

ENVIRONMENTAL AWARENESS

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Primer on the Philippine Environment:

What Beta Sigmans Can Do To Help

By Victor O. Ramos

Ecosystems

We talk of the Philippine environment in terms of ecosystems. These are ecological communities that harbor a web of lives that are interdependent of each other. For instance, Mt Makiling is an example of a forest ecosystem. Not only do we have trees, but also more importantly these trees harbor 70-90% of plant and animal species that depend on each other. Birds, bats, monkeys and other insects eat nuts, seeds, fruits and leaves. The insects are in turn eaten by other animals such as frogs, which end up in the stomach of predators like eagles. Ants comprise among the most plentiful of these insects. Prof. Wilson of Harvard estimated that if you collect all the ants in the world, they would weigh much heavier than all humans put together. Ants are among the most adaptable of the species. There is even a submarine ant. It thrives under the water of bromeliads, waiting for detritus or dead leaves for its food. This web of life in the forests is what we call biodiversity. They are important to our daily lives. They are the sources of food, raw materials and medicine without which human life on earth would be primitive. Scientists are confident that the cure for cancer and other ailments is somewhere there inside the forests.

Since we do not have a desert, we only have five prominent ecosystems in the Philippines -- forests, marine, freshwater, croplands and urban.

Forest ecosystem

Rainforests are normally situated along the equator where rain is regular and plentiful. In its pristine state, rainforests used to cover 20% of the face of the earth. Today, with decades of plunder and conversion to agriculture and other land uses, it covers only 6%. Half of these are found only in three countries: Brazil, Zaire and Indonesia.

In the Philippines, we used to have 21 million hectares of forests at the turn of the century. It covered 70% of the country's total land area of 30 million hectares. Today, we only have less than 800,000 hectares of virgin or untouched forests. If you add up even the logged over areas and the new plantations, it will add up to about 35% of our mountain areas. The Philippines has among the lowest forest cover per capita in the tropics. Ninety percent of its watersheds are degraded. Forty-five percent of its land area suffers from severe soil erosion.

The loss was due mostly to excessive logging, especially during the decades of the '60s and '70s -- during the first Macapagal administration and early part of Marcos'. Another cause is excessive land clearings for agriculture and human settlements, especially during the time of President Magsaysay when he opened up Mindanao as the "land of promise" during the 1950s.

Our biggest problem today in keeping our forests is poverty in the uplands. More than 20 million ultra poor Filipinos mostly of the indigenous tribes depend on the forests for livelihood. Unless given sustainable livelihood systems, they will cut the trees as source of income.

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The fragile ecosystem is in focus once more in this month's issue of Environmental Awareness. In no-nonsense terms, Brod Vic Ramos dissects the predicament in the Philippines, and offers ideas to stem the deteriorating situation in the context of being a Beta Sigman. Brod Vic's article is a must-read commentary that attests to the notion that every creature impacts the earth with its every action or inaction, and that individual initiatives aimed at a common goal do converge into global solutions.

Gerry Abenes - Editor

About the Author

Brod Vic Ramos was Secretary of Environment and Natural Resources in 1995-98. He received his education from UP Diliman (AB Journalism) and Harvard University (Master's in Public Administration). He now works pro bono as a trustee of various foundations in the Philippines when he is not tending to his small farm in Pangasinan.

As individuals, Beta Sigmans should help lessen the pressure on the forests in various ways. If you belong to a big corporation, you should propose adopting some of these communities and support them with livelihood options. A donation of P1-5 million will make a community self-sustaining. As individuals, do not use illegally cut logs in building your homes. Use concrete instead. Even better, lease or adopt a mountain. During my watch in the DENR, I introduced a modality called SIFMA. This program encourages individuals to lease forestland and plant trees, including fruit trees, which can be a good source of income during retirement.

Many brods are involved in providing livelihood to forest communities. Prominent among them is Brod Del Ganapin who is World Manager of the UNDP's small grants program.

