

# **BIODIVERSITY SENTINEL**

OFFICIAL NEWSLETTER OF THE DENR - BIODIVERSITY MANAGEMENT BUREAU JANUARY - JUNE 2020 | ISSUE 01

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# LETTER FROM THE EDITOR

#### Happy Super Year for Biodiversity!

2020 is the make or break year for biodiversity conservation as it sets the course for reaching the goals of the 2030 Agenda for Sustainable Development in its remaining decade. The 2030 Agenda details, among others, the following goals on biodiversity: conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development; reduce the degradation of natural habitats, halt the loss of biodiversity, protect and prevent the extinction of threatened species; end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products; prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species; integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts; mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems; and enhance global support for efforts to combat the Illegal Wildlife Trade.

Given these exigent tasks, the Biodiversity Management Bureau (BMB) intends to embark on generating a stronger collective action for biodiversity conservation, even as it currently stands guard in protecting, conserving and sustainably managing the country's biodiversity. As Derick Virgil puts it: "Awareness is the first step to action. They have to know something is going on to know to do something about it." Hence, this first of hopefully many bi-annual editions of the Bureau's official publication, the Biodiversity Sentinel, aims to bring issues to light and fill in as a stage to channel the endless limits of perusers and enthusiasts for activism in support of the goals of the 2030 Agenda.

Serving as the mouthpiece of the Department to reach out to its field units, this publication will highlight biodiversity conservation efforts in the international, ASEAN, national and regional scene; provide milestones achieved by the Bureau, and fill in knowledge gaps as it delivers news, data and stories on Philippine biodiversity in a language that will make ordinary Filipinos care about topics on wildlife resources, national parks, caves, wetlands and other ecosystems, biodiversity policy and knowledge management, and coastal and marine management.

While this issue provides selected topics and information on

our conservation efforts covering the entire country, we aim to expand our coverage to report on latest undertakings, news and research at the national, ASEAN and global levels in the succeeding issues. We hope that this and the upcoming issues of the Biodiversity Sentinel offer you an interesting glimpse into the past, a view of the present and an insight into the future works of the Bureau in biodiversity management.

Awareness is a key ingredient in success. If you have it, teach it, if you lack it, seek it.

- Michael Kitson



# **BIODIVERSITY SENTINEL**

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Lakeside Stories: The Locals' Perspective on the Ecosystem Services of Taal Lake and Pansipit River A Feature Story on the DENR-BMB's Rapid Survey Activity at the TVPL

### By Susan Joyce A. Se

The Taal Volcano Protected Landscape (TVPL) is a protected area under the category of a Protected Landscape, which means that the area is characterized by "the harmonious interaction of man and land and water while providing opportunities for public enjoyment through recreation, tourism, and other economic activities." It was proclaimed in 1996 under Presidential Proclamation No. 923 and legislated through Republic Act No. 11038 or the Expanded National Integrated Protected Areas System Act of 2018.

For tourists, it is a famous "road trip destination," situated about 70 kilometers south of Metro Manila. Popular for its cold breeze and picture-perfect attractions like the Tagaytay Ridge overlooking Taal Lake, Tagaytay tops the search for the best weekend getaway in Luzon, until January 12, 2020. The Taal Volcano finally awoke from its 43-year slumber, spewing a massive plume of ash and steam that blanketed nearby provinces with thick ashfall. Residents in the towns within the 14-kilometer radius of the crater were forced to evacuate.

For the locals, the TVPL, especially the Taal Lake, is their life. Taal Lake is one of the country's deepest lakes (average depth of 60 meters and maximum depth of 198 meters) and the 3rd largest lake next to Laguna de Bay and Lake Lanao. It is the center of their livelihood, source of food, recreation, tourism and culture. Jose Peñaflor, Jr., 45, a native of Laurel, Batangas who works as a fisherman and an employee at the Central Fish Port said, "Wala akong ibang alaala ng lawa ng Taal kundi ito ang nagbibigay sa amin ng hanap buhay at ipapakain sa aming pamilya." Since childhood until the volcanic eruption, Taal Lake brings food to their table.

Apolinario Nipay, 64, a native of Balete, Batangas narrated that during the 1960s, they would even get their drinking water from the lake. "Ang tubig sa lawa back in 1960's ginagawa pang-luto, pang-inom, pang-laba, pang-ligo. Fresh ang tubig talaga – walang amoy, walang lasa." Some even claimed that in earlier times, the waters of Taal Lake could heal certain ailments such as asthma in children as attested by Remedios Dimaala, 54, a resident of Balete, Batangas for 30 years. "Yung mga anak ko na may sakit na asthma, sa paliligo sa tubig ng lawa gumagaling. Pinagtitiyagaan naming mag-asawa paliguan sa madaling araw sa lawa. Gamot ang tubig ng lawa noon (early 90's). Ngayon hindi na," she recalled. They also shared that people, locals and non-locals, would flock on the lake side on weekends for picnics and other recreational activities.

Jesus Sinubyo, 72, a resident of Barangay Don Juan, Cuenca, Batangas said that life in their lakeside barangay is simple and peaceful. "Mas maalwan at mapresko ang pakiramdam sa may tabi ng lawa. Parang laging sariwa, hindi polluted dahil sariwa ang hangin at malilim dahil may mga puno. Iyong mga taga-bayan dumadayo rito, nagpi-picnic at naliligo, maging mga taga-ibang bayan at mga taga-Maynila," he said. He even boasted that their lakeside barangay once became a shoot location of a Hollywood film. "May nag-shooting dito dati. Sina Chuck Norris. Ang mga cameraman ay narito sa may lawa tapos kukuhanan nila si Chuck Norris na kunwari ay tatalon mula sa bundok (Mt. Maculot) papunta sa lawa," he recalled.

Residents living in the vicinity of the Pansipit River shared about how the river provides for their living. Germinigildo Mendoza, 64, has been residing in the vicinity of Pansipit River since his childhood days. He called to mind how the river used to be abundant in food source like the *maliputo*, *igat*, *hito*, *dalag* and *tilapia*. He said that the environment on the riverbanks was more refreshing compared to other areas farther from the river. They had not experienced flooding on rainy days and even during typhoon seasons, as floodwaters would immediately drain down the river. He added that the river serves as the venue for the annual fluvial procession of the Catholic faithful every December 8-9.

Lakes are famous for mysteries and urban legends. Taal Lake is no different. Apolinario Nipay, 63, a native of Balete, Batangas said that his grandfather told him stories about the town and the church of "Lumang Lipa" that are yet to be discovered by foreign researchers until now. Lumang Lipa is one of the barangays under the Municipality of Mataas na Kahoy, Batangas. His grandfather once shared with him about the topography of the Lake and how it transformed into its present state. "Once upon a time, ang tubig sa may Balete side ay sapa pa lang. Inuman ng kalabaw, bukal pa lang at may bundok sa gitna ng lawa ngayon (sa may tapat ng Taal Volcano). Noong sumabog ang bulkan noong unang panahon, lumubog ang bundok na iyon pati iyong simbahan sa Lumang Lipa. Hanggang sa paglubog ng bundok, lumaki ang bukal hanggang sa naging ganito na," he narrated. Remedios added, "May nanghihigop daw na ipo-ipo sa bandang Lumang Lipa, may hinigop na raw na helicopter doon sa sinasabing pinaglubugan ng simbahan ng Lumang Lipa."

The same is true for Pansipit River. Germinigildo shared that local fishermen who used to fish at night claimed that they were being accompanied by "engkantos" who served as their guides.

Whether these stories are real or simply legends, one thing remains true: Taal Volcano Protected Landscape and its wetlands play a vital role in the life of the people who depend on its resources for survival. But impacts of the volcano eruption were not only directly felt by the people, but also by other life forms, which role is critical in supporting ecosystem services that provide the food and water, among others, to many.

#### A Cradle of Biodiversity and Livelihood

For experts, the TVPL is a unique ecosystem considered as a Key Biodiversity Area. It features wetlands of high biological importance which include the Taal Lake, the main crater lake, 37 tributaries and the Pansipit River, the only outflow of Taal Lake to the sea through the Balayan Bay. The presence of endemic species, such as the "Tawilis" (Sardinella tawilis), the only species of freshwater sardine in the world; two (2) species of goby or "Biya" (Glossogobius giuris), freshwater-adapted species of "Maliputo" (Caranx ignobilis); and "Duhol" (Hydrophis semperi), an endemic species of freshwater sea snake, highlights the biological richness of the place. The biodiversity of TVPL does not end there, as it also serves as habitat to 118 recorded bird species and an estimated 700 species of plants. In recent years, conserving these biodiversity posed a challenge with the rapid tourism development in the area. But the most perilous was when Taal Volcano erupted.

