trade in fish and fishery products indigenous to the region by harmonizing standards, criteria and guidelines; and

Plan of Action C4: Develop and apply fish quality and safety management systems that ensure food safety and support the competitive position of ASEAN fish products on world markets through the implementation, validation and verification of Hazard Analysis and Critical Control Point (HACCP) based systems and improved laboratory practices, and adapting quality and safety management systems so that they may be applied to small and medium enterprises in the ASEAN region.

Plan of Action D1: Strengthen ASEAN trade policy on fish and fishery products through regional collaboration by harmonizing product standards and sanitary measures with international standards wherever appropriate, working towards harmonised guidelines for fish inspection and quality control systems among ASEAN Member Countries, strengthening fish inspection and quality control systems with regard to food safety and exchanging information on risk analysis

Recommendation in Technical Report: To develop a regional inter-laboratory proficiency-testing program

Based on the above Resolution, Plan of Action and Recommendations, the following work program is proposed:

This program on Good Laboratory Quality Management includes the establishment of good laboratory management practices in lead regional laboratories, the validation of analytical methods for fish and fish products, the establishment of measurement of uncertainties and

inter-laboratory proficiency testing programs amongst the fish inspection and technology laboratories in ASEAN.

The program will comprise of five components:

- a) Networking of lead laboratories in ASEAN
- b) Implementing good laboratory practices in lead laboratories in the region
- c) Validation of laboratory test procedures and
- d) Establishment of Measurement of Uncertainties
- e) Regional Inter-laboratory Proficiency Testing

All the components, although separate in focus, are interconnected. All laboratories in the region (and in particular those certifying products for export) need to meet laboratory quality assurance requirements found in ISO 17025. This program is designed to assist laboratories in the region to meet this standard. It would also investigate the possibility of developing a regional inter-laboratory proficiency-testing program. In addition to meeting quality assurance requirements, there should also be a validation of laboratory analytical procedures to ensure equivalency of results. Many laboratories use their own methods or procedures adopted from another country, which may not have been validated against recognized international procedures such as AOAC. This program is designed to improve aspects of laboratory practices in the region.

In the first Special 5-year Program, a network of lead fisheries post-harvest laboratories in ASEAN has been established through the ASEAN Network of Fisheries Post-Harvest Technology Centres for regional collaboration on the program items. Most of the lead laboratories in ASEAN member countries are in various stages of preparation of their laboratory Quality Management Manual and validation of methods. One regional inter-laboratory proficiency testing on heavy metal was also conducted. This program is proposed to be continued into the next 5 years to enable most laboratories to achieve ISO 17025 accreditation and to validate as many of their methods as possible. In this new phase of the program, two additional aspects have been added, namely the establishment of Measurement of Uncertainties for the laboratory test methods (a requirement for ISO17025 accreditation) and training on internal auditing of the laboratory quality system as well as technical performance.

2. PROGRAM

2.1 Objectives

1. To strengthen the network of lead laboratories in ASEAN member countries,
2. To implement good laboratory practices in lead laboratories in the region,
3. To validate laboratory test methods and establish their measurement of uncertainties,
4. To conduct inter-laboratory proficiency testing for lead laboratories in the region, and
5. To train laboratory personnel in good laboratory practices and internal auditing, and methods validation and measurement of uncertainties.

2.2 Program Description

This program is made up of 7 activities as follows:

Activity 1: Workshop on Methods Validation and Measurement of Uncertainties

Activity 2: Workshop on Good Laboratory Practices and Internal Auditing

Activity 3: Implementation of good laboratory practices in lead laboratories

- Activity 4: Validation of laboratory methods and calculation of Measurement of Uncertainties by lead laboratories
- Activity 5: Validation of MFRD laboratory methods
- Activity 6: Regional Inter-laboratory Proficiency Testing
- Activity 7: Compilation of Manual of Validated Methods used by ASEAN lead laboratories

PROJECT DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism (Non-funded Program)

Project Title: Development of Integrated Inland Fisheries Management in ASEAN Countries

Lead Department: MFRDMD

1. INTRODUCTION

Preventing further decline of fishes in the inland ecosystem is fundamental to sustainable development as fish and fishing are of central importance to the lives and culture of many people who depend entirely on inland ecosystem as source of animal protein. The overriding threat to future of inland ecosystems is the impact of water management schemes for improving navigation, drainage of wetlands for flood control, construction of dams for hydroelectricity, irrigation channels for agriculture and the establishment of inter-basin connections and water transfer. Even though these changes have improved transportation, provided flood control and hydropower, and boosted agricultural output but sad to say that inland fisheries has becoming less importance in enhancing the economic well being of the country's population.

To date, there has been little effective dialogue between the fisheries sector and other agencies that are involved in sharing this inland water source and also the need to stress the importance of integrated approach in managing this limited resource. A key to optimizing benefits gained from inland water ecosystem is to promote effective dialogue and consultation between all those involved in water management as well as the users that depend on this limited resource to sustain their livelihood. In such dialogues, the importance of fisheries will be fully understood, the biology of selected certain species taken into account, and mitigation and management of impacts are regularly monitored and improved. Thus more concerted efforts are needed to manage the inland water ecosystem in an integrated approach that would benefit all users. This is a challenge to managers and users of the resources in formulating measures to contain the situation as well as sustaining the inland fisheries resources.

2. PROGRAM

2.1 Objectives

1. To develop appropriate approaches in management of inland fisheries
2. To develop guideline for formulating more pragmatic management plan in sustainable utilization of inland fisheries resources
3. To strengthen community participation in management and conservation of inland fisheries resources

2.2 Program Description

The following activities are proposed:

1. Development of guideline for formulating management plan of inland fisheries:
2. Implementation of Pilot Projects in participating countries
3. Human Resource Development
4. Publication and Dissemination of Information

PROGRAM DOCUMENT

Program Categories: Programs under the ASSP-FCG Mechanism (Non-funded Program)

Program Title: Utilization of Freshwater Fish in ASEAN Member Countries

Lead Department: MFRD

Lead Country: Singapore

1. INTRODUCTION

Freshwater fish is an important fisheries resource in many ASEAN member countries where it serves as a major source of animal protein especially for the marginalized and poorer segments of the population thereby contributing to food security in these countries. Freshwater fish is also an important source of raw materials for processing into a variety of traditional fish products in the ASEAN member countries. However, information on these freshwater fish products are not readily available as either they are not published or are published in the local language. ASEAN member countries can assist each other to better utilize their freshwater fish resources through the exchange of such information.

Freshwater fish products as with other traditional products in the ASEAN region are largely processed by household producers and small and medium-sized establishments which are usually family-owned operations with little mechanization. Upgrading of processing and packaging technology for the freshwater fish products will help to improve their quality and safety with the possibility of commercialization.

The program is proposed based on the following resolution and plan of action as endorsed at the Millennium Conference:

Resolution 11: Promote the maximum utilization of catch, including the reduction of discards and post-harvest losses to increase fish supply and improve economic returns.

Plan of Action C1: To introduce and provide support for the development of technologies to optimize the utilization of catch and reduce post-harvest losses, wastes and discards in industrial and small-scale fisheries and processing operations through improved processing facilities, on-board and on-shore handling, storage and distribution of fish and fishery products.

Plan of Action C2: Promote the production and preserve the diversity of traditional fish products by assisting producers to secure stable supplies of quality raw materials, to meet food safety requirements and to improve product identity, nutritive value and marketing.

2. PROGRAM

2.1 Objectives

1. To compile information and data on freshwater fish products to assist in establishing national strategies for utilization of freshwater fish resources;
2. To assist in upgrading processing and packaging technology for freshwater fish products

2.2 Program description

The program will comprise of two components i.e. a survey to compile information and data (product types, raw materials utilized, production volume, processing and packaging

technology involved, etc) on freshwater fish products in ASEAN member countries, and pilot processing studies on selected freshwater fish products to upgrade processing and packaging technology which will be conducted with regional expertise. Component 1: Survey on freshwater fish products will be implemented from 2006-2007 followed by Component 2: Upgrading processing and packaging technology for freshwater fish products from 2008-2010.

The expected outputs for the program include a Handbook on inventory of freshwater fish products, pilot processing studies and End-of-Activity Workshops.

