

New records of discomycetous fungi from Ukraine

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Abstract: Eight species of discomycetous fungi found in the forests of the Kharkiv region for the first time in Ukraine are described: *Dermea acerina* (Peck) Rehm, *Chlorenchocelia versiformis* (Pers.) J.R.Dixon, *Arachnopeziza aurata* Fuckel, *Arachnopeziza obtusipila* Grélet, *Hyaloscypha intacta* Svrček, *Lachnum brevopilosum* Baral, *Pezizella vulgaris* (Fr.) Sacc., and *Gyromitra fastigiata* (Krombh.) Rehm. Original illustrations, descriptions, and data on the distribution of these species in the world are given.

Key words: Biodiversity of fungi, Discomycetes, *Arachnopeziza*, forests, eastern Ukraine

1. Introduction

The Kharkiv region occupies a space of 31,400 km² and is situated in eastern Ukraine. About 11% of the region is covered by forests. As it is situated in the southern part of the forest-steppe zone, the forests of the Kharkiv region are located just on the border of the zonal forest vegetation. For that reason, the natural regeneration of dominant tree species is very difficult. The research of forest biodiversity in the Kharkiv region is of great importance in defining the most valuable, well-preserved areas and should serve as a basis for taking the appropriate protective measures.

The Kharkiv region is located on the East European Plain. The forest areas studied are situated in the northern and central parts of the region, on the foothills of the Central Russian Upland (Figure 1). The relief of the region presents an undulating or widely undulating plain, dissected by river valleys and ravines with their predominant inclination to the south. Absolute altitudes range from 60 to 258 m. River terraces make a significant contribution to the landscape. Such rivers as the Siversky Dinets and its tributaries, flowing here, form rather asymmetrical slopes. Western banks are steep and highly dissected, and eastern slopes are low and terraced (Vilenkin and Demchenko, 1971; Ordynets, 2012).

The climate of the Kharkiv region is moderately continental with quite cold winters and changeable, long-sustained, sometimes dry and hot summers. The average amount of precipitation in the area ranges from 460 to 570 mm; the evaporation rate slightly exceeds the rate of humidification (Dubinsky et al., 1971).

The investigated part of the Kharkiv region is characterized by forest-steppe podzolic gray soils and podzolic chernozems (Alexeenko, 1971).

The forests here are mainly represented by oak and pine plant formations. While the oak stands generally grow on the western river banks, the eastern banks are covered by the pine forests. Zonal forest vegetation types are deciduous mixed forests, which occupy the eroded watersheds along the west banks of rivers. The main plant associations are maple–lime oak forests and ash–lime oak forests where *Quercus robur* L. is mixed with *Tilia cordata* Mill. and *Fraxinus excelsior* L., and where *Acer platanoides* L. and *A. campestre* L. are the main constant species. *Ulmus* spp., *Malus domestica* Borkh., *Pyrus communis* L., *Rosa* sp., *Corylus avellana* (L.) H.Karst., *Acer tataricum* L., and *Euonymus* spp. occur in wild forms, as well (Alexeenko, 1971). According to the botanical-geographic (mycofloristic) zonation of Ukraine, the region belongs to the Kharkiv Forest-Steppe Zone (Helyuta, 1989).

Because of active forest management in this territory for over 300 years, oak forests of the Kharkiv region most often are from 60 to 120 years old. Nevertheless, there are several forest areas dated at 120–200 years. These areas are the most valuable from the biodiversity conservation standpoint.

A series of natural reserves have recently been created in the Kharkiv region, including 3 national parks, 2 of which were arranged only in 2012.

This study is focused on discomycetous fungi that belong to the phylum Ascomycota and fruit with an opened fruit

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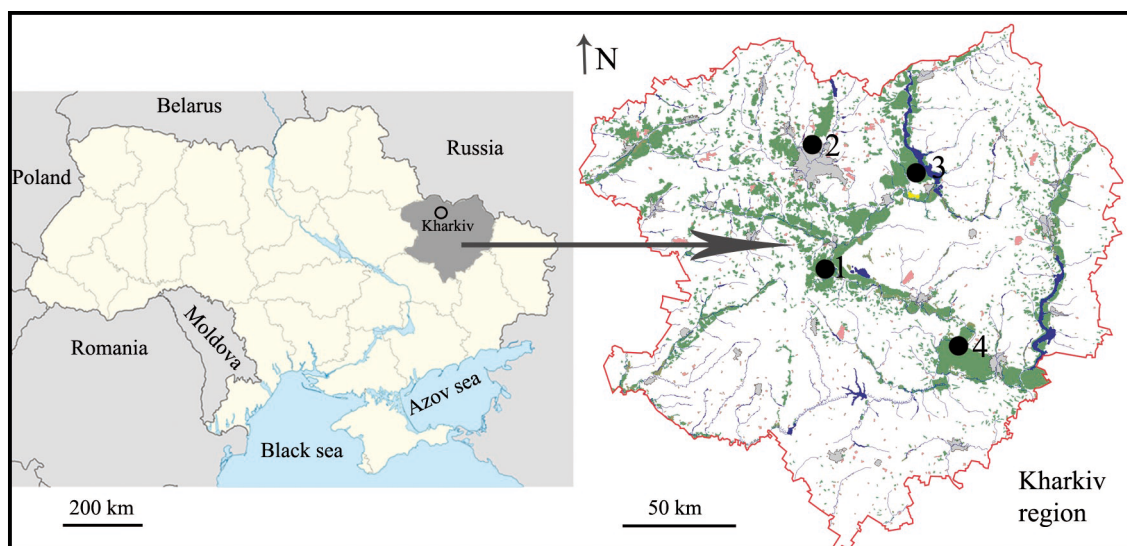


