

An aerial view of the solar and generator powered hatchery and nursery facilities at Molocaboc Island in Negros Occidental in 2019. The island is without electric and fresh water supply system. This was built as part of the Community-Based Resource Enhancement project initiated by the Southeast Asian Fisheries Development Center Aquaculture Department (SEAFDEC/AQD). See feature story on page 4.
[PHOTO BY JF ALDON]

aqd matters

January-February 2021

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

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Baliao: Revive abandoned hatcheries to boost Capiz aquaculture

To boost the local aquaculture industry, SEAFDEC/AQD Chief Dan Baliao said abandoned and underutilized hatcheries in the province should be rehabilitated to produce much-needed crablets and fish fry. He said this during a dialogue with local fish farmers who aired that there were not enough suppliers of crablets that they seed into their fishpond.

"The problem here in Capiz is that our crablets come from Bicol, Sarangani, and Cagayan Valley. How about us here in Capiz?" asked Ma. Cristina Dyna Honrado, vice-chair of the Capiz Aquaculture Producers Cooperative.

Other fish farmers acknowledged that while the SEAFDEC/AQD hatchery, based in nearby Iloilo, can supply crablets, the volume is still not enough, so they end up buying wild crablets from



Dan Baliao, chief of SEAFDEC/AQD, speaks during the On-site training Course on Aquaculture at Roxas City, Capiz where he encouraged the rehabilitation of abandoned and underutilized hatcheries to boost the local supply of crab and fish seeds. Photo by JZ Silorio

other regions which results in massive transportation losses.

Capiz produced 2,000 metric tons of cultured mangrove crabs worth a billion pesos in 2019, data from the Philippine Statistics Authority shows, making up 11 percent of the national mangrove crab output from aquaculture in terms of value.

Honrado was among 34 members of various

aquaculture cooperatives, members of the local business sector, and BFAR staff attending the On-site Training Course on Aquaculture organized by SEAFDEC/AQD, the Bureau of Fisheries and Aquatic Resources (BFAR) 6, and the Capiz Provincial Agriculture Office and held Feb. 23 to 24, 2021 at the San Antonio Resort.

"SEAFDEC and BFAR could start by profiling abandoned or

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A non-operational hatchery in Batan, Aklan in 2019, before its rehabilitation by the Bureau of Fisheries and Aquatic Resources (BFAR) and the Southeast Asian Fisheries Development Center, Aquaculture Department (SEAFDEC/AQD) to help boost the local supply of aquaculture seeds. Photo by SEAFDEC/AQD

underperforming hatcheries in Capiz so we can plan out how to help them become operational again,” said Baliao.

He said that since 2019, SEAFDEC/AQD has already been working closely with the Bureau of Fisheries and Aquatic Resources (BFAR) Region 6 to survey hatcheries in Iloilo and Aklan that are non-operational, abandoned, or damaged.

While they so far found nine operational hatcheries, they listed a further 12 that were abandoned or non-operating due to the owner’s physical incapacity, bankruptcy, or lack of finances.

“Most of these abandoned hatcheries used to grow tiger

shrimp in the 1990s when the industry boomed , but they were eventually abandoned,” commented Baliao.

Revived hatchery in Aklan

As an example, Baliao revealed that in February, SEAFDEC/AQD donated 1.1 million milkfish larvae and 30 liters of rotifers, a natural fish food, to a hatchery in Batan, Aklan that they rehabilitated jointly with BFAR 6, which provided the funds.

The hatchery used to produce shrimp fry but is now growing milkfish seeds as part of BFAR’s National Bangus Fry Sufficiency Program that

aims to secure a sufficient local supply of fingerlings.

On-site training

SEAFDEC/AQD initiated the On-Site Training Course in Aquaculture, where the dialogue took place, as part of their program to help revive the local aquaculture industry.

The on-site training covered topics on mangrove crab culture, shrimp culture, recirculating aquaculture systems, fish health management, and milkfish deboning, which were delivered by resource persons from SEAFDEC/AQD and BFAR.

