

28 May 2023 Sunday



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Marcos wants land use law institutionalized

By ALEXIS ROMERO

President Marcos is pushing for the passage of a law instituting a national land use policy, citing the need for all government entities to integrate their development plans and to work together to harmonize their projects.

During the launching of the Pier 88 in Liloan, Cebu yesterday, Marcos said the province stands to greatly benefit from a systematic and integrated planning that would further solidify its urban development foundation and consolidate its socio-economic strength.

He added that transportation projects such as Pier 88 and Cebu Bus Rapid Transit system "showcase kindred examples of good urban planning."

"Let us imagine if these kinds of projects are replicated across the country, laterally and locally coordinated, and harmonized both on the provincial and national levels – then we could say that we are genuinely closer to our ambition of a prosperous, inclusive, and resilient society," the President said.

"Hence, we highlight the essential importance of holistic, systematic and integrated planning in our country today, as we slowly but collectively tread along that path," he added.

Marcos went on to highlight the need for a law on national land use

policy, calling it "terribly important."

"Allow me to reiterate the urgency of enacting a (National) Land Use Policy for our country, which is a priority legislative agenda of this administration. I have had the opportunity to work on this matter when I chaired the Senate urban planning, housing and resettlement committee some years ago. It never materialized for reasons beyond our control. The pandemic is also included in that circumstance," Marcos said.

"This time, we will see to it that this measure shall be given [the] urgent attention that it deserves, cognizant of its fundamental importance to our holistic national development," he added.

Marcos said through a national physical framework plan, all mandates and policies on land use shall be integrated, from watersheds to farm lands, from cultural heritage sites to ancestral domains, from protected to disaster-prone areas. Such a policy involves a whole-of-government approach, as local governments must ensure that their respective physical and land use plans shall conform to and shall be consistent with the national plan, he added.

"Moreover, national and local governments will tap the budding profession of environmental planners for its technical expertise in the crafting of accurate and well-aligned

physical and land use plans," the Chief Executive said.

Marcos thanked the House of Representatives for passing its version of the national land use bill on third reading just a few days ago.

"It is terribly important. I have been following this from the time that I was governor to the time that I was congressman until the time I was senator and I continue to do so now as President," he said.

Smart port

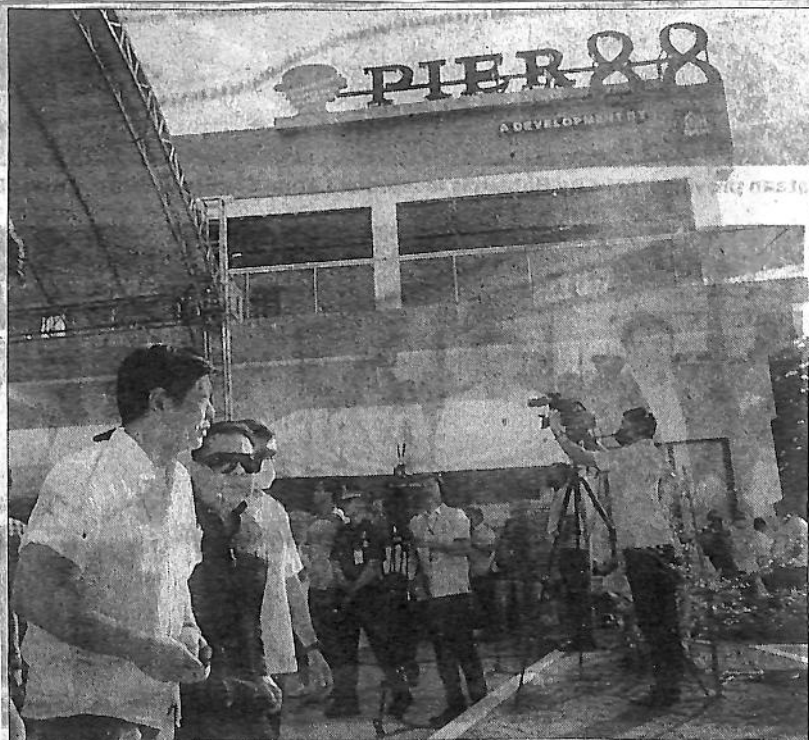
In the same speech, Marcos welcomed the grand launch of Pier 88, saying it would offer a faster transport alternative for passengers and cargo and "immensely" serve the interests of the people of Liloan and beyond.

"It's encouraging to see that a massive undertaking such as this, where the local government takes the lead and collaborates with the private sector and other LGUs, in the pursuit of objectives consonant with the national development agenda," he said.

Pier 88, Cebu's first smart port, was developed by Topline Group of Companies in partnership with Pier 88 Ventures Inc. and the local government of Liloan.

The three-hectare port is expected to benefit passengers traveling from the northern part of Metro Cebu who commute daily to their workplaces in Mandaue City, Lapu-Lapu City and Cebu City, and vice versa.

According to *Radio Television Malacñang*, Pier 88 will incorporate a smart port system, featuring an automated ticketing system with QR codes and radio frequency identification-ready system to be integrated in a mobile application. The port will initially serve a route connecting Liloan and Mactan wharf. Once the port becomes fully operational, travel time between Liloan and Mactan is expected to significantly shorten from about two hours by land to only about 30-45 minutes.



President Marcos visits Pier 88, one of Cebu's transportation projects, during its launching in Liloan town yesterday.



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President reiterates urgency of national land use policy

PRESIDENT Ferdinand Marcos Jr. on Saturday vowed to give "urgent attention" to the proposed measure institutionalizing a national land use policy that will ensure the country's holistic development.

In a speech during the grand launching of Pier 88 in Liloan, Cebu, Marcos said he would persuade Congress to immediately pass the proposed National Land Use Act (NLUA), one of his priority bills.

"Allow me to reiterate the urgency of enacting a [National] Land Use Policy for our country, which is a priority legislative agenda of this

administration," Marcos said.

"This time, we will see to it that this measure shall be given [the] urgent attention that it deserves, cognizant of its fundamental importance to our holistic national development."

Marcos also thanked the House of Representatives for its "timely and significant" approval of House Bill (HB) 6128 or the proposed NLUA.

On Monday, the House approved on final reading the proposed NLUA which seeks to provide the national framework for the development of the

country's land to ensure its optimum use, consistent with the principle of sustainable development.

Marcos said he has personal knowledge of the significant impact of the bill, adding that he worked on the measure as a senator and chairman of the Urban Planning, Housing and Resettlement Committee.

"Through a [national] physical framework plan, all mandates and policies on land use shall be integrated — from watersheds to farmlands from cultural heritage sites to ancestral domains, from protected

disaster-prone areas," Marcos said.

The passage of the bill is "terribly important," Marcos said, adding that local governments must ensure that their respective physical and land use plans "will conform to and will be consistent with the national plan."

"Hence, the whole-of-government approach. Moreover, national and local governments will tap the budding profession of environmental planners for its technical expertise in the crafting of accurate and well-aligned physical and land use plans," he said. **PNA**



'Pinoys lack discipline in waste management'

AN official of the Department of Science and Technology (DoST) believes that Filipinos lack discipline when it comes to waste management.

During a recorded video interview with *The Manila Times*, DoST Undersecretary for Research and Development Leah Buendia said Filipinos have a responsibility in alleviating the problem of waste disposal.

