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Thousands of volunteers take part in coastal cleanup

By ROMINA CABRERA

Thousands of volunteers joined the country's efforts to be part of the global initiative to protect the world's oceans in yesterday's International Coastal Cleanup (ICC) Day.

The Department of Environment and Natural Resources (DENR) led the simultaneous coastal cleanups in key areas in different parts of the country with an estimated 35,000 volunteers from national and government agencies, academia, private

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Thousands From Page 1

sector and the civil society joining in the efforts.

Cleanup activities were held in the Las Piñas-Parañaque Wetland Park, Novaliches, Quezon City and the Baseco Beach in Manila as well as in the provinces of Bataan, Batangas, Cebu, Bohol, Negros Oriental and Zamboanga del Sur.

This year's ICC theme is "Clean Seas for Healthy Fisheries" and aligns with the United Nations Ocean Decade Challenge 3 to "Sustainably Feed the Global Population."

The collected waste will be submitted to the Ocean Conservancy and UN Ocean Decade to contribute to global efforts to combat plastic pollution.

In Navotas City, at least 700 government employees, barangay officials and staffers, teachers and representatives of private institutions and non-government organizations joined the coastal cleanup drive in its 18 barangays.

Mayor John Rey Tiangco emphasized the importance, with Navotas being a coastal city, for their constituents to participate in community cleanup activities.

"Keeping the sea and other bodies of water clean is imperative in helping our *kababayans* maintain their livelihood. Let us make cleanliness a part of our lifestyle," Tiangco said in a statement, noting that a large portion of their population depends on fishing for

livelihood.

The ICC Day is a global event that unites countries and people with the common goal of resolving the growing marine debris problem by maintaining cleanliness along shorelines, rivers, lakes and waterways.

The Philippines has been participating in the global ICC activity since 1994, although it was only institutionalized through Presidential Proclamation 470 on Sept. 15, 2003, which designated the third Saturday of September as ICC Day.

Last year, an estimated 249,382 metric tons of waste was collected, including cigarette butts, beverage bottles, food wrappers, bottle caps, grocery bags, food containers, cups and plates, straws and stirrers.

- With Emmanuel Tupas



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THE EXPONENT OF PHILIPPINE PROGRESS
SINCE 1900
MANILA BULLETIN
THE NATION'S LEADING NEWSPAPER

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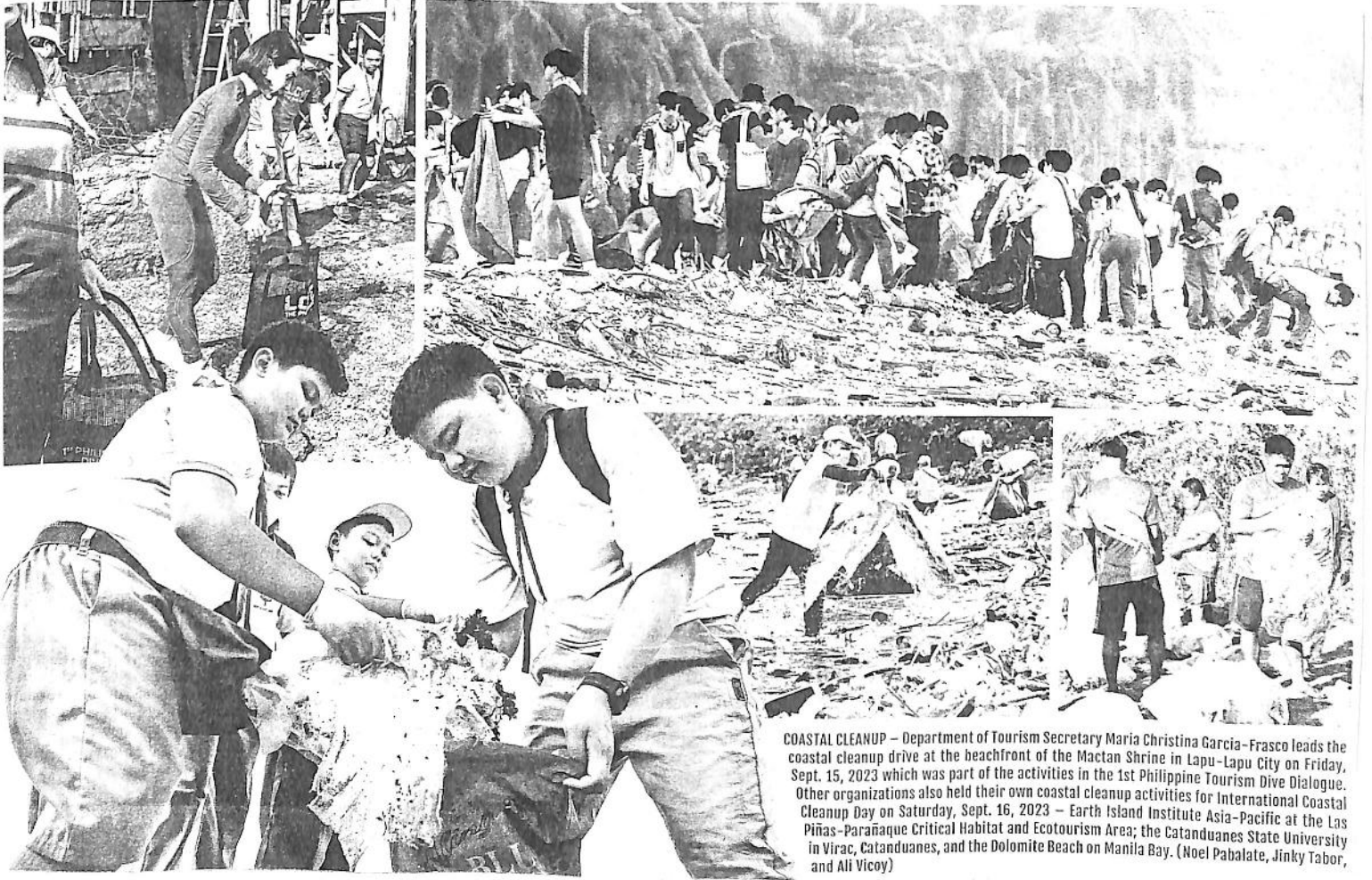
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COASTAL CLEANUP — Department of Tourism Secretary Maria Christina Garcia-Frasco leads the coastal cleanup drive at the beachfront of the Mactan Shrine in Lapu-Lapu City on Friday, Sept. 15, 2023 which was part of the activities in the 1st Philippine Tourism Dive Dialogue. Other organizations also held their own coastal cleanup activities for International Coastal Cleanup Day on Saturday, Sept. 16, 2023 — Earth Island Institute Asia-Pacific at the Las Piñas-Parañaque Critical Habitat and Ecotourism Area; the Catanduanes State University in Virac, Catanduanes, and the Dolomite Beach on Manila Bay. (Noel Pabalate, Jinky Tabor, and Ali Vicoy)



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THE PHILIPPINE STAR

TRUTH SHALL PREVAIL

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Representatives from the private sector and government agencies as well as volunteers participate in a cleanup drive in a creek in Barangay Mambaling in Cebu City yesterday in observance of National Cleanup Month and International Coastal Cleanup Day.

ALDO BANAYAL / THE FREEMAN

THE PHILIPPINE STAR
nation

EDITOR: TERESA B. COROS

SUNDAY | SEPTEMBER 17, 2023



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CLEANUP. The City Government of Navotas held a simultaneous coastal cleanup drives in all 18 barangays in celebration of the 2023 International Coastal Cleanup (ICC) Day. Some 700 individuals participated in the event including employees from the city government and national government agencies, barangay officials and staff, students, teachers, non-government organizations, and representatives from private institutions.
Andrew Rabulan



Manalo to lead Phi delegation in UNGA

By MICHAEL PUNONGBAYAN

Foreign Affairs Secretary Enrique Manalo and two Cabinet officials will lead the Philippine delegation to the 78th session of the United Nations General Assembly (UNGA) at the UN headquarters in New York City.

There is no update yet if Manalo will heed the strongly worded Senate resolution urging the UNGA to condemn China's intrusions in the West Philippine Sea.

"The participation of three Cabinet members in the national delegation underlines the high significance that the Philippines attaches to its role as a responsible and engaged global citizen fully supporting the UN Charter," Manalo said yesterday, referring to Environment Secretary Maria Antonia Yulo Loyzaga and Health Secretary Teodoro Herbosa.

"On behalf of President Marcos, I will deliver the Philippine National Statement during the UNGA General Debate... I will articulate the Philippines' advocacies for respect for the rule of law and ambitious climate action, as well as our achievements and aspirations as a middle-income economy with an important

voice in global affairs," he added.

The UNGA high-level week is scheduled from Sept. 18-26.

