Vol. 11 No. 1 January 1977

BIOLOGICAL CONSERVATION

Edited by

APPLIED SCIENCE PUBLISHERS

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CONSERVING THE MANGROVE FOREST OF THE NIGER DELTA

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ABSTRACT

The Niger Delta mangrove forest is the most extensive of such forests in West Africa. Its nature and extent are examined. The potential bio-economic importance of this unique forest type is discussed and proposals are made for an effective regional conservation programme aimed at managing these resources for a sustained yield.

INTRODUCTION

Tropical deltas and estuaries which are subject to variable rates and types of geomorphological change create a network of habitats which are colonised by mangroves. Mangroves are evergreen, tall or shrubby species belonging to several unrelated families which share similar habitat preferences, physiognomy, physiological and structural adaptations. Most of them have pneumatophores or breathing roots and a more or less marked tendency to viviparity. Mangroves are of outstanding scientific interest because of their many structural and physiological peculiarities (Richards, 1952). They are also of considerable economic and ecological importance not only indirectly because of their contribution to the stability of otherwise relatively fragile brackish water habitats, but also directly as a source of firewood, potential industrial fibres and chemical dyes. An important but difficult problem in Nigeria is the conservation of the Niger delta mangrove forest, which is one of the most extensive and highly developed in West Africa.

Biol. Conserv. (11) (1977) © Applied Science Publishers Ltd, England, 1977
Printed in Great Britain

EXTENT AND SPECIES COMPOSITION

The mangrove forest occurs in varying degrees of development and concentration all along the Nigerian coastal areas. It attains maximum development in the Niger delta brackish water areas (Fig. 1). The forest is characterised by the dominance of a small number of species belonging to two major genera— *Rhizophora* and *Avicennia*. Of the *Rhizophoras* (red mangrove), *Rhizophora racemosa* is the commonest species. It can attain a height of 45 m under favourable conditions (Nielsen, 1965). As a pioneer species, its seedlings readily colonise newly deposited mud. *Rhizophora harrisonii*,

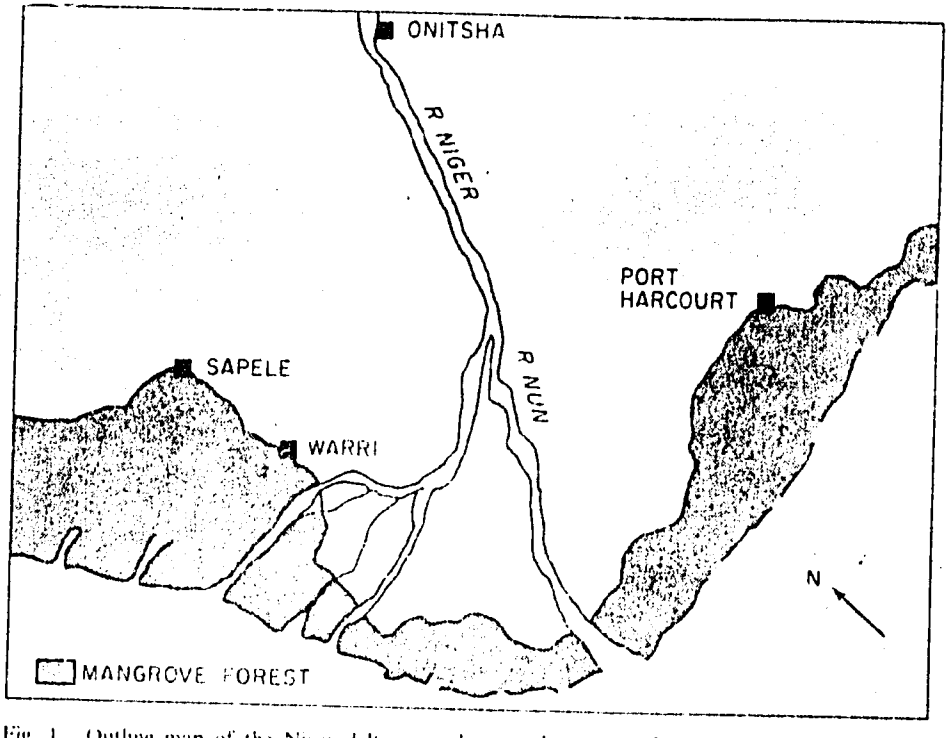

Fig. 1. Outline map of the Niger delta area showing the extent of the mangrove forest. Scale: 1 cm = 25 km.

which is a smaller tree, occupies slightly higher and drier ground. In addition to the red mangroves, there is the white mangrove (*Avicennia africana*) which is less common and occupies higher ground than the red mangroves.

