

SEAFDEC AQD Matters

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

Japanese dignitaries visit AQD

PHOTOS THIS PAGE BY RHILEDESMA



The Japanese delegates with the Tigbauan and Guimaras fisherfolk and AQD senior and junior staff

Dr. Shinichi Yokoyama, Japan's Parliamentary Secretary of Ministry of Agriculture Forestry and Fisheries, together with Japanese Fisheries Agency officers visited AQD in Iloilo, Philippines on 28 June 2014 to get acquainted with the current research projects of the Department. Dr. Yokoyama and party had a short tour at AQD's mud crab and

milkfish ponds in Dumangas Brackishwater Station. They also visited AQD's hatchery facilities for mud crab, abalone, milkfish and seaweeds in Tigbauan Main Station.

The group also met with fisherfolk from Tigbauan and seaweed farmers from Guimaras (who are AQD's partners in its seaweed project which received funding from the Government of Japan

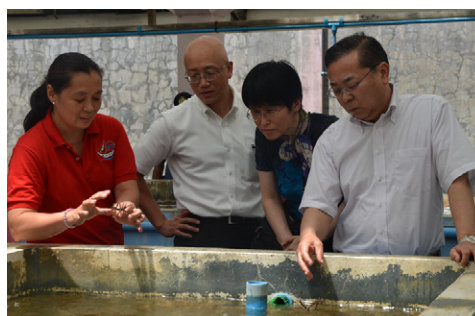
Trust Fund) to discuss about the fisherfolk's livelihood and how aquaculture, particularly seaweeds farming has improved their way of life. During the meeting, AQD Socioeconomics Section head Dr. Nerissa Salayo, also presented AQD's activities with the fishing communities.

Through this visit, Dr. Yokoyama was able to understand the problems and

concerns of the fisherfolk in the Philippines. Furthermore, he appreciated AQD for utilizing the fund from the Japanese government to help Filipino fisherfolk by disseminating aquaculture technologies it has developed. Dr. Yokoyama also mentioned that the Japanese government increased its funds for SEAFDEC to widen its reach to fishing communities.



Japan's Parliamentary Secretary of Ministry of Agriculture Forestry and Fisheries Dr. Shinichi Yokoyama (3rd from right) with AQD Chief Dr. Felix Ayson (2nd from right) at AQD's milkfish pond in Dumangas Brackishwater Station



AQD scientist Dr. Evelyn Grace Ayson shows the seaweed plantlets grown at AQD Tigbauan Main Station to SEAFDEC Secretariat technical coordinator Mr. Tsuyoshi Iwata (2nd from left), Ms. Hiromi Adachi, and Dr. Yokoyama (rightmost)



AQD scientist Dr. Nerissa Salayo shows Dr. Yokoyama the seaweed project site (2003) of AQD in Tigbauan, Iloilo, Philippines

AQD scientists participate in aquaculture convention

AQD scientists Dr. Rolando Pakingking Jr., Dr. Emilia Qunitio and Dr. Nerissa Salayo were among the speakers at the 5th Aquaculture Expo and Convention (AQUATECH 2014) held at Dagupan City, Pangasinan, Philippines from 29 to 31 May 2014. They talked on the diseases in tilapia, updates on the soft-shell crab production in the Philippines and market & development issues in coastal resources management in the Philippines, respectively. Moreover, AQD scientists Dr. Maria Lourdes Aralar, Dr. Mae Catacutan, Dr. Qunitio and Ms. Jocelyn Ladja were among the resource persons during the convention's aquaculture clinic while Dr. Maria Rowena Eguia and Dr. Salayo served as moderators during the technical conference.

AQD Chief Dr. Felix Ayson, Deputy Chief Dr. Takuro Shibuno, Research Division head Dr. Ma. Junemie Hazel Leбата-Ramos, and Dr. Veronica Alava also attended the event.

