



Bureau of Fisheries and Aquatic Resources extension workers visit an oyster grow-out site in Pan-ay, Capiz. SEAFDEC/AQD conducted a training course on *Oyster Seed Production, Nursery and Grow-out* to empower extension workers and promote the expansion of the oyster aquaculture industry.

aqd matters

March-April 2017

Newsletter of the SEAFDEC Aquaculture Department, Tigbauan, Iloilo, Philippines

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SEAFDEC/AQD Scientist pushes for equitable sharing of benefits from marine genetic resources in international waters

A scientist at SEAFDEC/AQD pushed for the equitable sharing of potential benefits from marine resources in international waters as she became part of the Philippine delegation in a United Nations Committee meeting.

Dr. Maria Rowena R. Eguia delivered one of several Philippine statements during the 3rd meeting of the “Preparatory Committee on Marine Biological Diversity Beyond Areas of National Jurisdiction” at the United Nations Headquarters in New York last April 5, 2017.

“Whatever resources are extracted from international waters are part of the common heritage of mankind,” said Dr. Eguia, referring to

marine genetic resources in areas beyond national jurisdiction (ABNJ), or the high seas, for which the UN is developing an international legally binding instrument under the United Nations Convention on the Law of the Seas.

“If at all these are to be explored and utilized, research activities should also involve countries with no or little capability to do so as part of their capacity building and



Dr. MRR Eguia delivering the Philippines' statements during week two of the PrepComm 3 meeting on “Marine Biological Diversity Beyond Areas of National Jurisdiction” held at the UN Headquarters in New York (Photo by IISD/ENB | Francis Dejon)

whatever product and benefits coming from the scientific undertakings should be shared equitably,” she added.

Dr. Eguia, who has an expertise in genetics, served as one of two technical advisers for the Philippine delegation on the issue of marine genetic resources in

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the ABNJ. The other adviser is Dr. Marie Antonette Meñez of the University of the Philippines' Marine Science Institute.

She further emphasized that research on conservation and sustainable management of resources should be prioritized before embarking on commercial research that could entail unregulated bioprospecting.

"Exploration for commercial purposes may be considered of least priority unless the potential use of the genetic resources can be identified as of utmost importance to mankind, such as in drug development," she said.

According to Dr. Eguia, research should be conducted first to assess the status of ABNJs especially on depleted habitats and those affected by climate change, as well as the state of biological and mineral resources.



[ABOVE] Photo of the conference room where the PrepComm 3 meeting was held and [RIGHT] some of the members of the Philippine delegation, from left: Ms. E Tulay and Ms. S Bales of PCAF, Atty. D Escoto of BFAR, Dir. R Villanueva of DFA-MOAO, Ms. D Maano of DENR-BMB and Dr. MRR Eguia (Photos by IISD/ENB | Francis Dejon)



"Once done, areas needing rehabilitation (both physically and biologically) can be considered for protection and marine genetic resource conservation," Dr. Eguia said.

The high seas, covering 64% of the oceans, are international waters for which no country has sole ownership

or responsibility, highlighting the need to develop policies to manage its conservation and use.

Dr. Eguia has been helping the Philippine delegation (albeit in absentia) in crafting the country's official statements on marine genetic resources in the ABNJ as delivered in

previous UN Prep Comm meetings. For this 3rd committee meeting, with travel funds from SEAFDEC/AQD, she was able to join the Philippine delegation which involved representatives from different government agencies and the academe.

- MRR EGUIA / RD DIANALA

SEAFDEC/AQD participates in 49th Meeting of the SEAFDEC Council in Brunei Darussalam

Participants representing the Council Directors and their delegations from 11 SEAFDEC Member Countries (Brunei Darussalam, Cambodia, Indonesia, Japan, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam), officials of the SEAFDEC Secretariat and Departments, and international and regional organizations gathered for the 49th Meeting of the SEAFDEC Council. The meeting was held in Bandar Seri Begawan, Brunei Darussalam from 3 to 7 April 2017; which was hosted by the Department of Fisheries of the Ministry of Primary Resources and Tourism, Brunei Darussalam.

