

Fresh water Ascomycetes from North Maharashtra-II

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Abstract

The present paper deals with three species of freshwater ascomycetes viz. *Caryospora putanium* (Schw.) de Notaris, *Natantispora retorquens* (Shearer and Crane) Campb., Anderson and Shearer and *Panorbis viscosus* (Schmidt) Campb., Anderson and Shearer were collected from the submerged wood samples from the various water bodies in North Maharashtra region. All the three species are being recorded for the first time from North Maharashtra. Brief notes and illustration are given for each taxon. Geographical distribution of each species in India is also provided.

Keywords: Fresh water, Ascomycetes, North Maharashtra.

INTRODUCTION

Freshwater Ascomycetes are defined as Ascomycetes which have been recorded in freshwater habitats and which complete part, or the whole of their lifecycle within freshwater environments [1,2 and 3]. According to this definition, in addition to species of Ascomycetes that function in water, transient ascomycetous fungi present in water and terrestrial ascomycetous fungi that release spores that are dispersed in water are all regarded as freshwater Ascomycetes [4]. Lignicolous freshwater Ascomycetes inhabit submerged woody material in lentic (lakes, bog, ponds, swamps, pools) and lotic (rivers, streams, creeks, brooks) habitats [3 and 4] playing an important role in recycling organic matter in the aquatic ecosystem. Thomas (1996) [2], however, states that the aquatic nature of some substrates is questionable (e. g. emerging part of a plant), therefore fungi growing on these substrates cannot be classified as freshwater fungi.

In India freshwater ascomycetes were discovered by Manoharachary and Rama Rao (1972) [5] first discovered new freshwater ascomycetous genus *Subbaromyces* with *Subbaromyces aquaticus* as its type species from South India.

Udaiyan (1989) [6] reported 10 ascomycetous species from water-cooling towers from South India. Out of ten species, 8 species were first time reported from lotic habitats. Latter on Udaiyan and Hosogaudar (1991) [7] discovered nine taxa from water-cooling tower of Madras. Of these four are new genera namely *Anekabeeja*, *Mukhakesa*, *Neelakesa* and *Phialogangliospora* while *Chaetomium lunasporium*, *Didymosphaeria pittospora*, *Leptosphaeria dimidiata*, *Mycosphaerella aquatica* and *Pleospora subramanianii* are the new species of ascomycetes from freshwater habitats. Recently, Borse and Pawara (2007) [8] reported *Savoryella aquatica* and *S. lignicola* from north Maharashtra region. Recently, Sridhar et al. (2010) [9] recorded some freshwater ascomycetes from Karnataka.

The survey was undertaken for two years (2008-2010).

Monthly random collections of fifty submerged; partially decomposed woody debris (1-5 cm diam. and 30 cm length) were made from the various sites viz. Tapti river, Panzara river, Latipada Dam, Aner Dam. The samples were returned to the laboratory keeping in plastic bags in the field and immediately examined with a dissecting microscope to locate fungal fruiting bodies. After the first observation, samples were incubated for few months on a moist paper towels in sterile plastic boxes at ambient temp. of 25^o -30^o C for three months to stimulate fungal development. Incubated samples were examined on day ten and then over three months under a dissecting microscope for fungal fruiting bodies. The fungal taxa present on the wood samples were recorded, identified and isolated. Voucher slides of the fungi reported were deposited in the mycology herbarium, P. G. Department of Botany, S. S. V. P. Sanstha's L. K. Dr. P. R. Ghogrey Science College, Dhule (M.S.).

Taxonomic Account

Caryospora putanium (Schw. Ex Fr.) de Not. (Fig.1, Pl.Fig.1)

Ascomata: 495-1000 µm or more in diam, superficial, base rounded or flattened and applanate, separate, conic, apex papillate, dehiscent, leaving rounded pore. **Peridium:** reddish brown, paler towards interior, composed of numerous layers of slightly compressed cells up to 100 µm wide. **Asci:** 125-260 µm long, xx-xx µm wide, ellipsoidal or clavate, usually less than four ascospores at maturity (1, 2, 3 or 4). **Pseudoparaphyses:** trabeculate, **Ascospores:** (50-) 80-120 (-150) x (35-) 40-54 (-65) µm, length : width ratio ca 2 : 1, reddish brown, dark brown, finally opaque in age, symmetric, broadly ellipsoidal or biconic, tapering to pointed or rounded tips, often paler at tips, primary septum median, occasionally with thin septa at the tips, constricted, with large globule in each cell, wall thick (3-5 µm), surrounded by narrow gelatinous coating 4-12 µm wide layer when young and this drying down to form toughened with granular deposit that may appear on surface.