Aside from the technical conference, AQD also participated in the trade show



(L-R) AQD scientists Dr. Emilia Qunitio, Dr. Rolando Pakingking Jr. and Dr. Nerissa Salayo speak during AQUATECH's technical conference



Participants from SEAFDEC/AQD including former Chief Dr. Joebert Toledo gather as AQD received a plaque of appreciation in recognition of its 40 years contribution to the aquaculture industry during the *Networking Night*. Incumbent AQD Chief Dr. Ayson and Dr. Toledo also received plaques of appreciation in recognition of their support to the aquaculture industry.

with Ms. Grace Garcia as the technical resource person and booth in-charge. In addition, during the networking night, AQD was able to re-launch its latest publications released in 2013 namely: (1) Culture of Marine Phytoplankton for Aquaculture Seed Production and (2) Field Guide to Mangrove Identification and Community Structure Analysis. The book Coastal Resource

Management: Perspectives from the Social Sciences published by the Philippines' Department of Agriculture-Bureau of Agricultural Research (DA-BAR) and the University of the Philippines Visayas (UPV) which includes a chapter on Market and Fisheries Development Issues in Coastal Resource Management written by Dr. Salayo was also re-launched.

Complimentary copies of these publications were given to about 15 participants of the convention.

In joining this event, AQD was able to disseminate its science-based aquaculture technologies and technical services. Also, this event helped broaden AQD's visibility to aquaculture stakeholders throughout the Philippines.

Courses on sandfish, abalone and mud crab

A 14-day international course on *Sandfish seed production, nursery and grow-out* was held from 22 April to 7 May.

The trainees were provided technical knowledge and skills on broodstock management & induced spawning and larval rearing, nursery & grow-out culture



Two trainees handle sandfish juveniles at the floating nursery in AQD's Igang Marine Station



Participants during their laboratory work on natural food production

techniques of the sandfish *Holothuria scabra*. They also learned how to produce natural food used as feed for sandfish larvae.

The course had seven participants from Malaysia (3), Netherlands (1), United Kingdom (1), India (1) and Micronesia (1).

Continued on page 3

PHOTOS BY RHI LEDESMA

PHOTOS BY R PAGADOR

Courses on sandfish...

from page 2

Five trainees from the Philippines (2), Singapore (1), Cambodia (1), and Vietnam (1) finished the international training course on *Abalone hatchery and grow-out* from 7 to 27 May.

Through a series of lectures and practical sessions, the participants learned the technologies needed for starting an abalone farm. They were taught about broodstock management; induced spawning techniques; larval, nursery and grow-out culture techniques; and the production of natural food for abalone larvae.

The trainees promised AQD that they will share the knowledge that they gained to their colleagues back home.

A total of 18 international trainees finished the 28-day course on mud crab *Scylla serrata* culture from 27 May to 18 June.

The trainees are both from the government and private sector coming from the Philippines (12), Malaysia (2), Tahiti (2), Japan (1) and USA (1). The lectures were a broad combination of knowledge from the basic concepts of mud crab industry

to broodstock management and larval rearing. The practical sessions gave the trainees hands-on experience on pond preparation, stocking and harvest & transport.

The mud crab course continues to be one of the most in demand courses in AQD. AQD Chief Dr. Felix Ayson said the number of participants reflects the popularity of mud crab aquaculture at present. The Chief also encouraged the trainees to go into soft-shell crab production because of its increasing demand in the market.



Abalone trainees at the natural food laboratory for a practical exercise



The abalone training participants during their hands-on work at the hatchery



Trainees taking measurement of abalone at AQD's Igang Marine Station



Trainees for the *Mud crab hatchery, nursery and grow-out operations* course during their practical sessions in the hatchery and the laboratory

PHOTOS BY R BOMBEO / CV GENZOLA

Research Seminars this MAY and JUNE

15 MAY



Dr. Nerissa Salayo
Scientist
SEAFDEC/AQD

“Community-based Stocking of Abalone in Sagay Marine Reserve, Negros Occidental, Philippines”

Dr. Salayo talked about the activities of the on-going 7-year community-based tri-party collaboration for the implementation of stock enhancement in SMR. The activities included social assessment surveys, community organizing, information dissemination and participatory promulgation of abalone catch size regulation to sustain the stocks. These activities were followed by the establishment of an abalone stock enhancement demonstration site in the coralline intertidal flats of Brgy. Molocaboc in June 2011. The fishers protect the demonstration site, the LGU provides logistics and oversight, and AQD provides hatchery-bred abalone juveniles and technical guidance. The outcomes showed that the juveniles established, grew and spawned in the release site, together with wild stocks. The tri-party collaboration continues but the participation of key stakeholders and uptake of stock enhancement process remains variable even if the stakeholders continue to obtain economic benefits through regulated partial harvest and sale of mature abalone. According to Dr. Salayo, the social aspects of stock enhancement remain a challenge and its relationship with the values and motivations of fishing communities in the Philippines should be studied.

