

# THE PRESENT STATUS OF ECONOMICALLY IMPORTANT TREE SPECIES AT CHANDPAI RANGE OF THE SUNDARBANS MANGROVE FOREST, BANGLADESH

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## Summary

Sundarbans mangrove forest is rich in floristic composition than any other mangrove forest in the world. Extensive use of forest resources and indiscriminate felling have resulted in nearly extinction of some species. This study revealed the occurrence of only 9 economically important species belonging to 8 families which generally decreased in the interior of the forest area. Only 4 important tree species viz. *Amoora cucullata*, *Cynometra ramiflora*, *Ecoecaria agallocha* and *Heritiera fomes* were found in the interior of the area. *Heritiera fomes* had highest density out of these, 2914 trees per ha which was associated with *Excoecaria agallocha* and *Amoora cucullata*.

## Key word

Diversity, Mangrove, species composition, *Heritiera fomes*, *Excoecaria agallocha*.

## Introduction

The Sundarbans is the largest continuous mangrove forest in the world which is criss-crossed by numerous water courses. The trees of the Sundarbans exhibit hydrophytic and holophytic adaptations which facilitate survival under waterlogged and saline conditions. This forest occupies a flood deltaic swamp rarely exceeding 0.9 to 2.1 m and inundated with saline water during spring tides of the monsoon (Karim, 1994).

The successional pattern of plant species development and variation depend on the flooding frequency and salinity level of the forest soil (Mahmood *et al.*,

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1998). Like other mangrove forests, the Sundarbans mangrove forest is not dominated by *Rhizophoraceae*. *Heritiera fomes* and *Excoecaria agallocha* are the two most extensively occurring species in the forest with some species of Sterculiaceae and Euphorbiaceae. This mangrove forest is very rich in biotic diversity than other mangrove forest which supports 330 plant species (AWB 1991).

Prain (1903) identified a total of 334 species belonging to 245 genera of Spermatophytes and Pteridophytes from the Sundarbans forest and adjoining areas. Currently nearly 123 Angiospermic and Pteridophytic species occur in Sundarbans reserved forest area (Karim, 1995). The Sundarbans flora belongs to Indo-Malaysian subgroup and characterized by the abundance of *Heritiera fomes*, *Excoecaria agallocha*, *Ceriops decandra*, *Bruguiera gymnorrhiza*, *Bruguiera sexangula* and *Sonneratia apetala*. The monsoonal and snow melt floods from the Ganges and Brahmaputra result in virtually fresh water swamps for major part of the year (Chapman, 1975).

In Bangladesh, the Sundarbans forest area is about 0.4 million ha constituting 40% of the forest land under the management of the Forest Department or 24% of the total forest area of the country (Rashid 1977, Imam, 1982, Chaffey *et al.*, 1985). The Sundarbans is located in the South West corner of Bangladesh facing the Bay of Bengal. It lies between 21°38' N latitude and 89°00' - 90°00' W longitude. The study area is under Chandpai Range. The greater portion of this range is in the low saline zone with the total area of about 100,021 ha which consists of 15 compartments. The plant resources of Sundarbans mangrove forest is limited to a group of commercial important species. The present study has been carried out to explore the present status of economically important tree species and diversity which may be considered as the portrayal of the entire area.

## Materials and Methods

Stratified random sampling was followed to determine diversity in economically important tree species. Sample plots were taken under 6 varying distances (0-50, 50-100, 100-150, 150-200, 200-250 and 250-300 m) from the water courses towards the interior of the forest area. Survey was conducted in 10 compartments bearing numbers 12A, 13, 14, 15, 22, 23, 25, 26, 28 and 31. One sample plot (10 × 10 m) was taken from each distance class in a compartment

which totals 6 sample plots in each compartment. Number and name of economically important tree species were recorded during September through November, 1995.

