

Students from Iloilo Science and Technology University visit SEAFDEC/AQD's exhibit booth during the Regional Science and Technology Week held 21-25 October 2019 at the Iloilo Convention Center. See full story on page 2. [PHOTO BY RH LEDESMA]



aqdmatters

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

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Ret. Commodore Eduardo Gongona, director of the Bureau of Fisheries and Aquatic Resources (left) and SEAFDEC/AQD Chief Baliao (beside Gongona) discuss possible research areas in aquaculture during a break at the 28th PTAC Meeting last 9 October 2019 in Pasay City. PHOTO BY JM DE LA CRUZ

Gov't committee lauds advances to lower cost of fish farming

PASAY CITY - A Philippine government committee commended developments in aquaculture research that lowered the cost of aquafeeds for milkfish and tilapia by 30 percent.

In a recent meeting, the Southeast Asian Fisheries

Development Center (SEAFDEC), an international research institution whose Aquaculture Department (AQD) is based in Tigbauan, Iloilo, reported on the progress of its projects to the Philippine Government. One of the most

commended projects for 2019 is the development of the low-cost feeds which were successfully verified through field-testing in cages and ponds in various locations across the country.

"We have successfully reduced the cost of feeds

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by 30 percent compared to the most cost-efficient commercial feeds available in the market,” said Dr. Roger Edward Mamauag, scientist and head of the Technology Verification and Extension Division.

The low-cost feeds by AQD also showed higher growth and weight performance compared to commercial feeds.

Ret. Commodore Eduardo Gongona, director of the Bureau of Fisheries and Aquatic Resources (BFAR) and chair of the Philippine Technical and Administrative Committee (PTAC), expressed his appreciation for this development and requested for AQD to move forward with the mass production of the formula.

“We [BFAR] can assist in looking into more demo-farms to test the feeds for faster confidence building on the formula as well as to ensure its quality,” said Gongona.

The committee also suggested for AQD, in

partnership with BFAR, to conduct acceptability studies among aquaculture operators and fish farmers on the newly-formulated low-cost feeds.

“By lessening the cost of aquaculture production, we can claim that the next ten years is going to be the game for aquaculture,” added Gongona.

AQD also presented the progress of 49 studies under its departmental and regional programs as well as special projects in collaboration with the Philippine government.

“We are happy to continue supporting AQD to have more resources for its programs and projects for the next years,” said Ret. Commodore Eduardo Gongona, director of the Bureau of Fisheries and Aquatic Resources (BFAR) at the presentation of AQD’s 2019 achievements during the 28th PTAC Meeting last 9 October 2019 here.

The PTAC is a committee tasked to coordinate activities between AQD and the

Philippine government as host country and is comprised of representatives from relevant government agencies.

Support for scientists

On the other hand, Prof. Encarnacion Emilia Yap, dean of the College of Fisheries and Ocean Fisheries of the University of the Philippines Visayas, expressed that aside from budget for research and extension, AQD scientists should be compensated well.

“Scientists are the lifeblood of AQD and with better salary and benefit packages, they could be even more productive than they already are,” she said.

This was supported by Gongona as he believed that scientists in the Philippines should be supported and given incentives.

“We are in the process of reviewing the salary scale of our scientists, researchers, and support staff. In view of the limited plantilla items for senior researchers in the department, we plan to invite visiting scientists from

universities or other research institutions to conduct research in priority areas of the department and the government,” said Baliao.

Challenge towards more progress

Gongona also challenged AQD to develop programs and projects that could make the country progressive.

“Come up with research, technologies or even policy recommendations and you can expect the support of the government,” he said.

Ms. Marnelie Subong of the Department of Agriculture-Bureau of Agricultural Research suggested the continuation of refining the culture and feeding technologies by expanding and updating the socioeconomic analysis of each technology and to include it in the training courses. She also requested for AQD to develop more modern technologies in fish diagnostics to make disease detection more convenient to fish farmers. **a**

- JM DE LA CRUZ

Young minds zoom into bacteria and shrimp cells at science expo

ILOILO CITY – Future scientists may be in the making as pupils and students from around Western Visayas trained their eye on identifying different types of bacteria at the SEAFDEC/AQD booth during the recent Regional Science and Technology Week (RSTW) expo.

Fish Health Section staff guided visitors as they used a compound microscope and eyepiece camera to differentiate between bacilli and cocci, gram-positive and gram-negative bacteria, as well as healthy and diseased shrimp hepatopancreas using prepared slides.

Aside from using the microscope, guests also availed of different SEAFDEC/AQD flyers and brochures that were distributed for free during the event.

The RSTW is an annual exhibition organized by the Department of Science and Technology (DOST) Region 6. This year’s event was held at the Iloilo Convention Center on 21-25 October 2019.



Students from a local school view prepared slides showing different bacterial shapes and shrimp tissues in SEAFDEC/AQD’s exhibit booth during the Regional Science and Technology Week held 21-25 October at the Iloilo Convention Center. PHOTO BY RH LEDESMA

DOST Secretary Fortunato dela Peña visited the booth on the first day of the event and expressed his

gladness that the SEAFDEC/AQD staff manning the booth were all products of DOST scholarship programs. **a**

- RD DIANALA

Crab hatchery in BARMM, a collab project of SEAFDEC/AQD and MAFAR



SEAFDEC/AQD Chief Dan Baliao discusses the inclusions and proper procedures on the implementation of the Memorandum of Agreement during the meeting with Mindanao Development Authority, Ministry of Agriculture, Fisheries and Agrarian Reform, and mangrove crab operators in Cotabato City on 2 September 2019. PHOTO COURTESY OF ST SEPOSO

COTABATO CITY

– A meeting on the establishment of a mangrove crab hatchery was held here on 2 September 2019.

