



# FISEARCH

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**“As for fisheries, we are pleased that it grew by 1.9% due to increased catch of marine species.”**

**-DA Secretary William Dar, Ph.D**  
*on 2020 3rd Quarter Agri Performance*





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**Cover photo:**

Mr. Rodrigo Embong Jr., a local fish vendor, sorting landed fish catch in Barangay Matalvis Masinloc, Zambales. Read the story on page 11.

Photo credit: Ms. Raziel Ares

FiSEARCH is a quarterly publication of the National Fisheries Research and Development Institute (NFRDI), an attached agency of the Department of Agriculture.



### From the Acting Executive Director



**T**o our dear readers, clients, and partners,

The current health crisis prodded us to trek a path that is different from what we have known — the new normal. Like other agencies, the Department of Agriculture - National Fisheries Research and Development Institute (DA-NFRDI) is now navigating this new normal. Now, we are challenged to a battle of rebuilding a better fisheries sector.

To respond to this challenge, our starting point is: refocusing. We refocused our projects to increase fisheries productivity, competitiveness and profitability while ensuring sufficiency of fish food supplies amid COVID-19 pandemic. In the previous issue of FiSearch, we introduced to you the 22 refocused projects of NFRDI. In this issue, we are featuring the concrete actions that we have embarked on.

Apart from refocusing, we are aware of the need for change in our engagement with you. Thus, we are also reinventing to rebuild a better platform where we can deliver our services with safety precautions. The celebration of the Fish Conservation Week has proven that, even with the pandemic, we can successfully participate in meaningful conversations via innovative ways like transforming face-to-face engagement to virtual. I am happy to note that we even exceeded your expectations, as manifested in your comments to our FishTalk sa FishCon: Sa NFRDI Siyentista, Ikonsulta. Rest assured that our scientists will always be within your reach. Our webinars, facebook posts and facebook live streams were participated and “liked” by thousands of you. For this, we deeply thank you!

Through FiSearch, we will continue to update you quarterly as we refocus, reinvent, rebuild and reconnect. May GOD bless us in this journey to a food-secure and resilient Philippines with prosperous farmers and fisherfolk.

*Lilian C. Garcia*  
**Dr. LILIAN C. GARCIA, CESO V**

## DA-BAR approves Php19.5M R & D projects of NFRDI

The Department of Agriculture - Bureau of Agricultural Research (DA-BAR) recently approved P19,552,840 budget for Research and Development (R&D) projects of the National Fisheries Research and Development Institute (NFRDI) in collaboration with the Bureau of Fisheries and Aquatic Resources (BFAR). A Memorandum of Agreement was signed by Dr. Nicomedes Eleazar and NFRDI Acting Executive Director Dr. Lilian C. Garcia, CESO V. A Notice to Proceed was issued to officially announce the start of the implementation of the eight (8) R&D projects for a duration of one year from July 2020 to June 2021.

The R&D projects under the refocused Sub-fisheries Program of DA-BAR include:

1. Enhanced fingerling production through outscaling of hatchery and nursery tilapia (*O. niloticus*) protocols in village-level farm in Laguna and Batangas - P 2,993,668 (Proponents: Dr. Maria Theresa Mutia and Frederick Muyot);
2. Enhanced fingerling production through outscaling of improved milkfish (*Chanos chanos*) hatchery protocol in Quezon province - P 3,702,668 (Proponents: Frederick Muyot and Myleen Magistrado);
3. Improved production of common carp (*Cyprinus carpio*) through outscaling of grow-out protocols in village-level farms in the province of Laguna and Rizal - P 1,011,372 (Proponents: Dr. Maria Theresa Mutia and Frederick Muyot);
4. Stock enhancement of blue swimming crab (*Portunus pelagicus*) in Guiuan, Eastern Samar - P 1,605,600 (Proponent: Nonita Cabacaba);
5. Adoption of modified intensive fry production and nursery rearing of *O. niloticus* for village-level production in Northern Luzon - P 4,105,600 (Proponents: Ma. Jodecel Danting and Dr. Maria Theresa Mutia);
6. Outscaling of protocols on saline tilapia (*O. niloticus* x *O. mossambicus*) through backyard satellite hatcheries as livelihood support to village level farmers in Pangasinan - P 1,500,000 (Proponents: Dr. Westly Rosario and Marites Chuico);
7. Strengthening food fish productivity and resiliency through outscaling of milkfish (*Chanos chanos*) nursery technology for village-level farmers in La Union and Pangasinan - P 3,403,769.60 (Proponents: Dr. Westly Rosario and Marites Chuico); and
8. Outscaling of African Catfish (*Clarias gariepinus*) breeding and culture technology in Region 1 Promotion of Catfish - P 1,230,162.80 (Proponents: Dr. Westly Rosario and Marites Chuico)

One of the affected sectors by the COVID 19 pandemic is the agri-fishery, with almost all essential activities hindered by the lockdown and stay-at-home situation. Aquaculture subsector produced 2.36 million metric tons, which is only 53% of the total fish production of 4.42 million metric tons (Phil. Fisheries Profile 2019). As such, with production significantly decreased, limited fish supply is inevitable.

These R&D projects will be implemented in response to the call of the DA Secretary, Dr. William D. Dar, to refocus the R&D programs of fisheries to mitigate the effects of COVID 19 in the fisheries sector. This move also contributes to DA's goal of increasing fish production and income of fisherfolk (Masaganang Ani at Mataas na Kita).

The program aims to ensure sustainable quality seed stocks of major aquaculture species by engaging village-level hatcheries and nurseries to increase fish production and provide a livelihood for the community. **(MTMutia)**

## News and Events

### Midyear Report in Flying Colors!

The NFRDI presented its Midyear Review and Evaluation Report at the Department of Agriculture-Conference Room last July 6, 2020. The presentation comprised of NFRDI-funded projects that were classified based on the eight (8) paradigms set by DA Secretary Dr. William Dar.

There are 39 projects being implemented by the NFRDI in which 23 are towards modernization of aquaculture practices, 10 for cross-cutting (modernization and farm consolidation), 5 for legislative support, and 1 for farm consolidation.

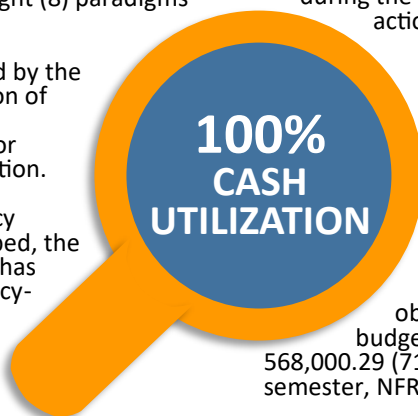
From its annual target output of 11 policy recommendations and technologies developed, the Institute has already surpassed its level and has generated a total of 28, wherein, 13 are policy-related while 15 are technologies.

Policy recommendations generated from conduct of R&D activities included the following: resource assessment status and scientific advisories for seven

commercial stocks in fishing grounds of Lamon Bay (two species), Albay Bay (two species), and the Visayan Sea (three species) for sound fishery management. The list of species and prescribed Harvest Control Rules (HCRs) were elevated to DA the Department of Agriculture and the BFAR during the 1st quarter of the year for their appropriate action.