The training is part of SEAFDEC/AQD’s Joint Mission

for Accelerated Nationwide Technology Transfer Program (JMANTTP), being done in collaboration with BFAR to conduct techno-caravans, field demonstrations, and hands-on training courses in different areas in the Philippines. [a](#)

— RD DIANALA

IN PHOTOS



SEAFDEC/AQD Chief Dan Baliao met with the Northern Iloilo Alliance for Development (NIAD) on 24 Feb. 2021 at Ajuy, Iloilo to discuss possible developments in aquaculture in the 5th district of Iloilo.

The coordination meeting was attended by NIAD Chairman Raul Bantias, Iloilo Gov. Arthur Defensor, Jr., municipal mayors from Iloilo’s 5th district, Bureau of Fisheries and Aquatic Resources (BFAR) 6 Regional Director Remia Aparri, among others. Photos by RP Servano

A HARD PROBLEM WITH A SOFT SOLUTION: Catfish farm's production surges after easy fix

There are not enough catfish in the “Catfish Country” of Zarraga, Iloilo, but recent findings in one farm may just be the catalyst that could catapult the fish into abundance.

Zarraga Pantat Fingerlings was one of the many farms struggling to keep pace with buyers' demands while itself suffering from many catfish eggs that fail to hatch and catfish fry that die before they can be sold to other farmers that grow them in ponds.

Larry Pañoso, the hatchery operations in-charge, said that they achieved a breakthrough in January when their production reached an all-time high of 500,000 fry per week after the Southeast Asian Fisheries Development Center Aquaculture Department (SEAFDEC/AQD) helped resolve a problem with their water source.

In early 2020, the hatchery produced just 60,000 fry per week, but production began to decline in June 2020 when eggs failed to hatch.

“We had no idea why this was happening,” explained Pañoso in Hiligaynon. “We were wondering why this suddenly happened after a few months of stable production.”

The “hard” problem

Dan Baliao, SEAFDEC/AQD Chief, reported that the facility's water was too hard for the catfish eggs and affected their hatching.

This was after SEAFDEC/AQD dispatched a team composed of a chemist, a fish biologist, microbiologists, and



African catfish (*Clarias gariepinus*) breeders in Zarraga, Iloilo, are awaiting hand-stripping, or the removal of eggs for external fertilization and production of seed. Photo by JR Pagador

engineers to holistically evaluate the hatchery operations.

One of the deep wells that served as the farm's primary water source reached hardness levels as high as 500 ppm (parts per million) when water hardness levels for egg hatching should ideally be between 30 and 60 ppm.

Hardness refers to the amount of calcium carbonate present in the water wherein purified water is considered soft with less than 50 ppm while hard water is above 170 ppm and is typical of ground water.

The soft solution

Upon advice by Dr. Rolando Pakingking, a scientist at SEAFDEC/AQD, Pañoso mixed rainwater, a soft water source, with

the water from the deep well supply used in the hatchery to reduce the water hardness level in the hatching tanks.

“Since then, we didn't encounter any further problems and are continuously producing fry for our clients,” said Pañoso, who reported producing 500,000 fry per week during the second and a weeks of Jan. 2021.

Zarraga Pantat Fingerlings supplies catfish fry to clients mostly from Panay, Negros, and Guimaras.

With SEAFDEC/AQD's advice, Pañoso also shared that they are upgrading biosecurity in the hatchery by disinfecting breeders and eggs after each induced spawning session. They also have become more vigilant in monitoring water parameters.

“Water parameters like pH, salinity, and hardness matter to the rearing of freshwater species, so constant monitoring is an integral component of good aquaculture practices,” emphasized Pakingking, who shared that monitoring is often “overlooked.”

Baliao said that with the mounting demand for technical assistance from the aquaculture industry, the research center is working to make its experts more available to help fish farmers.

“We have made it our policy to encourage direct involvement of our experts, as long as they are available, to hasten the commercialization of research results,” he added. **a**

— JR PAGADOR



Zarraga Pantat Fingerlings hatchery manager Larry Pañoso inspects the farm's hatchery tanks in Zarraga, Iloilo. Catfish eggs and fry are nurtured in these tanks before moving them into grow-out ponds. Photo by JR Pagador



Tatay Marianing (second from right) assists Raisa Joy Castel, associate researcher of SEAFDEC/AQD during a monitoring activity in Molocaboc last 2016. Photo by IT Tendencia

COMMUNITY-BASED SEA RANCHING: Fisherfolks' legacy to sustainable fisheries

Just off Molocaboc Island, beneath a turquoise canopy of water, fishers search the coral reef to pick out abalone and sea cucumber, two prized delicacies in Asian cuisine. Live abalone sells abroad for up to \$120 or approximately P5,700 a kilo, and dried sea cucumber, \$2000 or about P96,000 a kilo.

