



## The world's crab scientists meet in Iloilo

The International Workshop on Culture, Fisheries, and Stock Enhancement of Portunid Crabs was held at Hotel del Rio, Iloilo City, Philippines on 20-22 January 2005. The workshop was attended by 57 participants from 11 countries. AQD Chief Dr. Rolando Platon met the participants during the pre-meeting cocktails and joined the workshop on the third day.

The workshop was the culminating activity of the Project on the Culture and Management of *Scylla* Species, a 4-year collaboration among two European and two Southeast Asian partner institutions: the University of Wales-Bangor in the UK, the University of Gent in Belgium, Can Tho University in Vietnam, and the SEAFDEC Aquaculture Department in the Philippines. Both the project and the workshop were funded by the European Union through the European Commission.

Dr. Lewis Le Vay of the University of Wales-Bangor is the Project Coordinator and Dr. Jurgenne Primavera of SEAFDEC/AQD is the Project Leader for the Philippines. The AQD mud crab team also includes Dr. Emilia Qunitio, Dr. Fe Parado-Estepa, Dr. Celia Lavilla-Pitogo, Eduard Rodriguez, Junemie Lebata, Jennette de Pedro, Demy Catedral, Joseph Biñas, Quirico Ganon, Lillian Gustilo, Dr. Veronica Alava (resigned), and Dr. Giselle Samonte-Tan (consultant).

Project members presented at the workshop the results of research done on *Scylla* biology, broodstock, hatchery, nursery, grow-out, nutrition, fisheries, stock enhancement, and socioeconomics.

In addition, there were oral presentations and posters on the farming of *Scylla serrata* in Australia, the hatchery of *Charybdis feriatus* at AQD, the hatchery and stock enhancement of the blue crab *Callinectes sapidus* in Chesapeake Bay in the eastern USA, the taxonomy of *Portunus pelagicus* across the Indo-Pacific, and nutrition of the mitten crab *Eriocheir sinensis* (not a portunid but a grapsid) in China.

Dr. Cornelia Nauen, the European Commission's Principal Scientific Officer for International Scientific Cooperation and Research graced the workshop and briefed participants about EC's research priorities and the procedures for submission of proposals. Dr. Patrick Sorgeloos, AQD's friend over the years, chaired one of the sessions and was honored with Dr. Nauen at a dinner hosted by Dr. Platon. Dr. Sorgeloos also met with the Ilongo alumni of the University of Gent, including AQD's Ruby Bombeo, Demetrio Estenor, and Denny Chavez.

The participants came to Tigbauan Main Station on 22 January for a tour of facilities and FishWorld. A banquet dinner in the evening was highlighted by the release of the first copies of *Diseases in Farmed Mud Crabs Scylla spp.: Diagnosis, Prevention, and Control*, the new book by Celia Lavilla-Pitogo and Leobert de la Peña (see page 3).

A bonus for the workshop participants was the cultural experience of Dinagyang on Sunday, 23 January. Some participants also visited Boracay Island.

Congratulations to the AQD mud crab team for a well-attended workshop!



Participants of the International Workshop on Culture, Fisheries, and Stock Enhancement of Portunid Crabs, Iloilo City, Philippines, 20-22 January 2005

## The AQD streamlining continues

**A**QD employees with appointments until 15 January 2005 following the streamlining in July last year went through the hoop (again!) when they were notified they were considered terminated effective midnight of 15 January. *Gikulbaan tanan.*

The AQD Chief and the Division Heads deliberated who to keep and who to let go. It was a very difficult decision-making process, but in the end, 26 employees with probationary appointments and 57 with fixed terms were retained as regular or permanent personnel. Fifteen fixed-term employees got one-year extensions of contracts, 13 got fixed-term project-based appointments effective 16 January, and 11 were terminated effective 13 January. *Hay, naku.*

Some of the criteria for retention were:

- Position essential within the streamlined AQD structure
- Usefulness to AQD's future programs and operations
- Willingness to work together as the AQD Team
- High competence at the current job
- Availability of project funds
- Work history compatible with present expectations
- Contribution to the public image of AQD

Of course, *masakit mawalan ng trabaho*, and we are sure to hear complaints of unfairness. The selection process was not perfect and the regularized employees are not perfect. Further, the permanent employees are not assured they can keep their jobs forever. All AQD employees must now prove their worth. *Let us all work to accomplish AQD's directions and programs.*

