Summary

Tropical rainforests contain an astonishing variety of plants that are of use to man as a source of timber, food, medicines, industrial products, and spices. The non-timber forest products play significant roles in the domestic economy of countries, but unfortunately their continued use and availability is being threatened by timber extraction and shifting cultivation, both of which are wasteful and destructive activities, and which are leading to the loss of a significant number of species. If tropical forests in general and their non-timber products in particular are to survive, a new approach is required in their conservation. More emphasis should be given to further studies on the enormous variety of uses of non-timber species, coupled with attempts to encourage traditional and sustainable use of the species both within and outside the forest.

Introduction

A tropical rainforest contains may useful products in addition to timber, and 102 different categories of use have been identified by Burkill (1935). The better-known products include rubber (a product of the latex of *Hevea brasiliensis*), cinnamon (a spice with considerable medicinal properties made from the bark of *Cinnamomum* species), and kina (extracted from the bark of *Chinchona* species). At a more exotic level is 'garu-wood' which comes from the heartwood of *Aquilaria* but which is first infected with a fungus to make it suitable for the production of incense.

Perhaps the best known product is rattan, with over 500 species in the Malesian region alone. Two-thirds of the 104 Malaysian species are useful in one way or another, and at least 12 species are of great economic importance. During the late 1970s the total recorded harvest from Indonesia alone was almost 60,000 tons per year. The value of the world trade in rattan is at least US$1200 million, most of which is accounted for by the furniture industry. In brief, the variety of products and their uses are astonishing. One in six of the known plant species of the Malesian forest has some use to man, and one in three genera contains at least one useful species.

Problems of Forest Exploitation

The genuine tropical forest should not be regarded as a source of renewable plant material in the same way as a secondary forest is regarded, in spite of the fact that these forests contain the richest source of non-timber plant products in the world. Although it is undoubtedly possible to carry out a collection of some of these species on a sustained basis, timber extraction is another matter. Cutting down and removing large trees inevitably damages the forest canopy and the soil, and removes large quantities of minerals. Quite clearly, these forests are not suitable for timber exploitation, particularly when the main timber species are well spaced out in the forest, and their removal results in considerable damage to non-timber species (Fig. 14.1). It is a notoriously wasteful process, resulting not only in an enormous loss of mineral and nutrients from the forest, but also the loss of other species. In contrast, the non-timber species can be exploited to provide man with medicines, exquisite spices, stimulants, latexes, and wild fruits, all of which are produced in limited quantity with the utmost economy of inorganic nutrients.

Forest and the Domestic Economy

It is only comparatively recently that so much emphasis has been given to the collection of timber from tropical forests. Until well into the nineteenth century, the collection of non-timber products predominated, and the ecological impact of this collection was minimal. Gradually timber
forests themselves. Unfortunately, the present rate of deforestation is such that many of these products will soon no longer be available in certain regions. Exploitation of timber and of non-timber forest products are hard to combine, and for practical purposes they are mutually exclusive. When shifting cultivation is practised, the incompatibility is even greater, because most shifting cultivation totally destroys primary forest. If present trends continue, not only will forest products disappear, but domestic economies will also be adversely affected, both directly and indirectly. For example, although the narrowing of the genetic base of fruit trees might take centuries, we never know when genetic material in the wild might be needed. The virtual loss of the jeruk Bali during the 1970s is a case in point. This most delicious citrus fruit was almost exterminated by the phloem degeneration virus. A timely programme of hybridization with resistant wild relatives could have averted the danger.

The Conservation of Non-timber Products

There has always been an interest in non-timber products, and the key reference by Heyne (1950) has kept this interest alive. However, the book needs updating, but this is no easy task. Both botanical and ethnological skills are required to study non-timber forest products, to which must be added investigations into the manufacture, use and sale of an enormous variety of products. The works of Burkill (1935) and Heyne (1950) were based on individual studies of 30 years duration, and a team effort would be required nowadays to expand on their efforts. Nevertheless, priority should be given to those studies, which are becoming increasingly urgent as more species move towards extinction. An essential prerequisite for such investigations is the preparation of a comprehensive literature review to bring our overall knowledge of non-timber products up-to-date.

Studies on their own will not prevent forest destruction, and conservationists should give attention to encouraging traditional and careful sustained use of non-timber products. In the long run, such uses are far more economical than logging, and of course, far less disruptive ecologically. Finally, far more attention needs to be given to developing the resource by cultivating species outside of the rainforest, as is already being done with rubber, fruit trees and a few medicinal plants. A new approach is required in