

SEAFDEC AQD Matters

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

DOST funds Php 19.6 M SEAFDEC-UPV mudcrab program

DOST (Department of Science & Technology - Philippines) has approved the joint Php19.6 million proposal of AQD and UPV (University of the Philippines Visayas) for a *National mud crab science & technology program*. The ultimate goal is to establish mud crab *Scylla serrata* hatcheries and nurseries in the Philippines to increase availability of seedstock for farming and maintain or improve the country's status as the second largest producer of mud crab in the world.

AQD signed the agreement with PCAARRD-DOST (Philippine Council for Agriculture, Aquatic & Natural Resources Research & Development, which is the monitoring agency for the program) on 12 July at AQD's Tigbauan Main Station in Iloilo.



Deputy executive director Dr. Cesario Pagdilao (seated right) signs for PCAARRD while Chief Dr. Felix Ayson does the same for AQD. Standing as witnesses are AQD researchers and PCAARRD officers (L-R: Dr. Fe Dolores Estepa, Dr. Veronica Alava, Ms. Adela Corpuz, Ms. Ester Zaragoza, Dr. Emilia Quintio, Dr. Adelaida Calpe, Ms. Virna Salac)

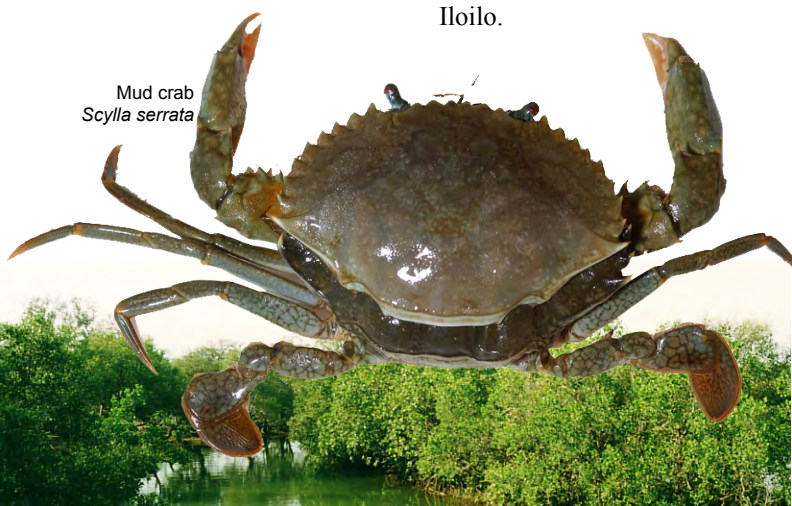
“With this, mud crab R&D will be a major activity for AQD,” noted AQD Chief Dr. Felix Ayson, “In addition to DOST, we also work to support the mud crab program of DA-BFAR as well as the mangrove rehabilitation program of DENR (Department of Environment & Natural Resources) where mud crab is one of the commodities that they plan to introduce in mangrove areas. AQD and partners must be ready with appropriate science-based technologies.”

The three-year program aims to come up with improved diets for broodstock & grow-out, more viable hatchery & nursery technology, and improved grow-out management strategies for the mud crab. Capacity building

of stakeholders is included to hasten technology transfer and extension.

The program has AQD's verification & demonstration division head and scientist Dr. Emilia Quintio as program leader. It consists of seven projects, five to be done by AQD (Dr. ET Quintio, Dr. Veronica Alava, Dr. Fe Estepa, Dr. Mae Catacutan) and two by UPV researchers/faculty (Dr. Jerome Genodepa, Dr. Rex Ferdinand Traifalgar): (1) development of techniques for sustainable production of marine annelids as feed for crab broodstock; (2) improvement of larval rearing protocol; (3) refinement of efficient diets for nursery culture; (4) application of strategies for reduction of cannibalism in crab nursery; (5) evaluation of existing feed formulation for grow-out; (6) development of feeding strategies for grow-out culture in ponds, pens & cages; and (7) development of immunostimulant for crab.

