ISSN 0096-3925, Moscow University Biological Sciences Bulletin, 2008, Vol. 63, No. 4, pp. 178–183. © Allerton Press, Inc., 2008.
Original Russian Text © D.I. Milekhin, V.P. Prokhorov, 2008, published in Vestnik Moskovskogo Universiteta. Biologiya, 2008, No. 4, pp. 42–47.

Widespread Species of Family Leotiaceae from Forest Parks of Moscow

D. I. Milekhin and V. P. Prokhorov

Department of Mycology and Algology
e-mail: prokhorov@herba.msu.ru

Received October 12, 2007

Abstract—The list of discomycetes from the family Leotiaceaea in eight investigated forest park of Moscow is presented. *Bisporella citrine, Chlorociboria aeruginascens, Hymenoscyphus scutula, H. repandus, H. herbarum, H. discretus*, and *Crocicreas cyathoideum* are widely distributed at all forest parks of Moscow. A key based on simple characters is developed. The annotated list includes 21 species.

DOI: 10.3103/S009639250804007X

The family Leotiaceaea is one the largest families in the order Leotiales. It comprises inoperculate discomycetes with small, up to several millimeters in diameter, fruit bodies, with a smooth surface, which are as a rule light in color. Usually, they develop as saprotrophs on various plant remains.

There are a few keys which may be applied to Leotiacea. Taxa of this family may be found in the keys by Dennis (Dennis, 1956, 1963, 1981) and Hansen and Knudsen (*Nordic Micromycetes*, 2000). In Russia, the sole large key to discomycetes generally is that by Naumov (1964).

In these books, the keys are two-level ones; i.e., genera are determined first, and for identification of species, a separate key is used for each genus. Usually, genera are distinguished by form, color, and consistence of apotecia. These characters may be interpreted by investigators rather subjectively and create difficulties in identification.

Determination of fungi of this family involves some difficulties. Some genera have clear morphological traits and are well differentiated from other genera. However, most genera of the family Leotiaceae are similar in morphology and it is rather difficult to point out any stable and reliable characters for their discrimination.

The species of discomycetes represented here were collected in 2003–2006 in forest parks of Moscow. The surveys were made annually, from May to October, in forest parks Bitsevkii, Losinoostrovskii, Filevskii, Sokolnicheskii, Izmailovskii, Timiryazevskii, and Troparevskii and in Vorob'evy gory.

The key for 21 species of the family Leotiaceae frequently occurring in forest parks of Moscow is composed, and representatives of different genera are combined in one key. In the annotated list, for each species, the most common synonyms, frequency in forest parks of Moscow, and substratum of the collected apothecia are indicated.

1. Apothecia violet or blue-green
2. Apothecia sessile, from saucer-shaped to barrel-shaped, violet. Spores ellipsoid, 8–11 × 3–5 mm, two-celled. *Ascocoryne sarcoides*
2. Apothecia on a short pedicle, blue-green. Spores narrow fusiform, unicellular
3. Spores 5–7 × 10 μm. ..... *Chlorociboria aeruginascens*
3. Spores 9–14 × 1–2 μm. ..... *Chlorociboria aerigunosa*
4. Apothecia sessile or on a short pedicle, whose length does not exceed the disk diameter
4. Apothecia on a clearly expressed pedicle, whose length considerably exceeds the disk diameter
5. Apothecia large, up to 5 mm in diameter, purely white, on soil ..... *Hymenoscyphus geogeum*
5. Apothecia smaller, light, but not white, on other substrata
6. Apothecia bright orange, spores ellipsoid, on wood
6. Apothecia pale, spores fusiform, on other substrata
7. Spores 9–14 × 4–5 μm ..... *Bisporella citrine*
7. Spores 8–9 × 3–3.5 μm ..... *Bisporella subpallida*

8. Apothecia cuplike, on a very short pedicle, covered with disk base, spores 12–14 × 1.5–2.5 μm, on remains of dicotyledonous herbaceous plants ..... *Hymenoscyphus herbarum*

8. Apothecia disklike, sessile, on the outside covered with very small hairs, on dead leaves ..... *Caycellina punctata*

9. Spores over 15 μm in length

9. Spores less than 15 μm in length

10. Edge of the disk with long serrations, clearly seen with the naked eye, spores fusiform, 15–20 μm in length ..... *Crocicreas coronatum*