"Initially, my observation is that if we're in another country, we can easily comply with the rules and regulations when it comes to waste management. But if you are here in our country, it looks like we lack the discipline to have waste management," she said.

Buendia also pointed out that the country's growing population generates more waste.

She also said waste management policies should be stricter for "discipline to be inculcated in each of the members of a community."

The DoST official also said the adoption of technologies would be vital in providing solutions to waste management.

She also explained that there are two kinds of wastes, solid waste and "waste water" or marine waste.

"In the Philippines, we produce solid wastes, particularly plastic waste, in the amount of 16 million metric tons, and this is a huge amount," Buendia explained. "And it has been projected that this would increase to about 165 percent by 2025, and the biggest volume comes from Metro Manila."

Citing figures from the National Solid Waste Management Commission, Buendia said that Metro Manila generated 9,500 tons of waste per day in 2020, and it is projected to be 10,400 tons per day in 2025.

She also cited that for marine waste, seven of the 10 largest plastic emitting rivers in Asia are in the country, among them the Pasig River, the Tullahan River and the Rio Grande de Mindanao River.

"This brings the country's total marine plastic input to at least 36 percent of the total ocean plastics emitted from Asia," she said.

The DoST's solutions in eradicating plastic waste include the Post-Radiation Reactive Extrusion (PRREX), where plastic wastes could be upcycled to produce high-value materials, and the Integrated Waste Water Survey and Technological Options (Iwasto), which assesses the solid waste management activities in the Manila Bay watershed and develops an integrated solid waste information and technology management system.

"We can actually control the pollution, but I don't think there will be a reversal of how it is right now," Buendia admitted. "If there is a very strong whole-of-government and even whole-of-society intervention, I think we can make it not to the pristine state of what it has been before, but this could be converted to a more manageable and more livable environment than we have."

As for the microplastic problem in Laguna de Bay, which two Mindanao State University scientists cited in their study, she urged the public not to use plastics or use biodegradable plastics.

"Plastics in the environment are coming from the degradation of the plastics," Buendia said.

She, however, cited that a high school student invented a measuring device for microplastics in the water system.

"There is another measurement that has been done in the air and that is anything aside from oxygen that goes inside our lungs," Buendia said.

"What more plastic, because it cannot be degraded by our bodies, so that is why a lot of



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illnesses are coming from these kinds of non-biodegradable microplastics that we ingest into our bodies."

"I think filtering could be very helpful," she added. "When we use masks, it is also a preventive measure ... but first and foremost, never use plastics."

An earlier *Manila Times* interview with Mindanao State University scientists Prof. Cris Gel Loui Arcadio and Dr. Hernando Bacosa showed that 100 out of 123 items in Laguna de Bay were extracted as microplastics.

Pimentel bats for banning imported solid waste

In a related development, Senate Minority Leader Aquilino "Koko" Pimentel 3rd has filed Senate Bill (SB) 2206, an "Act Banning the Importation of Solid Waste."

Pimentel said in the 17th Congress, he authored Proposed Senate Resolution (PSR) 553 on Dec. 4, 2017 regarding the so-called Canadian trash and PSR 939 on Nov. 13, 2018 regarding the so-called Korean trash.

These two incidents of trash dumping indicate that the Philippines is well on the path of the so-called global waste trade.

The minority leader stressed that while the Canadian trash and the Korean trash have been shipped back to Canada and South Korea, respectively, these incidents of trash dumping can be repeated at any time.

Therefore, a law to prohibit the importation of solid waste is urgently needed to prevent the entry of these wastes into our country.

Pimentel explained that he filed SB 2206 pursuant to the Constitutional duty and inter-generational responsibility to protect and advance the right of our people to a balanced and healthy ecology.

He said by banning the importation of solid waste, we prevent the country from being a dumping site of the same from other countries.

If enacted, it shall be unlawful to import any solid waste as defined in Republic Act (RA) 9003 known as the "Ecological Solid Waste Management Act of 2000" and its implementing rules and regulations into or within Philippine territory, including the Special Economic Zones as defined in RA 7916 known as the "Special Economic Zone Act of 1995," as amended, and use, treat or process the same.

Any entity or person who shall import any solid waste or otherwise use, treat, or process the same in violation of this Act shall be punished with imprisonment of 12 years and one day to 20 years, at the discretion of the court.

If the offender is a foreigner, the offender shall be deported and barred from any subsequent entry into the Philippines after service of his/her sentence.

In the case of corporations, associations or other entities, the penalty shall be imposed upon the managing partner, president or chief executive officer, in addition to the payment of exemplary damages of at least P500,000.

If it is a foreign entity, the director and all its responsible officers shall be barred from subsequent entry into the Philippines, in addition to the cancellation of its license to do business in the Philippines.

If the offender is a government official or employee, the penalties of automatic dismissal from office and permanent disqualification from holding any elective or appointive position in the government shall be imposed, in addition to the penalties.

**ARIC JOHN SY CUA AND
JAVIER JOE ISMAEL**



Siphon vessel arrives in Phl, headed for Mindoro

The vessel that will siphon off the remaining oil from the sunken *MT Princess Empress* has arrived in the Philippines to complete the final phase of the oil slick cleanup around affected areas, possibly by next month.

Presidential Communications Secretary Cheloy Garafil said dynamic support vessel *Fire Opal* arrived at the Riviera Pier in Subic Bay Freeport Zone last Friday.

It is scheduled to depart tonight for Batangas and reach its destination tomorrow.

"Officials said the siphoning operations may last up to 30 days," Garafil said.

Office of Civil Defense administrator Ariel Nepomuceno said the extraction of the remaining oil from the capsized *MT Princess Empress* would last for 20 to 30 days "if weather conditions are favorable."

The process will involve

transferring the collected oil waste to a tanker before it is disposed of.

Fire Opal was chartered by the Malayan Towage & Salvage Corp. and contracted by the Protection & Indemnity Insurance Club.

Oil spill from *MT Princess Empress*, which sank off Naujan town in Mindoro Oriental last Feb. 28, has affected about 26,000 fisherfolk. The tanker was carrying 800,000 liters of industrial fuel oil when it capsized.

The oil spill has reached the provinces of Antique, Palawan and Batangas.

Defense department officer-in-charge Undersecretary Carlito Galvez Jr. reported recently that 62.95 kilometers or 84.26 percent of the affected coastline have already been cleaned up as of May 10.

Various agencies and organizations collected a total of 6,801 liters of oil waste and



The dynamic support vessel *Fire Opal* arrives at the Subic Freeport Zone's Riviera Pier on May 26. The *Fire Opal* will siphon the remaining oil onboard the sunken *MT Princess Empress*.

300,603.60 liters of oil-contaminated waste in the waters of the affected provinces.

Last March, remotely operated Japanese salvage vessel

Shin Nichi Maru arrived at the port of Calapan in Oriental Mindoro to assist in the oil spill cleanup.

- Alexis Romero



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THE EXPONENT OF PHILIPPINE PROGRESS
SINCE 1898
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THE NATION'S LEADING NEWSPAPER

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Oil spill cleanup done by June, Palace assures

The last phase of the oil spill cleanup in Oriental Mindoro will be completed within a month, Malacañang said on Saturday, May 27.

Communications Secretary Cheloy Garafil gave the assurance after the arrival of a dynamic support vessel (DSV), which will be used to siphon the remnants of the 800,000 liters of industrial fuel oil from sunken MT Princess Empress.

