



Diversity of Freshwater Ascomycetes from Western Ghat Regions of Nashik District

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Abstract:

Present work deals with diversity of eight freshwater ascomycetes viz. *Atractospora thalendensis* Dong et al., *Didymospharia futilis* (Berk. and Br.) Rehm., *Leptosphaeria ginimia* Tsui et al., *Lindgomyces lemonweirensis* Raja et al., *Minutisphaera aquaticum* Bao et al., *Murispora aquatica* Bao et al., *Sovoryella fusiformis* Ho et al., *Sovoryella limnetica* Chang and Hsieh, were collected on naturally submerged bamboo wood from freshwater streams located at Traymbakeshwar, Peth, Surgana, Igatpuri and Satana regions of Nashik District. Collected species were identified and confirmed with the help of relevant literature.

Brief notes and illustrations are given for each taxon.

Key Words: Freshwater ascomycetes, Western ghat, Nashik district.

Introduction:

Traymbakeshwar, Peth, Surgana, Igatpuri and Satana regions are located in Sahyadri mountain ranges which are the offshoots of Western ghats in Nashik District.

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 (Shearer, 1993; Thomas, 1996; 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 freshwater Ascomycetes (Luo *et al.*, 2004). Lignicolous freshwater Ascomycetes inhabit submerged woody material in lentic (lakes, bog, ponds, swamps, pools) and lotic (rivers, streams, creeks, brooks) habitats (Wong *et al.*, 1998; Luo *et al.*, 2004), playing an important role in recycling organic matter in the aquatic ecosystem.

The ascomycetes are dominant in fresh water habitat with 2968 species of 1018 genera (Calabon et al., 2022)

Materials and Methods:

Samples of submerged woods were collected from Traymbakeshwar, Peth, Surgana, Ghoti, Igatpuri and Satana regions were kept in polythene bags and brought to laboratory. Those were examined under microscope to find out fungal fruiting structures. The fungal structures were mounted in lactophenol and stained with cotton blue and cover glass was sealed with D. P. X. The fungi were identified with the help of Jones (1995), Tsui et al. (2001), Hyde et al. (1999), Borse et al. (2016), Wang et al. (2024) and other relevant literature. Indian distribution was confirmed with Kamat et al (1971), Bhide et al. (1987), Mahabale (1987), Bilgrami et al (1979, 1981, 1991), Sarbhoy et al (1975, 1986, 1996), Jamaludden et al. (2004), Pande Alka (2008), Borse et al. (2016) and other relevant literature.

Taxonomic Account:

1. *Atractospora thailandensis* W. Dong, H. Zhang & K. D. Hyde, in Zhang, Dong, Hyde, Maharachchikumbura, Hongsanan & Bhat

Fungal Diversity 85: 90 (2017)

Saprobic on submerged deciduous wood. Sexual morph: Ascomata solitary or aggregated in small groups, immersed or semi-immersed to superficial, astromatic, subglobose to conical, dark brown to black 250-280 x 180-205 µm with a lateral neck, often lying horizontally on the substrate surface. Asci 8-spored, 80-92 µm, unitunicate, pedicellate, apically rounded or obtuse, with a J-, relatively small, apical ring. Ascospores 17-22 µm, uniseriate, hyaline, fusiform, aseptate or transversely septate, smooth or ornamented.

Habitat: Saprobic on submerged bamboo wood. Igatpuri, Dec. 2024

2. *Didymosphaeria futilis* (Berk. And Br.) Rehm.

Hedwigia 21: 81-86 (1882)

Ascomata 280 x 200 µm, solitary, flask shaped, immersed, globose, ostiolate. Asci 66-73 x 10-12 µm, 8 spored, cylindrical, short pedunculate, bitunicate. Ascospores 16-21 x 5-6 µm, uniseptate near the middle, biseriate, upper cell broader than the lower, smooth, constricted at the septum, brown.

Habitat: Saprobic on unknown submerged wood. Tryambakeshwar, Nov. 2024

3. *Leptosphaeria ginimia* Tsui, Hyde and Hodgkiss

Mycologia, 93:1005 (2001)

Ascomata 240-300 x 200-300 µm, superficial, sub globose, gregarious, dark brown to black, Asci 95-140 x 9-13 µm, 8 spored, cylindrical, short pedicillate, bitunicate, Ascospore 35-75 x 5-7 µm, overlapping, biseriate, 4-5 septate, fusiform, swollen at the middle cell, constricted at the septa, hyaline to pale brown.

