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AGUSAN MARSH

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Where humans and crocodiles thrive

By JONATHAN MAYUGA

LOLONG, a 22-foot saltwater crocodile, shocked the world when it was captured in 2011. It has put Bunawan, a town in the province of Agusan del Sur, in the limelight as home to the largest crocodile in captivity. Before its demise in 2013, Lolong became the center of ecotourism in Bunawan.



AGUSAN Marsh DENR STRATEGIC COMMUNICATION AND INITIATIVES SERVICE

More than the fame and fortune that came Bunawan's way, Lolong's capture and demise while in captivity became an eye opener to the people of Agusan del Sur: Wildlife belongs in the wild.

"After they captured Lolong, hunting of crocodile stopped. There was a plan to launch a hunt for another big crocodile then, but after Lolong [died], the Protected Area Management Board [PAMB] decided not to allow hunting within the protected area," said Emmelie T. Ibonia, the Protected Area superintendent of the Agusan Marsh Wildlife Sanctuary (AMWS).

Director Theresa Mundita Lim of the Department of Environment and Natural Resources-Biodiversity Management Bureau (DENR-BMB) said there is more to Agusan Marsh than large crocodiles, like Lolong.

Key biodiversity area

A PROTECTED area, by virtue of Proclamation 913, which established the AMWS, the 40,942-hectare wildlife sanctuary is a key biodiversity area and a wetland of international importance, it being a feeding and nesting ground of migratory birds.

The AMWS is Ramsar site and was issued a certificate on November 12, 1999, because of its importance to the survival of mi-

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40,942 ha

The area of Agusan Marsh Wildlife Sanctuary

gratory wild birds that pass by the country during their escape from colder areas in the region. "Once a wetland is declared a Ramsar site, it is recognized as a wetland of international importance," Lim said. The Convention on Wetlands of International Importance, called the Ramsar Convention, is the intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources.

The convention was adopted in the Iranian city of Ramsar in 1971 and came into force in 1975. Since then, almost 90 percent of UN member-states, from all the world's geographic regions, have acceded to become "Contracting Parties." According to Lim, the fact that the world's largest crocodile, and perhaps the oldest (Lolong was estimated to be 50 years old), was able to survive in Agusan Marsh is proof that the ecosystem in the area remains intact. The wildlife sanctuary is shared by the towns of Bunawan (where Lolong was cap-

tured) La Paz, Loreto, Rosario, San Francisco and Tacalogon in Agusan del Sur province.

According to a biological profile prepared by the DENR-BMB, the AMWS is home to 112 species of trees and other plant species. A total of 127 bird species can be found in the marsh, 31 of which are endemic to the Philippines, including 10, which are considered critically endangered. Being a wetland, the Agusan Marsh is also thriving with native fish, including 16 freshwater fish species.

Unique ecosystem

THE AMWS is a unique ecosystem. On top of being a habitat of rare and endangered wildlife, the marsh has two important hydrological functions. It serves as flood-retention basin that absorbs excess water that otherwise could cause flooding in many areas. At the same time, it also serves as sediment trap.

During the wet season, Agusan Marsh is a large single swamp or a single lake. During dry season, it turns into a series of interconnected rivers and isolated swamps and lakes with Agusan River flowing through the center. Eight river tributaries—namely, Gibong, Simulao, Manat, Baobo, Logum, Ihaoan, Umayan and Adgaoan—drain into the Agusan Marsh or into the reaches of the Agusan River upstream of the marsh.

Peatlands

AGUSAN Marsh is known to have large peatlands, which are wetlands formed by plant fossils over

thousands of years. They provide a host of important ecosystem services, Lim said. Peatland ecosystems are considered as the most important carbon sink, more important than forests, because of its carbon-absorption capacity. During heavy rains and floods, these peatlands can absorb huge volumes of water, preventing potentially destructive and deadly floods.

"Peatlands are carbon storage. Destroying peatlands may release carbon into the atmosphere," Lim said. "It is important that these peatlands in the Agusan Marsh are preserved," she added.

Ibonia said there are two peatlands within the AMWS—the 5,325 hectares Campugan Peatland in San Francisco town, and the 2,000 hectares Talacogon Peatland in Talacogon town. "These peatlands are being protected along with important ecosystems and wildlife as part of our biodiversity monitoring activities," she said.

Economic importance

CLOSE to 20,000 Manobos live within the AMWS, Ibonia said. Being its primary protectors, the Manobos consider the Agusan Marsh their most important capital. During the dry season, they use the dry portion of the marsh to plant rice, corn and other crops. During the wet season, when the Agusan Marsh is turned into one big lake, they take their boats and nets to catch fish, such as mudfish, carp, tilapia, catfish and gourami.

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The swamp forest is also a source of fuelwood. It is also thriving with fruits—*kamandiis*, *lambog* and wild *lanzones* (*Lancium domesticum*), *durian* (*Durio zibethinus*) and *marang* (*Arthocarpus integrefolia*).

The DENR-BMB believes that the unique sceneries in the marshland offer ecotourism activities, such as bird watching, kayaking, sightseeing, lake hopping, river cruising and trekking along identified peat dome area.

In fact, the Department of Tourism in the Caraga Region is promoting the AMWS. Ecotourism in the area is incorporated in the Provincial Tourism Master Plan of Agusan del Sur.

The management of the AMWS is continuously engaging the communities, including young pupils in public elementary schools in Agusan del Sur, as part of its information, education and communication campaign to highlight the importance of protecting Agusan Marsh.

Illegal fishing, timber poaching

ILLEGAL fishing is a serious threat to fish biodiversity in Agusan Marsh, Ibonia said. "People use electrocution gadgets to catch fish. This is illegal because electricity kills even small fish and fish eggs. If illegal fishing methods continue, we might end up losing all our fish," she said. Timber poaching, according to Ibonia, is another big problem. People living within AMWS, as well as "outsiders," are into commercial logging, she said.

'Bantay Danao'

ACCORDING to Ibonia, the 63-member PAMB, the highest policy-making body, which governs AMWS, is very active and supports the policy to protect and conserve Agusan del Sur's most treasured economic resource.

The local government units, which are represented in the PAMB, have their own respective "Bantay Danao," or lake guards. Danao in the Manobo native tongue means lake, she said. Because of limited resources, she added, the PAMB has appropriated a budget for only 10 Bantay Danao.

"Part of their [Bantay Danao] job is biodiversity monitoring and enforcement of environmental laws," she said. From time to time they conduct routine patrol in parts of the marsh's identified "hot spots," areas where illegal fishing and timber poaching occur, which covers an area of about 10,000 hectares. This means every deputized Bantay Danao covers 1,000 hectares.

Home of crocodiles

THE Agusan Marsh is known to be home of crocodiles. Two species of crocodiles found in the Philippines are known to thrive in Agusan Marsh: the *Crocodylus mindorensis*, or the freshwater crocodile, and the saltwater *Crocodylus porosus*.

According to Lim, to protect the remaining crocodiles, the DENR-BMB once attempted to conduct a study to determine the population of the crocodiles in Agusan Marsh. But the plan did not push through.

She said there is a need to develop baseline data in Agusan Marsh that should include crocodiles.

Live in peace and harmony

IBONIA said people and crocodiles live in peace and harmony. Despite reports of Lolong's fatal attack that prompted the Bunawan local government unit to launch the hunt, people do not generally fear crocodiles.

"There was no other incident of crocodile attack. The first and last report of crocodile threat to the community was in 2009," she said.

"Here, people have learned to live in harmony with the crocodiles. It's part of their way of life," she said. The report said a 10-year-old girl was eaten by a crocodile. The young girl's decapitated head was found, prompting the people in Bunawan to suspect a crocodile was behind the attack, hence, the manhunt that resulted in the capture of the world's largest-living crocodile.