In attendance at the meeting from AQD were Dr. Chihaya Nakayasu, Acting Chief; Dr. Evelyn Grace Ayson,

Research Division Head; Ms. Jiji Rillo, OIC of Administration and Finance Division, and Ms. Anna Maria Ortiz, Administrative Assistant.

The Council noted the progress and achievements made by SEAFDEC in 2016 and approved the program of activities for 2017. The Council also discussed the updates on priority and emerging issues on fisheries and aquaculture for policy considerations, the management and future operations of SEAFDEC, financial matters and

collaborative arrangements between SEAFDEC and its partner organizations.

The other important aspects discussed were the issues and follow-up actions related to combating IUU fishing for sustainable development of fisheries in the region and those that pertain



Dr. Chihaya Nakayasu, AQD Acting Chief (left) and Dr. Evelyn Grace Ayson, Research Division Head (right) (Photos courtesy of SEAFDEC Secretariat)

to Regional Common Position on CITES-related matters. On the issue of Sustainable Development Goal (SDG) 14 (conserve and sustainably use the oceans, seas and marine resources for sustainable development), SEAFDEC and Member Countries were asked to enhance their contributions to SDG 14 by linking various scopes of work and reporting the research results in the context of SDGs and their targets and indicators.

With regard to regional cooperation to promote sustainable fisheries and aquaculture in the region, the Council supported and approved for implementation the proposals of AQD on the: (i) establishment of the Regional Database of Alternative Feed Ingredients in Aquaculture and (ii) ASEAN Regional Technical Consultation on

Aquatic Emergency Preparedness and Response System for Effective Management of Transboundary Disease Outbreaks in Southeast Asia. These proposals were developed in response to recommendations that emerged during the regional technical consultations on aquafeeds and EMS (early mortality syndrome), organized previously by AQD and its partner organizations. The proposals were presented to the Council by AQD's Research Division Head, Dr. Evelyn Grace Ayson.

Concerning the regional initiative on eel, the Council supported the activities carried out by SEAFDEC on

anguillid eels, specifically the relevant surveys aimed at establishing the catch statistics on anguillid eels including eel seeds for aquaculture in each SEAFDEC Member Country. AQD has actively participated in this regional initiative, with IFRDMD as the lead Department.

The Council also approved the publication of the 2017

Southeast Asian State of Fisheries and Aquaculture and supported the planned activities for the 50th Anniversary of SEAFDEC. The special event is scheduled to be held in Bangkok in November 2017.

The 50th Meeting of the SEAFDEC Council in 2018 will be hosted by the Government of Cambodia. ➡

- B ACOSTA



Participants of the 49th SEAFDEC Council Meeting during round table discussions (Photos courtesy of SEAFDEC Secretariat)

ASEAN delegates visit SEAFDEC/AQD

Even the rainy weather did not dampen the enthusiasm of the delegates attending the 17th ASEAN Socio-Cultural Community (ASCC) Council Meeting and the 22nd Senior Officials Committee for the ASCC Meeting as they trooped to SEAFDEC/AQD Tigbauan Main Station on 9 March 2017.

The delegates were ushered to the informative exhibits featuring aquaculture commodities and the research

and information dissemination activities of SEAFDEC/AQD. They also visited the Integrated Fish Broodstock and Hatchery Complex and FishWorld. To make the delegates' visit more gratifying, they were served Ilonggo native delicacies.

Iloilo City hosted the two meetings led by the Philippine Department of Social Welfare and Development. The tour was part of the March 6-9 ASCC meetings that aimed

to contribute in realizing an ASEAN community that is people-oriented and socially responsible.