Collaboration between the Southeast Asian Fisheries Development Center/ Aquaculture Department (SEAFDEC/AQD) and the Ministry of Agriculture, Fisheries and Agrarian Reform (MAFAR) was initiated by convening

different stakeholders, mostly from fisheries sector, to formally introduce the proposed Fisheries, Coastal Resources and Livelihood (FishCORAL) project at Bangsamoro Autonomous Region in Muslim Mindanao (BARMM, formerly known as the Autonomous Region in Muslim Mindanao).

The meeting was attended by personnel from Mindanao Development

Authority, MAFAR and mangrove crab operators in the area.

Crab operators claimed that they have a difficulty in increasing the production of mangrove crab due to scarcity of crablets in the wild. Moreover, they mentioned that there are no crab hatcheries in their area.

With the implementation of the proposed project, they

believe that they could enhance their production through the establishment of mangrove crab hatchery with the technical support from SEAFDEC/AQD.

A Memorandum of Agreement was drafted to ensure partnership and to designate the duties and responsibilities of each agency. [a](#)

- ST SEPOSO

FEATURE STORY

Study finds 'straight' males do exist; may help save threatened species

Will Ivy someday become Ivan? Researchers have been monitoring Ivy since 2015 to gain a better understanding of how her gender might change over the years.

Latest data show that Ivy is about 29 kilograms young. There is no record of her exact age because she was adopted for the sake of science in 2015. Ivy is now housed comfortably in Nueva Valenca, Guimaras, albeit in a cage for the sake of science – to understand better the gender issues that surround her and her kin.

Born without a gender and only an inconspicuous genital opening, plastic

cannula were periodically inserted into her body. It was only in January 2018 that researchers finally concluded that Ivy was a female, after detecting eggs developing within her.

That was quite expected as giant grouper are known to be hermaphrodites where males arise from female groupers that naturally change sex at some point of their life. This was the presumed pattern until a recent study found that 'straight' males do exist.

Waiting for females to sex reverse is a problem for farmers who wish to breed the giant grouper. Grouper

culture is seen as the future as their wild population is under threat from overfishing and the destruction of their coral reef habitat.

"Before, it was assumed that giant groupers have to mature as female first before they become male. For fish farmers, it meant male breeders will take a long time to obtain," says Peter Palma, a researcher at the Southeast Asian Fisheries Development Center who observed a deviation from the presumed norm.

Not far from Ivy's cage at the Igang Marine Station of SEAFDEC is Lito, a 26-kilogram young grouper.

In November 2016, after over a year of showing no signs of being male nor female, researchers gently massaged Lito's abdomen and saw milt, or fish sperm, come out.

Palma refers to Lito as a primary male, one of the first documented among the giant grouper species. These 'straight' males did not pass through a female stage and provide hope that farmers need not gamble years of waiting and tons of food, hoping some of their captive females will sex reverse into functional males.

The findings of Palma and his team are detailed

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in the paper, “Reproductive development of the threatened giant grouper *Epinephelus lanceolatus*” published in volume 509 of the *Aquaculture* journal. Their study was funded by the Australian Centre for International Agricultural Research (ACIAR).

Palma hopes the documentation of the primary males will further

encourage the farming of the giant grouper and stave off the depletion of their wild population by providing an alternative source of the delectable fish known for their flaky and lean meat.

As for Ivy, nobody is sure if she will change sex several years from now. But even if she does not, there is already Lito waiting for her. **a**

- RD DIANALA



A giant grouper undergoing gonadal biopsy in June 2018 at the Igang Marine Station to determine its stage of reproductive development. PHOTO BY PA PALMA

BFAR Region XI and SEAFDEC/AQD collaborate on free milkfish culture training course

PANABO CITY, Davao del Norte – Various aspects of milkfish culture and production were discussed in a free 4-day on-site training course from 15 to 18 October 2019 at the National Mariculture Center (NMC) here.

The training is part of a collaboration between the Southeast Asian Fisheries Development Center (SEAFDEC) and the Bureau of Fisheries and Aquatic Resources (BFAR) Region XI.

Forty fishpond and fish cage operators, technicians, private sectors, LGUs, and BFAR staff who attended came from the different provinces of Region XI such as Davao Oriental, Davao del Norte, Davao del Sur, Compostella Valley, Davao Occidental, and Davao City.

This free course is part of the continuing projects under the Joint Mission for Accelerated Technology Transfer Program (JMANTTP) of the SEAFDEC Aquaculture Department (AQD) led by its Chief, Mr. Dan D. Baliao.

