

Consultation on International Fisheries Related Issues 2009

SEAFDEC has always paved the way for the ASEAN-SEAFDEC Member Countries to have opportunity to discuss emerging international fisheries-related issues that could impact the development of sustainable fisheries in the Southeast Asian region, and come up with recommendations to be used as basis in providing collective significant inputs to relevant international consultations. In order to address the recent international issues concerning trade and market

measures for fisheries sustainability and raising the profile of small-scale fisheries, SEAFDEC organized the 2009 ASEAN-SEAFDEC Regional Technical Consultation on International Fisheries Related Issues in Bangkok, Thailand from 10 to 12 February 2009.

The RTC was participated in by national delegates from the ASEAN-SEAFDEC Member Countries, senior officials of SEAFDEC, representatives from the ASEAN Secretariat, as well as resource persons from the Directorate-General of Maritime Affairs and Fisheries of the European Commission (EC), the Faculty of Economics of Kasetsart University, Thailand, and the Department of Marine



Countries' representatives participating the RTC

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SEAFDEC signs MOU with FRA

On 16 February 2009, SEAFDEC Secretariat welcomed the representatives from the Fisheries Research Agency (FRA) of Japan, namely: Mr. Akira Nakamae, President of FRA; Mr. Kazuhiro, Executive Director of FRA; and Dr. Yoshikazu Nakamura, International Cooperation Coordinator for the signing ceremony of the MOU between FRA and SEAFDEC.



Dr. Siri Ekmaharaj and Mr. Akira Nakamae, signing the Arrangement

The collaboration between FRA and SEAFDEC was formally started in 2004 with the signing of the first Arrangement for Scientific and Technical Cooperation; and during the past five

years, the collaboration between FRA and SEAFDEC has greatly contributed

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Second Sub-Regional Meeting on the Gulf of Thailand

The second Sub-Regional Meeting on the Gulf of Thailand was organized by SEAFDEC with funding support from the Swedish International Development Cooperation Agency (Sida) from 24 to 26 February 2009 in Bangkok, Thailand. The Meeting was aimed at reviewing and coming up with recommendations on the various concerns relevant to fisheries management in the context of the Gulf of Thailand Sub-region.

The Meeting agreed that the geographical coverage of the Gulf of Thailand should be consistent with the FAO administrative and management areas for statistical data collection, i.e. Sub-areas 71a, 71b, 71c, 71e. For better coordination of the management and conservation of the sub-region's living resources, the definition of IUU fishing in the context of the Gulf of Thailand was initially developed and agreed during the Meeting.

The future follow up actions for fisheries management and habitat protection in the Gulf of Thailand adopted during the Meeting included: (1) development of a Plan of Action on Responsible Fishing including Combating IUU in the Gulf of Thailand based on the agreed definition of IUU fishing in the context of the Gulf of Thailand with the key elements of the RPOA-IUU to be used as framework in the development of the sub-regional mechanism in combating IUU fishing; (2) promotion of sub-regional fisheries management mechanism under the framework of the ASEAN Fisheries Consultative Forum;

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EDITORIAL

During the quarter, the activities of SEAFDEC in addressing the international fisheries-related issues are in rapid progress. SEAFDEC organized the RTC where the important issues, e.g. preparation of countries in response to the EU catch certification scheme, FAO Legally-binding instrument on on port State Measure, the raising of small-scale fisheries profile, etc. were discussed. Several progresses have been also made in ensuring appropriate management for sustainable fisheries in the region. Among the important events are the Sub-regional Meeting for the Gulf of Thailand where the Meeting discussed and agreed on the definition of IUU fishing in the context of the Gulf of Thailand, as well as the follow-up actions for fisheries management and habitat protection in the sub-region. In addition, a Regional workshop was also organized to discuss the reduction of the impacts of fishing on coastal and marine environments in the Southeast Asian waters.

Several HRD activities were also conducted by SEAFDEC Secretariat and the departments during the quarter, particularly under the project on HRD for Poverty Alleviation, and the Promotion of "One Village, One Fisheries Product (FOVOP)", supported by the ASEAN Foundation. Under its departmental programs, AQD also organized a number of training courses to transfer aquaculture technologies both for the Member and non-Member Countries; while for TD, the training on the use of sail boat was organized in Thailand to promote the use of alternative wind energy for fishing operations. ☒

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TD organizes two exhibitions on the Children day

TD organized two exhibitions on the occasion of the National Children's Day of Thailand (10 January 2009). The first exhibition was organized in collaboration with the Fish Market Organization of Thailand at the Agriculture Museum, Pathumtani Province, where information on responsible fishing and sea turtle conservation were exhibited. The exhibition was visited by more than 4,000 school children.

The second exhibition was organized on the same day at the Pomprachunlajomklao Navy Dockyard in Samut Prakarn Province, Thailand. The models of fishing gear such as long line and trawl installed with JTED, were displayed. The event was held in collaboration with the Thai Navy Dockyard, and had more than 3,000 visitors. ☒



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and Coastal Resources (DMCR) of Thailand.

Highlight had been given to the new EC Regulation to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated (IUU) Fishing, specifically on the catch certification scheme which will be also imposed to and applied for small-scale fisheries as well. In this connection, the EC provided insights information on the new regulations that will impose to the countries exporting fish and fishery products to the EU in January 2010.

Short-term Training Course for University Students conducted



The University Student Training Course on Fishery Resource and Fisherman Community around Estuary was organized by TD from 24 March to 3 April 2009 in Samut Prakarn, Thailand. Forty two students from eight universities studying fisheries attended the training course which aimed to develop skills and experience in fishery practices and methods. As part of the training course, the students were conducted on a study tour and educated on fishery resource around Bangpakong River and the fisherman community around TD. Moreover, practice on fishing simulator, fishing operations and oceanography was done at the estuary in the Gulf of Thailand. TD hopes that the students can apply the new experience from the training course to their work in the future. ☒

The issues discussed during the Consultation also included: A legally-binding instrument on Port State; small-scale fisheries (the Coordinated Position for the Promotion of Small-scale Fisheries in Southeast Asia); aquaculture certification; required adaptive measures and proposed activities to mitigate the impacts of climate change; fisheries subsidies.

After the discussions, the RTC came up with major recommendations to be further submitted to the forthcoming meetings of the SEAFDEC Council and the ASWGFi, respectively, for consideration and endorsement. ☒

Philippines requests for AQD expertise

AQD senior research staff were invited to several conferences and meetings by the government and other institutions in the Philippines to share their experiences and views.

Four AQD senior officials – Technology verification & demonstration division head Dr. Clarissa Marte, Training & information division head Mr. Renato Agbayani, Manila office head Ms. Grace Garcia, and scientist Dr. Ma. Rowena Eguia – were invited to the first and second meetings of the technical working group for the creation of a Philippine Department of Fisheries and Aquatic Resources. These were held on 9 February at BFAR (Bureau of Fisheries & Aquatic Resources) and on 4 March at the national legislature complex, respectively. A house bill that elevates BFAR to department level is authored by three members of the House of Representatives and has AQD's support albeit with some modifications. To reinforce the call for the bill's approval, BFAR has been requested to conduct a series of multi-sectoral consultations to outline research, fish production and technology dissemination programs for implementation once a new department is established.