The DSV Fire Opal, Garafil said, would finish the last phase of the cleanup, and the operations may take 20 to 30 days.

"The DSV Fire Opal, which ► 4

Oil spill cleanup done by June, Palace assures 1◀

arrived at the Riviera Pier in Subic Bay Freeport Zone last Friday, will extract and transfer oily waste to a tanker, then dispose of the collected oil. Officials said the siphoning operations may last up to 30 days," Garafil said.

The vessel will sail from Subic on the night of May 28 and is expected to arrive in Batangas the following day.

It will then proceed to the designated mission area, she added.

Citing the report of Philippine Coast Guard (PCG) Commandant Admiral Artemio Abu, Garafil said the extraction would be done in 20 to 30 days.

The operations will last a month, if weather conditions are "favorable," she said, based on a separate report submitted by Office of Civil Defense (OCD) Administrator Ariel Nepomuceno.

The DSV was chartered by the Malayan Towage and Salvage Corp. and contracted by the Protection and Indemnity Insurance Club (P&I).

In March, Marcos expressed hope the cleanup would be done in less than four months.

As of May 10, about 84 percent, or 62.95 km. of the 74.71-km. shoreline affected by the oil spill in Oriental Mindoro has been cleaned up, according to a report transmitted to Marcos by Department of National Defense chief Carlito Galvez Jr. earlier this month.

The OCD recorded 6,801 liters of oil waste and 300,603.60 liters of oil-contaminated waste that have been collected through the efforts of various agencies and organizations, according to Galvez's report.

In March, the Japanese salvage vessel Shin Nichi Maru, a remotely operated vehicle (ROV), arrived at the port of Calapan in Oriental Mindoro and was immediately deployed to the mission area to help in the cleanup efforts.

The MT Princess Empress ran aground in the waters off Naujan, Oriental Mindoro on Feb. 28 due to engine trouble. It sank the following day.

The Marcos administration has provided P516,873,483 worth of early recovery assistance to about 96,256 residents affected by the oil spill. (PNA)



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The Manila Times

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Palace sees oil spill cleanup done by June

BY CATHERINE S. VALENTE

THE government is aiming to complete the mop-up of the oil spill from the sunken MT Princess Empress in Oriental Mindoro within a month, Malacañang said on Saturday.

"The DSV (dynamic support vessel) Fire Opal, which arrived at the Riviera Pier in Subic Bay Freeport Zone last Friday, will extract and transfer oily waste to a tanker, then dispose of the

collected oil. Officials said the siphoning operations may last up to 30 days," Presidential Communications Secretary Cheloy Garafil said in a statement.

DSV Fire Opal was chartered

by the Malayan Towage & Salvage Corp. and contracted by the Protection & Indemnity Insurance Club.

The Office of Civil Defense (OCD) offered the same time estimate.

"The operations will last for 20 to 30 days, if weather conditions are favorable, meaning the remaining oil from the sunken vessel will be retrieved," OCD Administrator Ariel Nepomuceno said.

In an update to President

Ferdinand Marcos Jr. earlier this month, Defense Senior Undersecretary Carlito Galvez Jr. reported that of the 74.71 kilometers of coastline affected by the oil spill, 62.95 kilometers, or 84.26 percent, had already been cleaned up as of May 10, 2023.

Galvez added the OCD recorded a total of 6,801 liters of oil waste and 300,603.60 liters of oil-contaminated waste collected in the area through the help of various agencies and organizations.



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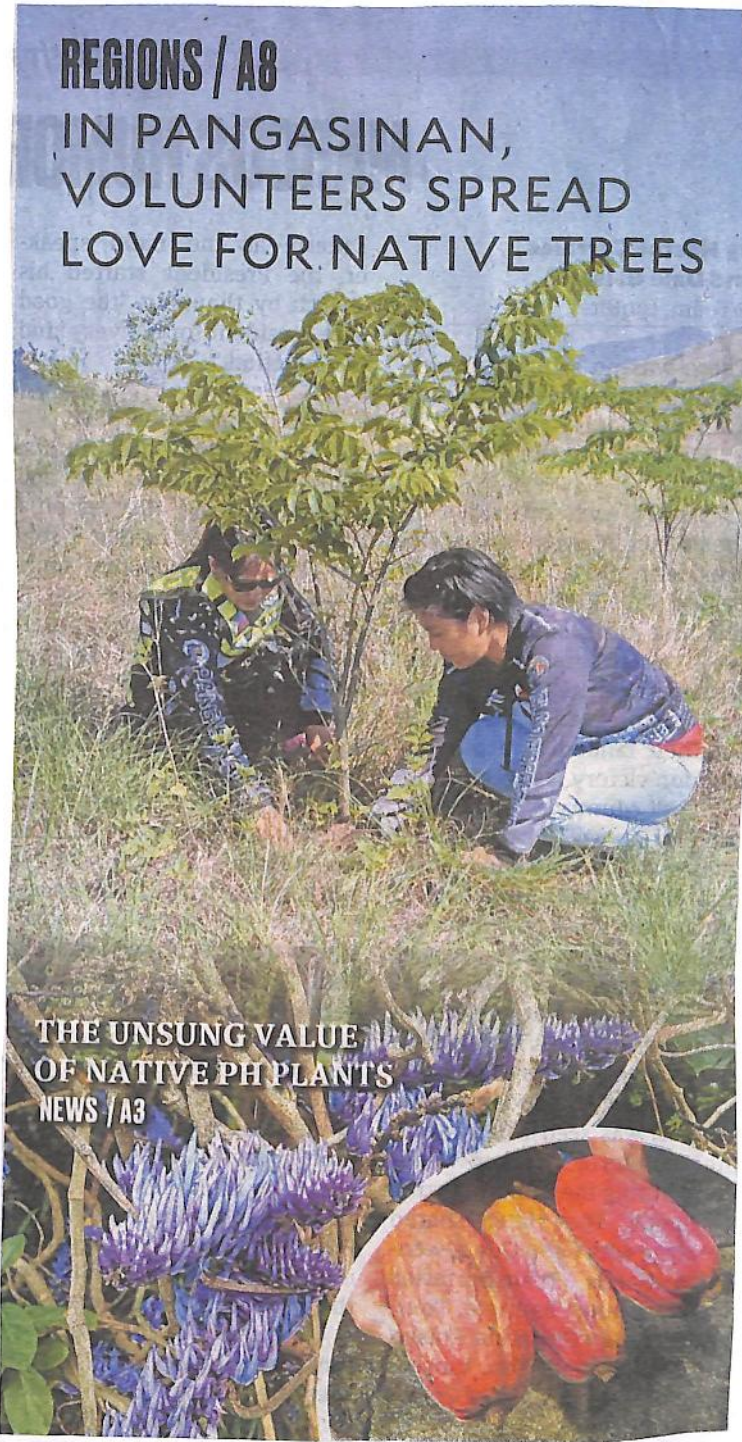
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IN PANGASINAN,
VOLUNTEERS SPREAD
LOVE FOR NATIVE TREES