The National Economic and Development Authority (NEDA) estimated the damage to be around P4.3 billion pesos in forgone income across four key industries (agriculture, fisheries, tourism and industry) in the CALABARZON region.

Jose Peñaflor, Jr. said that prior to eruption, they could harvest a minimum of 130-150 boxes of tilapia from fish cages per day (1 box= 40 kilos). After the eruption, the maximum that they could harvest was 100 boxes. In Talisay Fishport, fish buyer and wholesaler Nolida Sison said that before the eruption she could buy and resell around 80 boxes per day, but the eruption affected



Apolinario Nipay of Brgy. Poblacion, Balete, Batangas

the supply as she could only buy 30-40 boxes per day. Both agreed that although there was no significant increase in price, there was a decrease in supply. Francisco Asis, 61, owner of a dried fish store at the Talisay Public Market, shared that selling dried fish products for six (6) years has helped him build his own store, renovate his house, and buy a vehicle that he also uses for his business. He also shared that prior to the eruption, his lowest income per day was around P2,000 especially during market days, but he went on for two weeks without income after the eruption especially during the lockdown of Talisay. He said it paid to have savings which he spent during those days. On the other hand, Remedios Dimaala said that apart from fishing, many townsfolk in Balete earn a living through boat rentals for tourists who visit the volcano island. She shared that the standard boat rental was P3,500 for four (4) hours.

Based on the account of the residents, the lake provides for them economically. Without the lake, there will be no food on the table.

Germinigildo Mendoza added that the current water level of the Pansipit River following the 2020 eruption baffled him. It was the first time in his entire life that the river almost dried up. He narrated that the water never receded this low during the 1977 eruption and even during the major eruption in 1965.

The people of Cuenca, Batangas strongly believe that Mt. Maculot shielded their town against heavy ashfall and potential damage brought about by the eruption. Jesus Sinubyo shared an urban legend about the "protector" of Mt. Maculot, "Ang hiwaga sa bundok ay kapag puputok ang bulkan ay may nakaputi na nakataas ang kamay at nakatungtong sa bato sa itaas ng bundok. Hinaharangan at ibinabalik yung usok. Hindi tumatagos sa bundok."

Taal may have given us a glimpse of her furious and destructive side during the recent eruption, but she has always been generous in sustaining all life forms that depend on her especially us, humans.

#### Post Eruption Rapid Survey Held

The Department of Environment and Natural Resources (DENR), through the Biodiversity Management Bureau (BMB), will conduct a full assessment, valuation and monitoring of the impacts of Taal Volcano eruption to the biodiversity and ecosystem services of TVPL. This activity is in line with the Bureau's continuous efforts in the protection, conservation and management of our country's wetland ecosystems, protected areas and their resources.

On February 4-5, 2020, the DENR-BMB, composed of three (3) teams, conducted a rapid survey in the areas around TVPL that were heavily affected by the phreatic eruption.

The Coastal team conducted a rapid habitat assessment through direct observation of reef communities affected by ash deposits as well as the outflow of Pansipit River leading to Balayan Bay in Taal, Batangas. From the observation site at the Pansipit Bridge in Barangay Poblacion 5 in Taal, Batangas, the team documented



Francisco Asis, 61 years old at Talisay Public Market



The DENR-BMB TVPL Composite Team with TVPL PAMO Staff and DENR CALABARZON.

the current level of the river and compared it with a Google street view photo taken in June 2018. The stark difference in the water level can be seen as reduction in channel depth of around 1m-1.5m deep all throughout the river's length.

Direct observation was also made at the outflow of the Pansipit River to Balayan Bay where shore litter and settlements congregate in murky waters. The reef survey activity, on the other hand, compared the level of ash deposits in three (3) snorkeling sites in Balayan Bay, each with a depth of about three (3) meters, five (5) meters and 1.5 meters, respectively, with a distance of about 500 – 800 meters away from each site.

The Terrestrial team conducted vegetation analysis in Laurel, Batangas by revisiting permanent Biodiversity Monitoring Area of Biodiversity Assessment Monitoring System (BAMS) and the Biodiversity Monitoring System (BMS) transects in Laurel and Cuenca. The vegetation analysis revealed areas that were heavily affected by ashfall, such as the Volcano Island, Calauit and Sitio Bignay side; Baywalk area and Laeuna de Taal viewpoint in Talisay; and Barangays Gonzales and Wawa in Tanauan. On the other hand, the BAMS site in Laurel and the BMS site in Mt. Maculot Cuenca, Batangas were not significantly affected by ashfall. Like the people of Batangas who are slowly getting back to normal life after the eruption, recovering vegetation and avifauna (birds) have also been observed in these areas. The team said in their findings that the BMS site in Mt. Maculot has the

highest number of species observed in terms of flora. It also has the greatest number of native species. However, results were not conclusive in assuming that the animals which were affected by the eruption escaped to this area.

The Inland Wetland team conducted an assessment within the Taal Lake and its tributaries and conducted direct observation as well as drone mapping of the lake and its river systems.

The team also conducted water quality sampling in 19 sampling stations inside the TVPL boundary and compared the results with the DENR-Environmental Management Bureau's standard for beneficial use as recreational water. All the stations met the standard limits in temperature and pH and dissolved oxygen, while they exceeded the standard limits in turbidity level and total dissolved solids.

The team also visited and assessed the existing facilities of the TVPL. All visitor centers and look-out towers did not incur damage except for the visitor center in San Nicolas and the view deck in Barangay Gonzales in Tanauan which both had deep ash deposits on the floor. The Eco-lodge in Agoncillo- San Nicolas boundary was the only facility which suffered heavy damage from the eruption and subsequent earthquakes with cracks on the walls, ceilings, posts, floors and stairs, as well as long fissures on the ground and heavy ash deposits. Informant interviews were also conducted. The team interviewed some locals to directly inquire about the ecosystem services or benefits that they get directly or indirectly from the lake, its tributaries and the other ecosystems within TVPL, as well as its socio-cultural role. The locals narrated the changes they have observed in the lake and its tributaries even before the eruption happened. They recalled how they used the lake's water in their daily needs and how it provided for their everyday living.

The rapid survey aimed to recommend appropriate methodology for the assessment of the biodiversity and ecosystem services within TVPL and adjacent coastal ecosystems, in terms of its terrestrial, inland wetlands and coastal wetland areas, including site selection. Ultimately, the full assessment of the TVPL ecosystems will provide guidance to the TVPL Protected Area Management Office, the Provincial Environment and Natural Resources Office (PENRO) Batangas, the Community Environment and Natural Resources Office (CENRO) Calaca and Lipa City and the people who depend on this protected area for sustenance. ///

# Illegal Wildlife Trade: A conduit through which coronavirus is transmitted to humans *By Atty. Theresa M. Tenazas*

The wildlife of the Philippines includes a significant number of endemic animal and plant species. Out of the country's 52,177 species, 67% of which are endemic <sup>1</sup> and 418 of them are listed as threatened by the Red List of the International Union for Conservation of Nature and Natural Resources (IUCN) as of year 2000. However, populations are increasingly threatened by high levels of hunting for domestic and international wildlife trade, as well as habitat loss and destruction, deforestation, massive land conversion and climate change. While hunting animals from the wild is a source of food for some communities in the Philippines, as well as a cultural practice especially by the Indigenous Peoples for generations, the scale of this practice was relatively small and observed to be limited to subsistence consumption in the early years.

