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EDITORIAL

In the first quarter of 2024, SEAFDEC organized various events toward the aims of sustainable utilization and sound management of fishery resources in Southeast Asia including the "USAID Southeast Asia Fisheries Partnership: Activity Detailed Planning Workshop" which focused on the five-year plan for the Project activities including cross-cutting activities; the "Workshop on the Project End of Strengthening Regional Cooperation and Enhancing National Capacities to Eliminate IUU Fishing in Southeast Asia" that identified and prioritized ways forward to combat IUU fishing in the region; and the "2nd Workshop on the Innovation of Fisheries Monitoring, Control, and

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SEAFDEC Project on eliminating IUU fishing concluded

SEAFDEC Training Department (TD organized the "Workshop on the Project End of Strengthening Regional Cooperation and Enhancing National Capacities to Eliminate IUU Fishing in Southeast Asia" from 20 to 21 March 2024 in Chonburi Province, Thailand to conclude the project "Strengthening Regional Cooperation and Enhancing

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SEAFDEC pays courtesy visit to Department of Livestock and Fisheries, Lao PDR

As a significant step towards bolstering sustainable fisheries development and management in the Southeast Asian region, SEAFDEC, led by the Secretary-General, *Dr. Suttinee Limthammahisorn*, along with the Policy and Program Coordinator of the SEAFDEC Secretariat, *Dr. Worawit Wanchana*, Head of Planning and Project Management Division of SEAFDEC Training Departments (TD), *Mr. Isara Chanrachkij*, and Fisheries Management Senior Researcher from TD, *Ms. Panitnard Weerawat*, embarked on a courtesy visit to the Director General of

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EDITORIAL

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Surveillance (MCS) Analytics, and Utilization for Fisheries Analyst" for the enhancement of onboard observation, vulnerable marine ecosystems, electronic monitoring program, vessels monitoring system program, and MCS innovation technology. Moreover, the Inception Workshop was also organized at the initial stage of the BOBLME Project Phase II (Component 1: Sustainable Management of Fisheries) to introduce institutionalization of EAFM at the national level in Thailand.

SEAFDEC continued to conduct several training courses, including a training course on aquaculture technologies for the culture of shrimp, marine fish, mangrove crab, giant freshwater prawns, and seaweed, as well as training on an innovative feeding strategy for sea cucumber. In addition, to enhance staff capacity, TD organized a Training and Field Practice on Socioeconomic Monitoring (SocMon) for Coastal and Small-scale Fisheries Management in Southeast Asia. This Training strengthened the capacity of TD researchers in monitoring and assessment, focusing on the socioeconomic context by using the SocMon methodology to support small-scale fisheries management.

Other important activities in this quarter included courtesy visits of SEAFDEC to the Department of Livestock and Fisheries of Lao PDR and the Department of Fisheries Malaysia. These visits aimed to enhance cooperation in fisheries and aquaculture development and management, as well as to discuss ongoing regional initiatives and upcoming projects and activities. A change in the management of MFRD also took place with the appointment of *Mr. Tan Yit Wee* as the new Chief of MFRD starting 1 April 2024.

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secretariat@seafdec.org.

SEAFDEC Project on eliminating IUU fishing concluded

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National Capacities to Eliminate IUU Fishing in Southeast Asia" supported by the Japanese Trust Fund and implemented in 2020–2024. There were 29 participants attended in the Workshop including representatives from the ASEAN Member States (AMSs), SEAFDEC Secretariat, and TD. The highlights of the Workshop include the achievements of the Project, ongoing activities led by TD for combating IUU fishing, and identification of nine priority areas toward combating IUU fishing in the Southeast Asian region, *i.e.* 1) vessel monitoring; 2) strengthening MCS for commercial-scale, small-scale fisheries and community-based fisheries; 3) AMS/regional cooperation on IUU information; 4) encroachment of foreign vessels (enforcement control issue and registration); 5) strengthening catch documentation; 6) development of national/regional estimation of IUU losses; 7) strengthening evidence and procedures prosecution to improve the deterrence effect; 8) monitor Transshipment Activity; and 9) legal Reform..

Over the past years, the initiatives promoted by TD under this Project include: enhancing the utilization and improvement of RFVR; strengthening national capacities in the implementation of PSM and MCS; promoting the electronic ASEAN Catch Documentation System (eACDS) to enhance the product's traceability and eliminate IUU fisheries products; and coordinating a national/regional/international network for collaborative activities to combat IUU fishing.

SEAFDEC pays courtesy visit to Department of Livestock and Fisheries, Lao PDR

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Department of Livestock and Fisheries (DLF) and Council Director for Lao PDR, *Dr. Kaviphone Phouthavong*.

The courtesy visit on 22 and 23 February 2024 fostered discussions and field visits to enhance cooperation between SEAFDEC and Lao PDR in fisheries and aquaculture development and management. On the first day, the meeting was held at the DLF in Vientiane Province where SEAFDEC highlighted its community-based and ecosystem approach to fisheries management training programs and DLF officials explored collaborative opportunities on alternative livelihoods and climate change adaptation in fisheries and aquaculture. Concrete action plans were agreed upon including sharing the design of the mobile hatchery and establishing innovative training methods for inland fisheries stock assessment for fisheries officers. After the meeting, a private fish farm was visited to explore successful aquaculture practices. On the second day, SEAFDEC and DLF officials traveled to Nam Pok and Nam Mone Villages in Vangvieng District to observe fish passage construction sites which provided insights to enhance fish migration and ecosystem health.

SEAFDEC, Malaysia bolster ties for sustainable fisheries

The SEAFDEC Secretary-General and Chief of Training Department (TD), *Dr. Suttinee Limthammahisorn*, led a courtesy visit to Malaysia from 28 February to 1 March 2024. The SEAFDEC delegation included the SEAFDEC Secretariat Policy and Program Coordinator, *Dr. Worawit Wanchana*; Head of the TD Planning and Project Management Division, *Mr. Isara Chanrachkij*; and Head of the TD Research and Development Division, *Dr. Taweekeit Amornpiyakrit*.

