



## COMPARISON OF DIVERSITY OF MARINE FUNGI ON FIVE MANGROVE PLANTS.

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### ABSTRACT:

A comparison was made of the diversity of marine fungi on five mangrove plants, (*Avicennia alba*, *A. marina*, *A. officinalis*, *Rhizophora mucronata* Lam, *Sonneratia apetala* L. f.) co-habiting in a Sajanakhali and Gosoba cricks of Sundarbans. Sixteen species of marine fungi including *Aigialus parvus*, *Aigialus grandis*, *Aigialus mangrovei* and *Periconia prolifica* found to occur on *Avicennia alba*. *Avicennia marina* is the most common host of the 30 fungal species. Eleven species including *Bitariospora marina*, *Haiyanga salina*, *Morosphaeria veatospora*, *Quintaria lignatilis* and *Periconia prolifica* found to occur on *Avicennia officinalis*. Fifteen species including *Aigialus rhizophorae*, *Ascocratera manglicola*, *Dactylospora heliotrepha*, *Hallorosellinia oceanic*, *Lulworthia grandispora* and *Periconia prolifica* were reported from *Rhizophora mucronata*. While *Sonneratia apetala* was the host of thirteen species of marine fungi including *Aigialus grandis*, *Biatriospora marina*, *lignicola laevis*, *Neptunella longirostris*, *Botryophialophora marina*, *periconia prolifica* and *Trichocladium acharashporum*. The most common fungi is *Periconia prolifica*, which occur on all five mangrove plant. There were 20 marine fungi species that occur on only on *Avicennia marina*.

**Key words:** Marine fungi, Mangrove plants, host

### INTRODUCTION:

Biodiversity is the variety of organisms at all levels, from genetic variants of a single species through arrays of species to genera, families and still higher taxonomic level; it includes the variety of ecosystems which comprise both the communities of organism within the particular habitats and physical conditions under which they live (Lincoln *et al.* 1998).

India is very rich in its biological diversity, with huge flora and fauna. This richness is due to the impact of varied climatic and latitudinal coupled by variety of habitats. Of the nearly one lacks of fungi known around the world (Kirk *et al.*, 2008) about 27500 species have been reported from India (Bhat, 2010). Marine fungi are not a taxonomic and physiologically defined group (Hyde *et al.*, 2000). According to Kohlmeyer and Kohlmeyer (1979), "Obligate marine fungi are those that grow and sporulate exclusively in marine or estuarine habitat. Nearly 530 species of marine fungi reported from India included in 321 genera. Of which 424 Ascomycota (251 genera) 94 Mitosporic fungi (61 genera) and 12 Basidiomycota (9 genera).

Mangroves are considered as major niches of fungi. The fungal diversity is dependent on the age and diversity of the mangrove plants and the physico-chemical features of mangroves habitats; i.e. Temperature Salinity and tidal range (Jones, 2000). Twenty eight mangrove species yields 120 higher marine fungi (Hyde & Jones, 1998). Much

more information has been accumulated in last decades on diversity, taxonomy, distribution and

ecology of mangrove marine fungi (Sarma and Hyde, 2001, Alias Jones, 2009). However, the comparison of diversity of fungi on mangroves plants was little known.

### MATERIAL & METHODS:

Plant material occurring in between intertidal zone was collected during low tide from the localities of Sundarbans like Gossoba, Sajanakhali cricks where *Avicennia marina*, *A. alba*, *A. officinalis*, *Rhizophora mucronata* and *Sonneratia apetala* habiting side by side. The lower part of these mangroves plants are periodically came across in the intertidal zone. The collected plant samples were washed with saline water for the removal of debris, mud, and put in the sterile plastic bags. The bags were incorporated with the naphtha ball to avoid the development of the borrowing animals, and then are air tightened with the help of rubber band and brought to the laboratory.

In the laboratory, preliminary observations of the samples were done for the occurrence of sporulating structures of the fungi. After preliminary observations the samples were incubated in the plastic boxes grounded with sterile sea sans and sea water. The incubated plant samples were periodically observed for sporulating structures.

The slides were prepared according to the Kohlmeyer and Kohlmeyer 1972. The sporulating structures like Ascomata, Asci, and Ascospores were first mounted in the saline water and the stained with cotton blue and lactophenols. The identification of fungi was carried out by using the Kohlmeyer and Kohlmeyer (1979), Kohlmeyer and Volkmann-Kohlmeyer (1991), Hyde *et. al.* (2000). The permanent slides were preserved in the PG research centre in Botany, of SSVPS, A.S.C. College Shindkheda Dist.-Dhule.

#### RESULTS & DISCUSSION:

The table -1 shows the marine fungi isolated from the five mangrove species isolated from the Sundarbans region of the West Bengal. Total 38 species of marine fungi were recorded from the five host studied. It includes 27 genera including 30 species of Ascomycota and five genera including eight species from the Mitosporic fungi. Only four species were common to all five mangrove host. These are *Dactylospora heliotrepha*, *Halorosellinia oceanica*, *Verruculina enalia* and *Periconia prolifica*. **Avicennia marina** is the most common host of 30 species these are; *Acrocordiopsis patilii*, *Aigialus grandis*, *A. mangrovei*, *A. parvus*, *Aniptodera chesapeakeensis*, *Ascocratera manglicola*, *Bathyasus tropicalis*, *Dactylospora heliotrepha*, *Eutypa bathurstiensis*, *Eutypella naqsii*, *Haiyanga salina*, *Halorosellinia oceanica*, *Julella avicenniae*, *Leptosphaeria australiensis*, *Lignincola laevis*, *Lulworthia grandispora*, *Quintaria lignatilis*, *Saccardoella marina*, *Savoryella lignincola*, *Thalassogena sphaeriaca*, *Tirispora mandoviana*, *Verruculina enalia*, *Botryophialophora marina*, *Haleosporium varia*, *Periconia prolifica*, *Trichocladium acharashporum*, *T. allopallonellum*, *T. Melhae*, *T. Opacum* and *Zalerion maritimum*. *Neptunella longirostris* occur only on **Sonneratia apetala**, *Aigialus rhizophorae* was occurred only on **Rhizophora mucronata**, *Trematosphaeria liniolatispora* was occurred only on **Avicennia officinalis**. *Antennospora quadricornuta*, *A. mangrovei* and *salsugenia ramicola* occurred only on *Aicennia alba*.