But the fishers are not here to cash in on the abalone grazing on coralline substrates and the sea cucumber burrowing in the white sand. Not yet. They carefully weigh and size them, log the numbers in a notebook, and return them to the reef to continue to grow and reproduce.

During the formative years of the sea ranching project, the fisherfolks asked when they will benefit from the rehabilitation of the overfished abalone, sea cucumber, and seahorse population. Answering their questions was Dr. Nerissa Salayo, a socioeconomist of the SEAFDEC/AQD. "It will likely take longer than we would expect, it could be beyond our lifetime, but for sure, if we succeed, we will leave a legacy to the fisherfolk of the future generations," she said.

Some fisherfolk got serious, but with a smile, they said, "So we're dead already, but our children will benefit." Over a decade since the conversation with Salayo, they have abandoned destructive fishing practices and adopted a sea-ranching approach.

Salayo looks back at the people's cooperation and participation and credits them for the present success of the sea ranching project at Molocaboc Island, 20 minutes by boat from the Sagay City Port north of Negros Island.

It was since 2006 when the Molocaboc fishers and the Sagay City local government have been working with SEAFDEC/AQD whose staff guided them in the Community-Based Resource Enhancement Project. After years of social preparation and assessments, hatchery-bred juveniles of abalone, sea cucumber, and seahorses were periodically released in a no-catch zone, starting in 2011. Since then, the fishers have been protecting and monitoring the stocks.

Abalone, sea cucumber, and seahorses flourished and, except for seahorses which are banned from the trade, gleaners started

gathering just outside the protected site. Over the years, they reported catching a bit more which supplemented their subsistence income. In 2017, the fishers of Molocaboc began shipping live abalone to top hotels in Manila, while local traders supplied exporters in Cebu.

To ensure sustainability, gleaners only harvest abalone with shells at least 6 centimeters long, thanks to a Sagay City regulation initiated by the project. Sea cucumbers are also protected by nationwide harvest-size and trade regulations.

Role of fisherfolk leaders and barangay officials

Convincing the community to be involved in the project was the first hurdle, but one that was soon resolved.

Salayo dearly recalls Mariano Abog Jarina, an elderly fisherfolk leader who bolstered interest and support for the project from the very start. With most of his life dedicated to fishing, Jarina, fondly nicknamed "Tatay Marianing," has a reputation in the community for his steadfast principles and sincere dedication to his work. A father of seven children, he was the breadwinner of his growing family until he stopped going out to sea in 2005 because of his declining health.

"Tay Marianing is one of several personalities, together with the officials of Barangay Molocaboc, who made things easier for me when organizing people," emphasized Salayo. "He would personally approach people in their homes to encourage them to participate in discussions and lectures, especially during the early stages of the project."

"Together with his co-senior buddies, he is hands-on during sampling, overseeing, and guiding fellow fisherfolks on tasks. Like my father, I would seek his advise if there are problems in the field. The Jarina family also opened their home and treated us like we were a part of the family, whenever our team had to stay for a few days and nights," said Salayo as she recalled the challenge of monitoring the released stocks, especially the nocturnal abalone."

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In 2009, the Barangay Molocaboc Fisheries and Aquatic Resources Management Council (BFARMC), was organized. Jarina would serve as one of its presidents, in succession with other officers Carlos Batayola Jr, Jeoffrey Seronda, Terso Cordova, Francisco Bascar and Rafael Muñoz. He continued as advisor of the organization until he passed away last 4 Oct. 2020 at the age of 72. Until his last moment, he was saying that MOSRA should continue to care for the stock enhancement project with SEAFDEC in Molocaboc.

For the future

Today, about 60 community members are participating in the project. Hatcheries and facilities constructed by SEAFDEC/AQD to support sea ranching have been turned over to Sagay City and MOSRA in 2019.

Janet Tuling Jarina is Tatay Marianing's daughter and the present secretary of MOSRA. She shared that the monthly monitoring of the abalone and sea cucumber stocks continue in daily schedules and shifts among the members in the wake of the COVID-19 pandemic.