## AQD Programs for 2005

### Departmental Programs (Philippine-Funded)

1. Broodstock and seed quality improvement
2. Responsible and sustainable aquaculture technologies
3. Collaborative programs with BFAR and other agencies
  - Aquaculture Biotechnology
  - Joint Mission for Accelerated Nationwide Technology Transfer Program
  - AUS-AID Project: Poverty alleviation through aquaculture
  - Commercialization of freshwater hatchery technologies with ABCDEF
  - Verification projects with the private sector

### Regional Programs (SEAFDEC-ASEAN Collaboration)

1. Promotion of mangrove-friendly aquaculture in Southeast Asia (until March 2005)
2. Development of diseases inspection methodologies for artificially bred seeds (until March 2005)
3. Establishment of fish disease surveillance system (2004-2008)
4. Stock enhancement for threatened species of international concern (2005-2008)
5. Special Five-Year Project on the Contribution of Fisheries to Food Security: Aquaculture Component (Rural aquaculture and Supply of Good-Quality Seeds)

## How the streamlining came to be

*9 January 2004*

The Philippine Technical Advisory Committee for SEAFDEC/AQD discussed the AQD situation brought about by severe budget reduction. Resolved the creation of the Research and Development Advisory Committee (RDAC)

*20 January*

RDAC was created by DA Secretary Luis Lorenzo

*4 February - 12 April*

Series of RDAC meetings; recommended engagement of the Development Academy of the Philippines (DAP) on 17 March to conduct the organizational study

*17 May*

DAP submitted Rationalization Program for SEAFDEC/AQD. DAP study recommended core staffing of 135, down from 180.

*31 May*

PTAC accepted DAP report and made recommendations

*10 June*

PTAC Chair accepted the recommendations and directed DA Legal Counsel to assist AQD in implementing the streamlining

*16 June*

Executive Order No. 1 on the Streamlining of AQD was issued. All positions were declared abolished effective 16 July 2004. All separation benefits were released pursuant to Department policies and the provisions of the Collective Bargaining Agreement. Already 24 AQD employees availed of early retirement before the abolition of positions.

*15 July*

Newly created positions considered relevant and necessary were filled up, giving priority to employees qualified in light of new functions. The appointments were probationary or fixed-term, subject to review after 6 months.

## New Directions for AQD

- **Reengineer the organization from a bureaucratic system to a program matrix in which divisions work together**
- **Fully computerize Budget, Cashiering, Accounting, and Internal Audit**
- **Expand and strengthen collaboration with government agencies and academic and research institutions**
- **Assess the socioeconomic impact of SEAFDEC/AQD's R&D programs**
- **Build an innovative and enterprising institution that can generate revenues**





## Dr. Celia scores two new books

The Regional Fish Diseases Project at SEAFDEC AQD, funded by the Government of Japan Trust Fund and under the leadership of Dr. Kazuya Nagasawa, released two new books during the recent international crab workshop in Iloilo City.

One was the proceedings of the Meeting on Transboundary Fish Diseases held in Manila last June 2004. Entitled *Transboundary Fish Diseases in Southeast Asia: Occurrence, Surveillance, Research and Training*, the 254-page volume is edited by Celia Lavilla-Pitogo and Kazuya Nagasawa. It contains invited papers and country reports of participants from 10 SEAFDEC member countries, mainly about the emergent viral diseases, particularly Koi Herpesvirus and Taura syndrome virus. The country reports contain valuable information on the occurrence of these diseases, as well as surveillance activities and status of research and training in member countries. A 13-page Summary highlights the discussions in the five sessions of the meeting.

The second book released was *Diseases of Farmed Mud Crabs Scylla spp.: Diagnosis, Prevention, and Control*, written by Celia Lavilla-Pitogo and Leobert D. de la Peña. The 89-page book is a pioneering compilation of diseases observed in mud crab farming. It includes 30 pages with colored photos that clearly illustrate the diseases. The book emphasizes disease diagnosis based on gross observation and simple techniques that can be used by technicians in hatcheries and farms.