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**TABLE:-1 COMPARATIVE ACCOUNT OF MARINE FUNGI ON MANGROVE SPECIES**

S.N.	Name of the fungi species	AM	AO	AA	RM	SA
<b>ASCOMYCOTA</b>						
1	<i>Acrocordiopsis patilii</i> Borse and Hyde	+	---	+	---	+
2	<i>Aigialus grandis</i> Kohlmeyer and Schatz	+	---	---	+	+
3	<i>Aigialus mangrovei</i> Borse	+	---	+	---	---
4	<i>Aigialus parvus</i> Schatz and Kohlmeyer	+	+	+	---	---
5	<i>Aigialus rhizophorae</i> Borse	---	---	---	+	---
7	<i>Aniptodera chesapeakeensis</i> Shearer and Miller	+	---	---	---	---
8	<i>Aniptodera mangrovei</i> Hyde	---	---	+	---	---
9	<i>Antennoospora quadricornuta</i> (Cribb &Cribb) Johnson	---	---	+	---	---
10	<i>Ascocratera manglicola</i> Kohlm.	+	+	+	+	---
11	<i>Bathyascus tropicalis</i> Kohlmeyer	+	---	---	+	---
12	<i>Biatrispora marina</i> Hyde and Borse	---	+	+	---	+
13	<i>Dactylospora heliotrepha</i> (Kohlm.) (Kohlm&Kohlm.) Hafellner	+	+	+	+	+
14	<i>Eutypa bathurstiensis</i> Hyde	+	---	+	---	---
15	<i>Eutypella naqsii</i> Hyde	+	---	---	---	---
16	<i>Haiyanga salina</i> (Meyers) Pang and Jones	+	+	---	---	+
17	<i>Halorosellinia oceanica</i> (S.Schatz) Whalley et. al.	+	+	+	+	+
18	<i>Julella avicenniae</i> (Borse) Hyde	+	---	---	---	---
19	<i>Leptosphaeria australiensis</i> (Cribb &Cribb) Huges	+	---	---	---	---
20	<i>Lignincola laevis</i> Hohnk	+	---	---	---	---
21	<i>Lophiostoma mangrovei</i> Kohlm & Vittal	---	+	+	+	+
22	<i>Lulworthia grandispora</i> Meyers	+	---	---	+	---
23	<i>Morosphaeria velatospora</i> (Hyde and Borase) Suetrong et.al.	---	---	+	+	---
24	<i>Neptunella longirostris</i> (Cribb& Cribb) Pang and Jones	---	---	---	---	+
25	<i>Qunitaria lignatilis</i> (Kohlm) Kohlm & Volkm.Kohlm	+	+	---	---	---
26	<i>Saccardoella marinaspora</i> Hyde	+	---	---	---	---
27	<i>Salsugenia ramicola</i> Hyde	---	---	+	---	---
28	<i>Savoryella lignincola</i> Jones and Eaton	+	---	---	+	+
29	<i>Thalassogena sphaeriaca</i> Kohlm &Volkm. Kohlm	+	---	---	---	---
30	<i>Tirisporea mandoviana</i> Sarma and Hyde	+	---	---	---	---
31	<i>Trematosphaeria liniolatispora</i> Hyde	---	+	---	---	---
32	<i>Verruculina enalia</i> (Kohlm.)Kohlm & Volkm. Kohlm.	+	+	+	+	+
<b>MITOSPORIC FUNGI</b>						
1	<i>Botryophialophora marina</i> Linder	+	---	---	---	---
2	<i>Halenosporium varia</i> (Anastasiou) Jones	+	---	---	+	---
3	<i>Periconia prolifica</i> Anastasiou	+	+	+	+	+
4	<i>Trichocladium achrasporum</i> (Meyers & Moore) Dixon	+	---	---	---	---
5	<i>T. allopallonellum</i> (Moore & Meyers) Kohlm.& Volkm. Kohlm.	+	---	---	---	+
6	<i>T. melhae</i> Jones, Abdel-Wahab &Vrijmoede	+	---	---	---	---
7	<i>T. Opeacum</i> (Corda) Huges	+	---	---	+	---
8	<i>Zalerion maritimum</i> (Linder) Anasatasiou	+	---	+	+	+
<b>Total</b>		<b>30</b>	<b>11</b>	<b>16</b>	<b>15</b>	<b>13</b>

**AA:** *Avicennia alba*; **AM:** *Avicennia marina*; **AO:** *Avicennia officinalis*; **RM:** *Rhizophoramucronata* & **SA :** *Sonneratia apetala*.

Mangrove species	Avicennia marina	Avicennia officinalis	Avicennia alba	Rhizophora mucronata	Sonneratia apetala
Number of sepcies occurred	30	11	16	15	13