Annex 6

**OTHER PROGRAMS/ACTIVITIES IMPLEMENTED BY SEAFDEC
FOR THE YEAR 2008-2009**

The program/activities that have been implemented by SEAFDEC Departments are reported as *Appendix 1-6*. The programs/activities have been finalized and negotiated with donors/agencies but not in the scope of Departmental program and cooperation of ASSP-FCG Mechanism, list of programs are as follow:

Other Programs	Responsible Department	2008	2009
1. Promotion of Set-Net; an Eco-friendly Fishing Gear of Sustainable Coastal Fisheries Management (<i>Appendix 1</i>)	TD	X	X
2. Information Collection for Economical Important Species: as Surimi Raw Materials (<i>Appendix 2</i>)	TD	X	X
3. Cetacean Research in Southeast Asian Waters: Whale Sighting Program(<i>Appendix 3</i>)	TD	X	X
4. Collection of Information about International Support in the Region (<i>Appendix 4</i>)	TD	X	-
5. Promotion of Sustainable Freshwater Aquaculture for Rural Communities (<i>Appendix 5</i>)	SEC	X	X
6. Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Approaches (<i>Appendix 6</i>)	TD	X	X

PROGRAM DOCUMENT

Program Categories: Other Programs/Activities

Program Title: Promotion of Set-Net; an Eco-friendly Fishing Gear of Sustainable Coastal Fisheries Management

Responsible Department: TD

Total Duration: 2008-2009

Proposed Budget: 24,960 USD for each year program of 2008 and 15,000 USD for 2009

1. INTRODUCTION

The success of the Set-Net fishing technology transfer for sustainable coastal fisheries Management in Southeast Asian Region Case Study in Thailand was evaluated at the end of two years project in 2003-2005. The Small-scale fishermen on the coastal area in the Set-Net Project site were satisfied then the project is continuing under collaboration between the local fishermen and the local office of the Department of Fisheries, (Mae Rumpheung small-scale fisher groups and Eastern Marine Fisheries Research and Development Center (EMDEC) of Rayong Province. Set-Net was recommended to be an applicable fishing gear to promote Coastal fisheries Management and Resources Enhancement. Furthermore, it was recommended to have the furthers study to develop an appropriate fishing techniques for the tropical waters in the region

Set-Net plays an important role in the fishermen's cooperative activities. It could create many collaborative works among the fishermen and also local officers. However Set-Net fishing gear is still a new fishing technique for the local fishermen in this area, it needs more improvement in both fishing techniques and operation methods. Also it's affect to the present fishing activities and environment needs more study in details.

Two years follow up survey has conducted in 2006 – 2007 “Follow up activities and Improvement of Set-Net Technology Transfer for sustainable Coastal Fisheries Management” was carried out continuously after the first phase of Set-Net project. Both fishing techniques and fishermen skill have a lot of improvement, gear designed, operation techniques and fisher group management have developed.

The Administrative Management Committee of Mae Rumpheung Fisher Group has function well, and effectiveness. The second set-net was installed on the same area with one mile away from the first unit under the fisher group management themselves. The fisher group management of Mae Rumpheung Set-Net Fisher Group need more technical advice to improve it. Among the conflicts and problems of coastal fisheries in the region, community-base management is one of the programs being promoted to solve those problems. Coastal fisheries management by local fishermen is also an expected program could be succeeded for the coastal fisheries resources management plan. Collaborative activities of the local fisherman on set-net project are the good process to strengthen the cooperative of fishermen and set-net is an Eco-Friendly fishing gear for the future.

Common policy development for the sustainable coastal fisheries management by local fishermen has been develop to some level, such as set up of the fisher group management and collaborative activities, Administrative and Management Committee, local marketing system,

etc. The project target going to challenge the fisherman cooperative in future and set-net fishing will be an appropriate and eco-friendly fishing gear for their coastal waters.

2. PROJECT

2.1 Objectives

1. To promote set-net fishing technology to be a tool of sustainable coastal fisheries management.
2. To develop an appropriate set-net fishing techniques for tropical shallow waters operation.
3. To develop the common policy concept of fisheries management of stationary fishing gear such as set-net through the project.
4. To assist the member countries on development of sustainable coastal fisheries management.

2.2 Project Description

Proposed activities

Activity 1: Technical Assistance and Technology transfer

Technical advisory trip to member countries, Indonesia will be made in collaboration with Tokyo University of Marine Science and Technology (TUMSAT) and the Department of fisheries of Indonesia (January 2008).

Activity2: Improvement of Set-Net Fishing Gear and Methods

Shallow water type of set-net, Choko-ami will be introduced for experimental study in the coastal Mari-culture area, Chonburi Buri Province (June, August and October 2008).

Activity3: Human Resource Development through Regional Training Program

Human resources development for key person will be conducted through regional training program for two weeks at the Training Department. The course will be conducted in early of April 2008.

3. PROGRESS OF ACTIVITIES IN YEAR 2008

The Project was implemented under TF IV-3, "Fishing Community Development Program: Capacity Improvement of Fisheries Community for Fisheries Management and Alleviation of Poverty". The project title is "Follow-up activities and Improvement of the Set-Net Fishing Technologies Transfer for Sustainable Coastal Fisheries Management". It consists of 6 activities and 1 activity transferred from 2007 as follows:

500 copies of Set-Net Project technical manual were completed in April 2008

Technical advisory trip to Indonesia was carried out at the end of February 2008, to assist the Bone Set-Net project, in South Sulawesi, Indonesia. Gear installation was completed in the early of March 2008. Then fishing operation has been started under community management and data collection has been conducted.

Set-Net gear Improvement and Follow-up survey waere conducted at Rayong Set-Net project, Ban Phe, Rayong Province and Sriracha Set-Net site, Sriracha, Chonburi province. Five-year Rayong Set-Net Project evaluation was conducted by project implementing and related agency. It has been successfully made in both gear technology improvement and fisher group

management. Better income of the fisher group with better provident payment to members as well. Average catch per trip was increased from 250 to 288 kgs with also increasing average value from 5,500 to 7,800 Baht (from 2005-2008). The set-net fisher group has strongly requested for the legal operation of the group to central government with good support from local government.

Shallow waters type of Set-Net, “Choko-ami” was introduced and developed for the experimental project at Sriracha coastal green mussel farm area, Sriracha, Chonburi province. Its installation has been completed on September 25, 2008, then data collection has started for research and study. The last survey will be carry out in December 2008. Then Fishing Technology of Choko-ami type of set-net will be summarized and reported.

Also, fisheries resource in the coastal area, green muscle farm and stationary fishing gear will be compared and summarized gear will be compared and summarized.

Now, the use of Set-Net gear for Coastal Fishery Management was introduced in Indonesia, under JICA-grassroots partnership program. It is a collaborative project between Indonesia local agency, local fishermen and Japanese agency led by Tokyo University of Marine Science and Technology (TUMSAT) which Hasanudin University is a counter part.

Project/Activities Title	Duration	Remarks
Activity 1: Technical Assistance and Technology Transfer. It was made to Indonesia in collaboration with TUMSAT	24 February- 8 March 2008	
Activity 2: Improvement of Set-Net Fishing Gear and Methods. Small-scale set-net was introduced for experimental study in the Coastal Mariculture area of Chonburi province (Sriracha site)	22-26 September 2008	
Activity 3: Human Resource Development through Regional Training Program at the Training Department, Field trip to Rayong Se-Net and Sriracha, Chonburi province	8-22 April 2008	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

Proposed activities

1. Technical assistance and technology transfer through capacity building activities
2. Improvement of Set-Net fishing gear technology for shallow water
3. Human resource development of key person will be conducted through the Technical Advisory Trip to the member countries project

Activity 1: Technical assistance and technology transfer

Technical advisory trips to member countries, Indonesia and Malaysia will be continuously made in collaboration with Tokyo University of Marine Science and Technology (TUMSAT).

Activity2: Follow-up surveys

Follow-up surveys on the shallow water type of set-net, Choko-ami in Chonburi Province, mariculture area and Rayong Set-Net site, Rayong Province will be carried out periodically in the year 2009.

Activity3: Production of Handbook/Publication

Production of Set-net Fishing Technology Handbook would be made for further dissemination of the project to other member countries/institutions.

