

FRESHWATER HIGHER FUNGI FROM MAHARASHTRA-II:  
ASCOMYCETES



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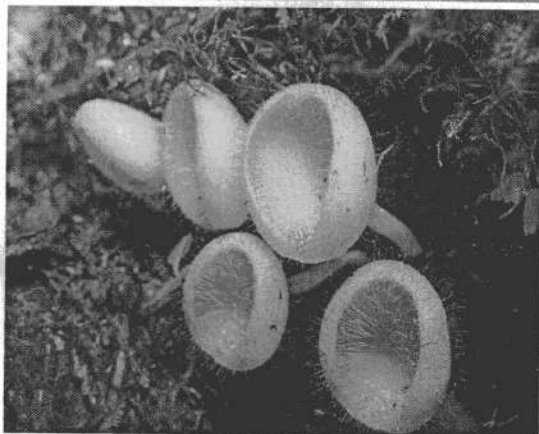
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ABSTRACT

The present paper records the occurrence of two freshwater Ascomycetes viz., *Neelakesa lignicola* Udaiyan & V.S. Hosag. and *Phaeosphaeria typharum* (Desm.) L. Holm collected from different streams and lakes in Maharashtra state (India). Both the species are being recorded for the first time from Maharashtra state (India). The data provides information on the range of distribution of these fungi in India. Descriptions and illustrations of encountered fungi are provided.

Keywords: Freshwater, Ascomycetes, wood samples, *Typha angustata*

INTRODUCTION

Freshwater Ascomycetes (FWA) are defined as Ascomycetous fungi which have been recorded in freshwater habitats and which complete part, or the whole of their lifecycle within freshwater environments (Shearer, 1993; Wong et al., 1998). 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 FWA (Luo et al., 2004). Lignicolous FWA inhabit submerged woody material in lentic (lakes, ponds, swamps etc.) and lotic (rivers, streams etc.) habitats, playing an important role in recycling of organic matter in the freshwater ecosystems. Thomas (1996), however, states that the aquatic nature of some substrates is questionable (e.g. emerging parts of aquatic plants), therefore fungi growing on these substrates cannot be classified as freshwater fungi.

The FWA is one of the least studied groups of fungi. Although sporadic reports of these fungi that colonize freshwater macrophytes occur in the early literature. Ingold was the first to recognize that a distinctive FWA might exist and published a series of papers of FWA on submerged substrates in the Lake District, England (Ingold 1951, 1954, 1955; Ingold and Chapman (1952). Ingold (1955)

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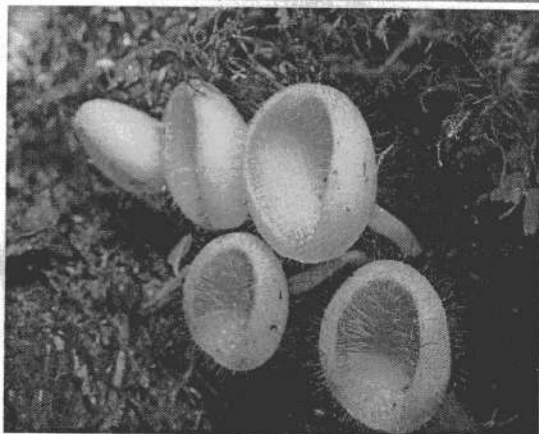
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The present paper records the occurrence of two freshwater Ascomycetes viz., *Neelakesa lignicola* Udaiyan & V.S. Hosag. and *Phaeosphaeria typharum* (Desm.) L. Holm collected from different streams and lakes in Maharashtra state (India). Both the species are being recorded for the first time from Maharashtra state (India). The data provides information on the range of distribution of these fungi in India. Descriptions and illustrations of encountered fungi are provided.

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discovered *Macrospora scripicola* on *Schoenoplectus laacustris*, the lakeshore bulrush. This fungus is one of the earliest known freshwater Dothideomycetous species. DeCandolle originally mentioned it in 1832 as *Sphaeria scripicola*, and Pringsheim (1858) first reported the said fungus from freshwater. The early literature dealing with FWA has been reviewed by Dudka (1963, 1985) and Shearer (1993). Since the 1990's interest in this group has grown and the number of species reported and/or described from freshwater habitats has increased by 2014 to a total of 622 species (Cai et al., 2014; Shearer et al, 2014).

The paper records the occurrence of two species of Ascomycetes viz., *Neelakesa lignicola* and *Phaeosphaeria typharum* collected from different streams and lakes in Maharashtra state (India). Both the species are being recorded for the first time from Maharashtra state (India). The data provides information on the range of distribution of these fungi in India. Descriptions and illustrations of fungi are provided.