The SEAFDEC delegation visited a research institute and a state park in Terengganu, Malaysia. The first visit was to Tanjung Demong Fisheries Research Institute to learn about the research on marine fish breeds and high-density technology that contributed to increased milkfish production and benefited local entrepreneurs and fish farmers. The next visit was to the Setiu Wetlands State Park which spans 23,000 ha and emerged as a crucial ecosystem supporting various aquaculture activities, underlining the importance of sustainable resource management.

On the second day of the visit, the SEAFDEC delegation visited a research institute and a state park in Terengganu, Malaysia. The first visit was to Tanjung Demong Fisheries Research Institute to learn about the research on marine fish breeds and high-density technology that contributed to increased milkfish production and benefited local entrepreneurs and fish farmers. The next visit was to the Setiu Wetlands State Park which spans 23,000 ha and emerged as a crucial ecosystem supporting various aquaculture activities, underlining the importance of sustainable resource management.

Finally, the SEAFDEC delegation extended a courtesy visit to the Director General of the Department of Fisheries Malaysia and the Council Director for SEAFDEC to discuss the ongoing regional initiatives and upcoming activities under JTF 7, USAID/RDMA PIO Grant, and GoTFish project. The meeting concluded with mutual agreement and commitment to explore collaboration opportunities in the areas discussed.

SEAFDEC Inter-Departmental Information Workshop organized

SEAFDEC Secretariat organized the "Inter-Departmental Information Workshop" from 5 to 7 March 2024 in Bangkok, Thailand. The Workshop was attended by the SEAFDEC Deputy Secretary-General and information-related officers from the SEAFDEC Secretariat, Training Department (TD), Aquaculture Department (AQD), Marine Fishery Resources Development and Management Department (MFRDMD), and Inland Fishery Resources Development and Management Department (IFRDMD). The Workshop focused on the harmonization of inputs from the Departments to the template for monitoring the implementation of the Information Strategies for Enhancing SEAFDEC Visibility and Communication including monitoring of SEAFDEC websites, repositories, social media accounts, and citations. In this regard, the participants discussed and shared experiences in monitoring the implementation of the Information Strategies. Furthermore, the use of various tools was demonstrated during the Workshop including Google Search Console for monitoring websites and repositories, Meta Business Suite for social media accounts, and Harzing for citations of publications and articles. For the development of another video on SEAFDEC activities, the preparatory process, timeline, and required inputs were also discussed during the Workshop. The Workshop came up with revised templates for monitoring the implementation of the Information Strategies and revised online template for monitoring the SEAFDEC websites and repositories.

DEPARTMENTAL ACTIVITIES

TD supports DOF Thailand, AFMA workshop on MCS innovation

SEAFDEC Training Department (TD) supported the Department of Fisheries (DOF), Thailand and Australian Fisheries Management Authority (AFMA) in conducting the "2nd Workshop on the Innovation of Fisheries Monitoring, Control, and Surveillance (MCS) Analytics, and Utilization for Fisheries Analyst" from 19 to 23 February 2024 at its premises in Samut Prakan Province, Thailand. The Workshop aimed to develop the capacity of 34 relevant fisheries officers from the DOF Fisheries Foreign Affairs Division, Fishing and Fleets Management Division, Fishing Control and Surveillance Division, Fish Quarantine and Fishing Vessel Inspection Division, and Marine Fisheries Research and Development Division.

The participants gained knowledge of onboard observation of standards and requirements, vulnerable marine ecosystems (VMEs) identification, electronic monitoring (EM) program, vessels monitoring system (VMS) program, and MCS innovative technology. Moreover, the representative from TD, *Mr. Kongpathai Saraphaivanich*, was invited to share information on SEAFDEC activities on MCS and delivered a presentation entitled "International/Regional Cooperation Role of SEAFDEC for Enhancing MCS Practice." The Workshop was an activity under the Departmental Program of SEAFDEC/TD "Promotion on Strengthening of SEAFDEC Visibility and Enhancing Human Capacity Building."

TD welcomes Silpakorn University students, lecturers

SEAFDEC Training Department (SEAFDEC/TD) welcomed a total of 40 students and lecturers from the Faculty of Animal Sciences and Agricultural Technology, Silpakorn University Phetchaburi IT campus on 4 March 2024. During the visit, the students gained knowledge of post-harvest fishing and marine fishing gear in Thailand imparted by the Marine Engineering Section Head, *Mr. Thaweesak Thimkrap*, and Fishing Technology Section Head, *Mr. Nakaret Yasook*, respectively. Moreover, the visitors learned more about the activities of SEAFDEC and observed TD facilities including the fishing workshop and M.V. SEAFDEC.

SEAFDEC supports regional collaboration for fisheries OECMs

The Secretary-General of SEAFDEC, *Dr. Suttinee Limthammahisorn*, and the Program and Policy Coordinator of the SEAFDEC Secretariat, *Dr. Worawit Wanchana*, joined the "Workshop on Other Effective Area-based Conservation Measures in Areas under the Competence of Regional Fisheries Bodies" organized by the Food and Agriculture Organization of the United Nations (FAO) in Rome, Italy on 22–24 January 2024. The Workshop was also attended by representatives from relevant regional fisheries management organizations (RFMOs), regional seas organizations (RSOs), relevant regional organizations, and non-government organizations, among others. The aim of the Workshop was to support the relevant stakeholders in understanding and applying the Convention on Biological Diversity (CBD) criteria to identify other effective area-based conservation measures (OECMs) in fisheries.

During the Workshop, the publication "A Handbook for Identifying, Evaluating and Reporting Other Effective Area-Based Conservation Measures in Marine Fisheries" was introduced which specified OECMs as established, spatially defined management and/or conservation measures other than protected areas that produce positive, long-term, and *in situ* biodiversity outcomes, in addition to the intended fishery outcomes. In this regard, lessons learned from countries' experience in applying the CBD criteria were synthesized at the Workshop. Furthermore, SEAFDEC presented its potential role in supporting its Member Countries in exploring and establishing fisheries OECMs which signified a crucial step towards fostering regional partnerships.