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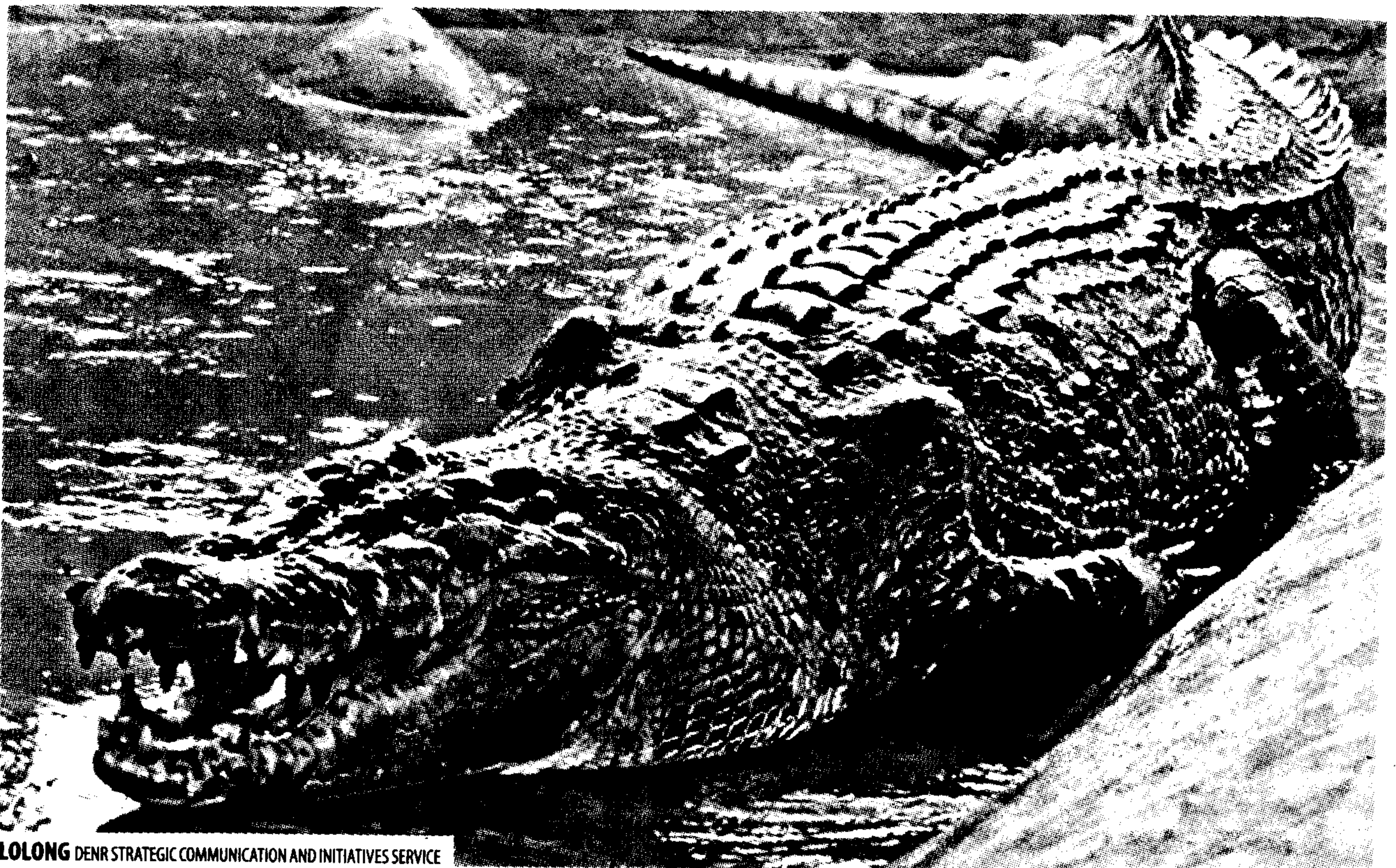
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where humans and crocodiles thrive



LOLONG DENR STRATEGIC COMMUNICATION AND INITIATIVES SERVICE

STRATEGIC COMMUNICATION AND INITIATIVES SERVICE

Mangroves help build disaster-resilient communities

An initiative to restore and plant new mangrove forests is proving the best way to build disaster-resilient communities.

While mangroves are an abundant source of food, fuel, and construction materials, they also play a very important role in protecting coastal communities from deadly storms, tsunamis, and strong winds.

The devastation caused by Super typhoon Yolanda served as a wake up call for the country to speed up efforts to fight the increasingly

frequent, severe and unpredictable storms as a result of climate change.

The Department of Environment and Natural Resources is urging companies, non-government organizations and local government units to join its efforts in achieving a sustainable mangrove ecosystem through integrated pest management (IPM).

According to Henry Adornado, director of the DENR's Ecosystems Research and Development Bureau, IPM involves the use of science-based

techniques that ensure that all seedlings planted will survive and grow.

Cynthia Marquez, ERDB's Senior Science Research Specialist on forest tree insect pest and diseases, said there are basic prerequisites for a sustainable mangrove planting which starts with the selection of materials.

~~The mangrove species~~
Bakawan babae and *lalaki* are not always the best species to plant despite farmers' preference to use these just because these easily germinate even while attached to parent trees.

These are vulnerable to infestation of the pest barnacles, the ERDB said.

Barnacles are crustaceans that are considered the most destructive pests of mangroves. When in groups, barnacles could crown mangrove stems, stunting growth and ultimately leading to the death of mangroves.

The ERDB also encouraged planting of different species of mangroves for reforestation. Monoculture practice exposes an area to heavy infestation.

Before planting, farmers should choose the species that

suits the area where it will be planted.

Farmers are also advised to ensure the proper planting of mangrove propagule. Even the packaging and transport of the propagules are very crucial in ensuring the survival of the mangroves.

The timing of collection of seeds from the wild for germination in nurseries contributes to whether a mangrove seedling turns out to be healthy. Seed collection has been observed to be excellent during the wet season.

Mangrove planting does

not end after the mangrove seedlings have been planted. Farmers must monitor the planted areas.

While there have been no reports of pest outbreak in mangrove areas, ERDB prescribes regular pest monitoring to detect the presence of any insect pest and diseases.

To control pest outbreaks, the ERDB has recommended the use of environment-friendly techniques such as the introduction of natural enemies like wasps or use of mechanical devices in removing barnacles.

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Risky work

ENVIRONMENTALISTS and personnel of the Department of Environment and Natural Resources have reportedly been receiving death threats, possibly from parties engaged in illegal logging and timber poaching in the province of Quezon. That there is no hue and cry about it indicates a sorry state of affairs: The threat of death and injury for one's work or advocacy of protecting the environment is now par for the course.

EDITORIAL

The threats were apparently made in relation to the efforts of environmentalists and DENR personnel to save the Sierra Madre mountains in Quezon from the illegal cutting of protected trees, whether on public or private lands. Funeral flowers and candles have been sent to the Community Environment and Natural Resources Office (Cenro) in the town of Real. Officers and members of the Save Sierra Madre Network Alliance (SSMNA) have received messages that coffins were being prepared for them. The alliance's assistant executive director, Zander Bautista, said he and his colleagues are now accustomed to such threats. "This latest threat is no different," he told INQUIRER correspondent Delfin Mallari Jr. "We will not be cowed."

Cenro chief Miliarete Panaligan describes the DENR's monitoring of the Sierra Madre as "too risky for the faint-hearted." The SSMNA president, Catholic priest Pete Montallana, said: "I know how [the illegal loggers'] evil minds work. They are willing to kill just to protect their lucrative but unlawful forest activities."

The DENR has confiscated over 13,000 board feet of hardwood illegally taken from the Sierra Madre since late last month. Bautista reported encountering illegal loggers working on trees felled by chainsaws. He and his colleagues have documented piles of illegal lumber on the mountain trails, in rivers, and in a shack.

Bautista and company have taken steps to protect themselves. Sadly, they feel no comfort in informing the authorities of the imminent danger. "Nothing will happen even if we report it," Bautista said.

