

AQD Matters

In-house newsletter of the SEAFDEC Aquaculture Department, Iloilo, Philippines

AQD welcomes its new Deputy Chief

With the term of Dr. Hiroshi Ogata ending in March, AQD welcomes its new Deputy Chief Dr. Teruo Azuma who will serve a two-year term starting April 1.

Dr. Azuma, 50, hails from Tochigi, Japan and is married with a 21-year old daughter and an 18-year old son. He is an expert in fish physiology, breeding, behavior and ecology. His last post prior to moving to AQD is Leader of the Breeding and Physiology Section of

the Freshwater Fisheries Division of Japan's National Research Institute of Fisheries Science. He has worked on salmon and trout, and his most recent and significant research are published in the science journals *Aquaculture*, *Zoological Science*, *Behavior Genetics*, and *Fisheries Science*.

Dr. Azuma is a graduate of Kagoshima University (BSc) and Kyushu University (MSc and PhD).

Welcome to AQD, Dr. Azuma!

Sayonara, Dr. Ogata

AQD held a farewell party for outgoing Deputy Chief Dr. Hiroshi Ogata on 12 March at the Ealdama Hall of the Tigbauan Main Station, with a big turn-out of employees who sang songs, danced, and brought gifts for the Ogata family. The Office of the Chief later hosted a dinner for both incoming and outgoing Deputy Chiefs at the Executive House.

In giving appreciation to Dr. Ogata's service to AQD, Chief Dr. Joebert Toledo noted



Dr. Teruo Azuma



At the dinner party hosted by the Chief, incoming Deputy Chief Dr. Azuma belts out a song (left) while guests (right) and AQD division heads take their turn [above; TID head Mr. RF Agbayani (standing) and TVDD head Dr. CL Marte (foreground)]



Tribute to the outgoing Deputy Chief



AQD Chief Dr. Joebert Toledo gives a plaque of appreciation to Dr. Hiroshi Ogata (above). At left is Dr. Teruo Azuma, Dr. Ogata, Ms. Ami Ogata, Ms. Rieko Ogata, and Dr. Satoshi Watanabe. The latter is a new JIRCAS expert who will start his two-year assignment in April; he'll work on sea cucumber at AQD

Giving tribute to Dr. Ogata are (L-R): RD head Dr. Evelyn Grace de Jesus-Ayson, Dr. Emilia Quintio, Dr. Ma. Rowena Eguia and Dr. Junemie Ramos



Dr. Ogata plays his own exit march after his wife Reiko's puppet show

that Dr. Ogata is a much-respected figure who has implemented with care new activities for the three Government of Japan Trust-funded programs on development of technologies & human capacity building for sustainable aquaculture, fish disease surveillance, and stock enhancement.

Deputy Secretary-General Mr. Hideki Tsubata, who is based in Bangkok, sent his felicitations by email, writing that he recognized that Dr. Ogata has been enjoying and

getting the support and kind cooperation of the AQD staff in an atmosphere that is peaceful and warm. "I wish you a good and happy new life in Japan, too!" Dr. Tsubata wrote.

Before going back to Japan on 29 March, the Ogata couple donated their saxophone and ukulele to Iloilo City's St. Vincent Ferrer Seminary which has about 130 seminarians. Their music class is handled by Rev. Father Theodriell Villariza.

Upon leaving, Dr. Ogata emailed the AQD staff, writing: "I have been here six-and-a-half years, first as a JIRCAS visiting researcher, then as Deputy Chief in the last two years. I truly had a nice time, and (done)

so many things. I learned the importance not only of R&D but also technology verification, transfer and training in the development of aquaculture practice in the region."

"I would like to express my sincere thanks to AQD for having supported my mission. Millions, billions, trillions thanks to the AQD Chief, researchers, technicians and other staff for their hospitality. I could never have completed my mission without your help and kindness. My wife also, she could never have stayed without your friendly smiles and warm arms. I and my wife deeply love AQD and your country, the Philippines. Good luck to you all and to AQD!"

