

SEAFDEC AQD Matters

Newsletter of the SEAFDEC Aquaculture Department (AQD), Tigbauan, Iloilo, Philippines

AQD presents its programs in Thailand

AQD was commended for the achievements made on its R&D programs in 2014 during the 37th SEAFDEC Program Committee Meeting (PCM) in Ubon Ratchathani, Thailand from 1-5 December 2014. PCM essentially endorsed the 2015 planned activities but requested AQD to intensify the dissemination of its R&D results for the benefit of various stakeholders, particularly the small-scale farmers in the region. In particular, AQD was asked to give priority in disseminating the following:

- Important findings of the project on sustainable aquaculture particularly on development of aquafeeds for selected species at specific growing stages, tissue culture of seaweeds, production of disease-free *Penaeus monodon*, and withdrawal period of antibiotics in important aquatic species;
- Experiences and lessons learned from the project on resource enhancement of species of international significance that are threatened or over-exploited in Southeast Asia through stock releases and breeding/seed production of the humphead wrasse, abalone, mud crab, sea cucumber and other economically important species.

The program committee gave the following suggestions for AQD to consider, depending on the availability of resources and cooperation of the requesting country:

- Collaborate with Malaysia on research that aims to address viral diseases in *Penaeus monodon* as well as the development of specific pathogen-free broodstock of *P. monodon*; and
- Provide assistance to Myanmar in (a) efforts to conduct studies on the culture of species suitable for different climatic conditions; (b) improving the methodology adopted by the country in the larval production for some important fish species and mud crab in protected areas; and (c) addressing problems on diseases of *Macrobrachium* spp., through technical support to enhance the capacity of local technical staff and on a cost-sharing basis.

PCM also reviewed the activities of the SEAFDEC Secretariat and AQD's sister departments in Thailand, Singapore, and Malaysia. It was held back to back with the 17th Meeting of the



Participants during the meeting (top) and their field trip in Pha Taem National Park located in Northeast of Ubon Ratchthani City. The park's boundary is next to Lao PDR's border (above)

Fisheries Consultative Group/ASEAN-SEAFDEC Strategic Partnership (FCG-ASSP) where discussions focused on the follow-up actions to the directives given by the SEAFDEC Council or noted in fisheries-related meetings organized by SEAFDEC and ASEAN. The meeting noted and endorsed two new projects proposed by AQD under GOJ for 2015 and these are: (1) reinforcement and optimization of fish health management and the effective dissemination in the Southeast Asian region; and (2) environment-friendly, sustainable utilization and management of fisheries and aquaculture resources.

The PCM and FCG participants were delegates from SEAFDEC's 11 member countries and from regional organizations and missions. AQD was represented by Chief Dr. Felix Ayson, Deputy Chief Dr. Takuro Shibuno, Research Head Dr. Ma. Junemie Hazel Lebata-Ramos, Technology Verification and Demonstration Head Dr. Mae Catacutan, Training and Information Head Dr. Evelyn Grace Ayson and Special Departmental Coordinator Ms. Belen Acosta.

AQD will host the next Program Committee Meeting and Fisheries Consultative Group Meeting this November 2015.



Participants of the 37th Program Committee Meeting

AQD librarian receives award



Kudos to AQD Library Head Mr. Stephen Alayon! He received a *Distinguished Service Award* from the Philippine Librarians Association, Inc. (PLAI) for his significant contributions and involvement in the activities of PLAI. Mr. Alayon was particularly recognized for his efforts in sharing relevant information on librarianship and in organizing conferences, seminars, and other continuing professional development activities that can enhance the competencies of librarians.

The award was given on 28 November 2014 at the Century Park Hotel, Ermita, Manila.

AQD Library Head Mr. Stephen Alayon with fellow awardee Ms. Elvira Lapuz. Both awardees were elected executive vice president and president, respectively, of the PLAI National Board of Trustees for 2015-2016

Fish diseases discussed in Viet Nam

Two SEAFDEC/AQD scientists attended the 9th *Symposium on Diseases in Asian Aquaculture (DAA9)* from 24 to 28 November 2014 held at Ho Chi Minh City, Viet Nam.