Mud crab
Scylla serrata



AQD has published at least four extension manuals in addition to conducting yearly training on mud crab



**Dr. Ramos:
outstanding
UP alumna in
fisheries & ocean
sciences**

Photo courtesy of JHL RAMOS



AQD scientist Dr. Junemie Hazel Leбата-Ramos was named the 2012 Outstanding professional awardee in fisheries & ocean sciences by the University of the Philippines Alumni Association Inc (Iloilo chapter). She was honored along with eight others on 28 July in Iloilo City as part of the 65th anniversary of the UP presence in Iloilo. Dr. Ramos is currently the head of AQD's farming systems & ecology section, and has headed the AQD program on maintaining-environment-integrity-through-responsible-aquaculture. Congratulations, Dr. Ramos. AQD is so proud of you!

**AQD staff
trains in Japan...**

AQD technical assistant Mr. Joemel Sumbing was in Japan from 11 to 27 July to learn environmental monitoring and modeling concepts, data analysis and programming. Dubbed as the *Mathematical*

modeling of nutrient flow in polyculture system course and sponsored by Japan International Research Center for Agricultural Sciences (JIRCAS), the training was conducted in JIRCAS, Tsukuba; National Research

Institute of Fisheries Science (NRIFS), Fisheries Research Agency (FRA), Yokohama; and National Research Institute of Fisheries and Environment of Inland Sea (NRIFEIS), FRA, Hiroshima.



Dr. Tomoyuki Okutsu (left) of JIRCAS teaches the SDS-Page (sodium dodecyl sulfate poly-acrylamide gel electrophoresis) technique with samples from hemolymph, hepatopancreas and ovary/testes of white shrimp *Litopenaeus vannamei*. Above, Mr. J Sumbing is dissecting white shrimp under a stereomicroscope



AQD's J Sumbing listens to the lecture of Dr. Katsuyuki Abo (right) of NRIFEIS on the environmental models and Princeton ocean model platforms



Dr. Kazuhiro Aoki also of NRIFS explains the global mapping tool, Fortran programming and applications

**... attends
workshop in
Thailand**

AQD senior technical assistant Ms. Milagros Paner and 45 other participants from 13 countries learned diagnostic standards and proficiency testing procedures during the *Workshop on regional proficiency testing program for aquatic animal disease laboratories in Asia-Pacific – implementation plan* held 25-26 July in Bangkok, Thailand.

This was organized by Australia's DAFF (Department of Agriculture, Fisheries and Forestry), CSIRO (Commonwealth Scientific & Industrial Research Organization), AAHL (Australian Animal Health

Laboratory), ANQAP (Australian National Quality Assurance Program), and the Thailand-based NACA (Network of Aquaculture Centres in Asia-Pacific). Ms. Paner's attendance was funded by NACA.

The workshop is part of an overall program aimed at strengthening Asia's regional capability to diagnose important aquatic animal diseases that impact on trade,

industry sustainability and/or productivity. The next move of the program partners is to establish four rounds of laboratory proficiency testing, including AQD's fish health diagnostic laboratory on 10 priority diseases (eg. WSSV, YHV, TSV, others) to start in May 2013.



AQD's M Paner (second from right) with participants from DA-BFAR and Negros Prawn Producers' Cooperative pose and NACA's coordinator on aquatic animal health programme Dr. Eduardo Leano (in white)

J COLOMA / BFAR-3



AQD celebrates its 39th year

The ANNIVERSARY week 2012 -- from 9 to 12 July at AQD's Tigbauan Main Station -- had AQD ceremonially installing its new Chief Dr FG Ayson, reaching out to stakeholders through a farmers' forum, holding a lecture in memory of its founding Chief Dean DK Villaluz, donating blood to the Red Cross, and organizing fun activities



Dr. FG Ayson: my vision for AQD

AQD Chief Dr. Felix Ayson delivered his first address to the AQD community where he stressed the importance of AQD's work plan on five thematic programs to address food security, poverty alleviation and sustainability issues in aquaculture in Southeast Asia. AQD's thematic programs, adopted in 2011 at the ASEAN-SEAFDEC conference on sustainable fisheries, include (1) meeting social & economic challenges; (2) ensuring quality seed; (3) developing healthy & wholesome aquaculture; (4) maintaining environmental integrity thru responsible aquaculture; and (5) adapting to climate change.