Figure 1. Map of forest massifs in the Kharkiv region (on the right) of Ukraine (on the left). Collection sites are marked with black circles: 1 – National Nature Park ‘Gomilshansky lessy’, 2 – ‘Kharkiv lisopark’, 3 – Hotomlyanske and Pechenizke parts of Guty forest (Krasnokutsky forest massif), 4 – RLP ‘Izyums’ka luka’.

body called an apothecium. Discomycetous fungi include various taxa from several evolutionary groups that possess different ecological strategies, parasites, saprotrophs, and mycorrhizal fungi among them (Lumbsch et al., 2002; Popov, 2005).

In Ukraine, discomycetous fungi have not been completely studied. Checklists of different sizes have been compiled, but only for certain regions (Smytska, 1975; Dudka et al., 2004a; 2004b, 2009; Golubtsova et al., 2009). Data on 90 species of discomycetous fungi of the Kharkiv region were obtained by Dr Akulov and students under his supervision in 2007–2012 (Akulov and Prilutsky, 2010).

The present study is concerned with the discomycetous species revealed for the first time in Ukraine as the result of our work in the forest ranges of the Kharkiv region.

2. Materials and methods

During different seasons of 2010 and 2011, we examined a series of localities within 4 forest areas: the National Nature Park ‘Gomilshansky lessy’ (NPPGL) situated in the Zmiiv district of the Kharkiv region; the ‘Kharkiv lisopark’ (KL), the forest range within the city of Kharkiv; and some quarters of the Hotomlyanske (HF) and Pechenizke (PF) parts of Guty forest (Krasnokutsk district of Kharkiv region), which do not belong to any nature reserve. In addition, we identified the samples collected by Dr Akulov in the Regional Landscape Park ‘Izyumska Luka’ (RLPIL, Izyum district of Kharkiv region) in 2010. Coordinates and locality characteristics are given together with the data on specimens examined.

Such substrates as wood, bark, and litter were examined with a hand lens. Microstructures were studied

using the light microscopy method (Mikromed-1, ver. 2-20 binocular microscope). To make the preparations, the following media were used: tap water, 5% KOH solution, Lugol’s solution, Melzer’s reagent, and Cotton Blue (in lactic acid).

The majority of samples were rehydrated after drying, but some of them were studied in the living state, *in statu vivo*, according to the vital taxonomy techniques (Baral, 1992).

The specimens were identified by means of the specialized identification keys and articles (Dennis, 1949; Breitenbach and Kränzlin, 1984; Hosoya, 1998; Hansen and Knudsen, 2000; Raitviir, 2004). Fungal tissue types (texturas) are named according to Korf’s classification (Korf, 1958).

The nomenclature is given according to the Index Fungorum database (Kirk, 2013). Data on species world distribution were taken from the literature as well as from the interactive database of the Global Biodiversity Information Facility (GBIF, 2001). All the specimens were deposited at the herbarium of the Department of Mycology and Plant Resistance at V.N. Karazin National University, Kharkiv, Ukraine (CWU Myc).

3. Results

Descriptions of discomycetous species revealed in Ukraine for the first time are presented below along with taxonomic notes (if needed), data on habitat, and illustrations of macro- and microstructures. Synonymy is given for *Pezizella vulgaris* (Fr.) Sacc. seeing that its synonym *Calycina vulgaris* (Fr.) Baral is currently used (Baral, 1989).

Leotiomyces O.E. Erikss. & Winka**Dermateaceae** Fr.

Dermea acerina (Peck) Rehm, *Berichte der Bayerischen Botanischen Gesellschaft*, 13: 197 (1912) (Figure 2).

Examined in statu mortuo.

