

THE NORTH NEGROS FOREST RESERVE A BIODIVERSITY HOTSPOT AT RISK

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ABSTRACT

This report outlines the results of habitat surveys, ecological research, species inventories, and conservation efforts that have been conducted in the North Negros Forest Reserve (NNFR) in Negros Occidental between 1995 and 2000 by a team of scientists and environmental workers. The habitat survey revealed that 50 years after its establishment the reserve still holds 4,700 ha of mid-elevation oldgrowth forest 5,200 ha of high-elevation mossy forest, and 6,600 secondary forest. Mainly due to its elevational gradient, the NNFR contains a stunning diversity of habitats, despite its small size. Interviews and site inspections at 20 villages in the reserve pointed towards some of the immediate threats to the reserve and its wildlife, such as small-scale logging, forest extraction, and hunting. Important first steps to constructively manage and protect the reserve are discussed in this paper.

Introduction

Being the last remaining forest fragments in the Philippines, montane and submontane ecosystems have recently become the focus of attention for conservation efforts. Particularly forest fragments of the West Visayas are global centers of endemism and biodiversity that fall into the IUCN category of the highest conservation priority (Dinerstein et al 1995). The North Negros Forest Reserve (NNFR), which has been established by legislation in 1946 to protect more than 100,000 ha of virgin rainforest on Negros, represents perhaps the most important refuge for endemic plant and wildlife species of this region. This report outlines the results of surveys, research, and conservation

efforts that have been conducted between 1995 and 2000 by the Philippine Endemic Species Project of the Ruhr-University Bochum, Germany, in collaboration with the Department of Environment and Natural Resources, Philippines, the Provincial Environment Management Office, Negros Occidental, and the North Negros Forest and Ecological Foundation, Bacolod. The review is meant to draw attention to the importance and problems of this little protected reserve.

Habitat survey

The NNFR is uniquely located, embraced by the volcanoes Mt. Silay and Mt. Mandalagan, whose rugged topography have protected the area from logging in the past. The area is small compared to the remaining forests in Luzon and Mindanao, yet it is an important refuge for a great number of species endemic to the West Visayan biogeographic zone, which includes the islands Panay, Negros, Guimaras, Cebu and Masbate (Davis et al. 1995). While the last three islands have been entirely deforested, Panay contains a noteworthy range of semi-deciduous monsoon forest, and Negros three fragments of wet tropical rainforest. The NNFR contains the largest fragment, although 50 years after its establishment only a relatively small portion (approximately 10%) of the reserve remains unlogged. A detailed aerial and ground survey revealed that all lowland dipterocarp forest of the reserve has been cleared except in a few inaccessible valleys, and 6,600 ha of secondary forest grows on areas that have been logged over in the past. The reserve, however, still contains 4,700 ha of mid-elevation oldgrowth forest and 5,200 ha of high-elevation mossy forest that is of no commercial importance (Figure 1). The two major fragments of submontane oldgrowth forest are bedded into half-craters that face each other and form arguably the most valuable watershed for quality water supply on Negros.

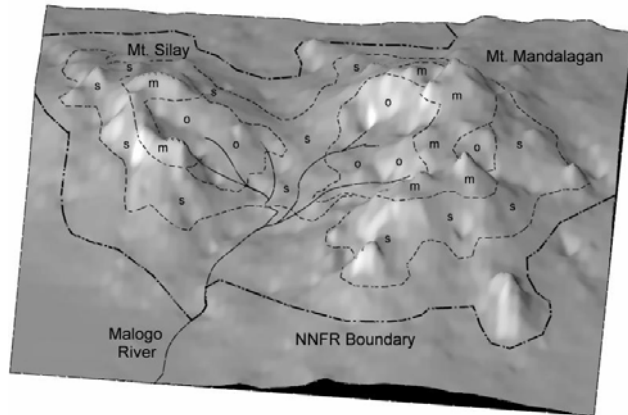


Figure 1. Digital elevation model of NNFR from 123°07' to 123°19'E and from 10°35' to 10°49'N (approximately 20×27 km). Symbols indicate oldgrowth forest (o), mossy forest (m) and secondary forest (s).