Aside from working closely with BFAR to realize AQD's strategic plans on these themes, the new Chief said he plans to expand AQD's technology transfer efforts by focusing on fisheries schools to enable them to put up small-scale aquaculture facilities that can be used as a laboratory and as a technology showcase.

He also deemed a strong linkage with BFAR as part of his strategic plan. "We will strengthen our partnership with BFAR. We know that BFAR is all over country and they have training and extension function. Our technologies, I believe, will reach the farmers faster when working closely with BFAR and their RFTCs or regional fisheries training centers."

Dr. Ayson added that he will address the lack of expertise at AQD in highly specialized fields (like biotechnology) by recruiting highly-qualified staff according to a rational manpower development target. Regarding the funding of AQD programs, he encouraged AQD researchers to be aggressive in seeking grants through innovative research proposals.

Dr. Ayson promised a transparent, just and fair management that will listen to all AQD employees; in return, he said he expects innovation, hard work and dedication.

"I am strict, but reasonable," he said. "And, we AQD employees must have only one loyalty and that is to AQD; we must have one motivation and that is service to all the stakeholders; and we must have only one guide and that is AQD's triple mandate of research, human resources development & information dissemination."

Dr. FG Ayson with PCAARRD deputy director Dr. Cesario Pagdilao and AQD deputy chief Dr. Teruo Azuma, and with officers from Philippine Shrimp Inc. Ms. Roselyn Usero and Mr. Philip Cruz



Dr. FG Ayson with his children Enrico & Erika and wife Evelyn Grace

DA and BFAR extends support to AQD

SEAFFDEC National Coordinator for the Philippines Dr. Jonathan Dickson was on hand as representative of DA-BFAR (Department of Agriculture-Bureau of Fisheries and Aquatic Resources) National Director Atty. Asis Perez and DA Secretary Hon. Proceso Alcala to extend their institution's support to AQD. Congratulating AQD on its 39th year of sharing expertise in aquaculture, Dr. Dickson noted that BFAR and AQD have established ties that support each other's programs and endeavors on marine and freshwater fish, mollusks, mud crab, shrimp, seaweeds and aquatic ecology to aid the problem of food security. "BFAR and AQD must (continue) its strong and regular collaboration so that viable technologies could reach our fish farmers," he said.



SEAFDEC National Coordinator for the Philippines Dr. Jonathan Dickson and AQD Chief Dr. FG Ayson

Dr. FG Ayson with BFAR-6 regional director Ms. Drusila Esther Bayate and DA-6 regional veterinary quarantine officer Dr. Jonic Natidad



Newly-appointed division heads: Dr. Emilia Quintio of technology verification & demonstration and Ms. Kaylin Corre of administration & finance. Above, rightmost: former AQD Chief Dr. Flor Lacanilao, described as the most respected and controversial



Farmers' forum Pompano, red snapper

AQD added two commodities to its business package for entrepreneurs under the ABOT mechanism (Agree-build-operate-transfer AquaBusiness). These are pompano *Trachinotus blochii* and mangrove red snapper *Lutjanus argentimaculatus* whose hatchery, nursery and grow-out culture technologies are ready for commercialization.