The NFRDI also recorded 2,190 in terms of technical assistance. This covers training for small-scale fish farmers, laboratory analyses conducted during the Taal Volcano eruption, distribution of various IEC materials, and as resource person to various seminars and similar activities.

The Institute has a total budget of Php 275,502,000.64. As of June 31, 2020, NFRDI has obligated Php 224,851,000.26 (81.61%) of its budget with an actual disbursement of Php161,568,000.29 (71.86%). As for the cash utilized for the entire first semester, NFRDI has achieved a 100% utilization. **(TBUico)**



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“BUT IT IS STILL I, THEY JUST CORRECTED MY NAME.”

-*Sardinella lemuru*

**DID YOU KNOW?**

*Sardinella lemuru* (Bali Sardine) and *Sardinella longiceps* (Indian Oil Sardine) are interchangeably **misidentified** because they have similar standard length, body depth, and number of pelvic fin-rays. They are best identified by their **gill rakers**.

Willette, D.A and M.D. Santos. 2012. Correcting widespread misidentifications of the highly abundant and commercially important sardine species *Sardinella lemuru*, Bleeker, 1853 in the Philippines. Journal of Applied Ichthyology 29(4): 1-5. doi: <https://doi.org/10.1111/jai.12051>.

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## NFRDI Launched Research Projects in Support of BASIL

The Balik Sigla sa Ilog at Lawa (BASIL) is a project of BFAR which aims to restore the freshwater resources of the Philippines, especially the seven major lakes and six major river basins in the country. Repopulating these water bodies with indigenous species and restoring its condition would spell a difference in fisheries' sustainability. It would conserve its biodiversity and address food sufficiency issues that would, in turn, result in the alleviation of poverty in rural areas.

From July to September, NFRDI conducted the following BASIL-related activities:

### Technology Promotion on the Seed Production of Common Carp.

This project of NFRDI-Freshwater Fisheries Research and Development Center (FFRDC) produces fingerlings for grow-out culture and BASIL stock enhancement activities of BFAR regions. As of July 2020, as much as 290,850 common carp fingerlings were stocked to the pre-identified suitable inland water for stock enhancement under the BASIL criteria standards in Magat Dam, Alfonso, Lista Iugao (BFAR-CAR), as well as in Pampanga, Tarlac, and Bulacan (BFAR-Region III), and Pandin Lake in San Pablo City, Tadtac Lake in Los Baños, Laguna



FFRDC distributed fingerlings to BFAR Regional Offices (Inset: Common carp fingerlings.)

Bay (BFAR-RFO IV-A). Cooperators of grow-out culture in ponds in Nagcarlan, Laguna, and Pililla, Rizal (BFAR-RFO IV-A) were also given the same.

Aside from these, FFRDC dispersed 20,000 fingerlings to BFAR CAR, 238,950 fingerlings to BFAR IVA, 1,200 fingerlings to BFAR III, and 700 fingerlings to Mr. Conrado Pavino of Lucban Quezon, a cooperator of BFAR IVA.

*(Continued on page 8)*

## NFRDI Celebrated Civil Servant's Health and Wellness Month 2020 Creatively!

In 2009, the Civil Service Commission officially declared July as "Civil Servant's Health and Wellness Month." This aims to promote health and wellness in the bureaucracy through various physical fitness activities for government employees to be healthy and fit in providing quality service.

The NFRDI has been actively participating in this campaign thru the conduct of "Olymfish". This year was a big challenge for the agency. It had to think of alternative activities due to the pandemic which now limits social gathering.

Hence, the Human Resources Management Unit (HRMU) thought of celebrating the Civil Servant's Health and Wellness Month without physical contact. The team used social messaging and video conferencing applications to facilitate the campaign.

Since wellness connotes not only the physical, but also mental, emotional and spiritual health as equally important, virtual recreations like Virtual Team Building was executed via online communication tools and applications to compensate for the physical team building activities. Simple sharing (or "flexing", in Generation-Z's terminology), and games, where employees share a fun fact, small struggles and success, made them feel heard. These exercises helped the civil servants overcome difficulties in this time of pandemic. They built rapport, improved communication, and increased co-workers' understanding of one another's strengths and weaknesses.

Additionally, an Online Zumba was done via Facebook video streaming and was posted with a hashtag #NFRDIinAction. Physical activities like Zumba Dance promote productivity and reduce stress and anxiety.

*(Continued on page 14)*

## R&D Projects Promoted in 57th Fish Conservation Week

The National Fisheries Research and Development Institute (NFRDI) joined the nationwide observation of the 57th Fish Conservation Week on September 14-18, 2020.

With the theme, "Karagatan ay Pangalagaan upang Ani at Kita ay Makamtan maging sa Gitna ng Pandemyang Hamon sa Bayan," this year's celebration aimed to raise awareness on the importance of protecting and conserving our country's aquatic resources, especially in times of health crisis.

With this, NFRDI prepared various activities that showcased its research and development (R & D) initiatives geared to support fisherfolks' livelihood for increased fish production and income.

The first part of the week-long program concentrated on an online training course and discussion on marine biodiversity and fisheries research. Spearheaded by the Training Division and in partnership with the Southeast Asian Fisheries Development Center-Aquaculture Department, the second batch of *FishKwela: Online Training Course on Milkfish and Mangrove Crab Hatchery Technologies* was held on September 14-17. Representatives from BFAR Regional Offices, fisheries industry sector, and academe participated in the activity.

Meanwhile, Ms. Ludivina Labe, NFRDI's expert on CITES, and Mr. Francisco Torres, NFRDI Project Coordinator for SMARTSeas PH, facilitated the presentations on the Convention on International Trade in Endangered Species of Wild Fauna (CITES) and Strengthening Marine Protected Areas to Conserve Marine Key Biodiversity Areas in Southern



The roundtable discussion "Fish Talk sa FishCon" moderated by Dr. Mudjekeewis Santos (top row, middle) and Mr. Frederick Muyot (top row, left). Serving as resource persons in the discussion were: Dr. Ulysses Montojo (top row, right), Ms. Nonita Cabacaba (2nd row from top, right) and Mr. Francisco Torres (right side of Ms. Cabacaba).

Palawan Initiative and Dedication for Environmental Restoration and Management (SMARTSeas in SPIDERMan) on September 16. The CITES program was conceived to protect biodiversity and ensure that international trade on wild animals and plant specimens does not threaten their survival. On the other hand, the units, civil society organizations, and non-government organizations. SMARTSeas in SPIDERMan project was initiated to promote the management of marine biodiversity areas in the Philippines in collaboration with local government

To highlight the agency's role in marine resources conservation and to provide an avenue to share its research endeavors, NFRDI also conducted its first virtual roundtable

(Continued on page 7)

## The Philippine Journal of Fisheries Webinar Series: All About Taal Lake Fisheries and Seafood Safety Matters

The Philippine Journal of Fisheries (TPJF) held its first-ever webinar on August 28, 2020, via Zoom, with the theme, "All About Taal Lake Fisheries," focusing on the capture and aquaculture fisheries around the lake. Acting Executive Director



The 1st TPJF Webinar, "All About Taal Lake Fisheries". Shown in this photo are some of the participants, with Ms. Cyrenes M. Moncawe (host, top row extreme left), Mr. Frederick B. Muyot (resource speaker, top row extreme right) and National Scientist Dr. Mudjekeewis D. Santos (moderator, midrow, extreme left).