Manalo noted that the country will organize side events during the high-level week, which includes the Skilling, Upskilling and Reskilling for a Resilient Workforce, co-hosted with Indonesia and Laos, on Sept. 17; the High-Level Event Promoting the Fissile Material Cut-Off Treaty, co-hosted with Japan and Australia, on Sept. 19 and the Ministerial Roundtable on Migration, Environment and Climate Change in the Asia Pacific Region on Sept. 21.

Manalo will also sign on Sept. 20 the "High Seas Treaty," a new agreement under the 1982 UN Convention on the Law of the Sea, related to conservation and sustainable use of marine biological diversity in areas beyond national jurisdiction.

Also in the delegation are National Economic and Development Authority Undersecretary Rosemarie Edillon, Special Envoy of the President to the UNICEF Monica Louise Prieto-Teodoro, an unnamed Department of Finance official and local executives from the League of Cities of the Philippines.

- With Marc Jayson Cayabyab



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AFP suspects China militia of coral harvesting in WPS

By EMMANUEL TUPAS

Rozul (Iroquois) Reef near Palawan has been plundered of its corals, and the Chinese were likely behind it, the Armed Forces of the Philippines (AFP) said yesterday.

Vice Admiral Alberto Carlos, commander of the AFP's Western Command (WESCOM), said the massive poaching of corals left a trail of destruction of marine resources in the area, which is within the country's exclusive economic zone (EEZ).

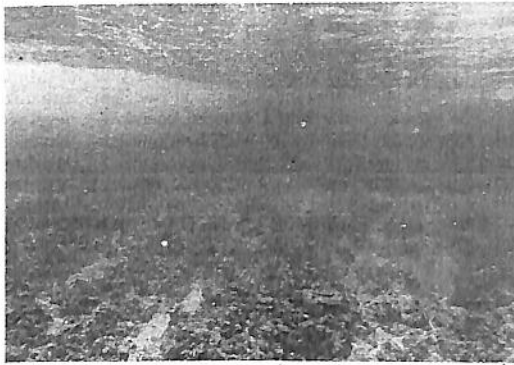
"Wala na 'yung corals. Yung mga debris nagkalat na (The corals are no longer there. Debris are scattered around)," Carlos told the Saturday News Forum in Quezon City.

The Chinese may have begun clearing the reef of its corals in July when their ships swarmed around the land feature, which is about 150 nautical miles from the Palawan mainland.

When the Chinese ships left Rozul Reef for Panganiban (Mischief) Reef weeks later, the AFP deployed navy divers to conduct underwater survey.

Carlos said they are coordinating with scientists and marine experts for an assessment of the

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Photos taken by military divers and released by the AFP Western Command yesterday show the empty and damaged coral bed of Rozul (Iroquois) Reef in the West Philippine Sea following massive harvesting. The military sent out its divers for an underwater survey of the reef after Chinese militia vessels left the area.

AFP suspects From Page 1

extent of environmental damage in the area.

He added the AFP – through the Philippine Navy – will beef up its presence in the area to prevent another environmental depredation in the area.

Carlos said ships from the Philippine Coast Guard and the Bureau of Fisheries and Aquatic Resources are also patrolling the area. "Sama-sama kami (We're doing it together). Palitan, rotation of our presence," he said.

Even if the WESCOM has the most number of Philippine vessels patrolling the West Philippine Sea, Carlos admitted they are not enough to completely secure the country's territorial waters.

"What's given to us is not enough so we make do with what we have," he said.

Rozul is one of the three land features within the Philippines' EEZ where a "concerning resur-

gence" of Chinese activities had been detected by the AFP earlier.

WESCOM said aerial patrols on Sept. 6 and 7 showed 23 Chinese fishing vessels in Rozul, five in Escoda (Sabina) Shoal and two in Baragatan (Nares) Bank.

"The increased presence of CFVs (Chinese fishing vessels) raises concerns regarding the potential implications for Philippines' maritime security, fisheries conservation, territorial integrity and preservation of the marine environment. These activities have been a source of tension in the WPS (West Philippine Sea) and have contributed to instability in the region," WESCOM said.

"The Philippines continues to remain vigilant and take necessary measures to safeguard its vital national interests and maintain stability in the region," it added.



Corals in WPS gone after China 'swarming'

PH urged to go back to arbitration court

BY FRANCO JOSE C. BAROÑA AND CATHERINE S. VALENTE

CORALS that grow in abundance in the shallow waters close to Rozul (Iroquios) Reef in the West Philippine Sea have disappeared, apparently due to massive harvesting, a military official said on Saturday.

Vice Admiral Albert Carlos, who heads the Western Command (WesCom) of the Armed Forces of the Philippines (AFP), said in a news forum on Saturday that this was what their divers discovered after surveying the Rozul Reef, where Chinese maritime militia vessels had been monitored by Philippine military air assets to

be "swarming" on September 6 and 7. The Rozul Reef is within the country's exclusive economic zone (EEZ). The Wescom chief said that while he did not want to draw any conclusions, he expressed suspicion that the Chinese ships have been harvesting the corals. **➤ Gone!**

■ GONE FROM A1

Corals in WPS gone

"We noticed coral harvesting in their swarming areas. When they left, we pinpointed it and sent divers to do an underwater survey. They saw that no corals were left — it was damaged, and there was debris," said Carlos.

He also expressed belief that the harvesting of corals in that particular area of the West Philippine Sea was carried out just recently.

"[Whether] the damage is old or new, but from the eyes of the Navy divers, it looks recent," Carlos said.

He said they were coordinating with scientists and maritime experts to conduct additional assessments.

Aerial patrols conducted earlier this month by Wescom air assets showed that three areas in the WPS, including Rozul Reef, were experiencing heightened swarming activities by Chinese maritime militia vessels.

At least 23 ships were observed off Rozul Reef, five off Escoda (Sabina) Shoal and two off Baragan (Nares) Bank.

Carlos said the increased presence of Chinese maritime militia vessels in these areas raises concerns regarding the potential implications for the Philippines' maritime security, fisheries conservation, territorial integrity, and preservation of the marine environment.

He noted that these activities have been a source of tension in the WPS and have contributed to instability in the region.

The presence of the Chinese vessels in the WPS is concerning, given the Philippines' rights within its EEZ, Carlos added.

"We are the only ones who have the right to the West Philippine Sea, and it looks like someone is exercising that right without our permission," he said.

Nevertheless, Carlos said whatever Wescom can hope to accomplish "against China's swarming, harassment, shadowing and outright aggressive behavior in WPS is dictated by the resources made available to us."

the West Philippine Sea issue.

"Now, what's the big difference now? Depending on where the incident is, I am arguing that a new case can be filed this time; unlike the previous arbitral award or arbitral case that we filed, this time we specify the amount of damages that we suffered," he added.

The former justice cited the China Coast Guard's use of a water cannon against the Philippine Coast Guard and its increased swarming activity as the main focus of the new case seeking "exemplary damages."

"For example, if there is swarming and they try to criss-cross our vessels, then there must be some damage there. For example, if we spent more gasoline, if they water cannoned us, these are what the lawyers called damages," Jardeleza said.

"But the more important part is the so-called exemplary damage that this can run into. First, before we can have exemplary damages, we must prove actual damages. Now you add the exemplary damages, I think it can be done in a case," he added.

Meanwhile, Jardeleza said the Philippines conducting military exercises with its allies "is good," but it would not deter China from its aggression in the West Philippine Sea.

"If there is a military exercise, we join in the military exercise, our troops will gain experience. So it's good. Now it's also good that they're foreign countries trying to be with us, that they are like us, like-minded citizens of the world, that they believe in our cause," he said.

"Now it will help, but I think it will not deter China. But any small matter can help us definitely," Jardeleza added. Bilateral agreements.

Meanwhile, the AFP announced that it will carry out more than 500 bilateral engagements with the United States Armed Forces under the Mutual Defense Board and Security Engagement Board (MDB-SEB) in 2024.

Legal remedy

Former solicitor general Francis Jardeleza on Saturday said the Philippines could file another case before the Permanent Court of Arbitration (PCA) over a resurgence of Chinese swarming activity in the WPS.

In an exclusive interview with *The Manila Times* in Iloilo City, Jardeleza suggested that the new case against China be handled solely by the Office of the Solicitor General (OSG) without foreign counsels so that "we don't pay anymore expensive American and British lawyers."

"My preferred option, which I have already expressed, is to file another case before the same Unclos (United Nations Convention on the Law of the Sea), but it will depend on the particular place where this swarming takes place, I think we can file a new case," Jardeleza said.

Unclos created the ad hoc arbitral tribunal in 2016 that affirmed the country's sovereign rights over its EEZ in the West Philippine Sea and rejected China's sweeping nine-dash line claim.

Jardeleza, who was part of the team that filed the arbitration case against Beijing in 2013, said that the Philippines could seek payment for damages caused by China's aggressive acts.

