CHAPTER-V
TAXANOMIC ACCOUNT OF ASCOMYCOTA

Systematic Arrangement of Freshwater Ascomycota From Nandurbar District
(Hawksworth et al., 1995)

Ascomycota

Dothideales

Phaeosphaeriaceae

Chaetomastia (Sacc.) Berlese (1 sp.)

Plectascales

Pseudoeurotiaceae

Neelakesa Udaiyan & Hosagoudar (1 sp.)

Zopfiaceae

Caryospora de Notaris (1 sp.)

Halosphaeriales

Halosphaeriaceae

Aniptodera Shearer & Miller (1 sp.)

Natantispora Campbell Anderson & Shearer (1 sp.)

Panorbis Campbell Anderson & Shearer (1 sp.)

Lasiosphaeriaceae

Savoryella Jones & Eaton (6 sp.)

Zopfiella Winter (1 sp.)
**Genus: Aniptodera** Shearer & M.A. Mill.


The genus *Aniptodera* was introduced by Shearer and Miller (1977) with *Aniptodera chesapeakensis* Shearer & M.A. Miller as the type species. The genus is characterized by having, *Ascomata*: peritheciod, immersed, semi-immersed or superficial, globose or subglobose, coriaceous, hyaline to brown, papillate, ostiolate, solitary or gregarious. *Ostiole*: central, or ascomata lying horizontal to the host surface, and then neck at one end and curving upwards, cylindrical to conical, hyaline to brown, periphysate. *Peridium*: relatively thin, comprising several layers of hyaline or brown, thick-walled, compressed or angular cells. *Catenophyses*: wide, slightly constricted at the septa. *Asci*: 8-spored, clavate, or becoming balloon-shaped or swollen, short pedunculate, unitunicate, apically truncate, with a J-apical thickening which has a central pore, and subapical cytoplasm retraction, mostly persistent. *Ascospores*: 2-3-seriate, ellipsoidal or fusiform, 1-3-euseptate, not constricted at the septum, hyaline, smooth, thick-walled, guttulate, with or without polar appendages; appendages filamentous, unfurling in water, long or short. The genus is represented by 11 freshwater (Hyde *et al.*, 1999) and 8 marine water species (Jones *et al.*, 2009).

*Aniptodera chesapeakensis* Shearer & M.A.Miler (Fig.1;Plate Fig.1,2, 3)


*Ascomata*: 130-300 µm high, 170-325 µm in diam, peritheciod, immersed, semi-immersed or superficial, globose or subglobose, hyaline to brown, papillate, ostiolate, solitary or gregarious, membranaceous. *Ostiole*: central, or ascomata lying horizontal to the host surface, and then neck at one end and curving upwards,
cylindrical to conical, hyaline to brown, periphysate. Necks: 81-326 µm long, 36-80 µm in diam, cylindrical, periphysate, brown at or below the tip. Peridium: 12-16 µm thick, composed of elongated, thin-walled cells with large lumina, forming a textura angularis, merging into the pseudoparenchyma of the venter. Catenophyses: wide, slightly constricted at the septa. Asci: 64-116 x 14-38 µm, 8-spored, clavate, or becoming balloon-shaped or swollen, short pedunculate, unitunicate, apically truncate, with a J- apical thickening which has a central pore, and subapical cytoplasm retraction, mostly persistent, slightly constricted at below the apex. Ascospores: 21-37 x 7-15 µm, 2-3-seriate, ellipsoidal or fusiform, 1-euseptate, not constricted at the septum, hyaline, smooth, thick-walled, guttulate, with or without polar appendages; appendages filamentous, unfurling in water, long or short.

**Habitat:** On submerged wood, Rangavali River, 20 May 2008, AFN-1A; Gomai River, 18 Oct. 2008, AFN-1B, Leg., S. N. Wagh

**Distribution:-** Marine Habitats: *West Coast:* Maharashtra, Goa, Karnataka, Pondicherry (Mahe); *East Coast:* Tamil Nadu, Andhara Pradesh, West Bengal, Andaman-Nicobar Islands (Borse et al., 2012).