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Other environmentalists have paid the price for their work and advocacy. In 2013, Dutchman Wilhelmus Geertman was murdered in Angeles City, Pampanga. In 2011, Gerry Ortega was shot in the head. It took four years before Philippine authorities were able to arrest and bring back from Thailand the high-profile suspects behind Ortega's killing: former Palawan governor Joel Reyes and his brother Mario. Around the world, more and more environmentalists are being targeted, according to a 2014 Associated Press story. "The murders of those protecting land rights and the environment have soared dramatically," with three times as many people killed in 2012 than in the previous decade, the London-based group Global Witness was quoted as saying.

Indeed, environmentalists constantly face danger in the course of doing their job. Firefighters battling forest fires know this all too well. They are currently laboring to contain five fires in the protected Mt. Kitanglad Range Natural Park in Bukidnon, which have been burning since April 2 and swept over more than 800 hectares of forest and grassland. A fire on nearby Mt. Katalungan has also scorched over 140 hectares.

And as we speak, the fire on Mt. Apo, the Philippines' tallest and most climbed mountain, has been burning since March 26, resisting mighty efforts from both government personnel and volunteers to control it.

All over the country, environmentalists are trying to undo the impact of human activity on what lies around us, and to cope with the calamitous effects of drought and climate change. (An eminent visitor and environmentalist, Prince Albert of Monaco, has flown to Tubbataha Reefs Natural Park, a protected area in the Sulu Sea and home to the most beautiful corals in the world. What dangers threaten their existence?)

In all, it's a difficult time in this Pearl of the Orient, which grapples daily against illegal loggers and those who plunder our endangered natural resources. It's time to acknowledge the risky work of volunteers and environmentalists. It will take the concerted efforts of the government and the private sector to preserve and conserve the Philippines' trove of treasures—a public-private partnership in the most ideal sense.

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Ship illegal wastes back to Canada -- EcoWaste

By CORY MARTINEZ

ENVIRONMENTAL advocates urged whoever will be voted as the 16th president to order the return of the illegal waste shipments to Canada within her or his first 100 days in office.

The advocates made the appeal during the general assembly initiated by the EcoWaste Coalition in Quezon City the other day wherein they adopted a resolution urging the next president to resolve the Canadian garbage scandal.

It will be recalled that a total of 103 shipping con-

tainers of largely residual household garbage declared as scrap plastics for recycling were illegally sent to the Philippines from Canada between 2013 and 2014, causing an uproar.

To ensure that such a blatant dumping incident in violation of national and international laws will not be repeated, the environmentalists also asked the incoming president "to draw up robust policies and regulations" to combat illegal waste trade.

"Seeing little hope that this shameful dumping case will be resolved under the Aquino administration, we appeal to our nation's

next president to bring this long drawn-out trash row to its just conclusion by sending the illegal shipments back to Canada," said Aileen Lucero, EcoWaste Coalition coordinator.

Lucero said that local government units (LGUs) have explicitly rejected the disposal of Canada's garbage in landfills operating within their jurisdictions for environmental, health and legal reasons and we stand by them.

According to a resolution adopted at the assembly, "it is extremely important to put the Canadian garbage dumping scandal to rest and for environmental justice to be served."



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Albay gets National Museum, Unesco citation

The province of Albay received twin accolades recently — the National Cultural Treasure and the Man and the Biosphere Reserve — attesting to its rich cultural and natural attributes.

The Cagsawa Ruins in the town of Daraga, Bicol's iconic image, has been declared by the National Museum as a National Cultural Treasure (NCT), the country's highest designation for a cultural property.

An NCT is defined as "a unique cultural property found locally, possessing outstanding historical, cultural, artistic and/or scientific value, which is significant and important to the country." It is distinct and of a higher category than a national cultural property.

The Cagsawa Ruins is what remains of the old Cagsawa community when the near perfect cone-shaped Mayon Volcano erupted early morning on Feb. 1, 1814. The eruption claimed over 1,200 lives and buried under rocks, sand and ash the entire village, including an old baroque church where

some 200 parishioners ran for safety.

Recorded accounts of the eruption said columns of rocks and stones shot high into the air and killed fleeing residents and set residences on fire as the volcanic debris fell down to earth. A recorded incident indicates that the parish priest of Cagsawa ordered the ringing of the church bells to warn the local people of the eruption.

"The National Museum's declaration as such of a cultural asset is an important step toward higher level designations. National cultural treasures are priority assets for protection, preservation and promotion by the state," Albay governor Joey Salceda said.

Meanwhile, Albay was declared by the United Nations Educational, Scientific and Cultural Organization (Unesco) as a

Man and the Biosphere Reserve at the 4th World Congress on Biosphere Reserve (4WCBR) held in Lima, Peru.

The province is home to some 800 flora and fauna species of which 137 are endemic. Some of these are vulnerable species and included in the IUCN Red List, such as the Philippine brown deer, Luzon bleeding heart, Philippine eagle-owl, Philippine warty pig and giant golden-crowned flying fox.

Unesco's Man and the Biosphere Programme recognizes communities that use sound scientific methods to support sustainable development.

"Being designated as a biosphere reserve brings prestige to the

province, which aims to achieve a sustainable balance between conserving biological diversity, promoting economic development and maintaining associated cultural values. It is also considered beneficial to the tourism industry, contributing to the growth of the local economy and alleviate poverty," Salceda said.

He noted that the award echoes the province's awareness of environmental threats and impacts to the natural ecosystems and the social and economic costs they may bring.

In a related development, he cited that the Mt. Mayon Volcano National Park (MMVNP) was tentatively listed among the most promising candidates for the Unesco World Heritage List. The Park shelters 156 floral species belonging to 36 families and 83 species of trees, including a nearly extinct specie, the pitcher plant *nepenthes ventricosa*.