"Now if China again wishes not to participate, we have proven that we can hale them to the tribunal as we have done in the past," Jardeleza said when asked if the Philippines can actually engage with China on

The MDB-SEB coordinates a framework for defense and security cooperation between the US and Philippine militaries.

In an interview on Saturday, Lt. Col. Enrico Gil Ileta, head of the AFP public affairs office, said these engagements between the US and Philippine militaries include increased tempo in joint exercises, the inclusion of key international partners, particularly in joint patrols, and Enhanced Defense Cooperation Agreement (EDCA) projects, among others.

This was agreed upon by AFP chief Gen. Romeo Brawner Jr. and Admiral John Aquilino, chief of the US Indo-Pacific Command, during the conclusion of the annual MDB-SEB meeting at Camp Aguinaldo in Quezon City on September 14.

The number of engagements between the two militaries next year was higher compared to the 496 activities set for 2023.

"The meeting is the culminating activity of the PH-US planning cycle that assessed previous activities and set out over 500 bilateral engagements for 2024 to include exercises and high-level exchanges between the allied nations, matters of security cooperation activities, and the strategic vision including maritime security, information sharing, and capacity and capability development, among others," Ileta said.

During the MDB-SEB meeting, Brawner and Aquilino also agreed to expedite the completion of 63 additional EDCA projects on top of the 32 projects that were allocated.



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'ALARMING': ROZUL REEF STRIPPED OF ITS CORALS

AFP SAYS CHINESE MILITIA VESSELS SWARMING AREA IN WPS

By Charles Dantes and Joel Zurbano

THE Armed Forces of the Philippines on Saturday reported massive coral harvesting in Rozul Reef in the West Philippine Sea where Chinese militia vessels were seen swarming.

AFP Western Command head Vice Admiral Albert Carlos said the area was completely stripped of its corals.

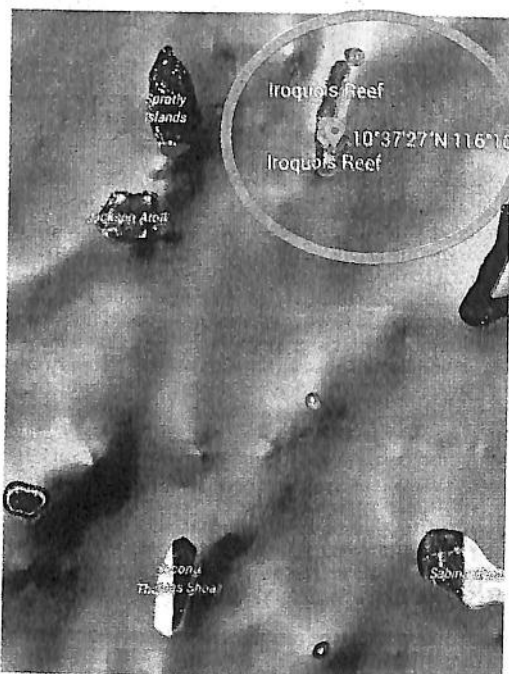
"The areas where there was swarming, we have pinpointed these. And then when they left, we sent out our divers to do a water survey and we saw there were no more corals. There we only debris," Carlos said.

Rozul Reef, also known as Iroquois Reef, lies within the country's 200 nautical-mile Exclusive Economic Zone and continental shelf.

"This is alarming because as far as WesCom is concerned, it is our duty to protect sovereign rights for Filipinos. Our fellow countrymen should be the ones enjoying the resources in our EEZ," he added.

The military official, however, said they are not yet officially blaming the Chinese militia vessels even if they have their own suspicions.

"It is just our suspicion for now. We are not saying they are harvesting our corals. But we suspect that somebody is harvesting our corals and that means they are violating our sovereign rights," he said.



A map of the West Philippine Sea shows the location of Rozul Reef, also known as Iroquois Reef, which lies within the country's 200 nautical-mile Exclusive Economic Zone.

US-PH MILITARIES EYE 500 BILATERAL ACTIVITIES IN 2024

By Charles Dantes and Maricel Cruz

THE Philippines and the United States militaries are planning for at least 500 bilateral engagements in 2024, the Armed Forces of the Philippines said yesterday.

The AFP and the US Indo-Pacific Command reaffirmed their commitment to strengthen ties amid tensions in the Indo-Pacific region during the annual Mutual Defense Board - Security Engagement Board (MDB-SEB) meeting on September 14 at Camp Aguinaldo.

The two countries discussed the inclusion of exercises and high-level exchanges for next year's activities, which include maritime security, information sharing, and capacity and capability development among others.

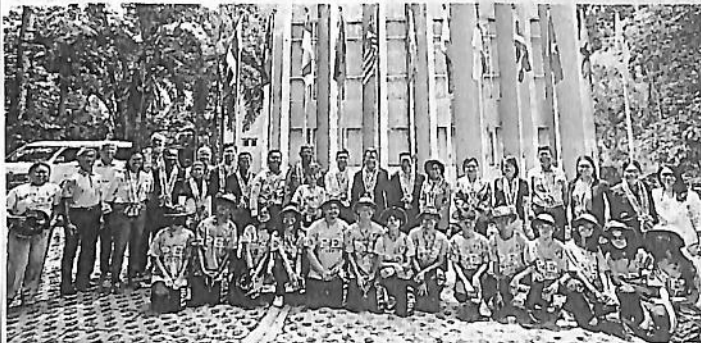


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Asean celebrates 18 years of biodiversity cooperation



ASEAN Secretary General Dr. Kao Kim Hourn, ACB Executive Director Dr. Theresa Mundita Lim and officials lead the celebration of the 18th founding year of ACB, together with ambassadors and representatives from embassies of Asean member states, dialogue and development partners, the Philippines' Foreign Affairs and Environment and Natural Resources officials, and the youth. *AKS PHOTO*

LOS BAÑOS, Laguna—Asean Secretary General Dr. Kao Kim Hourn graced the 18th Founding Anniversary of the Asean Centre for Biodiversity (ACB) together with the ambassadors of the Asean member states (AMS), Philippine government officials, Asean dialogue and development partners, University of the Philippines Los Baños officials and youth representatives at its headquarters in this town on September 10.

ACB Executive Director Dr. Theresa Mundita Lim, in her opening remarks, expressed her gratitude for the support of its partners, the Asean Secretariat, and the AMS in the almost two decades of regional cooperation for biodiversity through the ACB.

The anniversary's theme is "ACB@18:

Nurturing Seeds of Hope for a Sustainable Asean, the Epicentrum of Growth."

"The ACB has come a long way since its establishment 18 years ago...The Centre has made significant strides in terms of facilitating regional cooperation and cross-sectoral collaboration to guard Southeast Asia's web of life," Lim said.

"We affirm our commitment to nurturing seeds of hope through working hand-in-hand with the next generation of biodiversity champions and future leaders of Asean," she added.

Kao shared his priorities and plans for the effective management of the region's natural wealth. He thanked the government of the Philippines for its unwavering support to the ACB, being the host of the regional center.

"The [ACB] is Asean's own dedicated regional center of excellence on biodiversity. Since its establishment back in 2005, ACB has developed to becoming an essential and integral part of Asean cooperation on environment and an effective coordinating body for the [AMS] on biodiversity conservation," Kao said.

With the pandemic recovery and climate change in the forefront, the secretary general pointed out that Asean will need to step up its efforts to promote nature-based solutions, best practices, and greening initiatives.

He underscored the relevance of ACB's work to meet such objectives through its flagship programmes, such as the Asean Heritage Parks (AHPs), the Asean Green Initiative (AGI) and the Asean Youth

Biodiversity Programme.

"I want to thank the active role of ACB in promoting Asean and our collective actions at the CBD (Convention on Biological Diversity) fora. With the Kunming-Montreal Global Biodiversity Framework adopted by the CBD COP-15 in 2022, the role of ACB is increasingly important in facilitating cooperation among the [AMS] to achieve the global and regional objectives on biodiversity, including green economy and blue economy," he added.

New AHPs

ONE of the highlights of the event was the awarding of the certificates to the two newly recognised AHPs in Thailand which were approved during the 17th Asean Ministerial Meeting on the Environment in August in Lao PDR.

Thai Ambassador to the Philippines Tull Traisorat received the certificates from Kao and Lim for the Phu Khleo Wildlife Sanctuary-Nam Nao National Park and the Phu Kra Dueng National Park, as the 56th and 57th AHP, respectively.

Planting seeds of hope: Native trees

YOUTH representatives from Los Baños joined the tree planting, together with the ambassadors of Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Thailand, Singapore and Vietnam.

The activity was in line with the AGI, a flagship greening program of the region that aims to encourage the planting of at least 10 million native trees in 10 Asean member states in 10 years.