10. Edge of the disk smooth

11. Spores narrow ellipsoid with three or more septa, 20–27 μm in length, apothecia white, cuplike, on dead stems of herbaceous plants ..... *Crocicreas culmicola*

11. Spores unicellular or with one septum, apothecia yellowish or orange, saucer-like

12. On remains of various herbaceous plants, spores fusiform, 16–25 μm in length ..... *Hymenscyphus scutula*

12. On other substrata

13. Apothecia on dead leaves, spores fusiform, 15–21 μm in length ..... *Hymenoscyphus caudatus*

13. Apothecia on wood

14. Spores clearly clavate, rounded on the top, pointed below, 20–25 × 4–5 μm in length ..... *Hymenoscyphus serotinus*

14. Spores widely ellipsoid, often slightly asymmetrical, 15–22 × 4–6 μm ..... *Hymenoscyphus calyculus*

15. Apothecia large, usually over 1 mm in diameter, white, mature disk convex, spores fusiform, 10–15 (17) μm long; on various plant remains, often submersed in water ..... *Cudoniella clavus*

15. Disk concave

16. Apothecia deep cuplike, white, spores fusiform 8–12 × 1.5–2 μm ..... *Crocicreas cyathoideum*

16. Apothecia saucer-like, yellowish or orange

17. Apothecia on wood

17. Apothecia on leaves or remains of herbaceous plants

18. Spores pointed at both ends, 10–13 × 4–4.5 μm ..... *Hymenoscyphus immutabilis*

18. Spores ellipsoid, with rounded ends, 8–11 × 3–4 μm ..... *Hymenoscyphus imberbis*

19. Apothecia on dead leaves, spores ellipsoid, 12.9–14.5 × 4–5 μm ..... *Hymenoscyphus phyllogenon*

19. Apothecia on remains of herbaceous plants

20. Spores 11–15 × 2–3 μm ..... *Hymenoscyphus repandus*

20. Spores 5–8.5 × 1–2 μm ..... *Hymenoscyphus discretus*

Ascocoryne sarcoides (Jacq. Ex S.F. Gray) Groves et Wilson, taxon 16 : 40, 1967. **Syn.:** *Peziza sarcoides* (Jacq.) Pers. Synopsis Fung., 633, 1801. *Coryne sarcoides* Tul., Select. Fung. Carp., 3 : 190, 1865. *Sarcodea sarcoides* ([Jacq.] Fr.) P. Karst., Not. Sällsk. Faun. Fl. Fenn., 11 : 232, 1870. *Ombrophila sarcoides* ([Jacq.] Fr.) P. Karst., Mycol. Fenn., 1 : 86, 1871.

Apothecia large, up to 5 mm in diameter, sessile, disklike to barrel-like, with irregularly bent hymenial disk, smooth, naked, violet, fleshy. Hymenium violet brownish. Ascs eight-sporous, long, over 200 μm in length, 7–8 μm thick, with a well expressed amyloid pore. Spores ellipsoid, with one septa 6–11 × 3–5 μm. Paraphyses filiform, septate.

Locality: in all surveyed forest parks.

Substratum: on rotting wood of *Betula* sp., *Populus tremula* L.

Bisporella citrina (Batsch: Fr.) Korf et Carp., Mycotaxon, 1 : 58, 1974.

Syn.: *Peziza citrina* Hedw.: Fr., Syst. Mycol., 2: 131, 1822; *Helotium citrinum* (Hedw.: Fr.) Fr., Summa Veg. Scand., 355, 1849. *Phialea citrina* (Hedw.: Fr.) Gill., Champ. Fr., Discom.: 109, 1879. *Calycella citrina* (Hedw.: Fr.) Quél., Enchirid fing.: 109, 1886.

Apothecia numerous, 0.3–1.5 mm in diameter, sessile or on a very short thick pedicel, smooth, naked, yellow with orange shade, of thick fleshy consistence, with a slightly concave hymenia disk; when mature, often irregular. Ectal exciple of *textura porrecta* is formed of rectangular cells of parallel hyphae. Ascs eight-sporous, cylindrical 98–112 × 7–8 μm. nonamyloid. Spores ellipsoid 11–13.5 × 4–5.2 μm. Paraphyses filiform, septate.