Habitat: Saprobic on submerged bamboo wood. Igatpuri, Dec. 2024

4. *Lindgomyces lemonweirens* Raja, Mill and Shearer

Mycologia 103:1421-1432

Ascomata 218-250 x 295-310 μm , globose to sub globose, brown to black, superficial. Asci 170-217 x 28-42 μm , clavate, rounded at apex. Ascospores 30-44 x 10-15 μm , overlapping, oblong, fusiform, hyaline, one septate, constricted at septa.

Habitat: Saprobic on submerged bamboo wood. Igatpuri, Dec. 2024

5. *Minutisphaera aquaticum* Bao, Luo, Hyde and Su

Asian Journal of Mycology 2:306

Ascomata 71-90 x 85-98 μm , superficial, scattered, globose, dark brown to black. Asci 52-64 x 21.5-27.5 μm , 8 spored, bitunicate, obovoid to broadly cylindrical, sessile to pedicillate. Ascospores 28-32 x 7.6-8.7 μm , biserriate, hyaline, fusiform, curve at both ends with a supra median primary septum, without sheath and appendages.

Habitat: Saprobic on submerged bamboo wood. Satana, Dec. 2024

6. *Murispora aquatica* Bao, Luo and Hyde

Phytotaxa 416: 5 (2019)

Ascomata 180-280 x 180-250 μm , carbonaceous, solitary, globose to sub globose, papillate, dark brown to black, semi immersed to immersed, scattered, fused to host tissue, ostiolate. Ascospore 21-25 x 8-10 μm , ellipsoidal to fusiform, narrow and rounded at both ends, muriform, 4-6 transverse septa, 1-2 longitudinal septa in all cells, slightly constricted at transverse septa, deeply constricted at middle transversed septa, hyaline when young, become dark brown at maturity, smooth, surrounded by mucilaginous sheath.

Habitat: Saprobic on submerged bamboo wood. Igatpuri, Dec. 2024

7. *Sovoryella fusiformis* Ho, Hyde and Hodgkiss

Mycological research 101:804 (1997)

Ascomata 130-190 μm long, 70-90 μm in diameter, superficial, dark brown, slightly tappers towards the apex, Asci 80-120 x 9-14 μm , 8 spored, cylindrical, unitunicate, thin walled, Ascospores 25-35 x 6-10 μm , fusiform, 3 septate, slightly constricted at the septa, central cell brown, apical cell hyaline.

Habitat: Saprobic on submerged bamboo wood. Surgana, Dec. 2024

8. *Savoryella limnetica* Chang and Hsieh

Mycological research 102:715 (1998)

Ascomata 250-300 x 160-200 µm, partially immersed, dark brown to black, globose to sub globose, Asci 145-150 x 10.5-11.5 µm, unitunicate, long, cylindrical, Ascospores 20-25 x 7-9 µm, ellipsoidal, 3 septate, smooth, central cells brown, end cells hyaline.

Habitat: Saprobic on submerged bamboo wood. Peth, Dec. 2024

Acknowledgements:

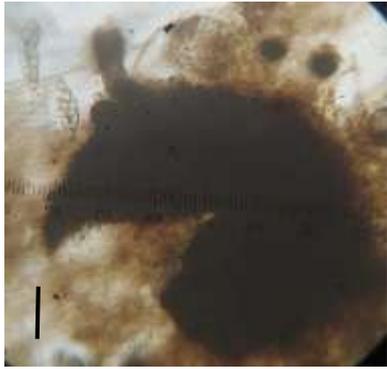
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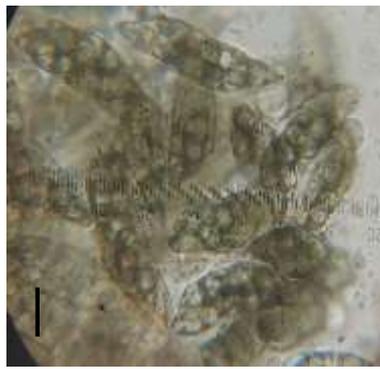
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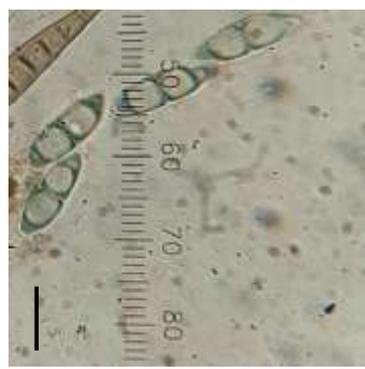
1. *Atractospora thalendensis*



Ascomata



Asci



Ascospores

2.