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Without fear or favor

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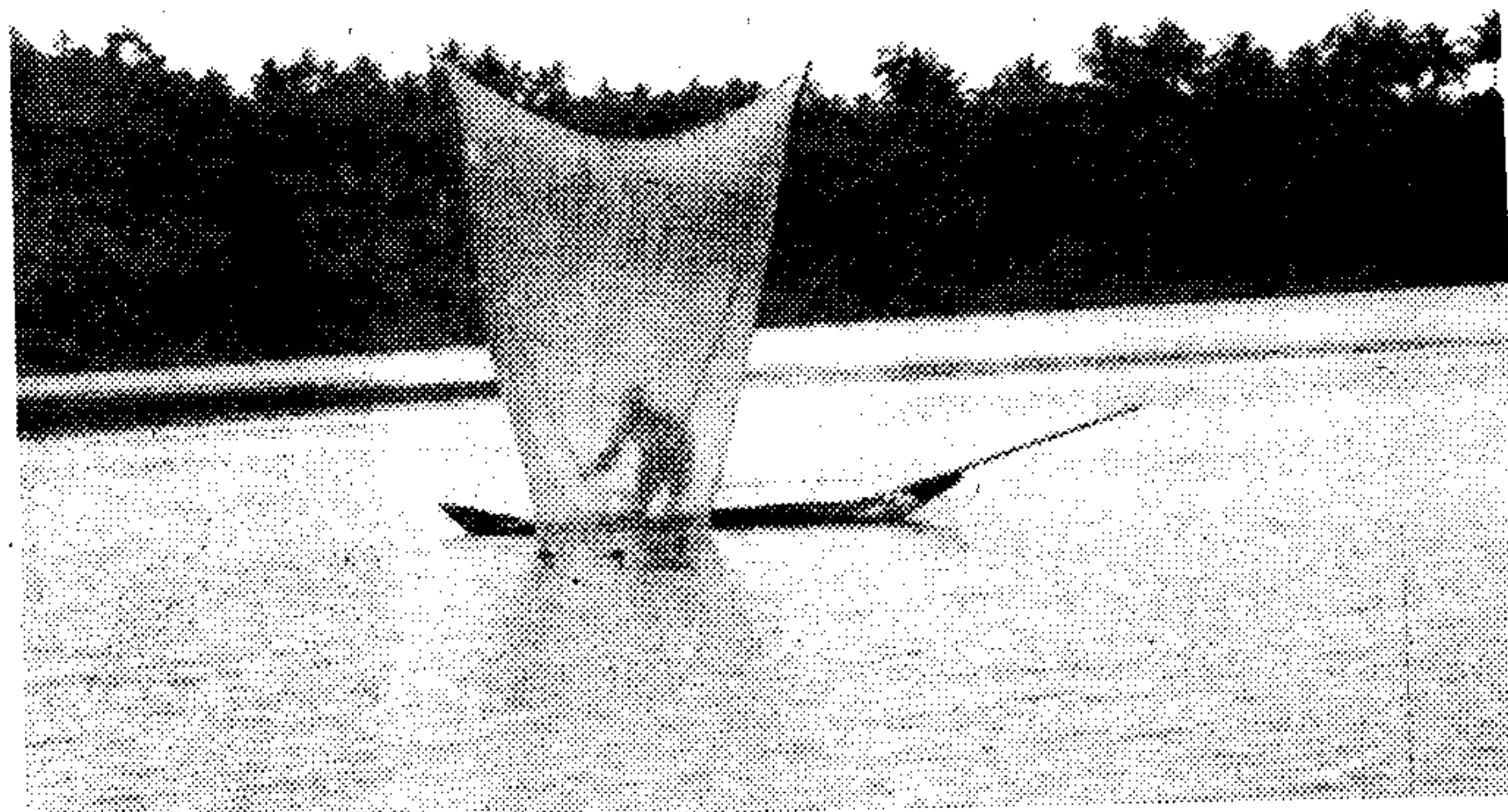
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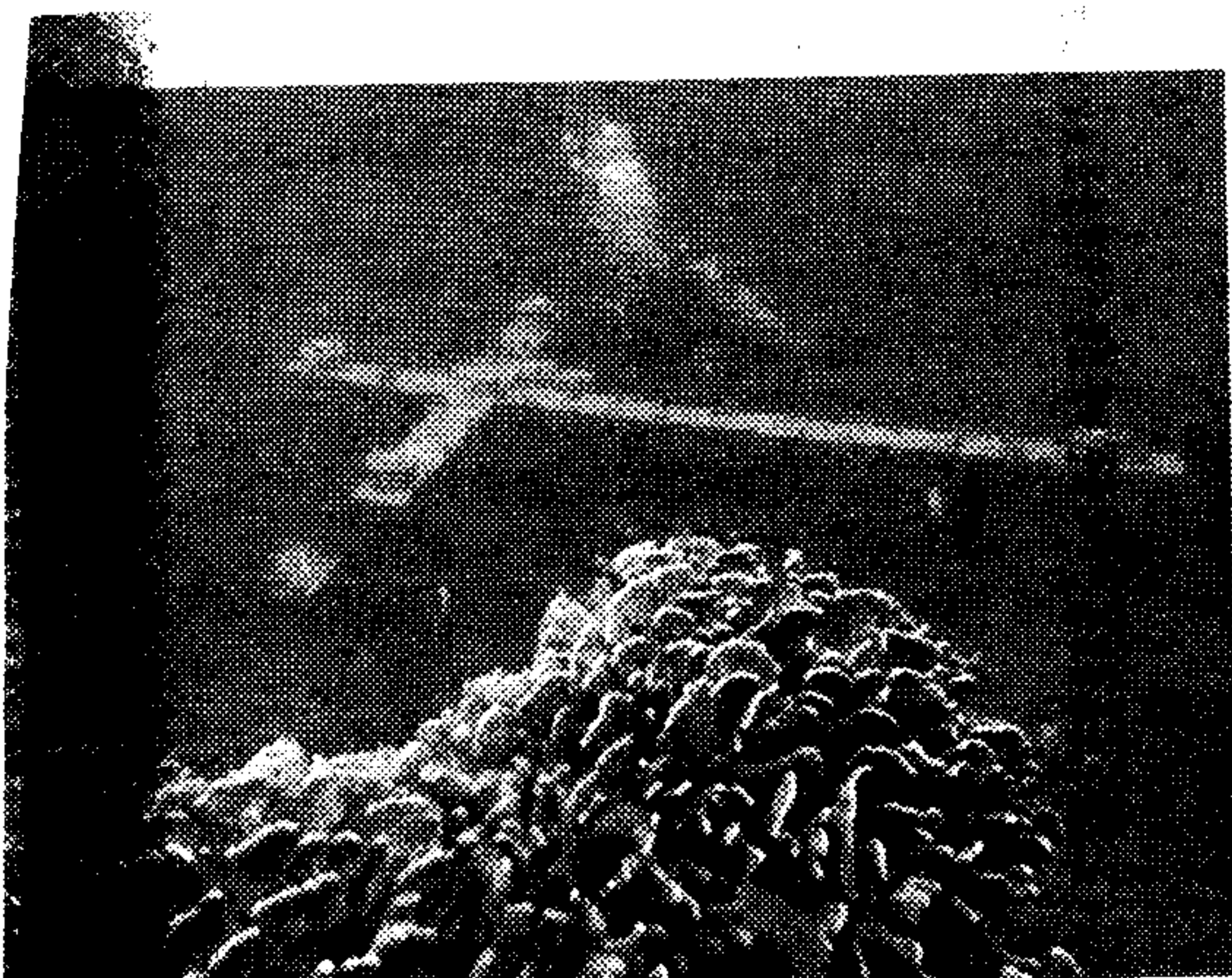
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ALBAY GETS NATIONAL MUSEUM, UNESCO CITATIONS

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Lake Danao in Polangui



Gulf coral gardens



Cagsawa Ruins Park Mayon with Mayon Volcano



Quitinday Falls and Underground River in Jovellar

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Renovation of Mt. Samat Shrine underway

By RAFFY VIRAY

PILAR, Bataan – A comprehensive masterplan to turn Mt. Samat National Shrine into a world-class memorial landmark has been submitted to the Tourism Infrastructure and Enterprise Zone Authority (TIEZA).

Bataan governor Albert Raymond Garcia told **The STAR** that 250 hectares will be renovated following the masterplan prepared by Berkman, an urban and environmental development planning firm, in consultation with the Bataan Peninsula Tourism Council Foundation.

The plan aims to keep the shrine as a lasting tribute to the heroic struggles of our soldiers in the Bataan peninsula during World War II.

Project completion has been set for 2020.

Garcia added that the Mt. Samat Shrine is one of the five sites identified as eco-tourism enterprise zones by TIEZA, which would provide fiscal and tax incentives, infrastructure and other support.

The Mt. Samat Shrine is the second historical site chosen by TIEZA after Luneta. It is projected to attract two million visitors.

Major improvements will be made on the memorial cross, colonnade, museum, stage, open spaces and landscaped areas for sculptures, relics and art installations while preserving the sacred character of the shrine.

The governor added that planned tourism attractions include a Tomb for the Unknown Soldiers and a center for World War II Studies. A zip line is also included in the plan. The renovation will create more jobs for the people of Bataan and nearby areas.

The Mt. Samat National Shrine was built in 1970. However, it lacks hotels, shops, restaurants and entertainment facilities that would make people stay on after the yearly Araw ng Kagitingan rites.

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EL NIÑO EFFECT

State of calamity declared in Bohol

By Leo Uddohan
Inquirer Visayas

TAGBILARAN CITY, Bohol—A state of calamity has been declared in the province after at least P300 million worth of crops have been destroyed by the drought caused by the El Niño phenomenon.

The Sangguniang Panlalawigan (provincial board) approved a recommendation by the provincial disaster risk reduction and management council for a declaration of a state of calamity to open access to the province's calamity funds.

Larry Pamugas, assistant provincial agriculturist, said the drought, which has affected the province for four months now, had destroyed more than 11,000 hectares of rice farms

and more than 90 hectares of corn fields.

The province has had no rain since January.

The absence of rain has also destroyed at least 309 hectares of farms planted to high-value crops and more than 52 hectares of land devoted to aquatic farming.