Both publications are available for free from SEAFDEC Aquaculture Department and will soon be uploaded in the AQD website for free download. For hard copies, visit the Regional Fish Diseases Project at AQD, Tigbauan, Iloilo. Or call Training and Information Division, 511-9172. Air mail charge is P100 within the Philippines, and P500 abroad.

Congratulations to Dr. Celia and the Fish Health Team!

## AquaHealth Online graduates 14

The third session of AquaHealth Online started 2 August and ended 17 December 2004. There were 25 participants, 19 sponsored by the ten SEAFDEC and ASEAN Member Countries and 6 from the private sector in the Philippines, Vietnam, India, and Hongkong. The Course Officer was Dr. Celia Torres.

The course covered 12 modules over 17 weeks, each module taught by a Specialist.

- Impact of disease development in Aquaculture (CL Torres)
- Viral diseases of fish and crustaceans (G Lio-Po)
- Bacterial diseases of fish and crustaceans (EA Tendencia)
- Fungal diseases of fish and crustaceans (EM Leño)
- Parasitic diseases of fish and crustaceans (K Nagasawa)
- Nutritional diseases of fish and crustaceans (E Amar)
- Environmental and other non-infectious diseases of fish and crustaceans (EA Tendencia)
- Harmful and toxic algae (R Caturao)
- Histology as a tool in disease diagnosis (CL Torres)
- Serological and molecular techniques in disease diagnosis (LD dela Peña)
- Immunity and biological methods of diseases prevention and control (E Amar)
- Physical, environmental and chemical methods of disease prevention and control (EA Tendencia)

For each module, the participants were graded for learning activities (20%), discussion board participation (20%), and exams (60%). The passing grade was set at 70% and 56 of the e-learners passed the course. During the last 6 modules, only 16 of the 25 participants were active. The main problems encountered were the language differences, trouble with internet access, and conflict with other work load of the e-learners.

## ABCDEF spells success

Starting with the Training Workshop on Responsible Freshwater Aquaculture on 25-27 August 2004, the Aquaculture-Based Countryside Development Enterprises Foundation Inc. (ABCDEF Inc.) and the Binangonan Freshwater Station have conducted several more one- to three-day training workshops on Freshwater Aquaculture and Integrated Fish Farming for Municipal Agricultural Officers and fish farmers in Rizal and Laguna.

### Workshop on Freshwater Aquaculture Livelihood Project Planning and Development (29 Sep – 1 Oct 2004)

Nineteen participants attended this three-day workshop. AQD's WG Yap, RV Eguia, and MLC Aralar were invited as resource persons. The workshop output included project development plans — feasibility studies or project proposals— on rice-fish farming, freshwater prawn farming, tilapia growout in cages, and catfish growout in ponds for each municipality. A schedule for on-site farmers' training was also agreed upon.

### On-site Training for Fishfarmers

To assist Municipal Agricultural Officers and local government officials in implementing aquaculture-based livelihood activities, on-site training was provided to fishfarmers who will be involved in the proposed fishfarming clusters in Rizal and Laguna. A total of 150 participants had attended the four training modules conducted in Antipolo on 1-2 Dec, in Nagcarlan on 3 Dec, in Sta. Cruz on 9 Dec, and in Binangonan on 14-15 Dec 2004.

## BFS is as active as ever

After the recommendation of the Development Academy of the Philippines for AQD to give up the Binangonan Freshwater Station as part of the streamlining, there was a lot of talk and worry about the future of BFS.

The BFS staff had to prove their relevance, and they did. They formed partnerships with the private sector for provision of seedstock and use of the lake cages in commercial farming of tilapia. They continued research in genetics and farming systems, particularly on genetic improvement of the freshwater prawn *Macrobrachium rosenbergii*. They conducted more intensive training in freshwater aquaculture for a variety of clients, often in cooperation with ABCDE Foundation. They strengthened relations with nearby schools and local government units. The University of Rizal System has recently requested BFS to provide training for its fisheries faculty.

Indeed, with the current AQD emphasis on responsible rural aquaculture, BFS is set to become a focal point once again for an intensive R&D program.

