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STRATEGIC COMMUNICATION AND INITIATIVES SERVICE



EDITORIAL

Sinkholes in Boracay

The sinkholes were first detected in 2018. From the 789 at the time, however, the number of sinkholes found on Boracay Island has grown to 815, found in three barangays. With the growing number, the Mines and Geosciences Bureau of the Department of Environment and Natural Resources has warned of possible risks to infrastructure on the resort island.

In line with the warning, the DENR-MGB is calling for the strict enforcement of the visitor carrying capacity of 6,000 in Boracay, one of the country's most popular tourist destinations. Further development of commercial establishments and infrastructure on the island will also have to be closely regulated.

The local government unit of Malay town in Aklan expressed surprise over the DENR-MGB report, saying most structures in Boracay have been in existence for a long time, with no sinkhole being reported. But the LGU has given assurance that the carrying capacity is being enforced, with residents even being relocated to the main area of Malay town so that more visitors can be accommodated.

Cases in other countries have shown that the risks

posed by sinkholes cannot be ignored. Sinkholes have swallowed up entire buildings, houses and cars, and caused serious injuries. Even small ones have caused heavy damage to property. Boracay is a small island and the collapse of multiple sinkholes can cause substantial damage.

The good news is that the DENR has detected the sinkholes and disaster prevention is possible. Sinkholes can be caused by soil erosion and sustained leaking of water pipes and sewerage lines. With early detection, there are geotechnical engineering interventions to fortify an area where a sinkhole has been found.

Geoscientists point out that there are telltale signs of the formation of a sinkhole, among them the most obvious: a circular depression or the appearance of a hole in the ground. Walls and structures may show cracks, or begin tilting.

Scientists stress that sinkholes can be stabilized. With the DENR identifying the sinkholes in Boracay, the interventions can begin. In this earthquake-prone archipelago, the sooner the interventions are carried out, the better. Early prevention will minimize if not prevent damage to property, and save lives.



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Bill seeks to develop PH bamboo manufacturing

A bill that seeks to establish the country's competitive edge in the natural bamboo market in transport, construction, furniture, and fabric sectors that can lead to industrial-manufacturing development will be refiled in Congress.

Bohol Representative Edgardo M. Chatto said he will refile House Bill 9576 or Philippine Bamboo Industry Development Act (PBIDA) was already approved on third and final reading in August 2021.

Deogracias Victor "DV" B. Savellano, who spearheads the 5K (Kawayan: Kalikasan, Kabuhayan, Kaunlaran, Kinabukasan) Foundation Inc., said they are hoping the bill can be certified as urgent by the administration of President Ferdinand R. Marcos Jr.

5K Foundation is an advocacy group seeking for the development of bamboo as nature-friendly, climate smart industrial material.

"House Bill 9576 should be approved under the administration of BBM (Bongbong Marcos). It will substantially help advance our industrial development. We already have the clumps in our inventory. We just need the support for production, training, processing," said Savellano.

The original bill envisioned to seize part of a global market placed in 2010 at \$8 billion will institutionalize the Philippine Bamboo Industry Development Council (PBIDC).

Created by Executive Order 879 in 2010, PBIDC saw the prospect of bamboo replacing plastic, metal, and other wood as manufacturing input.

While Savellano has earlier been appointed vice chairman of PBIDC, the council has not yet been convened since the Marcos Administration stepped in. A budget has neither been allocated for the council.

The bamboo industry holds huge economic potential for contributing to industrialization, being a highly-durable and ecologically-friendly raw material.

Comparable to or even better than other hardwood, bamboo has already been technologically developed into engineered wood, composites, laminated wood, or strand woven bamboo as sophisticated lumber or construction material.

The PBIDC, according to EO 879, should be composed of the heads of the Department of Trade and Industry, Department of Environment and Natural Resources, Department of Agriculture, and Department of Science and Technology (DOST), among others.

Bamboo advocates are now petitioning government to allocate at least P100 million to jumpstart the development of bamboo as a manufacturing sector.

EO 879 mandates DENR, Mines and Geosciences Bureau, and Laguna Lake Development Authority to use bamboo in at least 20 percent in their annual reforestation areas.

Rene Madarang, appointed PBIDC executive director but also actively supports bamboo promotion through 5K Foundation, earlier created a Technical Working Group (TWG) to support PBIDC functions.

TWGs have been put up for three functions – production and propagation, industry and commerce, and training of workforce for propagation and processing.