Freshwater Habitats: Karnataka (Ramesh and Vijaykumar, 2005; Sudheep and Sridhar, 2011); Maharashtra (Patil & Borse, 2012b).

**Remarks:** The present fungus is occasional in occurrence. The measurements of Ascomata, Ascospores, Asci and descriptions are completely agree with that of *Aniptodera Chesapeakensis* as given by Shearer and Miller (1977). Therefore, it is assigned to that species. It is being reported for the first time from Nandurbar district.

**Genus: Caryospora** de Not.

The genus *Caryospora* was established by de Not. in 1956 to accommodate *Caryospora putaminum* (Schw. ex Fr.) de Not. The genus is characterized by having, *Ascomata*: large, dull black, erumpent superficial, base rounded or flattened and applanate, leaving circular black zone in substrate when removed, separate, apex papillate, opening by broad pore. *Peridium*: carbonaceous or firm, composed of numerous layers of slightly compressed cells, pigment heavily encrusted externally, and base narrower than sides. *Asci*: relatively few from base of locule, oblong or inflated in middle, nearly cylindric at times, bitunicate, (one) two to eight spored. *Pseudoparaphyses*: trabeculate, numerous, narrow, branched and anastomosing above asci, in gelatinous matrix, extending into apical pore. *Ascospores*: rich reddish brown to dark brown, often opaque in age, symmetric, broadly ellipsoidal, tapering to pointed or rounded tips, often paler at tips, primary septum median, usually constricted, disto-septate (young), at times one or more secondary septa near at one or both ends, with large globule in each cell, wall thick, surrounded by narrow gelatinous layer when young and this drying down to form reticulate or striate or irregular toughening on surface.

*Caryospora putaminum* (Schwein) de Not. (Fig. 2; Plate Fig.4, 5, 6)


≡ *Sphaeria putaminum* Schw. ex Fr., *Syst. Mycol.*, **2**: 461 (1823).

*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, 60-75 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, Yashwant Lake, 29 May 2009, AFN-2A; Tapi River, 27 November 2010, AFN-2B, Leg., S. N. Wagh

**Distribution:** Maharashtra: On endocarp of *Cocus nucifera* L. (Zate, 1979); on submerged wood (Patil and Borse, 2012a).

**Remarks:** The present fungus is rare in occurrence. The measurements and description of Ascomata, Asci and Ascospore are completely agree with that of *Caryospora putamium* (Schw.) De Not (Barr, 1979). Therefore, it is assigned to that species. It is being collected for the first time from fresh water habitat in Nandurbar district.

**Genus:** *Chaetomastia* (Sacc.) Berlese

*Icon Pyren.* 1: 38 (1891).

**Ascomata:** immersed, becoming erumpent and appearing superficial when epidermis sloughed, separate or gregarious, obpyriform, ovoid or globose, rarely elongate, ellipsoid, medium sized, apex wide and blunt ostiole rounded or slit like.

**Peridium:** composed of brown pseudoparenchymatous cells externally darkened and thickened in upper region, internally of pallid compressed rows of cells with sparse or numerous brown hyphae into substrate. **Asci:** bitunicate, basal to peripheral, clavate or cylindrical, 4-, 6-, or 8-spored; Pseudoparaphyses: cellular in gel matrix, extending into ostiole. **Ascospores:** yellowish brown becoming dark brown or reddish brown, ovoid, elongate, slightly or strongly asymmetric with obtuse upper hrmispore, usually inequilateral to slightly curved, 3-11 septate, constricted at first formed septum, cell above this usually elongated; wall wide,
dark smooth or verrucose, surrounded by gel coating, contents with large globule in each cell; biseriate or uniseriate in the ascus.

*Chaetomastia typhicola* (Karst.) Barr (Fig. 03; Plate Fig. 7, 8, 9) *Mycotaxon*, **34**: 514 (1989).

