



At the 2023 National Science, Technology, and Innovation Week, SEAFDEC/AQD highlights various species of its culture commodities in the underwater-themed exhibition 'Palawud,' hosted aboard the M/V Capt. John B. Lacson training ship. Photo by MV Dosado

aqd matters

November–December 2023

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

Aquaculture commodities featured in national science exhibition

● REX DELSAR DIANALA



SEAFDEC/ AQD showcases Milkfish juvenile during the NSTW Week proving the department's milestone as the first one to hatch the said fish in captivity. Photo by MV Dosado



DOST officials grace the SEAFDEC/AQD display of cultured commodities at the NSTW Week. Photo by MV Dosado

AN aquarium tunnel displaying various types of fish, invertebrates, and seaweeds, all cultured by SEAFDEC/AQD, were a hit during the National Science, Technology, and Innovation Week celebration launched in Iloilo City on 22 Nov. 2023.

The display of SEAFDEC/AQD's farmed commodities is part of an underwater-themed exhibition called "Palawud," which is hosted on the M/V Capt. John B. Lacson training ship docked at the Muelle Loney wharf in Iloilo City.

Ribbon cutting for the exhibition was led by Secretary Dr. Renato Solidum of the Department of Science and Technology (DOST) on 22 Nov 2023. In the following days, busloads of visitors from various educational institutions and droves of families, all numbering several thousands, enjoyed the 16 aquarium displays, with a total of 18 different aquaculture species.

Due to the overwhelming response from the public, the free-access exhibition was kept open until 30 Nov. 2023. [a](#)

Matters Inside



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SEAFDEC/IFRDMD explores collaborative anguillid eel study with SEAFDEC/AQD



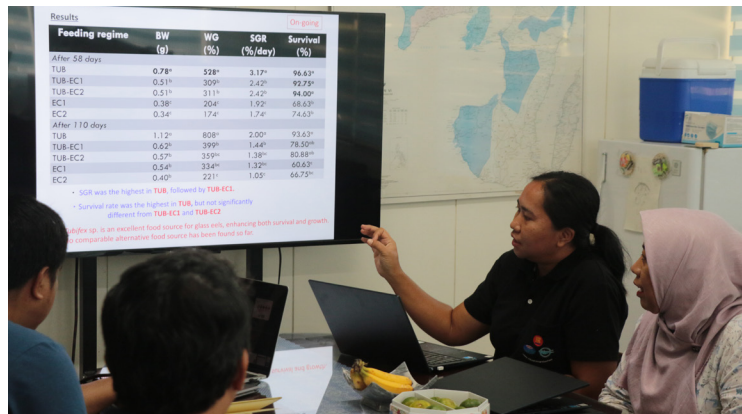
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Prized crabs find new home in abandoned ponds



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SEAFDEC/IFRDMD explores collaborative anguillid eel study with SEAFDEC/AQD



The IFRDMD delegation engages in discussions with AQD experts in the area of technical cooperation during their visit to the AQD headquarters in Tigbauan, Iloilo. Photo by MV Dosada

● NYRA ARMADA

To advance regional fisheries research and strengthen collaboration, the SEAFDEC Inland Fisheries Resources Development and Management Department (SEAFDEC/IFRDMD) recently visited the headquarters of SEAFDEC/AQD in Tigbauan, Iloilo, on 6 Dec. and the Binangonan Freshwater Station in Binangonan, Rizal on 10 Dec. 2023.

The visit was aimed at fortifying the ties between the two departments, particularly in light of IFRDMD's upcoming activities as part of a project titled "Sustainable Utilization of Anguillid Eel in the Southeast Asia Region," which spans the years 2020–2024.

Led by Mr. Tomohito Shimizu, IFRDMD deputy chief, the delegation engaged in discussions with AQD experts, including Dr. Sayaka Ito, AQD deputy chief, in the area of technical cooperation. A key highlight of the collaborative efforts is the ongoing anguillid eel surveys in the Philippines, carried out by IFRDMD from 1–8 Dec. 2023.

A benchmarking activity was also conducted on the facilities at SEAFDEC/AQD to identify best practices, assess capabilities, and pave the way for a more streamlined exchange of information between the two departments. [a](#)

Construction underway for aquaculture feed mill facility



● NYRA ARMADA

Rising sea temp threaten Japan's kelp industry:

SEAFDEC/AQD's Deputy Chief offers solutions at int'l symposium ● NYRA ARMADA

RISING water temperatures and warm water masses off the Pacific coast of eastern Hokkaido during summer and autumn have led to poor kelp harvests in recent years. This took the spotlight at the 16th International Kuroshio Science Symposium (IKSS), where SEAFDEC/AQD's Deputy Chief Dr. Sayaka Ito addressed the challenge.