“Economics of Stock Enhancement in New Washington, Aklan, Philippines: Baseline Information for Coastal Area Capability Development”

Dr. Salayo presented the baseline characteristics of the fisheries and the coastal community in New Washington, Aklan based on the survey conducted. The survey includes questions on: socioeconomic condition of households, estuary resources and utilization, marketing of catch, resource use conflicts, awareness of stock enhancement, cost of stock enhancement initiatives, perceived benefits from stock enhancement, and expected compensation in stock enhancement. The survey result shows that 81% of the 200 respondents depends on fishing as their primary source of income. In addition, the result shows that the assessment of living conditions was low with a score of about 5 where 10 is the highest rating. In relation to this, Dr. Salayo discussed the cost-benefit analysis of stock enhancement. She tackled the private and social benefits of stock enhancement that includes: (1) higher volume & value of catch of fishers, (2) improved food consumption, (3) restored fisheries, (4) improved fishing livelihood/income, and (5) community solidarity. The private and social costs of stock enhancement on the other hand are: (1) opportunity cost of individual participation, (2) social preparation, (3) release and monitoring, (4) research and disease prevention costs, and (5) governance transactions & management cost. The cost-benefit analysis of stock enhancement would be useful to determine its efficiency as a fisheries management tool that can guide governance and policy recommendations to support stock enhancement initiatives. Eventually, this can contribute to coastal area capability development in the Philippines and other countries.

19 MAY



Mr. Matthew Tan
Chief Technology Officer
Oceanus Group Ltd.

“The Industrialization of the Abalone Industry in China by the Oceanus Group” and “Operations of a Mega-Sized Abalone Farm”

Mr. Tan discussed Oceanus' venture on abalone farming. He presented that the company has an annual production target of 500 million fertilized abalone (*Haliotis discus hannai*) eggs. He also explained his company's grow-out and fattening operation in sea-based farms. Mr. Tan also mentioned that Oceanus follows a science- and evidence-based approach in farm management. The company has risk management plan and processes and also observes biosecurity measures and in-house farm & hatchery protocols. Mr. Tan also mentioned that Oceanus has the world's largest land-based aquaculture production platform with 42 production locations/farms in China. Currently, the company is diversifying its global operation with possible collaboration with other organizations on the production of other high-value species.

22 MAY



Dr. Jacques Zarate

Visiting Scientist
SEAFDEC/AQD

*“Polyculture of sandfish (*Holothuria scabra*) with selected marine finfish species”*

Dr. Zarate with co-authors Ms. Dieyna Caber and Michael Sestina conducted an initial trial by culturing small juvenile sandfish with small juvenile Asian sea bass (*Lates calcarifer*), grouper (*Epinephelus coioides*), pompano (*Trachinotus blochii*), mangrove snapper (*Lutjanus argentimaculatus*), rabbitfish (*Siganus guttatus*) and milkfish (*Chanos chanos*) in two-liter aquaria for one week. The authors observed that the grouper and rabbitfish bit the sandfish while the other fishes lived harmoniously with sandfish. The experiment was repeated using larger fishes and sandfish in 250-liter tanks for one month and confirmed that rabbitfish and grouper were incompatible with sandfish.

These results were verified in a production setting in pens installed in the open water and ponds. The results of this trial suggest that sandfish may be grown with Asian sea bass, pompano and milkfish with no detriment effect to the fish.

29 MAY



Mr. Joseph Leopoldo Laranja Jr.

Associate Researcher
SEAFDEC/AQD

*“The application of poly-β-hydroxybutyrate (PHB) accumulating *Bacillus* spp. as probiotics in aquaculture”*

Mr. Laranja discussed the use of poly-β-hydroxybutyrate (PHB) accumulating bacteria as a sustainable bio-control strategy for aquaculture. In his study, probiotic *Bacillus* spp. with higher PHB accumulation capacity were isolated and screened from different aquaculture environments.