**Ascomata**: immersed, separate or gregarious, ovoid or globose, at times ellipsoid, 250-430 um diam. **Peridium**: 15-25 um wide, surrounded by tomentum of interwoven hyphae. **Asci**: 90-135 x 15-18 um. **Ascospores**: 25-39 x 7-10.5 um, yellowish brown becoming dark brown, asymmetric, slightly curved, 3-, 7-, or 9-septate, wall verruculose, surrounded by gel coating.

**Habitat**: On submerged leaf of *Typha* sp., Tapi River, 27 November 2010, AFN-3, Leg., S. N. Wagh

**Distribution**: Tamil Nadu: On submerged wood in marine waters (Sarma and Vittal, 2004).

**Remarks**: The present fungus is rare in occurrence. The measurements and description of Ascomata, Asci and Ascospore are completely agree with that of *Chaetomastia typhicola* (Karst.) Barr as provided by Pande (2008). Therefore, it is assigned to that species. It is being collected for the first time from Maharashtra.

**Genus**: *Natantispora* J. Campb. *et al*.,


**Ascomata**: immersed to superficial, ostiolate, membranous, black. **Peridium**: composed of pseudoparenchyma in longitudinal section, of *textura angularis* in surface view. **Necks**: long, cylindrical, periphysate, dark-pigmented, gradually lightening toward the apex. **Hamathecium**: contains catenophyses. **Asci**: clavate, thin-walled, lacking any thickening of the apical wall, an apical pore or an apical apparatus, deliquescing before or at spore maturity. **Ascospores**: hyaline, fusiform to
ellipsoidal, 1-septate, with a single hamate appendage at each apex. **Appendages**: thread-like, coiled into a hamate structure equal to or longer than a single spore cell, unferling in water to form a long, fine sticky, threadlike structure. The genus is represented by two species (Jones *et al.*, 2009).

**Natantispora retorquens** (Shearer & J.L. Crane) J. Campb., J.L. Anderson & Shearer (Fig. 4; Plate Fig. 10, 11, 12)


**Ascomata**: 140-326 x 150-366 μm., solitary to gregarious, superficial to immersed, globose to subglobose, hyaline at first becoming black, ostiolate, Neck: 108-564 x 14-50 μm, cylindrical, periphysate, dark at base, hyaline at apex. **Peridium**: ,embranous, pseudoparenchymatous, multilayered, the outer layer brown to black. **Centrum**: consisting of asci and catenophyses. **Asci**: 53-144 x 14-24 μm, unitunicate, clavate, thin-walled, deliquescing before or at spore maturity. **Ascospores**: 20-34 x 7-11 μm, ellipsoidal, 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**: On submerged wood, Yashwant Lake, 30 May 2009, AFN-3A; Gomai river, 8 May 2011, AFN-3B; AFN-5C, Leg., S. N. Wagh

**Distribution**: Marine Habitats:- West Coast:-Maharashtra, Karnataka, Kerala (Borse *et al.*, 2012). **Freshwater Habitats**: Maharashtra: On submerged woody debris (Patil and Borse, 2012a).

**Remarks**: The present fungus is common in occurrence. The descriptions and measurements of Ascomata, Asci and Ascospores are completely agreed with that of *Natantispora retorquens* (Shearer and Crane, 1980). Therefore, it is assigned to
that species. It is being reported for the first time from freshwater habitats in Nadurbar district.

**Genus:** *Neelakesa* Udaiyan & V.S. Hosag.


The genus *Neelakesa* was established to accommodate *Neelakesa lignicola* by Udaiyan & Hosagoudar (1991). *Neelakesa* is characterized by having **Ascomata**: 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. **Asci**: unitunicate, irregularly distributed in the centrum, deliqueseing at an early stage, globose, 8-spored. **Ascospores**: brown, not of biovale type, single celled, ellipsoidal.

*Neelakesa lignicola* Udaiyan & V.S. Hosag. (Fig. 5; Plate fig.13, 14)


**Ascomata**: Clestothecia, 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 um in diam. **Asci**: unitunicate, irregularly distributed in the centrum, deliqueseing at an early stage, globose, 8-spored, 7-10.5 um in diam. **Ascospores**: brown, not of biovale type, unicellular, ellipsoidal, 4.5-5.5 x 2-3.5 um.