Locality: in all surveyed forest parks.

Substratum: on rotting wood of *Betula* sp., *Quercus robur* L.

Bisporella subpallida (Rehm) Dennis, Brit. Ascomycetes: 132, 1981. *Phialea subpallida* Rehm., Rabenh. Krypt. Flora, 2, 2, 3: 710, 1892. *Hymenoscypha subpallida* (Rehm) Migula, Krypt Fl. Deutsch. 3: 1165, 1913.

Apothecia 0.3–0.45 mm in diameter, on a very short massive pedicel or sessile, smooth, yellowish whitish, obconical, with slightly concave hymenium; when mature, often irregular; Ascs cylindrical 57–67 × 4–5 μm, deight-sporous. Paraphyses filiform, septate.

Locality: in all surveyed forest parks.

Substratum: on rotting wood of *Tilia cordata* L., *Populus tremula* L.

Syn.: *Peziza punctiformis* Grev., Scott. Cryp. Flora, 2 : 63, 1824. *Helotium querceti* Sacc. in Mich., 1: 68, 1877. *Helotium punctiforme* (Grev.) Phill., Brit. Discom.: 168, 1887. *Pseudohelotium punctiforme* (Grev.) Sacc., Syll. Fung., 8: 295, 1889. *Pezizella punctiformis* (Grev.) Rehm, Rabenh. Krypt. Fl., 2, 1, 3: 664, 1892. *Hymenopscypha punctiformis* (Grev.) Schroet., Cohn's Krypt. Fl. Schles., 2: 126, 1893. *Calycina querceti* (Sacc.) O. Kuntze, Rev. Gen. Plant., 3: 449, 1898. *Hyaloscypha punctiformis* (Grev.) Boud., Hist. Class., Discom. Eur.: 129, 1907. *Calycellina punctiformis* (Grev.) Höhnel, S. B. Akad. Wiss. Wien Abt. 1, 127: 601, 1918.

Apothecia sessile, disklike, lemon yellow, on the outside covered with small hairs. Ectoexcipule of *textura porrecta* formed of rectangular cells of parallel hyphae. Ascs eight-sporous, cylindrical, 57–70 × 4–5 μm. Spores narrow ellipsoid or fusiform, sometimes somewhat asymmetrical, slightly bent, 7–11.5 × 1.5–3 μm. Paraphyses filiform, septate.

Locality: in all surveyed forest parks.

Substratum: on dead leaves of *Betula* sp., *Quercus robur* L.

Chlorociboria aeruginascens (Nyl.) Kanouse, Mycologia, 39: 641, 1947.

Syn.: *Chlorosplenium aeriginascens* Karst., Myc. Fenn. 1: 103, 1971.

Apothecia blue-green, developing in groups or solitary, surficial, small cuplike or lobate. Disk from 2 to 5 mm in diameter, smooth, with a short round pedicle 2–3 × 1 mm. Caused intensive dark blue-green staining of wood. Ectal exciple of *textura intricata* formed of densely intertwined hyphae. Ascs narrow cylindrical or clavate, amyloid, eight-sporous, 48.8–65.7 × 3.0–4.5 μm. Ascospores narrow fusiform, smooth, colorless, 6.3–9.5 × 1.5–2 μm. Paraphyses cylindrical, branched at the base, 1.5 μm in diameter.

Locality: in all surveyed forest parks.

Substratum: on rotting wood of *Betula* sp., *Quercus robur* L.

Crocicreas cyathoideum (Bull.: Fr.) S. E. Carp., Brittonia, 32: 269, 1980.

Syn.: *Peziza cyathoidea* Bull.: Fr., Syst. Mycol., II, 1, p. 124, 1822. *Phialea cyathoidea* (Bull.: Fr.) Gill., Champ. Fr., Discom.: 106, 1879. *Calycella cyathoidea* (Bull.: Fr.) Quél., Enchirid. Fungorum: 307, 1886. *Hymenoscypha cyathoidea* var. *solani* (Pers.) Phill., Brit. Discom.: 141, 1887. *Phialea solani* (Pers. ex Phill.) Sacc., Syll. Fung., 8: 252, 1889. *Phialea minutula* Sacc. In Malpighia, 11: 268, 1897. *Phialea cyathoidea* (Bull.) Gill., Champ Fr., II, 3, 1880.

