

Foreword

*In terms of geography, biodiversity, history, palaeohistory and present-day situations, this book covers a vast area. The lowland rain forest of the Guinea–Congo region – much of it, of course, converted to farm and urban areas – is basically in two large blocks separated by the drier savanna areas of the Dahomey Gap in the countries of Togo and Benin. These were some of the first rain forests seen by European explorers, and it was from these forests that most of the slaves were taken to the West Indies and America. Indeed, the name ‘mahogany’ for the splendid timber (*Swietenia* spp.) of the Caribbean and central America seems to have been derived from the Yoruba name for the similar West African timber (*Khaya* spp.) (see Lamb 1963). Today a very common reminder of the Guinea–Congo rain forest is the distinctively striped Sapele Mahogany (*Entandrophragma cylindricum*) seen in many homes and offices around the world.*

This book is particularly valuable in giving a sense of perspective to studies of the forests. The contribution by Jean Maley sets out the main characteristics of changes in vegetation and climate from the Upper Cretaceous (about 70 million years ago) when Angiosperms first appeared and began to expand. Prior to that Gymnosperms were dominant and in the Guinea–Congo lowland rain forest region they included relatives of *Podocarpus*, a genus now confined in tropical Africa to montane areas. From about 800 000 years ago the Guinea–Congo region was subjected to arid periods coinciding with times of maximum glacial extension in middle and northern latitudes. These led to fragmentation of forest cover with biodiversity preserved in refugia which are the subject of much discussion in this book.

The chapter by Paul Richards emphasises that all parts of the Guinea–Congo rain forest region have a long and complex history of human occupation and use. This has not been a matter of primitive people living, as other primates, in simple harmony with the forest – as the media often suggest, especially for South America – but in well-organised communities in towns, with sophisticated industries, long before the Europeans came. For instance in what is now the rain forest belt of Nigeria there were sophisticated metal-working technologies at least a thousand years ago. Richards also brings out the point that some areas of rain forest, for instance in the Gola area on the borders of Sierra Leone and Liberia, which were part of a regular shifting cultivation cycle 100 to 200 years ago, have been left as now mature secondary forest because of conflicts between the surrounding peoples.

There is a helpful chapter on the soils of the lowland rain forests which draws attention to the fact that the soils in many parts are nutrient-impoverished strongly acidic soils unsuitable for large scale permanent agriculture. The chapter on the forests of Korup and Douala–Edea (Cameroon) draws attention to the dominance of certain large trees in the family Caesalpiniaceae (especially *Microberlinia bisulcata*, *Tetraberlinia bifoliolata* and *T. moreliana*) on poor soils which seems to be due to their association with ectomycorrhizal fungi. These fungi and some saprophytic fungi are the subjects of other chapters.

The chapter by W. D. Hawthorne provides a lot of information about the trees of the forest reserves of Ghana. Unlike other countries in the Guinea–Congo rain forest region, Ghana is fortunate still to have significant areas of forest protected in reserves which can even be seen from satellite photographs. In a recent book, M. P. E. Parren & N. R. de Graaf (1995), of Wageningen Agricultural University, compare the history of forestry in Ghana, Cote d'Ivoire and Liberia, and bring out the point that in Ghana the forest reserves were established by cooperation between the government forest department and the local administrations. Such cooperation did not occur in Cote d'Ivoire, so after independence the reserves were no longer respected and the country now has the highest rate of forest loss in the region. In Liberia there has been no tradition of forest reserves. The policy for the establishment of forest reserves in Nigeria was similar to that in Ghana, but with the division of the country into, now, 30 states each with its own forest department, protection of the forest against uncontrolled logging, farming and other developments has become well nigh impossible.

The chapter on secondary metabolites brings out in a most interesting way some of the important connections between the physiology of the plants and that of animals, including drugs that may be valuable to humans.

There are two chapters on animals of the Guinea–Congo rain forest: G. McG. Reid on fish and D. C. D. Happold on mammals. Those interested in the rich faunas of insects, reptiles, birds and other animals will have to look elsewhere. There are thought to be more than 1000 species of fish in the 40 or so major rivers of the region. New species are still being found in numbers and many species are endemic; in the Congo river basin alone, endemic species may exceed 80%.