The seedlings endemic to the Asean region are yakal (*Shorea stylosa*), katmon (*Dillenia philippinensis*), supa (*Sindora*

supa), red lauan (*Shorea negrosensis*), hairy leaf pitong (*Dipterocarpus scaber*), apitong (*Dipterocarpus grandiflorus*), tailed-leaf apitong (*Dipterocarpus caudatus*), white lauan (*Shorea contorta*) and kalingag (*Cinnamomum mercedii*).

The seedlings were planted around the ACB headquarters located in Mount Makiling Forest Reserve, an AHP, symbolising seeds of hope for a sustainable and greener Asean.

The Department of Environment and Natural Resources believes the event is not only a celebration of the Asean's shared commitment to biodiversity conservation, but also underscores a resolute dedication to achieving the vision of an Asean region, where biodiversity is effectively preserved, sustainably managed, and utilised to enhance the well-being of the people.

"The journey toward biodiversity

conservation remains an ongoing endeavour. We are confident that as the [AMS] strive to navigate the complex areas of conservation, capitalise on the current technological and financial solutions, and advocate for policies that prioritise the protection of our natural heritage, we will be guided by the able leadership and workforce of the ACB," said Jhorace Tupas, senior ecosystems management specialist of the Coastal and Marine Division of the DENR-Biodiversity Management Bureau.

Meanwhile, Permanent Representative of the Philippines to the Asean, Ambassador Hjayceelyn Quintana said, "The Philippines proudly hosts the ACB—the centre of excellence for biodiversity—and we remain dedicated to supporting the efforts of ACB and fellow [AMS] in preserving our natural heritage."



SENIOR Director Dr. Arvin Diesmos (left) of the Biodiversity Knowledge Management Department of ACB, assists Asean Secretary-General Dr. Kao Kim Hourn (center) in the ceremonial tree planting at ACB's headquarters in Los Baños, Laguna. *AKS PHOTO*



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Overfishing, unsustainable tourism threaten Tañon Strait

By JONATHAN L. MAYUGA

LAST month, the University of the Philippines-Diliman College of Science (UPD-CS) reported the declining population of dolphins in Tañon Strait, a body of water in the Visayas that is known to harbor a variety of amazing mammals, including rare whales and dolphins.

This was based on the survey the UPD-CS conducted in the strait from July 20 to 23, focusing on dolphin populations within its southern part.

"The initiative revealed deeply concerning trends, such as a decrease in dolphin numbers, a reduction in species diversity and evasive behavior possibly linked to increasing human activity in the area," the UPD-CS reported.

Fewer, more elusive dolphins

In a news release, Dr. Lemuel Aragon, head of the UPD-CS Marine Mammal Research and Conservation Laboratory (MMRCL) that conducted the survey, said the number of spinner dolphins recorded by the team was fewer compared to past their years' undertakings.

Earlier surveys witnessed vibrant gatherings of diverse species of cetaceans—including numerous kinds of dolphins and species of whales, with groups of as many as 100 individuals spotted in a single day.

However, the recent survey was starkly different, showcasing only three species—spinner dolphins, common bottlenose dolphins and dwarf sperm whales.

Only between 80 and 90 individual spinner dolphins were encountered throughout the four-day survey, compared to 100 in just one day.

Aragones added that the team observed the evasive behavior of the dolphins—which is a sign of possible stress or disturbance due to the persistent presence of aggressive dolphin-watching boats.

Overfishing

By the definition of the Fisheries Code and Amended Fisheries Code, Tañon Strait—that separates the islands of Negros and Cebu in the Visayas—is a

municipal fishing ground, hence off-limits to commercial fishing.

Municipal fishing grounds are the areas between the shorelines and 15 kilometers (km) toward the sea.

The areas are for the exclusive use of small, mostly subsistence fishermen, who have limited capacity to fish in distant waters.

Protectors of Tañon Strait have complained against overfishing in the area, a very important fishing ground both for Negrenses and Cebuans.

Oceana Philippines, an international non-government organization advocating for sustainable fishing practices to conserve the world's oceans, said commercial fishing vessels have been frequenting the Tañon Strait in the past.

The group is also pushing for the implementation of the Amended Fisheries Code and the enforcement of monitoring devices in commercial fishing vessels to detect the behaviors of commercial fishers.

Tourism woes

To generate jobs and livelihood opportunities, local governments in Negros and Cebu promote ecotourism in Tañon Strait, including whale and dolphin watching.

Lately, Aragon said his team observed a notable change in the behavior of dolphins, a possible sign of stress or disturbance, probably due to the persistent presence of aggressive dolphin-watching boats.

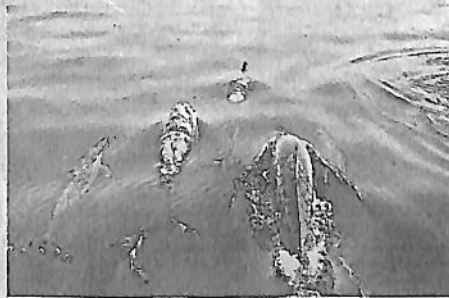
Aragones and his team, who have been monitoring the region since 1997, observed a significant increase in the number of dolphin-watching boats.

Although he noted that the area now hosts around 60 boats, down from the original 260, he still fears that this may still be too much.

"Too many dolphin-watching boats in the area disrupt the cetaceans' habits," he said. Marine mammals like dolphins and whales belong to cetacean family.

Less fish, less dolphin food

ARAGONES suspected that overutilization of the area's resources is a contributing factor to the decline in



THESE dolphins were chased upon Tañon Strait by underwater photography expert Danny Ocampo, a sealer campaigner of Oceana Philippines, during his visit to the area.

the dolphin population.

"There should also be a comprehensive assessment of fisheries resources in the entire strait as there is clearly less food now for these creatures," he explained.

To preserve the delicate ecosystem and to safeguard the remarkable marine mammals in Tañon Strait, the scientists have proposed several measures, including a moratorium on adding more boats to the already existing fleet.

They also underscored the need for a comprehensive assessment of fisheries resources, including fishing activities in Tañon Strait, as a decline in food availability may be exacerbating the dolphins' struggles.

Furthermore, strict monitoring and regulation of illegal unreported and unregulated fishing practices in the area are necessary.

Sustainable tourism practices needed

THE marine mammal expert emphasized the importance of educating boat operators on responsible dolphin-watching protocols.

He said a certification process that trains operators to navigate around dolphins without causing stress could play a pivotal role in protecting the charismatic animals.

Research also suggests that previous ecotourism activities negatively impacted dolphin behavior,

reinforcing the need for responsible and sustainable tourism practices.

Tañon Strait is not the only area affected by unsustainable tourism practices.

Beach resorts like Boracay, El Nido, Puerto Galera and other popular tourist spots have experienced environmental degradation.

Not far from Tañon Strait, the Cebu whale shark watching in Sorsogon and Oslob have led to disturbances of ecosystems and altered behaviors of the whale sharks.

In Sorsogon, tourists on boats chase whale sharks to get a glimpse of the huge docile creature, and swim close to them for photo opportunities.

In Oslob, Cebu, whale sharks are fed to make them stay in the area, altering their supposedly "wild" behavior of filter-feeding plankton in coastal areas, and later on migrate to other areas as they tend to be more dependent on the food provided by tourist operators in the name of "eco-tourism."

Protected area

KNOWN as the Tañon Strait Protected Seascape, it is a Protected Area by virtue of Proclamation 1234 of 1996.

The area is about 160 km long. It connects the Visayas Sea in the north to the Bohol Sea in the south. Its width varies from 5 km to 27 km, with the narrowest point in the south.

With an area of more than 5,000 sq

km, it is the largest marine protected area in the country and is supposed to be protected by the Department of Environment and Natural Resources (DENR), which implements the Expanded National Protected Areas System (EN-PAS) Act.

Demystifying dolphin population decline

THERESA MUNDITA S. LIM, executive director of the Asean Centre for Biodiversity (ACB), said there are several reasons that may cause the decline of cetacean populations.

"Pollution is one. Marine debris, such as plastics can be ingested by dolphins, which mistake them for jellyfish and other sea creatures that they feed on," Lim told the BUSINESSMIRROR in an interview via Messenger on August 21.

Lim, a biodiversity expert, said ghost nets can also entangle large marine wildlife like dolphins, and cause them to drown.

Worse, she said oil spills may also suffocate large marine wildlife, driving them away, the same way that noise pollution can also drive them away.

"Noise can disorient them, thus, affecting their normal movement, driving them away, and could even result in strandings," Lim said.

Meanwhile, she said severely polluted waters due to chemicals, or high levels of bacteria from domestic waste, can cause various diseases.

Lastly, any form of disturbance, such as irresponsible tourism can drive away their populations and they may choose to travel through other routes.

According to Lim, ASEAN is known to host an assortment of dolphin species. Spinner dolphins, she said, naturally occur in other parts of Southeast Asia.

"They migrate across the waters of Indonesia, Malaysia, and the Philippines, as they are found within the Coral Triangle area," she said.

