

MARINE FUNGI ON DECAYING WOOD FROM MANGALORE COAST

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ABSTRACT

Four species of ascomycetous fungi, viz. *Corollospora filiformis*, *Halosarphelia viscosa*, *Phaeosphaeria neomaritima* and *Trematosphaeria mangrovei* collected from dead driftwoods of Mangalore coast are illustrated and briefly described. Of these, *C. filiformis*, *H. viscosa* and *T. mangrovei* are reported for the first time from India and constitute new additions to Indian marine ascomycetes.

Key-words : Marine fungi, driftwood, Mangalore Coast, India

As interest and efforts to understand ecological processes in marine ecosystem increase, the study of fungi in these environments is also growing. The diversity of marine fungi is greatest on woody substrata than on seaweeds, seagrasses, angiosperm leaves, and even spores in seafoam (Hyde and Jones, 1989). Hyde and Jones (1989) recognised submerged wood, wood jammed in rocks, damaged roots/branches and driftwood semi-submerged in sand as different ecological niches along the shoreline for lignicolous marine fungi. More studies of lignicolous marine fungi, namely those growing on wood, have been conducted in temperate than in tropical regions (Kohlmeyer, 1984). Studies on tropical and subtropical marine fungi are mostly confined to western Atlantic Ocean (Hyde, 1986).

Marine fungi from India have been reported from submerged woods and drift/fixed woods on beaches (Borse, 1988; Borse and Shrivastava, 1988; Borse, Ramesh and Shrivastava, 1988; Raghu Kumar, 1973); sea foam and sand samples (Patil and Borse, 1983; Sridhar and Kaveriappa, 1991); mangrove wood and leaf litter (Borse, 1988; Borse and Shrivastava, 1988; Borse, Ramesh and Shrivastava, 1988; Chinnaraj and Untawale, 1992; Raghu Kumar, 1973; Ramesh and Borse, 1989; Ravikumar and Vittal, 1987; Sridhar and Kaveriappa, 1988). Four interesting marine ascomycetes collected from intertidal driftwood on Mangalore coast are illustrated and briefly described in this paper.

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MATERIAL AND METHODS

Driftwood samples accumulated at low tide zones of five different localities such as Bengre, Malpe, Mulki, Saint Mary's Island and Someshwara along Mangalore coast (Sridhar and Kaveriappa, 1991) were collected and transported to the laboratory. They were directly scanned for the presence of ascocarps as soon as possible. Later they were sealed in polythene bags containing sterile cotton soaked in sterile seawater. They were incubated at room temperature (25-30°C) under a continuous fluorescent light. The driftwood samples were screened periodically for the development of ascocarps. Fungi were identified with the help of monographs (Kohlmeyer and Kohlmeyer, 1979; Kohlmeyer and Volkmann-Kohlmeyer, 1991). Specimens are deposited in the Herbarium at Department of Biosciences, Mangalore University.

OBSERVATIONS

Corollospora filiformis Nakagiri (Fig. 1)

Transactions of the Mycological Society of Japan (1987), 28 : 422.

Ascocarps : 250-410 μm in diameter, globose, black, carbonaceous, solitary, seated with subicula on sand grains attached to driftwood. Paraphyses absent. Asci : 130-155 x 25-30 μm , eight-spored, fusiform to subuliform, unitunicate. Ascospores : 85-110 x 7-10 μm , filiform, 9-15 septate, hyaline. Appendages fibrous, terminal appendages 18-22 μm long; around central septum 20-30 μm long.

Substratum : Sand grains attached to intertidal wood at Someshwara, Mangalore coast (10.9.1992; Herb. No. KPR 1). Ascocarps developed after 35-40 days of incubation.

In the present study, *C. filiformis* is recorded for the first time from tropical locations. This fungus was first described from sea foam and beach sand of Japanese coast (Nakagiri and Tokura, 1987). In our study sand grains lodged at the hollow core of driftwood showed the presence of black ascocarps of *C. filiformis*. Possibly these are the sites where sand grains can adhere to wood firmly with minimal disturbance.

Halosarpheia viscosa (I. Schmidt) Shearer et Crane ex Kohlm. et Volkm.-Kohlm. (Fig. 2).

Botanica Marina (1980), 23 : 608; (1991), 34 : 22.