At the opening ceremonies, Dr. Jericardo Mondragon, chief of the National Mariculture Center, welcomed the participants followed by Atty. Rachel Mernil Bacera of BFAR NMC



Several of the participants pose together with SEAFDEC/AQD Technology Verification and Extension Division head Dr. Roger Edward Mamaug (seated, rightmost), BFAR NMC Chief Dr. Jericardo Mondragon (seated, 2nd from right), Atty. Rachel Mernil Bacera (seated, 3rd from left), and staff from SEAFDEC/AQD and BFAR XI. Photo by G Amias. PHOTO BY G AMIAS

who delivered the opening remarks on behalf of the regional director of BFAR XI, Ms. Fatima M. Idris.

An overview of aquaculture including the different culture commodities, polyculture and hatchery, nursery, and grow-out culture as well as updates on the status of the legislated hatcheries that are to be constructed all over the Philippines was discussed by Dr. Roger Edward Mamaug, head of the Technology Verification and Extension Division.

On the other hand, Ms. Ma. Irene Legaspi, associate researcher, talked about the biology, broodstock management, and seed production of milkfish as well as the protocols of operating a hatchery.

Pond culture, proper pond preparation and natural food production in grow-out ponds was discussed by Ms. Shangrilla Seposo, technical assistant, while Mr. Victor Emmanuel Estilo, the head of the Dumangas Brackishwater Station of SEAFDEC/AQD, lectured on the nursery and grow-out culture of milkfish in ponds.

Cage farming was discussed by Mr. Michael Tesorero, a technical assistant assigned at the Igang Marine Station of AQD whereas Dr. Mamaug talked about the feeding management and nutritional requirements of milkfish on the same day.

On the third day, 17 October, Ms. Janice Genilza, also a technical assistant, discussed about water quality

management and biosecurity measures and protocols for hatcheries and grow-out farms while Dr. Eleanor Tendencia lectured on fish health management in view of the different diseases that may occur in fish farms.

The last topic was about cost-and-return analysis which was given by Dr. Nerissa Salayo, head of the Socio-economics Section of SEAFDEC/AQD.

The last day of the training started with practical sessions including the proper harvest, transport and stocking of fry by Mr. Hanani Torilla. This was followed by the monitoring of physico-chemical parameters in the culture water by Ms. Genilza and Ms. Seposo. **a**

- J GENILZA

Scientist presents future actions for sustainable eel aquaculture in Asia

SAMUT PRAKAN, Thailand

– In the “Regional Core Experts Meeting on Tropical Anguillid Eel Information Sharing” here, Dr. Maria Rowena Eguia discussed the future actions that will make eel aquaculture in the region sustainable.

In her presentation, Dr. Eguia, scientist of the Southeast Asian Fisheries Development Center (SEAFDEC)/Aquaculture Department, talked about the gaps and constraints in eel aquaculture faced by other Asian countries. She also presented the possible technical solutions to the problems in eel aquaculture.

According to the Food and Agriculture Organization (FAO), eel is an important foodfish in China and Japan. It was also cited that the major eel consuming countries are

Japan, the Republic of Korea, China, other Southeast Asian countries, the EU, USA, and Canada.

Moreover, it was mentioned in the eel manual produced by SEAFDEC/AQD that the bulk of the world’s eel production is from aquaculture.

For the sustainability of eel aquaculture, Dr. Eguia recommends to “continue efforts on: the refinement and optimization of eel farming methods; ecological and genetics studies on tropical anguillid eel species; and implementation of science-based regulations/policies for effective and sustainable eel resource utilization, management, and conservation.”



Dr. Maria Rowena Eguia (standing, 6th from left) poses with the other participants of the “Regional Core Experts Meeting on Tropical Anguillid Eel Information Sharing” held on 3-4 October 2019 in Samut Prakan, Thailand. PHOTO COURTESY OF SEAFDEC SECRETARIAT

Dr. Eguia was one of the 19 experts who attended the meeting on 3-4 October 2019 while the other experts were from SEAFDEC Secretariat, Training Department, and Inland Fishery Resources Development and Management Department; Indonesia Institute of Sciences; Indonesia Institute of Sciences; Ministry of Marine Affairs

and Fisheries in Indonesia; Ubon Ratchatani University in Thailand; Tokyo University of Marine Science and Technology; National Fisheries Research and Development Institute in the Philippines; Directorate of Fisheries in Hanoi, Viet Nam; Japan NUS Co. Ltd; Iroha Sidat Indonesia; and FAO in Rome. **a**

- RH LEDESMA

Australian envoy visits ACIAR projects

AMBASSADOR Steven Robinson and his delegation from the Australian Embassy in Manila visited the Tigbauan Main Station on 9 October 2019 to see the progress of projects supported by the Australian Centre for International Agricultural Research (ACIAR).

The Australian Government has two recent projects with SEAFDEC/AQD, on giant grouper and sea cucumber, both through ACIAR.

SEAFDEC scientist Dr. Evelyn Grace Ayson, Researcher Peter Palma and Associate Scientist Dr. Jon Altamirano briefed Ambassador Robinson about the long-standing partnership between SEAFDEC/AQD

and ACIAR and the recent accomplishments of the projects.

“We’ve learned a great deal about how sea cucumbers spawn, and how they can potentially be grown and ranched,” Ambassador Robinson remarked after touring the hatchery facilities.

The Ambassador also shared that they are looking at how the “fantastic” grouper fish grows over the course of its life so it can be commercially harvested.