More than 40,000 farmers in 27 towns in Bohol, known as the rice bowl of Central Visayas, are facing

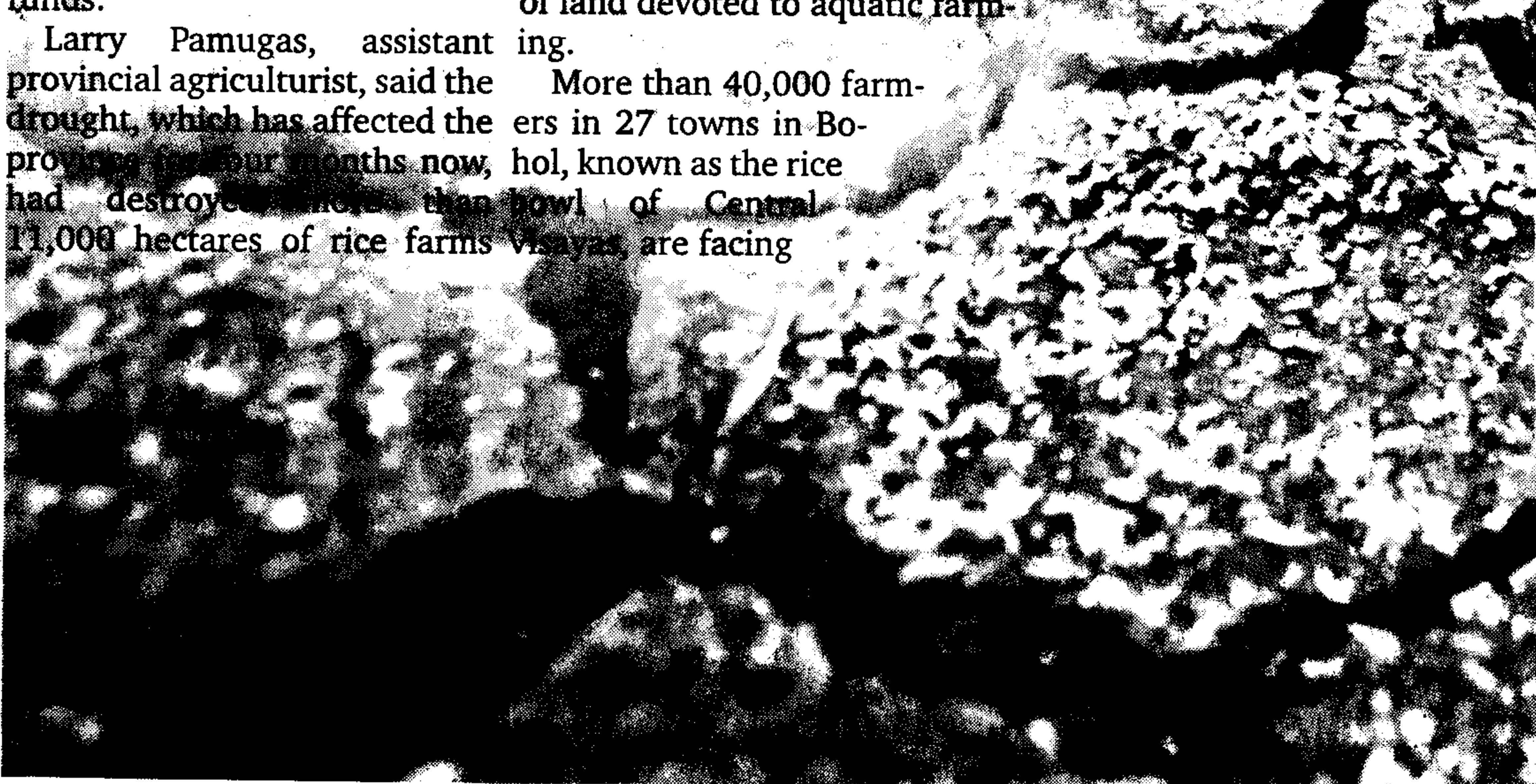
hunger and loss of income.

Agriculture is the main source of employment and livelihood in the province. Some 42 percent of the population are working in or dependent on agriculture.

Dairy industry also suffering

Bohol has a total of 46,587 hectares of rice farms, both irrigated and rain-fed, which is 25 percent of the province's agricultural land area (185,276 hectares).

Pamugas said the province's dairy industry was also suffering.



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State of calamity declared in Bohol

ing as a result of the drought. Milk production was down, he said.

The province's water reservoirs—Malinao Dam in Pilar town, Bayongan Dam in San Miguel town, Capayas Dam in Ubay town and Zamora Dam in Talibon town—were either drying or had dried up, said Pamugas.

He said some towns were losing their supply of drinking water. "We lack potable water," he said.

The provincial government,

he said, was using fire trucks to deliver water to thirsty towns.

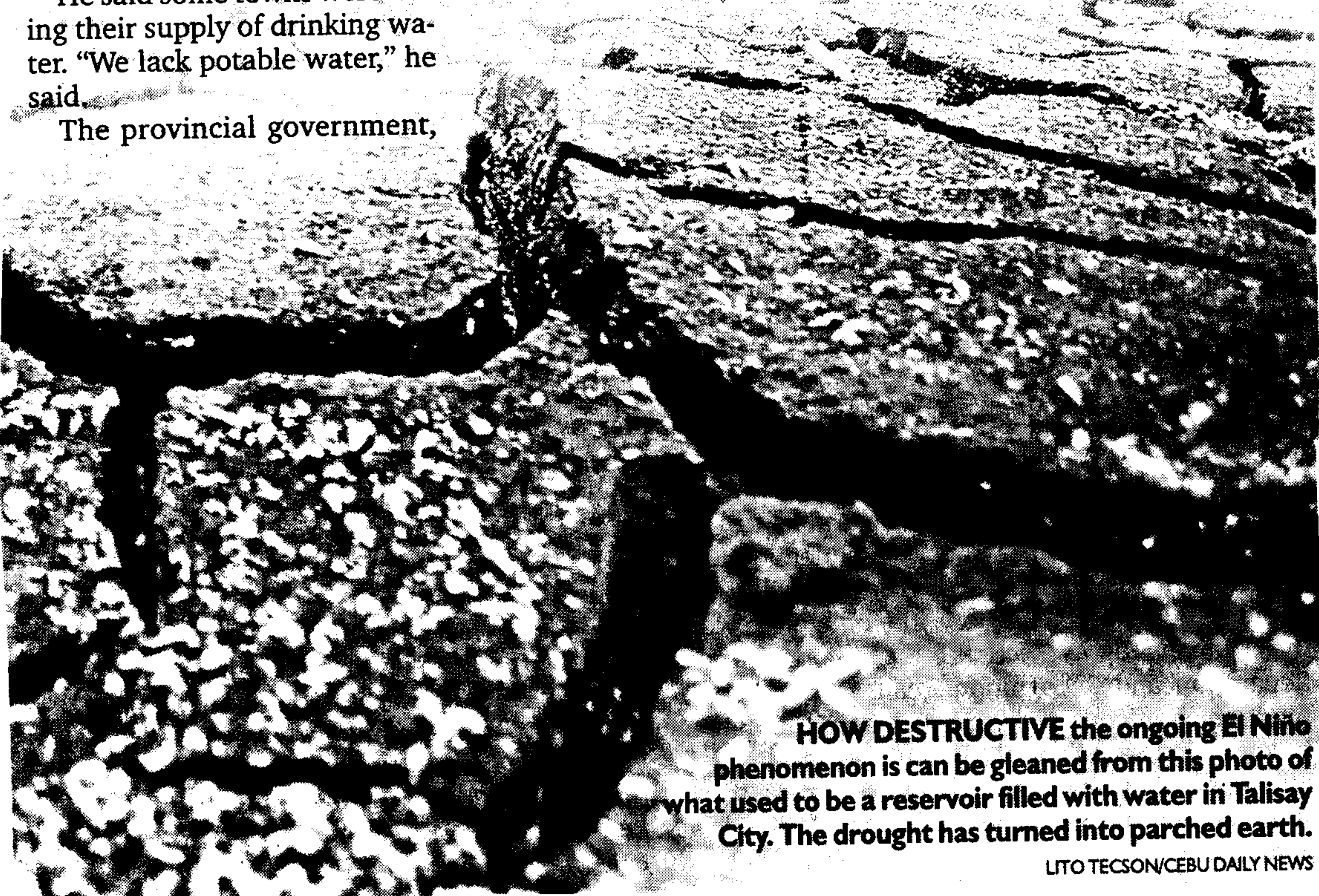
Farmers' plea

On April 6, at least 700 farmers, who attended a government-organized congress for agriculture growth, asked Gov. Edgar Chatto to declare a state of calamity in the province to enable farmers to receive aid.