Alarming, sad

REACTING to the UPD-CS report, Oceana Philippines Vice President Gloria Estenzo-Ramos said the declining population of dolphins and what

is happening now in Tañon Strait is both alarming and sad, but said it is not surprising.

"I am not surprised by this development. There still seems to be no sense of stewardship and genuine sense of responsibility to enforce the Enipias Act, and Fisheries Code, to name a few, and the management plan duly approved by DENR under the sterling leadership of then-BMB [Biodiversity Management Bureau] Director Mundita Lim and DENR Regional Director [Isabelo] Montejó," Ramos, an environmental lawyer, told the BUSINESSMIRROR on August 21.

Stronger law enforcement

RAMOS said there's a need to review policies and programs that strengthen protection in Tañon Strait.

"We would like to see the Coastal Law Enforcement in Region 7 [CLEAR 7] to be active again. The Tañon Strait Protected Area Management Board met regularly and approved the resolution to require vessel monitoring measures for all commercial fishing vessels transiting in Tañon Strait," Ramos said.

Ramos's leadership in Oceana saw the creation of many Bantay Dagat (Sea Patrol) volunteer groups in Negros and Cebu, among its various initiatives to protect this very important body of water.

According to Ramos, Cebu province under then-Gov. Hilario Davide III became the first province to require vessel monitoring.

She added that climate change aggravates the impacts of "human indifference, apathy and greed in illegally, shamelessly and recklessly exploiting our declining marine resources."

Ramos agreed that plastics and water pollution abound.

She said, "Sadly, the ecological dots are still to be connected, especially by the duty holders, the government, except for a few."

Ramos pointed out: "The call now is not to wait for duty holders to do the right thing. We have to be that society that we long to be and future generations deserve—less talk, more action—a mantra for all who still cares."



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Duterte leads release of turtle hatchlings at Cleanergy Park

WITH Vice President and Education Secretary Sara Duterte, Aboitiz Power Corp. (AboitizPower) subsidiary Davao Light and Power Co. Inc. (Davao Light) oversaw the release of 152 hawksbill *pawikan* (sea turtle) hatchlings at Aboitiz Cleanergy Park in Punta Dumalag, Matina Aplaya, Davao City.

The released turtle hatchlings came from the third of five nests found this year at the park. In total, over 7,993 hatchlings have been released from the area since 2014.

Besides the Office of the Vice President, the distribution utility was joined by the Department of Environment and Natural Resources (DENR), the Philippine Coast Guard, nongovernmental organizations, and schools and universities, which had their stu-

dents do the releasing.

According to the World Wildlife Fund, sea turtles helped maintain the health of seagrass beds and coral reefs.

Currently, there were seven rescued adult *pawikan* of varying species under the care of Aboitiz Cleanergy Park. These included five hawksbill sea turtles as well as a green sea turtle and an olive ridley turtle. They were provided with veterinary care and were being observed at the facility until they were fully recovered and could be released back into the wild.

The 8-hectare ecological preserve and biodiversity conservation site was managed by Davao Light and Aboitiz Foundation Inc. Since its launch in 2014, it served as a protected nesting ground of



■ Vice President Sara Duterte-Carpio (center), along with Davao Light and other Davaoeños, watch over the youth as they release hawksbill sea turtle hatchlings at Aboitiz Cleanergy Park. CONTRIBUTED PHOTO

the critically endangered hawksbill sea turtle and a home to more than 100 species of endemic and migratory birds and other marine life.



Natl Museum confirms new species of fish in PH

THE National Museum of the Philippines has verified a publication about a new species of fish that was discovered by four researchers in the country.

On a Facebook post on Saturday, the National Museum introduced the *Iniistius bakunawa*, also known as the eclipse-spot razor wrasse.

According to the agency, locals in Bohol are unaware of this fish, which is commonly sold in the local market.

"The eclipse-spot razor wrasse was described from several specimens, including the holotype collected from a public market in Loay, Bohol. Locals have long been familiar with this previously unclassified fish and, at some point, have made it a staple [dish]," the Museum said.

"This brings to light the importance of research such as taxonomy in helping us understand our environment and manage our natural resources, because all too often, such animals have been part of the culture of a certain area yet remain overlooked and [unclassified] as they live in poorly studied environments," it added.

A study on the fish was published by the Raffles Bulletin of Zoology in Singapore on September 4. It was authored by University of the Philippines Los Baños Zoology postgraduate student Kent Sorgon, University of the Philippines Mindanao College of Science and Mathematics Dean Cleto Nañola Jr., the National Museum's own Jasmin Meren, and Australian Museum postdoctoral fellow Yi-Kai Tea.

"*Iniistius bakunawa*, new species, is described on the basis of

nine specimens consisting of the holotype and six paratypes collected from fish markets in the islands of Panay, Cebu, Bohol, and Jolo in the Philippines, and two paratypes from the Dampier Archipelago, Western Australia," the study described the new species.

"The new species is distinctive in having a pale yellowish to jade green body with a large concentric black and white ellipsoid ocellus on the posterior-most edge of its dorsal fin," it further noted.

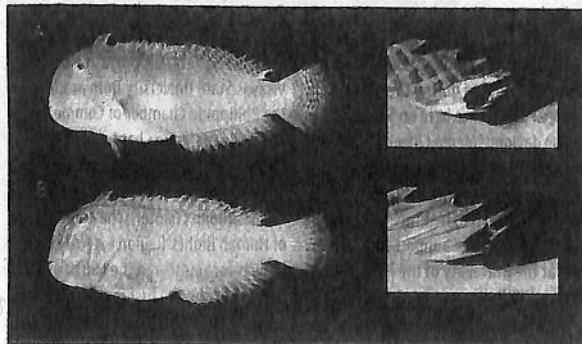
In a post on his Facebook page on the publication date of the study, Sorgon, one of the study's authors, said the species is named after a beast in Visayan mythology.

"The species is named after the Bakunawa, a serpentine beast in Visayan mythology believed to cause an eclipse by devouring the moon or the sun," he wrote. "The epithet also alludes to the eclipse-like spot on the rearmost part of their dorsal fin, where the white margin fades in preservative. Kinda like the fleeting nature of eclipses, right?"

According to Tea, its English name, the eclipse-spot razor wrasse, was named "after the concentric ellipsoidal ocellus on the posterior dorsal fin."

"The epithet alludes to the large concentric black and white ellipsoid ocellus on the rearmost part of their dorsal fin that resembles an eclipse. The white margin fades in preservatives. Kinda like the fleeting nature of eclipses, right?" the National Museum wrote on Facebook.

The study can be accessed at the website of the Raffles Bulletin of Zoology portion of the National University of Singapore-Lee Kong Chian Natural Museum.



NEW FISH Pictures of the *Iniistius bakunawa* obtained by the National Museum of the Philippines on Saturday, Sept. 16, 2023. PHOTOS BY HIROYUKI MOTOMURA AND YI-KAI TEA/ NATIONAL MUSEUM



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Urgency of Land Use Act

The devastation brought about by heavy rains in Cebu and Mandaue cities this week should be a cautionary tale on what unregulated and unsustainable urbanization can do. Major areas in the two cities were transformed into waterways with floods rising to as high as two meters or about 6.5 feet.

Videos that went viral on social media included scenes of a mall's flooded parking lot and a house being swept away by a landslide.

Reports also said that a portion of a major street in downtown Cebu City collapsed due to the heavy rains, creating a sunken area about 15 m long and causing the adjacent concrete fence of Patria de Cebu to collapse; while a wall near the Mahiga Creek also collapsed due to the floods.

These were all caused, not by a typhoon, but by week-long torrential rains resulting in the evacuation of hundreds of families in affected areas and the suspension of classes. The culprit? Poor drainage system and heavy development, according to initial investigation, with a local official noting that waters kept rising because they had nowhere to go and flow as the areas were paved with concrete while existing drainage systems were mostly blocked with silt. The local government has called for short- and long-term solutions to these problems that are not unique to Cebu and are, in fact, replicated across the country, especially in the National Capital Region.

But what makes these floods in Cebu even more significant is that they come on the heels of the controversial "The Rise at Monterrazas," a high-end development project recently unveiled by social media influencer and engineer Slater Young, that will be built on a mountainside in the Queen City of the South. Critics were quick to point out the irony of building what Young dubbed as a "sustainable residential design" but has the potential of damaging its immediate environment.

The Philippine Institute for Development Studies (PIDS), the country's leading think tank, published an article by Lorenzo Makoy that raises questions and concerns about the project's impact on the mountain's ecology, hydrology, and geology, not to mention the people and communities living in it. The article asked three major questions: How many hectares of trees and the mountainside will they be demolishing to build the condos? Did they compare the volume of rainwater that their irrigation system and tanks can collect compared to the volume of rainwater that the trees and mountainside can collect, with roots absorbing water and the soil storing it? Have they conducted an environmental impact assessment or had one [been] conducted?