Apothecia cuplike, on cylindrical pedicle, smooth, light in color. Ectal exciple of *textura porrecta.* Ascs cylindrical, with a short pedicle, pore staining with Meltzer reagent, 43–55 × 4–5 μm. On remains of herbaceous plants. Paraphyses filiform, 8–12 × 1.5–2 μm.

Locality: in all surveyed forest parks.

Substratum: on dead stems of *Dactylis glomerata* L., *Agropyrum repens* P.B., *Artemisia vulgaris* L.

Crocicreas culminicola (Desm.) S.E. Carp., Brittonia 32: 269, 1980.

Syn.: *Peziza culminicola* Desm., Ann. Sci. Nat., VI: 224, 1836. *Belonidium moliniae* de Not., Comm. Soc. cript. Ital. X, (V): 380, 1864. *Belonidium vexatum* de Not., Comm. Soc. cript. Ital. X, (V): 380, 1864. *Peziza vexata* (de Not.) P. Karst in Not. Sällsk Faun. Flor fenn., X: 139, 1869. *Helotium culmcolum* (Desm.) P. Karst in Not. Sällsk. Faun. Flor, fenn., XI: 237, 1870. *Phialea culmicola* (Desm.) Gill., Champ. Fr., Discom.: 103, 1870. *Calycella culmicola* (Desm.) Quél., *Enchirid fungorum*: 306, 1886. *Belonidium culmicolum* (Desm.) Phil., Brit. Discom.: 149, 1887. *Belonoiscypha vexata* (de Not.) Rehm in Rabenh. Krypt. Fl., 2, 1 (Pilze), III: 745, 1893. *Hymenoscypha culmicola* (Desm.) Schröt. in Cohn's Krypt. Flora Schlesien, III, 2: 75, 1893. *Belonioscypha culmicola* (Desm.) Dennis, Mycol. Papers. No. 62: 39, 1956.

Apothecia cuplike, on a long cylindrical pedicel, outwardly smooth, white or yellowish. Ectoexciple of *textura porrecta*, formed of paralel hyphae. Ascs cylindrical, with an amylous pore, 120–160 × 12–15 μm. Paraphyses filiform or cylindrical. Spores narrow ellipsoid, with three septae, 20–27 × 3–4 μm.

Locality: Losinoostrovskii forest park.

Substratum. on dead stems of *Calamagrostis* sp.

Crocicreas coronatum (Bull.: Fr.) S.E. Carp.

Syn.: *Pezixa coronata* Bull.: Fr., Syste. Mycol. 2: 120, 1822; *Helotium coronatum* (Bull.: Fr.) P. Karst., Not. Sällsk. Faun. Fl. Fenn., 21: 237, 1870. *Phialea coronata* (Bull.: Fr.) Gill., Champ. Fr., Discom., 110, 1879. *Calycella coronata* (Bull.: Fr.) Quél., Enchitrid. Fung.: 305, 1886. *Hymenoscypha coronata* (Bull.: Fr.) Phill., Brit. Discom.: 127, 1887.

Apothecia cuplike, with a long white pedicel, outwardly yellowish brownish or pinkish orange, smooth with a serrate edge. Serrations long 100–160 μm, elongated conical, pointed on top. Ascs eight-sporous,

cylindrical, nonamyloid. Length of ascs 85–108 μm. Spores fusiform, 14.7–24.1 × 2–3.6 μm. Paraphyses filiform, septate.

Locality: in all surveyed forest parks.

Substratum. on dead stems of *Anthriscus silvestris* Hoffm., *Artemisia vilgaris* L.

Hymenoscyphus caudatus (P. Karst.) Dennis, Persoonia, 3, 1 : 75, 1963.

Syn.: *Peziza caudate* P. Karst., Fungi Fenn, Exs.: 547, 1866. *Helotium scutula* (Pers.: Fr.) P. Karst. var. *caudatum* (P. Karst.) P. Karst., Not. Sällask. Faun. Fl. Fenn., 11: 234, 1870. *Helotium caudatum* (P. Karst.) Vel., Monogr. Discom. Bohem., 2 : 206, 1934.