The local government of Antequera town declared a state of calamity ahead of the province because of the devastating effects of El Niño on its farms.

Pamugas said it was time for farmers to plant drought-resistant root crops like cassava and yam to tide them over the long drought.

Consumers should also start conserving water, he said.



HOW DESTRUCTIVE the ongoing El Niño phenomenon is can be gleaned from this photo of what used to be a reservoir filled with water in Talisay City. The drought has turned into parched earth.

LITO TECSON/CEBU DAILY NEWS

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'There's cash, why did tillers go hungry?'

By Tarra Quismundo

GOVERNMENT agencies have around P50 billion in funds that could be used to mitigate hunger in Kidapawan and other places hit by the El Niño dry spell, noted Sen. Loren Legarda, chair of the Senate committees on Finance and Climate Change on Friday.

"You are awash in cash. Why don't you give it to the people who need it the most? Why is it not being spent? Why do farmers have to go hungry and get killed while demanding help?" Legarda asked a panel of agriculture and economic planning officials.

Breaking the Senate recess, Legarda called for a finance committee meeting on Friday in the wake of the violent dispersal of protesting farmers in Kidapawan City on April 1, which resulted in the death of three protesters and injuries to scores of others.

In attendance were officials of the Department of Agriculture, Department of Social Welfare and Development, Department of Budget and Management, Department of Interior and Local Gov-

ernment, Department of Environment and Natural Resources, Climate Change Commission, National Food Authority, National Disaster Risk Reduction and Management Council (NDRRMC), and the National Economic and Development Authority (Neda).

Legarda gave the government officials a dressing down for failing to bring timely interventions to farmers considering that funds were available.

"*Ang bagal-bagal ng gobyerno. 'Di pwedeng mabagal tayong lahat.* (The government is so slow. We can't all be that slow)," said Legarda.

The senator cited the estimated P50-billion in combined available savings and quick response funds (QRF) of the Departments of Agriculture, Social Wel-

fare and Development, and the NDRRMC from last year to the current budget.

This includes government's disaster risk reduction fund of P43 billion for 2016 and P5 billion in savings from 2015; DA's P496.6 million in QRF for 2016 and a balance of P11.9 million from 2015, and the DSWD's P1.6 billion QRF for this year and the remaining P703.6 million in savings from last year.

"You have not rolled out (projects) and, meanwhile, people are getting killed. Where are these billions from 2015 and 2016?" said Legarda, at one point pounding the table.

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"There's cash, why did fillers go hungry?"

"That's really deplorable. Only in this country do you shoot the hungry," said Legarda.

She assailed the myopic leadership of "imperial Manila, the imperial central government" for failing to bring help to farmers in far-flung areas when discussions and preparations for the dry spell began as early as 2014.

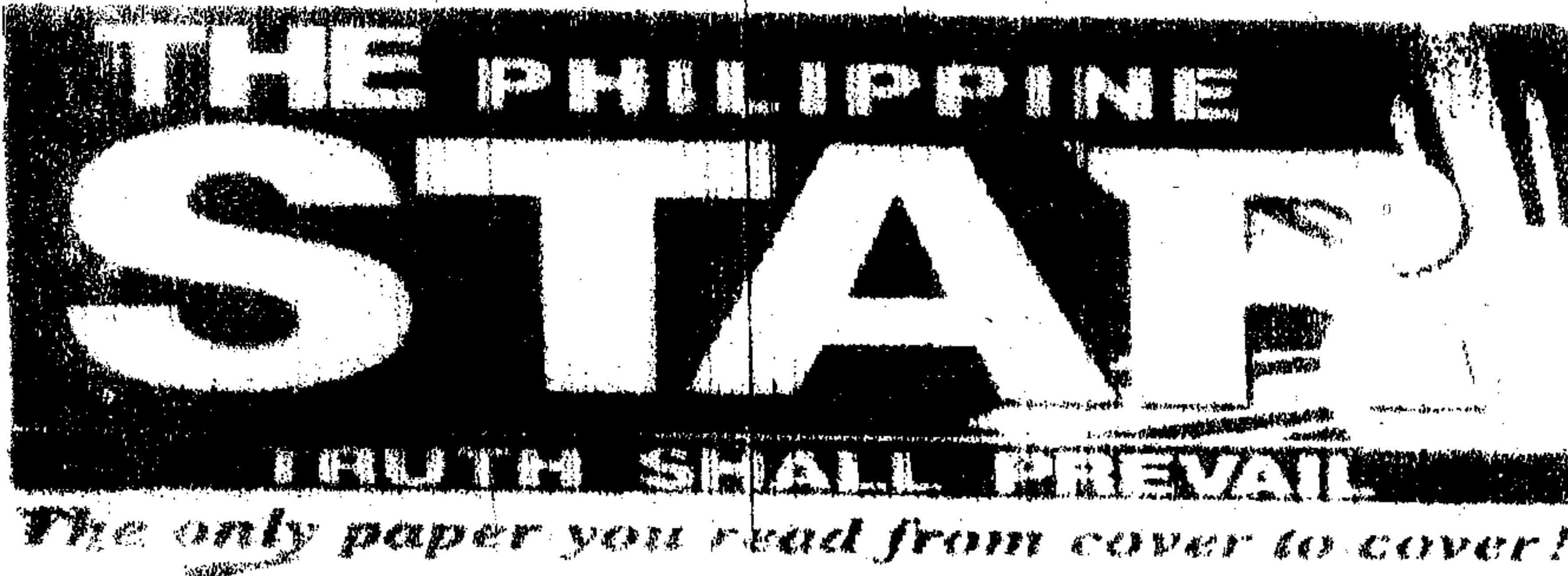
"*Bakit kayo tipid nang tipid eh ang laki ng pondong hiningi sa amin?* (Why do you keep saving when you asked us for huge funds?) I don't see the point unless you did not know they needed it, which is impossible because we've been talking about it

since 2014," said Legarda.

But NEDA Director General Emmanuel Esguerra, among those invited to the meeting, said the government's assessment of its El Niño interventions was positive, as there has been no food shortage, food prices have remained stable, and there has been no outbreak of diseases despite limited water supply in certain areas.

"Government has been able to successfully mitigate the impact of El Niño...But despite these encouraging numbers, we recognize there could be areas feeling the heavier impact of El Niño," said Esguerra.

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Indigenous women represent Phl in global leadership school

About 16 women from across the Cordillera Autonomous Region and Mindanao are representing the Philippines in the Global Leadership School of Indigenous Women spearheaded by the Food and Agriculture Organization of the United Nations (FAO) and the International Indigenous Women Forum (IIWF-FIMI).

Implemented in Bolivia, Peru, India and the Philippines, the program seeks to empower indigenous women leaders and activists to advocate for human rights, food and nutrition security.

FAO reports that while indigenous peoples constitute only about five percent of the world's population – most are in Asia – they account for about 15 percent of the world's poor.

Yon Fernandez de Larrinoa, FAO's Global Advocacy Officer on Indigenous Peoples, said the main causes of marginalization were related to the violation of their rights.

"It is crucial that we pave the way for indigenous women to have a strategic role in our quest to achieving zero hunger and other

interrelated goals for sustainable development," he said.