**Habitat**: On submerged wood, Yashwant Lake, 29 May 2009, AFN-4A; Amlibari dam, 21 May 2008, AFN-4B, Leg., S. N. Wagh.

**Distribution in India**: Tamil Nadu: On submerged wood in cooling tower system (Udaiyan and Hosagoudar, 1991).

**Remarks**: The present fungus is rare in occurrence. The descriptions and measurements of Ascomata, Asci and Ascospores are completely agree with that of *Neelakesa lignicola* provided by Udaiyan and Hosagoudar (1991). Therefore, it is
assigned to that species. It is being reported for the first time from freshwater habitats in Maharashtra.

**Genus: Panorbis** J. Campb., J.L. Anderson & Shearer


*Ascomata*: globose to subglobose, ostiolate, at first hyaline becoming black with age. *Peridium*: 10-13 cells wide, membranous, cells thin-walled forming a textura angularis. *Necks*: long, cylindrical, periphysate, hyaline at the apex and pigmented at the base. *Hamathecium*: absent or present as catenophyses. *Asci*: 8-spored, ellipsoidal to clavate, thin-walled, persistent or deliquescent, separating from the ascogenous hyphae, lacking an apical pore and apical apparatus. *Ascospores*: hyaline, 1-septate, ellipsoidal, tapered or rounded at the apices, often flattened on one side, with an apical appendage at each end. *Appendages*: small, hamate at first, less than or equal to ½ the spore length, unfurling in water to form long, sticky, threadlike structures.

**Panorbis viscosus** (I. Schmidt) J. Campb. et al., (Fig. 6; Plate fig.15,16,17)


12.5 µm (Schmidt, 1974); 21-28-31 x 8-11 µm (Kohlm. & Volkm.-Kohlm., 1991), hyaline, 1-septate, ellipsoidal, appendaged. **Appendages**: bipolar, composed of a single, coiled or folded filament, at first hamate to irregular, finally unwinding in water to produce a long, fine filament.

**Habitat:** On submerged wood, Rangavali river, 28 May 2009, AFN-5A; Toranmal Lower region, 20 May 2008, AFN-5B, AFN-5C, Leg., S. N. Wagh.

**Distribution:**

- **Marine Habitats:** West Coast: Maharashtra, Karnataka, Kerala; East Coast: Tamil Nadu, Andhara Pradesh (Borse *et al*., 2012).

- **Freshwater Habitats:** Maharashtra: On submerged wood (Patil and Borse, 2012a).

**Remarks:** The present fungus is frequent in occurrence. The measurements of Ascomata, Asci, Ascospores and descriptions completely agree with that of *Panorbis viscosus* (Schmidt) Campb., Anderson & Shearer provided by Shearer and Crane (1980). Therefore, it is assigned to that species. It is being collected for the first time from freshwater habitats in Nadurbar district.

**Genus: Savoryella** E.B.G. Jones & R.A. Eaton


The genus Savoryella is erected by Jones and Eaton (1969) with Savoryella lignicola as the type species. It is revised by Jones and Hyde (1992). The genus is characterized by having, **Ascomata**: solitary to gregarious, immersed, partly immersed to superficial, ostiolate, periphysate, papillate, membranous and brown, **Peridium**: of *textura angularis* when viewed from the surface and in section composed of several layers of angular cells. **Paraphyses**: presents in young ascomata, wide and septate. **Asci**: 2 to 8-spored, cylindrical to clavate, short pendunculate, unitunicate, persistent, with a non-amyloid apical thickening containing a pore. **Ascospores**: ellipsoidal, 3-septate, central cells brown, end cells hyaline, with or without polar appendages.
**Savoryella aquatica** K.D. Hyde  (Fig.7; Plate fig.18, 19, 20)


*Ascomata*: 195-260 μm long, 91-130 μm diam., immersed, semi-immersed or superficial, coriaceous, pyriform, brown or black, ostiolate, papillate, periphysate, solitary or gregarious. *Necks*: short, up to 68 μm diam., hyaline, bending up towards the light. *Peridium*: thin, of *textura angularis* in surface view and brown. *Paraphyses*: few, with round cells. *Asci*: 106-140 x 26-34 μm, 8-spored, clavate, thin-walled, with a short peduncle, apically thickened with a ring and pore/plug, mature successively. *Ascospores*: 29-38 x 13.5-17 μm, ellipsoidal, biseriate, hyaline to olive-green when immature, central cells dark brown when mature, end cells hyaline, constricted weakly at the septa, central septa appearing as a band and highly guttulate.