Two AQD researchers were asked by the Philippine Council for Aquatic Marine Resources Development and BFAR to participate in the First national summit on hatchery and culture of siganid (rabbitfish) that was held 11-12 March in Dagupan City. Associate scientist Dr. Rolando Pakingking presented a paper on diseases and scientist Dr. Relicardo Coloso read a paper on nutrition and feeding.

AQD scientist, Dr. Ma. Lourdes Aralar, was part of the technical working group that organized the National conference on wetlands, climate change adaptation and biodiversity conservation that was held 12-14 January in Dumaguete City. The conference revised and updated the country's wetlands action plan.

Three AQD scientists were invited to present papers in the First national summit on the hatchery and culture of freshwater prawn which was organized by BFAR in Dagupan City on 11 December 2008. Dr. Aralar spoke on cage culture, Dr. Eguia on research initiatives especially on breeding & genetics, and Dr. Leobert de la Pena on common diseases.

Two AQD scientists were at the 2 December 2008 technical seminar on Marine fish disease: prevention, maintenance, identification, and treatment that was sponsored by the American Soybean Association-International Marketing and held at Iloilo City. Dr. Gilda Lio-Po gave a lecture on presumptive diagnosis of fish mortality outbreaks at the farm-level while Dr. Edgar Amar was invited as chair and moderator. ❖



Attendees to the wetlands conference visit the protected twin lakes of Balinasayao and Danao

Philippine President inaugurates multi-species hatchery

On 5 January, Philippine President Gloria Arroyo inaugurated the multi-species hatchery at the Misamis Occidental Aquamarine Park (MOAP) in northern Mindanao. The multi-species hatchery is a joint project of the Misamis Occidental provincial government, the Australian government, and the Philippine Department of Agriculture through AQD which designed and helped build the hatchery. AQD will continue to provide technical support during its operations. AQD has also conducted a series of training courses in 2008 on grouper culture in the area under its ICDSA project (Institutional capacity development for sustainable aquaculture) in collaboration with

the GataDaku cooperative, PACAP-CATP (Philippine-Australian Community Assistance Program – Community Agricultural Technologies Project) and the Misamis Occidental Aquaventure Corporation. ❖



At the MOAP multi-species hatchery inauguration: President Arroyo (leftmost); and AQD Chief JD Toledo and Department of Agriculture Secretary Arthur Yap (above)

DEPARTMENTAL ACTIVITIES

International visitors to AQD

On 22 January 2009, Minister Stephen Scott, Deputy Head of Mission of the Australian Embassy, visited AQD and discussed with Dr. JD Toledo and senior officials on AQD's participation in the Australian government-funded multi-species hatchery project in Misamis Occidental. Mr. Scott inquired about how the project started, AQD's contribution, the species to be raised, and benefits to the community. His visit was part of the embassy's appointments to organizations to discuss local politics, security, and development issues.

On 15-16 January, ACIAR's regional coordinator Dr. John Skeritt visited AQD to follow up plans for ACIAR's new mariculture initiative. On 2-3 February, program manager Mr. Barney Smith, also of ACIAR, and National Maritime Science Center Director Prof. Alistair McIlgorm discussed with AQD researchers and officials the ongoing mudcrab project in Northern Samar and the proposed mariculture collaboration. And on 17 March, the AQD Chief and the research division head met with an ACIAR delegation for the proposed sandfish and seaweed project collaboration.

North Carolina State University (NCSU, the USA) professor Dr. Russell Borski visited AQD from 23-27 January to discuss the progress of the existing collaborative project between NCSU and AQD on Alternative feeding strategies to improve milkfish production efficiency in the Philippines. Dr. Borski is the



principal investigator and AQD's research division head Dr. Evelyn Grace DJ-Ayson is the host country's co-principal investigator. Dr. Borski went to see the planned study site in Guimaras province, and visited seaweed farms. Before he left, Dr. Borski conducted a research seminar for AQD staff on Compensatory growth mechanisms and applications for improving fish production efficiency.

Dr. Jacques Zarate of the University of Rhode Island visited AQD on 29 January, and presented a seminar to AQD staff on the Role of osmolyte transporters and heat shock proteins in adaption of Atlantic salmon to selected stressors. So did Dr Atsushi Yamamoto of Kagoshima University (5 March) who spoke on Vaccination against Lactococcus infection and a re-emerging disease of cultured yellowtails in Japan.

A young science journalist Ms. Shiew Chin of Malaysia was at AQD 5-6 February as part of her science journalism internship programme under IDRC and scidev.net. She interviewed training and information specialists to find out how



AQD visitors - Top-left: Mr. Scott; and from top to bottom: Dr. Borski, Dr. Zarate, Ms. Shiew, and Mr. Kritapol & Ms. Siriwan
AQD communicates with the public, the media and policymakers.

Finally, Thailand's Department of Fisheries - Surathani Coastal Fisheries Research and Development Center Director Mr. Kritapol Youngvanitset and Ms. Siriwan Nooseng visited AQD on 17 March to seek the latest developments in research. ❏

SEAFDEC signs MOU with FRA (Continued from Page 1)

to the sustainable development of fisheries in the Southeast Asian region. SEAFDEC and FRA therefore agreed to sign this new MOU to extend and further

enhance the collaborative spirits between the two organizations. During the signing ceremony, Mr. Akira Nakamae elaborated on the areas of potential collaboration, such as sustainable utilization of fisheries resources; promotion of coastal fisheries and aquaculture; safe and reliable supply

of fishery products; and safety at sea and energy saving technologies. After the signing ceremony, the representatives from both organizations also continued the discussion on specific activities/projects to be undertaken under the MOU. ❏

TD organizes tailor-made training course for Sri Lankans

The tailor-made training course on Coastal Fisheries Management in Thailand was organized from 3 to 22 March 2009 at the Training Department upon the request from the Department of Fisheries and Aquatic Resources and Ministry of Fisheries in Sri-Lanka. The course was participated by sixteen participants from the fishery agencies in Sri-Lanka, and focused on the concepts and case studies of coastal and resource management; approaches towards co-management involving the local communities and applying eco-

system principles to coastal fisheries management; code of conduct for responsible fisheries particularly on the selective fishing gears in Southeast Asia; and new approaches on fishery extension concepts and methods. The training course included presentations/discussions and practical sessions, and the visit to the project site on fisheries management in Thailand.



Participants in the tailor-made training course on coastal fisheries management visit a fish cage facility

AQD accepts trainees from five countries

From January to March 2009, AQD welcomed four batches of trainees from Northern Marianas, Saudi Arabia, Maldives and the Philippines; and an intern from Singapore.