Planning of the Project activities

Project /Activities title	Duration	Remarks
Activity1: Technical Assistance and Technology Transfer	February and May 2009	
Activity 2: Set-Net Technology Improvement	January, March and May	
Activity 3: Human Resource Development	September –December	

4.2 Expected Outcome

The Set-Net Fishing technology transfer to develop the sustainable coastal fisheries management will be promoted to the SEAFDEC region

PROGRAM DOCUMENT

Program Categories: Other Programs/Activities

Program Title: Information Collection for Economic Important Species: as Surimi Raw Materials

Lead Department: TD

Participating Countries: Member Countries

Total Duration: 2006- 2009

1. INTRODUCTION

Surimi is one of the important fisheries productions which are introduced to the region for more than two decades. Under the project on Information Collection of Economically Important Species as Surimi raw-materials in the Southeast Asian Region, the status of surimi industry is one of the most important issues in this project needed to be clarified. Based on the survey in 2006, nowadays a total 80 Surimi Plants are located in the region; 26 in Thailand, 15 in Vietnam, 3 in Myanmar, 8 in Indonesia and 15 in Malaysia. Due to the depletion of the fisheries resources, particularly the demersal resources in many countries in the region, this directly impact to the surimi industry.

Recently, it is found that there is a lack of stable supply of the raw materials in many countries. Also this species is exported from the region to international market including Japan as important materials for surimi products, and its production trend and sustainable production in the future is international concern. Taking into consideration importance of sustainable use of these economically important species as surimi raw materials for SEAFDEC Member Countries, the information collection for these species in the region are taken into accounts.

2. PROGRAM

2.1 Objectives

- 1 To continue in gathering information and to evaluate the existing potential fisheries resources of some economically species as Surimi raw materials in the Southeast Asia through the actual survey by research and fishing vessels;
- 2 To conduct the observer program in close collaboration with the Member Countries on data collection from commercial fishing vessels operated in the region to check to status of fisheries resources; and
- 3 To discuss and disseminate the progress report on existing potential fisheries resources of some economically species as Surimi raw materials through the Technical Consultation/Meeting.

2.2 Program description

Our reviewed works on the Surimi industry in the Southeast Asian region shows that only countries including Indonesia, Malaysia, Myanmar, Thailand and Vietnam have involved in Surimi processing for export. Depletion of fisheries resources especially surimi raw materials species will affected to the demand of the surimi industry. However, in some particular sea areas in the region, there still have potential resources to supply to the existing industries. Therefore, investigation of the status of fisheries resources as surimi raw materials is one of the important tasks in this project. In cooperation with the technical working group on data/information

gathering, the observation program on the commercial fishing boat in different fishing grounds of the Member Countries will be conducted under this program.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Project/Activity Title	Duration	Remarks
Activity 1: Workshops/Consultation Visit	Mar – Nov	0%
Activity 2: Supporting of Actual Survey, Data Collection and Data Analysis	Jan – Dec	0%
Activity 3: Production of information packages	May – Dec	50%

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
<p>Activity 1: Project finalization Data and information collection since year 2006 will be reviewing and presenting to technical coordinator of participating countries including: Indonesia, Malaysia, Myanmar, Thailand and Vietnam and MFRD in the project finalization workshop. The necessary information that member country should be overlook to maintain the sustainable of surimi industry and surimi raw material stock will be discussed to guide participating country for future information collection by each country.</p>	Feb/Jul	

4.2 Expected Outcomes

- To continue collect information and to initiate a regional synthesis on the existing potential fisheries resources of some economically important species for surimi raw materials as using in the Southeast Asia through the actual survey by research/fishing vessels;
- To encourage fishers to improve quality of surimi raw material through introduction of the suitable fish preservation techniques;
- To review the potential fish species to use as a surimi raw material from the under-utilised fishery resources; and
- To disseminate the status and trend of surimi raw material and potential fisheries resources in the Southeast Asian Water.
- To finalize the outcome of project from 2006 to 2008.

PROGRAM DOCUMENT

Program Categories: Other Programs/Activities

Program Title: Cetacean Research in Southeast Asian Waters: Whale Sighting Program¹

Lead Department: TD

Funding Source: Japanese unspent budget

Lead Country:

Total Duration: 2008-2012

Proposed Budget (2009): 13,000 USD

1. INTRODUCTION

Cetacean is one of the most distinctive and highly specialized orders of mammals meant whales, dolphins, and porpoises. They include the largest animal that has ever lived, the blue whale; the highly intelligent and communicative dolphins; the tusked narwhals and blind river dolphins and singing humpback whales, nearly eighty living species in all. Most species are marine but some dolphin species are found in both marine and fresh water such as Irrawaddy Dolphin (*Organelle brevirostris*) which is patchily distributed in shallow near shore tropical and subtropical marine waters, often associated with estuaries and mangrove forest. They also occur far upstream in the Ayeyarwady (formally Irrawaddy) rivers system of Myanmar, Makhakam river system of Indonesia, and Mekong river system of Lao, Cambodia and Vietnam.

At present, composition and abundant of cetacean species in the Southeast Asian waters are still not clear. Most of cetacean research has been conducted based on the field observation, and dead specimens recording at shore. Not many research works has been conducted by sighting survey. With regards to the survey plan of SEAFDEC Research vessels in the Southeast Asia waters, cetacean species such as dolphin and whale were often found by sighting. Every year, more than 5,000 nm the research vessel, namely MV SEAFDEC2 has sailed to many sea areas in the region. In order to collect scientific information on the distribution and composition of cetacean species in Southeast Asian waters, the cetacean research by SEAFDEC was initiative since 2008

2. PROGRAM

2.1 Objectives

1. Inventory of all cetacean namely whale and dolphin found in the Southeast Asian Waters through the whale sighting program using SEAFDEC Research vessels; MV SEAFDEC2.
2. Information gathering of the accidentally death of cetacean on the coastal areas of the region.
3. Information gathering of the whale watching programs existed in the Southeast Asian countries
4. Enhancement of the human resources capacity on the cetacean research works in the region.

¹ The original project title is “**Cetacean Research in Southeast Asian Waters: Whale Watching Program**”. TD proposed the change the word ‘**Watching**’ to “**Sighting**” to reduce misunderstanding of the project objectives.

5. Dissemination of the Species composition of Cetacean and their distribution in relation to their habitat/coastal ecosystem in the Southeast Asian waters.

2.2 Program description

Information/data collection of cetacean species existed in the Southeast Asian waters will be conducted based on the sighting survey using SEAFDEC research vessels namely MV SEAFDEC and MV SEAFDEC2, and also based on the existing data/information in the region.

3. PROGRESS ACTIVITIES IN THE YEAR 2008

In 2008, cetacean data and information existed in the SEAFDEC member countries were reviewed and analysis. Before conducting the sighting survey, consultation visit to Institute of Cetacean Research (ICR) and Tokyo University of Marine Science and Technology (TUMSAT) in Japan was made in order to discuss and seek the technical support for future collaboration. The cetacean sighting surveys were conducted three times based on MV SEAFDEC2 survey cruises.

- 1st Sighting survey from Gulf of Thailand to Andaman Sea (round trip) in Feb-Mar 08
- 2nd Sighting survey from Gulf of Thailand to Brunei Darussalam (round trip in June-July 08
- 3rd Sighting survey from Gulf of Thailand to Andaman Sea (round trip) in Nov-Dec 08

Project/Activity	Duration	Remarks
1. Workshop/Consultation Visit and Preparatory Works on Whale Sighting Program		
• Consultation visit to ICR and TUMSAT	Feb 08	funded from other project
• Lecture/training course for SEAFDEC staffs on cetacean sighting survey and species identification	21-22 Nov 08	Lecturers from TUMSAT, FRA-Japan
2. Information Gathering and Actual Survey by Research Vessels		
• 1 st Sighting survey from Gulf of Thailand to Andaman Sea (round trip)	Feb-Apr. 08	
• 2 nd Sighting survey from Gulf of Thailand to Brunei Darussalam (round trip)	July-Aug. 08	
• 3 rd Sighting survey from Gulf of Thailand to Andaman Sea (round trip)	24Nov-25Dec. 08	
3. Data Analysis and Information Dissemination		
• Preliminary Data analysis from the Sighting surveys	July-Dec. 08	
• Preliminary Data analysis from the existing data in the region	Sep.-Dec. 08	

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

In 2008, Cetacean sighting survey in the Southeast Asian waters will be continued using SEAFDEC research vessels; namely MV SEAFDEC and MVSEAFDEC2. Information on the whale watching program existed in the Southeast Asian countries will be investigated.