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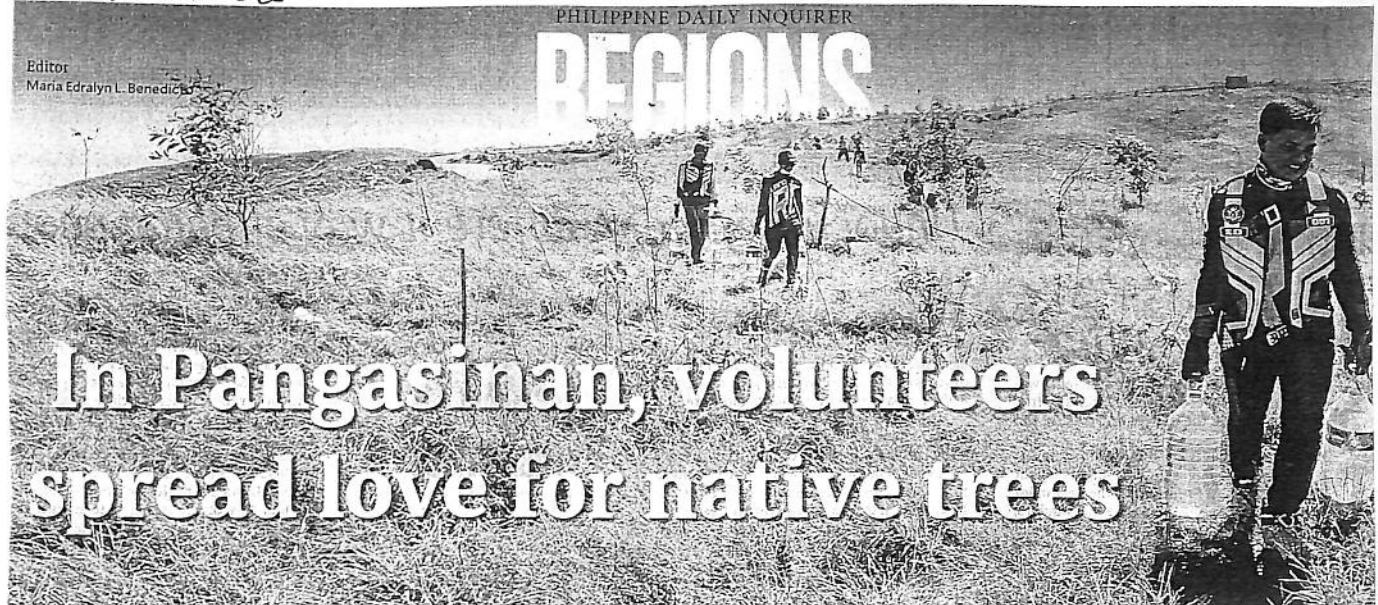




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Native trees

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In Pangasinan, volunteers spread love for native trees

SUSTAINING LIFE Members of Eagles Club lug water jugs to the upland arboretum along Daang Kalikasan in Mangataram, Pangasinan, during the group's recent watering activity. Volunteers puncture holes in the jugs and put them beside the seedlings to keep the soil wet before their next visit. —PHOTOS BY YOLANDA SOTELO

MANGATAREM, PAN-GASINAN—A tree blooming with dainty pink and white flowers greeted a group of volunteers on their way to an upland arboretum of native trees along Daang Kalikasan in this agricultural town on April 29.

The flowering tree turned out to be *patastik pula* (*Decaspermum blancoi*), one of the rarest native trees in the country.

"It's not on the list of the native trees we knew and planted," Edward Muego, 52, a member of Pangasinan Native Tree Enthusiasts (PNTE), told the Inquirer.

This group of native tree lovers and volunteers trekked to the mountain to water around 3,000 tree seedlings and saplings that were planted in the past two years.

Around 2 hectares of the arboretum (botanical garden devoted to trees) have been planted with different native tree seedlings, said Celso Salazar, PNTE president and a retired official of the Department of Environment and Natural Resources (DENR).

The area may seem small, but it is proof that the love for native trees is germinating in Pangasinan, sown by a group of six people with different backgrounds sometime during the pandemic, Salazar said.

Among themselves, they talk about native trees whose names sound bizarre to most people—*balitbitan*, *kalumpit*, *siar*, *kamagong*, *yakal-saplungan*, *tibig*, *hauli siar*, *supa*, *kalumpang*, *igyo*, *paguringon*, *balai lamok*, *tindalo*, *is-is* and *kusibeng*.

By Yolanda Sotelo
@yzsoteloINQ

Growers, not planters

There are, of course, still some recognizable trees like narra, molave, kamansi, *yakal*, *ylang-ylang* and *baeg*. "But they, too, are fast becoming unfamiliar to the new generation," Salazar lamented.

PNTE members are tree growers, not planters, Muego

said, stressing that while some groups just plant and leave the seedlings on their own to survive, "we nurture the seedlings until they can survive on their own."

This is why every two weeks, especially during hot days, volunteer groups would trek to the reforestation area, equipped with water jugs or used bottles that they fill up from a spring along Daang Kalikasan, and lug them up to the mountain plantation.

On the day the Inquirer visited the plantation, two groups of volunteers—the Eagles Club and the Island Riders Club—were there to water the seedlings and to remove weeds growing around them.

The water containers are used as sort of "drip irrigation devices," as volunteers puncture holes in them and put them beside each seedling. The dripping water would be enough for the saplings and seedlings to "drink" until the next watering activity.

Also, dried cow dung is put around the seedlings as fertilizer.

According to Salazar, PNTE uses social media to solicit support for its mission, as

stated in the group's slogan, "Spread love for native trees." They also get inspiration from similar groups like the Society of Native Tree Advocates and Nabunturan Native Tree Enthusiasts in Davao de Oro, which uses school grounds to create arboretums or botanical gardens devoted to native trees.

PNTE is starting to partner with schools to put up arboretums on campuses, providing seedlings for free and technical assistance on how to care for them.

Salazar is also thankful for donors of seedlings from all over the country, such as Shema Manzano, a native tree enthusiast from Davao de Oro who maintains a nursery and sends seedlings to PNTE for free.

Most of PNTE's members are of the older set, among them retirees looking for significant activities to while away their time but soon developed a passion for native trees, Salazar said.

But there are also young ones like Jerico Navasca, a 21-year-old environmental science student at Pangasinan State University. He learned about native trees during



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educational trips, and fell in love with them.

Fast vanishing

"I know that there is a need to plant native trees, which we are fast losing, and I try in my own little way to help by encouraging my classmates to plant, too," Navasca said.

Salazar said the mountains of Mangatarem used to be cov-

ered with native trees until massive logging activities, both legal and illegal, decimated the forests. There are still pockets of forests that are remnants of the rainforests, usually in valleys where spring water is available.

In the 1960s, exotic tree species like mahogany and Gmelina, which are both invasive and not hospitable to local bird species, were introduced in the country.

"The DENR encouraged the propagation of the exotic trees for economic purposes as they are easy to grow and propagate and have rapid growth, so they can be harvested in a short time. But because of this, we have forgotten that we have sturdy, resilient and beautiful trees that are now fast vanishing from our land," Salazar said.

Tommy Valdez, another native tree enthusiast, said there was a need to try to revive native trees that were believed to be extinct, expand the local natural habitat, protect watershed areas and conserve biodiversity.

"Native trees are better planted in protected areas, watersheds and urban areas," he said.

Salazar said it was during the lockdown in early 2020 when the idea of establishing a native tree farm cropped up.

