

FORESTS AND FLOODS*

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It takes a tragedy to awaken the public from lethargy. Let us take the case of the recent floods in Mindanao. Before the floods came, how many people realized the importance of forests? Even now many people know little about forests aside from the fact that they are the sanctuaries of outlaws and wild beasts. Others — the money-minded ones—are more often than not the worse enemies of forest conservation.

Of the country's total land area of 29,740,972 hectares, 18,388,915 hectares are forest lands. Commercial forests embrace 11,415,000 hectares and non-commercial 4,459,900 hectares. In an evaluation report rendered by the then Secretary Salvador Araneta of agriculture and natural resources, our forest wealth has an estimated value of ₱27,860,611,000, four times more than the combined value of other natural resources. Our forests have an estimated standing timber of 1,081,777,963 cubic meters or about 458 and 1/2 billion board feet. Of this amount of timber, about 376 million cubic meters are found in Luzon, 166 million in the Visayas and 539 million in Mindanao.

Our forest resources consist of the following:

(a) *Timber* which is turned into wood for construction and for industries using wood as raw materials. A major product of the forest, it does not include firewood and charcoal.

(b) *Minor forest products* which include all other products of lesser importance, such as firewood, charcoal, split and unsplit rattan, Manila copal, nipa, tanbarks and dyebarks, buri, bohos and bamboos, eleo, resin, etc.

(c) *Wildlife* which refers to game animals of the forest like deer, tamaraw, wild pig, etc., game birds like wild ducks snipe doves, pigeon, etc., and protected insect-eating birds and songbirds.

(d) *Forest land use* which pertains to forest land itself and its uses, such as for pasture, tree farms, sawmill site, log pond site, saltworks, timber depot, etc.

(e) *Indirect benefits* of the forest consist of the influences of forest upon stream flow and erosion, the conservation and enrichment of the soil, and climate. Forest also serves as shelter and habitats for wildlife and game animals, hunting grounds and fishing areas, and offers healthful outdoor recreational opportunities for the people.

The Bureau of Forestry is charged by law with the responsibility of "protecting and conserving the public forests in such a manner as to insure a continued supply of valuable timber and other forest products for the future, and regulating the use and occupancy of the forests and forest reserves, to the same end." The Philippines is divided into 46 forest districts, each under a district forester. There are, aside from district headquarters 80 stations, 20 scaling stations, 39 reforestation projects, 15 provincial nurseries, one city forest nursery and 450 deputy forest guards.

The Bureau has a total of 1,836 personnel, about 300 of whom are in the Manila office. The number of employees includes those doing clerical work. One can imagine the impracticability of fully covering the 18,388,915 hec-

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tares of forests lying in the various sections of the country with such a limited number of employees.

According to the foresters in the Bureau, forests have been glorified as the only effective panacea for our flood troubles. They maintain that forests cannot prevent *any kind of flood*. They admit, however, the fact "that with forests and other vegetative cover on watersheds, floods are less frequent and have lower crests than when the balance of nature has been disturbed by the hand of man."

Studies of silt in flood waters in China revealed that the average flood volume for a period of 40 days was 150,000 second feet and that flood water had an average of 4.5% of silt. Applying a conservative figure of 4 per cent weight as the amount carried by the average rivers in our country, authorities estimated that the annual soil loss in the Islands is 200,000,000 cubic meters or 500 million metric tons and will cover an area of about 600 square kilometers 30 centimeters deep. Topsoil which is the richest part of our tillable lands is washed away.

Flood Formation. — Experts listed down the following factors responsible for the occurrence of floods:

1) Unusually heavy or prolonged precipitation.

2) Rapid run-off to stream channels.

3) Inability of the stream channels to accommodate the discharge coming to them.

Floods may be aggravated by the following conditions:

1) Absence of vegetal obstruction.

2) Shallowness and non-porosity of the soil.

3) Unusual gradient of the soil.

Forests alone cannot prevent floods. G. R. Phillips and B. Frank hold that "only a properly designed combination of watershed and waterway treatments, encompassing all portions of a drainage basin and involving both watershed improvement and reservoirs and other necessary engineering works, can assure maximum flood protection." Engineering gimmicks alone like dams and levees are, therefore, neither capable of preventing

floods. This was proved by the Mississippi River incident in which the huge levees built around it were, to quote an Associated Press item, "pushed like corks."