Dr. Lilian C. Garcia, CESO V, thought that it is now time for the journal to conduct a webinar series to share research results to a broader audience.

The two studies featured in the webinar were: (1) "Abundance and distribution of *Sardinella tawilis* (Herre, 1927) larvae in Lake Taal, Philippines," and (2) "Growth performance and cost efficiency of tilapia (*Oreochromis niloticus*) and milkfish (*Chanos chanos*) fed extruded floating and non-floating feeds reared in net cages in Taal Lake."

Dr. Maria Theresa M. Mutia, Chief Aquaculturist of Freshwater Fisheries Research and Development Center (FFRDC), and Mr. Frederick B. Muyot, Senior Aquaculturist of FFRDC, being the primary authors of the two studies were the resource speakers of the respective projects. Dr. Mudjekeewis Santos, TPJF Editor-in-Chief, gave a brief introduction on what NFRDI does and about TPJF. He also served as the moderator during the open forum.

Another webinar themed as "Seafood Safety Matters" was conducted on September 18, 2020, as part of the Institute's contribution to the celebration of the 57th Fish Conservation

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List of issuances is available at [bit.ly/NFRDIissuances](https://bit.ly/NFRDIissuances)



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discussion entitled, "FishTalk sa FishCon: Sa NFRDI Siyentista, Ikonsulta" on September 17. The discussion covered the following topics: National Stock Assessment Program, Post-Harvest Losses in Fisheries, and Aquaculture Practices in the Philippines. The NFRDI scientists who served as resource speakers included: Ms. Nonita Cabacaba, OIC of NFRDI-Marine Fisheries Research and Development Center; Mr. Francisco Torres, NFRDI Project Coordinator for SMARTSeas PH; and Mr. Ulysses Montojo, OIC of Fisheries Post-harvest Research and Development Division.

The second part of the week-long program focused on the launch of collaborative R & D projects and agricultural inputs distribution to fisherfolk beneficiaries. On September 17, NFRDI, in partnership with BFAR IV-A, Department of Agriculture-Bureau of Agricultural Research (DA-BAR), and Calabarzon local government units, launched its collaborative R & D projects at the BFAR IV-A Regional Office Compound in Los Baños, Laguna. The DA-BAR funded projects aim to ensure the sustainable quality of seed stock of milkfish, tilapia, and common carp by engaging village-level hatcheries, nurseries, and growers to increase fish production through the adoption of newly developed technologies. Subsequently, the institute also awarded agricultural inputs to fisherfolk-beneficiaries of Laguna on the same day.

In Visayas, the NFRDI-Marine Fisheries Research and Development Center (NFRDI-MFRDC) conducted an awarding ceremony of milkfish fry produce to local fish pond operators from Batbangon, Leyte. The activity is part of the project, "Technology Promotion on Milkfish Fingerling Production in

Ponds and Cages" which seeks to promote good management practices for the sustainability of milkfish supply. Ms. Nonita Cabacaba, NFRDI-MFRDC Center Chief, led the ceremony and was assisted by NFRDI and BFAR-Guiuan Marine Fisheries Development Center staff.

On the last day of the celebration, NFRDI commenced its Stock Enhancement of Blue Swimming Crabs in Guiuan, Eastern Samar. The project, funded by the DA-BAR, was done through the successive release of crablets in seagrass beds along reefs of Guiuan, Eastern Samar, where productive crab fishing activities occur. Fishery productivity in terms of harvest estimates and fishers' economic gains will be the core basis in assessing the move's success, which is expected to end in June of 2021. **(IYCruz)**



NFRDI-MFRDC Center Chief Ms. Nonita Cabacaba led the awarding of milkfish fry to Ms. Adoracion Edogonio, a local fish pond operator from Bagatngon Leyte

## FishKwela for BFAR RFOs, Fisheries Organization and Cooperative Representatives

The NFRDI, in partnership with the Southeast Asian Fisheries Development Center (SEAFDEC), successfully conducted its first Online Training Course on Milkfish and Mangrove Crab Hatchery Technologies on September 1-4, 2020 and September 14-17, 2020 via Google Meet.

The training, held in two batches, consisted of a series of online lectures and practical activities that tackled the modernized culture methods of milkfish and mangrove crab developed by the SEAFDEC-Aquaculture Department.

A total of 48 participants attended the training, which composed of BFAR Regional Fisheries Office training personnel, and representatives of people's organizations and cooperatives duly endorsed by their respective directors. Experts and scientists from SEAFDEC and NFRDI served as resource speakers for the activity.

Fishkwela is part of the NFRDI's On-Air project, FishKwela, which aims to enhance public understanding of scientific studies. Through this series, scientists will be able to engage effectively with its stakeholders to overcome misperception, prevent misinformation, and maintain public trust in research. **(IYCruz)**



Screenshot during the opening ceremony of FishKwela Series

## 56 COS Personnel Bared Fluency during Status/Progress Report Presentation of CY2020 RDE Projects

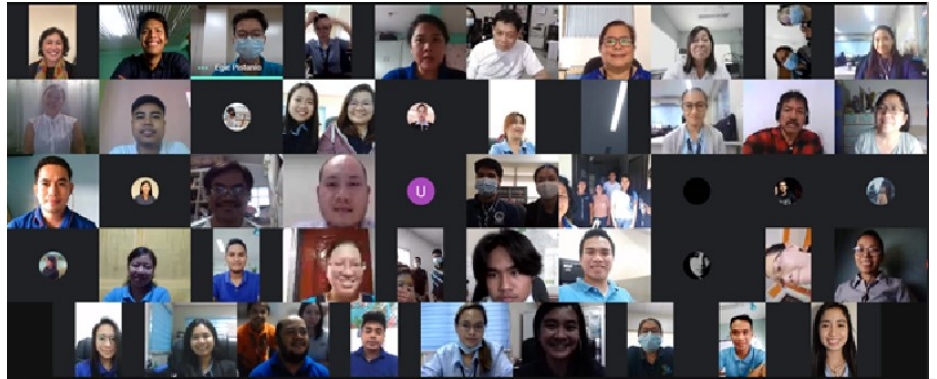
A Status/Progress Report Presentation of CY2020 Research, Development and Extension (RDE) projects of NFRDI was held last September 29. But, for the first time, presentations were done virtually via Google Meet. Another first: all presentations were rendered by 56 Contract of Service (COS) personnel of the institute.

It was the idea of Acting Executive Director (AED) Dr. Lilian C. Garcia to let COS do the presentations — a chance to shine and either display or hone their speaking ability.

There were 56 COS speakers who reported their respective ongoing projects which included 40 projects funded by NFRDI and 16 funded by other agencies like BFAR Central Office (4), BFAR Region II (1), Philippine Rural Development Project or PRDP (1), United Nations Development Programme or UNDP (1), DA-BioTech (3) and Bureau of Agricultural Research or BAR (6).