The ASEAN was established to accelerate economic growth, social progress and cultural development in the region. Its member countries include Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. ➡

- GK FAIGANI



SEAFDEC/AQD Acting Chief & Deputy Chief Dr. Chihaya Nakayasu and Training and Information Head Dr. Ma. Junemie Hazel Lebata-Ramos welcome the ASEAN delegates at FishWorld (Photo by IT Tendencia)



Philippine Social Welfare Secretary Judy Taguiwalo was briefed about abalone by SEAFDEC/AQD Research Assistant Ms. Mary Dianne Grace Arnaldo (Photo by JM dela Cruz)

South African Ambassador and Angolan entrepreneur eye partnership with SEAFDEC/AQD

South African Ambassador Mr. Martin Slabber and South Africa's Department of Agriculture, Forestry and Fisheries Counsellor Mr. Sitembele Kelembe met with SEAFDEC/AQD Manila Office personnel on 25 January 2017 in Quezon City, Philippines to discuss possible linkages in research and technical assistance.

Mr. Kelembe expressed his interest in tapping the technical expertise of SEAFDEC/AQD, particularly on aquatic health management, among other aspects in fish farming.

Moreover, Mr. Gregorio Tagupa of the Angolan Embassy and Ms. Stiviandra Oliveira, a social entrepreneur, visited SEAFDEC/AQD's Manila Office on 12 January 2017. During their visit, Ms. Oliveira expressed her interest in SEAFDEC/AQD's aquaculture technologies since she is currently putting up a tilapia farm in Angola.

SEAFDEC/AQD packages and builds science-based ready-for-handover operational businesses for new and re-focusing entrepreneurs through its Agree-Build-

Operate-Transfer (ABOT) AquaNegosyo program. Facilities are constructed on client site and made operational through on-the-job training for technicians and employees.

Using a fusion of technology and business management strategies, SEAFDEC/AQD aquaculture technologies are the main product lines packaged and delivered to entrepreneurs. ➔

- RH LEDESMA / RD DIANALA



(From left) SEAFDEC/AQD's Ms. Grace Garcia, Dr. Maria Rowena Eguia, Dr. Nerissa Salayo and Ms. Belen Acosta with South Africa's Department of Agriculture, Forestry and Fisheries Counsellor Mr. Sitembele Kelembe, South African Ambassador Martin Slabber and Ms. Ellen de Vega of the South African Embassy (Photo courtesy of MRR Eguia)



(From left) Mr. Gregorio Tagupa (seated) and staff of the Angolan Embassy (standing), Ms. Stiviandra Oliveira, Dr. Nerissa Salayo and Dr. Maria Rowena Eguia (Photo courtesy of MRR Eguia)

Science-based aquaculture technologies promoted at 61st Aklan Day

On the occasion of the 61st Aklan Day, SEAFDEC/AQD held an aquaculture technology forum on 21 April 2017 in Kalibo, Aklan, Philippines.

SEAFDEC/AQD Scientists were invited to talk about the science-based aquaculture technologies developed by the institution such as broodstock management and multi-species

hatchery operations, mud crab culture, freshwater aquaculture, and *Gracilaria* farming. In addition, a SEAFDEC/AQD fish health expert lectured on the avoidance and detection of common shrimp diseases.

The forum was then followed by an Aquaculture Clinic, where fish farmers consulted with SEAFDEC/AQD experts about the

problems they encountered in their fish farms.

SEAFDEC/AQD also participated in the week-long Agri-Aqua Trade Fair held at the Godofredo P. Ramos Park, Capitol Grounds from 21 to 26 April 2017 in order to disseminate information on aquaculture technologies to fish farmers and other stakeholders. ➔

- RH LEDESMA



SEAFDEC/AQD resource persons and participants (from the LGU, private sector and academe) of the Aquaculture Technology Forum during the 61st Aklan Day celebration (Photo courtesy of ET Qunitio)

R&D management is the future



Dr. Eguia (center) with University of Southern Mindanao Associate Professor Dr. Edward Barlaan and West Visayas State University-College of Medicine Research Office Head Ms. Charmaine Servigon-Malata during the CHED-PCARI workshop (Photo courtesy of MRR Eguia)

SEAFDEC/AQD should consider having a separate Research Management Office (RMO) under the supervision of a Research Director to enable scientists to focus more on their scientific undertakings rather than be preoccupied with project-related administrative work.

This was the suggestion of Dr. Ma. Rowena Eguia after attending the first “International Seminar Workshop on Laying the Foundation for the future of

Research and Development in the Philippines” organized by CHED-PCARI (Commission of Higher Education – Philippine-California Advanced Research Institutes) held at the Peninsula Manila Hotel last 23-24 March 2017.