During the conference, Dr. Rolando Pakingking Jr talked about his study on the *Load and composition of the bacterial microbiota of tilapia (Oreochromis niloticus) cultured in earthen ponds in the Philippines*. He reported that a total of 20 bacterial genera and 31 species were identified, majority of which were gram-negative bacteria constituting 84% of the overall bacterial isolates examined. The bacteria identified *Aeromonas hydrophila*, *Bacillus* spp., *Plesiomonas shigelloides*, *Shewanella putrefaciens*, *Pseudomonas fluorescens*, *Staphylococcus* spp., and *Vibrio cholerae* were dominant in the fish, in the pond sediment and rearing water, except *S. putrefaciens* and *V. cholerae* which are not present in the water samples examined. According to Dr. Pakingking, this only indicates that resident bacteria in the pond water and sediment typify the composition of bacterial microbiota in the gills and intestine of tilapia. He also added that this bacterial microbiota in the gills and intestine of tilapia

may cause disease epizootics under stressful conditions.

Dr. Eleanor Tendencia on the other hand, presented two posters namely *Effect of different salinities (5, 20, 37 ppt) at low temperature (22°C) on WSSV infected shrimp* and *Two-month mortality syndrome and other problems encountered by shrimp farmers in the Philippines*. Dr. Tendencia's first poster shows the results of the study that there is no significant difference in shrimp mortality and viral load among the shrimps infected with white spot syndrome virus (WSSV) reared at different water salinities (5, 20, 37 ppt).

The second poster focuses on the two-month mortality syndrome (TMMS) that is one of the major problems faced by shrimp farmers in the Philippines who are into extensive polyculture. Other problems faced by shrimp farmers such as protozoan infestation in the gills, the cooked-like appearance of live shrimps, and environmental problems like pollution were also shown in the poster. To avoid these problems, some of the preventive measures recommended are the proper implementation of the greenwater culture system and organic farming.

Prior to this conference, Dr. Pakingking also represented AQD at the 13th *Asia Regional Advisory Group on Aquatic Animal Health* on 22-23 November 2014, also held at Ho Chi Minh City, Viet Nam. The Advisory Group was established by the Governing Council of the Network of Aquaculture Centres in Asia-Pacific (NACA) to provide advice to NACA members in the Asia-Pacific region on aquatic animal health management. Dr. Pakingking was elected as the new Vice Chairperson of the Advisory Group.



AQD scientist Dr. Rolando Pakingking Jr presenting his study on bacterial microbiota of tilapia

Training Courses on...

soft-shell crab farming

Three employees of Santeh Feed Corporation completed the training course on soft-shell crab farming on 24 January held at AQD's Dumangas Brackishwater Station.

During the six-day training, AQD crab experts Dr. Fe Dolores Estepa and Dr. Emilia Qunitio discussed with the participants the biology of mangrove crab species;

nursery management; grow-out culture in ponds, pens, and cages; and soft-shell production. The trainees also had practical sessions on soft-shell crab production.



A trainee checks the water quality of the mud crab nursery pond



The participants showing their training certificates together with AQD crab experts Dr. Fe Dolores Estepa (rightmost) and Dr. Emilia Qunitio

nursery & grow-out culture of mangrove crabs

A training course on *Nursery and grow-out culture of mangrove crabs* (mud crabs) was organized by AQD and Winrock International last 25-27 February at the Northern Mindanao School of Fisheries (NMSF) campus in Buenavista, Agusan del Norte.

There were 35 participants including mangrove crab (mud crab) growers from Agusan, Surigao and Dinagat Island as well as fish growers interested in diversifying their crops, some faculty members of NMSF and technical staff for the fisheries project of Winrock International. Students enrolled in the Fisheries and Aquaculture Program of NMSF also attended the course as observers.