The activity aimed to monitor and review the progress of ongoing R&D projects. Each presenter was given 5 minutes to show the current status and accomplishments of their respective projects.

According to the AED, events like this will serve as means for establishing, strengthening and expanding the network of fishery researching communities through effective communication linkages. With the fluency displayed by our young COS presenters, NFRDI’s achievement to this mandate is not far-fetched. **(MDAlonte & JLCaser)**



Participants to the CY2020 NFRDI RDE Projects Status/Progress Report Presentation held last September 29 with Acting Executive Director Dr. Lilian C. Garcia, CESO V (top row, extreme left).

(Continued from page 5)



Participants to the project launch of Larval Rearing of Naturally Bred *Ayungin* and *Biya* with Focus on Diet and Nutrition with Dr. Lilian C. Garcia (front most right)

### **Larval Rearing of Naturally Bred *Ayungin* and *Biya* with Focus on Diet and Nutrition**

On August 25, 2020, NFRDI collaborated with BFAR-NIFTC and launched this project in Sitio Suyoc, Tanay, Rizal. The project aims to increase the quality and production of *Ayungin* and *Biya* by developing nutrient-enriched live diets for the two species.

Present in the event were NFRDI Acting Executive Director Dr. Lilian C. Garcia, CESO V; BFAR-NIFTC Chief Ms. Levita H. Zapanta; and Supervising Aquaculturist Mr. Romualdo M. Pol, together with the center’s project leaders and staff.

With all these undertakings, Undersecretary for Fisheries and concurrent BFAR National Director Commodore Eduardo Gongona says “This project will help us achieve productive fisheries, especially, 0.9 percent growth ang naitala sa second quarter alone na na-report ng PSA despite sa challenges ng COVID-19. We are developing, pero kulang pa. Mas paigtingin pa natin so that we can have a more inclusive fisheries particularly in inland waters.” **(CTTaglorin, FBMyot, MTMMutia & NCGatdula)**



## THE NATIONAL STOCK ASSESSMENT PROGRAM

### What is NSAP?

The National Stock Assessment Program (NSAP) was institutionalized in 1997 as a regular program of the Bureau of Fisheries and Aquatic Resources (BFAR). Its main objective is to generate reliable data as basis in formulating policies for improved management and conservation of the country's capture fisheries resources. This is to attain sustainable utilization and conservation and to develop and institutionalize the capacity of BFAR Regional Offices in resource assessment and management.

### What has been done by NSAP?

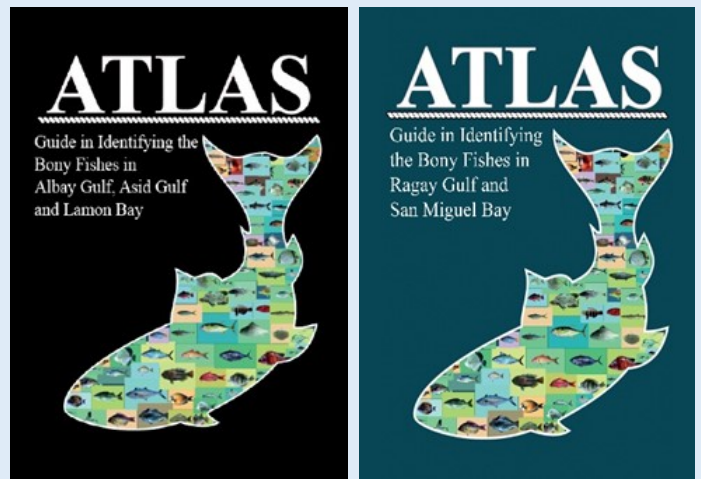
NSAP has been an excellent platform and only source of time-series, detailed commodity species catch and biological information in the country (for the past two decades) used for fisheries management. NSAP took extra miles to publish technical reports to make these data citable and peer-reviewed credit. As a result, numerous technical reports have been published by NSAP. Significant ones were the Technical Paper Series published by the BFAR-National Fisheries Research and Development Institute (NFRDI) in 2009. Six technical papers on the fish stock assessment of Honda Bay, Lagonoy Gulf, Northern Zambales, Sorsogon Bay, and Visayan Sea were featured. More stock assessment reports were published from 2015 to 2019 and 52 additional technical reports are expected to be published in The Philippine Journal of Fisheries this year.

NSAP also share information to support numerous management strategies at various levels, whether local, regional, national, or international. A notable contribution of NSAP is the passing of the highly successful large, seasonal fishing closures for pelagic species being implemented by DA-BFAR and the DILG-LGUs. These are Zamboanga Peninsula for sardines, Davao Gulf for small pelagics, and Northern Palawan

for round scads. The seasonal fishing closures are now being successfully replicated in various parts of the country.

### NSAP AT PRESENT

NSAP's primary focus is to provide a science-based stock status report and harvest control measures for commercially important fish species used for policy formulation and intervention by fisheries managers (i.e., NGAs and LGUs).



Guidebooks in Identifying the Bony Fishes in Albay Gulf, Asid Gulf, Lamon Bay, Ragay Gulf and San Miguel Bay.

### NSAP reports

Seven (7) Fish Guide books for Albay Gulf, Asid Gulf, Lagonoy Gulf, Lamon Bay, Ragay Gulf, San Miguel Bay and, Sorsogon Bay are ready for printing. Moreover, Two (2) Atlas books entitled "ATLAS: Guide in Identifying the Bony Fishes of Albay Gulf, Asid Gulf, and Lamon Bay" and "ATLAS: Guide in Identifying the Bony Fishes of San Miguel Bay and Ragay Gulf" were already printed and are ready for distribution. These reports are made possible by the collaboration between BFAR RFO 5 and NFRDI. Dr. Noemi Lanzuela, NSAP Project Leader of BFAR spearheaded the publication of the ATLAS.

### NSAP in Fisheries Management Areas (FMA)

Since the implementation of FMA in the country, NSAP regional teams have been focusing on providing scientific information needed by the 12 FMAs. As the leading science provider to FMA, different regional NSAP in an FMA have been doing data collation, data merging, and data analysis to identify the top 20 species in their respective FMAs. Once identified, regional NSAP teams have to provide each species at least three sustainability indicators or reference points that would serve as basis in proposing appropriate HCRs to be developed as policies or fishery rules and regulations.

Each FMA creates its own Management Board (MB), Science Advisory Group (SAG) and Technical Working Group



12 NSAP enumerators conduct field works amidst Covid19 pandemic with proper health and safety protocols

(Continued on page 13)

## A FLURRY OF ACTIONS TO SUSTAIN FOOD SECURITY AMID COVID-19

When DA Secretary Dr. William Dar called on all DA agencies to refocus programs/activities to sustain food security in the country amid Covid-19, the National Fisheries Research and Development Institute (NFRDI) was among the agencies that immediately heeded. Soon, 22 refocused projects were approved with a total budget of Php23 million. The refocused projects got the Secretary’s nod since these were expected to immediately result in increased fish production for the country. This was the basic requirement of Dr. Dar for the refocused projects/activities.