Out of the 70 isolates screened, 8 *Bacillus* spp. were selected based on their superior ability to accumulate PHB. Among the 8 isolates examined, the top 2 PHB-accumulating *Bacillus* isolates designated as *Bacillus* sp. JL1 and JL47 were incorporated in an artificial diet and fed to *Penaeus monodon* postlarvae to test their effects on the growth, survival and robustness of the shrimp determined in vivo. The in vivo results showed that PHB-accumulating *Bacillus* spp. significantly improve the growth, survival and robustness of *P. monodon* postlarvae during culture. The tests conducted also showed that *Bacillus* sp. JL47 have the most promising results in improving the growth, survival and robustness of the shrimp. However, there is still a need to verify the exact protective mechanism of PHB-accumulating *Bacillus*. More research is currently being conducted to understand the possible role of PHB accumulation in the protective capacity of *Bacilli*, a feature which has earlier been shown important for other bacterial species in this respect.

19 JUNE



Mr. Joseph Biñas

Senior Technical Assistant
SEAFDEC/AQD

“The increasing importance of polychaetes to aquaculture”

Mr. Biñas talked about the significance of polychaete worms in aqua-nutrition. He mentioned that based on some scientific publications, polychaete worms can be used as a maturation diet for crustacean broodstock. Furthermore, it can also be an alternative to fish meal for the protein component of feeds. He also cited some studies that showed that polychaetes improved the breeding performance of some shrimp and fish species. Like in the case of *Penaeus monodon* where spawning

frequency reached 85% when fed with 16.5% worm diet and only 57% when given feeds with only 8% worm diet.

He also discussed AQD's research work on polychaete which started in 2008 where wild-sourced *Perinereis* meal was used in fish, shrimp and crab feeds. In 2010, studies on polychaete include: (1) *Perinereis* meal used in *P. monodon* broodstock feed and (2) reproductive biology of *Perinereis quatrefagesi* and *Marphysa mossambica*. The following year, AQD started captive breeding of *M. mossambica* and studied the nutritional value of *P. quatrefagesi*. For 2012-2013, research work focused on the development of mass production protocol, nutritional evaluation of *M. mossambica* and completion of the life cycle in captivity which was funded by PCAARRD-DOST. Currently, refinement of production protocols, development of polychaete-based crab broodstock diet, and bioremediation of pond sediment by *M. mossambica* are being studied.



Tuklas Kalikasan at FishWorld

The National Museum organized and led Tuklas Kalikasan in Iloilo and Guimaras on 20-24 May 2014 starting at historic Santa Barbara and visiting several natural history sites: the Mariit Conservation Park and lowland forest in the WVSU-INCA campus in Lambunao, Iloilo; the Taklong National Marine Reserve and UP-Visayas Marine Station in Nueva Valencia, Guimaras; and SEAFDEC FishWorld and the AQD Museum of Aquatic Biodiversity in Tigbauan, Iloilo. About 30 tourism officers, museum workers, and teachers joined Tuklas, including FishWorld Curator Dr. Teodora Bagarinao and two FishWorld interns from Philippine Science High School, Cebu.

The Tuklas participants worked at FishWorld on 23 May. They viewed the AQD video and visited the laboratories and hatcheries for milkfish, sea horse, and abalone. They learned how the AQD Museum came about and was inaugurated in 1993, and how FishWorld followed in 2000 with a variety of exhibits and a program of activities to enhance science and environment education for the general public. Dr. Bagarinao has put together a wide array of species collections; sea-inspired artifacts and artworks (including several murals by An Leng); and many live animals in aquaria and tanks. Tuklas participants learned about mollusk diversity by identifying bivalves and gastropods to families and species through comparison with the AQD Museum's shell collection. They learned fish identification by means of a dichotomous taxonomic key, from NM's Don Dumale using the family Teraponidae as example. NM's John Rey Callado made ferns so interesting and the taxonomy so accessible by means of striking photographs of sori arrangements. Dr. Evelyn Ayson met the Tuklas group and son Enrico acted as guide. For more details of Tuklas Kalikasan, see the official report by Dr. Luisito Evangelista at seafdec.org.ph/fishworld.