However, years passed and trends changed in the Philippines and around the world. Wildlife, both live and dead, began to be traded in markets and gained momentum in the 80's and years thereafter. Market demand for these wildlife species increased, but was no longer related to subsistence consumption. Nowadays, wildlife is not only sold primarily for food, but also for traditional medicine, pets, ornaments, and for domestic and global market supply. The illegal trade of wildlife, confiscation and seizure, enforcement and prosecution are being documented, reported and monitored, not only in the Philippines but globally, in order to subvert the supply chains of this illegal activity. Today, "the criminal market spans the planet which makes wildlife trafficking a transnational organized crime" and the "4th largest transnational criminal activity in the world next to drugs trafficking, human trafficking and counterfeit goods trafficking."2

As you are aware, the COVID-19 outbreak has caused pervasive panic and turmoil among all nations and their citizens, including the Philippines, which has 104.9 million,<sup>3</sup> due to risks posed to individual health, the economy and public health, as well as the uncertainty and urgency in finding a solution on how to control this emerging threat. In order to prevent the quick spread of COVID-19, the Philippines resorted to lockdown of the entire island of Luzon on March 17, 2020.

This corona virus pandemic is not new to us. "Looking back at recent history, several pandemics in the last twenty years showed clear links with virus reservoirs in wildlife populations. The SARS outbreak in 2002, which infected more than 8,000 people and resulted in 774 deaths in 37 countries, came from a novel betacoronavirus sourced from bats through masked palm civets as the intermediate host before reaching humans. The Middle East respiratory syndrome (MERS) outbreak in 2012, which infected 2,494 and cost 858 human lives, also came from another coronavirus passing though dromedary camels to humans. The very recent bout of African Swine Fever (ASF) sweeping through China, Vietnam and nine other countries, has caused severe economic losses and is attributed to wild African suids. By the end of 2019, all 63 provinces in Vietnam were affected by ASF with over five million pigs euthanized."4

1

FAO – Philippines, nd.

2 WWF TRAFFIC, nd.

<sup>3</sup> World Bank 2017

<sup>4</sup> WWF, 2015



On 17 January 2017, 164.69kg of eviscerated meat of pangolins, 13 sacks of seahorses, and a sack of sea dragons were confiscated by the Philippine Coast Guard from a cargo truck aboard MV Francis Xavier at Pier 4, North Harbor, Manila.

The Philippines had its own outbreak of diseases transmitted by animals. "In 2008-09, evidence of Reston ebolavirus (RESTV) infection was found in domestic pigs and pig workers in the Philippines.<sup>5</sup> The Philippine government, with the help of Food and Agriculture Organization of the United Nations, assembled a multi-disciplinary and multi-institutional team to investigate Philippine bats as the possible reservoir of RESTV. The Team undertook surveillance of bat populations at multiple locations using both serology and molecular assays6 and a total of 464 bats from 21 species were sampled7 found "both molecular and serologic evidence of RESTV infection in multiple bat species."8 The said Virology Journal, published by Sarah Jayme et al. (2015), concluded that "...ebolavirus infection is taxonomically widespread in Philippine bats, but the evident low prevalence and low viral load warrants expanded surveillance to elaborate the findings, and more broadly, to determine the taxonomic and geographic occurrence of ebolaviruses in bats in the region."

In 2009, the World Health Organization reported that "six (6) out of a total of 141 people have tested positive of Ebola Reston antibodies in the Philippines since testing began in December 2008 and all six people who were antibody positive reported occupational exposure to pigs."9

Thereafter in 2014, another zoonotic disease outbreak known as Henipavirus hit the southern part of the Philippines. Based on scientific study, "Henipaviruses belong to a genus of recently emerging viruses within the family Paramyxoviridae and include two zoonotic members: Hendra virus (HeV) and Nipah virus (NiV). A journal entitled "Outbreak of Henipavirus Infection, Philippines" reported the investigation conducted by the Philippine government through its Department of Health, Department of Agriculture, and the World Health Organization, which mentioned that "the natural reservoir of both viruses is pteropid bats, which harbor the viruses but do not show clinical illness," further explaining that "virus transmission from bats to domestic animals is thought to be through pasture or feed contaminated by bat urine, feces, or other excretions. "Although the source of the horse infections is unclear, on the basis of the known ecology of henipaviruses, the most likely source is fruit bats (family Pteropodidae).10

The journal further revealed that "the most common route of virus transmission to humans was direct exposure to infected horses, contact with contaminated body fluids during slaughtering of sick horses, and/

<sup>5</sup> Jayme, et al. 2015

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

<sup>9</sup> World Health Organization 2009

<sup>10</sup> Ibid.



On 11 December 2018, authorities have confiscated a total of 94.5kg of marine turtle meat during a wildlife enforcement operation in Cebu City.

or consumption of undercooked meat from infected horses. However, for at least 5 cases, clinical and epidemiologic evidence suggest direct human-to-human virus transmission. No protective equipment was used by those who cared for case-patients in the home, and health care workers used gloves and a face mask but not eye protection. The evidence of human-to-human transmission in this outbreak confirms the need for preventative measures in home care and health care settings."

In the recent global pandemonium about COVID-19, many research groups have analyzed that wildlife trade can facilitate zoonotic disease transmission and represents a threat to human health. The whole world is not only combatting illegal wildlife trade, but is also fighting against this pandemic that "emerged in Wuhan, Hubei Province of China "<sup>11</sup> through its permitted, poorly regulated, open market selling of dead and live wildlife and their meat.

In a report published by the World Health Organization dated February 21, 2020, it was revealed that the most likely "ecological reservoir" of the novel coronavirus is bats. While there are no existing data at the Biodiversity Management Bureau or available record of study or research directly linking human consumption, trade of wildlife and open market sale of wildlife and its raw meat to the COVID-19 pandemic, there are already scientific and research studies proving that "coronaviruses are a zoonotic disease, meaning, they are transmitted between animals and people, which means that it can be transmitted from an animal host to humans, as posed by wildlife trade."<sup>12</sup>

Based on the 2016 study entitled "Wildlife Trade and Human Health in Lao PDR : An Assessment of the Zoonotic Disease Risk in Markets," it concluded that "the data presented on the volume and species of wildlife and biosafety found in markets in Lao PDR demonstrate that there are significant opportunities in certain markets for wildlife, and any zoonotic pathogens they carry, to come into contact with humans. The large number of individual wild animals from high risk taxa for carrying zoonoses, poor biosafety and potential for disease spread through the movement of regional or international market visitors are all risk factors for the occurrence of a disease emergence event similar to the public health catastrophes of SARS and EVD."

However, based on the above study, it still depends on the nature of the pathogen carried by the wildlife and the scale of trade. As per the report of the Wildlife Conservation Society, the "increasing rate of wildlife trade, trafficking, and poaching tends to likely increase the spread of global epidemics."<sup>13</sup> It also mentioned that "emerging infectious diseases (EIDs) and particularly zoonotic ones are a significant and growing threat to global health, global economy and global security. Analyses of their trends suggest that their frequency and economic impact are on the rise." The conditions

<sup>11</sup> She et al. 2020

<sup>12</sup> Greatorex et al. 2016

<sup>13</sup> Walzer 2020

of so-called "wet markets" are ideal for incubating new diseases and bolster their transmission."<sup>14</sup>

It appears clear that transmission has occurred via close contact between humans and wildlife as part of ongoing illegal wildlife trade. The conditions of these markets form one of the most detrimental bridges created by man over the natural barriers that previously separated humans and wild animals. Thus, "coming into close contact with wildlife — including their body parts and excreta — poses a risk of spillover of the pathogens they host, to which we humans might be susceptible."<sup>15</sup>

The universe of zoonotic agents is so vast.<sup>16</sup> Some are identified in this millennial period, but most of them are still unknown and unpredictable. As we now face the extremely huge problem of preventing COVID-19 virus to spread, if not putting an end to it, the Biodiversity Management Bureau firmly believes that limiting the chances of contact between human and wild animals is the most effective way to reduce the risk of emergence of new zoonotic diseases. This is coherent with both scientific and legal parameters on why illegal wildlife trade should be punished with more stringent effect, in terms of imprisonment and fines.

"Limiting interaction between wildlife and humans through strong enforcement against illegal wildlife trade and wildlife markets is the most effective approach to mitigating future risk associated with transmission of disease between animals and humans."<sup>17</sup>

The Philippine is regarded as one of one of the 18 mega-diverse countries in the world because of its exceptionally rich flora and fauna. In order to conserve and sustainably manage the country's biodiversity and prevent species extinction, the DENR through the Biodiversity Management Bureau has long been enforcing Republic Act No. 9147 and is totally prohibiting the collection, hunting and possession of wildlife, its by-products and derivatives, including trading and transporting. The Bureau is also working on the amendment of the aforesaid law to impose the most stringent penalty of 20 years imprisonment as the maximum penalty for wildlife trafficking. This effort to amend is to ensure that effective punishment of wildlife crimes may act as a significant disincentive. This goes hand in hand with our incessant effort to regulate the import and export of wildlife trade, and see to it that the permitting system of CITES Convention and the DENR to prevent illegal trade of wildlife is strictly complied with.

