ENVIRONMENTAL MANAGEMENT IN FORESTRY DEVELOPMENT PROJECT

DESIGNING AN OPTIMUM PROTECTED AREAS SYSTEM FOR SRI LANKA'S NATURAL FORESTS

Volume 1

A Project of the Environmental Management Division, Forest Department
Ministry of Lands, Agriculture and Forestry

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National Conservation Review teams

EXECUTIVE SUMMARY

Sri Lanka is a small but biologically diverse country that is recognized as a biodiversity hotspot of global importance for plants. Many plants and animals are endemic to the island, 26% in the case of flowering plants and from 45% to 76% for certain taxonomic groups of animals. Much of this diversity is found in the south-west wet zone which occupies one-third of the country. Closed canopy natural forest covers 24% of the country but it is least extensive in the wet zone where human population pressures are highest.

The over-riding objective of this National Conservation Review (NCR) of remaining natural forest in Sri Lanka is to define a national system of conservation forests in which watersheds important for soil conservation and hydrology are protected, forest biodiversity is fully represented and cultural, economic and social needs are met.

The NCR focused on assessing the importance of forests for soil, water and biodiversity conservation. All natural forests of 200 ha or more were included in the NCR, except those in the north and east of the island which were politically inaccessible. The biodiversity assessment was restricted to woody plants, vertebrates, molluscs and butterflies. Despite such limitations, **the NCR is among the most detailed, comprehensive and innovative evaluations of its kind carried out in any tropical country.** Between April 1991 and September 1996, a total of 1,725 plots (100 m x 5 m) were inventoried along 310 gradient-directed transects in 204 forests. Analyses are based on approximately 69,400 records of 1,153 woody plant species and 24,000 records of 410 species of selected animal groups. A total of 281 forests were evaluated with respect to their importance for soil and water conservation.

Sri Lanka has an extensive system of protected areas covering over 14% of total land area. However, this system is least extensive in the wet zone, where watershed protection is of paramount importance and biodiversity is highest. The results from the NCR show that many of the most important forests for soil and water conservation are not protected. Furthermore, certain floristic regions and forest types are poorly represented within the existing protected areas system. It has also been shown by this study that up to 15% of species diversity may be absent from the present system.

It is reassuring to find that 46% of the highest category of wilderness lies within protected areas, indicating their integrity and the relative absence of infrastructural developments, such as settlements and roads. A further 20% of high quality wilderness is found in forest and proposed reserves.

Of the 281 forests assessed for watershed protection, 85 were identified as being extremely important for soil protection and flood control, or interception of fog in the case of those located above 1,500 m. In general, wet zone forests are a top priority for soil and water conservation, particularly the largest units of contiguous forest (Central Highlands, KDN, Knuckles and Sinharaja) which protect the headwaters of the country's major rivers.

Of the 204 forests assessed for biodiversity conservation, minimum sets of 108 and 49 were identified for representation of woody plant and endemic woody plant species, respectively. Woody plant and animal diversity is represented within a total of 133 forests, but it should be noted that some woody plant inventories were inadequate and that all animal inventories were incomplete. Some 80% or more of woody plant and animal species are represented within eight units of contiguous forest, namely: Bambarabotuwa, Central Highlands, Gilimale-Eratne, KDN, Knuckles/Wasgomuwa, Pedro, Ruhuna/Yala and Sinharaja.

There is considerable commonality between forests important for soil and water conservation and those rich in species. An integrated analysis shows that a minimum set of 104 of 224 units of contiguous forest are necessary to meet watershed protection and biodiversity conservation priorities. Such an optimum system of conservation forests covers 516,795 ha, or 7.8% of total land area. With the exception of a few small fragments, all forests within the wet zone are included in this optimum system, together with the extensive forests of Ruhuna/Yala in the south-east and several small units to the north. If one of the criteria is changed from representation of all species to endemic species only, the minimum set of contiguous forests falls to 70 but the system extends over almost as large an area (490,193 ha, or 7.4% of total land area).

Given that there is very little redundancy in the wet zone, forests being important for either biodiversity conservation or for protection of watersheds, the current ban on logging should be maintained for the foreseeable future. As it is unlikely that such measures will be adequate to safeguard the entire spectrum of forest biodiversity, it will be necessary to conserve biodiversity though other measures, including private stewardship of natural forests. In the meantime, much can be achieved by upgrading the conservation status of existing forest and proposed reserves in the wet zone.

The Forest Department, in collaboration with other sectors, is encouraged to consider pragmatic ways of addressing the conservation priorities emanating from this study, taking into proper account their cultural, economic and social implications. Importantly, its Environmental Management Division now has the necessary skills and tools to optimise this system of conservation forests further in response to socio-economic and other constraints that might arise during the planning process. The Environmental Information Management System, held by the Division, provides a powerful tool for generating optimum systems of conservation forest according to predefined criteria and quantifying their potential benefits and costs.

In order to further optimise the system of conservation forests, it will be necessary to carry out additional surveys of forests overlooked by the NCR, as well as those inadequately inventoried for species. Moreover, any plans to release forest lands for other forms of use should be preceded by more detailed biodiversity surveys in order to fully evaluate their potential impact. This should be considered mandatory for any forest either not surveyed or inadequately surveyed by the NCR, particularly if it lies in the wet zone.

Despite the wealth of data generated by the NCR, they are preliminary and provide a basis for systems planning. Much more detailed and wide-ranging surveys will be required to plan and monitor the management of individual conservation forests once they are established. Given the continual need to survey and monitor biodiversity, it should be noted that there are more rapid, less costly alternatives of inventorying plant taxa at the level of genera without significantly jeopardising representation of species within minimum forest systems.

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