Abalone nursery & grow-out culture and seaweed farming was held from 16 to 21 February for eight fellows from the Northern Marianas Islands, including the town mayor of Tinian Mr. Jose San Nicolas, and the director of the Northern Marianas College Cooperative Research Education & Extension Services Mr. Ross Hugh Manglona.

Freshwater aquaculture: Modules on freshwater prawn (19-23 January), tilapia (23-27 February), farm-based feeds (26-27 January), and culture of natural food organisms (26 to 30 January

and 23-27 March) were conducted for six participants from the private sector in the Philippines.

Fish health management course was arranged for Mr. Abdulmohsen Ibrahim Alasous of the King Abdulaziz City for Science & Technology in Saudi Arabia from 9 to 25 March.

Cage and pond culture of selected marine species course (10-24 March) was attended by: Mr. Hussain Ahmed of Maldives, Mr. Ronnie Guiral of General Santos City, Ms. Qisma Omar of Zamboanga City, Mr. Mark Lawrence Pleyto of Makati City and Ms. Rubelie Rayos of Pangasinan. Ms. Rayos, class chair, was almost in tears as she related how she found AQD as the right institution to get the right training. She

now feels confident to run the 50-ha farm she inherited, thanks to her trainers who unselfishly shared their know-how.

Ms. Deborah Naw of Singapore is in AQD for four-month internship beginning 19 March to learn aquaculture techniques at various AQD hatcheries and laboratories.



AQD attends four global meets

In joining international conferences, AQD expands its network of contacts for future collaborations as well as share the results of its research studies. AQD representatives attended four meetings recently:

AQD scientist Dr. Mae Catacutan was at the Aqua VIV Asia 2009 held 11-13



Dr. Catacutan , Ms. Evangelista
& Mr. Eguia with friends

March at the Bangkok International Trade and Exhibit Center in Thailand. She was there to obtain information on the latest issues on aquaculture feed & nutrition, practices in the aquafeed industry, and new products like additives, ingredients, growth enhancers. All these costly new additives led Dr. Catacutan to wonder if AQD can circumvent their use in its aquafeed formulations. She noted that what is important is knowing their uses.

AQD researcher Ms. Antonieta Evangelista, on the other hand, presented a paper on Growth and survival of Asian catfish *Clarias macrocephalus* (Gunther) fry reared at different stocking densities and feeding regimes in Laguna de Bay, Philippines in the international symposium on Catfish aquaculture in Asia held at Can Tho University in Vietnam. The conference was held last 5-7 December 2008. Associate researcher Mr. Ruel Eguia was also one of the participants.

AQD scientist Dr. Maria Rowena Eguia, Mr. Eguia, and Ms. Evangelista participated in the international symposium on Current research

trends in fisheries biology on 20 January 20 at the Philippine Carabao Center in Nueva Ecija, Philippines. The purpose of the conference is to disseminate results of the collaborative studies by Central Luzon State University and the National Taiwan University under the microsatellite and otolith project. Most presentations were on population genetics as applied in the conservation and management of freshwater fishes.

Dr. Eguia and associate scientist Dr. Nerissa Salayo attended the Regional workshop on climate change and food security: global challenges for improving the competitiveness of fisheries and fisheries based products in Asia which was held 19-20 March in Laguna, Philippines. The workshop was organized by WorldFish Centre (WFC) and SEARCA. The first day was spent discussing regional fisheries/aquaculture production as affected by climate change. Government fishery agency representatives from Cambodia, Indonesia, Malaysia, Philippines and Vietnam gave country papers. The second day was focused on the finalization of a draft proposal that WFC hopes to submit for funding. ☒

SEAFDEC participates in BIMSTEC Meeting

Representatives from SEAFDEC Secretariat and Training Department participated in the BIMSTEC Fisheries Meeting on Sustainable Fisheries in the Bay of Bengal organized in Bangkok, Thailand from 20 to 22 January 2009. The Meeting aimed to provide a forum for fishery policy makers from the Member Countries of the Bay of Bengal Initiative for Multi-sectoral Technical and Economic Cooperation (BIMSTEC), namely: Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka and Thailand as well as biologists, scientists and representatives from concerned agencies to share their views and experiences and

to jointly discuss the relevant dimension of sustainable fisheries in the Bay of Bengal (BOB).

The presentations on Ecosystem-Based Fishery Management Approach, Status of Bay of Bengal Large Marine Ecosystem and Its Future Direction, and Fisheries Management in the Bay of Bengal by the BIMSTEC Member Countries were followed by panel discussions conducted under the scope of “Environment, Ecosystem and Fisheries Resources: Challenge in the Bay of Bengal”. On the part of SEAFDEC, Dr. Natinee Sukramongkol of TD made a

review of the status of fishery resources in the BOB while two TD staff involved in the project on “Ecosystem-Based Fishery Management in the Bay of Bengal” also presented the outcomes of the various research studies undertaken under the project. Group discussion was also arranged, which came up with the major constraints/opportunities relevant to contemporary fisheries policy and management as well as the prioritized programs to be proposed for further implementation by individual BIMSTEC Member Countries and at the sub-regional level. ☒

AQD gains two industry collaborators in Malaysia and the Philippines

AQD Chief Dr. JD Toledo signed a two-year agreement on 31 March with Bari Aquatech Sdn Bhd, a business company based in Kuala Lumpur, Malaysia. AQD is to provide technical assistance to a proposed collaborative project on Innovation of the farming technology of tropical abalone (*Haliotis asinina*) for commercial application in Malaysia. Specifically, AQD will assist Bari Aquatech in implementing research studies to improve spawning & larval rearing, feed formulation, and enhance growth; in drafting & preparing reports and manuals; in establishing & operating a pilot abalone farm; and in training Bari staff. Bari, on the other hand, will provide logistics and shoulder AQD's expenses during the conduct of feasibility studies, as well as pay for the training.

For the Philippines, AQD signed an agreement on 5 March with the owner-cooperator of a freshwater reservoir in Dingle, Iloilo, Philippines for a project on verification / production trials on netcage culture of seabass and hybrid tilapia using SEAFDEC and commercial feeds. Like most agreements with the private sector, AQD will provide full technical backstopping while the cooperator allows access and use of his facility, which is for about 9 months. To date, fixed netcages have been fabricated, a caretaker's hut constructed, a series of fine mesh nylon screen installed to increase the surface area for natural food organisms, and black hybrid SEAFDEC strain tilapia fingerlings from

the AQD hatchery were stocked on 10 March at 15 fish/m³ or 937 fish per netcage. Feeding with recommended rates of SEAFDEC formulated diet and a commercial feed is ongoing and being done in three replicates.