He was "locked down" in the family house in Laguna and could not travel back to Dagupan City, where he currently lives. To improve his mental health, he would jog every early morning in their tree-lined subdivision in Laguna and collect native tree seeds which he then planted in pots.

Salazar then created a Facebook page on native trees, where he posted photos and asked like-minded people to join and share their experiences planting native trees. The page currently has 1,200 followers.

Legal entity

Eventually, he invited six friends, one of whom is Valdez, to transform the social media page into a legal entity by registering PNTE with the Securities and Exchange Commission.

"We applied with the DENR for a site to reforest under the National Greening Program," Salazar shared. "We were initially granted a 5-ha area of public land along the Daang Kalikasan in Mangatarem. Eventually, the area was expanded to 20 ha."

Volunteers started to show up, and Salazar supervised the planting that started in June 2021 while he was stuck in Laguna due to COVID-related travel restrictions.

It was only in December 2021, when pandemic protocols eased, that he was able to go back to Dagupan City.

PNTE officials acquired native tree seedlings from the University of the Philippines Los Baños-College of Forestry and Natural Resources and coordinated with Computronix University and a religious group, which mobilized their students and members to plant the seedlings.

PNTE, Salazar said, wants to create a canopy of native trees up in the mostly barren mountains of Mangatarem.

"There is no plan to harvest the trees. We want them to grow and flourish. We want to saturate the bald mountains with native trees, one tree at a time," he said. INQ



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RAISING AWARENESS Celso Salazar, president of the Pangasinan Native Tree Enthusiasts (PNTE), introduces rare native tree seedlings to passersby during the tourism-trade expo, one of the events held during the "Pista'y Dayat" (sea festival) celebration in the province last month. Salazar says PNTE is trying to instill love for native trees in Pangasinenses.



UPKEEP Riders Annaliza Bautista, 41, of Dagupan City, and Donnalyn Carpio, 28, of Binmaley, Pangasinan, volunteer to help in the maintenance of the upland arboretum by removing weeds around narra saplings.



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The unsung value of native PH plants

By **Gregg Yan**
Contributor

What are the most familiar Pinoy fruits? Mangoes, bananas, pineapples and papayas probably come to mind—but did you know that Philippine forests harbor hundreds of lesser-known fruits, nuts and herbs?

Alupag or Philippine lychee tastes like the lychees originally imported from China. *Saba* or native bananas are loved by millions of Pinoys. Kamansi is our local version of *langka*. Sticky *tibig* fruits are produced by our native fig trees. In our mountains sprout sour berries like *alingaro*, *bignay* and *sapinit*. And though most of the world's mango trees originally hailed from India, we have our own indigenous mangoes like *pahutan* and the fragrant *kuini*.

The Philippines has strong agrobiodiversity resources. The Convention on Biological Diversity defines agrobiodiversity as a broad term that includes all components of biological diversity relevant to food and agriculture, plus all components of biological diversity that constitute agricultural ecosystems or agroecosystems. This includes the variety and variability of animals, plants and microorganisms at the genetic, species and ecosystem levels that sustain key functions of agroecosystems. Agrobiodiversity covers not just genetic resources, but the diversity of all species and agroecosystems affecting agriculture.

The pandemic and postpandemic periods, coupled with intensifying climate change effects, have highlighted the importance of agricultural diversity and biodiversity-friendly agriculture, plus the global rethinking of our agriculture and food systems.

These new concepts now form the foundation for economically viable, resilient and sustainable agriculture. Discussing agrobiodiversity is not just about conservation and sustainable use, but about the eventual need for a systematic evolution of prevalent agricultural systems toward a more biodiversity-friendly paradigm.

UP Arboretum treasures

Inside the sprawling University of the Philippines (UP) Diliman campus in Quezon City lies the UP Institute of Biology and Energy Development Corp.'s (UPIB-EDC) Threatened Species Arboretum. Inaugurated in 2014, the one-hectare park features over 70 native tree species and serves two vital functions—as a gene bank for endangered trees in case wild populations drop below sustainable levels and to educate students and the greater public about the country's native flora.


This writer recently visited the UP Arboretum in connection with the observance of the International Day for Biological Diversity. The occasion, marked every May 22, is a United Nations campaign highlighting global biodiversity issues and solutions.

"We have so many indigenous tree species that very few Pinoys know about," explains Roniño Gibe, a forester for EDC's Binhi program. "One of our goals is to popularize the conservation of our native plants, especially our threatened Philippine native trees."

Though definitions slightly vary, in general, native plants naturally occur throughout a country, whereas indigenous plants thrive only in particular locales. Endemic plants can only be found in one country, whereas naturalized plants are exotic imports which have settled into new countries over several centuries.

Eclipsed by the exotic

The Philippines hosts at least 10,107 plant species, as of a 2013 study by Barcelona et al. Over 57 percent of the country's plants are endemic, as per a 1996 study by Oliver and Heaney. The great majority of plants currently cul-



Many of our indigenous flora are neglected and underused, so their potential to provide us with nutrients is not fully utilized

Charina Javier

Senior science researcher
at DOST-FNRI

tivated in Pinoy orchards, farms and gardens, however, are exotic or naturalized plants originally imported from other countries.

Pineapples for instance came from South America, papayas from Mexico, lanzones from Malaysia. The ubiquitous trees found in many abandoned lots, like sampaloc and *aratilis*, came from Africa and Central America, respectively. Despite being called the Philippine lemon, even the iconic calamansi probably originated from the Himalayas.

Some native Philippine plants however, successfully broke through as mainstream products. "The *pili* nut is a great example of an indigenous tree which became popular, with a following both in the Bicol region and abroad," explains botanist David Ples.

Abaca, which is made from the fibrous stalks of a native Philippine banana, is another indigenous cash crop. "The key is to recognize these plants' value and create useful, viable products," adds David. As *pili* trees and abaca plants have become economically valuable, their survival over the next generations is assured. The same cannot be said for other Philippine tree species however.

Agrobiodiversity resources

As per the United Nations Development Programme (UNDP), biodiversity provides



primary medicine for 4 billion people, while agrobiodiversity improves the lives of 1 billion undernourished people.

"[The program] promotes ethical, natural ways not just to produce food and other vital resources, but to find alternative livelihood opportunities for communities living in or near forestlands; and that are supportive of the UN Sustainable Development Goals," says the UNDP resident representative to the Philippines, Dr. Selva Ramachandran.

"Our indigenous fruits, herbs, nuts and other products can provide vital nourishment for Pinoys who might not have ready access to mainstream food. Indigenous plants also have important vitamins and minerals that are sometimes deficient in the typical Pinoy diet," explains Charina Javier, a senior science researcher at the Department of Science and Technology Food and Nutrition Research Institute. "However, many of our indigenous flora are neglected and underused, so their potential to provide us with nutrients is not fully utilized."

Targets

The government has been working on the promotion of agrobiodiversity since 2015 and continues to achieve its agrobiodiversity targets under the Philippine Biodiversity Strategy and Action Plan.

Those targets include maintaining and conserving the genetic diversity of cultivated plants and farmed and domesticated animals and wild relatives, increasing areas devoted to biodiversity-friendly agricultural practices, formulating and adopting Comprehensive Land Use Plans that are ecologically sound under the revised Housing Land Use Regulatory Board framework, and increasing the number of nationally important agricultural heritage systems.