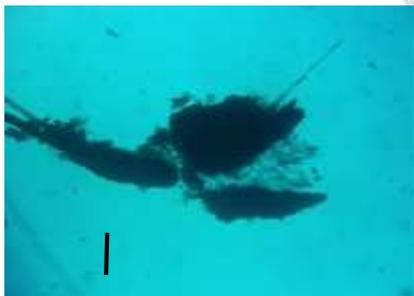
Didymosphaeria futilis



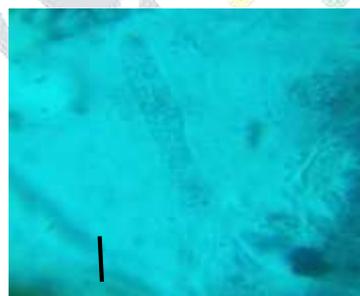
Asci and Ascospores

3.

Leptosphaeria ginimia



Ascomata



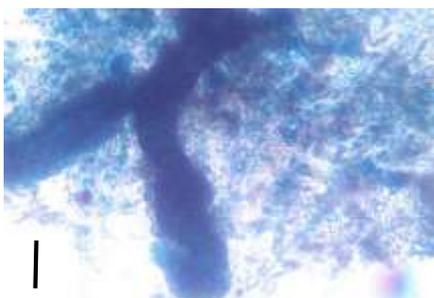
Ascus



Ascospores

4.

Lindgomyces lemonweirensis



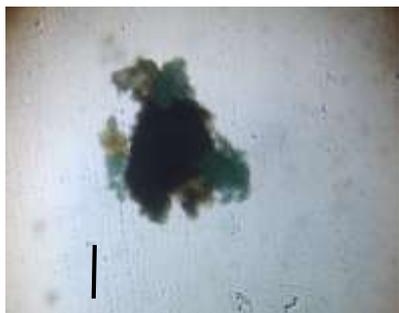
Ascomata



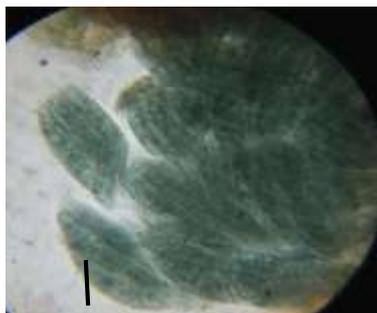
Ascospores

5.

Minutisphaera aquaticum



Ascomata



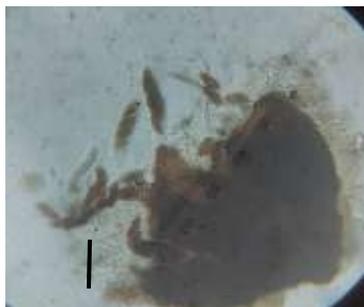
Asci



Ascospores

6.

Murispora aquatica



Ascomata



Ascus



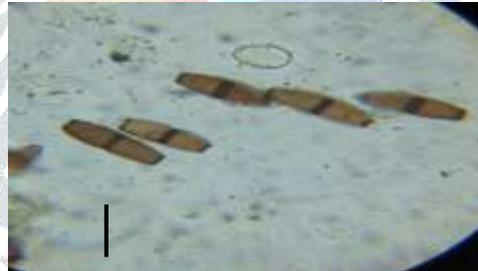
Ascospores

7.

Sovoryella fusiformis



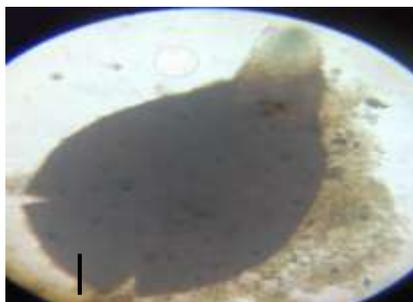
Ascomata



Ascospores

8.

Sovoryella limnetica



Ascomata



Asxcospores