We also find indispensable the continued and intensified partnership with different law enforcement agencies in the country working in major airports and seaports and other borders to prevent wildlife crimes like the Wildlife Traffic Monitoring Units (WTMU), as well as the strengthening of other cross-agency collaborative activities. On capacity building, there are about 12 workshops that are lined up for 2020 such as, Online Trade Investigation, Financial Investigation on Wildlife Crimes Advance Prosecutor and Enforcement Workshop, to mention a few, which are to be conducted in partnership with UNODC, USAID Protect Wildlife Project, BMB-ADB/GEF IWT Project and the United States Department of Justice Office of Overseas Prosecutorial Development, Assistance, & Training Counter Wildlife Trafficking. The target participants include DENR Regional Law Enforcement Units, DENR Lawyers, DOJ, NBI and BOC, among others, all intended to abate illegal wildlife trade. The Bureau has also strategized conservation of priority species like dugong, pawikan, and tamaraw by coming up with a 10-year management and conservation plan, alongside with other priority species with existing conservation plans, to address the need to manage, protect and conserve their population, as well as prevent their extinction and assure the sustainable use of wildlife resources.

Lastly, current efforts in strengthening the Communication, Education and Public Awareness campaign of the Bureau will be augmented to continue raising awareness of the risks of wildlife consumption to public health by issuing public advisories, publications and newsletters. CEPA initiatives will complement enforcement efforts against trafficking of wildlife, which has become the linchpin to the transfer of zoonotic diseases to humans, and in this current crisis, the human-to-human transmission of COVID-19. ///

- 15 Ibid.
- 16 Walzer 2020
- 17 WWF, 2015

<sup>14</sup> Fine and Kang 2020



The Caimpugan Peatland in Agusan Marsh Wildlife Sanctuary (AMWS) holds the only recorded remaining intact peat swamp forest in the country.

#### A New Partner in Peatland Conservation PLDT-Smart Sustainability Group joins the race to save the Caimpugan Peatlands

#### By Kathryn N. Almira

Peatlands have been ignored for far too long. They are a common target for agricultural expansion, particularly the development of oil palm plantations, which drains and damages the features that make them globallyimportant carbon sinks.

Far from the desolate wastelands they are often seen as, peatlands are ancient wetlands in which generations of dead and decaying plant matter accumulate as "peat." This millenia-old peat, once burned or degraded, releases stored carbon into the atmosphere and contributes to greenhouse gas buildup.

While these wetlands cover only 3% of the world's land mass, if kept wet, they store twice as much carbon than all the world's forests combined. But this vital function of peatlands in regulating climate and the costs that arise from damaging them remain largely overlooked.

The Agusan Marsh Wildlife Sanctuary (AMWS), located in Agusan del Sur, is home to what may be the largest areas of peatland in the Philippines. This includes Caimpugan Peatland, which holds the only recorded remaining intact peat swamp forest in the country. A study on Caimpugan Peat Swamp Forest's carbon storage estimated that this area stores 22.9 million tons of carbon within its 5,487-hectare peatland, which is remarkably higher than any other studied forest types in the country (Alibo & Lasco, 2012). Based on this carbon account, BMB estimated the total monetary value for carbon stock of this peat swamp forest at USD 917, 217,490.00 (PHP 45,860,874,520.00). This was accounted using the conservative value of USD 40 per ton of carbon by 2020, as suggested by the Intergovernmental Panel on Climate Change in 2017. In 2030, this monetary value is estimated to increase at USD 1,146,521,863.00 (PHP 57,326,093,150.00) using the conservative value of USD 50 per ton of carbon.

These estimates only prove the critical role peatlands play in the climate change story. However, if continuing threats of non-wise use persist, such as clearance and conversion into oil palm plantation, this area may turn into a carbon source from being a natural carbon sink.

In a recent visit to the Agusan Marsh Wildlife Sanctuary (AMWS), the DENR – Biodiversity Management Bureau and DENR Region XIII - CARAGA joined forces with PLDT-Smart Sustainability Group in an effort to identify possible interventions with the greatest potential to protect, conserve and restore Caimpugan Peatland.

The PLDT-Smart Group, through their Gabay Kalikasan Initiatives, started to roll out several carbon-offsetting programs: reforestation, mangroves conservation, marine protection and peatlands protection. Under their Peatlands Protection program, they have underscored the value of saving our country's peatlands to help combat climate change. What better way to do this than to focus their efforts on the largest intact peatland in the country, the Caimpugan Peatland.

Through this joint reconnaissance activity, the PLDT-Smart Group gained a better understanding of the current state of the peatland through a site visit to the Caimpugan Peat Swamp Forest and the floating community in Panlabuhan Lake. A series of discussions shed light on the key issues related to peatland degradation and challenges in peatland management. Protected Area Superintendent (PASu) Emmilie Ibonia emphasized in her presentation the need to rehabilitate 266 hectares of degraded peatland areas, construct a park ranger station fully equipped with monitoring and surveillance facilities, and establish a flying fox monitoring station/watch tower.

Currently, a three-year (2020-2022) program for the Protection, Conservation and Sustainable Use of Agusan (Caimpugan) Tropical Peat Swamp Forest is being finalized with PLDT-Smart Sustainability Group. Upon agreement of both parties, this collaboration may be DENR's first long-term public-private partnership for peatland conservation. This extendable program will initially implement activities that focus on three major components: 1) Protection, Conservation and



The DENR - BMB and the DENR Region XIII - CARAGA with the PLDT – Smart Sustainability Group making a site visit to the Caimpugan Peat Swamp Forest.



BMB Assistant Director Armida Andres (left) discusses the rationale behind the consultation-workshop; Senior Manager Nova Concepcion (right) presents PLDT-Smart Sustainability Group's programs and initiatives at the MDRRMO Conference Room in LGU San Francisco, Agusan del Sur.

Restoration, 2) Communication, Education and Public Awareness (CEPA), and 3) Sustainable Peatland-Friendly Enterprises.

Besides stepping up technologies for peatland monitoring and enforcement activities, procurement of drone and other communication devices will be given priority. Known for their School-in-a-Bag learning innovation, a portable digital classroom designed to facilitate learning in remote schools within the AMWS, the Group seeks to implement CEPA programs and activities to raise awareness on the value and degradation of these fragile ecosystems.

Through this collaboration, the parties may also tap other potential partners to expand facilities and other infrastructure necessary to strengthen ecotourism. They will also look into building the capacities of wetland-dependent communities for biodiversityfriendly livelihoods and support the enhancement and marketing of wetland products, such as *katmon* cookies, *libas* vinegar and hand-crafted water hyacinth slippers and bags, among others. They recognize that giving the communities access to sustainable livelihood options is essential to peatland conservation.

The climate change clock is ticking. There is no better time than now and no better weapon than a healthy peat to turn the tide on the climate crisis. Through this partnership between the DENR and the PLDT-Smart Sustainability Group, a bright future for peatland conservation awaits. ///



Participants pose for a group photo in their World Wetlands Day (WWD) shirts to show their solidarity and support to the WWD 2020 celebration, with the theme "Wetlands and Biodiversity," which highlights the importance of wetland biodiversity conservation.

## Philippine Rise on the Rise: Milestones and Roadmap

#### By Paula de Castro

The Philippine Rise is a vast underwater region measuring 24 million hectares and is averaging to about 3,000 to 5,000 meters deep. This undersea plateau, larger in area than Luzon, exhibits a massive formation of basalt (a common volcanic rock), and has a relatively barren seafloor. Also found in the Philippine Rise is a seamount that rises thousands of meters from the depths, lying just 35-70m beneath the surface - the Benham Bank.