“This facility is just really impressive, and the people who work here are ever so dedicated. We’ve walked all over it today, having a good look at all the various facilities and I’m immensely impressed, and I’m delighted



Ambassador Steven Robinson of the Australian Embassy in Manila enjoys with his spouse who is holding a sandfish breeder at the sea cucumber hatchery during his visit at the Tigbauan Main Station on 9 October 2019. PHOTO BY RD DIANALA

and proud that Australia is involved in this fantastic facility,” he added.

The Ambassador was accompanied by his spouse, Ms. Rhonda Robinson, and officers from ACIAR, the Australian Department of Foreign Affairs and Trade, and Australia Awards.

Since the nineties, the government of Australia has been supporting SEAFDEC/AQD in various other projects such as mangrove crab culture techniques, as well as micropropagation of seaweeds. **a**

- RD DIANALA

Int'l aquaculture conference in Java gathers researchers, academics, policy makers, farmers

SURABAYA CITY, Java Island – Various aquaculture stakeholders attended the “9th International Conference of Aquaculture Indonesia 2019” here to be updated on the latest aquaculture technology advances of various commodities.

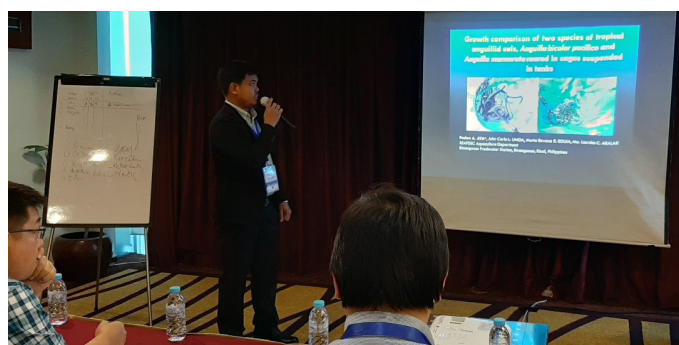
Over 300 participants who are researchers, academicians, students, farmers, policy makers and industry players from countries such as Indonesia, Singapore, Malaysia, Viet Nam, Philippines, Myanmar, Nigeria, Taiwan, China, Malta, India, France, Sri Lanka, Australia and the United States of America were present during the two-day conference held on 4-5 October 2019.

Dr. Frolan A. Aya, one of the participants and a

scientist of the Southeast Asian Fisheries Development Center/ Aquaculture Department, presented his paper “Growth response of two species of tropical anguillid eels, *Anguilla bicolor pacifica* and *Anguilla marmorata* reared in cages suspended in tanks” during the Aquaculture Management and Technology session.

During his presentation, Dr. Aya summarized the important findings of the study where he mentioned that “*A. bicolor pacifica* showed faster growth, better feed efficiency and survival than *A. marmorata*.” He also said that “*A. bicolor pacifica* appears to be a suitable species for culture in cages suspended in tanks.”

Study on tropical anguillid eels is important since these species are eyed to fill the gap for the demand of traditional



Dr. Frolan A. Aya, scientist of Southeast Asian Fisheries Development Center/Aquaculture Department, presents his paper on tropical anguillid eels during the Aquaculture Management and Technology session of the “9th International Conference of Aquaculture Indonesia 2019” held in Surabaya City, Java Island on 4-5 October 2019. PHOTO COURTESY OF FA AYA

anguillid eel species. The bulk of world production of eel is from aquaculture but the supply of seed is sourced from the wild, which resulted in the decline of the traditional anguillid eel species.

According to Dr. Aya, the conference was very helpful since he gained information from the papers presented

particularly on the use of alternative protein sources such as the high protein distillers dried grain and enzyme-treated soybean meal, feed additives like cactus extract, optimum protein requirement of rabbitfish reared in floating cages, and the use of bull testes meal extract in tilapia sex reversal. **a**

- RH LEDESMA

SPUI and SEAFDEC/AQD enter 3rd agreement on fisheries-related research and training programs

SHARING a common interest in research, training, and extension programs on fisheries and related sciences, St. Paul University Iloilo (SPUI) inked its third agreement with the Southeast Asian Fisheries Development Center/Aquaculture Department (SEAFDEC/AQD).

The agreement, which is effective for five years, was signed by both parties on 21 October 2019 at SEAFDEC/AQD's main station in Tigbauan, Iloilo. The first two agreements were signed on 2009 and 2014, respectively.

Collaborative activities to be done by SPUI and SEAFDEC/AQD under this agreement include joint undertaking of research projects wherein experts

from both institutions will serve as resource persons in training programs and extension activities carried out by either institution.

Moreover, both institutions also agreed to allow the use of their respective libraries and laboratory facilities to researchers

from SPUI and SEAFDEC/AQD.

SEAFDEC/AQD officials present during the signing of the agreement were Chief Dan Baliao, Research Division head Dr. Leobert de la Peña, Technology Verification and Extension Division head



Dr. Flor Agnes Sy (leftmost) and Sr. Mila Grace Silab (2nd from left) sign the agreement on behalf of SPUI while SEAFDEC/AQD was represented by Chief Dan Baliao (2nd from right) and Dr. Leobert de la Peña (rightmost). The signing of the agreement held at SEAFDEC/AQD's main station in Tigbauan, Iloilo on 21 October 2019 was witnessed by SPUI and SEAFDEC/AQD officers (standing, L-R) Prof. Sharon Ann Mendoza, Prof. Teresa Mallare, Prof. Caroline Mae Gopun, Prof. Imelda Olaguer, Ms. Amelita Subosa, and Dr. Roger Edward Mamauag. PHOTO BY JF ALDON

Dr. Roger Edward Mamauag, and Administration and Finance Division head Ms. Amelita Subosa.