"Papa always emphasized that this project is for the future generations of our community. The benefits reaped from our efforts today will be appreciated by our kids and even grandkids," said Jarina, who is also a mother of a four-year-old boy. 📍

— JR PAGADOR, RD DIANALA

" It will likely take longer than we would expect, it could be beyond our lifetime, but for sure, if we succeed, we will leave a legacy to the fisherfolk of the future generations. "



Mariano Abog Jarina, also known as Tatay Marianing, holds up a seahorse juvenile for closer inspection at their community-based hatchery in Molocaboc Island in 2019. The late Jarina is the former president of the Molocaboc Sea Ranchers Association (MOSRA) and played a pivotal role in rallying support for the now successful sea ranching project on their island. He passed away last Oct. 4, 2020 at the age of 72. Photo by RD Dianala

FishWorld rescues stranded dolphin in Tigbauan waters

Technical staff of FishWorld responded to a dolphin stranding incident on the shores of Barangay Buyu-an, Tigbauan, Iloilo last 15 February 2021.

FishWorld checked the vital signs of the stranded mammal and guided it back to open waters. It was revealed that the dolphin was emaciated based on the 'peanut-shaped' head and had two cookie cutter shark bites on its body.

The Iloilo Province and Tigbauan Municipal Bantay Dagat and Philippine Coast Guard also responded and monitored the coastline for re-stranding as young dolphins are considered unlikely to survive without their mothers. After a few days, no re-stranding was reported.

With the assistance of Dr. Jo Marie Acebes, senior museum researcher of the National Museum of the Philippines, the calf was identified to be a Risso's dolphin (*Grampus griseus*). Although this species commonly resides in deeper waters and on the edge of the continental shelf across temperate and tropical oceans around the world, they often come closer to shores where there are steep drop-offs or plenty of food.

FishWorld checked the vital signs of the stranded mammal and guided the locals on its proper handling before releasing it back to open waters.

Stephen Alayon, officer-in-charge of FishWorld, said that they are planning to intensify the dissemination of Information, Education, and Communication (IEC) materials and strengthen information literacy campaigns among the residents to help them become knowledgeable in the event that a mammal stranding happens again. Locals unknowingly caused more stress and harm to the mammal because of their little knowledge on proper handling as seen in a Facebook video where residents poured water in the blowhole.

In the Philippines, all cetaceans like dolphins and whales are protected under legal laws. However, accidental entanglement in fishing gear, hunting, overfishing, habitat destruction and the presence of marine debris and plastic pollution continue to pose a threat to these species on a global scale. 📍

— JR PAGADOR



A Risso's dolphin calf was rescued after being stranded in Zone 6, Barangay Buyu-an, Tigbauan, Iloilo. FishWorld officer-in-charge Stephen Alayon (inset) assisted its safe release back to open waters. Photos courtesy of SB Alayon



Members of the fish health diagnostic team, during their weekly monitoring of pompano breeders at the Igang Marine Station in Guimaras, collect caligid copepods through scrapings from infested body areas of the fish. Heavy infestations of caligid copepods are a problem in pompano culture because they cause severe erosion, hemorrhaging of the body surface, exophthalmia, and body lesions that significantly reduce the market value of harvested fish. *Photos by JF Aldon*

Milkfish fry sufficiency update



SEAFDEC/AQD delivered over a million pieces of milkfish larvae and 30 L of rotifers to the Bangus Satellite Hatchery in Batan, Aklan last 1 and 3 Feb. 2021. For the first five production cycles, SEAFDEC/AQD will be providing necessary assistance and quality seedstocks to the hatchery as part of the National Bangus Sufficiency Program of the Bureau of Fisheries and Aquatic Resources (BFAR). Chief Dan Balião is beefing up the production of milkfish larvae through environmental manipulation to ensure a sufficient supply of seeds despite the cold season.



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WE GOT STYLE!

SEAFDEC updates guide for writing and editing

To ensure the quality and consistency of SEAFDEC documents and publications being produced, information, research, technical, and administrative staff from Secretariat and all departments gathered through an online meeting and discussed the improvement of the SEAFDEC style guide last 17 to 18 Feb. 2021.