AQD collaborates with a Malaysian company and a Filipino farmer

AQD Chief Dr. JD Toledo signed a two-year agreement on 31 March with Bari Aquatech Sdn Bhd, a business company based in Kuala Lumpur, Malaysia. AQD is to provide technical assistance to a proposed collaborative project on *Innovation of the farming technology of tropical abalone* (*Haliotis asinina*) for commercial application in Malaysia.

Specifically, AQD will assist Bari in implementing research studies to improve spawning & larval rearing, feed formulation, and enhance growth; in drafting & preparing reports and manuals; in establishing & operating a pilot abalone farm; and in training Bari staff. Bari, on the other hand, will provide logistics and shoulder AQD's expenses during the conduct of feasibility studies, as well as pay for the training.

AQD also signed an agreement on 17 March with Mr. Carmelo Celis, the owner of a freshwater reservoir in Camambugan, Dingle, Iloilo for verification / production trials on netcage culture of seabass and black hybrid tilapia using SEAFDEC and commercial feeds.

AQD will provide full technical backstopping and the technical services of an experienced and industry-tested fish culturist and full-time caretaker-aide; assist in the identification of sources of healthy and quality hatchery-produced seabass and tilapia fry and fingerlings; collate, analyze data and document the entire operation; and pay the cooperator P2,000 per month as rental of facility.

The cooperator on the other hand will allow use of his facility for about 9 months, allow construction of a caretaker's hut, give

access to AQD staff and other authorized persons, assist in securing the area, assist or find a market for the produce.

To date, fixed netcages (5 x 5 x 2.5 m) have been fabricated and a caretaker's hut constructed. A series of fine mesh nylon screen substrates measuring 1.5 x 3.5 m has been installed like tennis nets inside the netcages to increase the surface area by 50% for attachment of natural food organisms. A black hybrid SEAFDEC strain tilapia fingerlings (1.2 g, 2.3 cm) from the AQD hatchery were stocked on 10 March at 15 fish per/m³ or 937 fish per netcage. Feeding with recommended rates of SEAFDEC formulated diet and a commercial feed is ongoing and being done in three replicates.

The proponents for the Dingle study are TVDD's Mr. Dan Baliao and Mr. Rolando SJ Gapasin.

There and back again!

Bangkok for aquafeeds

AQD scientist Dr. Mae Catacutan attended the *Aqua VIV Asia 2009* held 11-13 March at the Bangkok International Trade and Exhibit Center in Thailand. She was there to obtain latest updates / information on aquaculture feed & nutrition, practices in the aquafeed industry, and new products like additives, ingredients, growth enhancers. *VIV Asia* is held every two years for livestock and machineries but has expanded to aquaculture by popular request, thus *Aqua VIV Asia*.

Dr. Catacutan reported that there were a total of 568 exhibitors from 41 countries with 24, including Chinese and Vietnamese companies, focused on aquaculture that she had to prioritize which booths to visit.

Some companies that manufacture machines for livestock feeds are now

producing machines for aquafeeds. One is KAHL, which upon inquiry, has the smallest die diameter which is good for larval or starter feed production. The same is true for suppliers of protein sources which now produce or market enzymes/coated enzymes, pre-mixes, stable vitamin C derivatives, amino acids, chelated minerals, antibiotics, and 'undefined' feed additives for better feed performance, and DL-methionine in liquid form.

All these costly new additives led Dr. Catacutan to wonder if AQD can circumvent their use in its aquafeed formulations. She noted that what is important is knowing their uses.

Dr. Catacutan also attended full-day aqua-conferences in a separate location which were organized by Novus on 11 March on *Global economic crisis and*

latest issues in aquaculture and feed and nutrition and by Bayer on 12 March on *Innovations to sustain seafood supply*.