To date, over 200 species have been found and documented in the PH Rise, particularly in its shallowest seamount, the Benham Bank. It serves as a refuge and nursery for commercially-important fishes, such as mackerel, marlin, and bluefin tuna. Although more than a hundred kilometers away from the nearest coastline and much deeper than the shallow reefs we are used to seeing, parts of the Benham Bank also contain vast and extensive portions of coral reefs, sponges, and meadows of algae, forming a unique ecosystem and a national treasure for the Philippines for its biodiversity and fisheries resources.

#### What were the initiatives on the PH Rise?

For years, national government agencies and partner organizations have been pushing for efforts towards the protection, sustainable use, and management of resources in this area. In 2016, the Benham Bank was globally recognized as an Ecologically and Biologically Significant Marine Area (EBSA) under the Convention on Biological Diversity. The Executive issuance declaring parts of PH Rise as a Marine Protected Area (MPA) under RA 7586, as amended by RA 11038, and the Benham Rise Management Framework have also been prepared. The following year, a series of interagency policy dialogues and consultations among relevant national agencies were conducted, leading to the finalization of the Philippine Rise Management Framework.

In 2018, President Rodrigo Duterte signed Presidential Proclamation No. 489 declaring a portion of the PH Rise within the Exclusive Economic Zone of the Philippine Sea, particularly the Benham Bank and its surrounding waters, as a Marine Resource Reserve under the NIPAS.



Benham Bank



SECURE PH Rise Expedition 2018 with the DENR BMB, UP Marine Science Institute and the Philippine Navy.

Following this proclamation, biodiversity research expeditions were conducted under the project Securing the Eastern Corridor: Understanding the resiliency of Reef Environments in the Philippine Rise Region (SECURE Philippine Rise) between the Department of Environment and Natural Resources - Biodiversity Management Bureau (DENR-BMB) in partnership with the UP Marine Science Institute (MSI).

A second leg of SECURE PH Rise Expedition was conducted in 2019, concurrent with the ongoing development and finalization of the Philippine Rise Management Plan through the Interim Philippine Rise Marine Resource Reserve (PRMRR) Protected Area Management Board (PAMB) meetings. This included the recently held PRMRR Strategic Communication Plan Workshop; output of which was disseminated to partner agencies in the first quarter of 2020.

#### What should happen in the next 10 years?

Serious threats to PH Rise are related to illegal and unregulated fishing, poaching, and illegal intrusions by foreign vessels. There have been incidents of foreign research vessels conducting scientific expeditions and surveys in the greater PH Rise region and Luzon Strait without proper request and authorization from the Philippine Government. Also, given its depth and vastness, it is difficult to conduct regular monitoring activities in the area, especially during the onset of the Southwest monsoon from May to September wherein violent weather may be encountered.

In order to address the issues, threats, and challenges in conserving and protecting the PRMRR, a 10-year management plan has been formulated following consultations with more than 90 government staff, academic faculty members and researchers, and nongovernment organizations.

Within the next 10 years, some of the plans of the government for the PRMRR include:

- Legislation through a Republic Act to ensure
- continued support and allocation of resources for its conservation and protection;
- Consistent bi-monthly maritime patrols in and around PRMRR;
- Completion of an inter-agency maritime enforcement operational protocol;
- Gathering of comprehensive baseline information on the PRMRR living and non-living resources;
- Support for fisherfolks, efficient utilization of fisheries resources, and active participation in management of the PRMRR, including reporting violations and poaching; and,
- Setting of harvest control rules to ensure fishing activities are within ecological limits.

Given the importance of the Philippine Rise to our country, educating the future generations is crucial, especially on the protection and conservation of the pristine environment within the Marine Resource Reserve and the ecosystem services and food security it provides. This calls for continuous support and implementation of in-depth research supporting protection and conservation objectives. Payoffs from these efforts will ensure the sustainability of marine resources in the country. ///

Reference: Philippine Rise Marine Resource Reserve (PRMRR) Protected Area Management Plan (2019-2029)



PH Rise team conducts deep reef survey along the Bicol Shelf area as part of a connectivity study vis-à-vis the Benham Bank.

### Establishment and Management of National Integrated Protected Areas System (NIPAS)

#### By Babylyn M. Cacao and Guerrero Rojo Patiño

The establishment of protected areas is regarded by the Convention on Biological Diversity (CBD) as one of the most effective strategies in conserving biodiversity. Protected Areas (PA), which are key habitats to diverse endemic flora and fauna, allow species migration and movement, and ensure the continuous provision of vital ecosystem services.

As a signatory to the CBD, the Philippines has a legal responsibility to establish and manage protected areas in the country. In 1992, Republic Act 7586 or the National Integrated Protected Areas System (NIPAS) Act was enacted. But changing times bring changing needs. Thus, fast forward to 2018, RA 7586 was amended by RA 11038 or the Expanded NIPAS Act of 2018. Its Implementing Rules and Regulations was issued by DENR Secretary Roy A. Cimatu as DENR Administrative Order No. 2019-05 on 30 May 2019.

Also called the ENIPAS Act, this law placed 94 PAs under the classification of "National Park" in addition to the 13 previously legislated protected areas.

Protected Areas are defined as identified portions of land and/or water set aside by their unique physical and biological significance, managed to enhance biological diversity, and protected against destructive human exploration. The establishment and management of protected areas are part of international commitments under several multilateral environmental agreeements signed by the Philippine Government such as the CBD, Ramsar Convention, Convention on Migratory Species, World Heritage Convention, and the ASEAN Agreement on the Conservation of Nature and Natural Resources.

There are currently 244 protected areas in the Philippines of which 107 protected areas were legislated by Congress, 13 were established through Presidential Proclamations, and 124 are initial components of the NIPAS. Initial components are areas such as proclaimed national parks, game refuge and wildlife sanctuaries, nature reserves, wilderness areas, mangrove reserves, watershed reservations, fish sanctuaries, and protected landscapes and seascapes that were established prior to the effectivity of the NIPAS Act of 1992.

The total area covered by the 244 protected areas is 7.76M hectares. The 107 legislated PAs cover about 4.38M hectares while the 13 proclaimed protected areas and the 124 initial components cover 1.11M hectares and 2.27M hectares, respectively. These values are on track in achieving the Aichi Biodiversity Target specifically Target 11 which states that "by 2020, at least 17 percent of terrestrial and inland water areas and 10 percent of coastal and marine areas are conserved through effective and equitable management."



Two of the known UNESCO World Heritage Sites of the Philippines legislated under the National Integrated Protected Areas System (NIPAS).



Legislators Forum on the Expanded National Integrated Protected Areas System (ENIPAS) at the Crowne Plaza Manila Galleria on September 10, 2019.

Under the ENIPAS Act, the administration of the NIPAS is placed under the Department of Environment and Natural Resources through the Biodiversity Management Bureau. In addition, the ENIPAS Act requires the creation of a respective Protected Area Management Board (PAMB) which is a multi-sectoral decision-making body for each protected area established under the System.

The question on how to finance the conservation and management of protected areas is also addressed by the ENIPAS Act. An Integrated Protected Area Fund (IPAF) must be established for every protected area. The income that will be generated from the operation and management of the protected area will accrue to this fund. Of the total revenue raised by the protected area, 75% will be deposited in the Protected Area – Retained Income Account (PA-RIA) to be used solely for its protection, maintenance, administration, and management. The remaining 25% shall be deposited in a Special Account in the General Fund of the National Treasury for the purpose of financing projects under the System.

In recognition of the importance of the biological diversity of the Philippines, several protected areas have been recognized internationally and designated as (1) UNESCO World Heritage Sites (Tubbataha Reefs Natural Park, Puerto Princesa Subterranean River National Park, and Mt. Hamiguitan Range Wildlife Sanctuary); (2) Ramsar Sites (Olango Island Wildlife Sanctuary, Agusan Marsh Wildlife Sanctuary, Naujan Lake National Park, Puerto Princesa Subterranean River National Park, and Tubbataha Reefs Natural Park); (3) Transboundary Protected Areas (Turtle Islands Wildlife Sanctuary); and (4) ASEAN Heritage Parks (Mt. Apo Natural Park, Mts. Iglit-Baco National Park, Mt. Kitanglad Range Natural Park, Mt. Malindang Natural Park, Tubbataha Reefs Natural Park, Timpoong Hibok-Hibok Natural Monument, Mt. Hamiguitan Range Wildlife Sanctuary, Agusan Marsh Wildlife Sanctuary, and Mt. Makiling Forest Reserve).