*Mayor Cesar Ynares and University of Rizal System President Olivia de Leon visit BFS*

## AQD works with MACABATA-ARM

A new AQD project funded by the Australian Agency for International Development (P1.5 Million), *Poverty Alleviation through Aquaculture: increasing food and income through small-scale fish farming*, was assigned to Dan Baliao in September 2004 after the previous implementing team resigned from AQD. Proper communications were made with AusAID and the MACABATA-ARM, the previously identified beneficiary fisher federation (eight coastal barangays or villages) in Carles, Iloilo. Exhaustive meetings with MACABATA-ARM were conducted to determine an implementation approach that considered the fishfarming experience of the beneficiaries, the technical, environmental, and financial viability of the farming system, and the marketability of the selected species. It was decided that the federation will first learn to farm groupers in fish cages.

On-site evaluation of the project execution against the budget was done on 22 September and two AQD technicians were deployed to Carles on the same date. After the site suitability was assessed, 16 fish cages (each 5 m x 5 m x 3 m) were constructed at the island barangay of Manlot, Carles, and stocked with groupers *Epinephelus coioides*. Each barangay in the federation was allotted two fish cages that they can operate and supervise. The cost of grouper fingerlings and feeds was given in advance by AQD to the barangays.

In order to properly transfer the grouper cage farming technology to MACABATA-ARM, two trainees from each barangay worked day to day at the cages under the guidance of the AQD technician. The groupers were attended to for 5-6 months, and sorted several times along the way to minimize cannibalism. As to AQD's exit mechanism, the plan is to help the barangays conduct one or two technology livelihood runs. Once the barangay has established adequate management and technical capability, AQD will recommend to AusAid the complete turnover of the grouper farming projects to the beneficiaries.





## On-site training in Cambodia & Vietnam

The AQD Team, led by Dan Baliao of the Technology Verification and Commercialization Division, conducted an on-site training on mangrove-friendly shrimp farming at the Seaside Hotel, Sihanoukville, Cambodia, on 14-17 December 2004. The training was for 32 participants—officers of Department of Fisheries Cambodia and farmers from Sihanoukville and Kampot Provinces.

Mr. Ing Try, the Director of the Department of Fisheries, welcomed the trainees and trainers and opened the course. Lectures followed. Dan Baliao talked about the development of mangrove-friendly shrimp farming in Southeast Asia. Siri Tookwinas, a Senior Expert from the Thailand Department of Fisheries talked about shrimp farming systems in Thailand. Neil Raphael Jamon discussed pond design and construction, farming methodology, and feeds and feeding system. Nilo Franco stressed the economics and sustainability of the mangrove-friendly shrimp farming technology.

The participants visited a 12-hectare intensive shrimp farm in Prey Noup, Sihanoukville that has been using the Thai technology. The farm owner, Oung Putmolika, offered her adjacent lot for demonstration of the AQD technology. In his closing remarks, the Fisheries Officer of Sihanoukville, Mr. Sin Satharath, thanked the lecturers for coming to Cambodia and noted that on-site training was a novel and more effective method of technology transfer, one that allowed the experts to directly address the questions of farmers.

This on-site training in shrimp farming was the second conducted by SEAFDEC/AQD under the Mangrove-Friendly Shrimp Aquaculture Program funded by the GOJ-Trust Fund. Earlier,

## AQD demos shrimp farming in Malaysia

In August 2004, AQD deployed Chris Mitchum Ganancial and May Vincent Arellano of the Technology Verification and Commercialization Division to the Brackishwater Aquaculture Research Centre in Gelang Patah, Johore Bahru, Malaysia to carry out a technology demonstration project with the Department of Fisheries, Malaysia. The collaborative project is part of the Mangrove-Friendly Shrimp Aquaculture Program funded by the GOJ-Trust Fund, with Malaysia sharing the local costs.

BARC sits within a 252-hectare mangrove forest owned by the Malaysian Government. Dan Baliao visited BARC in September 2003 to discuss the project to showcase environment-friendly intensive shrimp farming. The AQD Team was allowed to use two 2,500-m<sup>2</sup> grow-out ponds and a 5,000-m<sup>2</sup> reservoir pond. Slight modifications and repairs were made to suit the project requirement. *Penaeus monodon* fry were stocked at the end of September and harvest is expected after 4-5 months.