Program/Project /Activities	J	F	M	A	M	J	J	A	S	O	N	D
1. Workshop/Consultation Visit and Preparatory Works												
• Workshop for information gathering												
• Participation in International forum: Indian Ocean Cetacean Symposium in Maldives												
2. Information Gathering and Actual Survey by Research Vessel												
• Information gathering on the cetaceans found in the region												
• Actual Survey using SEAFDEC vessels												
• Information gathering on the Whale watching program in the SEA countries												
3. Data Analysis and Information Dissemination												
• Data analysis												
• Annual Evaluation on the outcomes and future plan												

Expected Outcome:

- Inventory of all cetacean namely whale and dolphin found in the Southeast Asian Waters through the whale sighting program using MV SEAFDEC2.
- Information gathering of the accidentally death of cetacean on the coastal areas of the region.
- Information gathering on the whale watching programs existed in the Southeast Asian Countries.
- Enhancement of the human resources capacity on the cetacean research works in the region.
- Dissemination of the Species composition of Cetacean and their distribution in relation to their habitat/coastal ecosystem in the Southeast Asian waters.

PROGRAM DOCUMENT

Program Categories: Other Programs/Activities

Program Title: Collection of Information about International support in the Region

Lead Department: TD

Total Duration: -

1. INTRODUCTION

SEAFDEC continues to play an important role in developing sustainable marine capture fisheries and coastal fisheries management for Member countries. In response to the SEAFDEC Strategic Plan, and the ASEAN Resolution and Plan of Action adopted at the ASEAN-SEAFDEC Millennium Conference, many SEAFDEC activities are focused on improving regional coordination across areas including human resource development, research, resource management and policy development.

Increasingly, international organizations, NGOs, and individual donor countries are implementing programs and activities in coastal and fisheries resource development and management in the region. Whilst this trend reflects recognition of the importance of sustainable coastal and marine resource management in South East Asia, and the support is welcomed by SEAFDEC Member countries, it is in the best interests of all to avoid duplication, and cooperate where possible across project areas.

At the institutional level, collaboration and cooperative use of resources is important to SEAFDEC. Given the broad geographical area in which the organization operates, and the range of issues it faces, this is no surprise. Cost-efficiency is an important consideration in the development and implementation of SEAFDEC programs, and the organization needs to be aware of external activities, resources and sources of assistance in planning its activities.

To this end, SEAFDEC aims to create an information system that will act as a resource base in evaluating the range of activities, resources and sources of assistance in Southeast Asia. This system will be useful in identifying priority areas for the development of new projects and collaboration. It will also contribute to the successful implementation of SEAFDEC's initiatives in improving regional coordination across area including human resource development, research, resource management and policy development. The result from project implement will be present via TD homepage.

2. PROGRAM

2.1 Objectives

1. To collect information about international support in the region as support international coordination and consideration of future programs and activities
2. Creating and updating international support information database via TD homepage
3. To seek more collaboration between SEAFDEC and others donor agencies

2.2 Program Description

TD plan to continue collection of information about international support in the region. The project implementation in this year will emphasize on collection of information from internet. TD adjusted new project activities by consideration base on backward experience. The new project activities will available and sustainable to promote the database to SEAFDEC member countries. The following project activities during 2008 consist of; Collection of Information data and Creation and Updating Information Database.

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

In the year 2008, the Collection of Information about International support in the Region project was not approved by the Japanese Trust Fund. However, some of project activity was carried over to the year 2008. The project report was published in early 2008 and distributed to target group in March 2008.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

No proposed project future activities for the year 2009

PROJECT DOCUMENT

Program Categories: Other Programs/Activities

Program Title: Promotion of Sustainable Freshwater Aquaculture for Rural Communities

Lead Department: The Secretariat

Lead Country: Thailand

Total Duration: 2009

1. INTRODUCTION

Freshwater aquaculture has been practiced in Southeast Asia for centuries providing livelihood to rural people and ensuring sustainable supply of fishery products to the local populace and food security. Considering that the rural poor people generally lack access to appropriate technology, information, capital and inputs for livelihoods, community-based aquaculture has been identified as an approach to look into their collective needs and aspirations using aquaculture as a source of food and livelihood to elevate their socio-economic conditions.

To assist the countries in Southeast Asia in developing rural freshwater aquaculture, a project on the “Promotion of Sustainable Freshwater Aquaculture for Rural Communities” has been initiated by SEAFDEC with funding support from the Japanese Trust Fund. The project aimed to address important role of freshwater aquaculture in providing means of livelihoods and ensuring sustainable food supply to the people particularly in the remote rural areas of Southeast Asia.

The project has been implementing in collaboration with ASEAN, the Department of Livestock and Fisheries (DLF) of Lao PDR, the Department of Fisheries (DOF) of Thailand, Mekong River Commission Fisheries Programme (MRC-FP), the World Wide Fund for Nature (WWF) in Lao PDR, and the Asian Institute of Technology (AIT). The project focuses on the promotion of appropriate aquaculture systems that could be applied in remote rural areas in Southeast Asia where most people have long been ignored due to their isolation from the most basic infrastructures. This will be done through capacity building by promoting exchange of experiences, developing the capabilities of the countries’ key extension staff, mobilizing expertise in the region, and sharing of experiences on rural freshwater aquaculture.

A Regional Training on “Community-based Aquaculture for Remote Rural Areas of Southeast Asia” was identified as a major activity under the project. The Joint Regional Training on Community-based aquaculture for Remote Rural Areas of Southeast Asia was successfully organized in Lao PDR in 2007 and 2008. The training was able to test, developed, and refined the Handbook and Reference materials for Community-based Aquaculture for Rural Development in Southeast Asia as well as Reports of discussion and fieldwork practices on issues and consideration for successful community-based aquaculture for rural development. All of these training outputs will be published and disseminated as a future regional reference on the topic.

Based on the training conducted in 2007 and 2008, the participants expressed their satisfaction to the training arrangement and indicated that their expectations were fulfilled, in terms of satisfaction on the course content and resource persons, the training methods, materials and facilities, appropriateness and practicability of subject content, and field practical session. In addition, it was commended that joint organization of the training among various organization

was good and should be supported and this is the effective way of learning and sharing of information. Finally, it was recommended that areas of future projects by SEAFDEC on community-based aquaculture for remote rural areas of Southeast Asia to have echo regional training once a year and again in 2009 with more time allocated for the field practical session and exchanging of experiences through the Workshop.

2. PROGRAM

2.1 Objectives

Most of the poor farmers in Southeast Asian countries are located in remote rural areas, far from cities and infrastructure, and they depend almost exclusively on agriculture and natural resources, especially aquatic, while being deprived of most services. Those farmers are usually disadvantaged in terms of access to services, resources and limited infrastructure. In this basis, the project will focus on promoting means for those people to make their entry into aquaculture by promoting community-based fish farming/aquaculture and integration of aquaculture with agriculture, effectively aiming to achieve:

1. Improvement of human nutrition and food security
2. Reduction of vulnerability and risk of rural households or poverty alleviation
3. Equitable income and employment
4. Participation and empowerment of villagers in managing their resources, with a better utilization of the village resources
5. Reduction of requirements for physical labour and empowerment of women

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Project/Activity Title	Duration	Remarks
<p>Activity 1: Preparatory Meeting for a Joint Regional Training on Community-based Aquaculture for Remote Rural Areas of Southeast Asia</p> <p>- Based on an experience in 2007, the visit to host country (Department of Livestock and Fisheries, DLF, Lao PDR) and collaborating partners i.e. Huayson-Huaysua Agricultural Development Centre (HSHS), Mekong River Commission Fisheries Programme (MRC-FP), and the World Wide Fund for Nature (WWF) in Lao PDR, Asian Institute of Technology (AIT) in Lao PDR was carried out from 23 to 26 June 2008. The objectives were successfully achieved with confirmed collaboration from host country (DLF) and partners with the training schedule (1-15 September 2008), detailed work plan, comment and suggestion to modify the curriculum, responsibilities, inputs and arrangement as well as required follow-up preparatory work for a joint training. The meetings and coordination with resource persons from the Department of Fisheries (DOF) of Thailand was also conducted in June and July 2008 to discuss and confirm the inputs and required preparatory work particularly training materials and site visit in Thailand.</p>	Jun.	100% Completed
<p>Activity 2: Preparation of training materials and venue</p> <p>After the Preparatory Meeting, the training curriculum was revised. Coordination with DLF and partner agencies and resource persons was conducted from July to August 2008 for preparation of the training venue, arrangement and materials required for the training. The Handbook for A Joint Regional Training on Community-based</p>	Jul.-Aug.	