The Philippines now has an estimated bamboo area of around 104,000 hectares. It generates a value of \$60 million yearly. With 5.59 million hectares of arable land, the Philippines can expand bamboo area to 400,000 hectares – if only to level up to at least 10% of China's bamboo area of 4.2 million hectares.

Such area can yield a whopping \$3 billion (₱150 billion). The industry can employ one million rural folks including indigenous people that can be organized into cooperatives.

Each 10-hectare area can generate a net income of ₱922,995 per bamboo worker per year, according to a study of the International Network for

Bamboo and Rattan (INBAR).

Bamboo is a sustainable material as it fights climate change in several ways, INBAR said.

First, its fast-growing trait enables it to sequester carbon more substantially than other plants. It releases 35% more oxygen than other trees. Bamboo plants sequester 12

metric tons of carbon per hectare annually.

"Durable products made from bamboo can also be potentially carbon-negative. Bamboo could also be a favorable substitute for hardwoods, even FSC (Forest Stewardship Council)-certified ones." (Bernie Cahiles-Magkilat)



SEARCHING FOR THAT 'SUPERBUG'

UP SCIENTISTS RACE TO FIND PLASTIC-EATING MICROBES

By Krixia Subingsubing
@krixiasINQ

BOLINAO, PANGASINAN—Inside the country's first and only plastics research laboratory, a team of scientists from the University of the Philippines Marine Science Institute (UPMSI) is looking at an unlikely ally—microbial organisms—that could literally take a bite out of the mammoth problem of plastic pollution.

The team led by oceanographer Dr. Deo Florence Onda said it had identified bacteria which could break down that kind of garbage.

"It's just a matter of trying to explore and search for that 'superbug' that can actually degrade the plastics," Onda told the Inquirer. "It's just a very long process."

Breakthroughs in this pursuit could open up new ways to tackle the ecological crisis of plastic waste piling up on the planet and littering the oceans.

In the Philippines, serious research into that phenomenon, besides being relatively new, is further hampered by lack of funding.

This has limited such efforts to mostly monitoring how much of that trash gets thrown into the environment, rather than how it affects particular ecosystems.

The country has earned the unflattering distinction of being the third biggest plastics polluter worldwide after China and Indonesia, according to a 2021 World Bank report which affirmed an earlier study done in 2015.

Gaps, opportunities

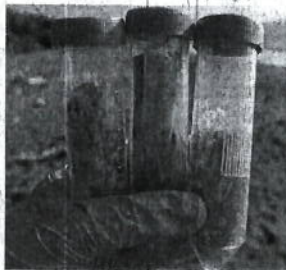
In 2020, Onda's team published a study titled "Marine Microbes and Plastic Debris: Research Status and Opportunities in the Philippines."

It identified gaps as well as opportunities in local plastics research—such as exploring how microbes interact with these materials which otherwise would take some 1,000 years to decompose.

Microbes are the "first and last organisms to interact with plastics," said Justine Bitalac, a senior research specialist and graduate student of Onda.

She noted that these hardy survivors cling to and feed on plastic waste as they drift into the ocean.

In the study, the team members took note of earlier research done abroad which already showed that some bac-



'MICROBIAL COMMUNITIES' A team of researchers from the University of the Philippines Marine Science Institute collects sediment samples at the heavily polluted Manila Bay (top photo) to study how microbes and other bacterial species could be harnessed to break down plastic waste. —PHOTOS FROM UP MARINE SCIENCE INSTITUTE

terial species could be "good models for metabolizing plastic." Such species include the bacterium *Ideonella sakaiensis*, which—as Japanese scientists discovered in 2016—was able to degrade polyethylene terephthalate, the synthetic commonly used for manufacturing beverage bottles and other liquid containers.

The study urged local researchers to explore how microbial biodegrading "could be further harnessed."

But this is no mean feat, as biodegradation itself "is very difficult to measure [and] takes a long time," said Norchel Gomez, another senior research specialist on the team and a former graduate student of Bitalac.

'Pits and holes'

Nevertheless, the two researchers set off to examine microbial biodegrading in heavily polluted Manila Bay.

There, Gomez found "members of microbial communities" from the bay's sediments, collected those samples and incubated them for about three months.

She identified 18 bacterial entities, or "taxons," most of which were cited in previous studies as being able to break down hydrocarbons—the same compound found in gas, coal and crude oil.

"[This] makes sense because

plastics share the same structure with them," Gomez said.