Forestry experts say that forests help control water flow by the following ways:

1) By absorption by the crowns and tree trunks of a portion of the precipitation.

2) By keeping the soil porous and increasing its water holding capacity.

3) By intercepting and retarding run-off.

4) By decreasing the volume of detritus and sediment carried by water.

The experiments conducted by scientists showed that the amount of precipitation held by vegetal cover was smallest in grass lands, greater in agricultural lands, greatest in forest lands and zero in denuded lands. C. W. Forsling writes that "the accumulation of run-off from torrential downpour is very much in inverse proportion to the density of plant cover." A very big portion of our agricultural lands are planted to seasonal crops. During off-season, these lands are bare so that water absorption by vegetation is so low that a moderate rainfall can easily cause floods.

If Central Luzon is the "rice granary" of the Philippines, Mindanao may be aptly called the "looting premier" of the country. The great bulk of woods being exported and used for local consumption comes from that Island. Figures from the Bureau of Forestry show that the biggest sawmills and lumber companies are to be found in Mindanao. More licenses and permits to utilize forest lands have been issued in Mindanao than in Luzon and Visayas. The annual cut is greater in the "Land of Promise" than in the other two islands.

This goes to show that our forests in Mindanao, the recent scene of destructive floods, are subject to greater drain by human exploitation.

The Mindanao floods have been attributed to the indiscriminate cutting of trees in that place. This state of affairs in the island's forest has been blamed on the Bureau of Forestry's laxity in the issuance of licenses. Director Felipe R. Amos of Forestry says

that applicants are thoroughly screened by his technical men before they are issued licenses. How can the Bureau, he asks, refuse to issue licenses if the applicants satisfy the requirements of pertinent laws, rules and regulations? Forestry officials bewail the fact that supervision of logging activities cannot be intensively carried out due to lack of men and traveling funds.

Loggers are not the only persons responsible for deforestation. There are the kaingneros who dramatize their economic plight to the authorities to get away with their illegal activities in our virgin forests. They clear valuable forest areas to plant a few insignificant crops. Using a shifting method of cultivation known as kaingin, they burn down trees and destroy other vegetative cover of the forest. Once they are through with a piece of forest land, they move to another, and so on. The abandoned areas, being denuded, cannot hold even a small amount of precipitation.

Agricultural lands badly misused also contribute to the uncontrollable surging of surplus water. More and more forest areas are being released from time to time for agricultural and settlement purposes to appease the landless. For the past three years, 1,175,098 hectares have been certified as alienable and disposable lands. The release of forest areas should be limited and permanent forest lands be kept for posterity.

Crooked rivers and streams, if not straightened by excavating channels, across the neck of the bends, have low flood-carrying capacity, according to P. McNee who undertook a study of floods that inundated Malaya in 1954. We have many rivers and streams of this kind, especially in Mindanao.

If only to help minimize floods, the selective timber management program strongly advocated by Director Amos should be nationally adopted to the letter. The important object in selective logging is to leave an adequate residual growing stock of undamaged

trees. The Director believes the system is the most reliable and cheapest means of restocking cut-over areas. Reforestation is expensive and tedious. But it seems most of the lumbermen are not receptive to the program although its adoption would in the long run redound to their benefit. Forests are replaceable resources if they are properly managed.

Nothing can prevent floods. But something can be done to give the public maximum protection. It requires the combined efforts of engineers, foresters, agriculturists, weathermen, soil experts and other technical groups.

The timely and correct prediction of the precipitation and wind velocity would prepare people against the possibility of destructive floods. A sound system of farming should be adopted in order to save the soil from erosion. Rivers and streams should be surveyed to determine their flood-carrying capacity. Marshy lands should be reclaimed.

Forest, however, are still the best natural agents in minimizing floods. The government should see to it that the bureau charged with the keeping of our public forests is given the full support it deserves.

WHY OUR FORESTS SHOULD ...

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day, that is to plant a tree or convince your elders of the benefits man gets from it and urge them to leave this country of ours to you as it was left to them by their elders, by conserving the forests by wise use.

Man's greatest discovery is not fire, or the wheel, or the combustion engine or atomic energy, or anything in the material world. It is in the world of ideas. Man's greatest discovery is teamwork by agreement.

— B. Brewster Jennings