#### Materials and Methods:

Submerged woody debris and dead decaying parts of *Typha angustata* Chaub. & Bory were collected from various sites and rivers (Mula river at Rahuri, Dist.- Ahmednagae and Yashawant lake at Toranmal, Dist- Nandurbar) in polythene bags. The samples were brought to the laboratory and examined for Ascomycetous fungi. Identifications of isolated species were confirmed with the help of Khashnobish and Shearer (1993) and Udaiyan and Hosagoudar (1991). Reports of fungi studied were confirmed with the help of Bilgrami et al. (1991), Jamaludeen et al. (2004), and Borse et al (2014).

#### Systematic account:

##### 1. *Neelakesa lignicola* Udaiyan & V.S. Hosag : J. Econ. Tax. Bot., 15: 654 (1991).

Ascomata: (Fig. 1) clestothecial, superficial, solitary to gregarious, non-ostiolate, apically glabrous, with conspicuous sutures or lines of dehiscence at maturity, black, covered with coarse yellow villous when young, 100-200  $\mu\text{m}$  in diam. Asci: unitunicate, irregularly distributed in the centrum, deliquescing at an early stage, globose, 8-spored, 7-10  $\mu\text{m}$  in diam. Ascospores: brown, uni-cellular, ellipsoidal to renoid, 4-6 x 2-4  $\mu\text{m}$ .

Habitat: On submerged wood; Yashawant lake (Toranmal); 1 May 2015; Leg. S.N. Wagh.

Distribution:- Tamil Nadu: Saprobic on wood text blocks in cooling tower ponds (Udaiyan and Hosagoudar, 1991).

##### 2) *Phaeosphaeria typharum* (Desm.) L. Holm : Symb. Bot. Upsal., 14: 1-188 (1957).

❖ *Sphaeria scripicola* A.P. de Candolle: E.M. Fries var. *typharum* J. Desm., Pl. Crypto. Du Nord De la France, Ed., 2, Fasc. 36, No. 1778. Anno 1849.

❖ *Leptosphaeria typharum* (J. Desm.) P.A. Karsten, Mycologica Fennica Pars 2, Pyrenomycetes, p. 100. 1873.

Ascomata: scattered, immersed, globose to somewhat conical, without clypeus, 90-120  $\mu\text{m}$  wide, 100-175  $\mu\text{m}$  high. Peridium: of *textura angularis* in surface view; in longitudinal section upper part of ascomal wall 8-10  $\mu\text{m}$  thick, composed of outer 4-6 layers of polygonal, brown-melanized,

pseudoparenchymatic cells, 6-10 x 2-3 µm, inner 1-2 layers compressed, hyaline, lower part of ascomal wall non-melanized, 4-5 µm thick. Pseudoparaphyses: 2-4 µm wide, numerous, cellular. Asci: (Fig. 2) 80-110 x 18-25 µm, numerous, cylindrical, short-stalked, rounded apex, 8-spored, ascospores arrangement biseriate. Ascospores: 22-30 x 10-12 µm, broadly fusiform to ellipsoid, with obtuse end cells, second cell swollen, straight to slightly curved, 3-septate, primary septum submedian, with constriction at mid-septum only, dark olive brown, distinctly verruculose, with uniform sheath 1 µm thick.

Habitat: On submerged decaying parts of *Typha angustata* Chaub. & Bory; Mula river (Rahuri); 16 August 2015; Leg. D.S. Borade.

Distribution:- Karnataka: On submerged woody debris (as *Leptosphaeria typharum*, Sridhar et al., 2010).

#### Acknowledgments:

Authors are thankful to Shri Aravind M. Patil, Chairman, N.S. Sanshta, Dhule's U.P. Arts and Sci. college, Dahivel, Dhule (M.S.); Prin. Dr. R.T. Chaudhary, S.V.S. Naik Arts, Comm. and Sci. college, Raver, Jalgaon (M.S.); Prin. Dr. K.B. Patil, B.S.S.P. Mandal's Arts, Com. & Science College, Songir, Dhule (M.S.); Prin. Dr. P.V. Ras & M.V.P. Samaj's Arts, Com. & Sci. colleg (α>0) Mig), Nashik for providing laboratory and library facilities. We are thankful to Dr. Angel Aguirre-Sanchez and authorities of Smithsonian Tropical Research Institute, Washington, DC, USA for providing rare research articles on aquatic fungi.

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Fig. Legends:

Fig. 1: Ascomata of *Neelakesa lignicola*

Fig. 2: Ascus of *Phaeosphaeria typharum*

