

Manglicolous fungi from atolls of Maldives, Indian Ocean

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Thirty nine species represented by 29 species of Ascomycetes, 2 of Basidiomycetes and 8 of Deuteromycetes were collected from partially submerged and submerged, dead and decayed parts of 5 mangrove species. The dominant species were *Dactylospora haliotrepha*, *Lincolata rhizophorae*, *Lophiostoma mangrovei*, *Massarina thalassiae* and *Verruculma enalia*. The maximum number of fungal species were recorded on *Rhizophora mucronata*.

Role of fungi in converting mangrove litter to detritus is well documented. Recent studies have provided¹⁻⁵ data on the quantitative and qualitative aspects of manglicolous (higher marine fungi associated with mangroves) fungi from different geographical regions of world. However, the mangroves of the oceanic islands of Chagos-Laccadive bank, in the Indian Ocean remain unexplored for their higher marine fungi. Attempts have been made to study the manglicolous fungi from Maldivian atolls in the Indian Ocean.

Maldives comprise about 1190 islands in a double row of atolls and is situated on the Chagos-Laccadive bank (lat. 0° 42'S-7° 05'N; long. 73° E). The Islands are enclosed by coral reefs with deep natural channels and shallow lagoons. Mangroves confined to the islands are either closed in the depression or fringing along the brackish water regions⁶. Atmospheric temperature varies from 30.4° to 35.7°C. Average annual rainfall is 1948 mm mainly received from southwest monsoon (May-October). Mangrove vegetation comprises 13 species and *Bruguiera cylindrica*, *Ceriops tagal* and *Lumnitzera racemosa* form the dominant flora.

The dead and damaged wood from the trunks, branches, roots, prop roots and pneumatophores of mangroves *Rhizophora mucronata*, *B. cylindrica*, *C. tagal*, *L. racemosa* and *Avicennia marina*, were collected from intertidal zones of the islands of Haadhaalu (lat. 6°20'-7°N, long. 72°45'-73°20'E), Shaviyani (lat. 5°40'-6°15'N, long. 72°50'-73°30'E), and Addu (lat. 0°30'-0°45'S, long. 73°05'-73°15'E), atolls of Maldives sealed in airtight polythene bags and transported to the laboratory. The materials were examined directly under stereomicroscope for fungal fructification. Identification of the fungi was done using standard taxonomic keys⁷ and other

relevant literature. The percentage occurrence of individual fungi was calculated as

$$\frac{\text{(Number of collections of a particular species)}}{\text{(Number of samples supporting sporulating marine fungi)}} \times 100$$

During the present investigation, 39 species (29 Ascomycetes, 2 Basidiomycetes and 8 Deuteromycetes) of manglicolous fungi were recorded (Table 1), most of which were previously reported from tropics¹⁻⁵. A few species of manglicolous fungi such as *Dactylospora haliotrepha*, *Lincolata rhizophorae*, *Lophiostoma mangrovei*, *Massarina thalassiae* and *Verruculma enalia* were commonly observed (percentage occurrence > 5%). These were reported to be either frequent or rare on the mangroves of other regions of Indian Ocean¹⁻⁵. The maximum number of species (24) were recorded on *R. mucronata* followed by *B. cylindrica* (13), *C. tagal* (12), *A. marina* (10) and *L. racemosa* (7). *Rhizophora* spp have been observed to harbour nearly 50% of manglicolous fungi out of 120 species recorded on the mangroves³. Qualitative and quantitative richness of manglicolous fungi on the prop roots could be attributed to the regular inundation, spongy and soft tissue which helps the substratum to retain high amount of moisture required for fungal growth. The other dominant mangroves such as *B. cylindrica*, *C. tagal* and *L. racemosa* showed poor diversity of manglicolous fungi on them and this might be due to their hard wood and poor moisture conditions due to long exposures.