The two-day inter-departmental information workshop was conducted to further refine the “SEAFDEC Style,” a guide for writing and editing SEAFDEC documents and publications. A style guide is an essential tool that helps an organization maintain its identity and communicate professionally and cohesively to its employees and external partners.

“This workshop aims to ensure that our style guide is up-to-date with the current international writing and communication standards and that all contents can still be practically applied to the daily production of documents and publications,” said Mr. Koichi Honda, deputy-secretary general of SEAFDEC, during his opening remarks.

During the meeting, revisions on harmonizing text formats, the use of gender-sensitive language, and tips on citing sources accurately were discussed and



Library, Devcom, MIS, and OC staff join the inter-departmental information meeting hosted by SEAFDEC Secretariat to discuss the refinement of the SEAFDEC style guide.

applied to the guide. One of the important parts of the discussion is the promotion of using the style guide. The meeting agreed to produce a print version of the guide for easy dissemination, making the electronic copy readily-available for all through the departmental repositories, and issuance of an administrative order that encourages concerned staff to use the style guide.

In the past, maintaining the uniformity and consistency of publications was challenging since numerous materials are being produced by different people and from different countries. SEAFDEC Style can now be an excellent reference for writers

and editors in developing documents and publications efficiently.

The current style guide was based on the original document developed by Ms. Barbara Mountfield, a senior editorial officer of SEAFDEC, in 1989 with the title “Notes for Editing SEAFDEC Documents.” It has been continuously updated since its first major revision in 2018. [a](#)

— JM DE LA CRUZ

Green algae as food source for shrimp

Mr. Joseph Biñas, an associate researcher of SEAFDEC/AQD, presented the progress of his ongoing aquaculture nutrition research in a webinar last 24 Feb. 2021.

Biñas investigated the potential of live green algae *Chaetomorpha linum* as an ingredient in shrimp feeds. He conducted a 90-day experiment using juvenile shrimps fed with unfermented *Chaetomorpha* meal at varying inclusion levels. Results showed that

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ZOOM WEBINAR | 2:30PM

Spaghetti algae in shrimp feeds:
Will it work?

Mr. Joseph Biñas
Associate Researcher
Nutrition and Feed Development Section
Southeast Asian Fisheries Development Center Aquaculture Department

the percent weight gain, specific growth rate, survival rate, and hepatosomatic index of shrimps were comparable to the control. The study concludes that unprocessed *Chaetomorpha* meal can be incorporated in diets up to 12% without adverse effect on growth, survival, and general condition of shrimps. [a](#)

— JM DE LA CRUZ

Charting the future of shrimp



SEAFDEC/AQD took part in the Shrimp Road Map Updating Workshop conducted by the Bureau of Fisheries and Aquatic Resources conducted virtually via Zoom on 9 Feb. 2021. Chief Dan Baliao, together with SEAFDEC/AQD's shrimp experts, participated in the identification of the strengths, weaknesses, opportunities, and threats faced by the shrimp industry during the workshop's SWOT analysis activity. *Photo by RH Ledesma*

A behind-the-scenes look at SAIR

At the Library and Databanking Services Section of SEAFDEC/AQD, Senior Information Assistant Elvi Nemiz begins his day facing the glare of his computer screen and the low hum of scanning machines in the background.

Surrounded by piles of journal articles, extension manuals, and books, he begins the meticulous task of scanning each page of the printed material then enhancing the images using an OCR (Optical Character Recognition) software.

“Since I was a student, the library has always been my favorite place but I never imagined myself working in one,” he shared in an interview.

Over the course of his career, Nemiz became one of the brains behind the establishment of SAIR (Southeast Asian Fisheries Development Center Aquaculture Department Institutional Repository), a digital repository housing the research work of the organization’s researchers and scientists.

“Around 2006 to 2007, there was an initiative to digitize SEAFDEC’s publications. I was sent to a seminar to learn the best practices of digitization and from what I learned, I began looking into probable platforms that would host our institutional repository,” he discussed.

After a series of trial-and-error, SAIR was launched in 15 March 2011 using DSpace, an open source software developed at the Massachusetts Institute of Technology (MIT) Libraries, typically used for building open access repositories.

From just being a program used to digitize, store, and categorize SEAFDEC publications, SAIR has now become a large repository of knowledge, enabling open and efficient access to scientific information for users around the globe.