"The Novus conference was very interesting," Dr. Catacutan reported. The focus was on the shrimp industry trend and global economic crisis, catfish in Vietnam, issues in aquafeed and nutrition, cost-effective aquafeed formulation, raw materials, biofloc systems for the Pacific white shrimp. The topics in the Bayer conference, on the other hand, were also informative, such as aquaculture regulatory requirements in importing countries, Thailand's seafood inspection and quality control, aquaculture drug registration, feed attractants, fish health, and milestones in marine aquafeeds in Asia.



Dr. Catacutan with collaborators Dr. Mike Rimmer of ACIAR and the three German researchers, Drs. Karsten Schroeder, Christian Luckstadt, and Kai Kuhlmann, who all did their doctoral dissertations at AQD and are now with the company ADDCON

*Dr. Catacutan meets up with two ex-AQD staff
Dr. Wenresti Gallardo (top) who was with the mollusc team before becoming a faculty member of Asian Institute of Technology in Thailand and Mr. Ronald Cheong who was with the biological assessment team of AQD's coastal fisheries resource management project in Malalison Island*

Los Baños for climate change

AQD scientist Dr. Ma. Rowena Eguia and associate scientist Dr. Nerissa Salayo attended the *Regional workshop on climate change and food security: global challenges for improving the competitiveness of fisheries and fisheries based products in Asia* which was held 19-20 March. The workshop was organized by WorldFish Centre (WFC) and SEARCA in Los Banos, Laguna.

The first day was spent discussing regional fisheries/aquaculture production as affected by climate change. The participants listened to government fishery agency representatives from Cambodia, Indonesia, Malaysia and Vietnam as they presented their country papers.

The Philippine country paper was presented by UP Los Banos College of Economics faculty members. Apart from AQD, resource persons from DOST-PCAMRD, DABAR, NIFTDC, Tambuyog Development Center, Nanyang Technological University, and ASEAN Center for Biodiversity were present.

The second day focused on the finalization of a draft proposal on *A value chain analysis of fish and fisheries products from small-scale fisheries in selected Southeast Asian countries: focus on climate change impacts*. The proposal that WFC hopes to submit has UP Los Banos researchers (Dr. Yolanda Garcia and Dr. Zenaida Sumalde) as the main proponents from the Philippines.

WFC Regional Director for East and SE Asia, Dr. Maripaz Perez, was open to the idea of having AQD as a collaborating institution on the proposed RP-based studies. She thanked the AQD representatives for their inputs to improve the proposal. The studies would include fishery commodities like roundscad, shrimp and/or Indian mackerel and cultured species like milkfish, seaweeds and/or grouper.

In her travel report, Dr. Salayo expressed the need for AQD to be pro-active in networking and collaborating with potential partners. There is also a need for AQD to invest in terms of time and funds to participate in inter-agency proposal writing workshops such as the WFC-SEARCA workshop.

Manila, still on climate change

Dr. MR Eguia attended the 31 March proposal writing workshop of the Philippine Ropaku fellows (PRF) at the De La Salle University in Manila. This was a follow-up to the 13 Feb PRF meeting where DOST Undersecretary Graciano Yumul Jr. announced the offer of a P10M research funding to two-year research projects on climate change.

During the workshop, DOST- PCIERD or the

Philippine Council for Industry and Energy Research and Development emphasized the need to integrate the PRF proposals, including, if any, from AQD-based PRF, and submit topics for evaluation by the appropriate DOST councils. PCIERD's Ms. Rubbie Raterta, presented the *DOST Roadmap on climate change* where she mentioned an on-going DOST funded project termed ICE CREAM program or *Integrated coastal*

evaluation: climate research, enhancement, adaptive management. The program is led by Dr. Annette Menez of UP Marine Science Institute and involves researchers from Silliman University, Bicol University, among others. Dr. Eguia noted that if AQD plans to submit a climate change research proposal, the focus should be more on the effect of climate change on aquaculture and farmed aquatic organisms.