Further, various support policies were issued by the DENR and the BMB to effectively implement the ENIPAS Act. These include guidelines on Special Use Agreement in Protected Areas (SAPA), Biodiversity Assessment and Monitoring System (BAMS), and Protected Area Suitability Assessment (PASA). The process of Management Planning for Protected Areas and drafting of PA Management Plans were also outlined and institutionalized. Procedures in the Identification, Designation and Delineation of Management Zones of Protected Areas, and standardization of the Rates of Fees for Entrance and Use of Facilities and Resources in Protected Areas were also supplied by the DENR through the BMB.

Lastly, the DENR through the BMB, lobbied with legislators to increase the funds for the protection, operation, and management of protected areas. For 2020, a total of Php 500M was secured to support the implementation of the ENIPAS Act. In addition, discussion with legislators for continuous funding support for 2021 is on-going. The creation of a Protected Area Management Office (PAMO) for each legislated protected area to be headed by a Protected Area Superintendent, who shall supervise the day-today operations of the protected area with sufficient number of support staff, is being discussed with the Department of Budget and Management (DBM). ///

## A Protected Area in the City's Heart

#### By Fides Sandoval

In a city where the hustle and bustle of life never ceases lies a serene place where nature's beauty and simplicity coexist. Known as the Ninoy Aquino Parks and Wildlife Center (NAPWC), this place is found at the heart of Quezon City. It serves as an oasis in the middle of a highly urbanized environment, and a habitat to various forms of animals and plants.

NAPWC is an urban park, popular to people who love to see the wild animals at the Park's Wildlife Rescue Center. A green space admired by tree enthusiasts as it boasts more than 3,000 individual trees, NAPWC is a venue for those who need a breather from hectic city living and those who love to capture nature's breathtaking scenery. But more than being an area where people can commune with nature, learn more about biodiversity and its conservation, or create memories worth remembering, NAPWC is, in fact, a Protected Area by virtue of National Integrated Protected Areas System (NIPAS) Act or RA 7586, as amended by RA 11038, that highlights urban biodiversity known to bring economic, health and ecological benefits to a wide variety of life.

#### Where It All Began

The Park traces its beginnings back to being a part of the 197.8-hectare Quezon Memorial Park that was reserved for National Park purposes (Presidential Proclamation No. 42 dated 5 July 1954). From the year 1954 until 1970, developments of certain portions of the Park took place by virtue of a number of Presidential Proclamations resulting to the reduction of its land area. The portions of land were used for the establishment of the Philippine Science High School and the National Government Centers, which were later subdivided and developed as the areas occupied by the Central Bank of the Philippines, Lung Center, Kidney Center, and Children's Hospital.

In 25 July 1970, the Park was opened to the public but later had to be closed in 1982 for further developments. Facilities and comfort rooms were constructed, and the lighting and water systems were installed. In 1983, the Park was reopened to the public and was popularized as "Lungsod ng Kabataan Recreational Park."

It was in 1986 when the Park's name was changed to

"Ninoy Aquino Parks and Wildlife Nature Center" (NAPWNC) in honor of the late Senator Benigno Aquino, Jr. During the government reorganization in 1987, NAPWNC was placed under the Protected Areas and Wildlife Bureau.

In 25 May 2000, the NAPWNC was changed into the DENR - Wildlife Rescue and Rehabilitation Center by virtue of Proclamation No. 312. It became instrumental in the conservation and management of the country's wildlife resources. After two years, Proclamation No. 238 amended Proclamation No. 312 once again, reverting the name to Ninoy Aquino Parks and Wildlife Center (NAPWC).

By virtue of Proclamation No. 723 dated 25 October 2004, NAPWC has been declared a protected area and a component of the National Integrated Protected Areas System (NIPAS) Act of 1992 or RA 7586 under the administration of the Protected Areas and Wildlife Bureau, now known as the Biodiversity Management Bureau by virtue of EO No. 192.

#### A Legislated Protected Area in Quezon City

With the passage of the Expanded National Integrated Protected Areas System (ENIPAS) Act of 2018 or RA 11038, an amendment to the NIPAS Act of 1992 or RA 7586, NAPWC became one of the 94 protected areas legislated in Congress, and now classified as a National Park.

RA 7586, as amended by RA 11038, is an act that ensures the protection of areas with biologically unique features to sustain human life, and guarantees the perpetual existence of all native plants and animals for the present and future generations through the establishment of a comprehensive system of integrated protected areas within the classification of national park.

One of the compliances undertaken by the management pursuant to the law is the creation and operationalization of the Protected Area Management Board (PAMB) of NAPWC. The Management Board is a policy-making body of the protected area at the site level that decides on matters related to planning, resources protection and general administration of the protected area. Specific to NAPWC, it is co-chaired by the Assistant Secretary for Climate Change and concurrent BMB Director, and the DENR - NCR Regional Executive Director, with members composed of representatives from the Senate, Congress and LGUs having territorial jurisdiction over the area; Regional Directors of the following government agencies, namely: the Department of Agriculture, the National Economic and Development Authority, the Department of Science and Technology, the Philippine National Police and the Department of National Defense; and representatives from an NGO/PO, the Academe and the Private Sector.

NAPWC conducted coordination meeting with concerned offices and agencies on 12 November 2018 to facilitate the creation of the Management Board. On 12 July 2019, a meeting attended by the ex-officio members of the Management Board was called.

Subsequently, a call for applications for interested members of NGO/PO, Academe and Private Sector was posted. The applications have been evaluated for endorsement to the DENR Secretary.

With NAPWC's declaration as a legislated protected area and the operationalization of its Management Board, the effective and efficient management of the Park as well as plans for its sustainable development are ensured.

Thriving Urban Biodiversity

The thriving biodiversity of the Park equates to a healthy ecosystem that helps in sustaining a wide variety of life, which in turn supports human well-being. NAPWC is an urban park considered as one of the few remaining green spaces in the city.

Based on the urban biodiversity assessment conducted by the Biodiversity Management Bureau in July 2019, various species of animals inhabit the Park including 29 species of birds; 6 species of amphibians; 2 species of mammals; and 1 species of reptiles. NAPWC also boasts more than 3,000 individual trees that include both endemic and introduced species. Of 108 species of trees, 13 species are found to be endemic to the Philippines including Katmon, Kamatog and Antipolo. With the ongoing transformation of the Park into an Arboretum of Philippine Native Tree Species, NAPWC will definitely become a home to species of native trees from different regions of the country.



A breathtaking aerial view of the human-made lagoon, a frequently visited area in the park, which serves as habitat to different fish species.



The Tea House and Fishing Village by the lagoon bear witness to a number of special and milestone events time and again.

#### Key Areas and Facilities

All year round, NAPWC serves as venue for various activities including educational, recreational, civic or religious activities. It is a place that connects people to biodiversity and learn about its conservation.

The Wildlife Rescue Center (WRC) found inside the Park serves as a temporary shelter and rehabilitation facility for confiscated, donated and/or abandoned indigenous and exotic wild animals. Its main objective is to release endemic and indigenous wild animals back to their natural habitat following standard protocol. Exotic wild animals and those unfit for release are retained in the showcase area of WRC for public awareness, appreciation and support for conservation of the country's wildlife resources and their habitats. It also serves as a training ground for practitioners and students of veterinary medicine, zoology, biology, botany and natural sciences.

NAPWC also offers facilities that can be utilized by the public for events, which are as follows:

#### Tea House

The Tea House can accommodate 40 to 50 people and it is ideal for workshops, seminars, meetings and intimate

gatherings. A whole day rent will cost PHP 500.00 (exclusive of electricity fee).

Fishing Village

This facility imitates the native fishing villages in Mindanao. It includes five houses on stilts at the edge of the lagoon that can accommodate 100 to 150 people. The rental fee costs PHP 2,500.00 for the whole day (exclusive of electricity fee).

#### Amphitheater

The open-air Amphitheater allows the visitors to enjoy an impressive view of the man-made lagoon that can accommodate around 800 to 1000 people. A whole day rent costs PHP 1,350.00 (exclusive of electricity fee).

#### **Picnic Sheds**

The park offers five Picnic Sheds that are situated in strategic areas and can be rented by the visitors for the whole day. Rental fee for each Picnic Shed costs PHP500.00.