AQD researchers Ms. Ofelia Reyes, Ms. Jocelyn Ladja and Mr. Eliseo Coniza presented these to stakeholders attending the *Farmers' forum*. They noted that the demand for high-value marine fishes like pompano (also known as apahan, damis lawin) and snapper (aka. managat, maya-maya, matangal bambangon) has been expanding as their market acceptance increased, and fishfarmers can profit from the high prices.

The hatchery requirements for pompano and red snapper are almost similar. "Critical to success," Ms. Reyes said, "are proper broodstock maintenance, availability of live food during larval rearing, and regular size-grading."

AQD can provide training on marine fish hatchery. A five-week, hands-on course is on-going (26 June to 1 August) at AQD's main station in Tigbauan, Iloilo. The course is offered yearly.

Meanwhile, fingerling production of pompano and red snappers in ponds can be an enterprise separate from grow-out culture. "In fingerling production of high-value fish," Ms. Ladja said, "the use of shelters and size grading are important to prevent sibling cannibalism (in carnivorous fishes) and to produce uniformly-sized fingerlings."

There are two methods in grow-out culture of pompano and snapper in ponds: direct stocking and using net cages set in ponds. "The cost of feed (61-66%) and juveniles (23-25%) are two highest variables in production cost," said Mr. Coniza.

Pompano and red snapper join the growing list of commodities with culture technologies. AQD also offers technology packages on giant freshwater prawn, abalone & seaweeds, mudcrab, grouper, milkfish, seabass, native catfish, tilapia and carp.



(L-R) AQD scientist Dr. Ma. Lourdes Aralar, researchers Mr. Eliseo Coniza, Ms. Ofelia Reyes and Ms. Jocelyn Ladja take questions at the open forum



Fishfarmers ask if AQD can supply seeds and feeds for high-value marine fish production. AQD says yes but the quantities are limited. For seeds, advance order is advisable so the AQD hatcheries can schedule their production and fry disposal. For feeds, AQD's pilot feed mill can only supply larval feeds and not grow-out feeds because the latter requires a large volume of ingredients. At best, AQD can train farmers in both hatchery operations (course is offered yearly) and fish nutrition (course is every other year)

Giant freshwater prawn

The hatchery production of giant freshwater prawn (locally known as ulang) can be done by small-scale fishfarmers. Farmers can utilize plastic drums (cut into half) as larval rearing tanks," AQD scientist Dr. Maria Lourdes Aralar pointed out during the *Farmers' forum*.

Prawn grow-out culture also looks promising since fishfarmers can earn a net income of at least Php 100,000 per year for a total farm area of 5,000 square meters with 70% survival rate. The postlarvae are grown for four to five months with a stocking density of 10-15 pieces per square meter. The average harvest size of ulang is 25-35 grams.

For the past two decades, the culture of giant freshwater prawn spread quickly as an alternative to shrimp culture due to the decline of the shrimp industry. From 1993-2002, the world production of giant freshwater prawn increased from 17,000 to 195,000 tons. In 2008, the Philippines made it to the top 15 producers of this species.

For more details on the farmer's forum, please check the the AQD website: www.seafdec.org.ph.

L-R: Pompano, red snapper and giant freshwater prawn



DKV lecture Dr. Lio-Po speaks on fish health



Development of superior but affordable diagnostic tests is the most important challenge in fish health in Southeast Asia," said retired AQD scientist Dr. Gilda Lio-Po who was this year's Dean Domiciano Villaluz Memorial lecturer. Dr. Lio-Po delivered her paper on *Fish health challenges in Southeast Asian aquaculture* where she tackled the important pathogens affecting aquaculture and the diagnostic tools that are currently available.

She also highlighted AQD's role in promoting and conducting fish health research on diagnosis; prevention & treatment of various serious aquatic pathogens including white spot syndrome virus, viral nervous necrosis virus, koi herpes virus, vibrios, and zoonotic pathogens; and disseminating research results through scientific publications, books & manuals. She also emphasized the importance of collaboration among stakeholders as essential in improving biosecurity and better control over transboundary movement of live aquatic animals. "It is likewise necessary that aquaculturists in the region should be vigilant of emerging pathogens and be aware of diseases found in new cultured species," she said.