Consequently, NFRDI’s Acting Executive Director (AED) Dr. Lilian C. Garcia set things in motion and a flurry of activities happened. Project launching, implementation and interventions simultaneously happened. For the 3<sup>rd</sup> quarter, the following events took place:

### Launching Activities (August)

A virtual launching for the refocused projects on Milkfish Fry to Fingerling Production in Marine Cages and the Lobster Production in Marine Cages was done on August 11 at the BFAR National Mariculture Center in Panabo City. Last August 14, the six refocused projects in collaboration with BFAR-National Freshwater Fisheries Technology Center (NFFTC) were launched at NFFTC, Science City of Muñoz, Nueva Ecija. Then, on August 20, the refocused projects on Oyster and Siganid were launched at the BFAR- National Integrated Fisheries Technology Development Center, while on August 25, the launching of the refocused project on Larval Rearing of Naturally Bred Ayungin and Biya with Focus on Diet and Nutrition was launched at the BFAR-National Inland Fisheries Technology Center (NIFTC) in Tanay, Rizal.



### Awarding Ceremonies (July to September)

NFRDI awarded milkfish fingerlings and extruded floating feeds to fisherfolk beneficiaries of Brgy Walay, Padre Burgos, Quezon Province last August 6 as part of the refocused projects Technology Promotion (TP) on the Use of Bigger Size Fingerlings and TP on the Use of Extruded Floating Feeds for Milkfish Grow-out Culture. Thirty-two fisherfolk members of the Ipil Action Group (IAG) received a total of 100,200 milkfish fingerlings and 189 bags of extruded floating feeds amounting to Php402,500.

A batch of fisherfolk members of Samahan ng may Palaisdaan sa Lawa ng Lumot in Brgy Mahipon-Lumot, Cavinti Laguna were also awarded extruded floating feeds last August 26 under the project TP on the Use of Extruded Floating Feeds for Tilapia Culture.

Two awarding ceremonies took place last September 17. The first was the awarding of agricultural inputs to fisherfolk beneficiaries of Laguna Province for the refocused project TP on the Use of Bigger Size Fingerlings for Tilapia and Milkfish Culture and Increased Fish Productivity through TP and Agricultural Support to Fisherfolk. The second awarding ceremonies took place in Guiuan, Eastern Samar wherein the NFRDI-Marine Fisheries Research and Development Center awarded milkfish fry produce to local fishpond operators from Batbangon, Leyte. This is part of the project TP on Milkfish Fingerling Production in Ponds and Cages.

Last 23 September, 49 fisherfolk-beneficiaries received a total of 750,000 tilapia fingerlings, 140,000 milkfish fingerlings and agricultural inputs (nets, bamboo, rope, tri-bike, smokehouse and other paraphernalia) all amounting to Php739,000.00.

*(Continued on page 15)*



The recipients of agricultural inputs together with PFO Krystine Escosura, Hon. Joan Amo, Dr. Lilian C. Garcia, Hon. Rachele Ogalinola, and Dr. Maria Theresa Mutia.



Awarding of milkfish fingerlings to fisherfolk beneficiaries together with Allan Castillo of BFAR 4A (dark blue shirt) and Frederick Muyot of NFRDI (in gray shirt, 3<sup>rd</sup> from the right).



## Fisheries Refugia: A Concept to Conserve Spawning and Nursery Population in the Philippines

As one of the countries located in the South China Sea and Gulf of Thailand, the Philippines contributes to high fisheries production in the world providing thousands of jobs in the fisheries sector. However, the lack of responsible fishing practices and anthropogenic activities threaten its fishery resource ecosystem.

Aware of the above concern, the project entitled “Establishment and Operation of a Regional System of Fisheries Refugia in the South China Sea and Gulf of Thailand” was funded by the United Nations Environment Programme and the Global Environment Facility (UNEP-GEF) in coordination with the Southeast Asian Fisheries Development Center (SEAFDEC). The Department of Agriculture-National Fisheries Research and Development Institute (DA-NFRDI) acts as the lead agency responsible for the overall coordination of the project’s national-level activities. As part of the Strategic Action Program regarding the South China Sea, this project introduces the Fisheries Refugia concept – a tool for integrated fisheries and habitat management.

Fisheries Refugia is a “Spatially and geographically defined, marine or coastal areas in which specific management measures are applied to sustain important species [fisheries resources] during critical phases of their life-cycle, for their sustainable use.” (UNEP, 2005)

Developed by the Regional Working Group on Fisheries (RWG-F), the fisheries refugia concept promotes sustainable use of fish stocks and their habitats. It uses criteria in selecting sites for fisheries and habitat management interventions that focus on fish life-cycle and critical habitat linkages. In so doing, the project hopes to maintain and increase the biomass, average size, egg production and recruitment of economically important fish (pelagic and demersal) and invertebrate species. Additionally, it intends to collectively reduce capture of juveniles and pre-recruits of economically important fish (pelagic and demersal) and invertebrate species in critical fisheries habitats of the Gulf of Thailand and South China Sea.

There are three identified refugia sites in the country: Bolinao, Pangasinan; Coron, Palawan; and Masinloc, Zambales. As part of the fisherfolk and LGU coordination, the project provides various training workshops to educate the people on the ecosystem approach to fisheries management, also an essential tool for the management of our fishery resources. Furthermore, through Executive Orders No. 11 series of 2019, No. 7 series of 2017, and No. 61 series of 2020, the Refugia Site Management Committee (RSMC) has been established in Masinloc, Zambales, in Bolinao, Pangasinan, and in Coron, Palawan, respectively. RSMCs for each site were chaired by their respective municipal mayors – Hon. Arsenia Lim (Masinloc, Zambales), Hon. Alfonso Celeste (Bolinao, Pangasinan), and Hon. Marjo Reyes (Coron, Palawan).

After a series of quarterly sampling, the spawning area for the top three fish families in each refugia site were established, as shown in the succeeding figures. **(VMBorja and RVAres)**



Figure 1. The map of the sampling stations for fish eggs and larvae survey in Bolinao, Pangasinan.

Out of the 8 sampling stations in Bolinao Bay, station 7 was observed to have the highest number of eggs and may therefore be considered as a spawning area. Top families collected from Bolinao Bay are Siganidae, Carangidae and Acanthuridae. This result supports *Siganus guttatus* from family Siganidae, selected by the Bolinao Refugia Site Management Committee (RSMC) as their priority species.

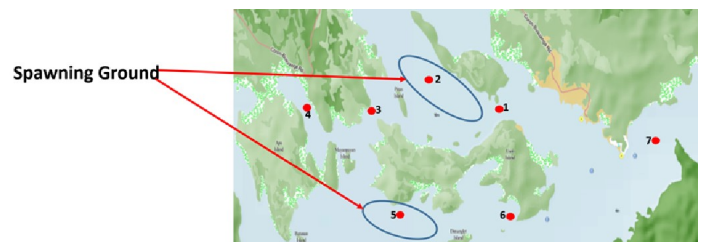


Figure 2. Spawning area of top species in Coron, Palawan

The spawning ground for Coron is shown on Figure 2. Out of 6 sampling stations, dominance in fish eggs were observed in stations 2 and 5 where families Caesionidae had the highest number of eggs, followed by both Clupeidae and Carangida, and Lutjanidae. RSMC in Coron selected *Lutjanus argentimacularus*, commonly known as Mangrove Jack as their priority species which is among the top families of fish eggs collected in Coron Bay.