On the other hand, SPUI was represented by its President Sr. Mila Grace Silab, Academic Affairs vice president Dr. Flor Agnes Sy,

University research director Prof. Imelda Olaguer, College of Arts, Sciences and Education (C.A.S.E.) dean Prof. Caroline Mae Gopun, C.A.S.E. research coordinator Prof. Teresa Mallare, and BS Biology Program Chair Prof. Sharon Ann P. Mendoza. **a**

- RH LEDESMA

Young professionals join Japan-Asia Youth Exchange Program in Science

HOKKAIDO, Japan – Two junior staff of the Southeast Asian Fisheries Development Center/Aquaculture Department (SEAFDEC/AQD) participated in the 5-day training on fisheries management through the Japan-Asia Youth Exchange Program in Science.

During the training conducted from 23 to 27 September 2019, Ms. Trisha N. Alavata and Ms. Jenalyn S. Lames, junior staff of SEAFDEC/AQD, attended special lectures and had hands-on activities on stock enhancement, ecolabelling, setnet fisheries, licensing and fisheries right management, fisheries management and extension, and age determination organized by the professor of Hokkaido University, Dr. Matsuishi Takashi Fritz.

“The short-term training broadened our perspective about the technicalities of capture-fisheries production in the southern part of Hokkaido, their custom and system in establishing sustainable fisheries through science-based management. We were also astounded by

the support and assistance of their local government in small-scale fisheries, the strict implementation and compliance with the laws and regulations in their region,” said Ms. Alavata.

The participants also visited the Fisheries Cooperative Association, Hakodate Seafood Wholesale Market and Retail Market, Hokkaido Local Government, Setnet Fisheries, Hokkaido Research Organization, Hakodate Fisheries Research Institute, and Hakodate Research Centre for Fisheries and Ocean to observe and learn the different fisheries management practices in Japan.

“SEAFDEC is an important inter-governmental organization that aims to establish sustainable fisheries in ASEAN regions. And as one of the young researchers of this institution, we are very thankful for the opportunity that this program has given us for we believe that through this, we could become better researchers,” said Ms. Lames.

The exchange program, also known as the SAKURA Exchange Program in Science,



Ms. Trisha N. Alavata (2nd row, leftmost) and Ms. Jenalyn S. Lames (2nd row, second from right) and the other participants pose with the SAKURA Exchange Program in Science coordinator, Dr. Matsuishi Takashi Fritz (last row, 2nd from right) and distinguished guest, Dr. John Richard Bower (last row, 2nd from left) in Hokkaido University, Hakodate Campus after the closing program and awarding of Certificates of Achievement on 27 September 2019. PHOTO COURTESY OF TN ALAVATA

is organized by the Japan Science and Technology Agency to promote exchanges in science and technology among the youth from Asia and Japan.

Moreover, this program facilitates short-term visits of competent Asian youth to Japan in collaboration with Japanese universities, research institutions, private companies, and government agencies.

“The training was a very good platform in promoting mutual understanding between Japan and other

participating countries for building future friendships and at the same time, future collaborations and cooperation,” said Ms. Lames.

Aside from the two participants from SEAFDEC/AQD, there were also eight participants from the other SEAFDEC departments and the Secretariat, two from the Universitas Diponegoro, one from the Civil Engineering Research Institute for Cold Region, and three from Hokkaido University. **a**

- JG GARIBAY/RH LEDESMA

Technical staff learns Kuruma prawn culture in Japan

JAPAN – Mr. Edgar Somblingo, technical assistant of the Southeast Asian Fisheries Development Center/Aquaculture Department (SEAFDEC/AQD), learned the basic techniques on artificial propagation of Kuruma prawn during a study visit in Japan.

During his study visit, Mr. Somblingo had hands-on training on maturation and spawning activity of Kuruma prawn, as well as its physiological and nutritional aspects with regard to grow-

out culture at the Momoshima Laboratory of the National Research Institute of Fisheries and Environment of Inland Sea, Japan Fisheries Research and Education Agency in Hiroshima, Japan.

“The hands-on experiences helped me to not only learn valuable skills, but also created opportunities to network and build professional relationships,” said Mr. Somblingo who was trained under the supervision of Dr. Takuma Sugaya.

Moreover, a lecture on white spot disease (WSD) control and egg disinfection using electrolyzed seawater was also given by Dr. Jun Satoh, leader of the Infection Control Group of Kamiura Laboratory, National Research Institute of Aquaculture in Oita Prefecture.

In addition, Mr. Somblingo visited a Kuruma prawn farm in Himeshima of the same Prefecture, wherein he was able to tour the different



Mr. Edgar Somblingo performing gill and eye cutting procedures on Kuruma prawn at the Momoshima Hatchery on 5 October 2019. PHOTO COURTESY OF E SOMBLINGO

Continued on next page...

facilities and observe the harvesting and packaging procedures for Kuruma prawn.