In related development, AQD completed a site assessment requested by the Lambunao local government unit (LGU) in Iloilo. LGU Lambunao is interested in tilapia pond and cage culture to provide livelihood to its constituent-farmers whose fields were damaged by Typhoon Frank in June 2008. A combined 600 m² area was found to be suitable as assessed by AQD's research head Dr. Evelyn Grace de Jesus-Ayson, stock enhancement program leader Dr. Junemie Ramos and training specialists Ms. Kaylin Corre & Ms. Ruby Bombeo. After the agreement signing, a season-long training course will be conducted to prepare the LGU beneficiaries.

AQD has also been following up with its private clients under the ABOT AquaNegosyo program (Agree-build-operate-transfer aquabusiness) in the Philippines. AQD associate researcher Mr. Ruel Eguia visited the brackishwater farm of a client in Sorsogon from 22 to 23 January and evaluated the farm infrastructure and activities to date. The client is planning to culture milkfish, seabass and tiger shrimp. Mr. Eguia and



Dr. J Ramos and Dr. EG Ayson get their feet wet (above); and one of the assessed sites (below)

associate researcher Manuel Laron were also at the Aurora Special Economic Zone in Casiguran, Aurora from 6 to 7 March to be resource persons for visiting Taiwanese investors, Governor Bellaflor Angara, and BFAR Director Malcolm Sarmiento. AQD is providing technical assistance to the proposed demonstration hatchery component of the Casiguran Mariculture Park that is part of the zone. AQD's presence was requested by Philippine Senator Edgardo Angara.



AQD assists students from Thailand and Philippines

AQD hosted the on-the-job (OJT) student trainees from Thailand. Three undergraduates studying fisheries technology and aquatic resources at the Maejo University in Chiangmai, northern Thailand, were at AQD for four months (since 3 November 2008) and completed their OJTs on 26 February. Ms. Suwaree Kitikiew, Ms. Nilobon Janwong and Ms.

Sasipim Namwongprom interned at all the laboratories, hatcheries, and stations of AQD. They also attended the training of trainers on rural aquaculture.

AQD also assisted a high school student from Capiz National High School in west central Philippines to conduct a study on Screening and protein profile of

milkfish bile for antioxidant, anticancer, antimicrobial and as a physicochemical defense system. Ms. Angeli Joyce Yap Dy successfully hurdled the national-level science fair competition and will now compete at the Intel-sponsored international level in Nevada (USA) in May. She was advised by AQD associate scientist Dr. Rolando Pakingking.



Mitigation of Sea Turtle Mortality Risks Caused by Drifting Fish Aggregating Devices (DFADs)

Isara Chanrachkij¹, Anurak Loog-on², and Somboon Siriraksophon Ph.D.³

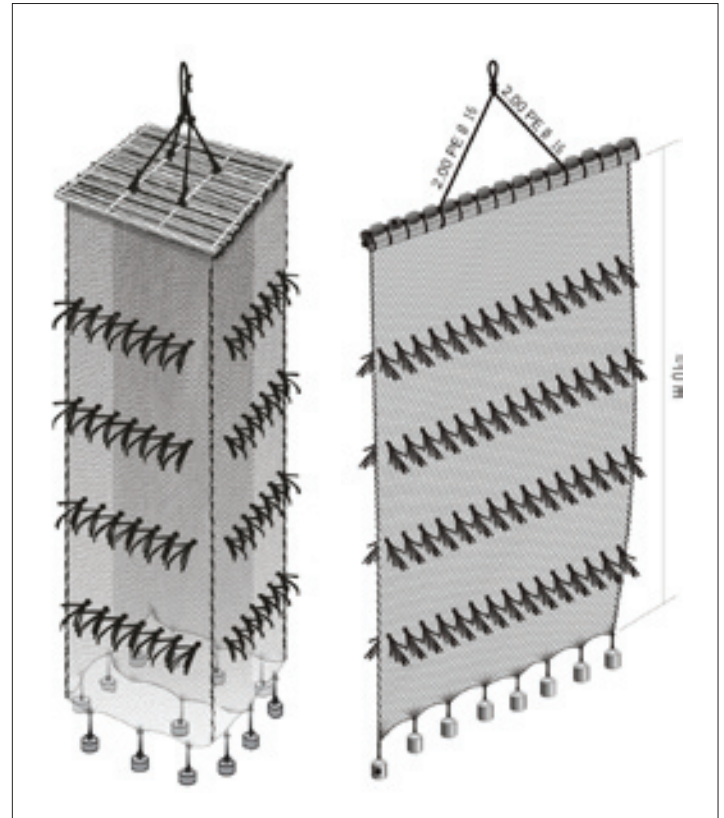
Introduction

Tunas are among the most important marine fishery resources of the world, with approximately 4.2 million tons harvested in 2007. More than half of the world's tuna catch is produced using tuna purse seine, making it the most important gear in tuna fishing industry. However, during the tuna purse seine operations, fishers need to apply techniques to gather the fish in order to obtain the maximum catch; i.e. fishing with the free swimming tunas, fishing tunas associated with porpoises, and fishing with drifting objects, e.g. Fish Aggregating Devices (FADs), etc. to attract the tunas and allow fishers to easily locate and catch the fishes.

Since 1993, SEAFDEC has been conducting fishery resources surveys and researches to promote tuna and skipjack fisheries in the high sea areas, particularly in the Eastern Indian Ocean. However, as free swimming schools of tuna are rarely found in this area, and the fishing tuna associated with porpoises is not well-accepted by consumers, the use of flotsams, e.g. wood, drifting log, etc., and the deployment of FADs have been important techniques used in gathering the schools of fish during purse seine operations. There are two types of FADs commonly used: the Anchor Fish Aggregating Devices (AFADs) and the Drifting Fish Aggregating Device (DFAD), however DFAD is envisaged to be more suitable considering that in the distant fishing grounds monitoring and maintenance of FADs is rather inconvenient, and AFAD could be lost during storms and strong water current.

Experiments on the use of DFADs and the incidental catch of sea turtles

DFADs could be generally classified by their floating parts, as the raft type (square) and curtain type designs. Both designs are fixed with "skirt" made of 10-meter used purse



*SEAFDEC Drifting Fish Aggregating Devices (DFADs):
raft type (left) and curtain type (right)*

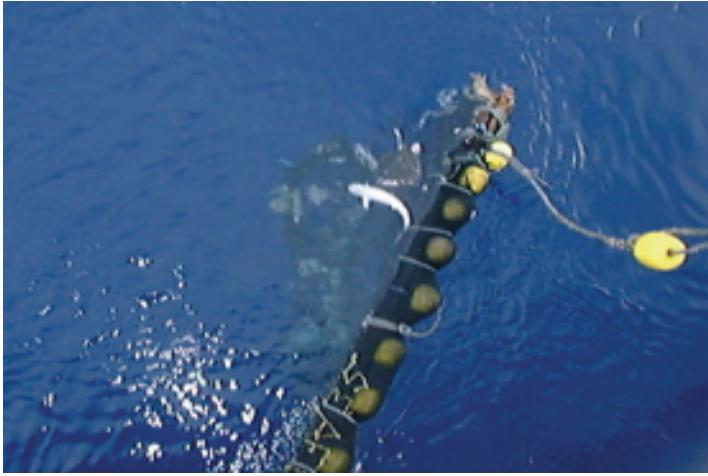
seine (or trawl) net panels, and attached with radio buoy or GPS positioning buoy to detect the position of DFADs after deployment. In the Eastern Indian Ocean, DFADs was designed originally for the Japanese R.V. Nippon Maru. The square DFADs with skirts are made of black nylon net with the twine size of 210/d180 and the mesh size of 100 mm. Based on the original DFADs, SEAFDEC attempted to improve the DFADs design by modifying the skirt, using Spanish mackerel gillnet material (green nylon net with the twine size of 210d/18, and the mesh size 100 mm) and black nylon net with the twine size of 210d/42 and the mesh size of 100 mm. With the modified DFADs, experiment was carried out from December 2002 to January 2003 to monitor its efficiency.