Dr. Ito, one of the plenary speakers at the symposium held on 16–17 Dec. 2023 in Naga City, presented his study titled "A Story on the Terminus of the Kuroshio Current: Understanding the Physical Environmental Characteristics of Kelp Harvest Grounds."

The focusing on "Naga-konbu" (*Saccharina longissima*), a long-blade kelp species constituting 40% of Japan's kelp production, primarily found along the Pacific coast of eastern Hokkaido and a significant source of income for local households engaged in small-scale coastal fisheries in the area.

During his presentation to an audience comprising academics and researchers from countries along the Kuroshio Current, Dr. Ito pointed out the lack of environmental information on kelp growth and habitat which prevents seaweed harvesters from making sound scientific decisions to improve resource management practices and prevent a decline in kelp production.

To address this gap, Dr. Ito and his team conducted a spatial and statistical analysis using geographical information system (GIS) data on harvest ground location, kelp measurement, and basic fishery area maps. The analysis revealed a crucial relationship between the physical environmental characteristics of kelp harvest grounds and kelp growth. As a result, a potential kelp growth map on harvest grounds was created, providing valuable insights for strategic decision-making.

The Deputy Chief concluded his presentation by sharing the procedure for creating the potential map and emphasizing its practical usefulness. [a](#)

SEAFDEC/AQD kickstarted its new construction project- A new feed mill which aims to provide cost-effective feeds at the department's station.

Construction has begun on a new feed mill plant for cost-effective feeds at the SEAFDEC/AQD Main Station in Brgy. Buyu-an, Tigbauan, Iloilo.

→ FEED MILL, PAGE 3

SEAFDEC convenes 46PCM back-to-back with 26FCG/ASSP

CHIEF Dan Baliao and Deputy Chief Sayaka Ito participated in the Forty-sixth Meeting of the SEAFDEC Program Committee (46PCM) and the Twenty-sixth Meeting of the Fisheries Consultative Group of the ASEAN-SEAFDEC Strategic Partnership (26FCG/ASSP).

Both meetings took place in Bali, Indonesia from 20 to 24 Nov. 2023.

The 46PCM reviewed the progress and achievements of the projects implemented in 2023 and endorsed the proposed program of activities for 2024 to ensure that the activities address the requirements of the SEAFDEC Member Countries. [a](#)



Delegates of ASEAN Member States and senior officials of SEAFDEC Secretariat and departments attend the back-to-back 46PCM and 26FCG/ASSP meetings in Bali, Indonesia held 20 to 24 Nov. 2023. Photo courtesy of SEAFDEC Secretariat

LGU-General Luna officials visit SEAFDEC/AQD headquarters

● NYRA ARMADA

OFFICIALS from the General Luna local government unit of Surigao del Norte (Philippines) held a benchmarking activity during their visit to the SEAFDEC Aquaculture Department (AQD) headquarters in Tigbauan, Iloilo, last 11 Dec. 2023.

The government officials discussed with Chief Dan Baliao how they can adopt best practices and SEAFDEC expertise to help ensure sustainable access to aquatic resources and marine products in their town.

They also discussed potential training partnerships and activities

to disseminate information that will push aquaculture development in their area. [a](#)



The officials listen intently to Chief Dan Baliao on how they can adopt best practices to ensure sustainable access to aquatic resources and marine products in Surigao del Norte. Photo by MV Dosado

→ FEED MILL, FROM PAGE 2

The project is part of the National Fisheries Program that plans to build aquafeed mills in strategic locations in the country. The project cost is PHP26,786,394.53, and SEAFDEC/AQD contributed a counterpart fund of PHP250,000 for this medium-scale aquaculture feed mill plant, which will have a daily production capacity of five metric tons.

Chief Dan Baliao highlighted the potential of this feed mill plant to provide high-quality feeds at a stable price, using raw materials sourced from local farmers.

The proponent is the Department of Agriculture – Bureau of Fisheries and Aquatic Resources (DA-BFAR) Regional Office 6, which sourced out funds for this project from the budget allocated by DA to BFAR.

“The establishment of an aquaculture feed mill plant in Visayas will help boost the production of farmers using formulated, cost-effective, and nutritionally balanced feeds. This would eventually help in increasing and sustaining the aquaculture production of finfishes in ponds and cages in the area,” Baliao said. [a](#)

AQUA WEEK



Day 1

Pre-school pupils from various schools took part in the first day of SEAFDEC/AQD's Sci-Art Aquaweeek 2023. The event, organized by the FishWorld Museum, took place on 27 Nov. 2023.