“I am very thankful for the opportunity to be trained in this field. SEAFDEC/AQD for the last two years

has invested heavily on the revival of the shrimp industry in the Philippines. I believe that the knowledge and improved breeding techniques of shrimp broodstocks I have learned and acquired from this study visit will significantly

contribute to the increased production of shrimp in the country,” he said.

The study visit is under the program “Kuruma prawn, *Marsupenarus japonicus*, breeding and disease control technology” held from 30

September to 16 October 2019. This program was implemented by the SEAFDEC Secretariat in coordination with Marino Forum 21, and through the funding support of the Government of Japan. [a](#)

- JG GARIBAY/RH LEDESMA

Information officers review progress of initiatives implemented

PUERTO PRINCESA CITY, Palawan - With the aim of further increasing the visibility of the Southeast Asian Fisheries Development Center (SEAFDEC), information officers held their annual meeting here to discuss the progress of the institution’s information-related activities.

Information officers from the SEAFDEC Secretariat and Departments presented the progress of their respective websites and digital repositories of scholarly and research information. The achievements and updates in the implementation of information strategies to

enhance SEAFDEC visibility were also reviewed and discussed during the meeting.

“This is a perfect venue to discuss strategies, monitor progress, and harmonize communication networking activities as well as to learn from each other. Our end goal is to successfully and truthfully disseminate

laudable information that we have generated and verified so that stakeholders of the region become aware of any sustainable technology development in fisheries and aquaculture,” said Mr. Dan Baliao, chief of SEAFDEC/AQD, during his welcome remarks.



Information assistants Mr. Ronilo Subaldo (left) and Ms. Mary Grace Oliveros (right) present SEAFDEC/AQD’s website metrics and progress of the institutional repository, respectively during the “Twentieth Meeting of SEAFDEC Information Staff Program” in Puerto Princesa City, Palawan held 15 to 17 October 2019. PHOTO BY JF ALDON

This year’s “Twentieth Meeting of SEAFDEC Information Staff Program,” held 15 to 17 October 2019, was hosted by SEAFDEC’s Aquaculture Department (AQD).

The meeting gathered a total of 31 participants and observers including AQD

officials Chief Baliao and Training and Information Division head Dr. Edgar Amar; AQD representatives Mr. Rex Delsar Dianala, Ms. Mary Grace Oliveros, and Mr. Ronilo Subaldo; and other AQD information staff. [a](#)

- RH LEDESMA

Algal paste promoted in Agrilink

PASAY CITY – SEAFDEC/AQD promoted its algal paste products during Agrilink, the Philippines’ largest agribusiness exhibition, held here at the World Trade Center on 3 to 5 October.

Associate researcher Annie Franco of the Larval Food Laboratory entertained queries from fish farmers and hatchery operators, some visiting Agrilink specifically to see the algal paste products.

“Algal paste are produced from fresh microalgae which upon removal of the seawater become concentrated so it can be stored for later use,” said Franco.

Aside from use as direct feed, the algal paste may also

be used as backup in case live cultures collapse such as during extreme weather conditions.

SEAFDEC/AQD currently produces algal paste in 5 species - *Nanochlorum* sp., *Chaetoceros calcitrans*, *Tetraselmis tetrathele*, *Isochrysis galbana*, *Chlorella sorokiniana*, and *Thalassiosira* sp.

Along with the algal paste, analytical and diagnostic services of SEAFDEC/AQD were also promoted. The AQD Bookstore also distributed publications and an aquarium display of live eel juveniles (*Anguilla marmorata*) grabbed the attention of passersby.



SEAFDEC/AQD’s algal paste products along with samples of live cultures were on display during the 26th Agrilink held 3-5 October 2019 at the World Trade Center in Pasay City. PHOTO BY RD DIANALA

Agrilink is an annual exhibition gathering hundreds of local and international exhibitors from the agriculture, food, and fisheries

industry. In recent years, it is reported to gather 25,000 visitors during each of its 3-day annual exhibitions. [a](#)

- RD DIANALA

Popularity of mangrove crabs leads to various trainings on crab hatchery, nursery, and grow-out

DUE to the growing popularity of mangrove crab as an aquaculture commodity, the Southeast Asian Fisheries Development Center/ Aquaculture Department (SEAFDEC/AQD) conducted several training courses on various aspects of mangrove crab culture.

In a span of two months, SEAFDEC/AQD already completed four training courses on mangrove crab alone. One course was on mangrove crab hatchery operations while there were three sessions for the course mangrove crab nursery and grow-out operations.

“We believe that mud crab is a widely sought commodity in the world today and even hailed as the food for the gods. Your 24-day training doesn’t mean that we have made an expert out of you overnight. But I would like to tell you that despite this short training, we have sent you out now as successful participants and SEAFDEC/AQD still stands at the threshold of helping you,” said Mr. Dan Baliao, chief of SEAFDEC/AQD, during the closing ceremony of the Mangrove Crab Hatchery Operations on 2 September 2019 held at Tigbauan, Iloilo from 5 p.m. to 7 p.m.