Retired AQD scientist Dr. GD Lio-Po (rightmost) accepts a plaque of appreciation from (L-R) AQD Chief Dr. Felix Ayson, research division officer-in-charge Dr. Mae Catacutan, and Mr. Antonio Villaluz (son of former AQD Chief DK Villaluz)



Authors Dr. JH Primavera and Dr. R Sadaba (in blue) hand over a complimentary copy of their book *Beach forest species and mangrove associates of the Philippines* to representatives of IBON, a research-education-advocacy foundation based in the Philippines



Special lecture Dr. Primavera on beach forest



For the purpose of biodiversity conservation, watershed rehabilitation and climate change mitigation, NATIVE plants should be planted," emphasized Pew fellow and AQD scientist emerita Dr. Jurgenne Primavera during her special lecture on *Beach forest trees suitable for the National Greening Program of the Philippine Department of Environment and Natural Resources*. Dr. Primavera also described the importance, major groups, morphological adaptations to environmental factors and taxonomy of 140 beach forest species and mangrove associates.

After the lecture, Dr. Primavera launched her book *Beach forest species and mangrove associates of the Philippines* which she co-authored with associate professor Dr. Resurreccion Sadaba of the University of the Philippines Visayas.



Other information-related activities



[Above] Development communication head Ms. Mila Castaños presented AQD's institutional publications (leftmost) after which training & information head Dr. Evelyn Grace Ayson together with AQD Chief Dr. FG Ayson ceremonially handed over copies to stakeholders (middle photo). At right is library & databanking services OIC Mr. Stephen Alayon introducing the new library manager system called Destiny Library Manager

Guided tours

[Below, L-R] Students from Tigbauan National High School with biotech laboratory manager Ms. Marget Arnaiz explaining how the electron microscope works; students from Colegio de San Jose High School with research technician Mr. Rafael Barrido showing abalone broodstock; and a group of fishfarmers at the integrated broodstock-hatchery complex and the marine fish hatchery



Employees honored “AQD has given me a life worthy of remembrance”

AQD honored six of its employees who are retiring or have retired this year (AQD’s mandated retirement age is 60), and two more who marked their 20th year of service. Ms. Lucena Mallo, administrative officer, spoke of her experiences when she started as a dental aide in 1976 until she retired as housing/building/grounds maintenance unit head. “My 36 years of love and loyalty to AQD have given me a life worthy (of remembrance),” Ms. Mallo said. “AQD has enabled me to educate my children and has made our lives better.” Her three children are now a medical doctor, an electronics & communications engineer, and a registered nurse.

To the young employees, Ms. Mallo advised: “Budget your income while still employed so you can enjoy life, and later retire with leisure and pride. Without AQD’s retirement plan to prepare me, my health would have suffered... I am now managing our sugarcane farm and selling insurance.” To the new Chief Dr. FG Ayson, she promised: “We retirees will still show our support to AQD; we will continue to pray for the institution. We are certain that with your leadership, you can transform AQD with boldness and achieve better things.”



Together with Ms. Mallo (at the podium) sharing pride in AQD service are retirees (L-R, top-bottom) radio operator Ms. Marilyn Marañon, researcher Ms. Didi Baticados, senior technician Mr. Uldarico Derotas, and senior technical assistant Ms. Remia Traviña. Mechanic Mr. Rodolfo Castañeda is unable to attend



Celebrating their 20th year as employees are senior technical assistant Mr. Nestor Bayona (holding plaque, with the AFD-OIC, Deputy Chief and Chief); and technical assistant Mr. Gerald Gonzaga



AQD employees provide intermission numbers at the main anniversary and closing programs



Community effort Walk, donate blood, plant a tree, join the fun!