Most of the Niger delta lies in the Rivers and Bendel States of Nigeria. There are over 500,000 ha of saline swamps with both tall and scrub mangroves in the region. A forest inventory conducted in the Niger delta by the former Niger Delta Development Board (1965), a Federal government agency, gave an estimate of

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nearly 283,200,000 m^3 of standing mangrove timber. The annual yield ranged from 600,000–1,600,000 tonnes. This means that at least 600,000 tonnes could be harvested in perpetuity without diminishing the total merchantable mangrove timber volume and represents a fairly substantial volume of standing timber.

THE MANGROVE FOREST PROBLEM

At present, the species making up the forest have little economic value to the community in terms of useful products. The ability of the region to retain human populations even at the low density which has now become a unique characteristic of the area is declining. It is true that there are other terms in which the forest is of value to the community, such as a rich reservoir of high-quality firewood, rural fishing and hunting grounds and a wildlife reserve, all of which are of great importance. But in spite of these, the question is whether the very large areas concerned should not be yielding more and employing more people. There is no doubt that the area could be made more productive. Unfortunately as yet no co-ordinated effort has been made to tap the renewable resources of this extensive forest on a sustained basis.

The industrial utilisation of mangrove timber is beset with a number of technical problems. The wood of red mangrove is hard, close-grained, heavy and dark reddish-brown. It is durable in water and is not easily attacked by hole-boring moluscs (Uphof, 1968). In spite of its proven strength, durability and virtual ubiquity in the Niger delta, mangrove timber has still to find a respectable place in the Nigerian or world timber market. Its present uses are relatively limited and include:

1. Domestic firewood
2. Pit-props for coal mines
3. Poles for scaffolding in the housing industry, fencing, power transmission and for railway sleepers
4. Production of poor quality tannin from the bark of felled trees.

In the predominantly agricultural economy of Nigeria, the demand on the forest for cheap fuelwood is still very high. Nevertheless, as the expansion of the gas and petroleum products industries in the country continues, the heavy demand on the mangrove forest for firewood is likely to diminish. The use of mangrove poles for scaffolding is also likely to decline with the utilisation of more modern scaffolding materials such as iron and steel. Neither do prospects for use as pitprops, fencing material, and railway sleepers seem great. Mangrove may continue to be used locally, but on a limited scale, for various domestic purposes. The future of the mangrove forest will depend to a large extent on the large scale utilisation of its timber in modern forest products industries such as board, paper and pulp manufacture. A large-scale utilisation of mangrove timber will necessitate managing the forest estate for sustained yield. This should inevitably arrest the present haphazard and destructive exploitation of the forest for firewood.

INTEGRATED USE OF THE MANGROVE FOREST

The Niger delta mangrove forest has been classified as a potential forest resource (Kinako, 1970) and since technical breakthroughs should one day make its timber of economic use, initial conservation efforts have to be directed at the creation of forest reserves in the region. This should facilitate the integrated use of the forest. The reserves could be of two main categories:

(A) Reserves for the preservation of the essential features of the flora and fauna of the forest.

(B) Reserves set aside for forest development, research and exploitation purposes.

Conservation is a dynamic concept which continually takes note of, and adapts to, changes in the status of various biomes with which it is concerned. This is true in the case of the mangrove forest. Anderson (1967) reported that 'chikoko' – peaty clay soils – occupy about 90% of the area of the Niger delta under mangroves, or an estimated 400,000 ha. On these soils the mangroves grow only feebly and do not usually exceed 3 m in height. The organic material seems to consist of relatively unchanged vascular fibres and bark from the roots of *Rhizophora*. These soils are considered potentially good for growing rice. It is likely that agriculture (rice cultivation), forestry and tourism could be profitably expanded in the region. Such an integrated use of the forest should increase its value to the local community and the nation as a whole.

Conservation work in the area may include the enrichment of the forest with certain exotic and saline habitat-tolerant tree species such as *Melaleuca leucadendron*. An enrichment pilot scheme of this nature in the Port Harcourt and Abonnema areas of the Rivers State has yielded promising results.

CONCLUSION

A major objective of conservation work in the Niger delta is not only to utilise and manage its extensive mangrove forest for sustained yield but also to expand agriculture and tourism there. Evaluation of factors in considering investments in conservation work is not an easy task, and is seldom arrived at by a simple use of the economist's cost-benefit analysis technique. Although the importance of cost-benefit analyses for conservation programmes should not be minimised, the total benefits cannot be counted only in terms of financial returns. They should include the overall improvement in the value – economic, recreational, educational, scientific and general amenity – of the forest to the local community.

The creation of forest reserves in the various areas of the delta is a conservation effort which should contribute significantly to the development of the mangrove vegetation and its associated resident animal populations. This would also act as an

effective buffer against the destructive effects of the present 'cut and go' exploitation policy of fuelwood dealers. Only in this way would it be possible to maintain this virtually untapped resource of scientific knowledge which is of great importance for practical questions of management and utilisation.

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