Marine and coastal ecosystems

The marine and coastal ecosystems are divided into two zones: the coasts and the deep sea. Ninety percent of life forms in the oceans are in the coastal zone. Coastal zones are where you find mangrove swamps, mudflats, sandy beaches and estuaries. Estuaries or rivers draining to the sea are especially important. The freshwater streams mixing with salt water fosters the growth of phytoplankton – the first link in the ocean's food chain. The sandy beaches act as filter to water coming from the uplands. Mangroves prevent strong tides from eroding the shores. They also act as source of detritus or dead leaves that are eaten by crustaceans and other fish. The mudflats are where sea grass grows. They are the final filters to pollution that protects the coral reefs. Each zone has a special role to play in making life in this ecosystem sustainable.

Coral reefs allow schools of fish to breed and survive the regular flow and whiplash of the ocean tides. Contrary to common belief, coral reefs are alive. They are structures made by many animals called polyps that form a skeletal like structure, made of calcium carbonate. Polyps eat floating zooplanktons. Inside polyps are other living things called zooxanthellae, algae which photosynthesize the CO₂ with nitrogen and phosphorous from the coral's wastes. The corals use the oxygen given off by the algae. This is a good example of interdependence within an ecosystem.

The Philippines has the most diverse coral reefs in the world. We have 488 coral species. They spread over an area of 350,000 hectares. The stretch between Palawan and the Sulu Seas was identified by world-renown scientists as one of the few biodiversity sites in the planet that should be preserved at all costs! That area accounts for 65% of the country's total reef concentrations.

The situation today is that this habitat for most of fish life in the ocean is heavily ravaged. Only 5% are in excellent condition today. Culprits are illegal fishing using dynamites, sodium cyanide and moro ami, careless throwing of boat anchors, ship grounding, unregulated tourism, coral mining and dredging. Pollution from inland caused by soil erosion, industrial effluents and fertilizer and pesticide runoffs take their toll on this fragile resource.

Because of these rich resources, the Philippines was one of the top 15 fish producing countries of the world. But a 1992 study showed that harvests from municipal fisheries have declined while commercial fishing increased. This is a continuing conflict until today because of the encroachment of big fishing vessels in municipal waters.

What can you do? If you come from one of the 1,492 towns in the coastal zone, you should volunteer your services to your local government units. Experts like Brod Popoy Castaneda are in great demand. The LGUs are responsible for the coastal zones but they have no technical expertise to manage them. I have visited towns in Cebu and Bohol that have shown political will in managing their coastal areas and they have done wonders for the ecosystem. They have ensured sustainable livelihood for their poor municipal fishermen – a model for the rest of our coastal zones where most of our people live.

Freshwater ecosystem

The freshwater ecosystem in the Philippines consists of 421 rivers, 58 natural lakes and more than 10,000 hectares of freshwater swamps.

Groundwater is the major source of potable water for half of our people. And yet 58% of the groundwater for drinking is already polluted. The worst case can be found in Cebu City. Salt water has seeped into its aquifers, rendering a large part of it as unfit source of drinking water.

Except for a few rivers in outlying areas like Quirino province, most of our freshwater ecosystems suffer from severe pollution. A total of 16 rivers (5 in Metro Manila and 11 in Luzon) are biologically dead. The major culprit is pollution, 48% coming from domestic source, 37% from agriculture and 15% industrial. Because of this, we lose an

estimated P67 billion in economic losses accounted for by loss of tourism by as much as P47B, loss in fisheries of P15B and P3 for health expenses.

Another culprit is conversion of cheap marshlands into human settlements. Marshlands serve to filter runoff water as they leach through the aquifers. But they happen to be the cheapest real estate in town, so they are dumped with river sand and gravel and converted into subdivisions. Butuan now suffers from acute water shortage because of such rampant conversions.

What can we do about it? If you are a realtor, please do not be tempted with converting the cheap swamplands into low-cost subdivisions. But all of us can do our share by sorting out household wastes – the major source of pollution. The rule is reduce, reuse, recycle.

The two great floodplains in our country -- Candaba swamps in Central Luzon and the Liguasan Marsh in Mindanao -- are being threatened with development. Brods living close to these areas should act as advocates against such plans. Candaba and Liguasan are indispensable in recharging the freshwater aquifers of our two largest islands.