A RMO as exemplified by the UC Berkeley and UP Manila templates, is

responsible for (a) accessing databases containing information on fund sources and priority topics for possible grants; (b) checking scientists’ background to ensure no conflicts of interest; (c) matching skills/capabilities of the research team members with potential projects to ensure the completion of the studies by the grant beneficiaries; and (d) managing the administrative components of projects such as those involving procurement and other logistics.

“Through this scheme, the researcher devotes 100% of his/her time in conducting the project,” said Dr. Eguia

“SEAFDEC/AQD should consider having an RMO especially so that it has to continually look for fund sources for research projects to help sustain its operations, pursue its mandates and at the same time demonstrate AQD’s relevance to the industry that it supports,” Dr. Eguia added.

The two-day seminar-workshop featured discussions on topics like sustaining talents in science and technology, Philippines laws concerning research (e.g. intellectual property code)

and presentation of R&D models used by universities like University of California-Berkeley and the University of the Philippines, Manila.

On intellectual property, Dr. Eguia also mentioned that “although an Information and Technology Support Office (ITSO) has been established at AQD, it should actively operate. It should start from ensuring that the intellectual property of AQD through its researchers are protected, that is, from proposals submitted particularly to external funding agencies, to the final output which includes not only scientific publications but also patentable technologies.”

The seminar gathered key representatives of selected public and private higher education institutions, government agencies and research institutions to discuss common concerns in R&D management with the aim of formulating recommendations for addressing issues/ gaps and in order to enable the enhancement of the country’s productivity in research and innovation. 🙌

- RD DIANALA / MRR EGUIA

BFAR Director Gongona @ SEAFDEC/AQD

BFAR Director Eduardo Gongona and his staff met with SEAFDEC/AQD’s Management Group headed by Acting Chief Dr. Chihaya Nakayasu at SEAFDEC/AQD’s Tigbauan Main Station on 14 March 2017. 🙌



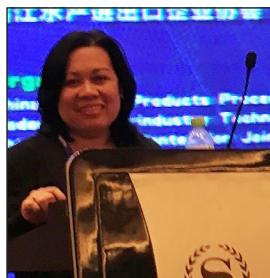
(Photo by GK Faigani)

SEAFDEC/AQD presents at international shrimp forum

Associate Scientist Dr. Nerissa Salayo was invited to present on the “Situation and Outlook of the Philippine Shrimp Industry” at the 9th China International Shrimp Industry Development Forum held 19-20 April 2017 at Zhanjiang City, Guangzhou province in China.

Aside from discussing production and market scenarios in the Philippines, Dr. Salayo noted that based on the shrimp R&D highlights at SEAFDEC/AQD and other local government agencies, the research investment preference, mostly on diseases and health studies, remain to focus on indigenous *Penaeus monodon* due to its high value. She further explained that initially there was a ban on the culture of *P. vannamei* in the Philippines but the government allowed its commercial production in 2007 to address its increasing local demand.

Most of the presentations in the forum generally focused on *P. vannamei* in the context of ecological farming in China,



SEAFDEC/AQD Associate Scientist Dr. Nerissa Salayo presenting on the status and outlook of the shrimp industry in the Philippines (inset). Dr. Salayo together with industry representatives from India and Thailand (below) (Photos courtesy of ND Salayo)



broodstock development and breeding, use of immune enhancers, production, trade and global opportunities. Presentations on international shrimp production and marketing included country and institutional reports from Network of Aquaculture Centres in Asia-Pacific (NACA), Ecuador, India, Thailand, Viet Nam, Indonesia, Malaysia, Bangladesh and the Philippines.