The first day kicked off with the preschoolers engaging in a Tour of Fishworld and hatcheries to help them to be familiar with the different aquaculture species being studied at the research center.

In addition to the educational tour, a clay molding contest was held, which served as a platform to showcase and celebrate the creative talents of the pre-school pupils.



Day 2

Elementary pupils battled their way to emerge as victors in contests like "Nutrition and Aquaculture Quiz," "Bring, Show, and Tell," "Write and Draw a Children's Story," and "Sayawit" during the second day of the Sci-Art Aquaweeek.

These activities took place simultaneously at the SEAFDEC/AQD FishWorld Audio-Visual Room and the Multi-purpose Hall, creating an atmosphere of lively competition and creative expression.

Day 3

On the third day, senior high school students from different universities and high schools participated in an “On-the-Spot Painting Contest,” where their artistic talents were put to the test; “BasurArt,” centered on creating art from waste materials; and “Click and Pick: Capturing Life at AQD,” a photography contest.

The activities held on the 29th showcased the youth’s talent in combining art and science to promote sustainable practices in aquaculture and protect marine biodiversity.



Day 4

FishWorld Museum’s Aquaweek capped off last 1 Dec. 2023 with an on-the-spot poster making contest, a cooking match, and a stage play competition.

Kirayan National High School bested other junior high schools with a colorful poster visualization of the theme “SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.”

Meanwhile, junior chefs from the WVSU Integrated Laboratory School took the top prize with their original seafood dishes (appetizer, main dish, and dessert) prepared using aquaculture commodities.

Finally, another team from the WVSU Integrated Laboratory School earned the first prize with their original stage play that campaigned against marine pollution.

This year’s AquaWeek, held 27 Nov. to 01 Dec. 2023, drew 175 participants and 75 coaches from pre-school, elementary, junior high school, and senior high school levels. [a](#)



WEEK-LONG CHRISTMAS CELEB ILLUMINATES

50 years of aquaculture advancements


It's that time of the year when SEAFDEC/AQD is adorned with twinkling lights, and the festive aroma of the Yuletide season fills the air.

SEAFDEC/AQD hosted a series of activities to illuminate the season during its week-long Christmas celebration. The highlight of the festivities was the Opening of Lights on the 15th of December, followed by the much-anticipated Christmas Party with the theme "Jingle Bell Rockin' at 50: AQD Sharing the golden years of love and service for the community."

"Over the past 50 years, we have witnessed AQD laboring with pride in the region to address food security, wealth creation, and environmental concerns,

among others, in support of research and development," remarked Chief Dan Baliao during the Christmas program.

He emphasized SEAFDEC/AQD's commitment to remaining steadfast in achieving one of its core goals: to uphold SEAFDEC's relevance as a leading aquaculture research and development organization in Southeast Asia.

"As we celebrate this Yuletide season, we reflect on our achievements as benchmarks for the challenges that lie ahead. We require all hands on deck to address these challenges promptly and with a dedication to ensuring "more food on the table," he continued. 





Prized crabs find new home in abandoned ponds

● ROSSEA LEDESMA

ABANDONED brackishwater ponds, if left untouched, can find themselves thriving with the prized mangrove crabs. Allowing mangroves to recolonize abandoned ponds may even provide local fishers with a lucrative source of income.

This is what SEAFDEC/AQD Scientist Ma. Junemie Hazel Lebata-Ramos and her team found out in their study titled “The reestablishment of mangrove crabs (*Scylla* spp.) in an abandoned pond following natural mangrove recolonization.”

The research team conducted their study in a 70-ha mangrove-recolonized abandoned pond in Dumangas, Iloilo, Philippines wherein six fishers were tapped to conduct standardized fishing every spring tide of the month using cylindrical bamboo traps. During the 18-month study, the fishers were able to collect a total of 14,262 crabs in the mangrove-recolonized abandoned pond.

The result of their study showed that mangrove crabs are capable of returning and living in an abandoned pond recolonized by mangroves. Mangrove habitats that have been previously converted for other purposes (*e.g.* ponds for fish culture), are capable of growing back mangroves if left untouched.

→ PRIZED CRABS, PAGE 9





SEAFDEC/AQD Scientist Ma. Junemie Hazel Lebata-Ramos with her team discovers prized mangrove crabs in abandoned brackishwater ponds.

→ PRIZED CRABS,
FROM PAGE 8

Restoring the mangrove crab population in a mangrove-recolonized abandoned pond can provide livelihood to fisherfolk in local communities without harming the environment since bamboo traps were used to collect the crabs.