## AQD develops aquafarms in Palau

AQD initiated its first international consultancy when it dispatched an 11-man aquaculture engineering team to Ngatpang State, Palau, on 3 August, to lay the groundwork for an aquaculture development program. Two years ago, AQD expert Dan Baliao served as FAO Consultant to assess the aquaculture potential of Palau, primarily of the four pre-identified sites in Ngchezar, Peleliu, Ngaremlangui, and Ngatpang. Last January, the Governor and Chiefs of the Ngatpang State visited AQD in search of a consultant. After securing clearance from the SEAFDEC Council, a consultancy agreement was forged between AQD and Ngatpang State on 5 July for a one-year project involving verification of fry availability thru fry collection, construction of a 14-hectare modular milkfish pond system, construction of fish cages, and operation of the built facilities to demonstrate technical, environmental, and economic viability of different aquaculture technologies.

As the Program Director of the Palau consultancy, Dan Baliao is responsible for the planning, implementation, supervision, monitoring, coordination, and evaluation of the program, in coordination with the local government of Ngatpang. Other members of the AQD Team are Nilo Franco, Neil Raphael Jamon, and Engineer Samson Jaspe.

A detailed pond development plan has been submitted to the Palau authorities, including justification of the modular method of milkfish farming as an environment-friendly technology (in compliance with the lengthy procedures of the Environmental Quality Protection Board). Heavy equipment was ordered and mechanized construction of the ponds with soil from a nearby quarry site was started as soon as EQPB approval was secured. There had been some problems. The dump truck being used to transport soil is also used as garbage truck and all-around truck by the State. The backfilling has also been delayed by frequent rains.

Bamboo cages (5 m x 5 m x 3 m) have been constructed with netting and floats bought from the Philippines, and stocked with grouper fingerlings from a Japanese-managed hatchery in Palau. As they grow, the juvenile groupers are thinned out and distributed to other cages. In order to protect the cage stocks from predators, a large-mesh perimeter net has been installed around the cage farm. The technician assigned to the grouper cages is Marlon Estimada.

Mud crab fattening in pens set in mangroves is also being conducted, using stocks collected by 30 crab pots. The current stock consists of 250 male and female *Scylla serrata* with average body weight of 450 grams. These are fed with 'trash fish.' The crabs will be selectively harvested as they reach market size. Mud crabs have become scarce in the area and the collection from the pots could not fill the stocking requirements of the pens. Theo Isumo, the Director of the Bureau of Marine Resources, wants to import crablets from the Philippines to stock in the mangrove pens in Ngatpang.

## Eight finish shrimp farming course

The 4<sup>th</sup> Training Course on Mangrove-Friendly Shrimp Aquaculture started on 21 October and ran for 3 weeks. There were eight trainees, seven of them sponsored by the ASEAN-SEAFDEC Mangrove-Friendly Shrimp Aquaculture Project.

The trainees included a woman from Myanmar and seven men from the Philippines, Cambodia, Indonesia, Malaysia, Thailand, and Vietnam. Pol Mimoso from Cambodia was a trainee during the Third Country Training Program in Responsible Aquaculture Development in 2000. Jorge Bautista, the only paying participant, is a Councilor from Surallah, South Cotabato, Philippines; he had earlier trained in freshwater hatchery management in Binangonan.



The AQD resource persons were JH Primavera, DD Baliao, FDP Estepa, WG Yap, NR Jamon, CLavilla-Pitogo, EA Tendencia, NM Franco, RD Traviña, D Catedral, J Babiera, G Gonzaga, CM Abelarde, J Sembrano, N Dosado and R Ticar. External resource persons were also tapped. Dr. Rodelio Subade from the University of the Philippines-Visayas gave several lectures on economic valuation of resources, environmental economics, and preparation and evaluation of feasibility study. Dr. Oseni Millamena lectured on nutrition in aquaculture and supervised practicals in feed preparation. Dr. Siri Tookwinas from the Department of Fisheries, Thailand gave lectures on shrimp farming in Thailand and on the implementation of Thailand's Code of Practice for Aquaculture. Dr. Phutt Songsangjinda, also from DOF Thailand gave a lecture on physical and biological technologies for water recycling in shrimp ponds.