In some protected areas, the encroachment of agricultural lands has become so evident that the Department of Agriculture and the Department of Environment and Natural Resources

(DENR) signed Joint Administrative Order (JAO) No. 2021-01, which mainstreams biodiversity-friendly agricultural practices in and around these sites.

The UNDP's Biodiversity Finance Initiative (DENR-UNDP BIOFIN) is currently assisting the two national agencies to enable the implementation of the JAO. Established in 2012 as a network comprising 41 countries in Africa, Europe, South and Central America, and the Asia-Pacific region, the initiative helps raise funds for smart agriculture to boost the productivity of ecosystems, while repurposing potentially harmful agricultural subsidies into effective conservation measures.

"We should do all we can to strengthen local agrobiodiversity, such as promoting our native fruits," says DENR-UNDP BIOFIN national project manager Anabelle Plantilla. "Native and even naturalized plants can be used for a host of purposes. *Alupidan* and pandan leaves [for example] can be used to garnish dishes, *batuan* fruits for flavoring and rattan vines to make furniture."

Food forests

According to the Forest Foundation Philippines, native trees are beneficial for threatened native flora and fauna species as they help recover and expand forest habitats, protect watershed and freshwater resources, secure the livelihood of local people and link protected areas with natural forests.

Food forests, or areas where various combinations of cash-crops are planted in a natural setting, instead of the endless monocrop rows which dominate large-scale agriculture, are slowly taking root.

"Food forests provide resilience to climate change because the cultivated crops are usually endemic and better suited to an area," explains Muneer Arquion Hinay, cofounder of Kids Who Farm, a Zamboanga-based initiative to get youth interested in agriculture.

"They also promote better regeneration for they closely recreate natural forest ecosystems, where the symbiotic relationships of plants, fungi and other lifeforms [are] retained. Lastly, food forests can enhance soil health through improved soil cover from the leaves, twigs and natural biomass of its trees."

Worth more than logs

At the Subic Bay Jungle Environment Survival Training Camp, where participants learn to survive in a tropical rainforest, campers are taught how to make "jungle coffee" from *kupang* seeds, how to use *gugo* vines as "jungle soap," how to fashion survival implements from bamboo and what leaves one can chew on to help stave off hunger.

In the uplands of Sibalom in Panay, locals seasonally harvest the leaves and stems of *bakan*, *balud*, *banban* and nito to make tourist souvenirs, while locally grown tobacco leaves are ground and inserted into dried *duhat* leaves to make native cigarettes called *lomboy* or *likit*.

"Our forests serve many key functions. They provide habitats for wildlife, generate the oxygen we breathe, even offering us places to spiritually recharge," says Plantilla.

"We can make them worth more than logs or farmland by seeing them as our First Nations (indigenous) people have for generations—as a pharmacy, a grocery and an extension of our home." (See related story in Regions, Page A8). INQ

Visitors interested in learning more about native Philippine trees, fruits, nuts and herbs can schedule a visit via Facebook to the UPIB-EDC Arboretum, where donations for upkeep and maintenance are appreciated.



STRATEGIC
COMMUNICATION
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PHILIPPINE DAILY
INQUIRER

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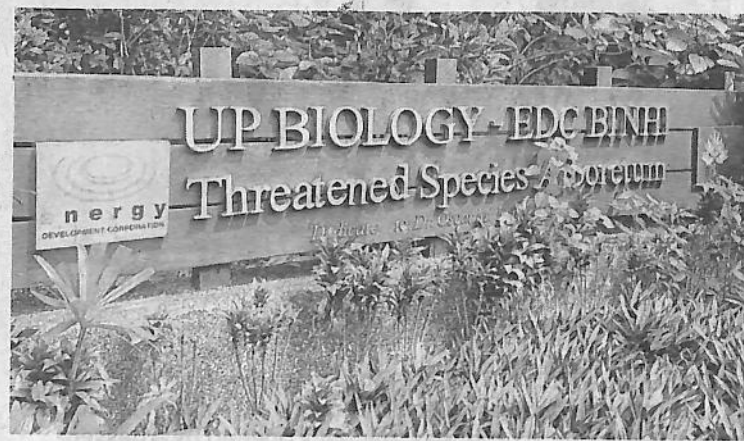
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SPECTRUM OF PINOY FLORA From the top: The entrance to the UPIB-EDC Threatened Species Arboretum in Diliman, Quezon City; the rare JC's Vine; "pili" nuts from the Bicol region; and cacao fruits harvested in Panay Island. —PHOTOS BY GREGG YAN AND ANGELIQUE OGENA



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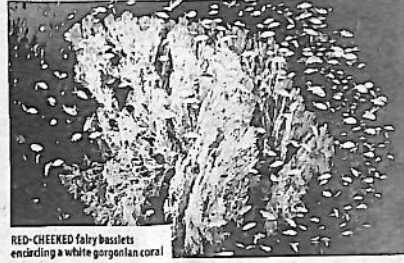
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'PANAON NG PANAON': JOINING HANDS TO SAVE RICH BIODIVERSITY IN S. LEYTE



DIFFERENT damselfishes and chromis



RED-CHEEKED fairy basslets encircling a white gorgonian coral



SHARPNOSE puffer



VARIEGATED lizardfish

BY JOVER MARIE DE LA CRUZ
Photos by Nonoy Lacza

SAYING the time has come to save Panaon Island in the southern tip of Southern Leyte, lawmakers have joined hands with international nongovernment organization Oceana to mount a photo exhibit capturing the breathtaking beauty of its biodiversity, in hopes of getting it declared by law as the Panaon Island Protected Seascape (PIPS).

The island has coral reefs with up to 60 percent of very good coral cover, way above the national average of only 20 percent, according to briefing notes provided to media.

The proposed seascape, PIPS, has an area of about 61,204 hectares, or 612.04 sq km covering the municipalities of Liloan, San Francisco, Pintuyan and San Ricardo in Southern Leyte.

On May 15, the House of Representatives Committee on Natural Resources provisionally approved the consolidated bill for the proposed Panaon Island seascape law pending the submission of a minor revision to the technical description from the National Mapping and Resource Information Authority (NAMRIA). The mapping authority committed to submitting this by next week.

On Tuesday the photo exhibit, "Panaon ng Panaon," was launched—with the

awesome images on display represented in this page by BusinessMirror's Nonoy Lacza.

Oceana and Southern Leyte Second District Rep. Christopherson "Coco" Yap led those expressing optimism that the House of Representatives will pass the bill declaring Panaon Island as a protected seascape within this year.

They were joined by Nueva Ecija Fourth District Rep. Emerson Emeng Pascual, Cebu Second District Rep. Eduardo Roa Rama Jr., Bukidnon Fourth District Rep. Leami Lavin Roque, Oceana Acting Vice President Atty. Rose Liza Eisma Osorio, and Assistant Director Armida Andres of Department of Environment and Natural Resources-Biodiversity Management Bureau.

In filing his bill, Yap said Panaon Island is located at the southern tip of Southern Leyte, which boast of coral reefs that are in good to excellent condition—a rarity in the country nowadays.

"Identified as part of the priority reefs that will highly likely withstand the devastating impacts of climate change, the urgency to protect the reefs of Panaon Island is highly emphasized," Yap said.

For her part, Southern Leyte First District Rep. Luz Mercado, one of the authors of the bill, said the establishment of the Panaon Island Protected Seascape is pursuant to the declared policy of the State to advance and protect the constitutional right to a balanced and healthful ecology

in accord with the rhythm and harmony of nature of all the Filipino people present for future generations.