Croplands ecosystem

About 47% of the country's land area is classified as A&D or alienable and disposable lands. Ninety percent of this is devoted to agriculture. This ecosystem is beset by such problems as soil erosion, pesticide and fertilizer pollution. Central Visayas covering such provinces as Negros Oriental, Cebu, Bohol and Siquijor has been singled out as the most eroded. Soil erosion washes away the nutrients of the soil. It makes the land unproductive while the sediments render the river systems unfit for fish culture. Looking back to my childhood years in the '50s, we used to eat a fish called bokto but the fish is now extinct in our place.

In the history of lost civilizations, the common cause was the loss of capacity to produce one's food. The Mayan empire used to rule over the Andes from what is now Ecuador. But they were wiped out from the face of the earth not because of military defeat but because they lost their capacity to produce their own food. The same thing can happen to us at the rate we are losing our croplands due to soil erosion and pollution.

What can we do about it? If you are a farmer, use organic fertilizer and practice integrated pest management (IPM) without the use of pesticides. This involves using the beneficial insects to do the work biologically by introducing predators to eat the insects causing damage to crops. Buy or grow your own organic vegetables. If you come from the Cordillera, act as an advocate against the use of banned pesticides found in vegetables grown in Benguet such as diazinon, lindane, endosulfan, methyl-parathion, heptachlor and dieldrin. If you are a builder or architect, introduce proper land use planning to avoid using the few remaining alluvial lands. Use instead the marginal hilltops and mountainsides for housing as Frank Lloyd Wright would rightly advise. They have better views and they do not reduce the area for crop production.

Urban ecosystem

The natural environment supports life, as we have argued in this primer. But today's modern man needs to serve more than his basic needs. He also needs the uplifting influences of creative, intellectual and economic activities that abound in urban areas.

Because of this, the Philippines has shifted since the mid-nineties to a predominantly urban population. The 2000 census indicated a level of almost 60% urban. The country's uncontrolled population and increased migration to the cities for employment triggered this.

Expectedly, Metro Manila has the bulk of the urban problems. The city generates an average of half kilo per person per day of solid wastes or about 10 million tons a year. Only 70% of this is collected.

Yearly, 2 1/2 million metric tons of toxic and hazardous wastes are generated by hospitals, chemical and petroleum industries. Only 38 hospitals have their own incinerators, most of which are not even the right ones.

As lethal as toxic wastes is the problem of air pollution in the cities. The level of TSPs or total suspended particulates is twice the acceptable levels. More dangerous is the level of particulate matter like PM10 (10 microns on less) because their small size allows them to penetrate the lungs. Major sources are two stroke engines being widely used by tricycles and the high sulfur content in diesel.

Motor vehicles account for more than 70% of the poor air quality problems in the city. We can do a lot if we tune up our vehicles. We should segregate our household wastes and lessen the pressure on the already limited capacity for sanitary landfills. We can also make our homes more environmentally safe by allowing more airflow and ventilation to avoid trapping pollutants from the outside. Moisture and heat also cause mildew that causes irritations. Be careful with synthetic textiles, which may contain carcinogenic chemicals. Clean your toilets well. Do not allow black dots or *Aspergillum Niger* to grow in bathroom tiles. They congest the lungs when the body reacts to the spores. Above all, stop smoking.

Think globally, act locally

To help save Mother Earth, we need to think of the global environment while acting on the specific problems within our small parts of that world.

Like the astronauts, we should be able to look at our world like a Spaceship floating in the horizon. This means that we have to be sensitive to the life-support systems that need to be nurtured lest we destroy the very things that we need for our own survival.

Our individual actions, apparently small and isolated, may cause harm globally. For instance, using CFCs for car air-conditioning or for our daily spray of cologne release ozone-depleting substances that tend to eat the thin layer of ozone in the stratosphere. Once released, these gasses have half-lives of almost a 100 years, continuously eating the ozone for that length of time until it dissipates. A hole in the ozone can dramatically increase the incidents of skin cancer.

Another innocent example that can cause dire consequences is the release of greenhouse gasses like methane and carbon dioxide in the atmosphere by burning our backyard litter. They can accelerate global warming that cause the rising of sea levels, making unlivable in the future places along our coasts, like Paranaque and Malabon.

In conclusion, think globally but act locally.