Filipino participants of the Global Leadership School gathered in Manila for intensive face-to-face seminars with experts that will reinforce the lessons they have learned through an earlier virtual learning platform.

Addressing participants, FAO Representative in the Philippines José Luis Fernández said: "Indigenous women bear the burden of discrimination related to gender and ethnicity, among others but this should not deter you from moving forward in charting a brighter future for your communities. In the years that FAO has been working in the Philippines, we have witnessed how Filipino indigenous women are extremely capable of advocating for positive change and being development partners."

"This is the first time that I am able to join a gathering of indigenous women from different parts of the country and even from outside our country. We can see a democratic dialogue and we are learning through sharing our

experiences and listening to the experiences of others," said Elsie Mokudef, a Teduray from Maguindanao Province.

"It's time for us indigenous women to break our silence. It's time for us to speak up. Then and now, we see in communities that only a few women are given the opportunity to participate in decision making and this is usually because they are insecure about speaking," she added.

Gender equality and empowering indigenous peoples are central to FAO's mandate of achieving food security for all.

In the Philippines, FAO has been working with the National Commission on Indigenous Peoples, Department of Agriculture, Philippine Coconut Authority, Department of Agrarian Reform, Department of Environment and Natural Resources and local government units to build the resilience of vulnerable indigenous communities and indigenous women to natural disasters through climate adaptive agroforestry methods that take into account their centuries-old farming systems.

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Earth could become hotter than thought, warns study

WASHINGTON — Global warming could make the planet far hotter than currently projected because today's scientific models do not correctly account for the influence of clouds, researchers said this week.

The study in the journal *Science* was led by researchers at Yale University and Lawrence Livermore National Laboratory.

When climate scientists look ahead to how much the planet's surface temperature may warm up in response to a doubling of carbon dioxide — a byproduct of fossil fuel burning — they typically predict a rise of between 2.1 and 4.7 degrees Celsius.

But these models overestimate the ability of clouds to reflect back sunlight, and counteract warming in Earth's atmosphere, researchers said.

"We found that the climate sensitivity increased from four degrees Celsius in the default model to five to 5.3 degrees Celsius in versions that were modified to bring liquid and ice amounts into closer agreement with observations," said lead author Ivy Tan, a researcher at Yale University.

The problem is most models assume there is more ice in clouds than there actually is.

Icier clouds would gain more liquid in a warming environment, and more liquid in clouds would mean less global warming.

"Most climate models are a little too eager to glaciate below freezing, so they are likely exaggerating the increase in cloud reflectivity as the atmosphere warms," said co-author Mark Zelinka.

"This means they may be systematically underestimating how much warming will occur in response to carbon dioxide."

Researchers said their findings add to previous studies that have suggested clouds may make warming worse, rather than lessen it.

"The evidence is piling up against an overall stabilizing cloud feedback," said Zelinka.

"Clouds do not seem to want to do us any favors when it comes to limiting global warming."

The study was funded by NASA and the Department of Energy's Office of Science.

AFP

SNAKE ATTACKS PREVALENT DURING EL NIÑO?

Today, *Born to be Wild* explores the effect of El Niño on wildlife.

In Albay, a 10-year-old girl died she was attacked by a venomous cobra.

For fear of more deaths in the village, residents now want to exterminate cobras.

Some experts believe that the intense heat brought about by El Niño is contrib-

uting to the snakes' emergence from their hideouts as they look for cooler areas. **Doc Nielsen** and his team investigate the cobra sightings and share information that may help save lives in the event of cobra encounters.

Meanwhile, spelunking is an extreme activity that many adventurers try out during the summer months. But apart

from being places of adventure, caves are also ecosystems that serve as habitats to a diverse number of wildlife.

Doc Ferds enters a cave in Davao, which experts have been studying to determine the kinds of species present there.

Born to be Wild airs Sundays right after *AHA!* on GMA 7.

RED TAPE HAMPERS EL NIÑO FUND FLOW

COMPLICATED rules and cumbersome requirements governing the request, release and use of national calamity funds are equally liable for the trickle down of aid to El Niño-hit areas, according to a Senate official.

“Red tape and rules are the main culprits why aid is moving at a very slow pace,” Senate President Pro-Tempore Ralph Recto said.

“If we want to turbocharge the release, then we must first change the rules,” Recto said in calling for the review of the procedures on how disaster-hit areas can access the Calamity Fund, or what is officially called National Disaster and Risk Reduction and Management Fund.

“*Kung i-diagram mo yung proseso, parang wiring ng kuryente.* From request to release to procurement to delivery of reconstruction materials, easily one hundred steps. *Kawawa talaga ang mga local governments,*” Recto lamented.

For this year, P39 billion has been allocated as National Disaster Risk Reduction and Management Fund in the 2016 national budget.

A lump sum fund, the Calamity Fund covers aid, relief, and rehabilitation services to areas hit by man-made and natural calamities. It also funds pre-disaster projects and operations.

The release involves “the interplay and layers of approval” of many agencies including the National Disaster and Risk Reduction and Management Council, the Office of the President, and the Department of Budget and Management, Recto said.

He said a local government unit flattened by a typhoon will have to submit documentary requirements “through a gauntlet of agencies.”

THE EXPONENT OF PHILIPPINE PROGRESS
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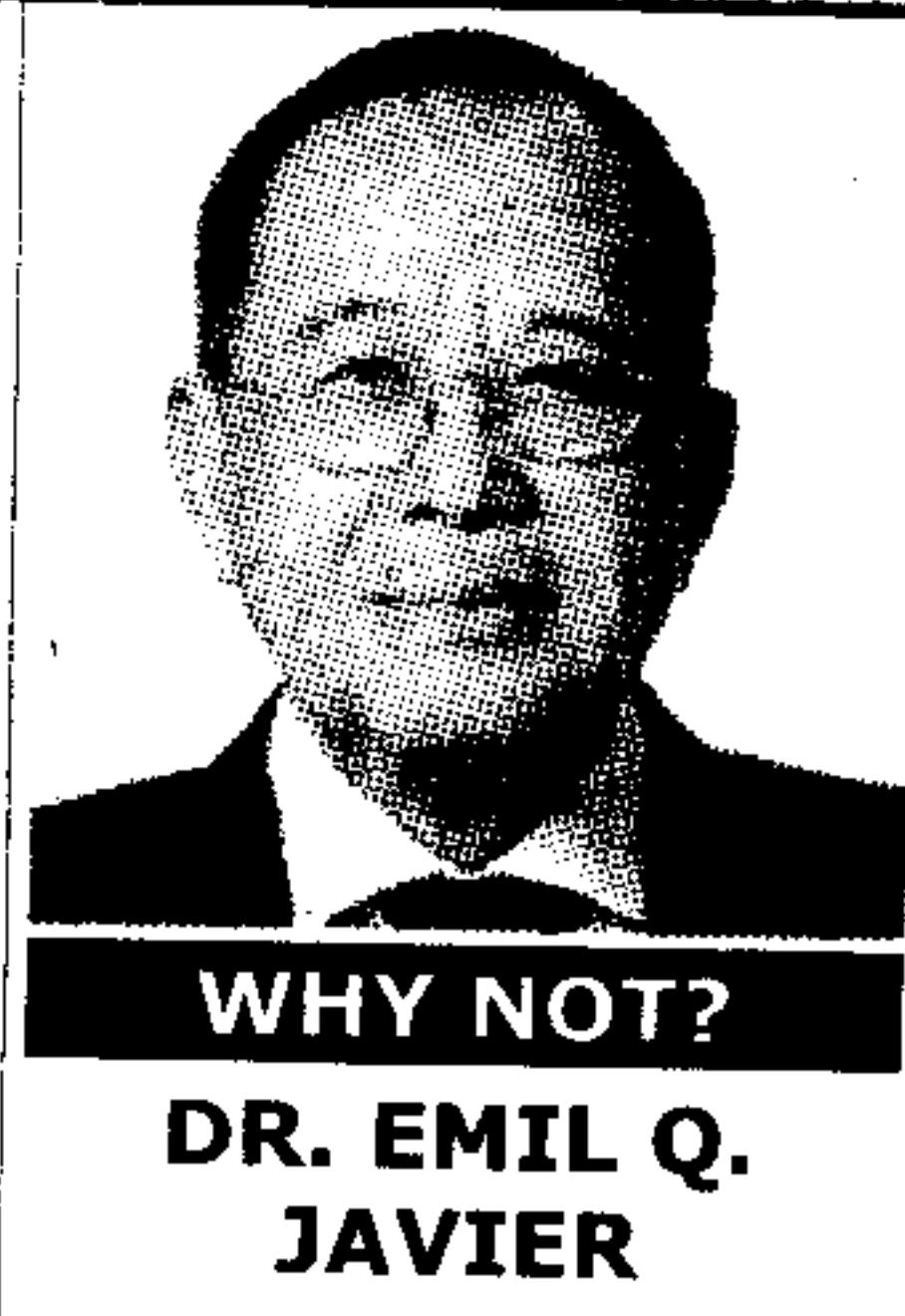
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STRATEGIC COMMUNICATION AND INITIATIVES SERVICE