## Results and Discussion

9 important economic tree species belonging to *Meliaceae*, *Avicenniaceae*, *Rhizophoraceae*, *leguminosae*, *Uphorbiaceae*, *Sterculiaceae*, *Sonneratiaceae* and *Meliaceae* occurred all over the study area (Table 1). Zakir and Karim (1994) reported that Sundarbans mangrove forest is dominated by *Heritiera fomes* and *Excoecaria agallocha*. There are about 25 plant species which are common all over Sundarbans forest but considerably less frequent in their occurrence. Chaffey and Sodom (1985) listed 18 economically important species under 10 different families in Sundarbans. This forest plays an important role in the economy of south western region of the country and acts as a single largest source of forest product. Due to excessive pressure or extensive use of the forest resource, there could be a chance to lose important species from the area.

Table 1. List of economically important tree species and their distribution in the study area

Scientific name	Family	Vernacular name	Type of plant	Absolute frequency (%)	Relative frequency (%)	Tree/ha
<i>Amoora culcullata</i>	Meliaceae	Amur	Small tree	100	16.1	1487
<i>Avicennia officinasil</i>	Avicenniaceae	Baen	Tree	50	8.06	506
<i>Bruguiera gymnoriza</i>	Rhizophoraceae	Kankra	Tree	30	4.84	387
<i>Ceriops decandra</i>	Rhizophoraceae	Goran	Shrub or small tree	30	4.84	387
<i>Cynometra ramiflora</i>	Leguminosae	Shingra	Shrub or small tree	90	14.5	1071
<i>Excoecaria agallocha</i>	Uphorbiaceae	Gewa	Tree	100	16.13	2766
<i>Heritiera fomes</i>	Sterculiaceae	Sundri	Tree	100	16.13	2914
<i>Sonneratia apetala</i>	Sonneratiaceae	Deora	Tree	40	6.45	387
<i>Xylocarpus mekongensis</i>	Meliaceae	Passur	Tree	80	12.9	1011

It was found that maximum member of species occurred within 50 m from the water courses. However, 9 species were not found in all classes. *Sonneratia apetala* was restricted in 0-50 distance class and *Ceriops decandra* was found

within 0-50 and 50-100 m from the water courses. The occurrence of individual species decreased with the increasing distance from the water courses. Only 4 individual species viz. *Amoora cucullata*, *Cynometra ramiflora*, *Excoecaria agallocha* and *Heritiera fomes* were found at 250-500 distance class (Fig.1).