The forum was organized by the China Aquatic Products Processing and Marketing Alliance, Modern Shrimp Industry Technology Research System, China-ASEAN Center for Joint Research and Promotion of Marine Aquaculture Technology and NACA. It was attended by about 200 shrimp industry stakeholders, mainly the large-scale shrimp producers, traders and processors in China. 🐷

- GK FAIGANI

RESEARCH SEMINARS



SEAFDEC/AQD Senior Technical Assistant Mr. Joemel Sumbing presented his study “Elucidation of sediment eutrophication of marine ecosystem due to waste loads from milkfish aquaculture through observed data and modeling” during a research seminar at SEAFDEC/AQD’s Tigbauan Main Station on 10 March 2017.

Waste reduction is one of the methods to achieve environment-friendly fish farming and promotes oxygen efficiency in several

aquatic systems in the world. Traditional water quality monitoring has often produced unclear results due to rapid water exchange that resulted to the dispersal and dilution of nutrients. Mr. Sumbing’s study included formulating a mathematical model to logically estimate the nutrient concentration in milkfish cages to serve as basis in assessing aquaculture sites.

The observed and logged data from the milkfish culture experiment performed on November 2011 until May

2012 were used as tools for establishing a model.

In conclusion, settling velocity, cage dimension, hydrodynamic data and bathymetry should be studied to derive dispersion equations. Mr. Sumbing also proposed for the creation of an Index of Suitable Location (ISL). ISL equates water depth and current velocity as variables that control water dispersal & oxygen supply and categorized aquaculture sites into three: (1) healthy area, (2) cautionary area; and (3) critical area. 🐷

- JM DELA CRUZ



Ms. Chloe Gaban of ESCO Global conducted a Biosafety Awareness seminar at SEAFDEC/AQD's Tigbauan Main Station on 30 March 2017.

According to Ms. Gaban, proper laboratory management and practices are often overlooked in laboratories. Biological and chemical safety awareness is important especially to laboratory personnel who are at risk of acquiring diseases and getting into laboratory accidents.

Ms. Gaban explained that most hazards in the laboratory can be classified as biological, chemical, and physical. Laboratory biosafety is the containment principles, technologies and practices implemented to prevent the unintentional exposure to biological agents and toxins, or their accidental release.

She expounded that engineering control equipment are effective in preventing or reducing exposure to hazards.

Engineering controls provide protection to the operator or products. The primary engineering control equipment laboratories are fume hoods, laminar flow cabinets, and biological safety cabinets. Each equipment is designed for specific applications dealing with different hazards. Proper knowledge and training are important in order to effectively utilize these equipment.

- RH LEDESMA



Polychaetes or marine annelids are commercially exploited due to its demand as part of the crustacean broodstock diet causing a massive depletion of natural stocks. "The culture of polychaetes under bio-secure conditions is the most sustainable alternative," according to SEAFDEC/AQD Technical Assistant Mary Ann Mandario during her seminar on "Refinement of rearing and feeding techniques for mass production of polychaete (*Marphysa mossambica*)" last 20 April 2017 at AQD's Tigbauan Main Station.

SEAFDEC/AQD had been successfully culturing polychaete in outdoor tanks, however, their survival and growth during the nursery phase are still low. Ms. Mandario's study focuses on optimization of rearing conditions by considering abiotic (light) and biotic (food) key factors that influence the survival, growth and development of early stage polychaetes (nectochaetes). She conducted two experiments to compare the survival and growth of nectochaetes based on

the: (1) effect of duration of light exposure and (2) effect of bioflocs as feed.

Her results show that early stage polychaetes are sensitive to light as indicated by the high mortality among those reared outdoors, without shading. Meanwhile, survival and growth are best in early stage polychaetes reared under continuous darkness. On the other hand, early stage polychaetes had higher growth when reared in bioflocs compared to those reared in seawater. This indicates that biofloc is a suitable feed as well as substrate for early stage polychaetes.

The results of the two experiments contributed to the understanding of the effect of rearing and feeding techniques on survival and growth of early stages of the polychaete *M. mossambica* larvae.

