

## 5 Filipino marine scientists who are saving our seas

By Cedric S. Reyes

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Five Filipino scientists working in marine-related fields talk about what the government can do to further the advocacy. Illustrations by LAUREN BALDO

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**Manila (CNN Philippines Life)** — Twenty-four million hectares of water off the coast of Aurora became a matter of national interest this year when Chinese vessels were found conducting research expeditions in the controversial [Benham Rise](#). The undersea region is part of the Philippine continental shelf, as affirmed by the United Nations in 2012. It was renamed Philippine Rise last year.

This body of water provides livelihood to some of the nation's [poorest](#). Fisherfolk from towns across the coastal provinces of Quezon and Aurora source their catch from Philippine Rise. For these Filipinos, there is cause for concern beyond just foreign research expeditions.

According to activist fisherfolk group Pambansang Lakas ng Kilusang Mamamalakaya ng Pilipinas (PAMALAKAYA), commercial fishing entities are crowding out municipal fishermen, decreasing near-shore catch and forcing fisherfolk to trespass on foreign waters in search of livelihood.

Further eroding the Philippine seabed are [government reclamation projects](#), says PAMALAKAYA.

The effects of rampant reclamation and commercial fishing are compounded by private damage to the nation's bodies of water. At least 60 percent of the nation's population reside in the coastal zone.

While these Filipinos rely directly on municipal waters to survive, they do not have access to information and resources necessary to implement sustainable livelihood practices. As a result, destructive practices like blast fishing and coral harvesting continue along the nation's coastlines, where people are simply trying to get by.

Maritime disputes have managed to dominate the public consciousness as a consequence of recent events. But international controversy is only the tip of the iceberg on a historically complex, systematic problem with our seas.

What does it take to save underwater life forms and the millions who rely on them to survive? Below, CNN Philippines Life talks to five Filipino scientists working in marine-related fields about what the government can do to further the advocacy.

These modern scholars share their story, and what they think is necessary to salvage our seas.



Illustration by LAUREN BALDO

**Andrew Torres, Marine Science Institute (MSI), UP Diliman**

Earlier this year, Andrew Torres worked as a volunteer on an expedition conducted in Benham Bank, the shallowest part of Philippine Rise. The expedition was funded by the Biodiversity Management Bureau of the Department of Environment and Natural Resources (DENR), and conducted by UP Marine Science Institute (MSI), where Torres works as a research associate.

The expedition set out to conduct reef assessments as well as oceanographic surveys of various water qualities. In addition to the opportunity to conduct research on the historic water bank, the expedition allowed Torres to experience firsthand the grandiosity of the Rise.

“I was fortunate enough to jump into the water and experience how clear and how extra salty it was,” shares Torres. “At 50- to 60-meter depths, you can still see the ocean floor, which is probably why Benham is able to support diverse marine ecosystems that very much depend on light. Not only does it support fish and corals, it supports fisherfolk from all over the country.”

He says their team’s expedition is a testament to the Filipino researchers’ capacity to conduct studies independent of foreign powers.

“Philippine communities rely on this area,” he says, “and frankly, the government can do more than just changing names to assert our sovereignty.”

The young marine scientist says the state should establish a department that centralizes functions related to maritime affairs. Efforts to save our seas are presently dispersed across institutions and NGOs, who must then work in partnership with various government departments, like the DENR, the Department of Agriculture-Bureau of Fisheries and Aquatic Resources, and the Department of Science and Technology.

“It would be nice to see a central agency that would oversee the country’s oceanic affairs, as well as the conservation and management of our marine resources,” says Torres.

Torres adds that personal individual consumption choices can only go so far in protecting marine biodiversity. For him, the act of refusing straws and other single-use plastics is symbolic rather than functional, comparable to switching all lights off for an hour once a year. “With conscious consumption, we do small things that we hope, collectively, will prompt change. But right now, we’re in a point where the situations are near irreversible, and, for me, it’s not an efficient way to deal with our current problems.”



Illustration by LAUREN BALDO

**Deng Palomares, Institute for the Oceans and Fisheries, University of British Columbia**

Since immigrating to Canada in 2001, Deng Palomares has taken on a number of leadership roles within the academe. She currently serves as manager of Sea Around Us, a research initiative based in UBC. She is also Science Director at Quantitative Aquatics Inc., and editor of an academic publication's marine science section.

Palomares is primarily involved with [FishBase](#) and [SeaLifeBase](#), online global information databases on various underwater life forms. These platforms provide scientists, teachers, and students with free access to information on marine organisms.

Fishbase contains information accumulated by Palomares through her postgraduate and doctoral theses at universities in the Philippines and France. Distribution of her data beyond what she calls “the shackles of subscription-based magazines,” was always her ultimate goal.

Palomares is a fierce advocate of free access to information. She admits to having an “obsession with free knowledge,” which stems from her childhood in the Philippines.

“I grew up during the Marcos regime,” Palomares shares, “when the pursuit of knowledge was greatly curtailed.”

“Being a student of public education from grade school to my master’s degree in the Philippines, I have been made acutely aware of how the rich can access information without problems against a fee that they are so willing to pay. Public school students still

do not have this luxury, and often do not succeed in knowledge-based competitions because they do not have access to most sources of information.”