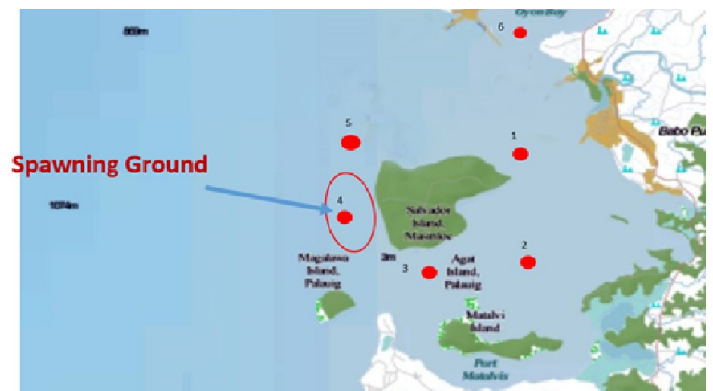


Figure 3. Spawning area of top Species in Masinloc, Zambales

Station 4 was observed to have the highest number of fish eggs compared with the 6 sampling stations in Masinloc Bay. Among the top families of fish eggs observed in Masinloc Bay were Siganidae, Carangidae and Scrombidae. RSMC selected *Auxis thazard* as the priority species for this municipality.

## NFRDI's role in reducing trade barrier on canned sardine (*Sardinella lemuru*) in the world market

In 2016 and 2017, the Bureau of Fisheries and Aquatic Resources (BFAR) reported that the European Union (EU) importers of sardines in Germany and Netherlands are refusing shipments labelled as *Sardinella* spp. or *S. lemuru*. They claimed that these species are not compliant with the EU standards.

Export documentations in CY2016 and 2017 respectively showed a total volume of 403 tons and 431 tons, with estimated value of USD980,434.97 and USD1,048,381.51. But, consummated shipments amounted only to USD401,806.80 (165 tons) in CY2016 and USD562,191.20 (231 tons) in CY 2017. Thus, for two (2) consecutive years, opportunity loss totaled USD1,064,818.48.

**Why is *S. lemuru* non-compliant with EU standards?** As a backgrounder, the *Standard for Canned Sardines and Sardine-Type Products* (CXS 94-1981) defines the essential quality standards and other requirements for canned products prepared from fresh or frozen fish of certain species. In 2007, this was revised to include the fish species *Clupea bentincki* as raw material.

The revision prompted the Codex Committee on Fish and Fishery Products or CCFFP to establish specific criteria in adding fish species in the standards. Consequently, the *Procedure for the Inclusion of Additional Species in Codex Standards for Fish and Fishery Products*, which specifies the necessary information such as description of candidate species and economic data, was adopted by the 36<sup>th</sup> Session of CAC in 2013 and incorporated into the Codex Procedural Manual.

Codex, the commonly used short form for Codex Alimentarius Commission or CAC, is an intergovernmental body established by the World Health Organization (WHO) and Food Agriculture Organization in 1962. Codex develops international science-based texts that set the standard for safe global food trade. As the Codex committee on fish and fishery products, CCFFP is responsible for elaborating standards for fresh and frozen fish, crustaceans and molluscs.

However, the EU standards are based on CAC CXS 94-1981 which contains a specific list of species for canned sardine and sardine-type products. This list does not include *S. lemuru* or *Sardinella* spp. The misidentification of *S. lemuru* or Bali Sardinella and *Sardinella longiceps* or Indian Oil Sardine in the Philippine Fisheries Statistics also adds to the issues that negatively affect the Philippine sardine industry.

**NFRDI's Role.** To correct the problem, the Department of Agriculture, through the Codex Sub-Committee on Fish and Fishery Products (SCFFP) being chaired by the National Fisheries Research and Development Institute (NFRDI),

pushed for the issuance of BFAR Administrative Circular No. 01 series of 2019. Entitled as "Correction of the nomenclature of Indian Oil Sardine (*Sardinella longiceps*) to Bali Sardinella (*Sardinella lemuru*)," the PSA started adopting the Circular and used *S. lemuru* in July 2019.

Additionally, NFRDI was instrumental in the drafting of a proposal to amend the CXS 94-1981. Through the SCFFP, the National Codex Organization – Technical Committee (NCO-TC) submitted to the CAC Joint FAO/WHO Food Standards Programme the Discussion Paper and Project Document on the "*Proposed Amendment of the Standard for Canned Sardines and Sardine-type Products (CXS 94-1981): Inclusion of Sardinella lemuru (Bali Sardinella) in the List of Sardinella Species under Sec. 2.1.*"



*Sardinella lemuru*; Standard length: 23 cm, usually to 20 cm.  
Source: [www.fishbase.org](http://www.fishbase.org) Photo by J. T. Williams

The Philippines' proposal gained a majority support from Codex member countries and observers when it was introduced for discussion during the 43rd Session of CAC (CAC43) on September 24 to November 6, 2020. However, Brazil and Chile, referring to the CAC Procedural Manual, stressed the need for a sensory evaluation by three (3) independent laboratories from different Codex regions. Likewise, the EU and Chile requested for additional information on the volume of stock present in the natural environment since *S. lemuru* has been declared as threatened species by the International Union for Conservation of Nature (IUCN).

With the CAC43 approval, the CCFFP has been reactivated to work in accordance with the Procedural Manual and evaluate if CXS 94-1981 could be amended to include *S. lemuru* (Bali Sardinella) in the list of *Sardinella* species under Section 2.1.

**Ways Forward.** As project proponent, NFRDI is in the forefront of facilitating the conduct of sensory evaluation and estimation of the volume of *S. lemuru* stocks present in the natural environment. Once these issues are addressed in accordance with the requirements of Codex, then, *S. lemuru* will be included in the CXS 94-1981 and border rejection of canned *S. lemuru* will be resolved. (**UMMontojo, FSBTorres, BJSBaldoza, and LCGarcia, AED**)



## See and Celebrate Life To Its Fullest

Inspiring devotional for our hungry soul

How we celebrate life will depend on how we see it. If we use the right lenses in life, we will have positive outlook. Let us see life according to what the Lord wants us to see it: Full of faith and joy, happiness and peace.

In reality, we all want to enjoy life to its fullest. But, sometimes, a great many of life's hassles bring us down. For instance, the pandemic COVID 19 has brought many people into tears. Who would rejoice knowing that our economy has contracted, millions of people became jobless and many families even lost their loved ones?

But, while it's true that life has multiple acid tests, still, it does not mean that we should wallow in misery. Despite the ambiance of negativity, still, there are many good things that we can count on. If only, we change our perspective because **appreciating and celebrating life is a function of our perspective.**

Pessimist people suffer in life. Optimist people enjoy life. It's a matter of having a right perspective. Our

negative perspective will change, if we know our God, if we trust in His plans and rely on what He can do.