Ecology and biodiversity

Despite its small size, the NNFR contains a stunning diversity of habitats, mainly due to its elevational gradient: In some low lying valleys majestic Dipterocarp forests can be found; the species-rich Oak-Laurel forests occur in the submontane zone; and higher up large areas are covered with mossy forest, which is named after a multitude of lichens, mosses and other epiphytes thriving in the mist of the cloud level. In addition sites with sulfur springs, hot springs and temporary inundated bogs provide unique habitats for specialized life forms. The submontane forest communities have the highest plant biodiversity and support a large fruit-eating vertebrate community (Hamann and Curio 1999) including rare species such as the Visayan Tarric Hornbills (*Pelenopides panini*) and several species of fruit pigeons and parrots. Among the most critically endangered species of the Philippines is Writhed-billed Hornbill (*Aceros waldeni*), which

has been photographed for the first time (Figure 2). Mammals living in this zone include the Visayan Warty Pig (*Sus cebifrons*), the Long-Tailed Macaques (*Macaca fascicularis*) and the highly endangered Tubenosed Fruit Bat (*Nyctimene rabori*) among other fruit bat species (Figure 2). This ecotone is the richest zone, both in terms of species of fruit trees and estimated total fruit production when compared to the Dipterocarp forests below and the mossy forest above (Hamann et al. 1999). Ascending higher, coniferous trees such as Almaciga (*Agathis philippinensis*) and Mountain Cedars (*Podocarpus* ssp.) become more frequent, while the overall species diversity declines towards the mossy forest zone with its gnarled and epiphyte covered trees, habitat of the Philippine Spotted Deer (*Cervis alfredi*), the most endangered species of deer in the world.



Figure 2. The two most critically endangered species found in the NNFR: the Writhed-billed Hornbill and the Tube-nosed fruit bat (Photograph by P. Heubüschl).

Threats to the reserve

Interviews and site inspections at 20 villages in the reserve pointed towards some of the immediate threats to the reserve and its wildlife: Rattan collection and other forms of forest extraction were common at most villages, while at four sites, “timber-poaching” of select oldgrowth trees that are processed into rough boards on site was encountered. Almost everywhere within the regenerating forest areas, recruiting trees are cut and processed into charcoal to be sold in the cities. Hunting of wildlife has been identified as the greatest immediate threat to the ecosystem. Hornbills that feed on fruits in orchards and pigs that leave the forest area to feed on crops are sometimes shot by farmers, while sport-hunting of birds with air-rifles appeared to be the most damaging and least acceptable practice that was encountered on a regular basis. The Visayan Warty Pigs and Philippine Spotted Deer were shot or trapped and their young are sold as pets. The same practice was once common for hornbills and parrots but, according to interviews, this has largely been given up, since nests are rarely found today.

Deforestation rates similar to those between 1988 and 1996 can no longer be tolerated if at least a minimum of the reserve is to be saved. The probability of species becoming endangered or extinct increases with the reduction of their habitat (Brooks et al. 1997), and comparisons of our surveys with previous studies in the NNFR indicate a serious decline in bird populations that probably started in the 1980’s, when forest area reached a critical size for the maintenance of wildlife populations. We believe that today almost all large fruit-eating bird species in the NNFR experience a severe population bottleneck, and their survival and recovery will depend entirely on immediate conservation measures. It is important to realize that the decimation of wildlife is a threat to the whole ecosystem, since more than 80% of all trees depend on seed dispersal by these animals for their long-term survival. The Oak-Laurel forest ecosystem, for example, will be unstoppably and irreversibly

transformed into a simple community of small to medium sized trees, dominated by members of the families Euphorbiaceae, Moraceae and Rubiaceae (Hamann and Curio 1999).

Conservation efforts

In recent years a number of different groups showed increasing interest in the NNFR for different reasons. Non-governmental organizations have promoted watershed improvement through reforestation to prevent catastrophic floods in the lowland as in 1995, and to guarantee the irrigation of rice and sugarcane fields. Inhabitants of the polluted cities in the lowlands find the reserve an attractive recreation area, and some municipal governments have proposed tourism development. Government agencies have an interest in watershed management for the provision of drinking water and consider the building of a water reservoir by damming the Malogo river. Land within the reserve is also being leased to farmers based on 25-year stewardship contracts, and many villagers continue to utilize forest products.

While multiple purpose land use is an attractive idea and combining conservation with utilization of natural resources has become a fashionable concept in many countries, it should be kept in mind that this type of management is recommended for extensive forest reserves. While utilization does not always conflict with conservation, there is not much room to err on the side of protection, if the last remnants of the West Visayan flora and fauna are to be rescued. Simplifying management objectives by rezoning the reserve may help to achieve this goal. Areas in the periphery of the reserve, where intensive agriculture has been practiced for decades, should be excluded from the NNFR. In a smaller manageable area stewardship contracts should be phased out and farmers should be resettled, after they have reforested their land based on an incentive scheme that provides the means for establishment elsewhere. Commercial forestry enterprises in the vicinity of the core reserve could be promoted in

order to create a buffer zone, to satisfy local demand for wood products, and to provide local employment.

An important step to constructively manage and protect the reserve was the creation of the NNFR Management Council in 1996, whose membership includes representatives of local and provincial governments as well as non-governmental organizations. The importance of such efforts cannot be over-emphasized, as the support of individual projects and their coordination will be crucial for the conservation of the last remnants of the West Visayan flora and fauna.

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