A total of 5,400 cc of blood contained in 12 bags were donated by 12 AQD employees during the bloodletting activity which was done in cooperation with the Philippine National Red Cross (PNRC). A medical mission (free consultation and medicines) was also conducted for 115 residents of Buyu-an, the barangay where TMS is situated. The consulting physicians were Dr. Sylvia Gepes, Dr. Irene Escanlar, and Dr. Jocelyn Magrico. In addition, around 40 AQD employees availed of the free eye consultation offered by the New York Optical team headed by optometrist Dr. Jerry de la Cruz.



AQD staff planted at TMS 60 seedlings of fruit-bearing trees (*calamansi*, *atis*, *chico*, jackfruit) near the pump house (above, with Dr. Fe Estepa and Ms. Didi Baticados) and ten saplings of native trees (donated by JH Primavera) behind the apartment building.

At BFS A trip down memory lane

by Jovy Ann Valera

AQD’s Binangonan Freshwater Station (BFS) celebrated its 36th anniversary from 24 to 26 July with the theme *A trip down memory lane* which expressed the heartfelt thanksgiving and joy of staff as they treaded the footprints of the station’s research endeavors.

The celebration started with a Do-day followed by sports such as table tennis, darts, chess and dama. On the second day, AQD Chief Dr. FG Ayson together with all four division heads came. At the meeting with BFS staff, the Chief applauded them for their multi-tasking efforts in working for AQD as a whole. He appreciated and encouraged them to value each given task.

“Treat this station as yours,” he said, “as if it belongs to you. So then if something wrong happens to your designated task or area, you can act immediately with dedication and eagerness, also knowing that you are a vital part of this (important) institution...”

A thanksgiving mass followed the meeting. On the third day, BFS staff proudly showcased their singing flair in the first ever “U GOT IT! Showdown of BFS Talents”. Adding to the thrill, raffle draw and parlor games were held.

At the 3-day celebration, the footprints of the past were remembered though a video presentation in which the successful efforts in BFS’ humble beginnings inspired the current staff to continue doing research in freshwater aquaculture. The celebration was also highlighted by the ceremonial transition or the transfer of the key-of-responsibility to the newly appointed BFS officer-in-charge Dr. Frolan Aya.

Dr. Aya noted that BFS will be indefatigable in its pursuit of sustainable (freshwater) aquaculture, a challenge of hardwork, unity and integrity that employees with their great hearts will take.



AQD Chief Dr. FG Ayson addresses the BFS employees and guests

Dr. Felix G. Ayson, AQD Chief; Dr. Alejandro Santiago, former BFS station head; Dr. Frolan Aya, current OIC-BFS (seated 4th, 3rd, 5th from the left, respectively)



Photos by JA VALERA



Former employees join Pinoy henyo, a guessing game



Games during the anniversary week included “Amazing FisheRACE” where teams of four employees race to finish tasks including counting fry (above, right) and making feeds (left). Team Red won over three others.



AquaWeek Sci-Art 2012 Winners

Biodiversity Lab: "Marine biodiversity around Panay and Guimaras" (6 high schools HS, 12 students, 7 teachers)

Prize	Winners	Age	Yr	School
1st	Glo Anne Humilde Jared Abraham Panganiban	15 16	4 4	Colegio del Sagrado Corazon de Jesus (CSCJ)
	Coaches: Kristinne Jallorina Ana Maria Daguay			
1st	Danielle Dale Edang Jessa Loraine Sermonia	15 15	3 3	Colegio de San Jose
	Coach: Angela Balista			
2nd	Caryl Joanne Nonato Cristine Faith Lazarte	16 15	4 4	SPED-Integrated School for Exceptional Children
	Coach: Maricar Moser			
3rd	Jumar Calanza Earl John Gison	15 15	4 4	Ramon Avancena National High School
	Coach: Josephine Andriano			