Habitat: On submerged wood in lotic environment. Aner dam,

Description: Based on Barr (1979) [10].

Distribution:- Maharashtra, Zhate (1979) and (present study).

Natantispora retorquens (Shearer & J.L. Crane) J. Campb., J.L. Anderson & Shearer (Fig.2, Pl.Fig.2)

Basionym: *Halosarpheia retorquens* Shearer & J.L. Crane

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Ascomata: 140-326 x 150-366 μm ., solitary to gregarious, superficial to first hyaline becoming black with age, ostiolate, immersed to immersed, globose to subglobose, hyaline at first becoming black, superficial. **Necks:** 73-262-648 x 18-36-54 μm , long cylindrical, ostiolate, Neck: 108- 564 x 14-50 μm , cylindrical, periphysate, dark at periphysate, dark at base becoming hyaline at apex. **Peridium:** base, hyaline at apex. **Peridium:** ,embranous, pseudoparenchymatous, membranous, pseudoparenchymatic. **Catenophyses:** apparently multilayered, the outer layer brown to black. **Centrum:** consisting of asci absent. **Asci:** 36-65-114 x 9-13-23 μm , 8-spored, ellipsoidal to and catenophyses. **Asci:** 53-144 x 14-24 μm , unitunicate, clavate, thin-clavate, thin-walled, unitunicate, deliquescent. **Ascospores:** 13-20-26 x 4.4-6.6-8.4 μm (16.5-23 x 6.5-12.5 μm , Schmidt, 1974; 21-28-31 x 8-11 μm , Kohlm. & Volkm.-Kohlm., 1991), hyaline, 1-septate, appendaged. **Appendages:** bipolar, composed of single, coiled or folded filament, at first hamate, finally unwinding in water to produce a long fine filament.

Habitat: Saprobic on submerged wood.

Description: Based on Shearer and Crane (1980) [11].

Distribution:West Coast:-Maharashtra: On intertidal wood of *Rhizophora mucronata* [12], prop roots and seedlings of *R. mucronata* [13] and [14]; Karnataka: On intertidal wood [15] ,on intertidal mangrove wood [16,17], on intertidal leaf and woody litter of mangroves [18] ; Kerala: On intertidal mangrove wood [16], on intertidal wood [19], on intertidal wood, wood of *Avicennia* sp. and *Bruguiera* sp. [20,21,22 and 23].

Panorbis viscosus (I. Schmidt) J. Campb., J.L. Anderson & Shearer (Fig.3, Pl.Fig.3)

Basionym: *Halosphaeria viscosus* I. Schmidt \equiv *Halosarpheia viscosus* (I. Schmidt) Shearer & J.L.

Ascomata: 68-248-455 x 68-250-385 μm , globose to subglobose, at

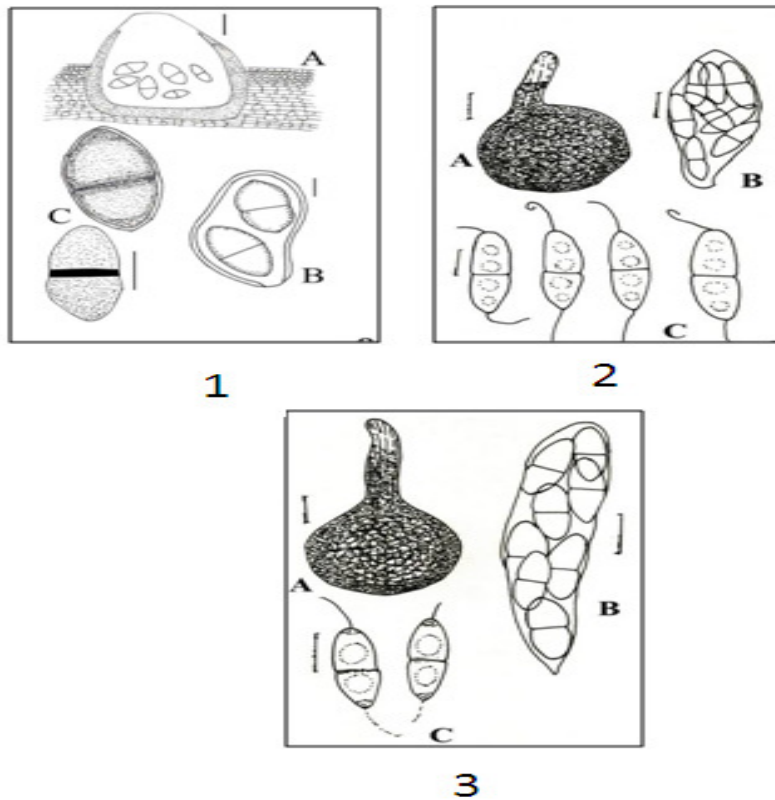
Habitat: Saprobic on submerged wood

Description: Based on Shearer and Crane (1980) [11].