A French novelist, Mr. Marcel Proust who wrote a seven-volume novel entitled, *In Search Of A Lost Time*, said something that could turn us into becoming optimists. He said: **"My destination is no longer a place, rather a new way of seeing."**

If we agree with Mr. Proust, the more that we should agree with our Great Master who said and promised:

<sup>4</sup>Mangalak kayong lagi sa

Panginoon: muli kong sasabihin, mangalak kayo. <sup>5</sup>Makilala nawa ang inyong kahinhinan ng lahat ng mga tao. Ang Panginoon ay malapit na. <sup>6</sup>Huwag kayong mangabalisa sa anumang bagay; kundi sa lahat ng mga bagay sa pamamagitan ng panalangin at daing na may pagpapasalamat ay ipakilala ninyo ang inyong mga kahilingan sa Dios. <sup>7</sup>At ang kapayapaan ng Dios, na di masayod ng pag-iisip, ay mag-iingat ng inyong mga puso at ng inyong mga pag-iisip kay Cristo Jesus.

<sup>8</sup>Katapustapusan, mga kapatid, anumang bagay na katotohanan, anumang bagay na kagalanggalang, anumang bagay na matuwid, anumang bagay na malinis, anumang bagay na kaibig-ibig, anumang bagay na mabuting ulat; kung may anumang kagalingan, at kung may anumang kapurihan, ay isipin ninyo ang mga bagay na ito. <sup>9</sup>Ang mga bagay na inyong natutuhan at tinanggap at narinig at nakita sa akin, ang mga bagay na ito ang gawin ninyo: at ang Dios ng kapayapaan ay sasa inyo. (Philippians 4: 4- 9). **(LCGarcia, AED)**



(Continued from page 9)

(TWG). The creation of each body is spearheaded by the designated lead NSAP region. FMAs 2, 7, 8, 9, 10, and 11 have already created their MB as of this writing. FMA 8 and 11 have created their SAG. Only FMA 11 has created a TWG as of this writing.

### NSAP Database

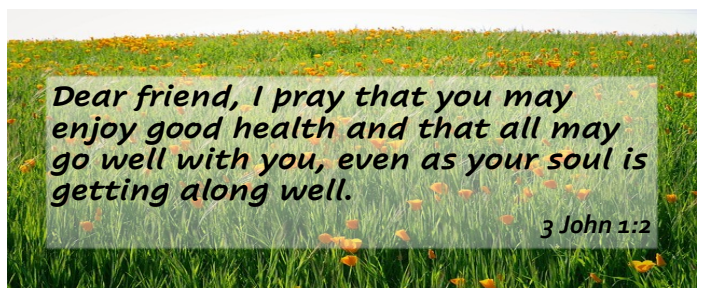
NSAP has been maintaining the NSAP Database system. There have been different versions of the database since the NSAP Regional Teams have used them for data storage and analysis. The NSAP National Database allowed the uploading and synchronizing of all Regional NSAP data to a single server in NFRDI. The National Database also provided an additional level of storage and back-up, as well as security for the millions of data points being uploaded in the system from all over the country. At present, the database manager has been updating NSAP backend database files merged and

consolidated. Also, the database manager has been creating Structured Query Language (SQL) script for merging Landing Centers (LC), Fishing Grounds (FG), Vessel Unloads, Sample per Day.

### NSAP Interactive Atlas

Due to insistent public demand, NSAP is now developing the NSAP Interactive Atlas System. This system will allow authorized users easy access to summary reports on the catch, effort, top species, etc., in a more efficient and timely manner. Moreover, this will provide both the national government, local government, and stakeholders the country's fishery resources' status in real-time. **(FTorresJr., NAFlores)**

*NOTE: What is NSAP? What has been done by NSAP is an excerpt from "M.D. Santos, N.C. Barut and AD Bayate (editors). 2017. National Stock Assessment Program: The Philippine Capture Fisheries Atlas. Bureau of Fisheries and Aquatic Resources - National Fisheries Research and Development Institute. Quezon City, Philippines. 220 pages."*



Got a story to tell?

Use #NFRDIInAction and #NFRDITeach in your FB posts or submit your articles to [iestd.nfrdi@gmail.com](mailto:iestd.nfrdi@gmail.com)

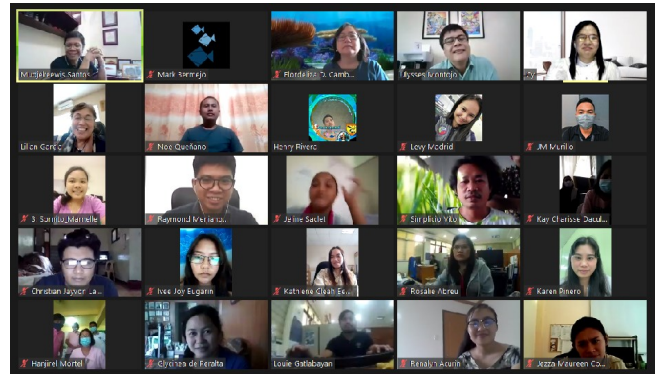
**WRITE it to WIN it!**

Send us your Christmas Wish and/or New Year's Resolution by December 21, 2020 and win a special prize when it gets published!

(Continued from page 6)

Week. The studies featured in the 2nd webinar were: (1) Levels of Heavy Metals in Six Aquaculture Commodities Collected from Various Landing Sites of Manila Bay: Relationships with Size and Seasonal Variation, and (2) Ciguatera in the Philippines: Examining Reef Fish Vectors and Its Causative Benthic Dinoflagellates in Visayan and Sibuyan Seas. Ms. Flordeliza Cambia, Officer-in-Charge of the Seafood Quality and Safety Section of the Fisheries Post Harvest Research and Development Division (FPHRDD) of NFRDI and Dr. Ulysses Montojo, Officer-in-Charge of FPHRDD were the resource speakers.

Zoom, Youtube and FB live were the platform used wherein as much as 1,039 views were documented for the 1st webinar while 1,013 views for the 2nd. The participants varied from students to professors or instructors, to professionals and government employees such as BFAR researchers and staff. This will be a regular activity of the journal to bring fisheries science closer to the people. **(CMMoncawe)**



Participants to the "Seafood Safety Matters" webinar. Shown in this photo are some of the participants with Dr. Lillian C. Garcia (2nd row from the top extreme left) and beginning from left, top row are Dr. Mudjekeewis D. Santos (moderator), Ms. Liza Cambia, Dr. Ulysses M. Montojo and Ms. Cyrenes Moncawe (host)



Virtual Zumba during the Civil Servants Health and Wellness Month

(Continued from page 5)

To increase NFRDI employees' awareness on COVID-19, Ms. Katelynne Joy S. Ulep, RN, conducted a webinar about the virus and shared some safety precautions to prevent its spread.

Lastly, a free online webinar entitled "How to Cope up with Stress, Anxiety, and Depression During COVID-19 Pandemic" was availed by the team.

Thus, amid challenges and unexpected circumstances, promoting health and wellness was still a priority of the Institute. As Mr. Rex Bate, Senior HR Specialist in CSC-CAR said in an interview, "You can serve better and can provide quality service to clients if you are healthy." **(RLLonoza and KJSantos-Ulep)**

As our advance Christmas gift, the Institute will be giving away prizes to lucky Facebook user winners! Thus, we invite everyone to LIKE and SHARE our Facebook Page, then get a chance to WIN rewards!