Powerpoint Seminar: "Marine biodiversity for food security" (8 HS, 8 students, 8 teachers)

1st	Margaret Anjellie Llorico	14	3	CSCJ
	Coaches: Ana Maria Daguay Wilfredo Torrecampo			
2nd	Frennie Tababa	14	3	Tubungan NHS
	Coach: Ricky Salabe			
3rd	Norevie Albancia	16	4	Colegio de San Jose
	Coach: Angela Balista			

Fish Play: "Ang buhay mangingisda" (8 HS, 34 students, 11 teachers)

1st	Carl Joshua Calfoforo Vrenelli Melle Tirado Ivan Sider Tuya Iana Jane Tanada	15 15 15 13	4 4 4 2	Tigbauan NHS
	Coach: Randy Ayuyon			
2nd	Ma. Alexandria Lacson Farrah Deanne Guzman Ellen Kate Moreno Risty Vincent Gison	15 15 15 13	4 4 4 2	CSCJ
	Coaches: Raquel Cachuela Wilfredo Torrecampo			
3rd	Ron Joshua Florece Ma. Sena Erta Lorenz Christopher Baluya Joshua Mellarpis	16 15 15 12	4 4 3 1	St. Louise Marillac School of Miagao
	Coaches: Geraldine Rodrigo Ramilie Najarila			



Write and Draw a Children's Story: "One fish, two fish, forever we eat" (9 HS, 18 students, 11 teachers)

Prize	Winners	Age	Yr	School
1st	Jay Adrian Gumacal Mary Clarence Madero	16 16	4 4	Pavia NHS
	Coach: Arglyen Suela			
2nd	Justin Grace Gallego Christian Jinn Hermano	15 15	4 4	CSCJ
	Coaches: Wilfredo Torrecampo Raquel Cachuela			
3rd	Zenah Uzzel Ortaliz Michael Angelo Fandagani	16 16	4 4	St. Louise de Marillac School of Miagao
	Coach: Raemmil Nulada			

Seafood Skills Olympics: "From the pond to the lunch table" (9 HS, 18 students, 12 teachers)

1st	Louie Tenorio Gerald Capalihan	16 17	4 4	Ramon Avancena NHS
	Coaches: Rhea Jane Salinel Renelyn Lacupa			
2nd	Stephanie Joy Legada Jester Samones	15 14	4 3	CSCJ
	Coach: Joel Superio Analyn Miraflores			
3rd	Jeffrel Mae Brillo Kenneth Wilson Si	15 15	4 4	SPED-ISEC
	Coaches: Mylyn Acosta Maricar Moser			



Bring, Show, and Tell: "Mollusks for food" (8 elementary schools ES, 16 pupils, 16 teachers)

Prize	Winners	Age	Gr	School
1st	Kaye Pauline Larroder Maria Isabel Layson	10 9	5 4	SPED-ISEC
	Coaches: Lilia Ramos Valerie May Belleza			
2nd	Leannah Andrea Toroy Thea Isabelle Tueres	12 11	6 6	Kinaadman
	Coaches: Sheryl Grace Barilea Lemuel Penafiel			
3rd	Chloe Elise Perez Ruselo Jumeras Jr.	13 12	6 6	Hibao-an ES
	Coaches: Rogelio Cautivar Cinderela Sotaridona			
3rd	Mary Ann Celeste	12	6	Sto Domingo ES
	Coach: Myrna Java			

Biodiversity Lab: "A shell collection for our school" (7 ES, 14 pupils, 14 teachers)