National Museum
Province of Iloilo & Guimaras
Municipality of Sta. Barbara
Iloilo Tourism Officers Association

TUKLASKALIKASAN 2014
ILOILO & Guimaras
IRIRIMAW SA PAGTUKIB
together we discover • May 20-24, 2014

STA. BARBARA • LAMBUNAO
TAKLONG ISLAND • SEAFDEC

FishWorld Internship 2014

Two students undertook the FishWorld internship in May 2014, Darlene Barago and Kaylene Cachila, cousins and incoming seniors at the Philippine Science High School, Cebu. They were assigned various learning tasks:

- aquarium maintenance for fish welfare
- museum work (shelving specimen jars, washing hundreds of others)
- species identification of mollusks
- fish anatomy
- caring for endangered sea turtles

With their mentor Dr. Teodora Bagarinao, Darlene and Kaylene joined the National Museum's Tuklas Kalikasan Iloilo-Guimaras on 20-24 May and learned other things as well. Here's what the interns say:

*In the midst of May
When the skies were never grey
A journey we found
Gave us knowledge without bounds*

*We first came to FishWorld
Where the sea is contained
Named organisms using a key
And hoped right we would be*

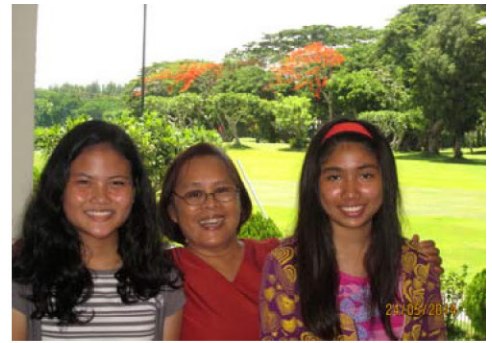
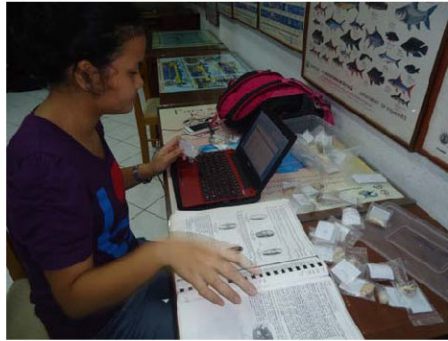
*Aquarium creatures we fed
Their homes we cleaned
Turtle connections we made
Memories will never fade*

*Learning plants and animals in school
From teachers who made us drool
Quite different from meeting first hand
Exotic residents of sea and land*

*In Santa Barbara started Tuklas
Showed us Lambunao and Guimaras
We ventured the forest and the sea
Impressed by the biodiversity*

*Of history and culture they proudly tell
In music and dance Ilonggos excel
Iloilo we just experienced anew
Too soon we bid adieu*

*Thanks to the people who made it fun
In a place where sea meets the sun
The mentor who gave us a place to stay
And taught us a lot in May*





PALARO 2014

“Building a healthy AQD community through physical and mind sports”



PHOTOS THIS PAGE BY DEVCOM

AQD's two-day Palaro kicked-off with a fun walk and a marathon from Tigbauan plaza to TMS (Tigbauan Main Station) on 26 May. Team Ulang won the marathon.

AQD Chief Dr. Felix Ayson lights the cauldron to officially open *Palaro 2014* (top). Teams Ulang and Pompano take the oath of sportsmanship led by Deputy Chief Dr. Takuro Shibuno (right)

Let the games begin!!!




The valiant men of Team Ulang triumphs over Team Pompano's men on three events: basketball, volleyball, and soccer



PHOTOS THIS PAGE BY DEVCOM



Team Pompano shows its prowess in bowling, badminton, billiards and table tennis. The team was the the overall winner in these events


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

 Editor this issue:
RH Ledesma

 Contributing writers/photographers:
 JM de la Cruz, GK Faigani,
 IT Tendencia

 Editorial consultants:
 Jesus Manuel Almendras,
 Dr. EG de Jesus-Ayson

 2010 Publications
 Review Committee:
 Dr. RM Coloso, Dr. EG Ayson,
 Dr. MLC Aralar,
 Dr. RV Pakingking Jr,
 Dr. ND Salayo

 Circulation to friends of AQD:
 SB Alayon

 For contributions and feedback,
 kindly email:
 devcom@seafdec.org.ph

Girl power! Team Pompano won the women's basketball and volleyball games





Team Ulang beats Team Pompano in lawn tennis, track and field, chess, darts and parlor games... and the Championship trophy goes to **TEAM ULANG!!!** Congratulations!