It was envisaged that the modified design would enmesh the small fishes around the DFADs and at the same time also attracting tunas and skipjacks around the DFADs. However, from the data collected from the DFADs deployed

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Dead sea turtle and shark found around the curtain type DFAD

by SEAFDEC, as well as from other unidentified abandoned DFADs found during the experiment, not only tunas but also other marine animals, e.g. several species of marine turtles (mainly Hawksbill and Ridley's turtles) and unwanted fishes, were incidentally entangled in the DFADs' skirt.

As also observed during the study, mortality of the sea turtles occurred during two steps of the fishing operations. The first was when the turtles entangle in the DFADs' skirt and could not free themselves, and the second was when the net is hauled back to the vessel, where turtles could be injured after having been entangled with net twine during the net hauling.

However, the entangled turtles in the DFADs was found only when the material of the net skirt of DFADs was changed to Spanish mackerel gillnet or to nylon net for the tuna purse seine net body (as experimented by SEAFDEC), while during the fishing operations conducted by the R.V. Nippon Maru, the DFADs with the original skirt design never had any incidental sea turtle catch. It was also observed that the incidental entangling of sea turtles in DFADs are particularly high in



SEAFDEC crew taking off the sea turtle from the net of an unidentified abandoned DFADs with garbage



Unidentified abandoned DFAD with garbage accumulating

the unidentified abandoned DFAD in the garbage areas where schools of bait fish for sea turtles congregate.

Recommendations to mitigate sea turtle mortality from purse seine DFADs

Based on the analysis of the study, the SEAFDEC research team came up with the following recommendations to reduce the mortality risks of sea turtles from tuna purse seine DFADs:

- Rigid net material should be used to assemble the net skirt of the DFADs while any drifting gillnet materials and tuna netting which is normally used to cover all DFADs, should be avoided. (After the SEAFDEC experiment in 2002-2003, the materials of the DFADs' skirt net used by the M.V. SEAFDEC have been changed to rigid net materials; and since then, not one sea turtle has been entangled in the DFADs.)
- Considering that abandoned DFADs drift with the oceanic current to a garbage area, resulting in high mortality of turtles; lost and abandoned DFADs could be minimized by improving the electronic equipment used in locating the DFADs as well as the durability and buoyancy of DFADs used during rough sea conditions.
- Research should be conducted on the use of alternative materials for DFADs, e.g. biodegradable materials such as coconut or palm leaves, or non-netting materials, to minimize any damage caused when the DFADs are lost or abandoned.
- Research should also be conducted to estimate the number of DFADs deployed in all fishing grounds of the world, in order to assess the mortality of sea turtles that may be caused by DFADs.
- Campaign for retrieving abandoned or lost DFADs in the sea, particularly in the garbage area should be considered and promoted.



REGIONAL PROGRAMS

Workshop on Certification and Eco-labelling

With the growing consumers' concern on the quality of fish and fishery products as well as the environmental impacts associated with fisheries and aquaculture activities, SEAFDEC with the support from the Swedish International Development Cooperation Agency (Sida) has been undertaking the study on eco-labelling of fish and fishery products; and on 30 January 2009 SEAFDEC Secretariat in collaboration with the Department of Fisheries of Thailand organized a one-day Workshop on "Certification and Eco-labeling" in Bangkok, Thailand. The Workshop aimed to provide the information on the principles of product certification as well as on branding schemes and developments of labels, particularly the eco-labels. The Workshop brought together key resource persons from

SEAFDEC, FAO, Marine Stewardship Council (MSC), SGS Thailand and Abba Seafood, joining and sharing their views and experiences relevant to the topic.

During the Workshop, the aspects and requirements that need to be considered both in the producers' and buyers' sides during the certification process were elaborated. The efforts of FAO in the harmonization of certification schemes, e.g. establishment of minimum requirements that are in line with the requirements of importing countries as well as the linkage between certification and eco-labelling and the Code of Conduct for Responsible Fisheries (CCRF), and their contribution to improved management and sustainability of fisheries were also discussed.

While taking note of the difficulties faced by the Southeast Asian region in certification of fisheries products, as most of the fisheries are small-scale, multi-species, multi-gear fisheries, it was clarified that fisheries certification may not necessarily be done for individual fishing boats but the process would rather focus on the assessment/certification of the whole management system of fisheries (e.g. by group of fisheries, fishing areas/gears, etc.). The Meeting also identified the opportunities and future direction for the region with respect to certification, e.g. a working committee among FAO, SEAFDEC, DOF Thailand and MSC may be established to identify potential fisheries, and discuss the possible approaches/steps that need to be considered and implemented in the fisheries certification process. ❖

SEAFDEC organizes HRD Workshop on FOVOP in Lao PDR

The ASEAN-SEAFDEC HRD Workshop on the Promotion of "One Village, One Fisheries Product (FOVOP)" in Lao PDR was organized in Thalat, Keooudom District, Vientiane Province, Lao PDR on 23-27 March 2009. The Workshop was organized by the Department of Livestock and Fisheries (DLF) and hosted by the Provincial Agriculture and Fisheries and Office of Vientiane Province, Lao PDR in collaboration with SEAFDEC Secretariat led by Ms. Pouchamarn Wongsanga, with the funding support from the ASEAN Foundation (Japan-ASEAN Solidarity Fund).

The Workshop was opened by Mr. Bouaphan Konedavong, Deputy Director of the Provincial Agriculture and Forestry Office, Vientiane Province. This Workshop in Lao PDR is considered the first activity under FOVOP project

that implemented as country's activities in the Region. The Workshop was participated in by 10 Government Officials and 10 women from local communities. The Workshop had the objectives with achieved in providing awareness building on the Regional Strategy for the Promotion of FOVOP as adopted at the Regional level in August 2008; and identifying potential FOVOP Products and Services in Lao PDR with local Communities. In addition, to facilitate the promotion of FOVOP in Lao PDR, awareness building on related issues to local communities (targeting women's leader) was also provided i.e. Role of Women in the Promotion of FOVOP in Lao PDR, Community-based Credit System in Fisheries Sector, Linkage of Community-based Credit System and Micro Group Business, Traditional Product Processing for the Promotion of FOVOP in Lao PDR.