Consistent with her belief in the liberating power of information, Palomares points out that governments can start with tighter labeling regulations in fish markets. “I have not seen fish sold in the market labeled properly, for example if they were caught sustainably,” Palomares observes. “There are no seafood advisory guides in the Philippines, not in markets nor in restaurants.”

She says that public clamor will be necessary to mobilize the government into action.



Illustration by LAUREN BALDO

**Erina Molina, Institute of Environmental Science and Meteorology, UP Diliman**

With over 130 dives under her belt, Erina Molina is a personal witness to the beauty of our marine ecosystems. Molina is a National Geographic Young Explorer grantee, and is currently pursuing her master’s degree in Environmental Science at UP Diliman.

After graduating with a degree in Environmental Science from Ateneo de Manila University, Molina implemented research with environmental NGO, Haribon, to identify endangered fish species. “My work involved spending time with fishers in different areas in the Philippines,” Molina recounts, “with the aim of using their knowledge to help identify vulnerable or locally extinct reef fish species.”

Among the species Molina encountered during her underwater expeditions are the endangered bumphead parrotfish and the dugong.

“I saw the school of bumphead parrotfish in Apo Reef Natural Park, Occidental Mindoro, the second largest contiguous reef in the world next to the Great Barrier Reef,” shares Molina. “And when I first had a glimpse of the dugong underwater, I was thrilled that this rare species is still in front of me. I got the chance to see the Dugong in Calawit Island, Philippines, the last remaining stronghold for dugongs in the Philippines.”

Molina is now focusing her research towards the conservation of these endangered dugongs.

The young scientist is quick to point out the urgent need to take action to conserve our seas. She says that government action cannot stop at city ordinances banning single-use plastics.

“Aside from government officials imposing plastic bans and regulations, the government can also fund research needed to effectively plan out what sustainable materials to use, and how materials can be recycled and reused at the end of a product’s lifetime.”



Illustration by LAUREN BALDO

**Andrian Gajigan, School of Ocean, Earth Science and Technology, University of Hawaii at Manoa**

Molecular biologist and oceanographer Andrian Gajigan is a doctorate candidate at the University of Hawaii, where he studies marine microbes and viruses. These marine microorganisms are responsible for 50 percent of the world’s oxygen supply, says Gajigan.

In 2016, Gajigan participated in The North South Atlantic Training Transect, a research cruise on the Atlantic Ocean. “[Going on] research cruise is one of the most exciting

things we do as oceanographers,” says Gajigan of the expedition. “We got to visit places that no one is typically allowed to go to. The adrenaline of doing science out at sea, the temporary disconnect from the hustle and bustle of city life are all so exciting.”

Gajigan remains deeply rooted in the Philippines and says he intends to return after completing his doctorate. He cites super typhoon Yolanda and its disastrous effects on the nation as a constant motivation in assessing ocean-climate relationships.

Gajigan acknowledges the limits of conscious consumption as a means to further the marine conservation advocacy. “All small contributions are important,” he says, “but we have to realize that if big corporations and big nations do not cut off their waste and carbon emission, then we are still doomed. We must demand accountability from big corporations and nations.”

Gajigan envisions a state-sponsored project on citizen science, where the public is educated in the marine sciences. This, he says, will allow Filipinos to witness both the beauty of our underwater ecosystems and the extent of deterioration it is now subject to.

“For instance,” he says, “the general public can measure temperature, pH, turbidity, and see plankton in their own coastal habitat. Reading about an environmental issue is one thing, but it’s an entirely different experience if you are directly involved.”



Illustration by LAUREN BALDO

**Deborah Tangunan, University of Bremen, Department of Geosciences**

Micropaleontologist Deborah Tangunan is a guest scientist at the University of Bremen, where she studies fossil remains of microscopic marine algae. Tangunan explains that

she studies these fossils to find indications of climate change throughout the history of the earth, before man came to be.

“It is important to look at the patterns of their past behaviors, their abundances and species distribution, how their shapes or sizes changed with colder or warmer conditions,” says Tangunan of her research subjects. “This allows us to advance our capability in understanding the present and even future climate scenarios.”

In 2016, Tangunan was the only Filipino in a collective of Germany-based scientists who won the International Year of Science University Competition, hosted by Wissenschaft im Dialog.

Their group proposed a book collection of scientific children’s stories written in various languages and distributed for free on the Internet. A year after their proposal won the competition, the group released [Once upon a time, a scientific fairytale](#) in English, Spanish, and German.

Tanganun says the group still intends to translate the book to all the team members’ native languages, including Filipino. She was initially skeptical of the book’s success in Filipino, worrying that certain terms would become even more opaque in the native tongue.

“The Filipino words may not be even familiar to kids,” says Tangunan. “I am not familiar with the current state of this but I know that there are scholars pursuing the translation and use of these scientific terms. There are already existing Filipino words. Maybe it’s time that we introduce them and let them know that these words exist.”

Link: <http://cnnphilippines.com/life/culture/2018/07/24/Filipino-marine-scientists.html>