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A REPORT ON MANGROVES IN SOUTH AFRICA.

Keith H. Cooper

January, 1968.

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by KEITH H. COOPER

(January, 1968)

*mangroves, S. Africa;*  
*mangroves, St. L.;*

A REPORT ON MANGROVES IN SOUTH AFRICA.

by Keith H. Cooper

INTRODUCTION:

The future of Mangroves in the Republic of South Africa is threatened.

This unique type of habitat with its equally unique associated fauna and flora only occurs on the east coast of the Republic as far south as almost to Kei River Mouth in the Transkei. Mangroves were once plentiful all along the Natal and Transkei coasts but the demands of 'progress' have resulted in a severe depletion of this interesting habitat-type. Particularly in the last few years we have seen the destruction of two of the larger communities i.e. Durban Bay and Isipingo.

Educationists have constantly called for the preservation of suitable Mangrove areas along our coast. It seems that in view of the former abundance of Mangroves their pleas were disregarded. Now, however, the situation has altered and only a concentrated effort on the part of conservationists, educationists, scientists and the interested public will save the few areas that are left.

AREAS WHERE MANGROVES CAN STILL BE FOUND AS VIABLE HABITATS:

1. Umtata River Mouth, Transkei

Area : 40 - 50 acres

Species Present - Rhizophora mucronata  
Avicennia marina  
Bruguiera gymnorrhiza

Condition - Good

Controlled by - Transkeian Territorial Authority

Accessibility - Poor

Proximity to large centres of education - 200 miles south of Durban  
130 miles north of East London.

Whether secure or threatened - Threatened by Bantu encroachment.

2. Umngazana River Mouth, Transkei

Area : 100 acres

Species present - Rhizophora mucronata  
Avicennia marina  
Bruguiera gymnorrhiza

<u>Condition</u>	- Excellent
<u>Controlled by</u>	- Transkeian Territorial Authority
<u>Accessibility</u>	- Fair to good
<u>Proximity to large centres of education</u>	190 miles south of Durban - 140 miles north of East London
<u>Whether secure or threatened</u>	- Threatened by Bantu encroachment

3. Beachwood or Umgeni Backwater, Durban

<u>Area</u> :	± 30 acres
<u>Species present</u>	- <u>Rhizophora mucronata</u> <u>Avicennia marina</u> <u>Bruguiera gymnorrhiza</u>
<u>Condition</u>	- Fair to good
<u>Controlled by</u>	- S.A. Government - Department of Defence
<u>Accessibility</u>	- Excellent
<u>Proximity to large centres of education</u>	- Within easy reach of Durban and Pietermaritzburg, both University towns.
<u>Whether secure or threatened</u>	- Threatened by development - area is being zoned for other uses

4. Umlalazi Lagoon, Mtunzini, Zululand

<u>Area</u> :	± 25 acres
<u>Species present</u>	- <u>Avicennia marina</u> <u>Bruguiera gymnorrhiza</u>
<u>Condition</u>	- Fair to good
<u>Controlled by</u>	- Natal Parks Board, Department of Bantu Affairs and Town Board of Mtunzini
<u>Accessibility</u>	- Fair to good
<u>Proximity to large centres of education</u>	- 85 miles north of Durban
<u>Whether secure or threatened</u>	- Threatened by dredging operations in Lagoon - area required for resort purposes.

5. Richards Bay, Zululand

<u>Area</u> :	± 100 acres
<u>Species present</u>	- <u>Avicennia marina</u> <u>Bruguiera gymnorrhiza</u>
<u>Condition</u>	- Good
<u>Controlled by</u>	- Natal Parks Board, but to be expropriated by State for construction of harbour.