AQD and Philippine NFRDI to expand collaboration with sardine project

NFRDI Director, Dr. Lilian Garcia, *(fourth from left) engages in conversation with AQD research assistant, Ms. Jernet Zyca Silorio, at the round scad tanks at AQD hatchery in Tigbauan, Iloilo, Philippines*

The National Fisheries Research and Development Institute (NFRDI) of Philippines tapped SEAFDEC/AQD in a partnership to explore the domestication of the Bali sardinella (*Sardinella lemuru*). In a meeting held on 22 February 2024 in Tigbauan, Iloilo, Philippines, the NFRDI team, who was led by the NFRDI Director, *Dr. Lilian Garcia*, presented the proposal with funding of PHP 20 million (around USD 350,000) to AQD Chief, *Mr. Dan Baliao*.

The project "Biological Study and Transport Trials of Bali Sardine (*Sardinella lemuru*)" intends to replicate the success of AQD in spawning round scad in captivity in 2021.

In addition to the sardine project, the meeting also discussed the memorandum of agreement on the technology demonstration of the grow-out culture of snubnose pompano and whiteleg shrimp which focused on personnel services and proposed plans. Furthermore, the development of cost-efficient feeds for aquaculture was also discussed. NFRDI requested AQD to review the ingredients necessary for the start-up operation/production of a feed mill plant as well as explore opportunities to formalize collaborations among AQD, NFRDI, and other government agencies.

Sea cucumber hatchery technicians upskilled to solve production bottleneck

To overcome hurdles that hinder the mainstreaming of sea cucumber aquaculture production in the Philippines, SEAFDEC/AQD conducted a specialized training on an innovative feeding strategy that benefited government technical staff in the Philippines. Sea cucumbers command high prices in international markets where dried sea cucumbers fetch over USD 1,000/kg; however, rampant overharvesting of wild stocks led to their depletion, prompting aquaculturists to explore breeding technologies.

Providing a consistent supply of live microalgae as food for larval sea cucumber is the primary bottleneck in sustaining hatcheries around the country, which is why AQD, with funding support from the Australian Center for International Agricultural Research (ACIAR), organized the training from 26 February to 1 March 2024 in Guiuan, Eastern Samar, Philippines to orient hatchery workers on the use of concentrated microalgae instead. The training was conceptualized after ACIAR-funded studies conducted by AQD showed that commercial microalgae concentrate or algal pastes, are viable supplements, if not total replacements, for live microalgae as food for sea cucumber larvae.

The demo training, held at the Bureau of Fisheries and Aquatic Resources (BFAR)-Guiuan Marine Fisheries Development Center, gathered 18 trainees who were equipped with practical skills to use algal pastes in growing sea cucumber larvae. AQD staff delivered lectures and led practical sessions that provided the participants with hands-on experience in sea cucumber hatchery operations, focusing on the sandfish (*Holothuria scabra*), which is one of the most threatened tropical sea cucumbers.

The pilot dissemination activity was co-organized by BFAR-Region 8 and the Guiuan Development Foundation Inc. (GDFI) and attended by technicians from various BFAR and LGU hatcheries around Leyte and Samar, as well as from ACIAR project partners through the University of the Philippines-Marine Science Institute (UP-MSI), and the Mindanao State University Naawan (MSUN).

AQD starts intensive training for fisheries graduates

Five fisheries graduates began their journey on an intensive training course on aquaculture technologies last 19 February 2024 as part of SEAFDEC/AQD initiative to build a pool of highly skilled aquaculturists. Scheduled to last until 31 May this year, the AQD program "Aquaculture Technologies for Manpower Development" seeks to equip graduates from state universities and colleges in the Philippines with enhanced knowledge and proficiency in various aquaculture technologies – culture of shrimp, marine fish, mangrove crab, giant freshwater prawn, and seaweed; and marine cage and brackishwater pond aquaculture. In 2024, the trainees came from the University of Antique, Iloilo State University of Fisheries and Science and Technology, and University of the Philippines Visayas. Throughout the program, the trainees will engage in practical sessions structured around three main components: seed production and nursery, pond aquaculture, and cage aquaculture. This year's batch is the fourth to undertake the training, with three other batches trained in 2018, 2021, and 2022–2023.

AQD builds up stock of tuna breeders to enhance research efforts

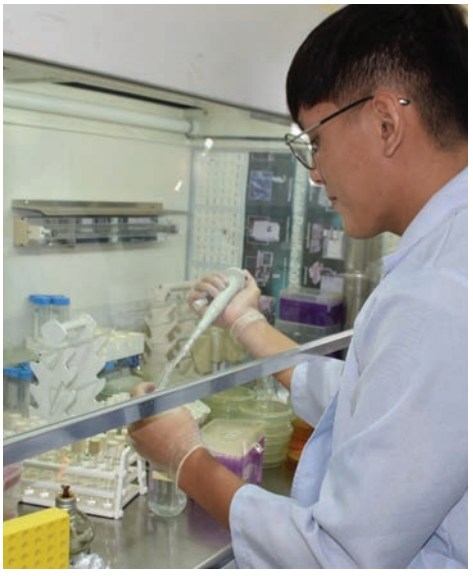
A new batch of wild mackerel tuna (*Euthynnus affinis*) was transported by SEAFDEC/AQD from Barbaza, Antique to its facility at the Tigbauan Main Station (TMS) in Tigbauan, Iloilo as part of its bid to create a tuna farming industry in the Philippines. AQD collected 17 juveniles of the fish from an otoshi-ami fish trap on 9 March 2024 with assistance from the Barbaza Multipurpose Cooperative. After a three-day conditioning period for confinement and a five-hour trip, the fish were brought to the TMS where AQD has been studying their reproductive biology since 2020 as part of a project supported by the Japanese Trust Fund.

The implementation of stringent handling and transportation protocols led to a remarkable 94.4 percent survival rate upon arrival, with no reported mortalities even after three-days post-transport. Also called kawakawa, the mackerel tuna juveniles will be kept in AQD hatchery where they are hoped to reach maturity and lay eggs. Currently, 25 new mackerel tuna are being reared at AQD with two mature mackerel tuna collected as juveniles last year and now in close monitoring for possible spawning of viable eggs.