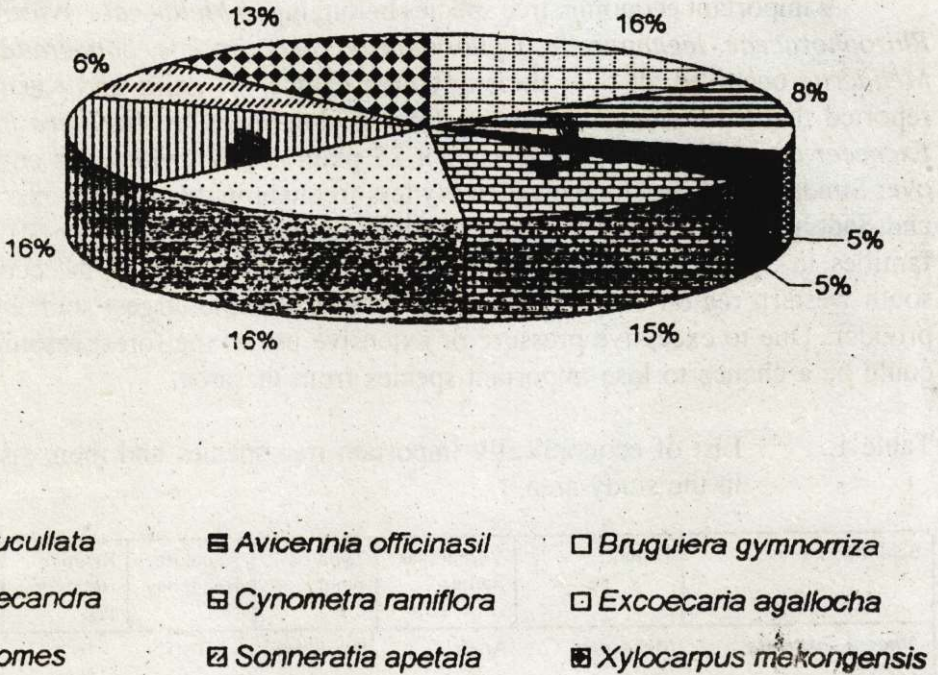


Fig.1. Present status of species composition in percentage at the study area

*Heritiera fomes* showed dominance over other species and attained highest number of 2914 trees per ha followed by *Excoecaria agallocha*, *Amoora cucullata*, *Cynometra ramiflora*, *Xylocarpus mekongensis* and *Avicennia officinalis* (Table 1). In terms of percentage, species like *Heritiera fomes*, *Excoecaria agallocha* and *Amoora cucullata* each contributed 16% but *Cerriops decandra* and *Bruguiera gymnoriza* contributed 5% each to the forest composition of the study area (Fig.2).

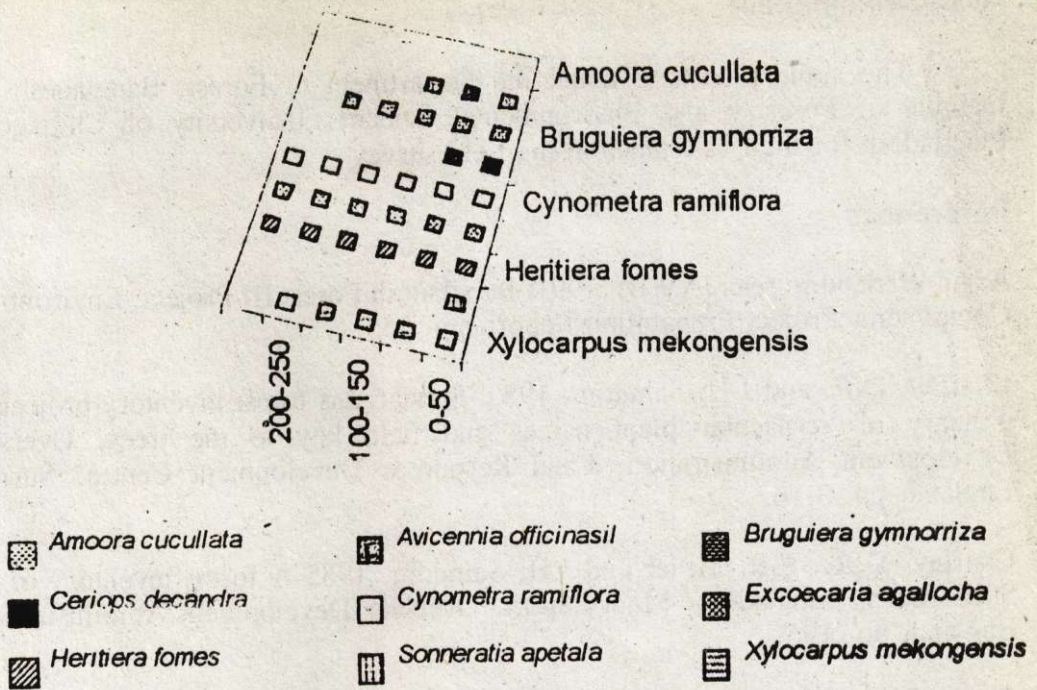


Fig.2. Species distribution with respect to different distance classes (distance from water courses)

Several environmental factors are seem to be related with the loss of important species diversity in the forest area. Among these, reduction in fresh water supply could be an important factor. Farakka barrage on Ganges river, reduces the fresh water supply in the southern part of Bangladesh as well as to the Sundarbans forest hence increasing salinity in the forest area. On the other hand top dying of *Heritiera fomes* is severe in some areas which may result in reduction of plant species diversity.

### Conclusions

Conservation of species diversity in the Sundarbans mangrove forest is an important issue which, indirectly, effects the employment opportunities for the people. Moreover, this forest acts as a greenbelt or shelterbelt and protects the people and their property from the tidal surge and cyclonic storms. Therefore, the diversity of Sundarbans mangrove forest is important for the national economy of Bangladesh.

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