Young has assured critics that he has secured all the necessary permits, that the area is residential, and that his project will occupy only a "small, small portion" at the foot of the mountain. They have also conducted a soil profile to ensure that the project site is safe to build on—it is made of "very, very hard" limestone, he said.

However, the questions PIDS raised should be asked not only on high-profile projects but also on all development projects that are being planned or being built. How much of the natural ecosystem is lost for every land that is converted to industrial or residential use? How can soil erosion and liquefaction be prevented for every tree that is felled? How will these development projects impact the immediate environment?

This brings us to the crucial approval of the proposed National Land Use Act (NLUA), which, as Inquirer columnist Cielito F. Habito, noted in a December 2022 column, "has been languishing for nearly three decades now." Last May, President Marcos renewed his call for Congress to pass NLUA, which is envisioned to integrate all mandates and policies on the use and protection of lands. The President said it should be given the "urgent attention that it deserves," but made no mention of it in his second State of the Nation Address (the House of Representatives has already passed on third reading last May while the counterpart bill is still pending at the Senate committee level).

The importance of having an NLUA that clearly states the parameters of land use, lays out long-term plans, and institutionalizes reviews on sustainable land use, cannot be emphasized enough amidst the issues of climate change, food security, and population growth. The absence of a national framework has resulted in poor, and often conflicting, land use planning that has seen the unregulated conversion of agricultural, forest, or protected lands to residential, industrial, or mining sites that displaces communities and impacts the environment the way we have seen in Cebu this week. Today, it was a house built on a danger zone that was swept away or an area with no proper drainage system turned into a temporary swimming pool. Tomorrow, it could be an entire village—like what happened during Tropical Storm "Ondoy"—and cities ending up as waterworlds. Must things get worse before action is taken?

If the Marcos administration wants to "Build Better More," it should aggressively push for the enactment of NLUA as part of its legacy.



NGCP WARNS PUBLIC NOT TO PLANT TREES, STAY CLEAR OF TOWERS

THE National Grid Corporation of the Philippines (NGCP) has warned the public against the planting of trees or conducting other activities under its transmission line towers.

"Our lines carry very high voltage power. Planting trees or conducting any activities under transmission lines are detrimental to the company's operations, as well as to public safety," the NGCP said.

The NGCP warned that three things can happen, including electrocution, accidents, and line trippings. The company also urged the public to report activities under the said transmission lines so that the NGCP can conduct the necessary clearing operations. **Butch Gunio**



DILG LEADS NATIONWIDE LAUNCH OF BARANGAY CLEANUP DRIVE

THE Department of the Interior and Local Government (DILG) led the national launch of Barangay at Kalinisan Day (BarKaDa) on Saturday.

During the launch, different local and barangay government units undertook various activities, including coastal cleanup, clean-

ing of clogged waterways, as well as mosquito control in coastal areas, creeks, public parks, roads and other public spaces.

Aside from Metro Manila, provincial DILG branches in Ilocos Norte, Pangasinan and Antique also joined the program.

Meanwhile, the Manila City Jail

— supervised by the Bureau of Fire Protection Manila — also joined the cleanup drive by cleaning the Estero de San Miguel located on Mendiola, San Miguel, Manila City.

DILG encourages around 42,000 barangay (villages) in the country to participate in the initiative.

BarKaDa is a community-based

cleanup drive aimed at promoting a clean and safe environment.

Earlier, DILG Secretary Benjamin "Benhur" Abalos Jr. issued Memorandum-Circular 2023-133, encouraging barangay to pass an ordinance or resolution designating one day a week as BarKaDa.

BarKaDa 2023 focuses on the

theme "Buhayin ang diwa ng bayanihan; mag-volunteer tayong lahat para sa kalikasan."

According to the memorandum circular, the following should be conducted by barangay every cleanup day: dredging of clogged canals, esterós and other waterways; pruning thick bushes or tree branches; draining of receptacles containing stagnant water; dismantling all possible breeding places of mosquitoes; community gardening; and information drive on solid waste management, dengue prevention and community gardening.

On the other hand, the following should be performed by cities, municipalities and provinces: participate in the simultaneous national launching of the cleanup drive program on Sept. 16, 2023;

through P/C/Menro, coordinate with component barangay to organize/participate in weekly cleanup activities in identified cleaning sites within their jurisdiction; ensure the participation of local government employees in the weekly cleanup in their respective barangay; provide additional materials and/or equipment necessary for the cleanup drive of component barangay; provide administrative and financial support to the barangay in the conduct of Barangay Clean-up Day; and ensure compliance of barangay with the circular.

Abalos said, "Come and join us, come and be part of BarKaDa on Saturday, September 16. Let's work together to keep our communities clean for a better and safer environment." **ALEXANDRA J. FURIO**



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ACEN and the Conservation Estate

ACEN is the listed energy platform of the Ayala Group, with aspiration to be the largest listed renewables platform in Southeast Asia. The company presently has -4,500 MW of attributable capacity from owned facilities in the Philippines, Australia, Vietnam, Indonesia, and India – with a renewable share of 98 percent, among the highest in the region. ACEN is committed to transition the company's generation portfolio to 100 percent renewable energy by 2025, and to become a Net Zero greenhouse gas emissions company by 2050.

The Manila Bulletin is happy to include ACEN in its list of speakers at our upcoming second MB Sustainability Forum, to be held this Nov. 21 and 22. With one of our forum's sessions centered on UN Sustainability Development Goals #7, Affordable and Clean Energy; why I'm especially pleased to have ACEN on board is that while the company's operations directly impact on Energy, the company's Sustainability programs meaningfully overlap with other Development Goals such as #8 Decent Work and Economic Growth, #11 Sustainable Communities, #13 Climate Action, #14 Life Below Water, and #15 Life On Land.

How does it achieve all this? One example is by making their flagship sustainability programs become

more than pie-in-the-sky ambitions, but part and parcel of an on-ground multi-pronged initiative they've called a Conservation Estate. Via multiple touch points with the community where their projects are located, ACEN takes on the mantle of ecological stewardship, while attending to their renewable core business.

Within the 81 MW North Luzon Renewables wind farm in Ilocos Norte, ACEN has established a 700-hectare Conservation Estate, with an integrated approach to reforestation, agroforestry, and biodiversity conservation. ACEN has actively engaged the community, with over 500 residents from Pagudpud and Caparispisan empowered as forest rangers and farmers.

From 2014 to 2022, the establishment of a tree nursery has resulted



SEA TURTLE hatchlings being released as part of the ACEN Pawikan Conservation Program presently found in Bangui and Pagudpud.

in the successful cultivation of over 706,000 seedlings. More than 500,000 endemic and fruit bearing trees can now be found across the 356 hectares of previously unproductive land within the Estate. This has resulted in forest patches co-existing harmoniously with the ACEN wind turbines.

Again within the Estate, a 4.5-hectare model farm is the 'petri-dish' for a 10-year agroforestry plan that's been mapped out with the UP-Los Baños College of Forestry and Natural Resources. This was started in 2017, with the objective of providing the local community with sustainable livelihood opportunities, self-reliance, and food security. Some 300 farmers have already benefited from this project.

When talking of biodiversity, remember the forest patches we mentioned? They're now a haven to 146 animal species, including 121 bird species. ACEN's host communities in Bangui and Pagudpud, are



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part of a Sea Turtle "Pawikan" Conservation Program. Since 2013, 1,923 sea turtle hatchlings have been released, monitored and protected. The Program has also rescued 41 adult turtles who were caught in the nets of fishermen.

Here, ACEN works with stakeholders such as the Marine Wildlife Watch of the Philippines, the LGU's of Bangui and Pagudpud, the Philippine Coast Guard, the PNP, and the DENR. It's collaboration, and a strategic sharing of responsibilities. And it's worthwhile noting that when ACEN operates facilities in other countries, this advocacy of biodiversity and conservation stays true. ACEN Australia is involved with the research and conservation of the Tasmanian wedge-tailed eagle; while ACEN Salak and Darajat Geothermal in Indonesia extends efforts in increasing the population of endangered species such as the Javan gibbon.

ACEN's solar farms have their own program - Solar Gulayan. This is an innovative agrivoltaics-based initiative that integrates agriculture in their renewable energy projects by optimizing the available land within a solar plant. ACEN strengthens the supply chain and stimulates the local economy. When possible, it goes further and collaborates with local farming communities, as it does in



PHOTOS OF THE SAME ACEN Ilocos Norte wind farm site, in 2014 (upper photo) and in 2023 (lower photo).

Alaminos Solar and Palauig Solar - in Laguna and Zambales, respectively. To date, the five operational ACEN solar farms in the country have yielded over 3,857 kilos of various crops.