Dagupan for health and nutrition of siganids

AQD associate scientist Dr. Rolando Pakingking and scientist Dr. Relicardo Coloso were invited by PCAMRD and

NFRDI to present papers on the diseases and nutrition & feeding of siganids, respectively, during the *First national summit on hatchery and culture of siganid*

(*rabbitfish*) that was held 11-12 March at NIFTDC-BFAR, Bonuan, Dagupan City.

Quezon City for a hearing on BFAR's elevation to department level

Four AQD senior officials – TVDD head Dr. Clarissa Marte, TID head Mr. Renato Agbayani, Manila Office head Ms. Grace Garcia, and scientist Dr MR Eguia – attended the second meeting of the technical working group for the creation of a Department of Fisheries

and Aquatic Resources. The house bill, authored by the Honorable Congressmen Pryde Henry Teves, Alfredo Maranon III and Luis Villafuerte, is supported by AQD albeit with modifications. During the meeting, Hon. Villafuerte reiterated the need for DA-BFAR to come up

with supporting documents outlining research, fish production and technology dissemination programs for implementation. BFAR is planning a series of consultation meetings with the various agencies (especially AQD, NFRDI, PFDA, etc) to comply with this request.

Aurora for demo hatchery

AQD associate researchers Ruel Eguia and Manuel Laron were in the Aurora Special Economic Zone (ASEZA) in Casiguran, Aurora from 6 to 7 March to be on hand for the investors and visitors including a Taiwanese delegation, Governor Bellaflor Angara, BFAR Director Malcolm Sarmiento and BFAR-3 Director Remedios Ongtangco.

They were the resource persons for the proposed demonstration hatchery component of the Casiguran Mariculture Park. Their presence was requested by Senator Edgardo Angara.



Mr. Eguia (center) is in ASEZA for the Taiwanese investors

Iloilo for fisheries policy

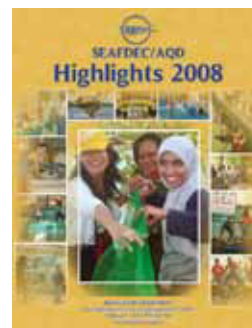
TID Head RF Agbayani, DBS head Mr. Hanani Torilla, researchers Ms. Didi Baticados and Ms. Jocelyn Ladja, associate researchers Mr. Eliseo Coniza and Ms. Eva Aldon, and senior technical assistant Ms. Dianne Hope Tormon attended on 9 March the UP Visayas-organized roundtable discussion themed *Towards appropriate policies in fisheries, aquaculture and coastal resources*. Held in Miag-ao, Iloilo and dubbed by UPV as an “interfacing and cross-fertilization of ideas” among researchers, scientists, faculty and students, it featured four speakers including Dr. Crispino Saclauso, Dr. Aklani Rose Hidalgo, Prof. Pepito Fernandez and Prof. Brian Ventura.

Dumaguete for computers

AQD's systems & network administrator, Mr. Jezreel Gebucion, attended the *9th Philippines Computing Science Congress* organized by the Philippines e-Learning Society from 2-3 March at Silliman University, Dumaguete City. He earlier earned his *National certification in computer hardware servicing* which TESDA organized and conducted from 5 to 13 February in Iloilo City.

New e-publications

Aquaculture stakeholders may now download AQD's newest publications from its website www.seafdec.org.ph. Released in the first quarter of 2009 are:



2008 Highlights, 40-page report of AQD's activities and progress in 2008

Milkfish culture in sea cages, 2-page flyer on site selection, cage culture & design, investment required, AQD work on developing an early warning system for pollution, and mariculture zones established by the Philippine government



Grouper, a poster illustrating full-cycle grouper culture, from hatchery to grow-out

Trainees and visitors

In March, AQD welcomed two batches of trainees from Saudi Arabia, Maldives and the Philippines; an intern from Singapore; and two batches of visitors from Thailand and the Philippines.