- JM DELA CRUZ

Congratulations GRADUATES

Christine Joy Torrigue, daughter of **Ronelo Torrigue** of the *Breeding and Seed Production Section*, finished her degree on Bachelor of Science in Information Technology at Iloilo Science and Technology University

Kurl Francis Saracin, son of **Sharon Saracin** of the *DOST-National Mud Crab Science and Technology Program*, finished his degree on Bachelor of Science in Agriculture major in Crop Science at Central Philippines State University

Gyll Anne Marie Moquera, daughter **Germin Moquera** of the *DOST-Philippine Shrimp Pathgenomics Program*, finished High School with High Honors at St. Louise de Marillac School of Miag-ao


Joshua Miguel Salvilla, son of **Yvonne Salvilla** of the *Office of the TID Head*, finished Junior High School at Iloilo National High School

Erika Ayson, daughter of **Dr. Evelyn Grace Ayson** of the *Office of the RD Head*, finished Elementary with High Honors at Kinaadman Elementary School, Inc.

Yee Shen Goto, daughter of **Evangeline Goto** of *BFS*, finished Elementary as First Honors at Children of Isaac Learning School Academe, Inc.

John Michael Olorvida, son of **Nemencio Olorvida** of *BFS*, finished Elementary at Pipindan Elementary School

Bea Angela Ledesma, daughter of **Rossea Ledesma** of *Devcom Section*, finished Kindergarten at Kinaadman Elementary School, Inc.



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SEAFDEC/AQD library staff conduct workshop on development of institutional repository

Information Officers from SEAFDEC Secretariat and Departments (TD, MFRDMD, and IFRDMD) participated in the SEAFDEC Inter-Departmental Workshop on the Establishment of Institutional Repository conducted by AQD Library personnel at the SEAFDEC Training Department in Samut Prakan, Thailand from 6 to 9 March 2017.

During the Opening Program, SEAFDEC Deputy Secretary-General Dr. Kaoru Ishii emphasized that through the Workshop, repositories should be developed in all SEAFDEC Departments accommodating various types and forms of information and results of SEAFDEC works. The establishment of Institutional Repositories is important since it is one way of enhancing SEAFDEC's visibility through improved access to SEAFDEC publications.

During the workshop, SEAFDEC/AQD resource persons Mr. Stephen Alayon, Mr. Elvi Nemiz and Mr. Daryl Superio introduced the SEAFDEC/AQD Institutional Repository (SAIR) and other potential repositories and databases that make use of records in the SAIR like Aquatic Sciences and Fisheries Abstracts (ASFA), Aquatic Commons, OceanDocs, and the IAMS LIC Digital Fisheries Library Box.

Created using DSpace, SAIR aims to store, preserve, and share AQD research outputs, thus, enabling easy access to and increasing the visibility of



SEAFDEC/AQD resource persons Mr. Daryl Superio (standing, left) and Mr. Elvi Nemiz (standing, right) guide the participants in developing a repository (Photo courtesy of SEAFDEC Secretariat)

AQD scientific publications and published materials. From January 2011 to December 2016, SAIR has already registered 8,386,408 total downloads and 2,830,541 searches.

SEAFDEC Secretariat and the other Departments were encouraged to establish their own institutional repositories due to benefits such as:

- Repositories facilitate sharing of SEAFDEC information to external clients and users thereby increasing the institution's visibility;
- Repositories allow better searching of SEAFDEC materials through search engines (e.g. Google, Worldcat) than through SEAFDEC websites;
- Institutional repositories will serve as the digital archive of each Department and all contents will have permanent and persistent link (URL) in the future.

The workshop participants were also guided by the SEAFDEC/AQD resource persons in developing their respective repository systems through the installation and customization of DSpace, and creating Communities and Collections.

On the last day of the Workshop, SEAFDEC Secretary-General, Dr. Kom Silapajarn, expressed his appreciation to SEAFDEC/AQD for extending support to the conduct of this Workshop and for sharing its expertise with the participants that would enable the SEAFDEC Secretariat and Departments to eventually share their publications and materials in a systematic manner. Dr. Silapajarn also urged the participants to continue developing their respective Repositories to enhance the visibility of SEAFDEC in the future. 🐾

- RH LEDESMA/RD DIANALA



The participants of the SEAFDEC Inter-Departmental Workshop on the Establishment of Institutional Repository (Photo courtesy of SEAFDEC Secretariat)