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Review

STATUS OF MANGROVES IN MAURITIUS

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ABSTRACT

Mangroves play an important role in the coastal ecosystem of Mauritius. Two species of mangroves, Bruguiera gymnorrhiza (L.) Lam., and Rhizophora mucronata Lam., have been identified so far. The latter species is more dominant and occurs in pure stands in most of the swamps.

Loss of biodiversity due to the destruction of wetlands, mangroves and corals is one of the priority issues identified in the National Environment Strategies. Mangrove and Coral reef management and protection is one of the key strategies in addressing coastal zone challenges in Mauritius.

Very few scientific studies exist on mangroves in Mauritius. Currently there are no scientific studies on the fauna and flora inhabiting mangrove ecosystems. This is an area that requires further research. Therefore a lot of work remains to be done with regards to the mangroves. Moreover, future management programs will need to look into the factors threatening mangrove ecosystems.

Key words: Mauritius, mangroves, bioversity, management, protection

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INTRODUCTION

The island of Mauritius is located at latitudes 19°59'S-20°32'S and longitudes 57°18'E-57°47'E, in the Western Indian Ocean, about 800 km east of Madagascar and has a population of 1.2 million. The island is of volcanic origin and has an area of 1.865 km^2 and a coastline of 322 km. Mauritius is surrounded by a large submarine platform (maximum width of 25 Km) allowing the development of extensive coral reefs covering an area of 300 km^2 (Montaggioni and Mahe, 1980).

Coral reefs of fringing type are discontinuous delineating a series of lagoons which are broader on the windward east coast (about 7.5 km) (Pichon, 1971). Lagoons are generally shallow (2-3 m) (Turner et al., 2000). Coral reefs are absent on the basalt cliffs along the south and west coast and in places like river mouths. Shores in these areas are muddy or rocky. Rocky shores occur to a limited extent within the lagoons, where much of the shore is sandy or in the east coast mangrove-covered (Hodgkin and Michel, 1962).

In Mauritius winter is from April to September and summer from October to April. South-east trade winds are prevalent throughout most of the year. Tides are semidiurnal, with neap tidal amplitude of

0.5 m and spring tidal amplitude of 0.7 m (Michel, 1974; Faure, 1975).

DISTRIBUTION OF MANGROVES IN MAURITIUS

Sauer (1962) identified two species of mangroves, *Bruguiera gymnorrhiza* (L.) Lam., and *Rhizophora mucronata* Lam. The latter species is more dominant (Fagoonee, 1990) and occurs in pure stands in most of the swamps (Poonyth, 1998).

The *Rhizophora* belt along Mauritian coastal line is narrow owing to low tidal range of 0.5m and topographical features. Mangroves are found in estuaries and sheltered lagoons. Mangroves cover an area of about 20 km^2 in Mauritius. *Rhizophora mucronata* is found on the Northeast, East, Southeast coast of Mauritius (extending from Grand Gaube, Pointe des lascars, Poste la Fayette, Ile aux Cerfs, Trou D'eau Douce, Beau Champ, Grand Sable, Mahebourg), some patches occur in the South–Southwest coasts (Maconde, Tamarin). Small patches of *Bruguiera gymnorrhiza* occur at Pointe la Fayette, Trou D'eau Douce, Ferney and Mahebourg, on the East Coast. The heights of the mangroves range from 2-7 m on the East Coast (Annon, 1991a).

IMPORTANCE OF MANGROVES IN MAURITIUS

Mangroves play an important role in the coastal ecosystem of Mauritius and in the state of the environment report (Anon, 1991b), their importance is listed as follows:

1. They prevent coastal erosion and dampening action of waves on coastline.
2. They retain terrigeneous sediments, thereby protecting the lagoons from the effects of sediments.
3. They provide habitats and nursery grounds for crabs, shrimp and juvenile fish.
4. They provide substrates for fixation of oyster spat.
5. They provide food in the form of leaves and offering detritus trapped among their roots for a number of marine organisms.

MANGROVE PROTECTION PROGRAMS

Mangroves covered most of the coastline of Mauritius in the past. Over the decades mangroves have been destroyed for firewood, construction purposes, development purposes and for providing boat passages (Annon 1991b). In Mauritius over the last decade there has been rigorous inputs from the Ministry of Fisheries and Marine Resources with regards to replantation programs on mangroves. This program became necessary because lack of mangrove plants in the lagoon was responsible for considerable decrease in yield of fish as juveniles were exposed to carnivorous fish (Anon, 1991b). The program was implemented since June 1995 and seedlings have been planted on west, north and east coasts. A total of 157, 900 seedlings have been propagated covering an area of 96.500 m^2 (Annon, 2001).

Legislation also helps in protecting mangroves such as the Fisheries and Marine Resources Act 1998 which stipulates that "no person shall cut, remove, damage or exploit a mangrove plant or part of a mangrove plant except with the written approval of the Permanent Secretary".