1st	Dennyl Marie Chavez Jonathan Patrick Calibjo	12 11	6 6	CSCJ
	Coaches: Wilfredo Torrecampo Kristinne Jallorina			
1st	Maryvin Aduana Marielle Salaveria	12 12	6 6	Hibao-an ES
	Coaches: Rogelio Cautivar Cinderela Sotaridona			
2nd	Jan Daniel Estrella Jenel Madronero	11 11	6 5	Nanga ES
	Coaches: Rhea Estrella Diane Rhovi Sumpia Perla Tredente			
2nd	Jasmine Marie Villanueva Venice Eurika Rodrigo	12 12	6 6	Iloilo Central ES
	Coach: Grace Ann Segovia			
3rd	Enrico Ayson Jose Roberto Garcia	11 11	6 6	Kinaadman ES
	Coaches: Janneth Sotela Sionny Tiu			
3rd	Joshua James Galotera James Matthew Young	9 9	4 4	SPED-ISEC
	Coach: Lilia Ramos Valerie May Belleza			

Aquarium Quiz: "Lantawa!" (18 ES, 36 pupils, 30 teachers)

Prize	Winners	Age	Gr	School
1st	Vaugh Remos Serra Coach: Lilia Ramos	12	6	SPED-ISEC
2nd	Michael John Aro Coach: Valerie May Belleza	12	11	SPED-ISEC
2nd	Nancy Nicole Supena Coach: Diana Ross Custodio	11	6	Sto Domingo ES
2nd	Yrma Angelee Tiron Coach: Lea Tingson	12	6	WVSU Integrated Lab School
3rd	Andrea Pearl Areno Coach: Kay Silla	12	6	WVSU Integrated Lab School
3rd	Angel Mae Acuesta Coach: Mona Mirasol	11	6	Oton Central ES
3rd	Kyla Presmei Depakakibo Coach: Marilyn Sinamban	11	6	Colegio de San Jose



Interns @ AQD

Two are learning from AQD on these areas of internship: marine and freshwater fishes, mud crab and abalone, natural food culture, aquaculture nutrition including feed preparation, fish health diagnostics, and socioeconomics.



AQD associate researcher Mr. Joseph Leopoldo Laranja Jr (left) and Mr. Tam Thanh Tran of Ghent University (Belgium) study the isolates from shrimp ponds for the presence of poly-beta-hydroxybutyrate accumulating bacteria. Mr. Tam is at AQD from 9 July through 21 August



Ms. Desiree Villanueva-Ompoc of Melbourne University (Australia) with senior technical assistant Mr. Deogracias Reyes at the TVDD hatchery for freshwater fishes. Her internship is from 30 July through 17 August

Seminars in July



Dr. Almira visits AQD's Igang Marine Station

From US\$100 to almost nothing (US\$0.00001) that is how much DNA sequencing cost (per base) has dropped from the late '70s to the present. This good news was shared by DOST Balik-scientist awardee Dr. Ernesto Almira (inset) to AQD staff on 24 July when he came to TMS to talk about the *Next generation DNA sequencing*.

Dr. Almira chairs the scientific advisory committee of the Philippine Genome Center's DNA sequencing core facility. He is also the assistant director of the Interdisciplinary Center of Biotechnology Research of the University of Florida (USA).

He said that to sequence genome sizes of 3 Gb, the late '70s used highly priced, room-sized sequencing equipment costing US\$15 million whereas the present sequencers are table-top models costing less than US\$200 thousand. There was also a huge difference in capacity: the old ones can only read 57,600 base pairs (bp) per run and required months for the task while the new machines can read 4 billion bp per run in days or even hours. The change was attributed to simplifying the methods in analyzing the pairings of adenine with thymine and/or cytosine with guanine; the old machines used cameras to detect light emissions attributed to each pairing, while the new machines detect pH or energy changes.

AQD invited Capt. Gert Heyns, squadron commander of the Philippine Coast Guard, to discuss cardiopulmonary resuscitation (CPR) on 24 July. "In every household it is important to have at least one member of the family who knows how to do CPR," he said as he demonstrated the CPR steps to AQD employees.



Devcom's Joesyl de la Cruz, Gelyn Faigani, Arvin Antolino, Julius de Pili join each one of four racing teams during anniversary week



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