Eco-bricks that incorporate repurposed plastic waste, are used for their projects' perimeter walls and buildings. It's managing plastic waste through a circular economy scheme; with social enterprise Green Antz Builders as the strategic partner that's helping run the recycling facility.

It's all in a day's work for ACEN... a sustainable day's work. Hear more about this when our MB Sustainability Forum happens in November.



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Biotech solution: High school's algae farm aims to curb pollution

MNHS' pioneering project RevAMP one of 3 finalists at T4 'World's Best School' for environmental action

By **Jordeene B. Lagare**
@jordeenelagare

Muntinlupa National High School (MNHS), the oldest and biggest school in Muntinlupa, is banking on biotechnology to shape the next generation of Filipinos and help save the planet.

Located at the New Bilibid Prison reservation in Barangay Poblacion, MNHS conceptualized Revitalized Algae Microfarm Project (RevAMP) in 2017, the first of its kind in the Philippines. It harnesses the potential of microalgae not only to address pollution but also to enhance the quality of education.

"Our primary goal in the implementation of RevAMP is really to capture the environmental protection aspect initially," Jason Albaro, overall project director of RevAMP, says in a Zoom interview with Inquirer.

Just like most public schools in the metropolis, MNHS had inadequate ventilation systems. Poor air quality made students' learning environment less conducive, resulting in declining performance of both teachers and students.

Wanting to deal with pollution problems, MNHS hatched RevAMP (formerly known as Comprehensive Algae Microfarm Project) to cultivate *chlorella vulgaris* algae, best known for the ability to absorb greenhouse gases and pollutants. Their absorption capacity ranges between 17,000 and 18,000 tons of carbon dioxide per acre a year. Simply put, they remove harmful elements in the air we breathe.

Albaro, also the head teacher of MNHS science department,



BOTTLED ALGAE Albaro inspecting MNHS' green micro warriors

With RevAMP, students are able to do things, experiment with things, invent things because of the inspiration and the different methodologies that we are teaching

Jason Albaro
RevAMP project director

describes RevAMP as an experiential farm that allows learners to perform different activities related to science and technology. That way, it increases the ability of learners to contribute to research and development while enhancing their creativity.

"We are doing research here in terms of science investigatory projects and robotics related to that. With RevAMP, students are able to do things, experiment with things, invent things because of the inspiration and the different methodologies that we are teaching," he says.

Better air quality

Now in its sixth year, RevAMP is focusing on improving air quality as Metro Manila is grappling with pollution problems.

"Since we are facing climate change and other problems related to the environment, we would

like to find ways in order for us to be beneficial in the future and to promote sustainability in terms of education," he adds.

Prior to its implementation, it was observed that majority of schools in urban areas suffered from poor air quality. Today, results prove that areas covered by the project have good air quality.

MNHS is implementing the project in schools close to the South Luzon Expressway or those located near dumpsites or creeks. Albaro says the target is to replicate RevAMP in 28 schools in Muntinlupa within this year and eventually, across the region.

Just like any other project, any initiative aimed at reducing air pollution has its own challenges and RevAMP is no exception. Albaro says they are dealing with "a mountain of problems and challenges" in carrying out this initiative, such as lack of funding, change in the MNHS administration every three years and the typhoons that hit the archipelago every year.

"Since our location is within the national penitentiary, there is a security measure that they



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HANDS ON Jason Albaro (center) and Muntinlupa National High School (MNHS) students cultivate microalgae to fight climate change. —PHOTOS FROM JASON ALBARO



MICROFARM The facility inside the New Bilibid Prison where MNHS cultivates greenhouse gas-absorbing algae.

are applying, which hinders us from doing improvements on the project," Albaro says, citing the need to request for clearance to bring in every material that they need. "There are a lot of processes that we need to undergo and also, our students are having difficulty in entering the premises. We are having the problems addressed one by one," he says.

To address these, the school

is linking up with other institutions with similar goals to sustain the project. It has partnered with the Department of Education and the Department of Science and Technology to improve RevAMP's current setup. It also teamed up with the University of the Philippines for the culture and testing of algae.

"As of this time, we have already established the initial

partnership and memorandum of agreement so that we can foster direct connections with these agencies," Albaro says.

International recognition

Amid these setbacks, the school caught the attention of international institutions for its efforts to protect the environment. In 2019, MNHS was one of the 10 recipients of the Zayed Sustainability Prize, which recognizes small to medium-sized enterprises, nonprofit organizations and high schools with impactful, innovative and inspiring sustainable solutions.

Just recently, London-based global education platform T4 Education picked MNHS' RevAMP as one of the three finalists for its "World's Best School" prizes for environmental action, along with Colombia's Institución Educativa Municipal Montessori sede San Francisco and the United Arab Emirates' Mamoura British Academy.

"As the world seeks to tackle a deepening education crisis, you light the path to a better future. It's time for governments everywhere to listen to your voice and learn from your expertise," Vikas Pota, founder of T4 Education and the World's Best School Prizes, says in a statement.

If it wins the prize, MNHS intends to scale up RevAMP. It is now communicating with 17 cities and municipalities to pilot-test. At the same time, it targets to roll out the project in all the regions in the Philippines.

"We will be selecting one university from each of the regions and one regional science high school for the implementation of the RevAMP in their own localities," Albaro says.

The winner of each of the five World's Best School Prizes—for community collaboration, environmental action, innovation, overcoming adversity and supporting healthy lives categories—will be announced in November this year. A prize of \$250,000 will be equally shared among the awardees. **INQ**



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EARTH'S CLIMATE, BIODIVERSITY, LAND, FRESHWATER, NUTRIENT POLLUTION AND 'NOVEL' CHEMICALS ARE OUT OF THE BOUNDS

Study: Earth outside its 'safe operating space for humanity'

EARTH is exceeding its "safe operating space for humanity" in six of nine key measurements of its health, and two of the remaining three are headed in the wrong direction, a new study said.

Earth's climate, biodiversity, land, freshwater, nutrient pollution and "novel" chemicals (human-made compounds like microplastics and nuclear waste) are all out of whack, a group of international scientists said the other day in *Journal Science Advances*.

Only the acidity of the oceans, the health of the air and the ozone layer are within the boundaries considered safe, and both ocean and air pollution are heading in the wrong direction, the study said.

"We are in very bad shape," said study co-author Johan Rockstrom, director of the Potsdam Institute for Climate Impact Research in Germany.

"We show in this analysis that the planet is losing resilience and the patient is sick," Rockstrom added.

In 2009, Rockstrom and other researchers created nine different "broad boundary areas" and used scientific measurements to judge Earth's health as a whole.

The paper was an update from 2015 and it added a sixth factor to the unsafe category.

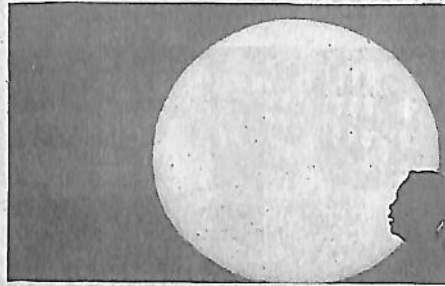
Water went from barely safe to the out-of-bounds category because of worsening river runoff and better measurements and understanding of the problem, Rockstrom said.

These boundaries "determine the fate of the planet," said Rockstrom, a climate scientist. The nine factors have been "scientifically well established" by numerous outside studies, he said.

If Earth can manage these nine factors, Earth could be relatively safe. But it's not, he said.

In most of the cases, the team uses other peer-reviewed science to create measurable thresholds for a safety boundary.

For example, they use 350 parts per million (ppm) of carbon dioxide in the air, instead of



A WOMAN is silhouetted against the setting sun as triple-digit heat indexes continue in the Midwest on August 20 in Kansas City, Missouri. AP/WIDEWORLD

the Paris climate agreement's 1.5 degrees of warming since pre-industrial times. This year carbon in the air peaked at 424 ppm.

The nine factors are intermingled. When the team used computer simulations, they found that making one factor worse, like the climate or biodiversity, made other Earth environmental

issues degrade, while fixing one helped others.

Rockstrom said this was like a simulated stress test for the planet.

The simulations showed "that one of the most powerful means that humanity has at its disposal to combat climate change" is cleaning up its land and saving

forests, the study said.

Returning forests to late 20th century levels would provide substantial natural sinks to store carbon dioxide instead of the air, where it traps heat, the study said.

Biodiversity—the amount and different types of species of life—is in some of the most troubling shape and it doesn't get as much attention as other issues, like climate change, Rockstrom said.

"Biodiversity is fundamental to keeping the carbon cycle and the water cycle intact," Rockstrom said. "The biggest headache we have today is the climate crisis and biodiversity crisis."

University of Michigan environmental studies Dean Jonathan Overpeck, who wasn't part of the study, called the study "deeply troubling in its implications for the planet and people should be worried."