The running price of mangrove crab, based on the price index from the Bureau of Fisheries and Aquatic Resources, ranges from USD8 to USD25 per kilogram depending on the species, sex, size, locality, and season.

With these findings, the research team suggests to open abandoned ponds to allow the recolonization of mangroves that will lead to the reestablishment of the mangrove crab population in the area thereby helping improve the economic status of marginalized fisherfolk.

Read more about this study by requesting a copy of the published article from the Restoration Journal. [a](#)

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aqd matters

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Scientists refine method to trace the complicated diets of Japanese scallops

HAVE you ever heard the phrase: “You are what you eat”?

Well, it may be true in more ways than you think. Through many scientific advances, we have developed methods to tell what an animal has been eating by comparing the composition of their tissues and potential food sources in their environment. This may sound really unimpressive when you’re thinking about large animals like cows that just eat grass, but think about animals whose diet may be a little harder to identify. Scallops, for example, feed on plankton, which could be anything floating nearby. To know the complicated diets of scallops, we rely on a concept called isotope fractionation.

Hold on. You might be asking, “what are isotopes”?

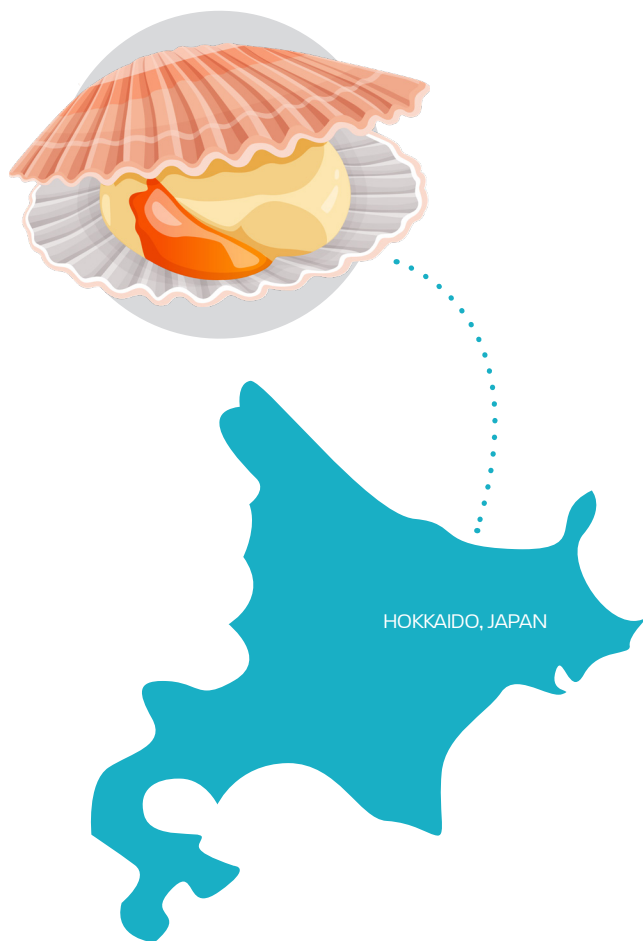
Put simply, sometimes elements in nature are just heavier than they usually are. A single atom of carbon for example usually weighs around 12 atom mass units. However, you can sometimes find carbon atoms that weigh somewhere around 13. This is what we call an isotope. In this case, isotope ^{13}C . Some isotopes are radioactive and decay over time, but isotopes like ^{13}C are pretty stable.

Scientists have found out that these stable isotopes interact differently with the environment compared to the same atoms of normal weight. This finding has led to methods involving isotopes that let us know details about what an organism eats. For example, certain animals’ tissues have consistent amounts of ^{13}C in them. If that animal is eaten by another animal, a certain amount of ^{13}C in the prey’s tissues get integrated into its predator’s body. By comparing the amount of regular ^{12}C and ^{13}C in an animal’s tissues, we can tell what it has been eating.

Now, back to scallops.

Isotope fractionation values have been used to determine the diets of shellfish before, but scientists have found that the numbers vary considerably because shellfish end up digesting a wide variety of particles. This would make it hard to use the method when you’re analyzing the diet of commercially grown shellfish like Japanese scallops.

To make the method for analyzing the diet of these scallops more reliable, Dr. Frolan Aya, from SEAFDEC/AQD, and Prof. Isao Kudo, from the Faculty of Fisheries Science in Hokkaido University, sought to determine how the isotope fractionation values are affected by the quality of the scallop food and by how fast they grow.



They also wanted to know if the values would be different depending on what kind of scallop tissue was analyzed.