**Habitat**: On submerged wood, Rangavali river, 22 May 2008, AFN-7A; Yashwant Lake, 19 Nov. 2008, AFN-7B; Gomai river, 16 August 2009, AFN-7C; Amlibari dam, 23 Nov. 2009, AFN-7D; Tapi river, 14 May 2010, AFN-7E; Ranipur dam, 26 Nov. 2010, AFN-7F; 18 Nov. 2008, AFN-7G, Leg., S. N. Wagh.

**Distribution**: Maharashtra: On submerged woody debris (Borse and Pawara, 2007).

**Remarks**: This fungus is common in occurrence. The descriptions and measurements of Ascomata, Ascospores and Asci are completely agreed with that of *Savoryella aquatica* Hyde (1993b). Therefore, it is assigned to that species. Borse and Pawara (2007) reported the present fungus for the first time from India.

**Savoryella fusiformis** W.H. Ho et al.  (Fig. 8; Plate fig. 21, 22, 23)


*Ascomata*: 130-190 μm long, 70-90 μm diam., immersed or superficial, coriaceous, pyriform, dark-brown, ostiolate, papillate, axis horizontal to the host
surface, solitary or gregarious. Necks: 70-120 µm long, 35-50 µm diam., cylindrical, slightly tapering towards the apex, brown, periphysate, mostly pointing upwards with a hyaline apex. Peridium: thin, brown, of textura epidermoidea when viewed from the surface. Paraphyses: septate. Asci: 80-120 x 9-14 µm, 8-spored, cylindrical or clavate, unitunicate, thin-walled, short pedicellate, persistent, with non-amyloid apical ring ca 1.44 µm high, 4.8 µm diam. Ascospores: 25-35 x 6-9.6 µm, fusiform, biseriate, 3-septate, slightly constricted at the septa, smooth, thin-walled; central cells brown, apical cells 4-4.8 µm long, 4-4.8 µm wide, hyaline.

**Habitat:** On submerged wood, Yashwant Lake, 19 April 2009, AFN-8A; Toranmal Lower region, 20 Nov. 2008, AFN-8B, Leg., S. N. Wagh.

**Distribution:**- Maharashtra: On submerged woody debris (Patil and Borse, 2011).

**Remarks:** The present fungus is occasional in occurrence. The measurements of Ascomata, Asci, Ascospores and descriptions are completely agreed with that of Savoryella fusiformis Ho et al., (1997). Therefore, it is assigned to that species. This makes new addition to the fungi of Nadurbar district.

*Savoryella grandispora* K.D. Hyde  (Fig. 9; Plate fig. 24, 25, 26)  

Ascomata: 195-260 µm long, 91-130 µm diam., immersed, semi-immersed or superficial, coriaceous, pyriform, brown or black, ostiolate, papillate, periphysate, solitary or gregarious. Necks: short, up to 68 µm diam., hyaline, bending up towards the light. Peridium: thin, of textura angularis in surface view and brown. Paraphyses: few, with round cells. Asci: 106-140 x 26-34 µm, 8-spored, clavate, thin-walled, with a short peduncle, apically thickened with a ring and pore/plug, mature successively. Ascospores: 46-58 x 14-16 µm, ellipsoidal, biseriate, light brown, central cells dark brown when mature, end cells hyaline, constricted weakly at the septa.
**Habitat:** On submerged wood, Rangavali River, 30 May 2009, AFN-9, Leg., S. N. Wagh.