Fish health management -- Mr. Abdulmohsen Ibrahim Alasous of the King Abdulaziz City for Science & Technology in Saudi Arabia trained from 9 to 25 March

Cage/pond culture of selected marine species -- Mr. Hussain Ahmed of Maldives, Mr. Ronnie Guiral of General Santos City, Ms. Qisma Omar of Zamboanga City, Mr. Mark Lawrence Pleyto of Makati City and Ms. Rubelie Rayos of Pangasinan trained from 10 to 24 March. Ms. Rayos, class chair, was almost in tears as she related how she found AQD as the right institution to get the right training. She now feels confident to run the 50-ha farm she inherited, thanks, she said, to her trainers who unselfishly shared their know-how

Freshwater aquaculture -- Modules on freshwater prawn (19-23 January), tilapia (23-27 February), farm-based feeds (26-27 January), and culture of natural food organisms (26 to 30 January and 23-27 March) were conducted for six from the private sector in the Philippines

Intern – Ms. Deborah Naw of Singapore will be at AQD for four months beginning 19 March, working and learning at various AQD hatcheries and laboratories

LGU Zamboanga – their party was on study tour 16 March, and was briefed by TID Head RF Agbayani on the ICDSA project

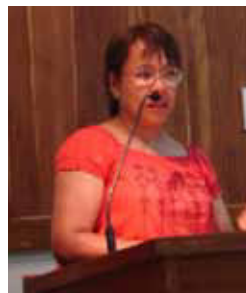
Thailand's Department of Fisheries – Surathani Coastal Fisheries Research and Development Center Director Mr. Kritapol Youngvanitset and Ms. Siriwan Nooseng visited AQD on 17 March

ACIAR delegation -- They met with the AQD Chief and the research division head on 17 March for the proposed collaborative project on sandfish and seaweeds



Trainees on fish health and marine species spend time in AQD's laboratories, hatcheries and/or ponds

CLOCKWISE FROM LEFT
Visitors from the Department of Fisheries - Thailand with AQD scientist Dr. Fe Estepa at the shrimp hatchery; Ms. Rayos speaks of her experiences at the closing ceremony; TID Head RF Agbayani briefs LGU Zamboanga visitors



Research seminars at AQD

5 March

Vaccination against *Lactococcus* infection and a re-emerging disease of cultured yellowtails in Japan

Atsushi Yamamoto, PhD
Kagoshima University
Japan



Dr. Yamamoto of Kagoshima University

Author's abstract. *Lactococcus* infection has been perhaps the most common in yellowtails and has given the greatest damages to yellowtail production for about a quarter century in Japan. This disease is controlled to some degree by in-feed antibiotic chemo-therapy for 7 days. Erythromycin (EM) has been usually administered to diseased yellowtails and repeated use of EM has brought about an increase of EM-resistant strain. The vaccine against *Lactococcus* infection was developed in 1997, which was administered orally and then the injected vaccine was developed in 2000. The latter had come into wide use because of its effectivity as prophylaxis. *Lactococcus* infection of yellowtail seemed to have been almost eradicated.

As *Lactococcus* infection of yellowtail quieted down, another infection emerged. This is Nocardiosis caused by *N. seriolae*. Nocardiosis was initially described in 1968 and has done less damage to yellowtails compared to *Lactococcus* infection. *N. seriolae* is highly sensitive against some drugs in-vitro; administration of those drugs, however, is not effective when used in the latter stage of infection because many granulomas are formed in the internal organs. The damage is severe in September to November. We tried to detect the antibody against the pathogen in the serum from yellowtails so that the early stage of the infection could be found, and we demonstrated this to be April to May. Determination of MIC (minimal inhibitory concentration) of 11 drugs

against the pathogen showed that Florfenicol (FF) would be most effective. Practical field test failed to demonstrate the effectiveness of FF, but administration of this drug reduced the number of the pathogen in the kidney. The survivors are completely resistant to the pathogen, however, vaccine has not been developed yet. The genetic and phenotypic characterization indicated that the pathogens isolated from 1970 to 1990 are different from those isolated from 2000 to 2004.