Present study revealed that the occurrence of manglicolous fungi of Maldives is very much similar

Table 1—List of manglicolous fungi recorded from 3 atolls of Maldives and their percentage occurrence

Name of the species	Atolls			Percent Occur.
	Haadhaalu	Shaviyani	Addu	
Ascomycetes				
1 <i>Acrocordiopsis patilii</i> Borse et Hyde	—	1	—	0.7
2 <i>Aigialus grandis</i> Kohlm. et Schatz	2	—	1	2.1
3 <i>Aigialus parvus</i> Schatz et Kohlm.	—	1	—	0.7
4 <i>Aniptodera</i> sp.	1	1	—	1.4
5 <i>Ascocratera manglicola</i> Kohlm.	—	2	—	1.4
6 <i>Biatriospora marina</i> Hyde et Borse	—	2	—	1.4
7 <i>Dactylospora haliotrepha</i> (Kohlm. et Kohlm.) Hafellner	4	6	3	9.0
8 <i>Eitheirophora blepharospora</i> (Kohlm. et Kohlm.) Kohlm. et Volk.-Kohlm.	—	—	1	0.7
9 <i>Halosarpheia ratnagiriensis</i> Patil et Borse	1	—	—	0.7
10 <i>Halosarpheia</i> sp.	—	—	1	0.7
11 <i>Halosphaeria quadricornuta</i> Cribb et Cribb	—	2	—	1.4
12 <i>Helicascus kanaloanus</i> Kohlm.	1	—	—	0.7
13 <i>Jullela avicenniae</i> (Borse) Hyde	—	1	—	0.7
14 <i>Leptosphaeria australiensis</i> (Cribb et Cribb) Hughes	—	—	2	1.4
15 <i>Lignicola laevis</i> Hohnk	—	—	2	1.4
16 <i>Lineolata rhizophorae</i> (Kohlm. et Kohlm.) Kohlm. et Volk.-Kohlm.	—	4	6	6.9
17 <i>Lophiostoma mangrovei</i> Kohlm. et Vittal	13	14	3	20.7
18 <i>Lulworthia grandispora</i> Meyers	—	—	2	1.4
19 <i>Lulworthia</i> sp.	—	—	3	2.1
20 <i>Marinosphaera mangrovei</i> Hyde	1	2	—	2.1
21 <i>Massarina thalassiae</i> Kohlm. et Volk.-Kohlm.	2	5	4	7.6
22 <i>Massarina velatospora</i> Hyde et Borse	—	2	—	1.4
23 <i>Payosphaeria minuta</i> Leong, Tan, Hyde et Jones	—	2	—	1.4
24 <i>Quintaria lignatilis</i> (Kohlm.) Kohlm. et Volk.-Kohlm.	2	—	—	1.4
25 <i>Rhizophila marina</i> Hyde et Jones	1	—	3	2.8
26 <i>Savoryella lignicola</i> Jones et Eaton	—	2	—	1.4
27 <i>Trematosphaeria</i> sp.	—	—	1	0.7
28 <i>Verruculina enalia</i> (Kohlm.) Kohlm. et Volk.-Kohlm.	7	11	3	14.7
29 <i>Saccardoella marinospora</i> Hyde	2	—	—	1.4
Basidiomycetes				
30 <i>Halocyphina villosa</i> Kohlm. et Kohlm.	2	—	—	1.4
31 <i>Calathella mangrovei</i> Jones et Agerer	—	—	1	0.7
Deuteromycetes				
32 <i>Cirrenalia pygmaea</i> Kohlm.	1	—	—	0.7
33 <i>Clavatospora bulbosa</i> (Anas.) Nakagiri et Tubaki	—	—	2	1.4
34 <i>Cytospora rhizophorae</i> Kohlm. et Kohlm.	—	2	—	1.4
35 <i>Humicola alopallonella</i> Meyers et Moore	—	—	1	0.7
36 <i>Periconia prolifica</i> Anasta.	3	2	2	4.8
37 <i>Phoma</i> sp.	1	—	—	0.7
38 <i>Trichocladium achrasporum</i> (Meyers et Moore) Dixon	2	—	1	2.1
39 <i>Zalerion varium</i> Anasta.	1	—	—	0.7
Numbers indicates number of identifications				
— Indicates not recorded				

to that of other regions of Indian Ocean. However, the species diversity is relatively poor and this may be attributed to limited number of collections examined. *L. racemosa* is studied for the first time for manglicolous fungi and all the species recorded form new host records. All species reported presently represent new records to fungi of Maldives.

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