Ascocarps : 240-250 μm high (excluding neck), 180-200 μm in diameter, immersed in the substratum, globose, gregarious, dark at base becoming hyaline at the apex. Necks : 250-350 μm long, 28-56 μm in diameter, cylindrical, centrally or laterally inserted, sometimes curved, ostiolar. Asci : 45-110 μm long, 15-28 μm in diameter, eight spored, pendunculate, unitunicate, thin walled. Ascospores : 18-24 x 8-10 μm (excluding terminal appendages, stiff and homogeneous appendages) ellipsoidal, hyaline, one-septate, with apical appendages, stiff and homogeneous appendages is

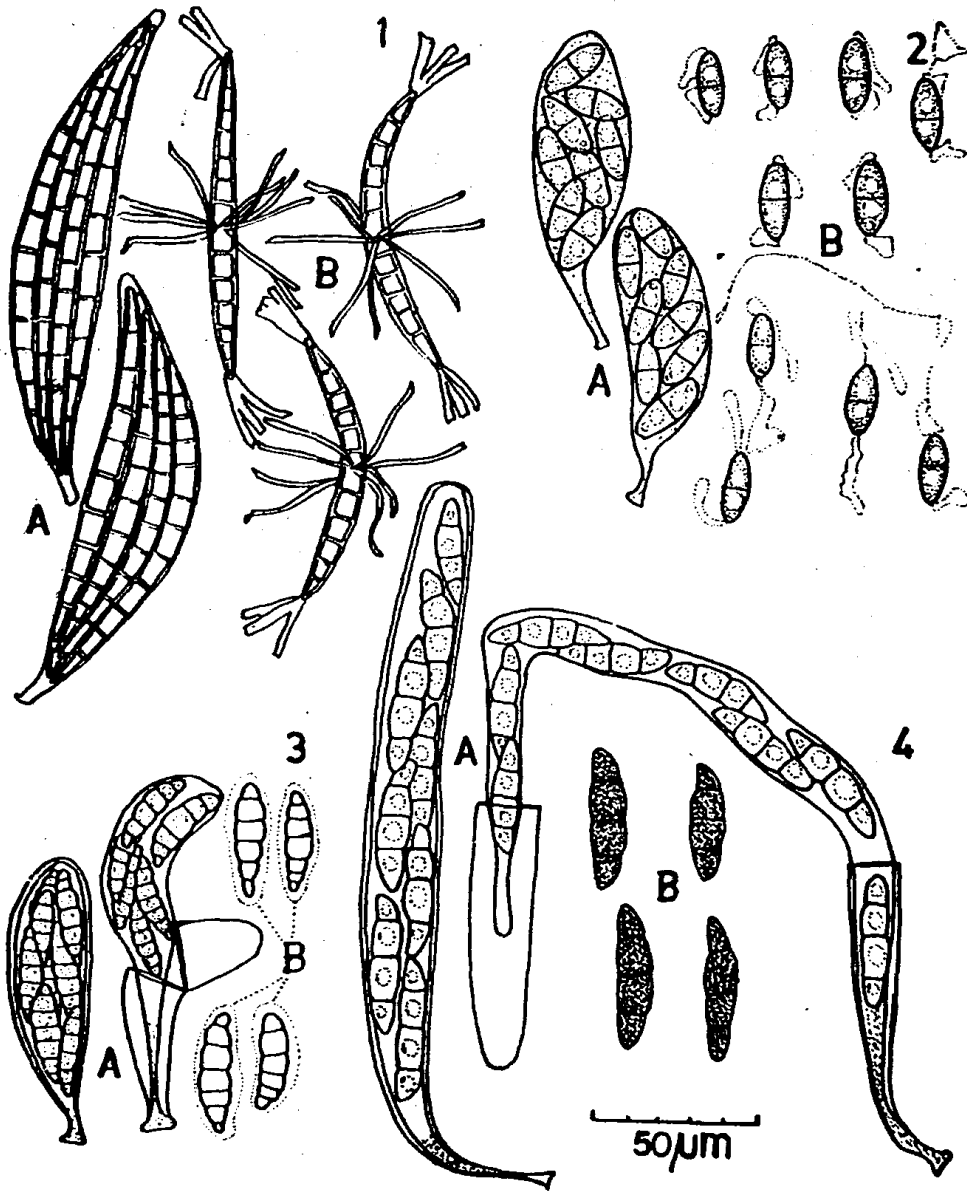


Fig. 1 Line drawing of asci (A) and ascospores (B) of 1 - *Corollospora filiformis*; 2 - *Halosarpheia viscosa*; 3 - *Phaeosphaeria neomaritima*; 4 - *Tramatosphaeria mangrovei*.

attached to each apex, usually runs partially along the side of the ascospore, 2-5 µm thick, 8-20 µm long, on staining with cotton blue in lactophenol and appendages uncoil into delicate fibres to form lengthy filaments, remain unattached to the apices of the ascospores.

Substratum : Driftwood in intertidal region from Bengre, Malpe and Someshwara, Mangalore coast (26.2.1989, 15.4.1990 Herb. No. KRS 1). Ascocarps developed in about 40-50 days of incubation.