AQD trains PH government personnel and college students

SEAFDEC/AQD conducted a training session from 20 to 23 February 2024 in Bongao, Tawi-Tawi, Philippines aimed at bolstering the expertise of the staff from the Ministry of Agriculture, Fisheries, and Agrarian Reform-Bangsamoro Autonomous Region in Muslim Mindanao (MAFAR-BARMM). The training, which included lectures and hands-on sessions, catered to 28 MAFAR-BARMM personnel and focused on high-value marine species like grouper and abalone. In addition, from 9 to 31 January 2024, AQD trained three personnel from the Iloilo Provincial Agriculture Office through its internship program held at AQD in Tigbauan, Iloilo, Philippines. The training aimed to enhance the technical knowledge and capabilities of the staff regarding crab hatchery operation and management practices.

Lastly, in January and February 2024, four BS Biology students specializing in the Microbiology Track from the West Visayas State University signed up for the on-the-job training program at AQD. Assigned to the Fish Health Laboratory, the students were given the opportunity to gain practical experience to complement their university education.



SPECIAL REPORT

Mitigating the impacts of climate change through the promotion of seaweed aquaculture in Southeast Asia

SEAFDECSecretariat

Over the past decade, climate change and its anticipated impacts are among the priority issues being discussed in the national and international arena including several fora under the fisheries sector. In Southeast Asia, the prominent concerns about climate change include a warming atmosphere, increasing seawater temperature, rising sea level and acidification, extending period of El Niño, as well as frequent extreme weather and climate events, among others. As for the aquatic habitats and fishery resources, the impacts of climate change could include degradation of habitats due to extreme drought or flooding in major rivers and their tributaries, coral bleaching, adverse changes in the distribution of aquatic animals and their breeding, spawning, and nursing grounds, or even survival of the species due to changes in water temperature and ocean circulation.

While the major contributors to climate change are identified to be from several sectors, *e.g.* agriculture, forestry, and other land-based industries; the fisheries sector is also considered a contributor, especially from the use of carbon fuel in fishing and aquaculture activities providing direct emission of greenhouse gases. In a broader picture, irresponsible fisheries and aquaculture practices, such as exploitation of non-target species or juvenile fishes, ineffective handling and utilization of fish catch, unsustainable use of fish-based ingredients for aquaculture, etc., also resulted in a situation where fishing efforts are unnecessarily increased to obtain a sufficient amount of fish to attain food security. Nonetheless, there are sound fishery activities that could also provide a way to mitigate climate change.

Seaweed aquaculture in Southeast Asia

In Southeast Asia, the culture of seaweeds significantly contributes to aquaculture production. In 2021, out of the 24.8 million t of total aquaculture production in the region, 43 % (10.7 million t) was derived from seaweed aquaculture. The major seaweed species cultured were *Eucheuma*, *Kappaphycus*, and *Gracilaria* with Indonesia, Philippines, Malaysia, and Viet Nam being the major seaweed aquaculture producers.

Seaweeds are used not only for human consumption but also as food additives and by pharmaceutical and cosmetics industries. Seaweed aquaculture is therefore one of the important income-earning industries that contribute to the economic growth of the respective countries in the region.

Environmental contributions of seaweed

Aside from food and other industrial applications, seaweeds have other potential contributions to the environment. Seaweeds can absorb excess nutrients in the coastal waters preventing eutrophication (Kee *et al*. 2023). Also, seaweed aquaculture has been advocated as a tool for carbon sequestration to reduce the effect of climate change (Duarte *et al*. 2017).

Regional projects toward the promotion of seaweed aquaculture

The research and development on seaweed aquaculture have long been undertaken by the SEAFDEC Aquaculture Department (AQD), which includes the farming of *Gracilaria* and *Kappaphycus*. Micropropagation techniques were recently developed for *Kappaphycus alvarezii* to mass-produce plantlets for seaweed farming in the Philippines. The culture of seaweed with other aquatic organisms has also been experimented as part of the integrated multi-trophic aquaculture or IMTA initiative of AQD. Moreover, SEAFDEC also embarked on several regional projects to further promote the region-wide

adoption of seaweed aquaculture technologies.

- *USAID Southeast Asia Fisheries Partnership*

The project "USAID Southeast Asia Fisheries Partnership" is a regional project implemented by SEAFDEC with support from the United States Agency for International Development/ Regional Development Mission for Asia (USAID/RDMA). Executed since October 2023 for a period of five years, the Project Component "Exploration of Integrated Multi-Trophic Aquaculture for Biodiversity Conservation, Blue Economy, and Climate Change Mitigation" is implemented by SEAFDEC/AQD. The Component aims to provide an opportunity to research and assess seaweed farming areas and wild seaweed utilization areas, and to explore appropriate integrated multi-trophic aquaculture by growing seaweed together with other commercial marine species for biodiversity conservation. The research and assessment results can provide guidelines and recommendations for the sustainable management of freshwater/coastal habitats as well as support the promotion of appropriate integrated multi-trophic aquaculture using seaweed-based farming to facilitate blue economy development in the region.

- *Blue Horizon: Ocean Relief through Seaweed Aquaculture*

"Blue Horizon: Ocean Relief through Seaweed Aquaculture" is another project supported by the Global Environment Facilities (GEF) with the World Wildlife Fund, Inc. (WWF-US) as an Implementation Agency, SEAFDEC as the Regional Executing Agency, and the Bureau of Fisheries and Aquatic Resources (BFAR) Philippines and Department of Fisheries (DOF) Viet Nam as National Executing Agencies. With a duration of four years starting from July 2024 and the objective to create new sustainable seaweed value chains that will deliver ecosystem services and provide socioeconomic benefits, the Project will be implemented in two sites in the Philippines and three sites in Viet Nam. In addition to seaweed culture, the Project will include pilot testing of value-adding technology and the establishment or strengthening of community-based value-adding small and medium-sized enterprises (SMEs) to be operated by seaweed farmers.