The next step was "to isolate the specific species [that] are actual biodegraders of plastics," said Bitalac, who took off from Gomez's discovery.

She isolated 10 different species, the majority of which were from the *Halomonas titanicae* group—a salt-tolerant genus or category of bacteria.

Bitalac said these bacteria punctured the plastic, creating "pits and holes" within 60 days.

It was as if they were eating it, she said.

'Problematic byproduct'

Gomez's findings were accepted for publication on Dec. 2 by the Archives of Microbiology Journal in Berlin, while Bitalac's research is undergoing revision for publication in the Netherlands-based Journal for Hazardous Materials.

But the team members are still careful about "overselling" their initial results, especially since plastic biodegradation releases carbon dioxide.

Onda said: "Even if we do get to a point that we're able to completely degrade [plastic], most of it would be converted to greenhouse gases—and how much of that byproduct would be problematic to the climate?"



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UP SCIENTISTS RACE TO FIND PLASTIC-EATING MICROBES

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While it's good to know that there are plastic-eating bacteria out there, efforts to curb pollution "should be at each stage of the life cycle of the plastic—from production to consumption and recycling," he said.

Still, understanding how microbes work could lead to other remedies.

Manufacturers, for one,

could start redesigning their products to make them more biodegradable. Scientists may craft more accurate climate solutions based on how much greenhouse gases are released by decomposing materials.

"Even if we don't reach our end goal of finding that 'super-bug,' we might be able to learn more about something else," Onda said.

"That's the beauty of it—the more you know, the more

you understand," he said.

(This story was written as a final output for the Blue Beat Initiative, a short course on marine science communication by the UP Marine Science Institute and the Association of Young Environmental Journalists, under a project funded by the National Security Council titled "Upgrading Capacity, Infrastructure and Assets for Marine Scientific Research in the Philippines.")



More government support crucial vs climate change

A recent study by the Institute for Economics and Peace placed the Philippines as the country most at risk from the climate crisis.

The Philippines is highly prone to multiple natural hazards, with estimations from the World Bank Group placing 60 percent of the country's land area and 74 percent of the population as exposed to natural disasters.

These natural disasters are projected to intensify under climate change. In fact, a recent study by the Institute for Economics and Peace placed the Philippines as the country most at risk from the climate crisis. In particular, the Philippines is most prone to cyclones and floods, due to its location in the Northwestern Pacific Basin - the most active tropical cyclone basin in the world. Yearly, the Philippines suffers from an average of 20 typhoons, eight of which make landfall and are usually devastating.

To combat climate change, the Philippine government has submitted its nationally determined contribution to the United Nations Framework Convention on Climate Change. The charter covers the



THE Z PERSPECTIVE
JOE ZALDARRIAGA

country's sustainable plans and programs for reducing greenhouse gas emissions and signifies a commitment to help meet the Paris Agreement's goal of limiting global temperature rise, ultimately achieving net zero.

The local business community has also put active measures in place, incorporating sustainability within their operations. Among these is the Manila Electric Company, the country's largest electric distribution utility.

Over the past few years, Meralco has already been laying the groundwork for progressive changes in its energy sourcing, investments, and adoption of sustainable technologies. This includes targeting 3,000 megawatts of renewable energy capacity, by sourcing 1,500 megawatts of RE over the next five years while also building another 1,500 MW of clean energy by 2027 through its power generation arm, Meralco PowerGen.

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Outside power, Meralco has also been pushing for the development of a cleaner transportation industry with the use of electric vehicles. In 2020, Meralco launched its Green Mobility program to reduce GHG emissions by gradually replacing the gas-fueled vehicles in its fleet with those powered by electricity.

As of this writing, Meralco's Metro Manila business centers and sector offices are already 100 percent electrified. It targets to electrify 25 percent of its entire

vehicle fleet by 2030.

Through its social development arm, Meralco Foundation, Meralco also embarked on a plan to protect and preserve Philippine forests and watersheds through its target to plant and nurture five million trees by 2025.

Because of these efforts, Meralco was recognized for its outstanding sustainability performance by none other than UK-based global sustainability index provider FTSE Russel.

Government agencies and other companies are also marching towards their own sustainability and net zero agenda.

The Department of Energy has already set an objective to hit 50 percent of RE power generation by 2040 and imposed a moratorium on the construction of new coal-fired power plants in 2020.

In the transportation sector, there are already mandates for biodiesel and bioethanol utilization and targets for EV penetration.