*TR Mallare*

## AQD's first abalone course graduates 24

The 1<sup>st</sup> Training Course on Hatchery and Grow-out of Abalone *Haliotis asinina* was conducted from 17 to 26 November 2004. The training course covered broodstock management, spawning, larval rearing, transport, production of benthic diatoms, biology and culture of *Gracilaria*, grow-out of abalone in net cages, and fabrication and maintenance of cages. The Technical Lead Person was Ms. Shelah Mae Buen and the resource persons included MTC Mallare, MR dela Peña, Virgie Sol Titular, Nestor Deatras and Salvador Tan. Lectures and laboratory practicals were conducted at Tigbauan Main Station and the field practicals at Igang Marine Station. The trainees also visited a private abalone hatchery in Guimaras.



There were 24 trainees— nine women and 15 men. The lone foreigner in the group was IBM Suastika Jaya, the Director of Marine Aquaculture Development Center in Lombok, Indonesia, who was sponsored by the Integrated Rural Aquaculture Project under the ASEAN-SEAFDEC Special Five-Year Project on the Contribution of Sustainable Fisheries to Food Security.

The 23 paying trainees from the Philippines included three local government officials who want to provide an alternative livelihood to their constituents in Mindanao and two officers from the Center for Empowerment and Resources Development. The Bureau of Fisheries and Aquatic Resources sent 10 trainees, one each from Regions I, 4a, 4b, 6, 8, 9, 10, 11, 12 and 13, funded by the Fisheries Resource Management Project.

From the private sector, there were eight trainees. Alvie and Nashieba Musa from Zamboanga City are engaged in export trading of dried abalone. According to them, there is no problem in the supply of adult abalone from the wild at the moment, but they foresee that it could happen in the future so they plan to set up a hatchery to sustain their business. The two trainees from Coral Aquaventures in Davao, one from Alsons hatchery in Sarangani, and two from Surigao also plan to set up a hatchery.

*RF Bombeo*



## Tsunamis and mangrove greenbelts

JH Primavera

Are deaths and devastation necessary consequences of tsunamis and typhoons? The 26 December 2004 Indian Ocean tsunami left more than 150,000 dead in a dozen countries and millions more homeless. Decades ago, a tsunami in the Cotabato Trench caused 5000 deaths, 2300 missing and more than 93,000 homeless in Cotabato, Lanao, Zamboanga and Sulu provinces.

But the Indonesian island of Simeuleu located some 50 kilometers from the earthquake epicenter lost only a few villagers because their vast mangrove area dissipated the power of the waves and their past experience foretold of the impending disaster. In 1999, an army of mangroves also spared Nasi Island in Kendrapara district in Orissa, India while elsewhere in the eastern coastal state, a supercyclone killed more than 10,000 people and damaged 3 million houses.

The Philippines is visited by 20-30 typhoons yearly not counting the less frequent tsunamis, so it is high time we build greenbelts of mangroves and beach forest to protect our coastlines from storm surges and tidal waves. Philippine laws and promulgations abound that require the retention or replanting of a mangrove buffer zone extending 20-50 meters along riverbanks and 50-100 meters facing oceans and open seas. It is the implementation of these laws – P.D. 705 (1975), P.D. 953 (1976), MNR Adm. Order 42 (1986), DENR Adm. Order 76 (1987) and DENR Adm. Order 16 (1993) – that is wanting. Local governments must NOW enforce the greenbelt law in the form of ordinances at the barangay, municipal and provincial levels.

The Department of Environment and Natural Resources together with universities and research institutions can provide local governments and NGOs suitable technology for planting, especially the correct mangrove/beach forest species. In October 2002, the Philippine Association of Marine Science called on the DENR and other government agencies to implement the buffer zone requirement in ecologically sound ways – by not planting mangroves on seagrass beds, and by cultivating species naturally present in the seaward zone, i.e., *piapi* or *bungalow* (*Avicennia marina*) and *pagatpat* (*Sonneratia alba*), with *bakhaw* (*Rhizophora* species) confined to more sheltered areas. A wealth of ecological information on Philippine mangroves can be found in local publications such as the “Handbook of Mangroves in the Philippines – Panay”.

Such coastal planting will require a paradigm shift in how we view our shorelines. Tsunami-triggered waves destroy only those that lie in their path including houses and tourist resorts. But a greenbelt of *bungalow/pagatpat* mangroves and *talisay/bitoon* beach forests will mitigate the impact of 15-meter waves – Nature’s protection against Nature’s fury. The Marine Biological Station on Inhaca Island in Mozambique which I visited years ago shows how it can be done. The buildings, hidden from sight as our boat approached the island, had been constructed a good distance behind the beach vegetation.