Second Sub-Regional Meeting on the Gulf of Thailand

(Continued from Page 1)

and (3) development of a communication system with focal point at the SEAFDEC Secretariat to facilitate exchange of information, e.g., dedicated email group for the sub-regional areas starting with the Gulf of Thailand sub-region.

Moreover, in order to strengthen the MCS capacity in the sub-region, SEAFDEC was requested to develop a specific course on MCS for the sub-regional areas of Southeast Asia starting with the Gulf of Thailand. While dialogues on the other sub-regional areas are envisaged to take place, to enable the countries to understand the activities in the sub-regions and share knowledge and experiences on responsible fishing practices in the sub-regions. ❖

National Workshop for the Development of STF held in Thailand

The importance of knowledge of the status and trends of capture fisheries and fishery resources, as a key to sound policy-making and responsible fisheries management is widely recognized. Since 2008, SEAFDEC has been conducting the activity to support Thailand as the pilot country in the development of Information on Status and Trends for Marine Capture Fisheries and Aquaculture (STF), under the scope of Marine Capture Fisheries. Thus in 2008, several consultation meetings were convened in collaboration with the Department of Fisheries (DOF) of Thailand and relevant national agencies to discuss the priority areas and issues that need to be incorporated in the STF Report. In order to finalize the draft STF Report, the DOF organized a National Workshop for the Development of

Information on Status and Trends for Marine Capture Fisheries of Thailand on 28-29 January 2009.

During the Workshop, discussion was focused on the difficulties and concerns during the report preparation, e.g. on working mechanism/process, etc. as well as on the problems/constraints related to the existing national fishery statistics/information (e.g. on the availability, quality, accuracy, etc. of data and information). Recommendations were therefore made for the DOF to enhance collaboration with relevant agencies to improve the system/mechanism to collect data/information required for development planning and management of fisheries.

In the development of national STF Report of Thailand, the national agencies involved were mainly those under the DOF of Thailand (e.g. Fisheries Information Technology Center (FITC), Fisheries Foreign Affairs Division (FFAD), Marine Fisheries Research and Development Bureau



Dr. Poonsap Wirulhakul from DOF, delivering the opening remarks

(MFRDB), Fisheries Economics Section (FES); the National Statistical Office (NSO), etc.); the Department of Marine and Coastal Resources, the Marine Department, the academe (i.e. Chulalongkorn University and Faculty of Fisheries of Kasetsart University), and fisheries-related organizations/associations, (Fish Market Organization of Thailand, Thai Far Sea Fisheries Association, Thai Fisheries Association, Thai Frozen Food Association, and Thai Food Production Association). As envisaged, the national STF Report could further contribute to the sustainable development of marine capture fisheries of Thailand, while the experiences and collaborative spirit gained through the report preparation process would be expanded to the other areas of importance to maximize the use of available fishery statistics and information to support fisheries policy planning and management in the future. ❖



The workshop participants from the DOF and other fisheries-related organizations in Thailand

ASEAN Training Course on Post-Harvest Technology on Aquaculture

Two MFRD officers were invited by the ASEAN Secretariat to participate as resource speakers at the ASEAN Training Course on Post-Harvest Technology on Aquaculture in Nha Trang, Vietnam from 22 to 24 March 2009. The training course was organised by the International Cooperation Department (ICD) in collaboration with the Ministry of Agriculture and Rural Development of Vietnam (MARD) and the ASEAN Secretariat and was funded by Japan through the Ministry of Agriculture, Forestry and Fisheries (MAFF).

The officers presented lectures on 'Fish Production and Consumption Trends in ASEAN', 'Fish Utilisation and Post Harvest Technologies in ASEAN' and 'Seafood Safety and the Strategy for Seafood Safety Assurance in ASEAN.'

They also visited Nha Trang University on 24 March 2009, to establish contacts and foster good relations for future collaboration in the area of seafood processing. ❖



MFRD Officer presenting a lecture during the Training Course

TD organizes training course on sail boats

TD organized the training course on the Use of Sails for Fishing Boats from 17 to 19 February 2009 in Rayong Province, Thailand. Twenty participants from the Department of Fisheries (DOF) of Thailand attended the course which was aimed at providing the DOF staff with the necessary knowledge and skills in preparation for their role as focal points in promoting and transferring to fishermen the technology on the use of sails for fishing boats. The course consisted of two parts: 1) the lecture part, introducing the techniques on how to install and control sails in boats, as well as the topics on safety at



sea; and 2) practical session, involving the actual installation of a sail in a fishing boat, which was conducted in the coastal area of Rayong Province. The participants also had hands-on experience in controlling the sail boats



The lecture and practical sessions of the training course

by themselves. The use of sails in fishing boats is being promoted by SEAFDEC to maximize the alternative use of energy such as wind energy, in order to save on operation costs in fishing activities.



Regional Workshop on the Reduction of the Impacts of Fishing on Coastal and Marine Environments in the Southeast Asian Waters

Organized by SEAFDEC/TD from 12 to 15 January 2009 in Samut Prakarn, Thailand under the auspices of the Japanese Trust Fund Program, the Regional Workshop was attended by experts and representatives from the SEAFDEC Member Countries and organizations involved in regional and national programs and activities related to the reduction of impacts of fishing gear/practices on the coastal and marine environments. Specifically, the Workshop aimed to share information and experiences on issues related to the reduction of the impact of fishing gear in coastal and marine environments in the Southeast Asian waters; and to come up with recommendations on the reduction of such impacts as well as on minimizing sea turtle by-catch in fisheries.

The Regional Workshop identified and discussed the major issues and concerns on the reduction of the impacts of fishing on the coastal and marine environments in the Southeast Asian waters such as: (1) light fishing; (2) use of stationary gears (e.g., tidal traps, stow-net, fyke net, Japanese set net, muro-ami, choko-ami, etc.); (3) use of active gears

(e.g., trawls, dredge, push net, etc.); (4) use of semi-passive gear and small-scale fishing gear (e.g., pot, gill net, etc.); (5) longline; and (6) purse seine operation associated with FADs. In addition, actions needed for mitigating the impacts on sea turtles and others (e.g., interaction with sea turtles and fisheries) were also suggested while the possibility of establishing the IFCOME Network was also considered. The Action Plan for 2009 and Three-year Action Plan were developed corresponding to the various issues and concerns with the suggestion that such plans should be carried out not only by the countries at the national level and SEAFDEC at the regional level but also through the proposed collaborative programs that were proposed and initially explored during the Workshop. Such initial collaborative efforts could include: (1) WWF-SEAFDEC by-catch collaborative program; and (2) IOSEA Marine Turtle MOU and SEAFDEC turtle conservation program.