Mercado added that the State shall protect the nation's marine wealth in its archipelagic waters, territorial sea and exclusive economic zone, and reserve its use and enjoyment exclusively to Filipino citizens, the objective of the Expanded National Integrated Protected Areas System Act.

"We need to have more marine protected areas, with our country having only 1.4 percent of our waters up to 200 nautical miles protected under the National Integrated Protected Areas System, as of 2020," she said.

Mercado said marine protected areas play a pivotal role in rebuilding fisheries, fighting overfishing, promoting food and nutritional security and strengthening climate mitigation and adaptation measures.

"With the Philippines considered among the most vulnerable to the impacts of climate change, the country needs more well-managed marine reserves that may help marine ecosystems and people adapt to five prominent impacts of climate change: acidification, sea-level rise, intensification of storms, shifts in species distribution, and decreased productivity and oxygen availability, as well as their cumulative effects," Mercado added.



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WHILE WILD ANIMALS ARE THREATENED WITH EXTINCTION, UNIQUE SPECIES ON MOUNT APO CONTINUE TO THRIVE DUE TO INDIGENOUS PEOPLES' PROTECTION

Philippine warty pig, an ecological engineer



TALOMO Upland Watershed on the Mount Apo Range. Below and beyond this vast forest are the unprotected regions of Mount Apo. PHOTO BY JUSTON BLAZER



PHILIPPINE warty pig PHOTO BY JUSTON BLAZER



AN image of a Philippine macaque caught by a camera trap during the study on Mount Apo Range.



PHILIPPINE deer PHOTO BY JUSTON BLAZER

BY JONATHAN L. MAYUGA

WILD boars, or "baboy damo" in Filipino, are hunted to the brink of extinction in many parts of the country. But did you know that they perform important ecosystem functions that warrant their protection and conservation?

Fortunately, at least one species continues to thrive on Mount Apo—the Philippine warty pig, one of the four endemic wild pigs that are hunted in the country for their meat.

While wild animals are threatened with extinction, even in the unprotected portions of Mount Apo, or areas outside the Mount Apo Natural Park (MANP), a protected area under the National Integrated Protected Areas System (NIPAS) Act, a number of unique species continue to thrive, thanks to the strong protection provided by the indigenous peoples (IPs) living in the area.

Population decline

THE ever-increasing environmental degradation across the country has led to the rapid decline of wild animal populations, including nonvolant, or land-based, mammals and avian species.

Moreover, several species are threatened with extinction due to human persecution and narrowed geographic ranges, authors of a recent peer-reviewed report said.

Some of the largest mammals in Philippine forests, including Philippine brown deer and the Philippine warty pig, are among them.

Also declining in number are some mammals in Mindanao forests, such as the Philippine tree squirrel (*Sundaiculus philippinensis*), large Mindanao forest rat (*Bullimus bagobus*), common Philippine forest rat (*Rattus everetti*), Mindanao tree shrew (*Urogale everetti*) and palm civet (*Paradoxurus hermaphroditus*).

Similarly, the population of bird species like the vulnerable giant scops-owl (*Otus gurneyi*) and Mindanao bleeding-heart (*Gallicolumba crinitus*) were observed to be declining due to anthropogenic pressures, Jayson Ibanez—one of the

authors of the study titled, "Inventory and abundance of nonvolant (land-based) mammals and birds in the unprotected regions of the Mount Apo Range"—told the *BusinessMirror* via Zoom on May 24.

Ecological engineers

THE authors of the study—that included Jhonnell P. Villagas, Jireh R. Rosales and Giovanna G. Tampos—consider wildlife, particularly nonvolant mammals and birds, "ecological engineers" that influence forest vegetation.

Published in the *Journal of Threatened Taxa* last month, the study that used camera trapping in 2016 and 2020, aimed to conduct a species inventory and assess the relative abundance of nonvolant mammals and birds in the Mount Apo Range.

"Wildlife, such as nonvolant mammals and birds, play a vital role in the maintenance of ecosystem health. They are considered ecological engineers that influence forest vegetation," the study revealed.

However, due to deforestation, habitat loss and human persecution, wildlife population has declined over the years, highlighting the need to strengthen the protection of Mount Apo's unprotected regions against destructive human activities, added Villagas, a member of the faculty of Education and Teacher Training at Davao State University.

Villagas explained that the IP communities with ancestral domain rights or claims over vast tracts of lands need all the support—from the national and local governments, and from private institutions—for them to continue protecting the forests and be part of the solution rather than becoming part of the problem.

"While in some parts of Davao City, the IPs are receiving some level of support from the local government, they remain to be wanting," he said.

Important ecosystem functions

WILD animals play important ecosystem functions.

Mammals regulate prey populations,

facilitate seed dispersal and pollination, shape vegetation patterns and act as bioindicators of ecosystem health, the study said.

On the other hand, avian species are important pollinators, scavengers, predators, seed dispersers and ecosystem engineers.

Biodiversity-rich area

THE study highlighted the fact that Mount Apo, which hosts at least three pairs of the critically-endangered species, maintains a highly diverse species of plants and animals despite the many anthropogenic threats (or environmental change caused or influenced by people) that pushes these already endangered animal species to the brink of extinction.

Mount Apo is at the heart of the Mount Apo Natural Park (MANP), an Asean Heritage Park (AHP), the Philippines' eighth AHP, which means it is among the best of the best-protected areas in the Asean, said Asean Centre for Biodiversity (ACB) Executive Director Theresa Mundita S. Lim.

"[MANP] is one of the first protected established as an AHP back in 1984, primarily for being a known habitat of the endemic Philippine eagle," Lim said.

She pointed out that other than the Philippine eagle, MANP is also a type locality, an area where species are first discovered from, for other unique species, such as the Mount Apo lorikeet, some Mindanao endemic mammals, such as the Mindanao forest mouse, the Philippine tree squirrel and the Apo myna that inhabit the forest park.

Sought to comment on the study, Lim, a former director of Biodiversity Management Bureau of the Department of Environment and Natural Resources, explained that the recent study that documents Philippine species found inside the MANP, such as Philippine warty pig (*Sus philippensis*) and Philippine brown deer, are present as well outside unprotected portion of the Mount Apo Range, demonstrates that wild animal populations know no boundaries in their natural movements.

"It is, therefore, vital that some form of

sustainable management be put in place for corridors connecting already fragmented habitat ranges," she suggested.

"Protected areas, such as the MANP, should not be viewed as isolated 'islands' of protection, but as part of an interconnected diversity of ecosystems, including urban ecosystems that require integrated action to sustain the benefits it can provide, not just for the wildlife, but for human communities that depend on it," she said.

Key biodiversity area

THE study authors pointed out that Mount Apo Range is an important Key Biodiversity Area in the Philippines.

A large portion of Mount Apo is within the 64,000-hectare (ha) MANP, which has been the subject of several biodiversity conservation initiatives.

However, a significant portion of secondary and natural forests of the mountain range are left unprotected and, thus, receive fewer conservation initiatives, which is the focus of the new study.

The authors said the situation calls for intensive forest governance and conservation programs beyond the protected landscapes.

"Fortunately, there are IPs in the area because parts of the unprotected regions of Mount Apo Range overlap with the Obu Manuvu Ancestral Domain that is inhabited mainly by the Obu Manuvu people," Ibanez said.