Apothecia smooth, saucer-like, with a well expressed pedicel, pallid yellow to yellow brownish, of uniform color, with a pedicel. Diameter of apothecia 0.2– 1 mm. Ectal exciple of *textura porrecta,* formed of rectangular cells of hyphae arranged in parallel. Ascs eight-sporous, cylindrical clavate, with an amyloid pore, 105–120 × 7–8 μm. Spores clavate fusiform, straight or bent unicellularm hyaline, 17–21 × 2–3 μm. Paraphyses filiform, 2–3 μm thick, sometimes slightly swelled at the top to 2.9 μm.

Locality: in all surveyed forest parks.

Substratum: on dead leaved of *Betula* sp., *Acer platanoides* L.

Hymenoscyphum discretus (P. Karst.) Svrček, Česká Mycologia, 35, 2 : 54, 1981.

Syn.: *Peziza discreta* P. Karst., Fungi Fenn. Excic. 637, 18 et Not. Sällsk. Faun. Fl. Fenn., 11: 235, 1870. *Helotium discretum* (P. Karst.) P. Karst., Not. Sällsk. Faun. Fl. Fenn., 11: 235, 1870. *Phialea discreta* (P. Karst.) Rehm, Rabenh. Krypt. Fl., 2, 1, 3 : 729, 1893. *Calycina discreata* (P. Karst.) O. Kuntze, Rev. Gen. Plant., 3, 2: 448, 1898.

Apothecia smooth, cuplike, pallid yellow, 0.25–0.5 mm in diameter. Pedicle 0.4–0.6 mm long, lighter than the cup. Ectoexciple of *textura porrecta*, formed of rectangular cells of hyphae arranged in parallel. Ascs eight-sporous, cylindrical, with an amyloid pore, 44.5–48 × 4–5 μm. Spores ellipsoid or fusiform, sometimes slightly bent, 6.4–8.2 × 1–2 μm. Paraphyses filiform, septate.

Locality: in all surveyed forest parks.

Substratum: on dead stems of *Artemisia vulgaris* L., *Dactylis glomerata* L., *Aegopodium podagraria* L., *Anthriscus sylvestris* Hoffm., *Angelica sylvestris* L., *Trifolium pratense* L.

Hymenosciphus herbarum (Pers.: Fr) Dennis, Persoonia, 3, 1 : 75, 1963.

Syn.: *Peziza herbarum* Pers.: Fr., Syste, Mycol., 2, 1 : 136, 1822. *Helotium herbarum* (Pers.: Fr.) Fr., Summa Veg. Scand.: 356, 1849. *Peziza hymenula* Fuckel, Symb. Mycol. : 308, 1870. *Phialea hymenula* Sacc., Syll. Fung., 8: 262, 1889. *Malotium herbarum* (Pers.: Fr.) Vel. Mon. Discom. Bohmiae, 1: 240, 1934.

Apothecia almost sessile, with flat or convex hymenium, smooth or slightly farinose, white or yellowish. Diameter of apothecia 0.25–0.5 mm. Ectoexciple of *textura porrecta*, formed of rectangular cells of hyphae arranged in parallel. Ascs eight-sporous, slightly clavate, with an amyloid pore, 82–86 × 4–5 μm. Paraphyses filiform, 1.5–2 μm thick. Apex sometimes slightly swollen. Spores fusiform, 12–14 × 1.5–2.5 μm.

Locality: in all surveyed forest parks.

Substratum: on dead stems of *Urtica dioica* L.

Hymenoscyphus imberbis (Bull.: St. Amans) Dennis Persoonia, 3, 1 : 75, 1963.

Syn.: *Peziza imberbis* Bull.: St.-Amans, Fl. Agen. : 532, 1821. *Helotium imberbe* (Bull.: Fr.) Fr., Summa Veg. Scand.: 356, 1849. *Calycina imberbis* (Bull.: Fr.) O. Kuntze, Rev. Gen. Plant., 3, 2: 448, 1898. *Ombrophila imberbis* (Bull.: Fr.) Boud., Hist. Class. Discom. Eur.: 92, 1907.