For venue inquiries and/or reservations, you may reach NAPWC at 8924 6031 local 236, or send an email to napwc@bmb.gov.ph. ///

## Green Fins: Biodiversity meets Tourism

#### By Grick Cordero

The Philippines is one of the 18 mega-diverse countries in the world that harbor two-thirds of the earth's biodiversity – offering vast amount of advantages and disadvantages both for the country's ecosystems and its people. With the global tourism industry gaining momentum in the past years and the anticipation of its boom in the coming decades, the Philippines is situated to be a tourism hotspot with its unique coastal, marine and beach biodiversity.

There has been an unprecedented influx of tourists in the areas of CALABARZON, MIMAROPA and Central Visayas regions where diving and snorkeling are rampant. These areas are also considered by the Department of Tourism as some of the top tourist destinations in the country. To this end and as one of its conservation strategies, the DENR, through one of its flagship programs, the Coastal and Marine Ecosystems Management Program (CMEMP), has taken on the Green Fins to regulate diving and snorkeling activities in selected areas within these regions.

In 2004, Green Fins was started by the United Nations Environment Programme (UNEP) under the Regional Seas programme and is overseen by The Reef-World Foundation (RWF). Primarily, Green Fins is a comprehensive approach that encourages diving and snorkeling operators, local communities and governments to work together and reduce environmental impacts of diving/snorkeling activities to our coastal and marine ecosystems. This is done through feedback and regular assessments against a 15-point Code of Conduct implemented by the RWF, the DENR and partner trained Green Fins Assessors. Moreover, it also contributes to raising public awareness and encouraging good practices that will impact the conservation of coral reefs and reduce unsustainable tourism practices.

Common unsustainable tourism practices reported include anchoring, fish feeding and poor waste management that cause degradation of coastal and marine ecosystems. Green Fins addresses monitoring needs, hence, facilitated constant and strengthened cooperation among stakeholders across regions and reduction of direct and indirect pressures which tourism puts on coral reefs. Through these efforts, coral reefs embody a high degree of resilience against climate change, which will, in the long run, benefit local communities and economies. ///





QR Code for Green Fins Code of Conduct digital copy

# BMB Kicks Off Women's Month with Fun-filled Activities

#### By Apple Matic

Every March, the Biodiversity Management Bureau (BMB) commemorates the impact of women throughout the world in a celebration we know as Women's Month. With the recurring theme, "We Make Change Work for Women," the BMB kicked off the month-long celebration of National Women's Month on March 9, 2020 at the Ninoy Aquino Parks and Wildlife Center.

In his inspirational message, the Assistant Secretary for Climate Change and concurrent BMB Director Ricardo L. Calderon encouraged everyone to be active agents of change contributing to the promotion of gender equality and the empowerment of all. He also emphasized the growing number of women in the agency, especially in third level positions, which shows the impact of valuing equal gender representation in the workforce. ASEC Calderon expressed his gratitude to the men as well for their continuous support to women and for fostering an environment that enables women to pursue their passion and meaningfully engage in whatever endeavor they hope to achieve.



ASec Ricardo Calderon delivering an Inspirational Speech.

The BMB-Gender and Development Focal Point System (GFPS) recognized its retired and retiring members, Maria Christina Fider, Lanie Mabana and Maritess V. Agayatin, for their meaningful contribution in mainstreaming gender in the agency's activities and programs. These awardees have proven that women and men have very valuable roles to play in nation-building, especially in the environment and natural resources sector.



ASec Calderon and Asst. Director Armida Andres with GFPS Honoree Ms. Lanie Mabana.



Another GFPS Honoree: Ms. Maria Christina Fider (center-right), together with Asst. Director Armida Andres; GAD Focal Person Nancy Corpuz; and HR Staff Wed Balatibat.

After the recognition, BMB employees gathered for a Zumba dance workout followed by the annual Fun Walk. The activity aimed to raise awareness on the importance of exercise and good health, particularly among women who are preoccupied with their daily work routine to embrace a healthy and balanced lifestyle.



BMB employees actively participating in the dance session.

A lecture about improving social life for longer living was discussed by Dr. Maria Teresa Icasiano, M.D., FPPA, F.P.C.Psych. Dr. Icasiano highlighted that having close relationships and being socially integrated increase chances of living a longer life. Social connectivity can act as a preventive barrier to a harmful level of stress.

To make the activity more special, the male employees of the Bureau handed out red roses to every female employee in the hall. It was a simple act to let them know that they are appreciated in every way. Let us enable every Juana to show how extraordinary she can be by tearing down barriers to gender equality, ending discrimination, and fighting sexism and toxic masculinity.

Let us be reminded that this month is not only for us, women. It is for everyone. It is a time for all of us to celebrate women and work towards their full empowerment. Let us all unite and make gender equality a lived reality. Let us all Make Change Work for women! ///



Dr. Teresa Icasiano on how to live longer through improved social life.



BMB employees all smiles during the Women's Month Celebration Kickoff Activity.



The DENR-BMB is at one with the entire nation and the world in celebrating World Wetlands Day 2020.

### World Wetlands Day 2020 DENR-BMB goes to the regions and takes action for "Wetlands and Biodiversity"

#### By Kathryn N. Almira

The Philippines welcomed "the crunch year for biodiversity and climate emergencies" with Taal Volcano sending ash plumes 14 kilometers into the air and spewing lava fountains that forced thousands to flee their homes. This set alarm bells ringing across the DENR - Biodiversity Management Bureau (BMB), prompting the creation of a composite team made up of representatives from all the Bureau's technical divisions.

On the same week that the world came together to celebrate World Wetlands Day (WWD) 2020, three weeks after the Taal Volcano woke up from its 43year slumber, the team geared up and set out on their mission to assess, valuate and monitor impacts of the eruption on biodiversity and the functioning of ecosystems within the Taal Volcano Protected Landscape (TVPL).

"Wetlands and Biodiversity" was the theme for WWD 2020, and the Bureau took this unique opportunity to raise awareness on the critical role and high value of wetland biodiversity in disaster-stricken TVPL, and two other wetland areas, namely, the Sasmuan Bangkung Malapad Critical Habitat and Ecotourism Area (SBMCHEA) in Pampanga and the Agusan Marsh Wildlife Sanctuary (AMWS) in Agusan del Sur.

#### Rapid Survey of Taal Volcano Protected Landscape February 4-6, 2020

The DENR-BMB composite team, together with DENR CALABARZON and its field units, was quick

to sketch out a plan of action and bring it to fruition, commencing with a three-day reconnaissance survey on selected sites beyond the seven-kilometer radius Taal danger zone. Ready with maps, drones, cameras and other equipment, the team split into three groups assigned to conduct a rapid survey on: 1) terrestrial, 2) inland wetland and 3) coastal wetland ecosystems.

The Terrestrial group revisited Biodiversity Assessment Monitoring System (BAMS) and Biodiversity Monitoring System (BMS) sites in Laurel and Cuenca, Batangas and conducted roadside survey of species and drone mapping of vegetation (orthographic) in various sites within TVPL. The Inland Wetland group, on the other hand, visited Taal Lake and its tributaries, namely, Pata River, Pansipit River, Wawa River and



Jose Penaflor, Jr., RAWES interviewee, at Laurel Fish Port

Looc River. Direct observation of species and drone survey/mapping of the lake and its river system were conducted. Water quality testing was facilitated in 19 sampling stations within TVPL.

Lastly, the Coastal group carried out a rapid visual assessment of reef communities heavily affected by volcanic ash deposits in three (3) selected sites in Balayan Bay and in one of the two Pansipit River outflows leading to Balayan Bay. A sub-team also conducted an initial ecosystem service assessment using the Rapid Assessment of Wetland Ecosystem Services (RAWES) approach. Seven (7) locals from different affected areas were interviewed to determine the economic and socio-cultural values, among other ecosystem services, of Taal Lake and Pansipit River.

The team returned with a wealth of initial information on the extent and magnitude of the loss and damage to biodiversity and ecosystem services, as well as impacts to infrastructure and facilities within TVPL. They made recommendations on appropriate assessment methodologies to inform subsequent assessments and further long-term studies on the recovery of damaged ecosystems within TVPL.