<p>Aquaculture for Remote Rural Areas of Southeast Asia developed in 2007 was used as key regional reference for the training. Additional training materials i.e. lecture note, power point presentations, information on sites to be visited were also developed for the Training based on some modification of the training curriculum and subjects in 2008.</p>		<p>100% Completed</p>
<p>Activity 3: A Joint Regional Training/Workshop on Community-based Aquaculture for Remote Rural Areas of Southeast Asia A two-week Joint Regional Training on Community-based Aquaculture for Remote Rural Areas of Southeast Asia was successfully conducted from 1 to 14 September in Vientiane Province of Lao PDR with field sites visit in Thailand. The Training was attended by 25 participants from 8 ASEAN Countries. The training was divided into two parts. The first part of the training from 1 to 5 September was conducted at Huay Son Huay Sua Agriculture Development and Service Center in Vientiane Province. And the second part of the training from 7 to 14 July has been conducted at DLF in Vientiane province. The training comprises lectures, practical sessions, demonstration, study visit and group discussion mobilizing knowledge and experiences of the partner agencies and of the participants. The participants have been cooperative and actively participated in training activities. After the training, the participants expressed their satisfaction to the training arrangement and indicated that their expectations were fulfilled and suggested to have echo training once a year.</p>	<p>Sept.</p>	<p>100% Completed</p>

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
<p>Activity 1: Preparatory Meeting for a Joint Regional Training on Community-based Aquaculture for Remote Rural Areas of Southeast Asia The visit to Lao PDR and border provinces of Thailand in the North-eastern will be carried out as planned in March 2009. This is to conduct the meetings to discuss and confirm the collaboration with DLF and other partner agencies in Lao PDR. The activities and expected outputs will include comment to revise the curriculum, role and responsibilities, training venue, survey of potential sites for field practice, and detailed preparatory work and work plan.</p>	<p>Feb./Mar.</p>	
<p>Activity 2: Preparation of training materials and venue As a result of the above preparatory meetings, each partner and resource person will prepare, in close coordination with the others, additional materials, presentations and references to be used for the training. The Training Handbook as a major output from the 1st Training in 2007 will be used as key training material and reference for the training.</p>	<p>Mar.-Jun.</p>	

<p>Activity 3: A Joint Regional Training/Workshop on Community-based Aquaculture for Remote Rural Areas of Southeast Asia</p> <p>In 2009, a ten-day Joint Regional Training on Community-based Aquaculture for Remote Rural Areas of Southeast Asia will be conducted in Lao PDR tentatively in the first half of July 2009. The participants will be aquaculture extension officers from 8 ASEAN Countries of about 25 persons (SEAFDEC supports 18 persons). Based on comment and suggestion received during the training evaluation; the training curriculum will be modified to meet the need and requirement of the member countries. In addition, as the budget for 2009 was reduced, the training period will be shortened to 10 days to suit the new curriculum with appropriated components, subjects, time and budget allocation.</p>	<p>Jul.</p>	
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4.2 Expected Outcomes

Capacity of key extension staff, who considered as service providers/trainers that can pass on the skills to extension people at the national level, from the Member Countries on Sustainable Freshwater Aquaculture for Rural Communities, is built through exchange of experience and through the mobilization of regional capacity.

PROGRAM DOCUMENT

Program Categories: Other Programs/Activities

Program Title: Promotion of Inland Small-scale Fisheries Management through Rights-based Fisheries and Co-management Towards Institutional Building and Participatory Approaches

Funding Source: Japanese unspent budget

Responsible Department: Secretariat

Total Duration: four year (2008-2011)

1. INTRODUCTION

Since the adoption of the FAO Code of Conduct for Responsible Fisheries in 1995, SEAFDEC has implemented various activities to promote responsible fisheries in Southeast Asia. Starting with the regionalization of the global code into regional contexts and production of Regional Guidelines for Responsible Fisheries in Southeast Asia from 1998 to 2006 (covering responsible fishing operations, responsible aquaculture, responsible fisheries management, and responsible fisheries post-harvest practices and trade); this was followed by translation of the guidelines to national languages and provisions of HRD activities to support the implementation of responsible fisheries in the region. In addition, the principle of responsible fisheries has also been embedded in SEAFDEC programs of activities from formulation until their implementation.

In June 2007, SEAFDEC was informed of the endorsement by the FAO Council nominating SEAFDEC as the recipient of the Margarita Lizarraga Medal Award for the biennium 2006-2007. This award is given to SEAFDEC for its efforts in promoting the adoption of the Code of Conduct for Responsible Fisheries (CCRF) in the ASEAN Region.

SEAFDEC still further promote the concept of CCRF by implementing on various regional programs. Most of the CCRF implemented programs have focused in the coastal and marine fisheries. Very few programs were implemented in the inland areas remarkably in Lao PDR and Myanmar. Therefore SEAFDEC, using Japanese unspent from MoFA proposes to promote of inland small-scale fisheries management through rights-based fisheries and co-management towards institutional building and participatory approaches concept to those two countries as pilot projects. It is expected that the outcomes from those two pilot countries could be fulfill the gap in implementation of the CCRF, in addition the outcomes could also apply and benefit to all SEAFDEC member countries.

2. PROJECT

2.1 Objectives

1. To promote the practice of rights-based fisheries and co-management to improve inland small-scale fisheries management in the ASEAN member countries
2. To strengthen fishing community organization and its institution to enable it to take leading role in practicing rights-based fisheries and co-management for achieving sustainable inland small-scale fisheries management
3. To establish sustainable inland small-scale fisheries resource management entity at local levels
4. To alleviate poverty in inland small-scale fishing communities

3. PROGRESS OF ACTIVITIES IN THE YEAR 2008

Project/Activity Title	Duration	Remarks
Activity 1: Regional consultative meeting on rights-based fisheries and co-management for inland small-scale fisheries	1-2 May	The project concept and action plan was presented at the meeting and asked representatives of Lao PRD and Myanmar to fill out questionnaire to assess problems and need before implemented the project activities. Lao PDR representative completely filled out questionnaire and submitted to SEAFDEC for analysis.
Activity 2: Case study on the promotion of rights-based fisheries and co-management for strengthening the implementation of an integrated inland small-scale fisheries management		
Activity 2-1: Onsite baseline survey and monitor	24-27 June	SEAFDEC team accompanied with officials of the Department of Livestock and Fisheries, Vientiane Capital and Vientiane Province to visit a fishing community located along Nam Ngum Reservoir. The mission talked and exchanges idea on issue of inland fisheries situation and need. In addition, the mission also conducted interviewing with local villagers by using formatted questionnaire for collecting data. SEAFDEC requested a fisheries official to conduct interview with other fishing communities located along the reservoir. The result of data analysis would be used for the stakeholder consultative work in the end of November.
Activity 2-2: Workshop/seminar on rights-based fisheries and co-management for inland small-scale fisheries management with local fisheries officers and stakeholders as participants	25-26 November	Stakeholder Consultative Workshop on “revitalization of protected area conservation” in Vientiane Province. Twenty-three fishing communities of five districts of the province as major participants of the workshop. SEAFDEC and the Department of Livestock and Fisheries, Lao PDR would present the concept of co-management and rights-based fisheries for revitalization of protected areas conservation including the result of data collection of the activity 2-1.

