ENDEMIC TREES: ISSUES AND CHALLENGES

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ABSTRACT

Of an estimated 5,000 species of trees in Borneo, 41% are endemic to the island. This estimate is supported by data from the 64 families so far published in the Tree Flora of Sabah and Sarawak Vols 1-4, in which 490 species have been found to be endemic of a total of 1,201 species recognised. So far, 102 species have been confirmed endemic to Sarawak, but the final total may reach 400 species. The conservation of hundreds of endemic species is a major exercise requiring the mobilization of intellectual and practical resources. Priorities, goals and incentives are proposed. It is emphasised that the stewardship of biodiversity is a dynamic knowledge-based activity. A Sarawak endemic is significant only in the context of the flora of Borneo; a Bornean endemic is significant only in the context of the flora of SE Asia and the world.

Keywords: endemism, conservation, biodiversity

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INTRODUCTION

An endemic organism is one that occupies a well-defined geographical area. Organisms that are widespread are said to be cosmopolitan. There are three variables in the definition of an endemic organism.

The first variable is the taxonomic unit. The usual unit is the species, but we may also speak of an endemic family, genus, variety, or population. Foresters use the word 'provenance' for a local population. Agriculturists use the word 'land race' for a crop that has been cultivated in a particular location for some time. It is assumed that any population that has been locally grown and propagated for one or more generations will have developed some genetic differences from other populations.

The second variable is the geographical area, which may range from a point, e.g. a limestone hill in Bau, to a vast area such as the island of Borneo. Politically defined areas such as the state of Sarawak, or the country Malaysia, correspond poorly with the natural boundaries that limit the spread of plants, but are important in considerations of endemism because,

in practice, the stewardship of biological diversity is the political responsibility of individual states and countries.

The third variable is the state of knowledge of the flora and fauna. The effect of increasing knowledge on the definition of endemics may be illustrated by our knowledge of the endemic trees of Peninsular Malaysia. In 1990, a list (Ng *et al.*, 1990) was compiled based on the completed Tree Flora of Malaya (Whitmore and Ng, 1972-1989). This list covered 100 families, 532 genera, 2,830 tree-species. The number of endemic tree species was found to be 746, or 26.4% of the total tree flora. With progress on the Tree Flora of Sabah and Sarawak (Soepadmo *et al.*, 1995-2002), we find that the figures for Peninsular Malaysia have been affected. To illustrate the changes, two examples, *Diospyros* and *Litsea,* are given in Table 1. In both genera, there has been a reduction of species for Peninsular Malaysia because of a broadening in species concepts, and a reduction in the number of endemics because of species found to extend into Borneo.

Table 1: Malayan endemics then and now.
(TFM: Tree Flora of Malaya, 1972-1989)

Genus	No. of species TFM	No. of species 2004	Endemics in TFM	Endemics in 2004
Diospyros	66	65	28	24
Litsea	54	48	11	10

THE ENDEMIC TREES OF BORNEO AND SARAWAK

Soepadmo (1999) has estimated that the number of species of trees in Borneo is about 5,000, of which 41% are expected to be endemic to the island. For the families completed for the Tree Flora of Sabah and Sarawak, I have extracted the relevant figures, which are presented in the Appendix to this paper. In summary, the appendix covers 64 families, 224 genera and 1,201 species, representing only a quarter of the Bornean tree flora. The Bornean endemics identified so far total 490 species. Of these, 102 species are endemic to Sarawak. The total endemic flora of Sarawak may eventually reach 400 species.

PRIORITIES IN CONSERVATION

In any programme to conserve flora and fauna, endemic species are usually considered to be more vulnerable and therefore of higher priority than cosmopolitan ones. By the same reasoning, a point endemic should be rated higher than a widespread endemic for conservation action.