We need to change our stereotyped picture of a tropical sunset with only coconut trees swaying in the breeze. Nature meant for the coconut palm to be only one among many beach forest species. It is time we heed Nature’s laws and replace our stereotype of a romantic but vulnerable palm beach devoid of other vegetation with the lush forest greenbelt that our coastlines used to have.

The value of coastal protection (and other ecological services such as erosion and flood control, nutrient recycling, commercial fish and shellfish nursery, and wildlife habitat) provided by mangrove-beach forests is incalculable, as the horrific Indian Ocean nightmare has shown. Mangroves and their associated ecosystems also yield important goods from fisheries (seaweeds, fish, crabs, prawns, and mollusks mainly for food) and forests (firewood, timber, dyes, fibers, honey, beverages and medicines). To these vital roles may be added a historical aspect -- the country’s premier city of Manila, or *Maynila*, owes its name to the mangrove species *Scyphiphora hydrophyllacea* locally called *nilad*, which grew profusely along Manila Bay and the Pasig River in preHispanic times. Towns and villages all over the islands are named after mangroves and their associates, indicating the wide distribution and diversity of these plants in times past.

We humans cannot control the occurrence of tsunamis, but we can mitigate the damage and devastation they cause. Let us start by planting greenbelts of mangroves in the intertidal zone and beach forest above the high tide level, in addition to early tsunami warning systems. Such systems will surely save lives but not property and livelihoods. For our own survival, we must learn to coexist with trees, whether in the upland Quezon and Aurora rainforests or with mangroves at the water’s edge.

This article appeared in the Philippine Star, 8 Jan 2005, and was also picked up by the international press, such as the US World and News Report. A month after the tsunami, the death toll was placed at 280,000 people.





## PRIMAVERA NAMED A PEW FELLOW IN MARINE CONSERVATION

Miami, Florida, USA – A witness to the destruction of mangroves in her native Philippines, Jurgenne Honculada Primavera has won the world’s most prestigious award in marine conservation and will use it to protect this essential habitat.

As one of this year’s five Pew Fellows in Marine Conservation, Primavera receives \$150,000 for a three-year project and becomes part of the world’s premier network for ocean science and conservation. Celebrating its 15th anniversary, the Pew Fellows Program in Marine Conservation has selected 89 Pew Fellows who have completed projects across the globe. Fellowships are funded by The Pew Charitable Trusts and administered by the Pew Institute for Ocean Science.

“Dr. Primavera’s work to preserve and restore mangroves is essential to maintaining the overall health of coastal areas, and she fills an important niche within the growing conservation legacy of the Pew Fellows,” says Dr. Ellen Pikitch, Executive Director of the Pew Institute for Ocean Science at the University of Miami’s Rosenstiel School, and a Pew Fellow herself.

Primavera spent several years promoting shrimp aquaculture, which often involves the clear-cutting of mangroves, before changing course to promote sustainable aquaculture. She received an honorary doctorate in 2004 from Stockholm University and is a member of the Swedish Royal Academy on Agriculture and Forestry. She earned a PhD in Marine Science and a B.S. in Zoology *cum laude* from the University of the Philippines in Diliman, and an M.A. in Zoology from Indiana University. She is employed as the first Senior Scientist of the Aquaculture Department of the Southeast Asian Fisheries Development Center (SEAFDEC/AQD) based in Iloilo, central Philippines.

An international committee of marine specialists selected the 2005 Pew Fellows in Marine Conservation based on their potential to protect ocean environments. The other 2005 Pew Fellows are: Shankar Aswani, USA; Miriam Fernandez, Chile; Sarah Fowler, United Kingdom; and Laurence McCook, Australia.



***Congratulations, Ma'am JHP!!***

*— from your SEAFDEC AQD family*

Photographs and more information about each of the 2005 Pew Fellows are available by request. Detailed information about all 89 Pew Fellows in Marine Conservation is available at <http://www.pewoceanscience.org>.

*The Pew Fellows Program in Marine Conservation is part of the Pew Institute for Ocean Science, in partnership with the University of Miami. The Pew Institute for Ocean Science strives to undertake, sponsor, and promote world-class scientific activity aimed at protecting the world's oceans and the species that inhabit them.*