

Mae Yom National Park: A Precious National Botanical Treasure¹

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Introduction

Mae Yom National Park, located in the northern part of Phrae Province, northern Thailand, has the last natural teak (*Tectona grandis* L.f., Verbenaceae) forest in Thailand. Much of this forest is threatened by the proposed Kaeng Sua Ten Dam which would create a reservoir of c. 66 km², thereby submerging everything natural from c. 160–258 m. The Electricity Generating Authority of Thailand (EGAT), and later the Royal Irrigation Department, have been promoting this dam since 1982; however, lack of funding plus conservation issues have, so far, prevented construction. Illegal logging is rampant in the national park since various powerful and otherwise influential vested interests are trying to remove as many logs as possible before the dam is built. Greed, corruption, and environmental ignorance have caused over 85% of Thailand to be deforested—mostly during this century. What little is left, regardless of its potential economic gain, must be preserved and considered a national treasure—inviolable from further desecration. Some basic arguments for preservation, which have never been considered by forest exploiters and dam proponents, will be presented here.

Background

The many values and benefits of the flora in Mae Yom National Park have not been studied in detail; however, a general idea of the topic is discussed here. The most important requirement for ascertaining this information is a detailed floristic and vegetational study along with various other ecological parameters—a project which has yet to be done there and which would take at least two years of detailed work. In general, the vegetation in Mae Yom National Park is dominated by primary, deciduous, seasonal, hardwood forest with much bamboo. The dominant tree species in this habitat is teak, which has been exploited there for many years for its valuable wood. Fire is common in this kind of forest during the hot-dry season (March–May) and the extent of this forest ranges from c. 180–500 m elevation. Above c. 500 m the forest becomes more evergreen, *i.e.* seasonal, mixed evergreen + deciduous hardwood forest with less bamboo. Riverine flora is found along

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the Mae Yom River. The northern part of the park, *i.e.* south of Chiang Muan, has a secondary kind of forest, *i.e.* deciduous, seasonal, dipterocarp-oak hardwood forest which has developed where the deciduous hardwood (teak) forest has been clear-cut. The bedrocks in the park include, granite, limestone, and shale, which have had no influence on the kind of vegetation present. The quality of the soil, including its depth and moisture content, have yet to be studied there. This parameter has had a direct effect on the kind and quality of the forests in the area.

Values

Biologically, the most important value of the plants in Mae Yom National Park is ecological in which all life there is dependent on a stable ecosystem. Disruption of the ecosystem, which is very obvious in many places (due to logging, agricultural activities, villages, *etc.*), has caused degradation of stable systems, resulting in erosion, decline in biodiversity, increase in temperature and flooding, as well as a rapid decline in the usefulness of the area. Forest exploiters, from mushroom and bamboo shoot gatherers to ruthless tree cutters, rarely if ever consider what effects their activities have on the forest, while anything dealing with conservation or sustainability is rarely considered. The effects of disrupting natural systems, *e.g.* food webs, reproductive cycles, decomposition, hydrological cycles, *etc.*, are known to have vast and mostly unanticipated effects on forests and rivers which very often cannot be controlled or rectified. Once an area is burned by a hunter, for example, to either trap or shoot animals, not only is the vegetation going to change, but also soil erosion will increase while soil quality decreases. All natural organisms in Mae Yom National Park are valuable, some more obviously so than others. The forest is thousands of years old and has, through evolution and stability, developed into what was a pristine area until people moved into the area during the last century. While actual scientific research is lacking for the area, many general premises can be made based on research in other places.

Regional Deforestation

Northern Thailand has suffered from commercial timber exploitation for over a century. Many of the cut areas have not recovered for, example in Lamphoon-Lampang Provinces, where the present vegetation is a pathetic scrub, dipterocarp-oak or even 100% bamboo scrub facies. As a result of uncontrolled logging without reforestation, Mae Yom National Park is the last area where intact, albeit disrupted, seasonal, deciduous, hardwood (teak) forest can be found in Thailand. Teak plantations are common, but they are not a substitute for an established and stable ecosystem. Unlike a garden or an orchard, a teak forest cannot be planted since it involves all aspects of the forest ecosystem which cannot be duplicated artificially. Therefore, since this deciduous, hardwood, (teak) forest is the last in Thailand, it must be conserved and protected to appreciate its numerous benefits and values. Loss of the forest, or even part of it, by the proposed Kaeng Sua Ten Dam, would be a biological, ecological, and national disaster.

Reforestation

If a sincere and biologically acceptable programme for reforestation of lowland forest is to be made in Thailand, foresters and botanists must cooperate and agree on how to actually reforest an area. Until now, regardless of the sincerity of various replanting schemes, none has been done properly. To recreate a forest, we need to know what vegetation was there originally, the distribution and niches of the various species, and their relative quantities. The teak forest at Mae Yom National Park is the last place in Thailand where this information is available. Further degradation of this area can only lead to a void in scientific knowledge which cannot be gained elsewhere in Thailand.