Halosarpheia viscosa has been recorded on intertidal drift-wood from tropics including Kpg. Serasa mangrove (Brunei Bay), Kpg. Seria mangrove (Brunei) (Hyde, 1989) and Mare Anglaise (Seychelles) (Hyde and Jones, 1989); on mangrove wood collected from Atlantic and Indian Ocean range (cf. Hyde and Jones, 1988).

Phaeosphaeria neomaritima (Gessner et Kohlm.) Shoemaker et Babcock (Fig. 3).

Canadian Journal of Botany (1989), 67: 1572.

Ascocarps : 120-186 μm high, 100-160 μm in diameter, immersed in substratum, globose to subglobose, gregarious, dark brown. Asci : 100-150 μm long, 20-30 μm in diameter, 6-8 spored, cylindrical, pedunculate, bitunicate, thick walled. Ascospores : 35-40 x 10-12.5 μm (excluding mucilage), fusiform, hyaline, 5-6 septate, constricted at the septa, surrounded by 6-8 μm thick gelatinous sheath.

Substratum : Driftwood in intertidal region from Bengre and Saint Mary's Island, Mangalore coast (30.10.1988, 7.9.1989; Herb. No. KRS 2). Encountered ascocarps on direct observation of driftwood.

Phaeosphaeria neomaritima has been found on submerged mangrove wood of *Sonneratia apetala* B. Ham. and *Rhizophora mucronata* Lam. from Maharashtra coast (Ramesh and Borse, 1989).

Trematosphaeria mangrovei Kohlm. (Fig. 4).

Mycopathologia et Mycologia Applicata (1968), 34: 1-2.

Ascocarps : 400-500 μm high, 550-650 μm in diameter, ovoid, partially immersed in substratum, solitary or gregarious, black, carbonaceous, ostiolate, periphysate. Asci : 180-220 μm long, 20-28 μm in diameter, eight-spored, cylindrical, pedunculate, bitunicate and thick-walled. Ascospores : 40-47.5 x 8-12 μm , uniseriate to biseriate with overlapping end cells, dark brown, three-septate, slightly constricted at the septa.

Substratum : Driftwood in intertidal region from Mulki and Someshwara, Mangalore coast (29.9.1988, 12.11.1992; Herb. No. KRS 3). Ascocarps developed in about 60-70 days after incubation.

Trematosphaeria mangrovei is known from mangrove wood (*Rhizophora racemosa* G. Meyer) from Atlantic range (Kohlmeyer, 1968).

So far 11 ascomycetes and four deuteromycetes are known on various substrates from Mangalore coast (Table I). Quantitative ecological studies on marine lignicolous

Table I – Marine fungi reported from Mangalore coast.

Fungus	Substratum	Location*	Reference**
Ascomycotina			
<i>Arenariomyces trifurcatus</i>	Foam	A,C,D,F,G,H	3
	Sand	A,C,F,G,H,I	3
<i>Corallospora filiformis</i>	Sand attached to driftwood	H	4
<i>C. intermedia</i>	Foam	G,H,I	3
	Sand	G,I	3
<i>C. lacera</i>	Foam	D,G	3
	Sand	D,G,H,J	3
<i>C. maritima</i>	Foam	D,G,H,J	3
	Sand	D,F,G,I	3
<i>C. pulchella</i>	Foam	F,I,J	3
	Sand	C,F,G	3
<i>Halosarpheia viscosa</i>	Driftwood	A,C,H	4
<i>Hypoxylon oceanicum</i>	Mangrove wood	B	1
<i>Phaeosphaeria neomaritima</i>	Driftwood	A,G	4
<i>Rhizophila marina</i>	Mangrove wood	B	1
<i>Trematosphaeria mangrovei</i>	Driftwood	D,H	4
Deuteromycotina			
<i>Clavatospora bulbosa</i>	Leaf litter	E	2
	Foam	D,G,H,J	3
	Sand	C,H	3
<i>Monodictys pelagica</i>	Foam	D,F	3
	Sand	H	3
<i>Zalerion maritimum</i>	Foam	D,H,I,J	3
	Sand	C,F,I	3
<i>Z. varium</i>	Foam	D,G,H	3
	Sand	D,I	3

* A - Bengre, B - Kundapura, C - Malpe, D - Mulki, E - Nethravathi, F - Panambur, G - Saint Mary's Island, H - Someshwara, I - Surathkal, J - Uchila (A, C, D, F-J - Beaches; B - Mangrove; E - Estuary).

** 1. Chinnaraj and Untawale (1992); 2. Sridhar and Kaveriappa (1988); 3. Sridhar and Kaveriappa (1991); 4. Present study.

fungi on Indian shoreline habitats are limited (Borse, 1988). Study of this kind would help to understand the biodiversity and distribution of lignicolous marine fungi.

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