Up to 130 species of mammals are found in certain areas of the Guinea–Congo rain forest and they are, of course, more directly in contact with the forest trees than are the fish. Rodents and bats contribute the greatest number of species (about 25% each), with lesser numbers of primates, duikers and small insectivores. Fruits and insects are the main source of food for the mammals. The chapter by Happold goes into some detail about the habits and food preferences of the mammals, some of which play an important role in distributing seeds of forest trees. The largest of the mammals in the forest is, of course, the elephant which is generally considered as a separate species or subspecies from the savanna elephant. Kortlandt (1984) and others have drawn attention to the 'bull-dozer' effect of elephants on the rain forests of Africa, especially on the drier margins, where they created a mosaic of high forest and secondary regrowth, including grassy areas, long before human beings came on the scene.

It is, of course, people who have had the most serious effect on the forests of the region. As Richards explains, this influence is widespread and has been going on for a very long time. Traditional methods of farming, by slash and burn shifting cultivation, have not, until comparatively recently had too devastating an effect on the forest as a whole. However, with the great increases in population in the latter half of the 20th century, the fallow periods in the cultivation cycle have been significantly shortened, and the impact on the forest is apparent nearly everywhere.

As an example of the increases in population in the Guinea–Congo region, it may be noted that in the early 1940s the population of Nigeria was estimated at about 20 million; now it is about 100 million. The reasons for such increases are to be found in the greatly improved medical and public health services. The region has

had an unenviable record of endemic diseases, and at the beginning of the 20th century little was known about the causes. Research in epidemiology has identified the means by which most of the diseases are transmitted, and much progress has been made in reducing human contact with the vectors, such as mosquitoes for malaria and yellow fever, tsetse flies for sleeping sickness, *Chrysops* flies for filariasis. Improvements in water supplies and sewerage have also been most important.

In looking to the future it is clear that the rain forests of the region will be subject to continued and increasing pressure from the growing populations with their improving standards of living. As examples of the impact these improved standards have on the forests, timber for houses is an obvious one. It is also important to remember that improvements in education and living standards lead to great increases in the consumption of paper most of which comes, in one way or another, from the world's forests. For instance, per capita consumption of paper in Nigeria rose from 0.22 kg in 1960 to 5.2 kg in 1988, and this with a doubling of the population in the time meant a 30 fold increase in total consumption (Adegbehin & Omijeh 1989) (but per capita consumption in Europe and North America remains 50 times as great as in this region). Although much of the paper used in West Africa today is imported from temperate regions, it clearly makes sense to seek locally and sustainably grown sources in future. We are all in favour of improvements in literacy and general standards of living, but it has to be recognised that these put increasing pressure on the diminishing forests.

So what then can be done to preserve and manage the rain forests of this region, with their great biodiversity? The establishment and maintenance of legally protected forest reserves is essential. Ghana leads the way in this, but the task facing most of the other countries is enormous. On-the-ground protection and management of such forest reserves is essential and needs to be carried out in cooperation with local people. For this to be done properly very careful studies of the position and needs of the people must be undertaken and every section of the proposed boundaries must be discussed, on the ground, with them. Studies of social anthropology as well as ecology are needed. In addition to space for farming, consideration must be given to the use local people make of the forest for collecting fruits and herbs and for hunting; with regard to the latter, it has to be recognised that 'bush meat' may well be the people's main source of protein. If local people can be given some rights within the proposed forest reserve, it will help to enlist them as protectors of the forest.

If the reserved forest is to be managed for the production of timber and other produce, careful studies must be made of the ecological processes within the forests and especially within gaps. This must involve studies of the growth rates of at least those species of trees which it is proposed to harvest on the sustainable basis.

To reduce pressures on the natural forests, plantations of trees to provide, firewood, pulp for paper and constructional timbers will be required in increasing numbers. Again careful ecological studies are needed including studies of some of the forest plantations established in the Guinea-Congo rain forest years ago.

To summarise, proper management of natural forests and the creation of forest plantations must be based on sound understanding of the biological and social problems involved. The authors of this book have made some very valuable contributions to our understanding of the Guinea-Congo rain forest which those living and working in the region would do well to study carefully.

References

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