Conclusion

Through these projects of SEAFDEC, it is expected that regional policy and approaches will be developed to enhance the capacity of the seaweed industry in the region to support the sustainable management of coastal habitats. The upscaling of seaweed farming and relevant industries along the value chain would contribute to people's well-being through economic and social benefits such as secured livelihood, increased employment, and improved food security. Moreover, the ecosystem services provided by seaweed farms, *e.g.* absorbing organic matter and excess nutrients from seawater, mitigating eutrophication and ocean acidification, improving habitats to serve as nursery grounds and spawning areas for fish and other aquatic animals, and removing carbon dioxide from the atmosphere, would also be enhanced. With these initiatives, it is expected that seaweed culture will contribute to the global efforts to reduce marine pollution and, at the same time, mitigate the effects of climate change to sustain the future of the next generations.

References

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Kee, P.E., Phang, S.M., Lan, J.CW., Tan, J.S., Khoo, K.S., Chang, J.S., Ng, H.S. (2023). Tropical seaweeds as a sustainable resource towards circular bioeconomy: Insights and way forward *Mol Biotechnol* https://doi.org/10.1007/s12033-023-00940-7.

REGIONAL PROGRAMS

IFRDMD surveys inland fisheries in South Sumatra, Indonesia

SEAFDEC/IFRDMD, together with the fisheries extension officers from the Ministry of Marine Affairs and Fisheries (MMAF) of Indonesia, conducted a series of activities in South Sumatra Province, Indonesia on 8–10 March 2024 under the project "Management Scheme of Inland Fisheries in the Southeast Asia Region" supported by the Japanese Trust Fund.

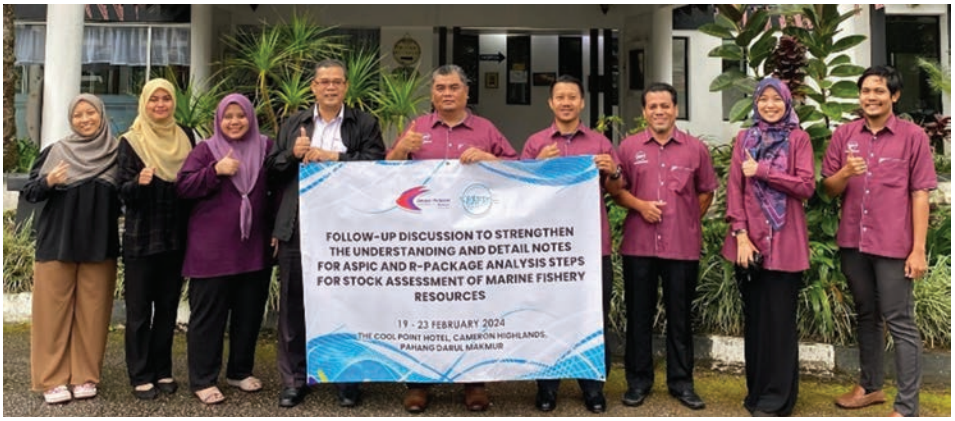
IFRDMD visited one of three weirs with fishway structures in Indonesia which is the Perjaya Dam in Martapura Sub-District in East OKU District. The MMAF fisheries extension officers explained the infrastructure and fisheries activities around the Perjaya Dam as IFRDMD observed the fish ladders. Furthermore, a focus group discussion (FGD) with 39 fishers and fish processors was held at the Office of Fish Hatchery Center, Banding Agung Village, OKU Selatan Regency. The FGD focused on the community's concern of the Lake Ranau including better planning and resource management framework considering the ecological, social, and economic dimensions. Lake Ranau is an important freshwater resource that provides socioeconomic services, such as water, recreation, and among others. Furthermore, IFRDMD assessed the water quality of Lake Ranau and interviewed fishers and fish farmers.

TD presents at JSFS, advances capacity in hydroacoustics

SEAFDEC Training Department (TD) was represented by the senior expert, *Dr. Koki Abe*, and fishing gear technologists, *Ms. Saruttaya Jaroonpongsawat* and *Mr. Santiphong Putsa*, at the Japanese Society of Fisheries Science (JSFS) Spring Meeting 2024 from 27 to 30 March 2024 at Tokyo University of Marine Science and Technology (TUMSAT) in Tokyo, Japan. At Japanese session of the Meeting, *Dr. Abe* made a presentation entitled "Efforts to Improve Acoustic Survey Capabilities at SEAFDEC" which highlighted the activities of SEAFDEC on quantitative echosounder EK80 including the technical issues found during the survey using M.V. SEAFDEC 2. For the international session "Sustainable Development Goals (SDGs) and Fisheries Sciences," Ms. Saruttaya presented the activity of SEAFDEC related to the hydroacoustic survey using EK80.

Furthermore, SEAFDEC/TD staff had the opportunity to visit the Fisheries Engineering Division of Fisheries Technology Institute in Kamisu Field Station on 26 March 2024 and observed the large acoustic experiment tank for hydroacoustic research which enhanced their understanding and further related SEAFDEC works.

MFRDMD strengthens skills in stock assessment of marine fishery resources



SEAFDEC/MFRDMD further strengthened the skills of its staff in stock assessment of marine fishery resources by obtaining a profound understanding of Aspic and R-Package Analysis. An in-depth discussion was organized from 19 to 23 February 2024 in Pahang, Malaysia which was a follow-up of the previous training session on stock and risk assessments in December 2023 in Subang, Malaysia. The nine participants in the discussion included the staff from SEAFDEC/MFRDMD and Fisheries Research Institute (FRI) Kampung Acheh, Perak. The discussion focused on constructing the Kobe plot using the catch and effort data of Indo-Pacific king mackerel (*Scomberomorus guttatus*) off the Eastern Indian Ocean.

S. guttatus is a migratory pelagic species that inhabits the coastal waters of the Indo-West Pacific region typically at the depths of 15–200 m and occasionally venturing into turbid estuarine waters. Carnivorous in nature, this fish species feeds primarily on small fish like sardines and anchovies, along with squids and crustaceans. It is one of the major species under the seerfish group that is commercially important, especially for many coastal communities. However, the primary concern for the population of this species is overfishing due to high demand coupled with inadequate management measures. Promoting sustainable fishing practices (using selective gear) as well as enforcing fishing regulations (catch limits, size restrictions, and fishing seasons) are, therefore, essential for preventing overexploitation and ensuring the long-term viability of seerfish stocks.