- Accessibility - With boat good, otherwise poor
- Proximity to large centres of education - 110 miles north of Durban - good road.
- Whether secure or threatened - Presently secure but threatened by new harbour development.
6. St. Lucia Estuary, Zululand
- Area : ± 30 acres
- Species present - Avicennia marina  
Bruguiera gymnorrhiza
- Condition - Fair to good
- Controlled by - Natal Parks Board
- Accessibility - Very poor
- Proximity to large centres of education - 160 miles north of Durban - good road
- Whether secure or threatened - Threatened by interference through siltation and deposition of dredged material.
7. Sordwana Bay, Zululand
- Area : Small
- Species present - Bruguiera gymnorrhiza
- Condition - Excellent
- Controlled by - Natal Parks Board
- Accessibility - Fair
- Proximity to large centres of education - over 200 miles from Durban
- Whether secure or threatened - Secure
8. Kosi Bay, Zululand
- Area : ± 80 acres
- Species present - Avicennia marina  
Bruguiera gymnorrhiza  
Rhizophora mucronata  
Ceriops tagal  
Lumnitzera racemosa
- Condition - Presently poor due to natural phenomena of flooding during 1966 - Cyclone Claude. Regenerating well however.
- Controlled by - Department of Bantu Affairs
- Accessibility - Poor
- Proximity to large centres of education - over 300 miles north of

Whether secure or  
threatened

- Threatened, as local Bantu cut them to construct fish "kraals".

From the above survey it will be appreciated why there is concern about the future of Mangroves in the Republic.

WHAT ARE MANGROVES AND WHY ARE THEY UNIQUE

Professor A.W. Bayer writing in the Bulletin of the Natal Society for the Preservation of Wild Life and Natural Resorts, January, 1953, stated :

"It is generally accepted that plant life originated in water and that the sea-weeds, together with some of their fresh water relatives are among the most primitive of plants. From them were produced the land living hepatics and mosses, ferns, cone plants such as the Cycads and Yellowwoods, and lastly to the flowering plants. So that by the time the modern flowering plants were evolved, plants had become, during several hundreds of millions of years, fully adapted to a land existence.

Plants having once become adapted to a land existence have found it difficult to return to life in water. This applies especially to life in salt water, since very few species of flowering plants are able to live there. Among the most interesting of these plants are the mangroves.

Mangroves are typically tropical plants, but because the Mozambique current brings a stream of warm, tropical water down the east coast of Africa, the Mangroves of this coast have extended beyond the tropics to Natal and the Transkei. In Portuguese East Africa there are nine species of mangroves, but only five of these reach Natal, and only three south of one northernmost estuary (viz. Kosi Bay). The three species are : Bruguiera gymnorrhiza (Black mangrove), Rhizophora mucronata (Red mangrove), and Avicennia marina (White mangrove). They are all trees that may attain a height of about 20 ft. for Rhizophora, 35 - 40 ft. for Avicennia and 50 ft. for Bruguiera but are generally much less.

Mangroves are not found on open beaches and are able to establish themselves only in bays and estuaries. Due to their tolerance of both saline and fresh water they have developed remarkably efficient mechanisms for altering the absorbing power of their tissues to suit the fluctuations in salinity of lagoons, and they are thus among the few flowering plants able to survive these conditions.

Another feature of mangroves that deserves special mention is that the seeds germinate while still attached to the trees. The so-called fruits of mangroves are in reality seedlings. This habit of vivipary is so unusual in the plant kingdom, but so common in mangroves, that it must be regarded as a special response to lagoon conditions".

Furthermore mangroves show an ability not only to survive and colonize an environment impossible for most other trees, but even to create new land.

that seem at first indecipherable, a mangrove forest on closer examination sorts itself out into a meaningful structure that actually traps flotsam of all kinds in the shallow waters where it grows, gradually forming solid ground from the decaying mass. The origin of a mangrove forest can be a single seedling which, before separating from the parent tree, develops a long root. When it falls, the seedling is almost a finished young plant: it may strike into mud below and take hold there, or it may float off on the tide to travel a thousand miles, wherever it does finally lodge, it establishes itself quickly and grows with great rapidity to reproduce itself within five years. Mangrove seedlings have been observed to grow an inch an hour and bear fruit when four feet high.

WHAT OTHER FORMS OF LIFE ARE ASSOCIATED WITH MANGROVES AND WILL ALSO BE THREATENED ?