**Mechanics:**

**Facebook users**

Facebook user tagged as NFRDI's top page fan will qualify to an electronic raffle. There will be one winner per week starting November 6, 2020. A Php 500 worth of prepaid load will be forwarded to their mobile number as a reward and will be notified via Facebook messenger.

**NFRDI employees**

NFRDI employees with the greatest number of friends who have liked and followed NFRDI social media accounts will also receive a special gift pack by December 2020. As a proof, the employee must do the following:

- Step 1. Post in his/her personal wall inviting his/her Facebook friends to like and share the NFRDI Facebook page.
- Step 2. Use the hashtag #NFRDIinAction
- Step 3. His/her friends must show proof of their liking and/or sharing the page by commenting with the screen shot.

The employee must also be tagged as NFRDI's top page fan to qualify for the prize. The NFRDI-Information and Education Section will randomly pick one (1) Facebook user winner per week starting November 6, 2020.

For more details, visit <https://www.facebook.com/nfrdiphilippines> or email [iestd.nfrdi@gmail.com](mailto:iestd.nfrdi@gmail.com)





(Continued from page 10)



Virtual launching ceremony of refocused projects on milkfish and lobster held via Zoom. Attendees include NFRDI Acting Executive Director Dr. Lilian Garcia; BFAR National Director Eduardo Gongona; ARDD OIC/FAD chief Ma. Salvacion Ferrer; BFAR NMC Chief Dr. Jericardo Mondragon; and TD Section Chief and Project head Mr. Francisco Santos



On-site program launching of refocused projects on milkfish and lobster held at BFAR-NMC, Panabo City, Davao del Norte

**Some Highlights on Technology Promotions**

With the sudden onset of Covid-19, everything changed. It has forced those in government to veer from being complacent to being anxious at helping those displaced by the pandemic. For its part, DA-NFRDI crafted projects that would focus on immediately and tangibly helping the affected fisherfolk by providing agricultural inputs and technical assistance. These are the refocused projects under Technology Promotions (TPs).

From the start of its implementation about four (4) months ago, as of September, these projects have documented impressive achievements. As reported last September 29 during the presentation on the Status/Progress of CY 2020 NFRDI RDE Projects, accomplishments of refocused projects under TPs include:

- The TP on the Use of Bigger Sized Tilapia and Milkfish Fingerlings for Cage Culture has dispersed 1,338,472 tilapia fingerlings and 143,400 milkfish fingerlings to a total of 50 cooperators (15-tilapia and 35 milkfish). The project’s financial accomplishment is 121.98%
- The TP on the Seed Production of Common Carp for Stock Enhancement and Aquaculture has produced a total of 530,803 fry out of the targeted 480,000. This is 111% accomplishment. The project has produced and dispersed 290,850 (79% accomplishment) fingerlings, with a financial accomplishment of 74.91%
- For the TP on the Culture of Tilapia and Milkfish Using Extruded Floating Feeds, the project has awarded 792 (100% accomplishment) bags of agricultural inputs. The project recorded 125% accomplishment for targeted fisherfolk beneficiaries, targeted profiling of beneficiaries, sampling and monitoring, and, stocking.
- The refocused project for Increased Fish Productivity through TP and Agricultural Support to Fisherfolk recorded a performance of 120%, 190% and 430% accomplishment in terms of number of fisherfolk beneficiaries in aquaculture, post-harvest and capture fisheries, respectively.
- TP on the Milkfish Fingerling Production in Ponds and Cages has dispersed 274,880 fingerlings, as of September 19, and extended assistance to 33 cage operator beneficiaries.
- Both the TP on Saline Tilapia and TP of Bangus Nursery Rearing in Brackishwater Ponds have recorded a percent accomplishment of 60% and provided fingerling assistance to 21 fish farmers.

With three (3) months more left, more activities and accomplishments are sure to come from DA-NFRDI’s refocused projects that will definitely contribute towards a productive fisheries to sustain food security amid Covid-19. **(MDAlonte)**



Ribbon cutting - Layout design plan of natural food laboratory



Representatives from NFRDI-FFRDC, BFAR IV-A and SPLI during the signing of Memorandum of Agreement

## Four Women and the Role of “Kulapu” in their Lives—Part 1

I have long wanted to contribute an article in GRaD, but I could not find a suitable subject that will inspire me to make one until I encountered these four strong-willed women while doing a Focus Group Discussion (FGD) in line with our research on seaweeds. Four different women from different areas in Eastern Visayas (Region 8), practically from all walks of life, different jobs and fields in fisheries, but connected because of kulapu. So what is the role of kulapu in their lives?

One may ask now - what is kulapu? Kulapu is a local term for the brown seaweed *Sargassum*, particularly in the Visayas regions. *Sargassum* is an integral part of the marine ecosystem, being the habitat and breeding ground for many marine organisms. It is also considered a potential economic commodity in the country today. *Sargassum* is a good source of alginates, which has various applications for food and beverages, pharmaceuticals and cosmetic products, and many industrial uses (i.e., textile, fertilizer, paint, and printing). So we can imagine the big boost *Sargassum* could make in the seaweed industry. However, we have to protect the resource from unregulated harvesting because it affects the natural stocks as well as the many marine organisms that live and breed on seaweed beds. In 2014, BFAR issued FAO 250 to ban the harvesting, selling, and exportation of *Sargassum* for its conservation and management. Through series of consultations and workshops, the Fishery Order was amended into FAO 250 -1 to dispose of the remaining stocks of dried *Sargassum* for some time in 2015 and into FAO 250 -2 that allows only the gathering of washed ashore or drifted kulapu in 2019.

So how did kulapu affect and connect these women in Northern Samar? Let us take a closer look at these women with innate characteristics and the role of kulapu that made a difference in their lives and community.

# GRaD

GAD for Research and Development

For comments, suggestions and inquiries, please contact:

Information and Education Section, Training Division  
National Fisheries Research and Development Institute.  
Corporate 101 Bldg., Mo. Ignacia Ave., Quezon City 1103

 @NFRDPhilippines



Ms. Vicenta Projimo and the participants during one of her talks on seaweeds (Inset: “Kulapu” Seaweed *Sargassum*)

Ms. Vicenta S. Projimo, hails from Giuian, Samar. She is married, with two children, and presently a resident of Tacloban City. She represents the government sector, a senior technical staff from BFAR Region 8. “Ma’am Centa” or simply “Centa,” as her fellow seaweed coordinators fondly call her, is one of the pioneer advocates of seaweed development initiatives in BFAR. She has been in government service for more than 30 years, and most of these were spent on seaweed production, where she started as an assistant project leader in 2007. She was designated by Regional Director Juan Albaladejo of BFAR Region 8 as the Regional Seaweed Coordinator (RSC) in 2008, a role which she holds until today. Her work on seaweed is mainly on the production and utilization of *Kappaphycus* and *Euclima*, which are red seaweeds that are commercially and widely produced in the country. (MSFerrer)

**Read our next issue for Part 2 of this article featuring the remaining women and how they were connected because of kulapu**

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