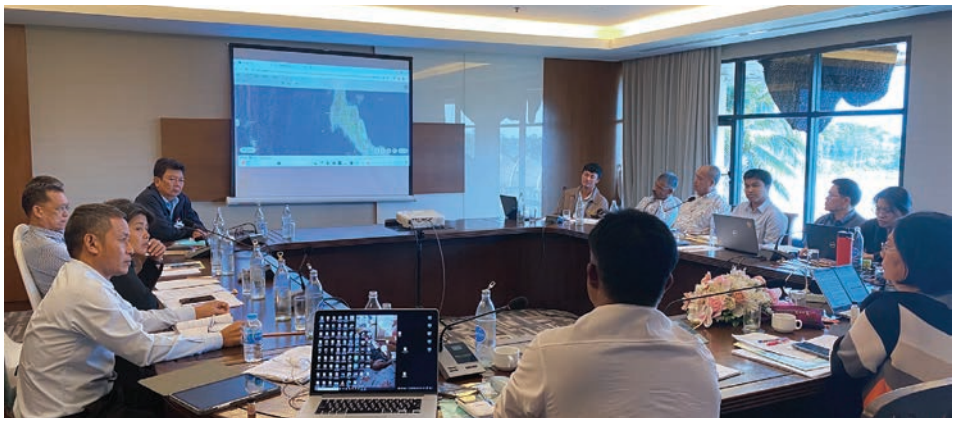
IFRDMD continues monthly eel catch surveys in Indonesia

Under the Japan-ASEAN Integration Fund (JAIF) funded project "Development of Stock Assessment Methods and Strengthening Management Measures for Tropical Anguillid Eel Resources in Southeast Asia," SEAFDEC/IFRDMD carried out surveys in Palabuhan Ratu, West Java on 15–19 January and 18–22 March 2024 and in Poso, Central Sulawesi on 7–11 February 2024. As part of the monthly data collection on the capture of eels at glass, elver, and yellow stages as well as water quality, the surveys were supported by enumerators and representatives from the SEAFDEC Secretariat.

Glass eels and elvers catch data were collected from the fishing gear set up in the Cikaso and Cimandiri Rivers in West Java. Meanwhile, the catch data on yellow eel and elvers were recorded from the fishing gear installed in the mouth of Poso, Pandiri, and Tentena Rivers in Central Sulawesi.

Anguillid eels are a significant commodity for cultural delicacy and biodiversity in Indonesia. However, eel populations in the country face various challenges, including habitat degradation, overfishing, pollution, and climate change impacts; therefore, understanding the status of eel populations through surveys is crucial for conservation efforts. Data collected from these surveys will help identify critical habitats, migration patterns, and population trends and allow policymakers and relevant stakeholders to develop management strategies, such as implementing fishing regulations, restoring habitats, and raising awareness about the importance of eel conservation.

Inception workshop on EAFM institutionalization organized under the BOBLME II



SEAFDEC Training Department (SEAFDEC/TD) organized the "Inception Workshop on the Ecosystem Approach to Fisheries Management Institutionalization at National Level of Thailand, including Target Transboundary Fish Stocks" from 20 to 22 March 2024 in Trang Province, Thailand. The Workshop was under the Bay of Bengal Large Marine Ecosystem Project Phase II (BOBLME II) and attended by 21 participants including representatives from the Department of Fisheries (DOF) of Thailand, Department of Marine Coastal Resources (DMCR) of Thailand, Food and Agriculture Organization of the United Nations/ Regional Office for Asia and the Pacific (FAO/RAP), International Union for Conservation of Nature (IUCN), and TD.

During the Workshop, the ecosystem approach to fisheries management (EAFM) institutionalized at the national level, including targeted transboundary fish stocks which is a component under the sustainable management of fisheries and marine living resources and their habitats in the Bay of Bengal region for the benefit of coastal states and communities were discussed. Moreover, the Workshop discussion also included the initial stage of the BOBLME II which consists of EAFM introduction, broad FMU area identification, EAFM implementation status and human capacity needs review, EAFM implementation team and facilitators identification, stakeholders and organizations identification, key stakeholder group establishment, and E-EAFM and TOT E-EAFM training courses planning.

BOBLME II is funded by GEF and Norad and implemented by three organizations, namely: the Bay of Bengal Programme Inter-Governmental Organization (BOBP-IGO), IUCN, and SEAFDEC. SEAFDEC takes part in the activities in Southeast Asia under Component 1 (Sustainable Management of Fisheries) and Component 5 (Regional mechanism for planning, coordination and monitoring of the BOBLME) which will be implemented from 2024 to 2028 and Component 3 (Management of coastal and marine pollution to improve ecosystem health) which will be implemented from 2024 to 2026. The objective of BOBLME II is to contribute to the sustainable management of fisheries, marine living resources, and their habitats in the Bay of Bengal region including reduce environmental stress and improve environmental status for the benefit of coastal states and communities.

SEAFDEC attends 33rd NACA Governing Council Meeting

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he highlighted collaborative projects between AQD and the Government of the Philippines, including the Fry Sufficiency Program, Development of Cost-efficient Feeds, "Oplan Balik Sugpo" (Operation Plan to Revive Tiger Shrimp), SEAFDEC/AQD-DA-BFAR Joint Mission on Accelerated Techno-Transfer Program II, and Manpower Development.

The Meeting provided a valuable platform for sharing insights, exchanging knowledge, and fostering partnerships to address the complex challenges faced by the aquaculture sector. Through collaborative efforts and shared objectives with NACA, SEAFDEC reaffirmed its commitment to promoting innovation, sustainability, and inclusive development in the aquaculture industry.

SEAFDEC attends 33rd NACA Governing Council Meeting

The Secretary-General of SEAFDEC, *Dr. Suttinee Limthammahisorn*; Policy and Program Coordinator of the SEAFDEC Secretariat, *Dr. Worawit Wanchana*; SEAFDEC/AQD Chief, *Mr. Dan Baliao*; and AQD Research Division Head, *Dr. Leobert de la Peña*, attended the 33rd Governing Council Meeting of the Network of Aquaculture Centre in Asia-Pacific (NACA) held from 5 to 8 March 2024 in New Delhi, India.