Two small succulent herbs Chenolea diffusa and Arthrocnemum natalense, the grasses Sporobolus virginicus and Paspalum vaginatum, a fern Acrosticum aureum and a sedge Juncus krausii and the plants Triglochin laxiflorum and Dimorphotheca fruticosa are all found in association with mangroves. In addition the following fauna is closely associated with mangroves : Crassostrea cuculata (Mangrove oyster), Littorina scabra (Periwinkle), Balanus amphitrite (Mangrove barnacle), Uca spp. (Fiddler crabs), Sesarma spp. (Mud crabs), the sea cucumber Holothuria parva, Cerithidea decollata (a herbivorous gastropod), Periophthalmus sobrinus (The Mud-skipper) and (Halcyon senegaloides) the magnificent and beautiful Mangrove Kingfisher.

RECOMMENDATIONS

1. From this report and survey of remaining Mangroves in the Republic, it is evident that areas nearest to large centres of education will be the most important (mangroves provide excellent material for biological study). For this reason it is suggested that highest priority should go to the Beachwood-Umgeni backwater area, Durban. It is further recommended that this area be declared a protected zone and reserved for outdoor educational study, recreational use, scientific comparison, and its historic value without delay. Its importance for conservation lies not only in its Mangroves but also in its undisturbed and well preserved sand-dunes with associated fauna and flora which will also be important for comparison with denuded and disturbed areas. Being State-owned there is a greater likelihood that success will be achieved in having this area proclaimed than if it was in Municipal ownership. The area, as shown in Fig. 1, stretches from the Umgeni River mouth northwards into the Beachwood Golf Course. It is bounded by the Indian Ocean to the east and the main North Coast National road to the west.

It is pointed out, however, that changes in environmental factors, detrimental to Mangroves as a permanent community have already occurred and to ensure their continuance a management policy is likely to have to be implemented.

- u. 6.
2. The Department of Bantu Affairs be urged to give strict protection to the Kosi Bay Mangrove community which is a most important area as it is the only area in the Republic which possesses all five species of mangroves.
  3. The Natal Parks Board be urged to take more active steps to ensure the survival of Mangroves in the areas under their jurisdiction. In this connection the prevention of silt and debris from reclamation works being deposited in the Mangroves would greatly assist in their re-generation particularly at Umlalazi Lagoon, Mtunzini, Richards Bay and St. Lucia Estuary. Gaps should be left in banks of dredged silt to permit tidal flow into mangrove areas.
  4. The Transkeian Territorial Authority be urged to give strict protection to the very interesting and well developed Mangrove communities at Umtata and Umngazana River mouths. Furthermore this authority be requested to stop the encroachment of Bantu into these areas.
  5. That in planning harbour development at Richards Bay consideration be given to the possibility of conserving at least portion of the mangrove area on account of its scientific, educational and recreational value. In this area the mangrove swamps are important also in providing a feeding ground for estuarine fish.
  6. Because of the importance of mangrove areas in attracting estuarine fish, local authorities be encouraged to re-introduce mangroves to numbers of our swollen estuaries from which mangroves have disappeared.
  7. Conservation of mangrove areas should include the surrounding tree fringe of Hibiscus tiliaceus and, where it occurs, the almost mangrove, Barringtonia racemosa.

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The Natal Mercury is thanked for the use of their photograph in Fig. 1.

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Fig. 1. An aerial view of the Beachwood Mangroves, Durban looking south. (1967)

Photo by Natal Mercury



Fig. 2. An interior view of the Beachwood Mangroves. Note large *Avicennia marina* and young sub-canopy *Bruguiera gymnorrhiza*, also air-roots or pneumatophores of *Avicennia*. (1967)

Photo K.H. Cooper.