Activity 2-3: Establish community – based management		Waiting for result of the Activity2-2.
Activity 2-4: technical transfer and assistance for developing capacity building for local fisheries officers and stakeholders		Waiting for result of the Activity2-2.

4. PROPOSED FUTURE ACTIVITIES FOR THE YEAR 2009

Planning for the project and activities (project/activity title and its short description) to be implemented in the year 2009 as well as expected outcomes. In case that there are linkages among programs, the linkages and coordination mechanism among concerned programs should be provided.

4.1 Planning of the Project Activities

Project/Activity Title	Duration	Remarks
Activity 2: Case study on the promotion of rights-based fisheries and co-management for strengthening the implementation of an integrated inland small-scale fisheries management		
Activity 2-1: Onsite baseline survey and monitor	January - December	<p>The baseline survey will be conducted at Nam Ngum Reservoir of Lao PDR as well as Duya Inn in the Ayeyarwaddy Division of Myanmar.</p> <p>SEAFDEC team accompanied with officials of central and local to visit a fishing community. The mission will talk and exchanges idea on issue of inland fisheries situation and need. In addition, the mission also conducted interviewing with local villagers by using formatted questionnaire for collecting data.</p>
Activity 2-2: Workshop/seminar on rights-based fisheries and co-management for inland small-scale fisheries management with local fisheries officers and stakeholders as participants	April-June	<p>Stakeholder Consultative Workshop on “revitalization of protected area conservation” in Duya Inn in the Ayeyarwaddy Division. The representative of fishing communities around reservoir will be participate as major participants of the workshop. SEAFDEC and the Department of Fisheries of Myanmar would present the concept of co-management and rights-based fisheries for revitalization of protected areas conservation including the result of data collection of the activity 2-1.</p>

Activity 2-3: Establish community – based management	January – December	In order to strengthen the substantial factor for the establishment institutional framework at the project site, the project will transfer information and give advice to resources user to take part of the responsibility of co-management by building the awareness of local officers and community leaders. The project will advise and assist resource users to organize community-based management groups of whatever type.
Activity 2-4: technical transfer and assistance for developing capacity building for local fisheries officers and stakeholders	July – September	The training workshop will be organized for fisheries officers, fisheries policy maker or people who work in the inland small-scale fisheries sector. The content of the workshop will be based on the right-based and co-management in fisheries which based on the “SEAFDEC Regional Guidelines for Co-management Using Group User Rights for Small-scale Fisheries in Southeast Asia” and accommodate their fisheries management experiences and current situation.

4.2 Expected Outcomes

- Practical implementation of rights-based fisheries and co-management promoted to improve inland small-scale fisheries management in the ASEAN member countries;
- Improvement of fisheries livelihood;
- Community-based co-management achieved for sustainable utilization of inland fisheries resources;
- A fishing community organization(s) is fostered/ strengthened.

REVIEW OF SEAFDEC PIPELINE PROJECTS

Introduction

In response to the policy change of annual contribution from the Member Countries to SEAFDEC, the Center's programs of activity starting from the year 2007 and onwards will be funded from irregular funding sources. The paper attempts to review progress and efforts by the Secretariat and the Departments in developing project proposals for funding and/or partnership arrangement.

SEAFDEC Pipeline Projects

Based on on-going preparation and negotiation with donor/partner agencies, the following are current status of the pipeline projects:

Islamic Development Bank (IDB)

- Community Fisheries – Strengthening Organization of Communities for Sustainable Livelihoods in Coastal Areas (2007-2009) (*Appendix 1*)

ASEAN Foundation

- Awareness Building on Sustainable Development of Fisheries in the ASEAN Region (2008) (*Appendix 2*)

Wetland Alliance Program (WAP)

- Transboundary Collaborative Arrangement Supporting Aquatic Resources and Habitat Management for Sustainable Fisheries (2008-2009) (*Appendix 3*)

Suggested Actions by the Committee

The Committee is invited to consider the progress of pipeline projects and where appropriate provide comments for further development and finalization of the projects with respective donors or partner agencies.

Community Fisheries – Strengthening Organization of Communities for Sustainable Livelihoods in Coastal Areas

Project Concept Note

Prospect Funding Agency: Islamic Development Bank (IDB)

Proponent: Southeast Asian Fisheries Development Center (SEAFDEC)

Project Duration: 3 years

Background and Rationale:

The coastal areas in Southeast Asia provide environmental services and means of livelihood to the coastal dwellers. Due to degradation of coastal resources and conflicts over the multiple resource use, livelihoods of coastal communities have been further threatened. This calls for a need to strengthen community organization and capacity building to support better development and management of coastal resources to ensure sustainable livelihoods of coastal communities.

Goal:

Sustainable development and exploitation of coastal resources and amelioration of the socioeconomic condition of the Muslim fishers and farmers and other stakeholders by empowering them through strengthen community organization to become efficient resource managers and prudent resource users through enhancement of their knowledge and skills in fisheries, aquaculture and aquatic resources management.

Target Beneficiaries and Countries:

Target beneficiaries are selected Muslim fisheries communities, village and local government extension workers, development workers, and small-scale fishers and fish farmers in Brunei Darussalam, Indonesia and Malaysia with involvement of representatives from the Philippines and Thailand who are working in support of Muslim communities in their respective countries

Project Assumption:

Policies and institutions should have firm foundation in the community and local levels of fisheries governance to ensure effective co-management arrangements between the local government and the Muslim community and effective transfer and adoption of responsible fisheries and aquaculture technologies and practices.

Project Strategy:

Building capacities of target beneficiaries on participatory, inter-disciplinary and community-based strategies in community organization and capacity building as well as the transfer and adoption of knowledge-based coastal resources management and responsible fisheries and aquaculture technologies and practices

Project Components:

1. Community organization and institutional capacity building of fisheries communities including social preparation and empowerment of communities and co-management in coastal fisheries and aquaculture
2. Capacity building and training for extension workers and fisheries communities in
 - a. Coastal resource management, and
 - b. Sustainable fisheries and aquaculture practices

- Responsible fishing techniques including community-operated fishing gear i.e. set nets
- Fisheries Enhancement Devices (FEDs)
- Mariculture of selected species (sea bass, grouper, milkfish etc)
- Seaweeds and mollusks farming
- Community fisheries post-harvest and processing

Progress and Consideration by the Program Committee

The project is under the process of discussion.

STATUS AND PLAN OF PROGRAMS SUPPORTED BY THE ASEAN FOUNDATION

Project Concept Note

Project Title: Awareness Building on Sustainable Development of Fisheries in the ASEAN Region (2008)

Project Duration: 12 months

I. Background & Rationale

In ASEAN region, it is recognized that fisheries resources are crucially important in terms of socio-economic, food security and livelihoods. Fish as food provides cheap source of animal protein to the poorer, trade of fish and fish products creates employment and income generation as well as a foreign exchange at international market. There is no doubt that how significant of fisheries sector contribute to the people in ASEAN. However, overfishing and environmental degradation have caused fisheries resources depleting, of which ASEAN and SEAFDEC are seriously taken this situation into account.

Since 1967, SEAFDEC as an inter-governmental organization specialized in fisheries providing technical supports to the Member Countries of ASEAN in broad fields with the aim to ensure that utilization of fisheries resources would be sustained, responsible, well managed and not reach to over-exploitation. A technical cooperation between ASEAN and SEAFDEC towards sustainable fisheries development has been implemented under the regional framework (ASEAN-SEAFDEC Fisheries Consultative Group Mechanism). Promotion of sustainable fisheries development through this channel is well accredited within ASEAN.

The ASEAN-SEAFDEC Conference on Sustainable Fisheries for Food Security in the New Millennium: “Fish for the People” held in Bangkok from 19 to 24 November 2001, was organized with the financial support by the Japan-ASEAN Solidarity Fund in the ASEAN Foundation. The Conference was successfully concluded by the adoption of “the Resolution and Plan of Action on Sustainable Fisheries for Food Security for the ASEAN Region” by the fisheries related ministers and senior officials of ASEAN-SEAFDEC Member Countries as the regional common fisheries policy and priority actions.