While these are remarkable initiatives, there are opportunities to take the agenda against climate change even further. The Philippines must ramp up its sustainable initiatives and programs for the country to hit its goal of reducing GHG emissions.

A firmer sustainable commitment would engage more businesses to invest in the country in clean energy projects.

Secondly, the government should encourage and incentivize local banks to finance green programs, to make funds available to fight climate change.

Lastly, ramping up the national budget to fight climate change is a must. Solid government support will always serve as the backbone of any initiative for the betterment of the country, and will only be achieved if we ramp up investments and closely coordinate with industry stakeholders.



Villar: Sicogon Island Wildlife Sanctuary to make tourism vibrant

It is a "good step" to protect the environment a protected area in Carles, Iloilo, while it is undergoing massive development to boost its tourism industry, a senator said.

"The presence of the Sicogon Island Wildlife Sanctuary, I believe, complements well the tourism potentials in the area," said Sen. Cynthia A. Villar, the guest speaker during the launching of the Sicogon Island Wildlife Sanctuary and turn-over/ribbon cutting ceremony for the Livelihood Center Extension in Barotac Viejo, Iloilo.

"Your wildlife sanctuary is home to 318 species of plants and 32 species of which is endemic to Panay, including the 'batwan' that is a prized culinary ingredient; seven species of amphibians; 15 species of reptiles, including a new species of a dwarf gecko; and 63 species of mammals of which 12 are endemic to the Philippines," Villar said.

She noted that the threatened species in the area include the grass owl, the pied fantail, the Philippine monkey, the common island flying monkey and the critically endangered Visayas warty pig.

Saying that the Philippines is rich in biodiversity, the chairman of the Senate Committee on Environment and Natural Resources, cited the need to protect the country's biodiversity.

She said we can also extoll our

biodiversity to spur tourism growth.

According to Villar, the Sicogon Island Wildlife Sanctuary in Carles, Iloilo, is a legislated protected area under the Expanded National Protected Area Systems (E-Nipas) Act, or Republic Act 11933, in August 2022.

According to the senator, she and Iloilo Rep. Raul Tupas fought for the bill to make Sicogon Island a protected area.

To date, there are 114 legislated protected areas under the E-Nipas Act in the country.

"There is a need to pass into law recognition of our protected areas to give them proper care in order to preserve them and to avoid destruction. In return, its ecological benefits will still be enjoyed by the next generation," she explained.

The law, she said, provides for the legal framework and the administration of the protected area to maintain essential ecological processes and life-support systems, to preserve genetic diversity, to ensure sustainable use of resources found therein, and to maintain their natural conditions to the greatest extent possible.

Meanwhile, she lauded the Livelihood Center Extension as a good project because it benefits the Aeta Community in the area.

This will serve as "reception area" where the Aetas can sell their products to tourists going to the place to visit Nagpana Falls.



IUCN: Dugong, 700 new species facing extinction

POPULATIONS of a vulnerable species of marine mammal, numerous species of abalone and a type of Caribbean coral are now threatened with extinction, an international conservation organization said last week.

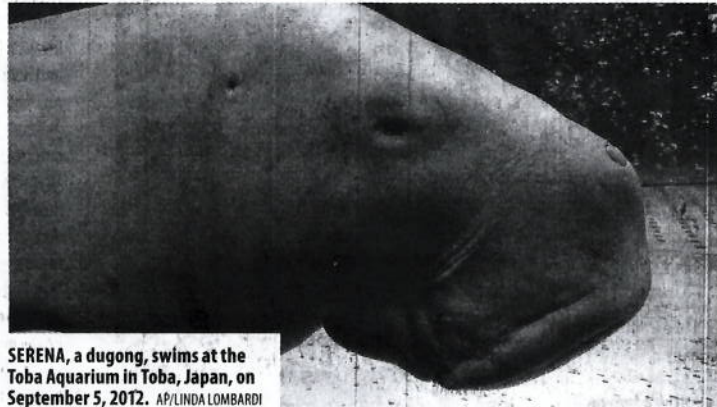
The International Union for Conservation of Nature (IUCN) announced the update during the United Nations Convention on Biological Diversity, or the 15th Conference of the Parties (COP15) in Montreal, Canada.

The IUCN's hundreds of members include government agencies from around the world, and it's one of the planet's widest-reaching environmental networks.