On the other hand, the proposed IFCOME Network aims to facilitate the sharing and dissemination of information on the implementation of programs/

initiatives related to the reduction of the impact of fishing and in monitoring the development of fishing gear and practices for the purpose of reducing their impacts on the environment. Thus, the IFCOME Network could contribute to: (1) improving the current fishing gear technology and its actual practices to reduce impacts from fishing activities; (2) enhancing inter-agency and inter-sectoral coordination at the national, regional and international levels for achieving sustainable fisheries management and development in the Southeast Asian region through development of responsible fishing gear technology and practices; (3) strengthening regional cooperation on R&D, technology transfer, and resources capacity building on the issues related to reduction of impact of fishing gear and practices; and (4) widening the network of people, government, organizations for reducing the impact of fishing gear and practices to coastal and marine environments. In this regard, SEAFDEC through TD was requested to spearhead the IFCOME Network considering that this is beneficial to the countries in the Southeast Asian region.



SEAFDEC participates in international workshops

The representatives from SEAFDEC, Mr. Bundit Chokesanguan from TD and Dr. Somboon Siriraksophon from SEAFDEC Secretariat, participated in the Technical Workshop on Mitigating Sea Turtle By-catch in Coastal Net Fisheries, which was organized by IUCN in collaboration with WPFMC, IOSEA, IOSEA, and the U.S. National Marine Fisheries Service/Southeast Fisheries Science Center in Brisbane, Australia from 13 to 19 February 2009. The main objectives of the Workshop are to (i) review the state of knowledge of effective and commercially viable methods for avoiding and reducing sea turtle entanglement in artisanal coastal gillnet and other fixed and drift net fisheries, (ii) develop partnerships to conduct fishery-specific assessments of turtle by-catch, and commercial demonstrations and experimental trials of modified fishing gear, and (iii) develop research plans, experimental designs,

and funding proposals for fishery-specific assessments and trials.

Almost 50 participants from all over the world attended the workshop, including gear technology experts with experience in gillnet-turtle avoidance methods, representatives from fixed and drift net industry, and fishery management authorities from priority fisheries areas known to have problematic turtle by-catch. The representatives from SEAFDEC presented the progress and development of the SEAFDEC programs on mitigating of sea turtle interactions in fisheries in Southeast Asia and shared experiences on the implementation of activities on mitigating the interactions in coastal net fisheries, and promoted and publicized SEAFDEC activities.

On the other hand, Mr. Bundit participated in the 29th International Symposium on Sea Turtle Biology and

Conservation and its associated meetings. The Symposium, which is actually organized every year by the International Sea Turtle Society, had its 29th session held for the first time “down under” in the Southern Hemisphere, where it was only the second time that the Society held its Symposium in the Indo-Pacific Region. About 800 representatives from 86 countries participated in the Symposium, where 108 oral and 201 poster papers were presented. At the Symposium, Mr. Bundit presented the work of SEAFDEC on the mitigation of fisheries interactions with sea turtles through one oral presentation on “The use of Turtle Excluder Devices in Southeast Asia” and one poster presentation on “The Promotion on the Use of Circle Hooks in Southeast Asia”. Moreover, he also publicized the SEAFDEC activities on sea turtle and fisheries related issues and promoted such activities to the participants in the Symposium. ☒

TD organizes on-site training course on Fish Landing Data Analysis in Cambodia

From 17 to 19 February 2009, TD organized the on-site training course on Fish Landing Data Analysis in Cambodia. Since November 2005, TD has implemented the project on Integrated Coastal Resources Management in Sihanoukville, Cambodia (ICRM-SV), under which many activities have been implemented to support community fisheries management and coastal fishery resources management. The collection of basic data on daily fish landing is one of the activities which had been carried out by enumerators in the project area, and the collected data were provided to TD to be further analyzed and published. As this project would soon be transferred to the Fisheries Administration (FiA) of Cambodia to ensure the sustainability of the project, the training course on Fish Landing Data Analysis was therefore conducted to acquaint the concerned FiA

staff on analyzing fish landing data, etc. The course was opened by Mr. Doung Samath, Director of Cantonment of the Fisheries Administration of Kampong Som on 17 February 2009, and was participated in by six staff members from the Cantonment.

The course covered topics on data collection, basic concepts on indicators, background of landing data in ICRM-SV project site, selected indicators for the project, and recommended additional

indicators to monitor the crab bank project. Moreover, the participants also had practical session, analyzing the data using several functions in the Microsoft Excel Software. The database management system for small pelagic fishery namely “FishBio” (developed by SEAFDEC/TD) was also introduced, and the manual was distributed to all participants. ☒

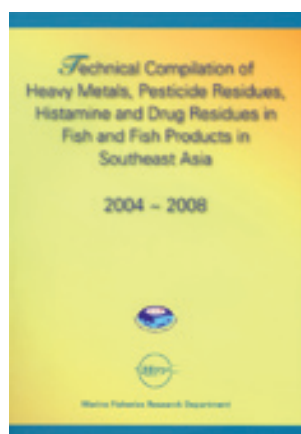


The training participants (left); and participants during the practical session using a software to analyze data (above)