The Mangrove Crab Hatchery Operations is a 22-day training course with lectures and practical activities on crab biology, site selection, natural food production, hatchery operations, feeding management, and health management among others. On the other hand, the Mangrove Crab Nursery and Grow-out Operations is a 10-day training course with lectures and practical activities on crab biology,



Trainees study the anatomy and physiology of mangrove crab at SEAFDEC/AQD's Training Laboratory in Tigbauan, Iloilo on 13 August 2019. PHOTO COURTESY OF TRAINING SECTION

pond preparation, nursery and grow-out operations, feeding management, and health management among others.

There was a total of 67 trainees with 63 coming from the Philippines, three from Papua New Guinea, and one from India who participated in the training courses which were completed on 2 September, 16 September, 19 September, and 9 October 2019, respectively.

In the closing ceremony held on 8 October 2019 at Tigbauan, Iloilo from 5 p.m. to 7 p.m., Mr. Glenn Fajardo, a crab farm owner and participant of the training, gave his impression about the training course on behalf of his fellow trainees.

“This kind of training serves as an instrument or as a guide for those who experienced loss of investments because we don’t know anything. So through SEAFDEC/AQD, we call this our best friends guiding us, giving us advice and they promised us just a while ago that they will continue giving us pieces of advice going to our goal to be more productive



Trainees prepare natural food for mangrove crab larvae at SEAFDEC/AQD's Training Laboratory in Tigbauan, Iloilo on 14 August 2019. PHOTO COURTESY OF TRAINING SECTION



Participants of the on-site training course on Mangrove Crab Nursery and Grow-out in Bagamanoc, Catanduanes install hapa nets in ponds on 18 September 2019. A hapa net is similar to an inverted mosquito net that is used in a fixed net enclosure. PHOTO COURTESY OF TRAINING SECTION

especially in mangrove crab industry,” said Mr. Fajardo.

Moreover, Training Section head Mr. Caryl Vincent Genzola added that there were already nine batches of trainees

for crab-related training alone from January to October 2019 and another upcoming training is scheduled in November 2019. **a**

- RH LEDESMA

3 trainees from PH, Madagascar complete sandfish course

TWO trainees from Madagascar and one from the Philippines finished the training course “Sandfish (*Holothuria scabra*) Seed Production, Nursery and Management” offered by the Southeast Asian Fisheries Development Center (SEAFDEC/AQD) at its main station in Tigbauan, Iloilo.

The training course covered lectures and practical activities on natural food culture, sandfish spawning induction, and larval rearing. The course also included a field tour to a sandfish sea ranching site in Molocaboc Island, Sagay City, Negros Occidental. Grow-out culture and sandfish processing were

taken up during the course as well.

Sea cucumbers including sandfish are highly valued marine commodities when processed and dried into *trepang* or *beche-de-mer*. However, majority of the traded sea cucumbers come from wild harvests causing a decline of sea cucumbers in their natural environment. Hence, culture of sea cucumber is an alternative to protect the wild population. Moreover, among the sea cucumber species, sandfish has one of the highest potential for aquaculture because hatchery production technology is already established.



Dr. Jon Altamirano (center), SEAFDEC/AQD's expert on sandfish, teaches the trainees the proper monitoring of sandfish juveniles reared in a floating nursery at SEAFDEC/AQD's Igang Marine Station in Nueva Valencia, Guimaras on 10 October 2019. PHOTO BY RP PAGADOR

This 16-day training course that was conducted from 3 to 18 October 2019, was already the second

session for this year with the first session conducted in March 2019. [a](#)

- RH LEDESMA

AQD trains BFAR-6 staff on milkfish culture and management

TO PROVIDE effective extension services and technical assistance on milkfish culture and management to stakeholders, SEAFDEC/AQD capacitated 15 newly-hired staff from the Bureau of Fisheries and Aquatic Resources-Region 6 (BFAR-6).

Ms. Riza Chua, trainee and aquaculturist of BFAR-6, shared her fruitful experience during the one-week training course held last 15 August to 1 September 2019 at AQD's Tigbauan Main Station.

“Through the knowledge and expertise shared to us by AQD, we will be going home with adequate knowledge to strengthen the services we will give to the stakeholders,” she said.

The participants learned basic and practical culture techniques such as proper fry

transportation, installation of egg collectors, feed preparation, and sampling.

“We all know you can't be considered as experts through a 1-week training course but take this as the first step in honing your skills. We expect you to go beyond what you have learned from us,” Mr. Dan Baliao, chief of AQD, said during the closing program of the training course last 30 August 2019.

Chief Baliao also mentioned that this course is just one of the series of training courses requested by BFAR-6. The succeeding batch will focus on seaweed, tilapia, and other priority species required by the Philippine government.

Ms. Edna Janeo, chief of BFAR-6's Regional Fisheries Training and Fisherfolk



BFAR-6 staff counts milkfish fry for transport during one of the practical sessions at AQD's Integrated Fish Broodstock Hatchery Complex. PHOTOS BY EV ANTOLINO

Coordination Division Center, shared that this activity is more than capacity-building but also for developing linkages.