Apothecia disklike or saucer-like, with flat to concave hymenium, on a short pedicel 0.2–1.2 mm, smooth, from pallid yellowish to orange. Diameter 0.4–0.75 mm. Ectoexciple of *textura porrecta*, formed of rectangular cells of hyphae arranged in parallel. Ascs cylindrical, eight-sporous, amyloid, with conical apices, 76–80 × 6–8 μm. Spores ellipsoid, clavate or inequilateral, unicellular, hyaline, 8–11 × 3–4 μm. Paraphyses cylindrical, sometimes septate, 2.5–2.7 μm in diameter.

Locality: in all surveyed forest parks.

Substratum: on rotting wood of *Salix caprea* L., *Sorbus aucuparia* L., *Corylus avellana* L.

Hymanoscyphus phyllogenon (Rehm) O. Kuntze., Rev. Gen. Plant., 3 : 485, 1898.

Syn.: *Helotium phyllogenon* Rehm, Hedwigia, 24: 14, 1885. *Phialea phillogenon* (Rehm) Sacc., Syll. Fung., 8: 274, 1889.

Apothecia sparse, about 0.1–0.5 mm in diameter, with flat hymenial disk, yellow, on a long pedicel, outwardly smooth. Ectoexciple of *textura porrecta*, formed of rectangular cells of hyphae arranged in parallel. Ascs eight-sporous, amyloid, cylindrical or clavate, 90–97 × 7–9 μm. Spores uniserial or irregularly biserial, short-ellipsoid, with blunt ends to almost cylindrical, unicellular, 12–14.5 × 4–5 μm. Paraphyses filiform, swelled at the top to 3 μm.

Locality: in all surveyed forest parks.

Substratum: on dead leaves of *Betula* sp., *Quercus robur* L.

Hymenoscyphus repandus (Phill.) Dennis, Persoonia, 3, 1: 75, 1963.

Syn.: *Helotium repandum* Phill., Brit. Discom.: 161, 1887. *Calycina repanda* (Phill.) O. Kuntze, Rev. Gen. Plant., 3, 2: 449, 1898.

Apothecia with pedicel, smooth, disklike or saucer-like, external surface slightly brownish, pedicel and hymenium yellowish. Diameter of apothecium 0.25–

0.7 mm. Ectoexciple of *textura porrecta*, formed of rectangular cells of hyphae arranged in parallel. Ascs eight-sporous, cylindrical or slightly clavate, with an amyloid pore, 82–97 × 4–5 μm. Spores unicellular or with one septum, short ellipsoid, sometimes bent, asymmetrical, 11.5–15 × 2–2.5 μm. Paraphyses hyaline, cylindrical, up to 2 μm in diameter, septate, slightly swelling at the top up to 1.5–2.5 μm.

*Locality: i*n all surveyed forest parks.

Substratum: on dead stems of *Arthemisia vulgaris* L., *Anthriscus sylvestris* Hoffm., *Angelica sylvestris* L., *Calamagrostis* sp.

Hymenoscyphus scutula (Pers.: Fr.) Dennis, Persoonoa, 3, 1: 75, 1963.

Syn.: *Peziza scutula* Pers.: Fr., Syst. Mycol., 2, 1: 123, 1822. *Helotium scutula* (Pers.: Fr.) Phill., Brit. Discom.: 137, 1887. *Helotium scutula* (Pers.: Fr.) P. Karst., Not. Sällsk. Faun. Fl. Fenn., 9: 233, 1870. *Ciboria ciliatospora* Fuckel, Symb. Mycol.: 311, 1870. *Phialea sutula* (Pers.: Fr.) Gill., Chaml. Fr., Discom.: 108, 1879. *Helotium virgultorum* var. *scutula scutula* (Pers.: Fr.) Rehm, Ascom. Lojk.: 7, 1882. *Calycella scutula* (Pers.: Fr.) Quél., Enchirid. Fung.: 305, 1885. *Belonioscypha ciliatospora* (Fuckel) Rehm, Rabenh. Krypt. Fl., 2, 1, 3: 744, 1893. *Helotium ciliatosporum* (Fuckel) Boud., Hist. Class. Discom. Eur.: 114, 1907. *Belospora ciliatospora* (Fuckel) Clements, Gen. Fung.: 175, 1909.