The course comprised of lectures and practical sessions on different aspects of mangrove crab production. Lecture topics included an overview of the mangrove crab industry (in the Philippines, the region and the world), biology of mangrove crab, hatchery, nursery and grow-out production systems, feeds and feeding management and value-addition (fattening, production of soft-shell crabs). The hands-on sessions included (1) identification of the different mangrove crab species, (2) pond preparation, (3) fabrication/construction and installation of nursery cages and shelters, (4) packing, transport and stocking of crablets; (5) feed preparation and computation of feed ration; (6) monitoring of stocks and water quality parameters and (7) record keeping. During the training, a demo set-up for primary and secondary nursery was established. A demo pond for grow-out culture was also stocked with match-box-size crablets.

After the training, the demo site will be managed by a technician from NMSF with technical support from SEAFDEC/AQD. The demo site will also serve as a field lab for students under NMSF's aquaculture program. The participants thanked the resource persons for the concepts and skills that they learned from the course. They also expressed hope mangrove crab hatcheries will be established in the region in the near future to address problems with supply of good quality seeds for mangrove crab farming.



Trainees during the stocking of crablets



AQD scientists Dr. Emilia Qunitio and Dr. Fe Dolores Estepa showing participants the distinguishing features of the different mangrove crab (mud crab) species

All photos by CV Genzola

milkfish farm operation

Two staff from Tonga's Ministry of Agriculture and Food, Forests and Fisheries (MAFFF) successfully finished a special course on *Milkfish farm management and operations* from 28 January – 11 February at AQD's Tigbauan Main Station.

MAFFF's Principal Fisheries officer Mr. Poasi Fale Ngaluafe and Senior Fisheries assistant Mr. Tonga Latu Tuiano joined lectures on broodstock management and spawning techniques;

production of natural food organisms for fish larvae; and larval and nursery rearing techniques as well as practical sessions on fry collection, stock sampling, monitoring and harvest. The trainees also visited farms that practice intensive (Hautea Milkfish Farm), traditional (Bermejo Milkfish Farm), modular (Capiz State University Farm)



Mr. Tuiano practices water and soil analysis at AQD laboratory

and integrated (Roxas City Integrated Farm) methods through the study tour. The trainees were funded by Food and Agriculture Organization of the United Nations.

Research seminars



Dr. Abigail Elizur

Director of Genecology Research Center
University of the Sunshine Coast (Australia)

"Biotechnology applications in marine aquaculture"

On 20 January, Dr. Elizur discussed four major biotechnology applications such as (1) manipulation of finfish reproduction, (2) surrogate technology in finfish, (3) monosex technology in prawns and (4) spawning inducing peptides in oysters.

She discussed hormone manipulations to help both finfish (using gonadotropin-releasing hormone or GnRH) and oysters (peptide hormones) to advance pubertal development and induce spawning. She also talked about her study on surrogate technology as an alternative broodstock system. Basically, it aims to engineer yellowtail kingfish (YTK) to produce southern Bluefin tuna (SBT). The experiment uses germ cell transplantation wherein SBT germ cells are transplanted in the abdominal cavity of YTK where they migrate to the immature gonads of the host. However, no proliferation of the Bluefin tuna germ cells could be detected in the kingfish. Dr. Elizur and her team are now planning to study surrogate technology on giant grouper. She also discussed creating monosex populations in crustaceans using androgenic gland manipulations specifically in *Penaeus monodon*. The process includes removal of the androgenic gland (a male specific gland which regulates masculine development and maintenance) located at the base of the fifth walking leg, will cause males to become females.



Prof. Wayne Knibb

Associate Professor
University of the Sunshine Coast

"Genetics science and technology used in the domestication of new aquaculture species"

On 29 January, Prof. Knibb said that many marine organisms are group spawners, or have numerous but tiny larvae so it is not easy to raise families separately or use physical tags.

According to him, using DNA microsatellites markers is one of the tools that can be used in monitoring inbreeding and avoiding crossing of relatives across generations. He explained that once pedigrees are established inbreeding over many generations can be managed. In addition, desirable commercial information can be gathered such as the degree to which traits are genetically influenced as well as the genetic correlations among traits. This information is essential to determine selection indices. He further discussed that pedigrees facilitate the discovery of genes responsible for traits such as genes for fillet fat content in kingfish or genes for viral resistance in shrimp.



AQD Matters

is published monthly by the
Development Communication Section
SEAFDEC Aquaculture Department
Tigbauan, Iloilo, Philippines

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