Gene Bank/Pools

Supply of seeds, seedlings, and native soil for reforestation projects must come from an area similar to the planting site. As most of northern Thailand's lowland forest was originally similar to that now found at Mae Yom National Park, this remaining forest must be conserved for future research. Genetic diversity in plantations is far less than that found in primary, undisturbed forest. Teak trees in plantations have been selected and developed for wood production, not biodiversity, and compared to natural populations are genetically much less diverse. A comparison can be made with cattle, for example, which have been selected and bred for meat, while other aspects have been ignored, *e.g.* resistance to diseases and longevity. These animals would not be able to survive in natural habitats and have been developed only to satisfy food demands of people.

Medicinal Plants

People have been using plants for medicinal purposes for thousands of years. Many useful drugs have been made by chemists based on natural chemicals and new chemical compounds are being found frequently in plants and animals which have previously never been tested medically. An inventory of the medicinal plants in Mae Yom National Park is desired, especially in the area to be flooded, since some species may be rare or endemic and, therefore, lost if the habitat is destroyed by continued logging or flooding. Ideally, all plants there should eventually be studied by phytochemists since there are many more chemical compounds awaiting discovery and research in the know flora. Loss of even one species due to flooding is undesirable. When any plants or animals become extinct it is a great loss to biodiversity, subsequent stability of the ecosystem concerned, and medical science. Since it has taken thousands of years for species to evolve and adjust to habitats, once they become extinct the potential of each is lost forever. Short-sighted economic gains, *e.g.* logging and even dubious engineering projects with known environmental shortcomings, such as dams, should not be considered more important than plant conservation and forest research. The future values of intact forests have yet to be determined and their loss is something that no amount of money or political maneuvering can replace, compensate for, or recreate.

Food Sources/Food Chains

Insects, snakes, birds, mammals, *etc.* all require the forest to survive. In addition to providing suitable habitats, the forest is also a source of food—from primary producers to predators. Disruption of one phase in this system will adversely affect other organisms. For example, many flowers produce nectar which is collected by bees and made into honey. If a canopy tree or ground herb whose flowers attract insects or produces fruits which are eaten by birds is disturbed, two major components in the food web are disrupted, especially if the population of the tree or herb is destroyed. Furthermore, the loss of the tree, which provides habitats for other species and food for animals is, in turn, detrimental to the stability of the forest since a major link in the forest ecosystem has been destroyed. The loss of this fruit/seed producing tree also has other effects on the distribution of its seeds in the forest which are required for continuation of forest populations as well as food for rodents. Contrary to official Royal Forest Department regulations, collection of forest products by villagers is not damaging to the forest as long as it not done on a commercial or ecologically damaging scale. Mushrooms, bamboo shoots, honey, wild fruits, leaves, rhizomes, *etc.* have been used by people since they appeared in Asia, and until forest products became commercially exploited during this century, no great damage was done to most forested areas. Plants at Mae Yom National Park have been the major source of food for many animal species, *e.g.* gibbons and elephants, for thousands of years and have coexisted with people, but many plant communities have been completely altered and in some instances completely destroyed by the harmful activities of people not directly reliant on the forest for their livelihoods.

Recreation/Educational Values

Natural places are becoming increasing scarce in northern Thailand due to the demands of people to make or expand villages, agricultural areas, and industrial enterprises. Exploitation of natural resources and pollution of water sources by siltation, pesticides, factory wastes, *etc.* all contribute to the degradation of natural places. There are still some people who have not completely abandoned or forgotten nature who still find it relaxing or educational to actually walk in a natural area. There is a need to conserve these places, *e.g.* wildlife sanctuaries and national parks, from degradation or “development” since they are biologically fragile and impossible to recreate. The loss of natural places is permanent and they cannot be replaced, regardless what various “experts” and politicians claim. The comparison between a teak forest and teak plantation would be the same as between a flowing stream with clear water and a chemically treated, *i.e.* polluted, swimming pool.

Scientific Research

Natural scientists, including geologists, zoologists, botanists, and ecologists, often require pristine areas in which to do research. In Mae Yom National Park the opportunities to study plants and plant ecology are vast and will be available only as long as the forest remains intact. Flooding the core of the national park will not only destroy many

opportunities to do original research, but also disrupt areas in the park that are above the flood zone. Much work remains to be done in such areas in all aspects of natural science. The basic dilemma confronting conservationists and natural scientists is that the last teak forest in Thailand is under threat of destruction by a dam project. The authorities must decide whether the intrinsic and practical values of the natural forest, including scientific, recreational, and various unknown future benefits, are less important than a dam construction project. Dams have an effective life span of perhaps 25 years and, considering other dams in Thailand, provide dubious benefits in flood control, irrigation, power production, and durability.

Epilogue

Rampant destruction, devastation with impunity, and infinite avarice are the causes of the loss of so much of Thailand's natural heritage. This monumental disaster will continue unabated until everything of immediate value is plundered. The intended sacrifice of the teak forest in Mae Yom National Park is just another example where virulent and environmentally rapacious concepts of "development" are forced on nature. Although the adverse effects of deforestation, construction, pollution, and population increase are obvious, it is astounding how little has been done to control these problems. It is indeed quite amazing as well as infuriating that sinister forces in "official" positions still intend to continue their evil schemes under the guise of "development" at the expense of nature without any regard for the environmental consequences of their activities.