In addition, various programs/activities were executed, much of which addresses on human resource development particularly developing countries and remote areas with the aim to reduce economic development gap within the ASEAN and alleviate poverty by contribution of fisheries sector. The programs include South-South Cooperation in the ASEAN Region and Capacity Building on the Improvement of Fishery Statistical System in the ASEAN Region, and Human Resource Development (HRD) for Sustainable Development of Fisheries in Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area (BIMP-EAGA) Region. To address the issue on poverty alleviation, there are two new projects will be launched in 2008, which are HRD on Poverty Alleviation and Food Security by Fisheries Intervention in the ASEAN Region and Promotion of One Village, One Fisheries Product (FOVOP) System to Improve the Livelihood for Fisheries Communities in ASEAN Region.

To raise profile of ASEAN in promoting sustainable fisheries development and commemorate its 40th year’s collaboration between ASEAN and SEAFDEC, public awareness on the above efforts should be shaped up. Therefore, printed publication, posters, and video documentary

in relation to sustainable fisheries development in ASEAN with the aim to combat poverty should be produced.

II. Objectives:

- 1) To raise profile of ASEAN in combating poverty through promotion of sustainable fisheries development;
- 2) To provide comprehensive view on regional fisheries activities on sustainable fisheries development;
- 3) To publicize collaborative effort between ASEAN and SEAFDEC in promotion of sustainable fisheries development for poverty alleviation.

III. Project Description

- Production of Posters and Publications

Posters and handicap publications will be produced with the aim to address an important of sustainable fisheries development in combating poverty within the ASEAN and regional collaborative efforts between ASEAN and SEAFDEC through the financial support of Japan-ASEAN Solidarity Fund. Past achievements from the implementation of aforementioned key collaborative programs/activities will be highlighted, especially activities enhancing human capacity in fisheries sector.

- Production of Video Documentary

To picture of overall achievements and reflect importance of fisheries development to alleviate poverty in ASEAN region, motion pictures in four selected countries will be filmed; priority will be given to CLMV and BIMP-EAGA sub-regions. Leaders of selected countries, ASEAN, ASEAN Foundation and SEAFDEC will be interviewed to express their visions in future promotion of sustainable fisheries development as well as suggestion towards improvement of fisheries in ASEAN region.

III. Expected Output:

- 1) Printed posters and publications related to sustainable fisheries development to alleviate poverty in ASEAN region;
- 2) Video documentary related to sustainable fisheries development to alleviate poverty in ASEAN region; and

It is expected that all posters, publications, and video documentary will raise profiles of ASEAN and regional collaborative efforts between ASEAN and SEAFDEC on promotion of sustainable fisheries development in combating poverty.

Progress and Consideration by the Program Committee

The project proposal was not taken up during the ASEAN commemorated its 40th years. The Program Committee is requested to withdraw this program from the list.

Project Concept Note

Program Title: Transboundary Collaborative Arrangement Supporting Aquatic Resources and Habitat Management for Sustainable Fisheries

Lead Department: Training Department

Lead Country: Cambodia, Vietnam

Total Duration: 24 months (2008-2009)

Proposed Budget:

5. INTRODUCTION

The Wetland Alliance is a regional program addressing local capacity building for sustainable wetlands management. It is a combined strengths of four partners- the Asian Institute of Technology (AIT), Coastal Resources Institute of Prince Songkhla University (CORIN), WorldFish Center, and World Wide Fund for Nature (WWF) that work towards a common approach to building the skills that staff at local levels need for sustainable aquatic resources management. With the prospect funding from the Swedish International Development Cooperation Agency (SIDA), the program has been developed based on complementary strengths of the WAP partners. A logical framework is formulated with the goal of improving sustainability of wetlands, livelihoods and food security for the poor, complementing aquatic resources and habitat management at the local level particularly in Kampot, Cambodia and Kien Gaing, Vietnam, the component on transboundary collaborative arrangement was identified as part of WAP. Considering existing collaborative framework among Cambodia, Vietnam and SEAFDEC, therefore, SEAFDEC Training Department was invited to assist the development process in transboundary collaborative arrangement.

6. PROGRAM

2.1 Objectives

Strengthen the capacity of local change agents to support sustainable wetlands management for the benefit of the poor.

To achieve the main objective, the following objectives will be focused:

- To building knowledge and capacity of local change agents in each local area, in term of technical and management skill;
- To support and be consultant on transboundary collaborative arrangement between two target sites;
- To establish role and responsibilities and system for information exchange of agencies of two target sites;
- To strengthen systems and mechanisms of administration and management;
- To establish common and management plan and measures as well as a joint Monitoring, Control and Surveillance (MCS) framework.

2.2 Program description

SEAFDEC together with WAP partners have been seeking a cooperation in implementing the process of establishing the necessary mechanism and strengthening the capacity building for human resources development of local agencies and communities in the two neighboring province to, ultimately, help people to improve the livelihoods in Cambodia and Vietnam. In this connection, the collaboration of SEAFDEC-WAP for year 2008-2009 is planed, the specific local human capacity building that are needed to provide local support to the establishment of the coastal resources management mechanism should be identified in order to sustain the uses of marine resources in this transboundary area.

7. Progress and Consideration by the Program Committee

There was no agreement on budget allocation. The Program Committee is requested to withdraw this program from the list.

STATEMENT

By Mr. Suriyan Vichitlekarn, Senior Officer, Natural Resources Unit, Bureau for Economic Integration and Finance, ASEAN Secretariat

SEAFDEC Secretary-General and the Chairman of the Program Committee,
SEAFDEC Program Committee Members,
Colleagues from FAO and the Swedish Board of Fisheries,
Ladies and gentlemen, good afternoon,

I firstly wish to thank SEAFDEC for the opportunity to speak before the Program Committee on ASEAN-SEAFDEC cooperation on fisheries. I wish to take this opportunity to congratulate SEAFDEC Secretariat and the Departments for the good progress and achievements made in the year 2008. Through ASEAN-SEAFDEC partnership, ASEAN has over the years been benefited a great deal from SEAFDEC programme of activities. Appreciation from ASEAN Member States to SEAFDEC particularly made at the 16th Meeting of ASWGFⁱ and the 30th Meeting of ASEAN Ministers on Agriculture and Forestry in the year 2008 were good evidence for such recognition.

Mr. Chairman, ladies and gentlemen, the year 2008 is an important transitional year for a so-called new ASEAN. With the Charter adopted by the ASEAN Leaders in 2007, all ASEAN Member States are awaiting to announce formal ratification of the Charter at the forthcoming Summit in December in Thailand. By having the Charter ratified, ASEAN will be conferred legal personality, which will transform ASEAN from a loose association to a rule-based intergovernmental organization. The ASEAN Charter reaffirms the commitment to realize an ASEAN Community by 2015 comprising three pillars of ASEAN Political and Security, Economic and Socio-Cultural Communities. Each of the pillars has a Blueprint, which maps out measures and strategic schedules for realizing the ASEAN Community.

Considering the multi-functionality and potential contribution of fisheries in the ASEAN Community integration process, collaboration between ASEAN and SEAFDEC is crucial in strengthening efforts to achieve the defined goals set forth by the ASEAN Charter and the relevant ASEAN Community Blueprints. The signing of the Letter of Understanding for the ASEAN-SEAFDEC Strategic Partnership (ASSP) in 2007 signified our appreciation and value of partnership with SEAFDEC. ASEAN envisages that the ASSP Program will be the vehicle of opportunity for closer cooperation and partnership among the two organizations and their respective Member Countries.

Mr. Chairman, ladies and gentlemen, for the year 2008, I wish to commend SEAFDEC for the fruitful cooperation. In particular, I would like to highlight the support to the on-going efforts in the implementation of ASEAN Roadmap for Integration of Fisheries Sector, the conduct of meeting of ad-hoc working group on ASEAN Regional Fisheries Management Mechanism, the Executive Report on International Fisheries Related Issues, and the on-going establishment of ASEAN-SEAFDEC portal website. I wish to also commend the initiative and successful outcome of SEAFDEC in co-organising the Global Conference on Small-scale Fisheries with FAO and hosted by the Thai Department of Fisheries. I hope that SEAFDEC will continue to keep momentum in raising profiles of the small-scale fisheries and contribute to the global efforts in developing initiatives in ensuring sustainable small-scale fisheries development, including at the forthcoming Session of FAO Committee on Fisheries in March 2009.