The IUCN uses its Red List of Threatened Species to categorize animals approaching extinction. This year, the union is sounding the alarm about the dugong—a large and docile marine mammal that lives from the eastern coast of Africa to the western Pacific Ocean, and the Philippines.

The dugong is vulnerable throughout its range, and now populations in East Africa have entered the red list as critically endangered, IUCN said in a statement. Populations in New Caledonia have entered the list as endangered, the group said.

The major threats to the animal are unintentional capture in fishing



SERENA, a dugong, swims at the Toba Aquarium in Toba, Japan, on September 5, 2012. AP/LINDA LOMBARDI

gear in East Africa and poaching in New Caledonia, IUCN said.

It also suffers from boat collisions and loss of the seagrasses it eats, said Evan Trotsuk, who led the East Africa red list assessment.

"Strengthening community-led fisheries governance and expanding work opportunities beyond fishing are key in East Africa, where marine ecosystems are fundamental to people's food security and livelihoods," Trotsuk said.

The IUCN Red List includes more than 150,000 species. The list sometimes overlaps with the species listed under the US Endangered Species Act, such as in the case of the North Atlantic right whale. More than 42,000 of the species on the red list

are threatened with extinction, IUCN said.

IUCN uses several categories to describe an animal's status, ranging from "least concern" to "critically endangered."

IUCN typically updates the red list two or three times a year. This week's update includes more than 3,000 additions to the red list. Of those, 700 are threatened with extinction.

Jane Smart, head of IUCN's Centre for Science and Data, said it will take political will to save the jeopardized species, and the gravity of the new listings can serve as a clarion call.

"The news we often give you on this is often gloomy, a little bit depressing, but it sparks the action, which is good," Smart said.

Pillar coral, which is found throughout the Caribbean, was moved from vulnerable to critically endangered in this week's update.

The coral is threatened by a tissue loss disease, and its population has shrunk by more than 80 percent across most of its range since 1990, IUCN said.

The IUCN lists more than two dozen corals in the Atlantic Ocean as critically endangered.

Almost half the corals in the Atlantic are "at elevated risk of extinction due to climate change and other impacts," Beth Polidoro, an associate professor at Arizona State University and red list coordinator for IUCN.

Unsustainable harvesting and poaching have emerged as threats to abalone, which are used as seafood, IUCN said.

Twenty of the 54 abalone species in the world are threatened with extinction according to the red list's first global assessment of the species.

Threats to the abalone are compounded by climate change, diseases and pollution, the organization said.

"This red list update brings to light new evidence of the multiple interacting threats to declining life in the sea," said Jon Paul Rodriguez, chair of the IUCN Species Survival Commission.

Patrick Whittle/Associated Press



Climate change fueling cholera surge — WHO

GENEVA, Switzerland (AFP) — Climate change is fueling a global cholera upsurge, the WHO said Friday, warning the situation was compounded by vaccine shortages and will only worsen unless it is stamped out soon.

The World Health Organization is responding to cholera outbreaks in 29 countries, including Haiti, which has more than 1,200 confirmed cases, more than 14,000 suspected cases and more than 280 reported deaths.

This week, Haiti received almost 1.2 million doses of oral cholera vaccines.

But the WHO said that vaccine stockpiles were extremely low — and that manufacturers were not enthusiastic about producing a vaccine chiefly aimed at some of the poorest countries in the world.

“If we don’t control the outbreak now, the situation will get worse and worse,” Philippe Barboza, the WHO’s team lead on cholera, told reporters in Geneva.

He said fatality rates are extremely high for most of the countries for which the UN health agency has data.

Cholera is contracted from a bacterium that is generally transmitted through contaminated food or water.

It causes diarrhea and vomiting,

and can be especially dangerous for young children.

“The factors which drive cholera are still the same: poverty, vulnerability and people who do not have access to clean water,” Barboza said.

These are amplified by conflict, humanitarian crises and natural disasters, which reduce access to drinking water.

“But this year, we have a factor which is even more important: the direct impact of climate change, with a succession of major droughts, unprecedented floods in certain parts of the world, and cyclones which have amplified most of these epidemics,” he said.

Barboza said that while there had been big epidemics in certain countries before, they had not happened simultaneously, as now.

Although cholera can kill within hours, it can be treated with simple oral rehydration, and antibiotics for more severe cases.

But many people lack timely access to such treatment.

Outbreaks can be prevented by ensuring access to clean water and improving surveillance.

“It is not acceptable in the 21st century to have people dying of a disease which is very well-known and very easy to treat,” said Barboza.