5 March

Screening and protein profile of milkfish (*Chanos chanos* Forsskal) bile for antioxidant, anticancer, antimicrobial and as a physicochemical defense system

Angeli Joyce Yap Dy
Student-researcher
Capiz National High School
Capiz, Philippines

Author's abstract. Milkfish (*Chanos chanos* Forsskal) production represents one of the main sectors of the nation's fishery industry. It is a traditionally cultured species and has been studied for a long time. It is an innately sturdy fish, being able to adapt and thrive even in the confined, unnatural environment of the fishpond. Published reports have pointed out that milkfish serum possesses antimicrobial, antioxidant and cytotoxic properties; however, related studies on milkfish bile have not been fully explored. The objectives of this study were to screen milkfish bile for its antimicrobial, antioxidant, and cytotoxic properties. The protein compounds in milkfish bile were also examined and characterized.

The antibacterial property of milkfish bile against *Vibrio harveyi*, *Proteus vulgaris*, *Aeromonas hydrophila*,

Pseudomonas aeruginosa, *E. coli* and *S. aureus* was conducted using a modified agar cup-well diffusion assay. The antioxidant property of milkfish bile was determined using a spectrophotometric assay. The cytotoxic property of milkfish bile against human lung and colon carcinoma cells was conducted using the MTT [3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide] assay. The quantity of protein compounds in milkfish bile was determined using the Bradford Protein Assay and further characterized using SDS PAGE.

Milkfish bile potently inhibited the growth of *Vibrio harveyi* and *P. aeruginosa*. On the contrary, it failed to inhibit the multiplication of other bacterial strains tested. These results indicate that milkfish bile is a promising chemotherapeutic agent against diseases caused by *V. harveyi* and *P. aeruginosa*. Milkfish bile demonstrated an activity of 86.05% inhibition against free radical DPPH (1, 1-Diphenyl-2-Picrylhydrazyl), comparable to 100% inhibition induced by Gallic acid (positive control). These results indicate that milkfish bile possesses antioxidant property against free radicals. Employing the Linear Interpolation Method for sublethal toxicity, results showed that 0.1620 µg/ mL IC₅₀ and 0.1640 µg/ mL IC₅₀ potently inhibited the proliferation of human colon and lung carcinoma cells, respectively. These results were significantly higher than the control (Vinblastine: 4.4696 µg/ mL IC₅₀). Cytotoxic effects of milkfish bile on carcinoma cells include cell death, detachment from the substratum and color changes from brown to yellow. The preceding results indicate that milkfish bile is a promising chemotherapeutic agent against human colon and lung carcinomas. The results of the Bradford Protein Assay demonstrated a linearly comparable protein content of 1.924µg for every 5µg/100µL bile. Additionally, two protein bands (MW: 84 and 66) comparable to serum albumin were obtained.



Ms. Dy of Capiz National High School, a competitor in the Intel international science fair to be held in Nevada (USA) in May 2009. She was advised by AQD associate scientist Dr. R Pakingking

Graduates of 2009, congratz!

One can almost hear a sigh of relief from AQD parents and their children whose hard work paid off, earning for themselves a great milestone – graduation 2009! Congratulations, graduates and parents!

Special kudos to AQD staff who have made a home run – that is, all children are now professionals with the last “batch” earning their college degrees this year. This special set of parents includes TID’s Ms. Kaylin Corre, Ms. Ruby Bombeo, Ms. Paz Garibay and AFD’s Ms. Rose Mallo.

We have a new doctor of medicine, daughter of Ms. Mallo; six nurses, children of TVDD’s Ms. Nancy Acdol and Mr. Hanani Torilla (he’s got two!), AFD’s Mr. Edison Pineda, Ms. Bombeo and Ms. Mallo.