Apothecia solitary, saucer-like, with a well expressed edge, naked, situated on a pedicel, pallid yellow to yellow-brown, of the same color as pedicel; if white, then the pedicel darker. Diameter of apothecia from 0.15–0.45 to 1 mm. Pedicel well expressed, 0.5–1.5 mm in length and 0.2 mm in diameter. Ectoexciple of *textura porrecta*, formed of rectangular cells of hyphae arranged in parallel. Ascs cylindrical clavate, with an amyloid pore, eight-sporous, 128–193 × 9–14 μm. Spores unicellular, hyaline, clavate, inequilateral, with blunt apical end and pointed basal end, 20.5–25 × 3–6 μm. Paraphyses filiform, 2–3 μm thick, sometimes with a slightly swollen apex.

Locality: in all surveyed forest parks.

Subtratum: on dead stems of *Artemisia vulgaris* L., *Agropyrum repens* P.B., *Calamagrostis* sp., *Angelica sylvestris* L., *Trifolium pratense* L., *Centaurea jacea* L., *Anthriscus sylvestris* Hoffm., *Urtica dioica* L., *Dactylis glomerata* L., *Aegopodium podagraria* L., *Rubus caesius* L., *Cirsium arvense* Scop.

Hymenoscyphus serotinus (Pers.: Fr.) W. Phillips, Brit. Discom., p. 125, 1887.

Syn.: *Peziza serotina* Pers.: Fr., Syst. Mycol., II, 1: 119, 1822. *Helotium serotinum* (Pers.: Fr.) Fr., Summa beg. Scand.: 355, 1849. *Hymenoscypha serotina* (Pers.: Fr.) Phill., Brit. Discom.: 125, 1887. *Calicina aurea* O. Kuntze, Rev. Gen. Plant., III, 2: 448, 1898.

Apothecia solitary, saucer-like, naked, situated on a pedicle, pallid yellow to yellow brown, of the same color as the pedicle. Ectoexciple of *textura porrecta*, formed of rectangular cells of hyphae arranged in parallel. Ascs clavate, with conical apex and an amyloid pore, 90–105 × 10–11 μm. Pedicle weakly expressed. Paraphyses cylindrical. Ascospores clavate, 20–25 × 4–5 μm.

Locality: in all surveyed forest parks.

Substratum: on rotting wood of *Quercus robur* L., *Populus tremula* L.

Cudoniella clavus (Alb. Et Schw.: Fr.) Dennis, Persoonia, 3: 73, 1964.

Apothecia aggregate or solitary, disk about 3–10 m in circumference, at first slightly concave, convex when mature, white or greenish, with a slight purple shade. Flesh of thin-walled parallel hyphae about 4 μm thick, which become loosely intertwined, with numerous aerial cavities, in hypothecium. Ectoexciple about 100 μm thick, formed of similar hyphae but wider and with dense septae, parallel to the pedicel axis, slanting to apothecium surface. Ascs nonamyloid, cylindrical clavate, rounded at the top, eight-sporous, 70–115 × 8–10 μm. Ascospores uniserial or irregularly biserial, elongate fusiform, often slightly narrower at one end, nonseptate, 10–17 × 3–5 μm. Paraphyses narrow, cylindrical, colorless, about 2 μm thick.

Localities: Bitsevskii forest park, Filevskii forest park.

Substratum: on various plant remains.

Hymenoscyphus geogenum Cooke, Grevillea, 6: 75, 1877.

Apothecia solitary, purely white, obconical, semisessile or on a very short pedicle, smooth. Disk up to 5 mm in diameter, edge often slightly incised. Flesh of slightly intertwined, rather compact, thin-walled, hyaline hyphae, 4–5 μm thick. Excipular hyphae similar, but wider and consisting of short cells, 9–11 μm thick, situated in parallel or at a narrow angle to the surface. Ascs 160–175 × 10–11 μm, eight-sporous, the pore not staining by Mezer reagent. Ascospores narrow fusiform or slightly asymmetrical, 22–30 × 4–5 μm, nonseptate. Paraphyses thin, 2 μm wide, hardly swollen at the end, containing colorless oil drops.