"The analysis is balanced in that it clearly sounds a flashing red alarm, but it is not overly alarmist," Overpeck said. "Importantly, there is hope."

The fact that ozone layer is the sole improving factor shows that when the world and its leaders decide to recognize and act on a problem, it can be fixed and "for the most part there are things that we know how to do" to improve the remaining problems, said Carnegie Mellon chemistry and environment professor Neil Donahue.

Some biodiversity scientists, such as Duke's Stuart Pimm, have long disputed Rockstrom's methods and measurements, saying it makes the results not worth much.

But Carnegie Mellon environmental engineering professor Granger Morgan, who wasn't part of the study, said, "Experts don't agree on exactly where the limits are, or how much the planet's different systems may interact, but we are getting dangerously close."

"I've often said if we don't quickly cut back on how we are stressing the Earth, we're toast," Morgan said in an e-mail. "This paper says it's more likely that we're burnt toast." Seth Borenstein/As Science Writer



Special mosquitoes are being bred to fight dengue

By MARÍA VERZA & MADDIE BURAKOFF
The Associated Press

TEGUCIGALPA, Honduras—For decades, preventing dengue fever in Honduras has meant teaching people to fear mosquitoes and avoid their bites. Now, Hondurans are being educated about a potentially more effective way to control the disease—and it goes against everything they've learned.

Which explains why a dozen people cheered last month as Tegucigalpa resident Hector Enriquez held a glass jar filled with mosquitoes above his head, and then freed the buzzing insects into the air. Enriquez, a 52-year-old mason, had volunteered to help publicize a plan to suppress dengue by releasing millions of special mosquitoes in the Honduran capital.

The mosquitoes Enriquez unleashed in his El Manchen neighborhood—an area rife with dengue—were bred by scientists to carry bacteria called Wolbachia that interrupt transmission of the disease.

When these mosquitoes reproduce, they pass the bacteria to their offspring, reducing future outbreaks.

This emerging strategy for battling dengue was pioneered over the last decade by the nonprofit World Mosquito Program, and it is being tested in more than a dozen countries. With more than half the world's

population at risk of contracting dengue, the World Health Organization (WHO) is paying close attention to the mosquito releases in Honduras, and elsewhere, and it is poised to promote the strategy globally.

In Honduras, where 10,000 people are known to be sickened by dengue each year, Doctors Without Borders is partnering with the mosquito program over the next six months to release close to 9 million mosquitoes carrying the Wolbachia bacteria.

"There is a desperate need for new approaches," said Scott O'Neill, founder of the mosquito program.

Dengue defies typical prevention

SCIENTISTS have made great strides in recent decades in reducing the threat of mosquito-borne diseases, including malaria. But dengue is the exception: Its rate of infection keeps going up.

Models estimate that around 400

million people across some 130 countries are infected each year with dengue. Mortality rates from dengue are low—an estimated 40,000 people die each year from it—but outbreaks can overwhelm health systems and force many people to miss work or school.

"When you come down with a case of dengue fever, it's often akin to getting the worst case of influenza you can imagine," said Conor McMeniman, a mosquito researcher at Johns Hopkins University. It's commonly known as "breakbone fever" for a reason, McMeniman said.

Traditional methods of preventing mosquito-borne illnesses haven't been nearly as effective against dengue.

The *Aedes aegypti* mosquitoes that most commonly spread dengue have been resistant to insecticides, which have fleeting results even in the best-case scenario. And because dengue virus comes in four different forms, it is harder to control through vaccines.

Aedes aegypti mosquitoes are also a challenging foe because they are most active during the day—meaning that's when they bite—so bed nets aren't much help against them. Because these mosquitoes thrive in warm and wet environments, and in dense cities, climate change and urbanization are expected to make the fight against dengue even harder.

"We need better tools," said Raman Velayudhan, a researcher from the WHO's Global Neglected Tropical Diseases Program. "Wolbachia is definitely a long-term, sustainable solution."

Velayudhan and other experts from the WHO plan to publish a rec-



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A DOCTORS Without Borders worker releases laboratory-bred mosquitoes in Tegucigalpa, Honduras, August 24, 2023. AP/ELMER MARTINEZ

commendation as early as this month to promote further testing of the Wolbachia strategy in other parts of the world.

Scientists surprised by bacteria

THE Wolbachia strategy has been decades in the making. The bacteria exist naturally in about 60 percent of insect species, just not in the *Aedes aegypti* mosquito.

"We worked for years on this," said O'Neill, 61, who with help from his students in Australia eventually figured out how to transfer the bacteria from fruit flies into *Aedes aegypti* mosquito embryos by using microscopic glass needles.

Around 40 years ago, scientists aimed to use Wolbachia in a different way: to drive down mosquito populations. Because male mosquitoes carrying the bacteria only produce offspring with females that also have it, scientists would release infected male mosquitoes into the wild to breed with uninfected females, whose eggs would not hatch.

But along the way, O'Neill's team made a surprising discovery: Mosquitoes carrying Wolbachia didn't spread dengue—or other related diseases, including yellow fever, Zika and chikungunya.

And since infected females pass Wolbachia to their offspring, they will eventually "replace" a local mosquito population with one that carries the virus-blocking bacteria.

The replacement strategy has required a major shift in thinking about mosquito control, said Oliver Brady, an epidemiologist at the London School of Hygiene and Tropical Medicine.

"Everything in the past has been about killing mosquitoes, or at the very least, preventing mosquitoes from biting humans," Brady said.

Since O'Neill's lab first tested the replacement strategy in Australia in 2011, the World Mosquito Program

has run trials affecting 11 million people across 14 countries, including Brazil, Mexico, Colombia, Fiji and Vietnam.

The results are promising. In 2019, a large-scale field trial in Indonesia showed a 76-percent drop in reported dengue cases after Wolbachia-infected mosquitoes were released.

Still, questions remain about whether the replacement strategy will be effective—and cost effective—on a global scale, O'Neill said. The three-year Tegucigalpa trial will cost \$900,000, or roughly \$10 per person that Doctors Without Borders expects it to protect.

Scientists aren't yet sure how Wolbachia actually blocks viral transmission. And it isn't clear whether the bacteria will work equally well against all strains of the virus, or if some strains might become resistant over time, said Bobby Reiner, a mosquito researcher at the University of Washington.

"It's certainly not a one-and-done fix, forever guaranteed," Reiner said.

Special mosquitoes bred in Colombia

MANY of the world's mosquitoes infected with Wolbachia were hatched in a warehouse in Medellín, Colombia, where the World Mosquito Program runs a factory that breeds 30 million of them per week.

The factory imports dried mosquito eggs from different parts of the world to ensure the specially bred mosquitoes it eventually releases will have similar qualities to local populations, including resistance to insecticides, said Edgard Boquin, one of the Honduras project leaders working for Doctors Without Borders.

The dried eggs are placed in water with powdered food. Once they hatch, they are allowed to breed with the "mother colony"—a lineage that carries Wolbachia and is made up of more females than males.

A constant buzz fills the room where the insects mate in cube-shaped cages made of mosquito nets. Caretakers ensure they have the best diet: Males get sugared water, while females "bite" into pouches of human blood kept at 97 degrees Fahrenheit (37 degrees Celsius).

"We have the perfect conditions," the factory's coordinator, Marlene Salazar, said.

Once workers confirm that the new mosquitoes carry Wolbachia, their eggs are dried and filled into pill-like capsules to be sent off to release sites.

Doctors enlist help in Honduras

THE Doctors Without Borders team in Honduras recently went door-to-door in a hilly neighborhood of Tegucigalpa to enlist residents' help in incubating mosquito eggs bred in the Medellín factory.

At half a dozen houses, they received permission to hang from tree branches glass jars containing water and a mosquito egg-filled capsule. After about 10 days, the mosquitoes would hatch and fly off.

That same day, a dozen young workers from Doctors Without Borders fanned out across Northern Tegucigalpa on motorcycles carrying jars of the already hatched dengue-fighting mosquitoes and, at designated sites, released thousands of them into the breeze.

Because community engagement is key to the program's success, doctors and volunteers have spent the past six months educating neighborhood leaders, including influential gang members, to get their permission to work in areas under their control.

Some of the most common questions from the community were about whether Wolbachia would harm people or the environment. Workers explained that any bites from the special mosquitoes or their offspring were harmless.

María Fernanda Marín, a 19-year-old student, works for Doctors Without Borders in a facility where Wolbachia-infected mosquitoes are hatched for eventual release. She proudly shows neighbors a photo of her arm covered in bites to help earn their trust.

Lourdes Betancourt, 63, another volunteer with the Doctors Without Borders team, was at first suspicious of the new strategy. But Betancourt—who has been sickened by dengue several times—now encourages her neighbors to let the "good mosquitoes" grow in their yards.

"I tell people not to be afraid, that this isn't anything bad, to have trust," Betancourt said. "They are going to bite you, but you won't get dengue."