“Although this is a way to capacitate our newly-hired staff on milkfish culture technologies, we also consider this activity as a way for BFAR's future generation to build close coordination

with AQD. Together, we can improve the extension activities which will cater to the needs of our stakeholders and better our milkfish production,” she said. [a](#)

- JM DE LA CRUZ

JICA trainees appreciative of AQD small-scale inland freshwater aquaculture course

AN INTERNATIONAL training course on small-scale inland freshwater aquaculture held at the Binangonan Freshwater Station from 5 to 23 August 2019 had its participants voicing out their appreciation of the course and vowing to implement their learning in their home countries.

Ms. Elizabeth Forgako, head of Cameroon's Ministry of Livestock, Fisheries, and Animal Industries and one of the participants, expressed her gratitude for having participated in the courses.

"I consider AQD as a basket of knowledge and I promised to apply all the learnings I gained here to improve fisheries and aquaculture sector in my home country," said Ms. Forgako.

On the other hand, Mr. Kennedy Otieno, sub-county in-charge of Migori County's Directorate of Fisheries Development in Kenya said he will implement what he learned from the courses which are broodstock management, feed formulation and preparation, fish nutrition, fish health management, and hatchery to grow-out culture techniques of tilapia, bighead carp, catfish and freshwater prawn.

"I really appreciate the knowledge and skills I learned from AQD and I will try my best to implement the action plan in my region," said Mr. Otieno.

Ms. Forgako and Mr. Otieno are two of the eight participants who completed the 20-day training course supported by the Japan International Cooperation Agency (JICA). Other participants were from Benin, Cambodia, Côte d'Ivoire,



Training course participants on their way to Brgy. Navotas in Cardona, Rizal for the rapid rural appraisal activity with AQD Scientists (4th and 5th from right, respectively) Dr. Frolan Aya and Dr. Nerissa Salayo and Associate Researcher Mr. Dan Joseph Logronio (leftmost). PHOTO BY RP PAGADOR

Ghana, Kenya, Myanmar, and the Philippines.

The training course, already on its second year, aimed to promote small-scale freshwater aquaculture especially for rural areas in the Asian and African countries.

Aside from technical lectures and practical exercises, a rapid rural appraisal activity held at Brgy. Navotas in Cardona, Rizal was included in the course where the participants collected and analyzed information from the community about its current inland aquaculture status and practices.

The said rapid rural appraisal activity enabled the participants to gain a deeper understanding of the issues and problems in a small-scale artisanal fishing community in the Philippines. It also provided a learning opportunity for the participants as it enabled them to formulate an action plan for their communities. **a**

- F AYA/JM DE LA CRUZ



aqd matters

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AQD to strengthen aquaculture techno-transfer efforts



External evaluators joins SEAFDEC/AQD management, program leaders, and staff for the 2019 In-house Review and Planning Meeting last 26-27 September 2019 at its Tigbauan Main Station in Iloilo. PHOTO BY JF ALDON

FOR STAKEHOLDERS to benefit from existing aquaculture technologies, SEAFDEC/AQD focused on increasing its efforts to effectively transfer technologies with the help of partner agencies.

With 42 studies being conducted in 2019, AQD chief Dan Baliao highlighted the urgent need to verify and demonstrate the experiments to hasten the adoption of matured researches for the benefit of small-scale, local fish farmers.

“Research-wise, we have significant positive results and achieved many milestones in various commodities. However, a lot remains to be done including the improvement of our extension efforts,” Baliao said during the 2019 In-house Review and Planning Meeting of SEAFDEC/AQD held last 26-27 September 2019 in Tigbauan, Iloilo.

Activities implemented under the said studies were focused on the development

of aquaculture technologies such as broodstock development and seed production, farming systems and ecology, nutrition and feed development, fish health management, and socio-economics.

Baliao suggested for AQD to actively collaborate with competent agencies such as the Department of Agriculture’s Bureau of Fisheries and Aquatic Resources (DA-BFAR) and Bureau of Agricultural Research, National Fisheries Research and Development Institute, among others.

“Extension initiatives can be very complex and if not done well, the Philippine aquaculture industry persists in a situation where no innovations are being introduced. This is why we need to strengthen our relationships with our co-partners because we can’t do this alone,” he added.

The meeting is being held annually to review the progress of departmental,

regional, and special programs as well as the activities conducted by the various divisions of AQD. The department’s plans for 2020 were also discussed during the sessions.

“We have done this activity annually and so far, it has been useful in making necessary adjustments for our programs and projects – not only in research but in other divisions as well,” he said.

The meeting has also been a venue to openly discuss constraints and problems that hindered or delayed the attainment of the goals as well as to determine the strategies to solve the presented issues with the help of external evaluators from the government agencies and private sectors.

The four external evaluators, on behalf of their respective agencies, showed their support to AQD’s new initiatives. Mr. Rene Bocaya, a representative from Alson’s Aquaculture Corp., Dr. Emelyn Flores,

Assistant Regional Director for Technical Operations of Department of Science and Technology Region 6, Mr. Erwin Pador of DA-BFAR Region 6, and Mr. Joseph Borromeo, who attended on behalf of DA-BFAR Director Eduardo Gongona, were present during the meeting.

In closing, Baliao mentioned that AQD’s ultimate goal is to ensure that its researchers and staff won’t forget about the stakeholders.

“As we continuously refine, improve, and modernize sustainable aquaculture technologies, let’s always remember that there’s an average Filipino fish farmer out there waiting for our assistance,” he said. 📷

- JM DE LA CRUZ