**Distribution:-** Maharashtra: On submerged woody debris (Patil and Borse, 2011a).

**Remarks:** The present fungus is occasional in occurrence. The measurements of Ascomata, Asci, Ascospores and descriptions are completely agree with that of *Savoryella grandispora* as given by Hyde (1994). Therefore, it is assigned to that species. This makes new addition to the fungi of Nadurbar district.

*Savoryella lignicola*  Jones & Eaton  (Fig. 10; Plate fig. 27, 28, 29)  

**Ascomata:** 200-345 μm high, 120-180 μm in diam., globose, subglobose or ellipsoidal, immersed, partly immersed or superficial, ostiolate, papillate, membranous and pale to dark brown. **Necks:** 80-165 μm long and up to 72 μm in diam., brown with periphyses. **Peridium:** brown, a *textura angularis* when viewed from the surface, while in section composed of several layers of thick-walled angular cells. **Paraphyses:** present but sparse. **Asci:** 128-180 x 16-24 μm, 8-spored, cylindrical or clavate, short-stalked, unitunicate, persistent, with an apical truncate non-amyloid apical thickening containing a pore. **Ascospores:** 24.5-33.5(43.0) x 8.5-12.5 μm, uni or biseriate, ellipsoidal, 3-septate, not markedly constricted at the septa; central cells brown (10.6-16.0 μm), apical cells smaller and hyaline (2.6-6.0 μm).

**Habitat:** On submerged wood, Udai river, 21 May 2008, AFN-10A; Yashwant Lake, 25 Nov. 2009, AFN-10B, Leg., S. N. Wagh.

**Distribution:-**

**Marine Habitats:-** West Coast:- Daman, Gujarat, Goa, Karnataka, Pondecherry (Mahe), Kerala, Lakshadweep Islands; East Coast:- Tamil Nadu, Pondecherry, Andhara Pradesh, West Bengal, Andaman & Nicobar Islands (Borse *et al.*, 2012).
Freshwater Habitats: Tamil Nadu: On submerged wood test blocks (Udaiyan, 1989; Udaiyan and Manian, 1991b); On submerged treated service timber packing of water cooling towers (Udaiyan and Manian, 1991a); Karnataka: On submerged wood and wood test blocks (Ramesh and Vijaykumar, 2000; Ramesh and Vijaykumar, 2005; Sridhar et al., 2011; Sudheep and Sridhar, 2011); Maharashtra: On submerged wood (Borse and Pawara, 2007).

Remarks: The present fungus is common in occurrence. It has been reported for the first time from Maharashtra by Borse and Pawara (2007).

Savoryella limnetica H.S. Chang & S.Y. Hsieh (Fig. 11; Plate fig. 30, 31) Mycol. Res., 102: 715 (1998).

Ascomata: 250-300 x 160-200 µm, partly to fully immersed in wood, oblique to horizontal, dark brown to black, globose to subglobose, ostiolate, periphysate. solitary or gregarious. Necks: 150-340 µm long, 55-90 µm diam., lateral and periphysate. Peridium: texutura angularis, with brown, septate, unbranched hyphae on the surface and neck. Paraphyses: broad up to 8 µm, deliquescing early, hyaline, rarely branched. Asci: 145-150 x 10.5-11.5 µm, unitunicate, long-cylindrical with a short foot, apices truncate, with a non-amyloid apical thickening containing a pore, 8-spored, pedicellate with an annulus. Ascospores: 20-25.5 x 7-9 µm, ellipsoidal, 3-septate, not constricted, smooth, thin-walled, central cells brown, end cells smaller and hyaline to sub-hyaline.

Habitat: On submerged wood, Rangavali River, 26 April, 2009, AFN-11A; Udai River, 23 May, 2008, AFN-11B, Leg., S. N. Wagh

Distribution:- Maharashtra: On submerged wood (Patil and Borse, 2011a).

Remarks: The present fungus is occasional in occurrence. The measurements and description of Ascomata, Ascospores, Asci are completely agree with that of
Savoryella limnetica as given by Chang et al. (1998). Therefore, it is assigned to that species. This makes new addition to the fungi of Nadurbar district.