FUTURE ACTIVITIES

Date	Venue	Title	Organizer
2009			
4-28 May	Philippines	Training on Freshwater Fish Breeding and Farming	AQD
11-15 May	Manado, Indonesia	World Ocean Conference 2009- "Climate Change Impacts to Oceans and The Role of Oceans to Climate Change"	WOC
14-15 May	Hochimin City, Vietnam	Regional Seminar on EC Regulation to Prevent, Deter and Eliminate IUU Fishing	MARD-Vietnam
18-20 May	Cambodia	1 st HRD Workshop for the Promotion of "FOVOP" in Cambodia	Secretariat
18-22 May	Colombo, Sri Lanka	Regional Workshop on Practical Implementation of Ecosystem Approach to Fisheries and Aquaculture in the APFIC Region	FAO RAP
18 May-23 Jun	Philippines	Training on Marine Fish Hatchery	AQD
26-27 May	Thailand	Preparatory Meeting of the ASEAN Fisheries Consultative Forum (AFCF)	ASEAN
26-28 May	Samutprakarn, Thailand	Regional Workshop on the Standard Operation Procedure and Development/Improvement of Sampling Gears for the Deep-Sea Resource Exploration	TD
27-28 May	Bangkok, Thailand	ASEAN-FAO Regional Conference on Food Security	ASEAN, FAO
3-5 June	Vietnam	17 th Meeting of the ASEAN Sectoral Working Group on Fisheries (ASWGF _i)	ASEAN
8-23 June	Samutprakarn, Thailand	Training Course on Coastal Fisheries Management and Extension Methodology for Thai Officers	TD
15-19 June	Indonesia	1 st HRD Workshop for the Promotion of "FOVOP" in Indonesia	Secretariat
15-19 June	Cambodia	2 nd HRD Workshop for the Promotion of "FOVOP" in Cambodia	Secretariat
15-19 June	Bangkok, Thailand	FAO-SEAFDEC Workshops on the Assessment of Fishery Stock Status in South and Southeast Asia'	FAO-SEAFDEC
25-26 June (tentative)	Bangkok, Thailand	SEAFDEC Departments' Chief Meeting	SEAFDEC
29 June - 3 July	San Sebastian, Spain	2 nd Joint Meeting of Tuna Regional Fisheries Management Organization 2009	CCSBT, IATTC, ICCAT, IOCT, WCPFC
3-23 July	Philippines	Training on Abalone Hatchery and Grow-out	AQD
7-17 July	Lao PDR	3 rd Joint Regional Training on Community-Based Freshwater Aquaculture for Remote Rural Areas of Southeast Asia	Secretariat
30-31 July	Samutprakarn, Thailand	Regional Workshop on Information Gathering and Cetacean Research in the Southeast Asian Waters	TD
July (tentative)	(To be defined)	Fishing Record and Inventory	SEAFDEC/Sida
3-13 August (tentative)	Myanmar	HRD Workshop for the Promotion of "FOVOP" in Myanmar	Secretariat
17-18 August	Manado, Indonesia	International Seminar on Building a Comprehensive Maritime Security and Possible Benefit to the Effort to Minimize Illegal Fishing in the Region	RPOA-IUU
19-21 August	Manado, Indonesia	Workshop on MCS Curriculum Development and Capacity Building	RPOA-IUU
24-28 August (Tentative)	Thailand	Regional Technical Consultation on Regional Advisory Committee for Fisheries Management in Southeast Asia (RAC)	SEAFDEC
August (tentative)	Phuket, Thailand	Meeting of the Sub Regional: Andaman Sea	SEAFDEC/Sida
Aug /Sep (tentative)	Singapore	Regional Technical Consultation on Chemical and Drug Residues in Fish and Fish Products in Southeast Asia (Biotoxins Monitoring in Fish and Fish Products in ASEAN)	MFRD
Aug /Sep (tentative)	Singapore	End-of-Activity (EOA) Workshop on Good Manufacturing Practices for Traditional Products Establishments	MFRD
5-9 October	Bangkok, Thailand	2 nd FAO-SEAFDEC Workshops on the Assessment of Fishery Stock Status in South and Southeast Asia'	FAO-SEAFDEC
12-14 October (tentative)	Malaysia	10 th Meeting of SEAFDEC Information Staff Exchange Program (ISEP)	SEAFDEC

Technical Compilation of Heavy Metals, Pesticide Residues, Histamine and Drug Residues in Fish and Fish Products in Southeast Asia 2004-2008



The publication entitled, 'Technical Compilation of Heavy Metals, Pesticide Residues, Histamine and Drug Residues in Fish and Fish Products in Southeast Asia' was prepared and published based on the regional surveys undertaken by SEAFDEC/MFRD under the project on "Chemical and Drug Residues in Fish and Fish Products in Southeast Asia".. It contains the baseline information on the current situation of chemical and drug residues in seafood in some Southeast Asian countries. ☒

New AQD's Publications

2008 Highlights, 40-page report of AQD's activities and progress in 2008

Milkfish culture in sea cages, 2-page flyer on site selection, cage culture & design, investment required, AQD work on developing an early warning system for pollution, and mariculture zones established by the Philippine government

Grouper, a poster illustrating full-cycle grouper culture, from hatchery to grow-out ☒



Note for contributors

The SEAFDEC Newsletter publishes quarterly news on all aspects of fisheries in Southeast Asia. The Editors reserve the right to accept and/or abridge articles based on available space. Anyone wishing to submit an article to the SEAFDEC Newsletter is requested to send it to the Editor in Chief or Editors at the given addresses.

Information in this Newsletter may be quoted only if reference is made to SEAFDEC.

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Regional Train-the-Trainer Workshop on Backyard Fishery Post-Harvest Technology

The Regional Train-the-Trainer Workshop on Backyard Fishery Post-Harvest Technology was organised by MFRD from 3-11 March 2009 with objectives to provide Train-the-Trainers training to the country focal points (participants) using the training manual and materials on fish quality preservation and processing of fish products developed by MFRD for this project. The Workshop was attended by participants from Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand and Vietnam.

Lecture topics included concept of fish quality, freshness, nutritive value and wholesomeness, fish handling and preservation (icing and freezing), packaging of fish products as well as maximising utilisation of fish catch through value-added products. The processing focused on products such as fish sweetmeat, fish otah, fish sausage, tuna pico and fish muffins, which makes use of basic equipment and technology suitable for backyard fishery industries as the purpose of the project is to provide human resource development (HRD)

for coastal fisheries communities. A field visit to the Jurong Fishery Port was also arranged for participants to observe fish landing facilities and activities. The participants were each given a copy of the Training Manual on Fish Quality Preservation, as well as processing manuals, which they could use to conduct on-site HRD activities in their respective countries. The workshop concluded with a meeting and discussion on the proposed on-site implementation of HRD activities by various ASEAN member countries.

This training workshop is part of the Human Resource Development (HRD) Project on Poverty Alleviation and Food Security by Fisheries Intervention in the ASEAN Region supported by the ASEAN Foundation. The objectives of the HRD project are 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. This is 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. Special focus would also be given to rural areas and fishery communities in the ASEAN region. MFRD is co-ordinating the implementation of HRD activities, in the area of backyard fishery post-harvest technology, to be conducted in the eight participating ASEAN member countries of Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand and Vietnam. ❖



AQD welcomes new Deputy Chief, sends off outgoing Deputy with much appreciation

With the term of Dr. Hiroshi Ogata ending in March, AQD welcomes its new Deputy Chief Dr. Teruo Azuma who will serve a two-year term starting April. Dr. Azuma, 50, hails from Tochigi, Japan and is married with a 21-year old daughter and an 18-year old son. He is an expert in fish physiology, breeding,

behavior and ecology. His last post prior to moving to AQD is Leader of the Breeding and Physiology Section of the Freshwater Fisheries Division of Japan's National Research Institute of Fisheries Science. He has worked on salmon and trout, and his most recent and significant research outputs are published

in the science journals Aquaculture, Zoological Science, Behavior Genetics, and Fisheries Science. Dr. Azuma is a graduate of Kagoshima University (BSc) and Kyushu University (Msc and PhD).

AQD held a welcome party for Dr. Azuma on 12 March which was also a farewell party for outgoing Deputy Chief Dr. Hiroshi Ogata. In giving tribute to the contributions of Dr. Ogata, AQD Chief Dr. Joebert Toledo said that Dr. Ogata is a respected figure who has implemented with much care the new activities under the Government of Japan Trust Fund Programs on development of technologies & human capacity building for sustainable aquaculture, fish disease surveillance, and stock enhancement. ❖



Dr. JD Toledo presents a plaque of appreciation to outgoing AQD Deputy Chief Dr. Hiroshi Ogata (left); and Dr. Teruo Azuma, new Deputy Chief of AQD (above)