The Meeting brought together the representatives from NACA member governments and collaborative partners who contributed to the deliberations aimed at advancing sustainable aquaculture practices across the Asia-Pacific region. The discussions of the Meeting focused on regional aquaculture development strategies, research findings and best practices in sustainable aquaculture, workshops and capacity-building sessions on key industry topics conducted by NACA, and updates on ongoing projects and initiatives of NACA.

Representing SEAFDEC/AQD as the Regional Lead Centre (RLC) in the Philippines, *Mr. Baliao* delivered a report on the achievements of the RLC in 2023, wherein he underscored the consistent contribution of aquaculture to over half of the annual fishery production of the Philippines. In his report, *Mr. Baliao* cited the accomplishments of AQD, including the completion of the black tiger shrimp life cycle in captivity through eyestalk ablation, development of culture technologies for high-value commodities such as seabass, grouper, and pompano, as well as hatchery and nursery protocols for round scad, and completion of the milkfish life cycle in captivity. He also mentioned various feed formulations that have been prepared for different stages of aquaculture commodities. Additionally,

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AQD hosts annual progress meeting to review JTF-funded research

SEAFDEC/AQD hosted an Annual Progress Meeting to assess the outcomes of research and training programs supported by the Japanese Trust Fund (JTF) last 15 March 2024 in Tigbauan, Iloilo, Philippines. The annual evaluation meeting allows AQD to align its activities and priorities to address the needs in the Southeast Asian region and serves as an opportunity to receive feedback on the research projects.

Researchers and training coordinators presented ongoing programs, including 10 studies on aquatic production techniques and disease management strategies. Additionally, a training program aimed at enhancing the capacity of aquaculture practitioners in Southeast Asia was presented.

A panel of evaluators, comprising former SEAFDEC/AQD Deputy Chief, *Dr. Koh-ichiro Mori*, researcher from the National Fisheries Research and Development Institute (NFRDI), *Dr. Mary Nia Santos*, and Senior Expert and Assistant Project Manager for the JTF Programs, *Mr. Fumiya Takahashi*, provided feedback on all project components to further enhance their effectiveness and impact.

FUTURE ACTIVITIES

Date	Venue	Title	Organizer(s)
		2024	
22—26 April	Binangonan, Philippines	Training Course on Tilapia Hatchery and Grow-out Operations	AQD
29 April—14 May	Tigbauan, Philippines	Training Course on Sandfish (*Holothuria scabra*) Seed Production, Nursery and Management	AQD
6—9 May	Tagaytay, Philippines	56th Meeting of the SEAFDEC Council	SEC
6—16 May	Iloilo, Philippines	Training Course on Abalone (*Haliotis asinina*) Hatchery and Grow-out	AQD
13—21 May	Samut Prakan, Thailand	64th Short-term Training Course for University Students "Ecosystem-based Fisheries for Sustainable Fisheries Resources Management"	TD
14—16 May	Bangkok, Thailand	Women in Fisheries Workshop	TD & DAFF, Australia
20—7 May	Iloilo, Philippines	Training Course on Fish Nutrition & Feed Development (specialized course)	AQD
27—28 May	Samut Prakan, Thailand	INFOFISH Training for Trainers on "Onboard Tuna Handling, Preservation, and Transport"	TD
6—7 June	Bangkok, Thailand	Regional Workshop on "The application of AquaGRIS: the FAO global information system, to build national registries of aquatic genetic resources"	SEC & FAO
10—13 June	Samut Prakan, Thailand	Training Course on Monitoring the Phenomenon of Climate Change and the Impact on Fish Stock Life History Parameters in water in Southeast Asia	TD
10—14 June	Trang Province, Thailand	Training Course on Essential Ecosystem Approach to Fisheries Management (E-EAFM)	TD
10—14 June	Tokyo, Japan	Regional Coordination Meeting on the Agreement on Port State Measures (PSMA) Asia	FAO
13—14 June	Bangkok, Thailand	Workshop on Development of Statistical Database based on the Revised Regional Framework for Fishery Statistics of Southeast Asian (2024 Edition)	SEC
14 June	Samut Prakan, Thailand	Core Expert Meeting on Improving the Draft Work Plan and Way Forward on USAID DOI International Technical Assistance Program Implementation	TD
17 June—23 July	Iloilo, Philippines	Training Course on Marine Fish Hatchery (regular course)	AQD
24—28 June	Bangkok, Thailand	Regional Training Workshop on Measuring Fish Losses: A Gender Sensitive Approach	FAO
1—5 July	Penang, Malaysia	14th ASEAN Shrimp Alliance (ASA) 16th Meeting of the ASEAN Fisheries Consultative Forum (AFCF) 32nd Meeting of the ASEAN Sectoral Working Group on Fisheries (ASWGFi)	DOF Malaysia & ASEAN
2—4 July	Chonburi, Thailand	19th Meeting of the ASEAN Working Group on CITES and Wildlife Enforcement (AWG CITES and WE)	ASEAN
5—6, 12 July	Rome, Italy	10th meeting of the Regional Fishery Body Secretariats' Network (RSN-10)	FAO
8—12 July	Rome, Italy	36th Session of FAO Committee on Fisheries (COFI)	FAO
12—19 July	Geneva	33rd Meeting of CITES Animals Committee	CITES
23—24 July	Bangkok, Thailand	USAID Southeast Asia Fisheries Partnership: Inception Workshop	SEC/USAID Project
6 August	Bangkok, Thailand	ASEAN Regional Workshop on Mitigation of Microplastic Pollution and Implications for Fisheries and Human Health in ASEAN towards Healthy Ocean	ASEAN+CSEAS
6—8 August	Kota Kinabalu, Malaysia	Expert Consultation on Stock Assessment for Priority Species in the Sub-Region Area (Sulu Sulawesi Sea)	MFRDMD/ USAID Project
12—30 August	Iloilo, Philippines	Training Course on Mangrove Crab Hatchery Operations (regular course)	AQD
19—23 August	Binangonan, Philippines	Training Course on Carp Hatchery & Grow-out Operations (regular course)	AQD
28—30 August	Bangkok, Thailand	4th Regional Technical Consultation on Fishery Statistics and Information in Southeast Asia	SEC