*Savoryella verrucosa* Minoura & T. Muroi (Fig.12; Plate fig. 32, 33, 34) *Trans. Mycol. Soc. Japan*, **19**: 132 (1978).

*Ascomata*: 250-325 µm long, 150-250 µm diam., ellipsoidal, immersed, semi-immersed or superficial, coriaceous, pyriform, black, papillate, axis horizontal oblique or vertical to the host surface, solitary or gregarious. *Necks*: 55-70 µm long, cylindrical, smooth, subhyaline to brown, periphysate, bending upwards with pale brown to brown apex. *Peridium*: thin, brown, of *textura epidermoidea* in surface view. *Paraphyses*: present, sparse. *Asci*: 165-210 x 22-34 µm, 8-spored, cylindrical or clavate, unitunicate, thin-walled, short pedicellate, apically thickened and truncate with a ring. *Ascospores*: 29-40 x 12.5-18 µm, biseriate, ellipsoidal, hyaline when immature, 3-septate when mature, constricted at the septa; central cells brown, distinctly verrucose, polar cells 3.8-6.4 µm long, 4-5 µm wide, hyaline.

**Habitat**: On submerged wood, Tapi river, 25 Nov. 2009, AFN-12, Leg., S. N. Wagh.

**Distribution**: Karnataka: On submerged woody debris (Sridhar et al., 2011a).

**Remarks**: The present fungus is rare in occurrence. The descriptions and measurements of Ascomata, Asci and Ascospores are completely agreed with that of *Savoryella verrucosa* as described by Minoura and Muroi (1978). Therefore, it is assigned to that species. It is being reported for the first time in Maharashtra.

**Genus**: Zopfiella Winter

*Kryptogamenflora*, **1**: 56 (1884).

*Ascomata*: solitary or gregarious, globose to subglobose, superficial or rarely immersed, nonostiolate, thin-walled, irregularly dehiscing, covered with hairs.
Peridium: pseudoparenchymatous, membranaceous, cephalothecoid in some species, cells forming a textura angularis. Paraphyses: early deliquescing, indistinct or absent. Asci: 4 to 8-spored, clavate to cylindrical or rarely subglobose, pedunculate, unitunicate, deliquescing, in some species with an apical ring, fasciculate or irregularly arranged. Ascospores: uni-, bi-, or triseriate, at first 1-celled, hyaline, becoming 1-septate, hyaline in the lower third, forming a large ellipsoidal, dark upper cell and a small, mostly cylindrical, hyaline, often collapsing basal cell; the upper cell may become divided by a horizontal septum in some species; with an apical or subapical germ pore. The genus is represented by 2 species in marine habitats (Jones et al., 2009).

Zopfiella karachiensis (Ahmed & Asad) Guarro (Fig. 13; Plate fig. 35, 36)


Ascomata: 285-375 x 235-285 µm., clothed densely with hyphal-like hairs, globose to subglobose, superficial, ostiolate, coriaceous, dark brown. Necks: 75-150 µm long, conical. Peridium: thin, membranaceous, outer layer composed of brown angular cells. Asci: clvate, with a short stipe, 8-spored, 100-135 x 17-23 µm. Ascospores: biseriate, ellipsoidal, at first 1-celled, latter becoming 2-celled, 34-39 x 12.5-20 µm; upper cell dark olivaceous brown to dark brown, ellipsoid, inequilateral, smooth, with a single germ pore at the apex, 23-29 x 12.5-20 µm; lower cell conical, hyaline often collapsed at maturity, 7-10 x 7-8.5 µm.

Habitat: On submerged wood, Tapi river, 7 May 2011, AFN-13, Leg., S. N. Wagh
**Distribution:** Tamil Nadu: On wood test blocks (as *Triangularia karachiensis*, Udaiyan 1989; Udaiyan and Manian, 1991b).

**Remarks:** The present fungus is rare in occurrence. The measurements and descriptions of Ascomata and Ascospores are completely agree with that of *Zopfiella karachiensis* as given by Udaiyan (1989). Therefore, it is assigned to that species. This makes new addition to the fungal flora of Maharashtra.