

BOOK REVIEW

FLORISTICS AND ECOLOGY OF THE MANGROVE VEGETATION OF PAPUA NEW GUINEA

MARGARET PERCIVAL AND JOHN S. WOMERSLEY. *Botany Bulletin* No. 8, Department of Forests, Division of Botany, Lae. 96 pp., 3 plates, 68 figs.

In recent years there has been an increasing world interest in mangrove communities. This interest has come about due to the realization of the true ecological and economic significance of these communities. In Papua New Guinea interest has been sharpened by proposals for harvesting mangroves for pulp production and by the possible ecological effects on the mangrove forests of the proposed Purari River hydroelectric scheme. The possibility of these developments has increased the awareness of our ignorance of the ecological functions of mangrove communities. The ecological web of life within the community, the relationships with the surrounding marine, freshwater and terrestrial communities, the productivity, energetics and nutritional flow within, into and out of the mangrove system and all aspects of sedimentation and erosion need study before the environmental impacts of large schemes can be assessed.

Floristics and Ecology of the Mangrove Vegetation of Papua New Guinea is a book which fills a vital need for any mangrove studies. The first three chapters outline some of the environmental conditions influencing mangrove vegetation, the types of specialized root systems which mangroves have evolved, and zonation and succession of mangrove forests. These chapters summarize neatly and succinctly the existing state of general knowledge of these aspects. It should be borne in mind, however, that mangrove trees are only part of a complex community which includes numerous other life forms.

The chapter on uses of mangroves is quite brief, perhaps too much so, as the significance of mangroves to man is surely the crux of the whole matter.

Fish, crabs and prawns are the main sources of protein for people living in mangrove areas.

Although only slightly exploited at the moment, commercial mangrove fisheries could add significantly to Papua New Guinea's protein production. Moreover, such fisheries require little complex technology or outside expertise, and could be operated by village people themselves. The mention of the development of mangrove areas for fish culture in South-East Asia is interesting, but not particularly relevant to Papua New Guinean conditions as "wild" fish are so numerous and so readily caught.

The great importance of mangroves as nursery areas for marine fish and prawns is referred to. Probably equally important, but omitted, is the nutrient outflow from mangroves to the sea. Large quantities of vegetable matter and small crustaceans can regularly be seen being carried out to sea from mangrove areas.

Land accretion and the prevention of erosion are mentioned as two significant functions of untouched mangroves.

The production of sugar from *Nyssa fruticans* may be of potential value to Papua New Guinea, particularly as the emphasis on village cottage industries and self-reliance increases. The other subsistence uses of *Nyssa* and of other mangrove vegetation for light building materials and firewood are important in the village economy. The authors leave it unclear whether the medicinal uses of mangroves are followed in Papua New Guinea. If not, this may be an area where experience elsewhere can be used to advantage by Papua New Guineans.

The uses mentioned above all come from comparatively untouched mangroves and demonstrate that, in this state, mangroves are a resource which is already being utilized. Before any decision on commercial harvesting is made the existing value should be considered. Tannin, timber and pulp are commercial products requiring large-scale harvesting of mangrove trees. Tannin is of declining importance, but timber and pulp appear to be potentially viable industries. Whether the short-term value of

these products could outweigh the existing recurrent value of mangrove forests, or whether commercial harvesting could exist side by side with village-based industries needs close study.

The final chapter on the taxonomy of mangrove species in Papua New Guinea takes up two-thirds of the book and is clearly the main reason for its production. This chapter is extremely useful to anyone doing scientific work in mangrove areas. For identification there are keys, descriptions, some photographs and many excellent line drawings. The keys and descriptions are clear and concise and the drawings particularly good—in fact, it is possible to identify most genera directly from the drawings. In short, this is the exact field handbook for mangrove identification that has been needed for so long.

There are two criticisms of the final chapter, however, which should be made. The first is minor: on page 72 the distribution of *Nyssa*

fruticans is given as NE. New Guinea and the Solomon Islands. No mention is made of the quite extensive *Nyssa* stands in the Gulf Province. The other criticism is more important—that is the lack of a glossary of technical terms. For the non-botanist, the number of technical terms used in the species keys is bewildering. A glossary of such terms would have added little to the cost of the book, and greatly increased the convenience of using it.

To sum up, the need for scientific data from our mangrove communities is growing more pressing all the time. This book will prove invaluable to all technical workers in mangrove areas, and also to anybody else who wishes to be better informed about his environment. Workers in Australia, the Pacific and SE. Asia will find it as useful as those in Papua New Guinea.

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