They found that tissue-diet isotope fractionation values were higher in muscle tissues compared to digestive gland tissues. This implies – among other things – that the scallops’ digestive glands integrate what it eats faster than their muscles do. They also found that isotopic fractionation values of nitrogen in younger scallops were different from older scallops because of their growth rate.

The results of their study would be helpful in estimating the food utilization of scallops under field conditions.

Further details of the study can be found in the article, “Effect of diet isotopic ratios on the ^{13}C and ^{15}N signatures of scallop-gut contents in a natural setting,” which was published this year in the journal *Plankton and Benthos Research*. [a](#)



Lead by Chief Dan Baliao, SEAFDEC/AQD presented its plans for research and development to the Philippine Technical Administrative Committee last 7 Dec. 2023. Photo courtesy of RT Bautista

SEAFDEC/AQD discusses accomplishments, plans with host government

● NYRA ARMADA

TO ensure that SEAFDEC/AQD's present and future programs are relevant and in line with its host country's needs and priorities, a meeting was held to review and discuss the progress of SEAFDEC/AQD research and development activities in 2023 and endorse its plans for 2024 to the Philippine Technical Administrative Committee (PTAC).

Led by Chief Dan Baliao, the Management Committee of SEAFDEC/

AQD, along with representatives from relevant Philippine government institutions, the meeting convened last 7 Dec. 2023 at Richmonde Hotel Ortigas, in Pasig City.

The Chief highlighted the department's accomplishments in 2023 and outlined plans for 2024, focusing on five key thrusts: fry sufficiency, cost-efficient feed, "Oplan Balik Sugpo", National Techno-Transfer Program, and Manpower Development.

Commendations were extended for SEAFDEC/AQD's efforts in developing aquaculture technologies beneficial to fish farmers.

Moreover, division heads presented on other activities, including technology verification and extension; internally-funded departmental programs; regional programs funded by the Japanese Trust Fund; training and information; and administrative and finance matters. [a](#)

SEAFDEC/AQD, BFAR-6 collaborate for hatcheries, outreach stations

● NYRA ARMADA

SEAFDEC/AQD and the Bureau of Fisheries and Aquatic Resources (BFAR) Region 6 are working together to establish legislated hatcheries and develop existing technology outreach stations across Western Visayas.

Dir. Remia Aparri of BFAR-6 met with Chief Dan Baliao at SEAFDEC/AQD's Tigbauan Main Station on 22 Dec. 2023 where they discussed feasibility studies for proposed legislated hatcheries, development plans for BFAR Technology Outreach Stations, and updates on the progress of the feed mill construction in SEAFDEC/AQD's premises.

During the meeting, Dir. Aparri remarked on the positive feedback from legislators regarding the establishment of legislated hatcheries in the region. "Thus, the initiative to put up a similar project in their respective areas is also gaining momentum," she added.

A Memorandum of Agreement was inked during the meeting, outlining a fund transfer of one million pesos from BFAR to SEAFDEC/AQD. This funding is designated for the latter to prepare feasibility studies for the establishment of legislated hatcheries and development plans for existing technology outreach stations in the region. [a](#)



Leading the collaboration initiative in pursuit of establishing legislated hatcheries and developing the existing technology outreach stations within the region, Chief Dan Baliao and Dir. Remia Aparri of Bureau of Fisheries and Aquatic Resources with their respective teams inked the agreement between the agencies, 22 Dec. 2023 at SEAFDEC/AQD headquarters.



Tourism Secretary Christina Frasco experienced the best of Iloilo as she ganders at the southern part of the province, which included a visit at SEAFDEC/AOD headquarters. *Photo by NG Armada*

EXPLORE ILOILO!

Tourism Secretary Christina Frasco visits heritage destinations in southern Iloilo

● NYRA ARMADA

TOURISM Secretary Christina Frasco visited various heritage destinations in southern Iloilo as part of the launch of the Western Visayas leg of the Philippine Experience: Culture, Heritage, and Arts Caravan on Thursday, November 30, 2023. The caravan included a visit to SEAFDEC/AQD's Fishworld in Tigbauan, Iloilo, where Sec. Frasco witnessed how the museum-aquarium promotes sustainable aquaculture and biodiversity conservation through its displays. 



Chief Dan Ballo toured Tourism Secretary Frasco in the SEAFDEC/AOD site, seeing various exhibits which discovers the diverse marine flora and fauna in Iloilo. *Photo by NG Armada*



Ms. Hananiah Pitogo, officer-in-charge of the FishWorld Museum, guides the delegation headed by Secretary Christina Frasco in an informative tour of the museum-aquarium. *Photo by NG Armada*