Loss of biodiversity due to the destruction of wetlands, mangroves and corals is one of the priority issues identified in the National Environment Strategies. Mangrove and coral reef management and protection is one of the key strategies in addressing coastal zone challenges in Mauritius (Anon, 2002).

RESEARCH WORK ON MANGROVES IN MAURITIUS

Very few scientific studies exist on mangroves in Mauritius. One study by Abdoolah (1993) dealt with nutrient studies on a mangrove patch in an estuary in the South coast (Riviere du Cap). Poonyth (1998) did an in-depth study of the fungi associated with mangroves in Mauritius, 67 fungi species were recorded from intertidal wood samples and 48 were identified from dead prop roots of *Rhizophora mucronata* from five sites (Poudre D'or, Ile D'Ambre, Beau Rivage, Beau Champ and Maconde).

Another research work includes the medicinal properties of mangroves. Decoction of *Bruguiera gymnorrhiza* roots and leaves of *Piper borboneuse* is important in preventing hemorrhages; it is also effective against diabetes and hypertension. Leaves of *Bruguiera gymnorrhiza* act as antidote against venom of some poisonous fish. Roots of *Rhizophora mucronata* are used against hypertension and diabetes. The leaves of this species are effective against fever, local edema and as antidote against poisonous fish (Gurib-Fakim, 1997).

CONCLUDING REMARKS

In Mauritius a lot of scientific and management work still remains to be done with regards to the mangroves. Fauna and flora inhabiting mangrove ecosystems will require in depth study so as to have a better understanding of the density and diversity of species using this ecosystem in the local context.

A follow-up of the outcomes of the replantation programs will be useful. These may include sediment deposition studies or faunistic studies. Moreover, future management programs will need to look into the factors threatening mangrove ecosystems. The effects of a monoculture of mangroves (*Rhizophora mucronata*) and effect of introduction or propagation of other species of mangroves prevalent in other regions of the Western Indian Ocean will require due consideration.

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REFERENCES

Anon, 1991a. *Sagar Kanya report* pp. 197-199.

Anon, 1991b. *State of the Environment in Mauritius*, Ministry of the Environment, Quality of life, Government of Mauritius.

Anon, 2001. *Annual Report*, Ministry of Fisheries, Albion Fisheries Research Centre, Albion, Mauritius.

Anon, 2002. Towards Sustainable Development, Mauritius National Report, A review of the implementation of Agenda 21, *World Summit on Sustainable Development-Johannesburg - August 2002*, 195 pp.

Abdoolah, D. 1993. *Nutrient studies in the mangrove ecosystem (Rhizophora mucronata) of Riviere du Cap estuary*, unpublished B.Sc. Project, Faculty of Science, University of Mauritius, 103 pp.

Fagoonee, I., 1990. Coastal marine ecosystems of Mauritius, *Hydrobiologia*, 203: 55-62.

Faure, G., 1975. Etude comparatives des recifs coralliens de l'archipel des Mascareignes (Ocean Indien), *Bull. Mauritius Inst.*, 8(1): 1-23.

Fagoonee, I., 1990. Coastal marine ecosystems of Mauritius, *Hydrobiologia*, 203: 55-62.

Gurib-Fakim A. 1997. *Plantes medicinales de Maurice (Tome 3)*, Editions de L'Ocean Indien, pp. 152-157.

Hodgin, E. P., and C.Michel. 1962. Zonation of plants and animals on rocky shores of Mauritius, *Proceedings of the Royal Society of Arts and Sciences*, Mauritius, 2(2): 121-145.

Michel, C., 1974. Notes on marine biology studies made in Mauritius, *Bull. Mauritius Inst.*, 7(2): 1-284.

Montaggioni, L. and J. Mahe, 1980. Caracterisation faciologique des sediments recifaux de l'ile Maurice par analyse factorielle des correpondances. *Oceanol Acta*, 3(4): 409-420.

Pichon, M. 1971. Comparative studies of the main features of some coral reefs of Madagascar, La Reunion and Mauritius, In Regional Variation in the Indian Ocean Coral reefs edited by D.R. Stoddart and Sir M. Younge, *Symposium of the Zoological Society of London*, 28: 185-216.

Poonyth, A.D., 1998. *Mangrove fungi in Mauritius*, Ph.D. thesis, University of Mauritius, 205 pp.

Sauer. J.D. 1962. Effects of recent tropical cyclones on the coastal vegetation of Mauritius. *J.Ecol*.50:275-290.

Turner, J, C. Jago, D.Daby and R. Klaus, 2000. In *Seas at the Millennium: An environmental evaluation. The Mascarene Region*, pp. 253-268, edited by C.R.C. Sheppard, Elsevier Science Ltd.