#### "Wetlands and Biodiversity" Scientific Conference in Sasmuan February 11-12, 2020

The Sasmuan Bangkung Malapad Critical Habitat Ecotourism Area (SBMCHEA) is a candidate site for inclusion in the Ramsar List. With a total area of 4,426.89 hectares, the site is critical to the conservation of migratory birds, regularly supporting 20,000 or more waterbirds, including five threatened species, namely, the Black-faced Spoonbill, Chinese Egret, Asian Dowitcher, Far Eastern Curlew and the Philippine Duck.

The Bureau was invited by PENRO Pampanga to participate in its celebration of World Wetlands Day 2020, entitled "Kaalaman sa Latian para sa Wastong Gamit ng Likas Yaman." The conference, held at the National Child Development Center in Sasmuan, gathered local fisherfolk from Sasmuan coastal barangays, representatives from various government agencies and the academe to discuss and learn from various scientific papers on the importance and wise use of wetlands and their biodiversity. The presentations included a preliminary report on the Ecological and Biological Status of Guagua Pasak River and Bangkung Malapad estuary by Angeles University Foundation; Mangrove Ecosystem: Classroom Without Walls by Holy Angel University; Status of Waterbirds in Manila Bay Wetlands by Wetlands International Philippines; and an Overview of the Ramsar Convention on Wetlands and Ramsar Site Designation by the DENR – BMB.

Mr. Jayson Salenga, LGU Sasmuan Tourism Officer and focal for Bangkung Malapad Coastal Wetlands, shared about the GSMA Smart-Ericsson Connected Mangroves Project, which helps with mangrove reforestation by leveraging connected technologies that enable remote and real-time monitoring of the health and security of the mangroves, as well as generates data helpful in increasing their survival rate.

Ms. Joy Navarro of BMB – CAWED discussed the three (3) implementation pillars of the Convention: 1) wise use of wetlands, 2) designation of Ramsar sites, and 3) international cooperation. She highlighted a wide range of best practices Contracting Parties may implement as part of their commitment to wetland conservation, such as maintaining a National Wetland



Ms. Joy Navarro of BMB - CAWED gives an overview of the Ramsar Convention on Wetlands, which is the only global treaty that focuses on the conservation and wise use of wetlands.

Inventory, establishing national wetland policies and plans, and promoting the conservation and wise use of wetlands through CEPA, among others. She also laid out the criteria for identifying Wetlands of International Importance and guidelines for application, along with the benefits that come with Ramsar designation.

Bangkung Malapad is a mangrove islet that is nestled on the Pasak River, which is one of the connecting rivers from upstream regions of Manila Bay, making it immensely crucial to the rehabilitation of Manila Bay.

#### Joint Reconnaissance Activity in Caimpugan Peatlands February 11-14, 2020

The presence of peatland areas in the Agusan Marsh Wildlife Sanctuary (AMWS), the largest and possibly the only of its kind in the Philippines, makes it one of the most ecologically significant wetlands in the country.

In a recent site visit, the DENR - BMB, together with DENR Region XIII - CARAGA, joined forces with PLDT-Smart Sustainability Group in taking stock of the status of the peatland areas, particularly the Caimpugan Peat Swamp Forest, which is considered as one of the least known distinct forest formations in the country. This intact peatland is estimated to store 22.9 million tons of carbon, or >3,000 - 6,000 tons of carbon on a per hectare basis, playing a crucial role in carbon storage and climate regulation. Based on this carbon account, the BMB estimated the total monetary value for carbon stock at USD 917, 217,490.00 (PHP 45,860,874,520.00). This was calculated using the conservative value of USD 40 per ton of carbon by 2020, as suggested by the Intergovernmental Panel on Climate Change in 2017. In 2030, this monetary value is estimated to increase at USD 1,146,521,863.00 (PHP 57,326,093,150.00) using the conservative value of USD 50 per ton of carbon.

Peatlands Protection is a major Gabay Kalikasan carbon-offsetting initiative of the PLDT-Smart Group, and Caimpugan Peatland is eyed as priority program in the offing. Facing threats on multiple fronts, including land use conversion to oil palm plantations, timber poaching, and drainage that leads to land subsidence and susceptibility to peat fire, this peatland treasure needs urgent protection and restoration.

The reconnaissance survey of the area was part of the effort of all parties to finalize a three-year (2020-2022) program for the Protection, Conservation and Sustainable Use of Agusan (Caimpugan) Tropical Peat Swamp Forest, which may be DENR's first long-term public-private partnership for peatland conservation.

Through an exposure trip to the floating community in Panlabuhan Lake in Loreto town, the PLDT-Smart Group gained a better understanding of the uniqueness of the entire wetland ecosystem of AMWS and the communities dependent on it for survival. Insights from the site visit beefed up the planning of activities and interventions to be included in the said three-year program during a consultation-workshop.

The workshop took on a bottom-up approach to ensure the effective participation at grassroots level. It was participated in by representatives from the Local Government Units of San Francisco and Talacogon; barangay officials from Caimpugan, New Visayas, Causwagan, Maharlika, La Flora and Sabang Gibong; and the Caimpugan Native Farmers and Fisherfolks Multipurpose Cooperative (CANFFMULCO).

All of these awareness-raising efforts during World Wetlands Day 2020 celebration rounded off in a culminating activity that gathered the entire BMB workforce in one place to show solidarity in protecting our country's "Wetlands and Biodiversity." ///



The DENR and PLDT-Smart Sustainability Group meet the locals of Brgy. Caimpugan during the site reconnaissance.

# FREEDOM WALL



# CLIMATE CHANGE

is a phenomenon that refers to significant variations to the climate and the effects of these variations on other parts of the earth, with respect to the increase accumulation of greenhouse gases in the atmosphere such as Carbon dioxide.



## rising sea levels

change in rainfall patterns and increase intensity and frequency of storms

warming oceans from global temperature rise



# **BLUE CARBON**

is the *Carbon* stored in **plants** and **sediments** in coastal and marine ecosystems. Mangrove forests and seagrasses are examples of *Blue Carbon Ecosystem*.

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Blue carbon ecosystems absorb and store large quantities of carbon in both plants and the sediment below.

When degraded or disturbed, these ecosystems emit the carbon they have stores for centuries back into the atmosphere and oceans.

An estimate of 1.02 billion tons of carbon dioxide are released annually from degraded blue carbon ecosystems.

Blue carbon ecosystems are critical ecosystems. They support coastal water quality and healthy fisheries.

Mangroves and seagrasses also provide coastal protection against floods and storms.

83% of the global carbon cycle is circulated trough the ocean. Coastal habitats cover less than 2% of the total ocean area but they account for approximately 50% of the total carbon sequestered in ocean sediments.

Blue Carbon Ecosystems are important for their role in reducing impacts of global climate change. Thus, it is also important to protect and restore these ecosystems for their 'blue' carbon value.

3. Department of Health. "CLIMATE CHANGE". Department of Health Website.





# **BIODIVERSITY SENTINEL**

# **OUR SOLUTIONS ARE IN NATURE**

The Biodiversity Sentinel's upcoming issue is all about building back better, featuring various stories and solutions that support the global agenda to bend the curve on biodiversity loss for the benefit of all life on Earth.

#### WHAT'S INSIDE OUR JULY - DECEMBER 2020 ISSUE:

- Urban Forest Bathing
- Empowering 4PS Beneficiaries through Citizen Science | DSWD and DENR BMB's Biodiversity Finance Initiative (BIOFIN) Project
- Animal Handling Safety Protocols: Reducing Risk of Exposure to Emerging Pathogens
- Exploring Drivers of Lake Sebu Degradation and Community-based Solutions
  First Record of Hooded Cranes in the Philippines
- Eco-friendly and Sustainable Living in Low-Income Communities
- Ecosystem Services and Biodiversity within Uyaan Lake in Madamba,
- Lanao del Sur
- Celebration of Month of the Ocean
- Protecting Traditional Knowledge of Molbog Communities in Balabac, Palawan
  Carving a Path towards a National Wetland Policy
- Dynamic Conservation and Sustainable Use of Agrobiodiversity in Traditional Agroecosystems of the Philippines



# **22 MAY 2020** ERNATIONAL DAY FOR **BIOLOGICAL DIVERSITY Our solutions are in nature**





**Department of Environment and Natural Resources Biodiversity Management Bureau** 