Distribution:West Coast:-Maharashtra: On intertidal wood of mangroves (*Rhizophora mucronata*) [14 and 24]; Karnataka: On intertidal wood [15 and 25] , on intertidal wood (Prasannarai and Sridhar, 2001), on intertidal leaf and woody litter of mangroves [18] ; Kerala: On intertidal wood [19 and 21], on intertidal wood, wood of *Avicennia* sp. and *Bruguiera* sp. [23].

East Coast:-Tamil Nadu: On intertidal wood [26] ; Andhara Pradesh: On intertidal wood of *Avicennia marina* [27,28,29 and 30].

Two species viz. *Natantispora retorquens* (Shearer and Crane)Campb.,Anderson and Shearer and *Panorbis viscosus* (Schmidt) Campb., Anderson and Shearer were found abundantly while *Caryospora putanium* (Schw.) de Notaris was found rarely.



1. *Caryospora putaminum* (Schw. Ex Fr.) de Not.

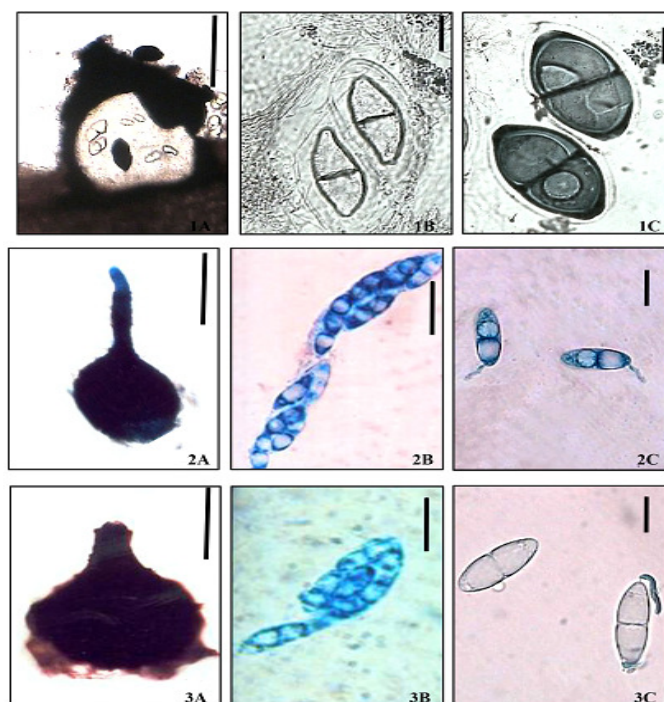
A) Ascomata (Scale=75 μm) B) Ascus (Scale=30 μm) C) Ascospores (Scale=10 μm)

2. *Natantispora retorquens* (Shearer & J.L. Crane) J. Campb., J.L. Anderson & Shearer

A) Ascomata (Scale=40 μm) B) Ascus (Scale=15 μm) C) Ascospores (Scale=10 μm)

3. *Panorbis viscosus* (I. Schmidt) J. Campb., J.L. Anderson & Shearer

A)Ascomata (Scale=50 μm) B) Ascus (Scale=10 μm) C) Ascospores (Scale=10 μm)



1. *Caryospora putaminum* (Schw. Ex Fr.) de Not.

A).Ascomata (Scale=200 µm) B) Ascus (Scale=100 µm) C) Ascospores (Scale=15 µm)

2. *Natantispora retorquens* (Shearer & J.L. Crane) J. Campb., J.L. Anderson & Shearer

A).Ascomata (Scale=50 µm) B) Ascus (Scale=25 µm) C) Ascospores (Scale=15 µm)

3. *Panorbis viscosus* (I. Schmidt) J. Campb., J.L. Anderson & Shearer

A).Ascomata (Scale=100 µm) B) Ascus (Scale=20 µm) C) Ascospores (Scale=10 µm)

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