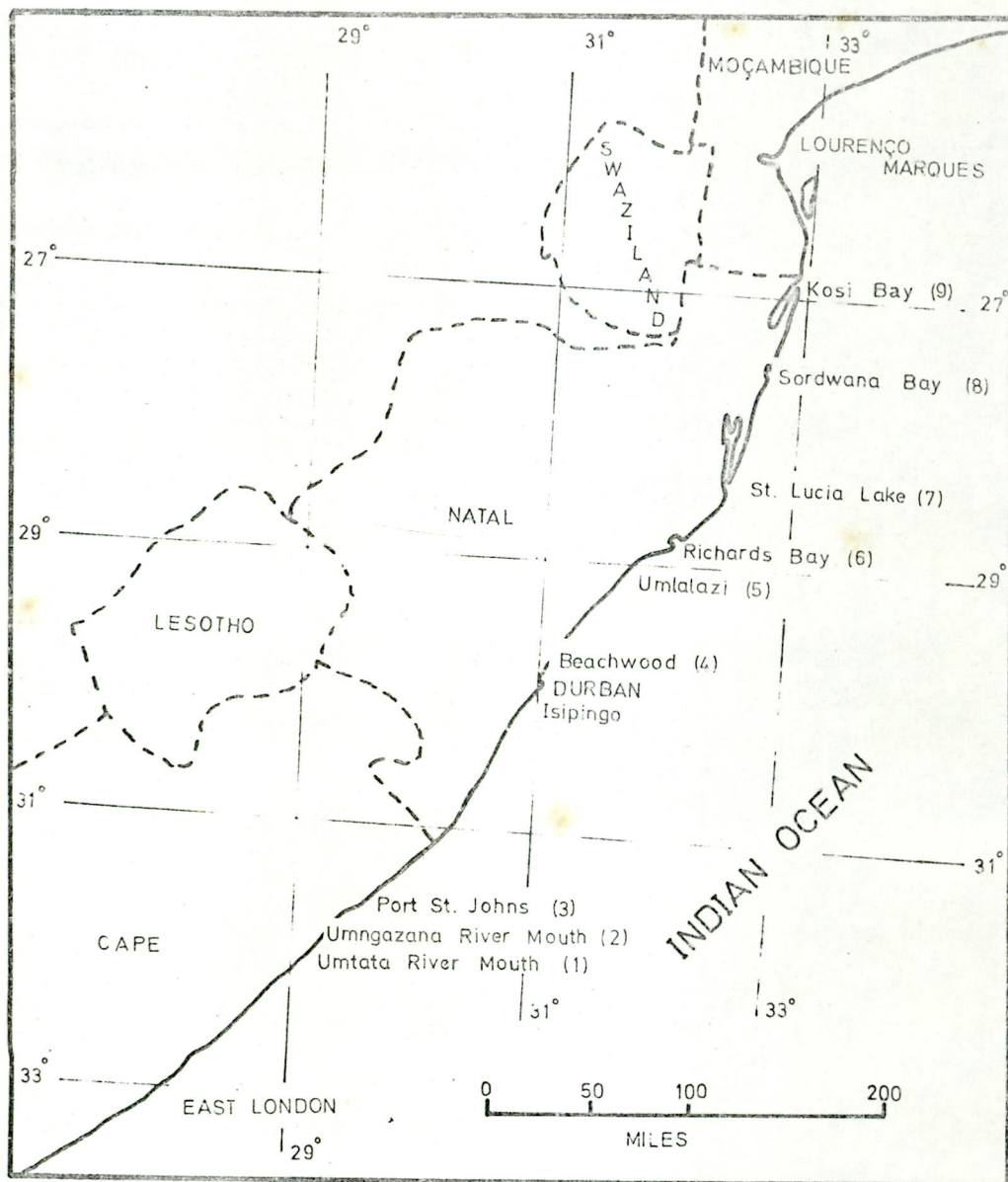
Fig. 3. An aerial view of the Kosi Bay Mangroves looking west. (1967)

Photo E.J. Moll



Fig. 4. A closer aerial view of Mangroves at Kosi Bay. Note cutting of Mangroves to provide material for "fish kraals" or traps. (1967)

Photo E.J. Moll



Map showing the Mangrove areas mentioned in the report.