TD researchers strengthen capacity on SocMon

SEAFDEC Training Department (SEAFDEC/TD) conducted the "Training and Field Practice on Socioeconomic Monitoring (SocMon) for Coastal and Small-scale Fisheries Management in Southeast Asia" from 18 to 28 March 2024. The Training was under the Human Resource Development Program supported by the USAID-DOI International Technical Assistance Program (ITAP) to strengthen the capacity of SEAFDEC/TD researchers on monitoring and assessment focusing on the socioeconomic context by using the socioeconomic monitoring (SocMon) methodology to support small-scale fisheries management. Experts from the SocMon Network, namely: *Dr. Vineeta Hoon* and *Mr. Philip Townsley* were invited as resource persons for the Training. The 12 relevant researchers from TD gained knowledge of the SocMon methodology and a better understanding of the socioeconomic context of fisheries and coastal resource management. Moreover, a field exercise was conducted in Chumphon Province, Thailand to collect data through community engagement by practicing SocMon methodology at threevillages of Lang Suan District, namely: Ban Ratbumrung, Ban Thong Krong, and Ban Ko Pitak.After data collection, the community was organized to report and validate the results and get feedback from local stakeholders in the community.

Note for contributors

The SEAFDEC Newsletter publishes quarterly news on all aspects of fisheries in Southeast Asia. The Editors reserve the right to accept and/or abridge articles based on available space. Anyone wishing to submit an article to the SEAFDEC Newsletter is requested to send it to the Editor in Chief or Editors at the given addresses.

Information in this Newsletter may be quoted only if reference is made to SEAFDEC.

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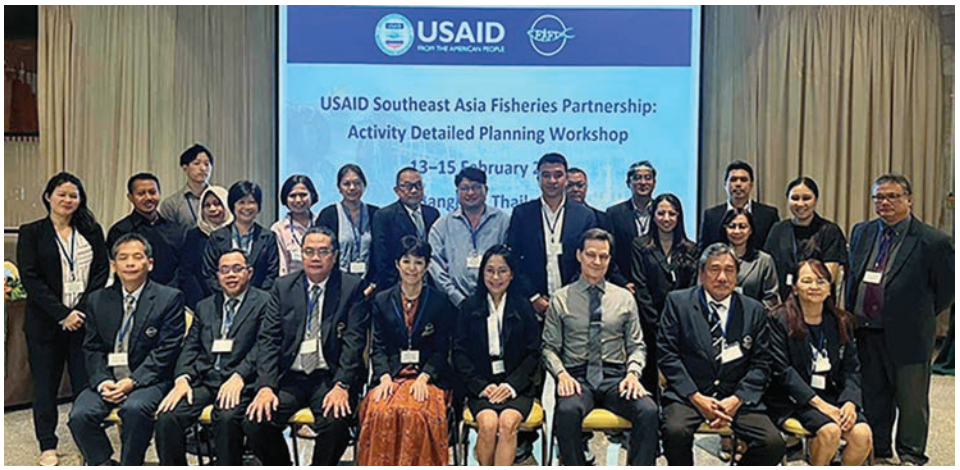
SEAFDEC/MFRD has new Chief

Mr. Tan Yit Wee was appointed by the Singapore Food Agency, Government of Singapore to serve as the new Chief of SEAFDEC/MFRD starting 1 April 2024, succeeding *Mr Ong Yihang*. *Mr. Tan Yit Wee* obtained his M.Sc. (Aquaculture) from the Institute of Aquaculture, University of Stirling, Scotland in 2003. He joined the Agri-Food and Veterinary Authority of Singapore (AVA) in 2000 focusing on coastal aquaculture and farm environmental monitoring. Currently, he works on deploying technologies to ensure the sustainable use of marine waters including monitoring water quality and harmful algal blooms, and exploring climate change resilience technologies to ensure seafood security and safety. His extensive experience will contribute significantly to future MFRD programs and projects.

USAID Southeast Asia Fisheries Partnership: Activity Detailed Planning Workshop convened

The "USAID Southeast Asia Fisheries Partnership: Activity Detailed Planning Workshop" was convened by the SEAFDEC Secretariat on 13–15 February 2024 in Bangkok, Thailand. The aims of the Workshop were to: 1) discuss the detailed activities of the USAID Southeast Asia Fisheries Partnership project among SEAFDEC Departments; 2) identify associated risks along with its mitigation measures; 3) clarify cross-cutting activities; and 4) gather suggestions for improving the draft Monitoring, Evaluation, and Learning (MEL) Plan. The Workshop was attended by SEAFDEC officials, Department Chiefs, and relevant staff from the SEAFDEC Secretariat, Training Department (TD), Aquaculture Department (AQD), Marine Fishery Resources Development and Management Department (MFRDMD), and Inland Fishery Resources Development and Management Department (IFRDMD), as well as representatives from the USAID Regional Development Mission for Asia (USAID/RDMA).



Under the USAID Sustainable Fish Asia (SUFIA) program of USAID/RDMA, SEAFDEC is implementing the project "USAID Southeast Asia Fisheries Partnership Activity" from 1 October 2023 to 30 September 2028. The Project's goal is to achieve improved and sustainably managed fisheries and aquaculture practices and productions. The specific objectives of the Project include: 1) fishery policies, programs, and plans supported by SEAFDEC are adopted and implemented by national fisheries agencies; 2) commercial and small-scale fishers have appropriate financial and human resources, capacity, and good governance to adopt sustainable fishing and aquaculture practices; and 3) operational and technical capacity among national fisheries agencies and fisheries institutions is increased.

During the Workshop, the discussions focused on the 5-year detailed plan for Departmental activities, cross-cutting activities such as co-branding and communication strategy, gender-inclusive action plan, and Monitoring, Evaluation, and Learning (MEL) Plan. In the end, the SEAFDEC Departments attained a clear understanding of their roles, responsibilities, and working mechanisms in supporting the implementation of the Project.