Locality: Troparervskii forest park.

Substratum: on moist soil.

Hymenoscyphus calyculus (Sow.: Fr.) W. Phillips, Brit. Discom: 136, 1887.

Apothecia aggregated, cuplike, with a concave yellow disk, about 2 mm in diameter, yellow-brown, often hairy, especially on the pedicle. Ectal exciple of thin-walled, elongate cells about 30 × 5–10 μm, situated at a angle of about 30° to the surface. Ascs cylindrical clavate, with a weakly expressed pedicle and truncate conical apex, about 120–125 × 9–10 μm, eight-sporous, amyloid. Spores irregularly biserial, cylindrical, rounded at the top and frequently pointed below, or pointed at both ends, frequently with one septum, 15–

22 × 3–4.5 μm. Paraphyses cylindrical, slightly swollen at ends, up to 3 μm.

Locality: Izmailovskii forest park.

Substratum: on dead wood of *Quercus robur* L.

Hymenoscyphus immutabilis (Fuckel) Dennis, Persoonia, 3, 1: 76, 1963.

Apothecia aggregated, white; when fresh, yellowish brownish; when dry, smooth, with a short compact pedicle. Disk flat, about 1–1.5 mm in diameter. Ectal exciple about 25 μm thick. Cells of the outer layer isodiametric, thin-walled, 10–15 μm in the area of the pedicle, on the sides of apothecium replaced by rectangular cells about 15 × 5 μm, parallel to the surface. Ascs 80–100 × 8–9 μm, clavate, with a short pedicle and truncate conical apex, eight-sporous, amyloid. Spores biserial, unicellular, sometime clavate, narrower at the basal end, 10–13 × 4–4.5 μm. Paraphyses cylindrical, 3 μm in diameter.

*Locality: i*n all surveyed forest parks.

Substratum: on dead leaves of *Betula* sp., *Populus tremula* L.

All discovered species are typical representatives of the fungal biota of forest parks of Moscow. The species *Bisporella citrina, Chlorociboria aeriginascens, Hymenoscyphus scutula, H. repandus, H. herbarum. H. discretus*, and *Crocicreas cyathoideum* are widely distributed and occur everywhere on the territory of all surveyed forest parks. According to the available data, usually they represent the group of dominant species of the family Leotiaceae present in forests in the vicinities of Moscow and adjacent oblasts (Prokhorov, 2005). Such species as *Calycellina punctata, Bisporella subpallida*, and *Ascocoryne sarcoides* are usually present in territories exposed to anthropogenic impact. The results of the surveys indicate that their frequency of occurrence in city forest parks is considerably higher than what is expected. These species are most common in highly polluted and trampled areas with a high anthropogenic load. Some species, such as *Crocicreas culmicola, Cudoniella clavus, Hymenoscyphus geogenum*, and *H. calyculus,* are recorded only in some of the surveyed forest parks, while in some of neighboring forest parks they are dominant.

REFERENCES

Dennis, R.W.G., A Revision of the British Helotiaceae in the Herbarium of the Royal Botanical gardens, Kew, with Notes on Related European Species, *Mycol. Papers,* 1956, no. 62, pp. 1–216.

Dennis, R.W.G., Remarks on the Genus *Hymenoscyphus* S.F. Gray, with Observations on Sundry Species Referred by Saccardo and Others to the Genera *Helotium, Pezizella,* or *Phialea*, *Persoonia*, 1963, vol. 3, part 1, pp. 29–80.

Dennis, R.W.G., *British Ascomycetes*, Ed. J. Cramer, London, 1981.

Naumov, N.A., *Flora gribov Leningraskoi oblasti* (The Fungal Flora of Leningrad Oblast), vol. 2, Moscow, Leningrad, 1964 [in Russian].

Nordic Macromycetes, Hansen, L. and Knudsen, H., Eds., Ascomycetes, Nordsvamp, Copenhagen, 2000, vol. 1.

Prokhorov, V.P., Discomycetes of the Nature Reserve of the Zvenigorod Biological Station and Other Areas of Moscow Oblast, *Trudy Zvenigorodskoi biologicheskoi stantsii im. S.N. Skadovskogo,* 2005, vol. 4, pp. 67–79.