As for the cooperation in the year 2009, I wish to emphasise on the continuation of four main cooperation areas under the ASEAN-SEAFDEC Strategic Partnership as supported by the 40th Meeting of SEAFDEC Council and the 16th Meeting of ASEAN Sectoral Working Group on Fisheries. These are (i) supporting the establishment of an ASEAN Regional Fisheries Management Mechanism, which is now referred to as “ASEAN Fisheries Consultative Forum”; (ii) supporting the formulation of common positions on international issues that will have impact on fisheries development in the ASEAN region; (iii) assisting ASEAN in the regional integration of the fisheries sector; and (iv) continuing the existing collaborative projects under the FCG mechanism to enhance capacity building, information collection and exchange, and research and development in fisheries. Cooperation in these four areas is considered crucial in the ASEAN Community integration process particularly the economic and socio-cultural dimensions of the fisheries sector in the region.

Mr. Chairman, ladies and gentlemen, the year 2009 will mark 10 years of close cooperation between ASEAN and SEAFDEC since the establishment of ASEAN-SEAFDEC Fisheries Consultative Group in 1999. I could not help recalling a number of important initiatives that had been commenced during that time of which we all have witnessed good results and impacts to fisheries in the region today. The initiatives include among others the conduct of ASEAN-SEAFDEC Millennium Conference on Fish for the People in 2001, Regionalisation of the Code of Conduct for Responsible Fisheries, Special 5-year Program on Sustainable Fisheries for Food Security in the ASEAN Region.

To this end, on behalf of ASEAN I wish to extend our appreciation to SEAFDEC for the continued cooperation. I wish to also extend our appreciation to the Government of Japan for the continued support and partnership with the ASEAN Member States. I have high hope that such partnership will continue to sustain for many years to come. I wish also to recognize efforts and contribution of those who has initiated and promoted those regional fisheries initiatives, particularly Dr. Yasuhisa Kato who has brought a new challenging chapter of fisheries cooperation in the region. The appreciation also goes to partner organizations including FAO and the Swedish Board of Fisheries for fruitful cooperation.

Mr. Chairman, ladies and gentlemen, allows me to conclude my statement by wishing SEAFDEC a greater success in undertaking of your programme of activity. I also wish to assure you our strong interests in and any possible support to the close collaboration and partnership with SEAFDEC. Thank you.

Annex 9

STATEMENT OF SWEDISH BOARD OF FISHERIES (SBF)

By Mr. Joacim Johannesson, Fishery Advisor, Swedish Board of Fisheries

Secretary General and Chairman of the Programme Committee, distinguished delegates and observers, ladies and gentlemen

I am pleased to have been invited to this SEAFDEC Programme Committee Meeting. I am here on behalf of the Swedish Board of Fisheries, and would like to extend gratitude from my organisation for your invitation.

SEAFDEC plays a very important and active role in the region, having high technical capacity and competence, which of course is reflected in the very comprehensive work programmes for 2008 and 2009 that has been presented and discussed here.

The Swedish Board of Fisheries and SEAFDEC have now been cooperating for more than four years in the implementation of a Swedish supported project on capacity building in fisheries management in the spirit of the Code of Conduct for Responsible Fisheries.

During these four years we have noted increased regional cooperation with regards to fisheries management, between countries as well as between organisations, at different levels and, in different forms, SEAFDEC as an important technical organisation in the region, has contributed to this very positive development.

In the Swedish supported project, specifically, issues such as vessel registration, monitoring of coastal fisheries, promotion of regional fisheries management, integration of habitat and fisheries management have been dealt with.

We note progress in all these project areas. In particular we see significant steps taken in the promotion of the *refugia* concept as a management tool. The concept can be a practical way forward to embrace the ecosystem approach in fisheries management.

Finally, I would like to thank SEAFDEC-representatives and all other participants for sharing experiences with me during this meeting. Hopefully this will form a basis for further dialogue and cooperation between Sweden and this region in the field of fisheries management.

In our dialogue with Sida, earlier this year, the Board of Fisheries recommended continued regional support to activities linked to fisheries and marine environment issues in Southeast Asia, including support to SEAFDEC. However a new government strategy for Swedish support to Southeast Asia is under preparation and future support will have to be in line with this strategy once it is adopted.

Thank you for your attention.

CLOSING SPEECH

By Dr. Siri Ekmaharaj, SEAFDEC Secretary-General

Distinguished Members of the SEAFDEC Program Committee and the representatives from Member Countries,
SEAFDEC Deputy Secretary-General,
SEAFDEC Department Chiefs, and Senior Officials,
Representatives from our Partner Organizations,
Ladies and Gentlemen,

As Chairman of the SEAFDEC Program Committee, I would like to thank all of you for your hard work during the past three days. Our collective efforts have made the Meeting successful. I am also happy that we were able to achieve our main objective of reviewing the 2008 programs and activities, and also endorsed the programs for 2009. We have considered the programs under the ASSP/FCG mechanism. The outcomes and agreed recommendations at this Meeting will therefore be endorsed to the ASSP/FCG Meeting which will be convened from tomorrow until Friday. We have also considered the pipeline projects and the emerging needs for the preparation of future projects.

Based on the outcomes of our active deliberation, I am very pleased to see the future of SEAFDEC heading to the direction that serves the requirements of the Member Countries. Most particularly, your guidance that underlined the improvement of SEAFDEC activities and development of new SEAFDEC Program Framework, these will ensure future implementation of SEAFDEC programs/activities to be in line with the national and regional stipulation.

In connection with the establishment of the Regional Advisory Committee on Fisheries Management in Southeast Asia (RAC), the First Meeting of RAC was organized in September 2008. Although the outcomes of RAC would still need to be considered by the SEAFDEC Council, but for the time being SEAFDEC and the Member Countries as well as donor agencies could start considering the recommendation of the RAC, especially on how it could be accommodated into the SEAFDEC program exercises. I would like to mention that the Regional Policy Recommendations to Improve Fisheries Management in Southeast Asia which has been adopted would be submitted to the 41st Meeting of the SEAFDEC Council in 2009.

Ladies and Gentlemen, please be informed that this is the final Program Committee Meeting that Dr. Kato would be attending. He is leaving SEAFDEC in December for better opportunities. On this occasion, allow me to thank Dr. Kato on behalf of SEAFDEC, for his excellent services during his more than 10 years with SEAFDEC. I would also wish to thank Dr. Kato for his endeavors in promoting sustainable fisheries in the region and enhancing the visibility of SEAFDEC. Dr. Kato who exerted much effort for the conduct of the 2001 Millennium Conference which we could come up with the regional fisheries policy framework “ASEAN-SEAFDEC Resolution and Plan of Action on Sustainable Fisheries and Food Security in the ASEAN Region”. Other regional masterpieces, that made our region be renowned at the international communities, are the production of SEAFDEC Special Publication “Fish for the People” and the Regionalization of the Code of Conduct for Responsible Fisheries or RCCRF, which the latter one is quarantined by receiving the Margarita Lizárraga Medal Award from FAO in November 2008.

Ladies and Gentlemen, Dr. Kato also continued to play a leading role in addressing poverty issues in the region through the promotion of FOVOP, sustainable small-scale fisheries development, and many more. These are just but a few of his achievements with SEAFDEC. For his efforts, we are in fact very thankful to Dr. Kato.

Without getting very sentimental on the departure of Dr. Kato from SEAFDEC, I wish to express my gratitude again to all of you for your contributions during our deliberations during the Program Committee Meeting as well as our partner organizations ASEAN Secretariat and FAO. I wish also to express my sincere appreciation to the Government of Japan through Japanese Trust Fund, the Swedish Board of Fisheries through Sida, and the ASEAN Foundation through Japan Solidarity Fund, for their always kind provision of funding support to SEAFDEC programs. Most especially, I wish to thank MFRD and the Secretariat staff for the excellent arrangements of the Meeting. The study tour arranged for our participants to the National Museum this morning was very educational and useful. For some of you who will leave before the FCG Meeting, I wish you have a safe journey back home. And to the rest, I will see you during the FCG Meeting tomorrow.

With that note, ladies and gentlemen, I now declare the 31st Meeting of the Program Committee closed. Thank you and good day!