We have four in the computer field, children of RD’s Ms. Pacita Bantilan, TVDD’s Ms. Jo Ladja, Ms. Corre and Ms. Mallo.

We also have two mariners (sons of AFD’s Mr. Rodolfo Castañeda and RD’s Ms. Gigi & TID’s Mr. Sid Tendencia), two management graduates (sons of Ms. Garibay and AFD’s Atty Jerry Opinion), an architect (brother of AFD’s Christine Barrion), a social worker (son of Ms. Corre), and a literature graduate (daughter of AFD’s Marlyn Surtida).

Here is the complete list:

- 1 **Nyssa Acdol**, BS Nursing, University of San Augustin
- 2 **Khristopher Bantilan**, 2-year Electronics, Southern Iloilo Polytechnic College
- 3 **Rodolfo Barrion Jr**, BS Industrial Technology major in Architectural Drafting, West Visayas College of Science & Technology
- 4 **Lucille Gaea Bombeo**, BS Nursing, Central Philippine University
- 5 **Arlhie Castañeda**, BS Marine Transportation, John B Lacson Colleges Foundation
- 6 **Kean Verne Corre**, BS Social Work, Central Philippine University
- 7 **Matthew Jan Corre**, BS Computer Science, Central Philippine University
- 8 **Cecil Vincent Garibay**, BS Management, Iloilo Doctor’s College
- 9 **Jainal-Rafi Ladja**, BS Information Technology, Central Philippine University
- 10 **Jewel Mae Mallo**, Doctor of Medicine, Iloilo Doctor’s College; she’s been accepted at St. Luke’s as a post-graduate intern
- 11 **Jose Mallo III**, Electronics and Communications Engineering, De La Salle University Manila
- 12 **Johanna Marie Mallo**, BS Nursing, Riverside College Bacolod
- 13 **Fem Martin Opinion**, BS Management (Communications Technology Management), Ateneo de Manila University
- 14 **Maria Cristina Merill Pineda**, BS Nursing, Iloilo Doctors College

- 15 **Ella Surtida**, BA Literature, UP Visayas
- 16 **Kempsee Tendencia**, BS Marine Transportation, John B Lacson Colleges Foundation
- 17 **Franz Rei Torrilla**, BS Nursing, Central Philippine University
- 18 **Francine Anne Torrilla**, passed the nursing board exams given 29-30 November 2008; results were released February 2009

And, entering college in the new school year are the following high school graduates:

- **Anne Clarice Opinion** (Salutatorian), Assumption – Iloilo
- **Kyle Stephen Aralar**, Child Jesus of Prague
- **Johan Michael Arnaiz**, Philippine Science High School - Western Visayas
- **Ana Mae Depaclayon**, Guimbal National High School
- **Kenneth Reyes**, Talim Island Academy
- **Kevin Tendencia**, Tigbauan National High School

Graduating from elementary are:

- **Jillian Armie Gerolaga** (Valedictorian), Pipindan Elementary Sch
- **Leobert Julian de la Peña** (1st Honor), Kinaadman Elementary Sch Inc
- **Francis Wilhelm Arnaiz** (2nd Honor), Kinaadman Elementary Sch Inc
- **Lovely Reyes**, Pipindan Elementary Sch
- **Karlo Tendencia**, Kinaadman Elementary Sch Inc

Last but not least, congratulations to **Andrea Villa Franco** for completing Kindergarten 2 at Kinaadman Elementary Sch Inc

AQD Matters is published monthly by the Development Communication Section, SEAFDEC Aquaculture Department, Tigbauan, Iloilo, Philippines. For contributions and feedback, kindly email: devcom@seafdec.org.ph

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Acronyms used: AQD, Aquaculture Department; RD, Research Division; TVDD, Technology Verification & Demonstration Division; TID, Training & Information Division; AFD, Administration & Finance Division; DBS, Dumangas Brackishwater Station; ICDSA, Institutional capacity development for sustainable aquaculture project; LGU, local government unit in the Philippines