“Perhaps one of the greatest accomplishments that SAIR had in the 10 years of its operations is the wider dissemination of SEAFDEC publications to the public,” discussed Nemiz.

He further said that compared to the traditional way where publications are requested through its printed versions and thus limited to people who only have physical access, digitized publications uploaded to the online repository can make their way to the hands of more users.

During the onset of the COVID-19 pandemic in the Philippines, the transition of most academic institutions to online learning has led to a spike in the access, requests, and downloads of publications on the site. In fact, statistics showed that searches performed on SAIR as of March 2021 reached 32.5 million, with 1.4 million unique visitors, and 10.3 million downloads.

“Since the scope of our information dissemination widened, it also caused a sort-of domino effect where citations concerning SEAFDEC publication also increased and that’s also one of the things I felt proud of,” he stated.

A day in the life

When he’s not working on his queue of documents for scanning or compiling spreadsheet requests for access on certain publications, Nemiz does coding for the repository to further improve its services.

“The coding language used in DSpace was never taught to me in school, so I took it upon myself to self-study it instead,” he said.

SAIR was one of the first repositories that was able to utilize DSpace in the Philippines, so Nemiz took it upon himself to conquer the steep learning curve that it posed by asking online communities dedicated to the operations of the software.

“Coding constantly challenges me to improve my skill-set. As it is quite delicate and taxing work, it can get frustrating at times, but the satisfaction on accomplishing what you wanted to achieve is worth it in the end,” he further elaborated.

In fact, Nemiz has also engaged in several training and speaking stints where he demonstrated his expertise on the platform as several academic institutions and libraries in the Philippines began their shift to DSpace to host their respective knowledge repositories.

“I don’t even consider myself an expert, but I am always honored when people approach me and ask for my assistance on DSpace,” he said.

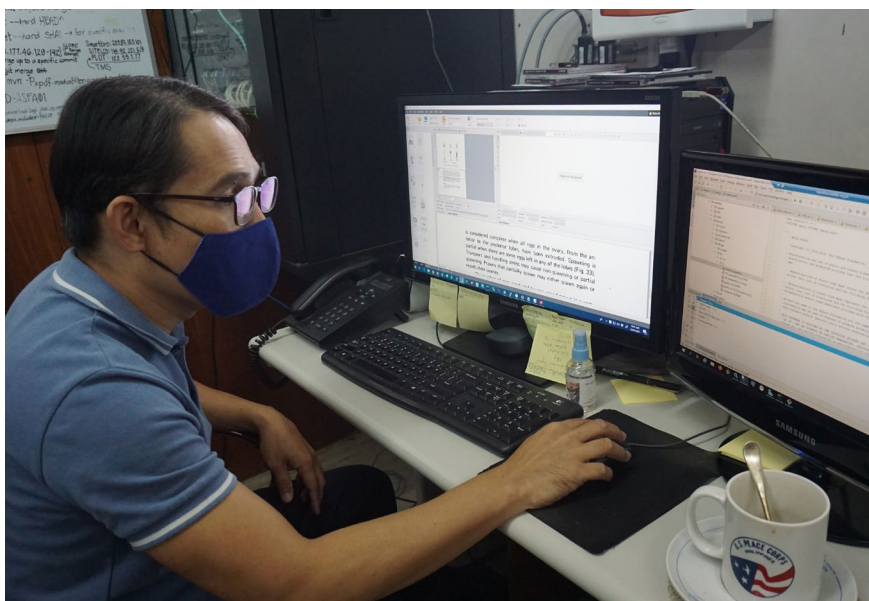
The next steps forward

Now, Nemiz states that he is gearing up for the next developments of DSpace and is looking forward to implement new features on SAIR.

Aside from that, he shared that he is also planning to work on a paper together with the library team that analyzes the usage data of those who access SAIR.

“What keeps me going is my love for my job. Nobody is indispensable, but I strive to be the very best I can be while I’m still here,” he stated. [a](#)

— JR PAGADOR



Elvi Nemiz, Senior Information Assistant at the Library and Databanking Services Section of SEAFDEC/AQD, peruses his two computer screens for his workload of the day. The bulk of his responsibilities rests on the operations of SAIR, SEAFDEC/AQD’s online repository of publications. Photo by JR Pagador