Non-browning GMO apples and potatoes

*'There are those who look
at things the way they are,
and ask why... I dream
of things that never were,
and ask why not?'*
— Robert Kennedy

Since we do not grow apples and not much potatoes and both are minor items in our diets, what are our interests in non-browning genetically modified (GMO) apples and potatoes?

Not much really, directly, except for the implications of their commercial release with the debate on the relevance of genetically modified crops to our economy. Recall that last year the Supreme Court (SC) banned further field trials of GMO *Bacillus thuringiensis* (Bt) eggplant and required government to craft clearer regulations to guarantee the Filipinos' right to healthful and balance ecology under the Writ of Kalikasan.

The five departments (Agriculture,

Environment and Natural Resources, Health, Science and Technology, and Interior and Local Governments) have complied with the SC directive and have issued a new Joint Department Circular to replace the maligned DA Administrative Order No. 8. And so far now, at least for the time being, the executive branch is proceeding with its stated policy of safe and responsible of modern biotechnology.

The approval for commercial propagation by responsible authorities in Canada and United States of apples and potatoes that have been purposely bred through genetic engineering techniques not to be

discolored after the fruit is sliced and exposed to the air is noteworthy for three reasons: The world of agricultural biotechnology is moving on, whether we are part of it or not, and the objectives of improvement are necessarily those of economic interest to the countries developing them.

Conversely, if we want to see technological progress on the crops and traits of interest to our farmers and consumers, we can rely on the efforts of advanced countries, only to the extent that their economic interests coincide with ours. Otherwise we are on our own!

The second noteworthy consideration is the less threatening kind of genetic technology applied to produce the desired outcome. The first generation GMOs are transgenics, i.e. alien genes were transferred from unrelated species like the Bt gene for insect resistance from bacteria. This "unnatural" transfer of genes has raised concern on unanticipated consequences.

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STRATEGIC COMMUNICATION AND INITIATIVES SERVICE

Non-browning GMO

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However, these new non-browning apples and potatoes are cisgenic — no alien genes were transferred but the expression of some native genes have been modified through a technique called gene silencing.

The third difference is while the first generation GMOs were helpful to the farmers to grow and protect their crops, this time the benefits accrue to consumers with better quality and more healthful products.

Gene Silencing – A Less Threatening Kind of Genetic Engineering

Many fruits including apples, pears, avocados, melons and bananas turn brown after they are sliced open and exposed to the air. The fruits are not rendered inedible nor spoiled but they do not look presentable especially when they are prepared into fresh fruit salads.

The usual kitchen remedy is to squeeze lime juice which has anti-oxidant properties on the newly sliced fruit to prevent browning.

However, as far as the biotech developers were concerned, the immediate target of the technology is not the kitchen but the rapidly expanding and very profitable fruit fresh cut business in groceries and supermarkets in the developed countries. On the other hand, for potatoes the target are the food processors of French fries and potato chips who want to keep their potatoes spotlessly golden yellow, not brown.

The phenomenon of browning is based on the action of the enzyme polyphenol oxidase on phenols, the family of organic aromatic compounds technically described as having at least one hydroxyl group attached to the benzene ring. The phenols are oxidized into reactive chemicals called quinones which together polymerize to form the unsightly brown pigments.

Both the enzyme and the phenols naturally occur in fruits but they are physically separated in the cell. The polyphenol oxidase enzyme is confined in cell organelles called plastids while the phenols are in the vacuole. When the fruit is sliced, the integrity of the plastids is broken and the enzyme gets in contract with the phenols which result into the brown reaction which is visible in a few minutes.

By a new technique called RNA interference, the native genes responsible for producing the polyphenols oxidase enzyme are silenced and thus unable to produce the

enzyme. This technology had been incorporated into the "Arctic" varieties of apple by Okayama Fruits a small company in Canada and in "Innate" varieties of potato by Simplot, a huge potato producer in the United States.

Additional Desirable Traits in "Innate" Potatoes

However the second generation Innate potatoes developed by Simplot added three more GMO traits apart from the non-browning property. They have built in resistance to potato late blight, the destructive pathogen which caused the Irish potato farming in 1846 and which till today is the most devastating disease of potato. They accomplished this by transferring a resistance gene into cultivated potato from *Solanum venturii*, a wild potato species in the Andes Mountains of South America.

The new Innate potato likewise offers a unique consumer benefit by reducing the presence of acrylamide, a suspected human carcinogen, which is found in potatoes cooked at high temperature like potato chips and French fries.

Acrylamide is the product of the reaction of asparagine, a non-essential amino acid, with reducing sugars. By silencing the genes that produce asparagine they reduced the potential of the new potato to produce acrylamide.

The third beneficial trait of the second generation Innate potato is lower reducing sugars in the tubers which enable the tubers to be safely stored in cold storage at 38°F for more than six months without impairing quality.

Conclusion

The world of agricultural biotechnology is moving on whether we are a part of it or not. The non-browning apples and potatoes described above are indicators of what the new products look like. In both cases, they are of marginal interest to us for the obvious reason that we are not the intended market. It goes without saying that we can rely on global innovations only to the extent that the economic interests of the technology developers coincide with ours.

And so for the crops and traits of specific interest to Filipino farmers and consumers we are very much on our own!

It is therefore foolhardy and against our self-interest to deprive ourselves of the means to advance our national interest. We should persevere in mastering biotechnology ourselves and in investing in our people and research institutions. The controversial Bt eggplant developed by our plant breeders in UP Los Baños is evidence we can hold our own.

Dr. Emil Q. Javier is a Member of the National Academy of Science and Technology (NAST) and also Chair of the Coalition for Agriculture Modernization in the Philippines (CAMP) For any feedback, email eqjavier@yahoo.com

Earthday jam at MOA

On April 23 at Mall of Asia, guitar-strumming, drum-beating ambassadors for Mother Earth will replace mall strollers.

It's April and it's Earthday Jam time. Now on its 16th year, this musical marathon celebrating international Earth Day shows no signs of slowing down. Starting at 5 p.m, 100 musicians and artists are featured in an eight-hour musical journey bound to be extremely wild and fun.

Earthday jam will feature more than 15 big names in various musical genre.

Kicking off the festivities is the premiere Afro-Brazilian percussion ensemble in the Philippines, **Brigada**.

Women dominate this years' jam with **Nina, Sitti, Lou Bonnevie, Kitchie Nadal**, and **Barbie Almalbis, Gracenote, Arci Munoz** and her band **Philia** with, and fresh from the US, **Flying Ipis** and the youngest participating band, **Absolute Play**.

The jam brings back metal kings **Slapshock, KJwan** and **The Chongkeys**, pop rock bands **6cycle Minds** and **MayonnaisE** and **Abra**.

Admission is free. For more info, like us on facebook Earthday Jam Foundation or call 897-6991.



Jamming with Earth Hour ambassadors Barbie Almalbis, Lou Bonnevie and Nina