For the Obu Manuvu, the forest's "pusaka," where an indigenous practice is held to sanctify biotic and abiotic materials that have value to their community. It prohibits hunting wildlife species in most parts of the forest. Only some parts are allowed for hunting, provided that a ritual is performed before the activity.

Camera trapping

BESIDES conducting a species inventory and assessing the abundance of nonvolant mammals and birds in the area through camera-trapping, the researchers also discovered the anthropogenic threats in the area.

A total of 1,105 camera trap days were carried out in 2016 and another 500 days in 2020.

Based on 260 independent sequences in the surveys, 12 species were identified—eight nonvolant mammals and four birds.

Besides the Philippine warty pig (*Sus philippensis*), among the identified species are the endangered Philippine brown deer (*Rusa marianna*), Philippine long-tailed macaque (*Macaca fascicularis philippensis*) and the vulnerable Giant Scops-owl (*Otus gurneyi*). Unidentified rodents were also detected in the camera traps.

Unregulated forest clearing

THE authors deployed the camera traps with the help of IPs who are "converts," or hunters-turned-forest protectors.

"They noted the existence of unregulated forest clearing in some parts of Mount Apo Range.

It was observed in barangays Carmen and Tawan-Tawan, where around three hectares of trees and undergrowth forest were shaved.

This was also observed at an even larger area downstream in the Kalatong River, where more than 10 hectares of forest were shaved and converted into a grazing area for cattle.

Almost the same forest cover was lost in Kagawasan, Barangay Tambobong, which is now being occupied by some 100 individuals, who have settled in the area.

Tree farmer

A PHILIPPINE warty pig was caught on camera for the first time, doing what they do best—cultivate the soil by digging to find food, and make holes to create a wallowing area, as if to allow seeds that fall from nearby trees to grow on later on—the perfect natural reforestation process.

Moreover, a single camera trap in the 2016 survey captured videos of at least three animal species that used the same Philippine warty pig wallowing hole as drinking and bathing spots. It was also used as a wallowing hole for other species, such as the Philippine deer and the giant scops owl.

This was the first documentation in the Philippines of other forest vertebrates drinking and bathing from the wallowing pit of warty pig.

According to the authors, wallowing is a very important behavior and provides multiple physiological and welfare benefits to warty pigs, the study explained.

"For the first time, using camera traps, we were able to learn of their behavior in the wild," Ibanez pointed out.

Nutrient recycling

MORE than just a game for hunters, the warty pigs are also scavengers that feed on animal carcasses in the wild. In removing dead animals, like vultures, warty pigs recycle nutrients that are used by plants.

The Philippine warty pig also help prevent the spread of diseases that could lead to an outbreak that can threaten to wipe out the local animal population in the area, or worse, cause a pandemic threatening the human population.

"They help prevent the spread of diseases," said Dr. Emilia Lastica Temoura of the University of the Philippines Los Baños College of Veterinary Medicine.

There are incidences of mass die-offs due to suspected African swine fever (ASF) affecting Philippine warty pig populations in some parts of Visayas and Mindanao, particularly in Tagum City, she said.

"This happened in 2019, almost the same time that the ASF started to affect areas along the trading path of imported swine," Temoura added.

She warned that stronger protection measures must be put in place in the wild, particularly against hunters and even mountaineers who climb Mount Apo and other areas, to protect wild animal populations like the so-called ecological engineers from being wiped out by zoonotic diseases, such as the dreaded ASF.

Otherwise, she said there's a chance that the Philippine warty pig and other wild pig species in the country may eventually become extinct.



NEDA, KOICA ink \$2.5-M deal for water resources project

The National Economic and Development Authority (NEDA) and the Korea International Cooperation Agency (KOICA) have signed a record of discussions for the implementation of a \$2.5 million water resources management project in the country.

In a statement, the NEDA said the signing ceremony for the Capacity Building for Integrated Water Resources Management (IWRM) and Sustainable Development project was held last Friday.

The project, which will be implemented until next year, aims to enhance the management and technical skills of institutions involved in the Philippines' water resources sector.

"This momentous occasion holds great promise for the improvement of vital services, such as water supply, sanitation, irrigation, and flood control under the framework of Integrated Water Resources Management or the IWRM. By ensuring equitable, efficient, and sustainable management and allocation of our water resources, we can embark on a path of progress," NEDA Secretary Arsenio Balisacan said.

The NEDA will work closely with the National Water Resources Board, the Department of Public Works and Highways, and the Local Water Utilities Administration for the implementation of the project and to establish the Philippines-Korea IWRM Cooperation Roadmap.

Under the project, there will be training offered for personnel in the Philippines and experts from South Korea will be providing technical advice.

In addition, the NEDA will coordinate with the recently created Water Resources Management Office (WRMO) in the Department of Environment and Natural Resources to ensure the implementation of the project is in line with the WRMO's mandate

to integrate and harmonize all government efforts for the sustainable management of the country's water resources.

The project is expected to support the Philippine Development Plan 2023-2028, which indicates that integrated water and resource management is a way to strengthen efforts to rehabilitate and protect the country's ecosystems.

Balisacan said the project is crucial in addressing the water sector's problems due to weak governance and fragmented systems.

"We must address these shortcomings by embracing effective water governance through integrated water resources management. By harmonizing the planning

and management of land, water, and coastal resources, we can overcome these obstacles and create a brighter future for all," he said.

KOICA Philippines country director Kim Eunsub said the South Korean government agency dedicated to providing grant aid programs, recognizes the need to help enhance the Philippine government's ability to address challenges and threats in the water sector.

"Our project was designed to help water agencies implement IWRM reforms and address issues on increasing water demand, insufficient water infrastructure, and rising climate change threats," he said.

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DA, KOICA ink \$2.5-M water resources project

By CHINO S. LEYCO

The National Economic and Development Authority (NEDA) and the Korea International Cooperation Agency (KOICA) will implement the capacity building for Integrated Water Resources Management (IWRM) and Sustainable Development project.

NEDA Secretary Arsenio M. Balisacan and KOICA Philippines Country Director Kim Eunsub signed the record of discussions to implement the capacity development project, which is valued at approximately \$2.5 million, or roughly ₱139.3 million. The project implementation will continue until next year.

"This momentous occasion holds great promise for the improvement of vital services, such as water supply, sanitation, irrigation, and flood control under the framework of Integrated Water Resources Management or the IWRM," Balisacan said in a statement.

"By ensuring equitable, efficient, and sustainable management and allocation of our water resources, we can embark on a path of progress," he added.

The capacity development project

aims to increase the management and technical skills of institutions involved in the water resources sector. The initiative supports the strategies under the Philippine Development Plan 2023-2028, which indicates that integrated water and resource management is a way to intensify the rehabilitation, protection, and management of the country's ecosystems.

During the signing ceremony, the NEDA chief highlighted that the project is imperative for addressing the issues in the water sector caused by weak governance and fragmented systems.

"Balisacan said the government must address these shortcomings by embracing effective water governance through integrated water resources management.

"By harmonizing the planning and management of land, water, and coastal resources, we can overcome these obstacles and create a brighter future for all," Balisacan said.

Meanwhile KOICA Philippines Country Director Kim Eunsub recognized the need to enhance the capability of the Philippine government in dealing with challenges and threats in the water sector.