Apothecia erumpent from under the bark, scattered or arranged in rows, single or in small circular or elongated clusters up to 3 mm, diameter of single apothecium 0.3–1.3 mm (Figure 2A). Apothecia sessile, narrowed below, solid, horny or leathery, blackish-brown, disc flattened or convex, margin thick, elevated, paler than the disc. Ectal excipulum composed of textura angularis with dark brown, thick-walled hyphae. Asci 8-spored, cylindrical-clavate, arising from croziers, $70\text{--}90 \times (7.5\text{--})10.5\text{--}16.5 \mu\text{m}$, short-stalked, apex with a flattened top, apical pore euamyloid (Figure 2B). Ascospores oblong-ellipsoid, straight or allantoid, 0-septate or 1–2-septate, hyaline, $(14.5\text{--})17\text{--}21 \times 5.6\text{--}6.7 \mu\text{m}$ in size (Figure 2C). Paraphyses filiform, septate, often branching, $1.5\text{--}1.8 \mu\text{m}$ in diameter, tips swollen forming the epithecium covering asci.

Sections observed in KOH showed strong purplish-red coloration due to releasing of pigments.

World distribution: Europe (Slovakia), North America (Canada, USA) (Groves, 1946).

Specimen examined: RLPIL, floodplain oak-dominated forest, *Quercus robur* L. – *Tilia cordata* Mill. – *Acer campestre* L. – *A. tataricum* L. – *Corylus avellana* (L.) H.Karst. association, on slightly decayed bark of *Acer tataricum* L., $49^{\circ}08'21.37''\text{N}$, $37^{\circ}10'47.88''\text{E}$, 133 m, 05.11.2012, CWU D44.

Notes: As spores were examined in statu mortuo, it is impossible to say exactly whether mature spores are septate or septa arises only in over-mature spores.

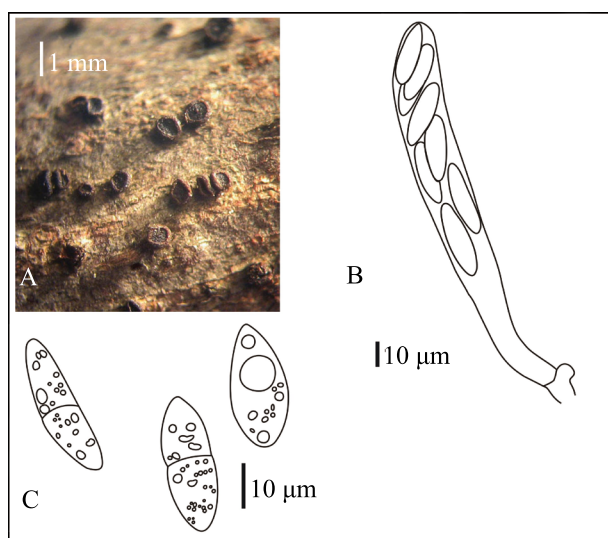


Figure 2. *Dermea acerina*: A- fruit bodies; B- ascus; C- spores, in statu mortuo, probably 2 septate spores are over-mature.

Nevertheless, according to Groves (1946), spores were also 0–1–2 septate, and in our specimen septate spores occur regularly.

Numerous microconidia and few macroconidia of its anamorph *Sphaeronema acerinum* Pk. are present.

Hemiphacidiaceae Korf

Chlorencoelia versiformis (Pers.) J.R.Dixon, *Mycotaxon*, 1(3): 224 (1975) (Figure 3).

Examined in statu mortuo.

Apothecia superficial, solitary, short-stalked, disc concave when dry, flattened or slightly convex rehydrated, 0.8–1.2 cm in diameter, brownish-olive to olive-green, stalk 0.2–0.3 cm, concolorous with a disc or darker, solid, rugose (Figure 3A).

Asci 8-spored, cylindrical, stipitate, $103\text{--}135 \times 4.7\text{--}8.3 \mu\text{m}$, apex rounded, euamyloid (bluing in IKI without KOH pretreatment), arising from croziers. Spores cylindrical-oblong to allantoid or S-shaped, smooth, nonseptate, containing 1–2 large and several smaller guttules, 1-septate when over-mature, $13.3 \times 16.6\text{--}2.5\text{--}3.5\text{--}5 \mu\text{m}$. Paraphyses filiform, simple, septate, filled with olive guttules, $1.5\text{--}2.7 \mu\text{m}$ in diameter (Figure 3B). Medullary excipulum forming textura intricata consisting of dark brown thick-walled hyphae. Ectal excipulum brownish thick-walled textura angularis, changing to septate, short, straight, cylindrical, or clavate tomentum hyphae. Tomentum hyphae at the base, $5.5\text{--}6.3 \mu\text{m}$ in diameter, near the apex extended up to $9 \mu\text{m}$, smooth or rugose, hyaline or sometimes containing olive pigment.

World distribution: Europe (Austria, Denmark, Estonia, Finland, France, Norway, Poland, Russia, Sweden, UK), Asia (Japan, Republic of Korea, Turkey), North and South America (Argentina, Canada, USA), New Zealand (Dixon, 1975; Gungör et al., 2013).

Specimens examined: RLPIL, *Alnus glutinosa* (L.) Gaertn. association, on the rotten wood of *Alnus glutinosa* (L.) Gaertn., $49^{\circ}09'20.39''\text{N}$, $37^{\circ}07'36.92''\text{E}$, 76 m, 06.11.2010, CWU D 45.

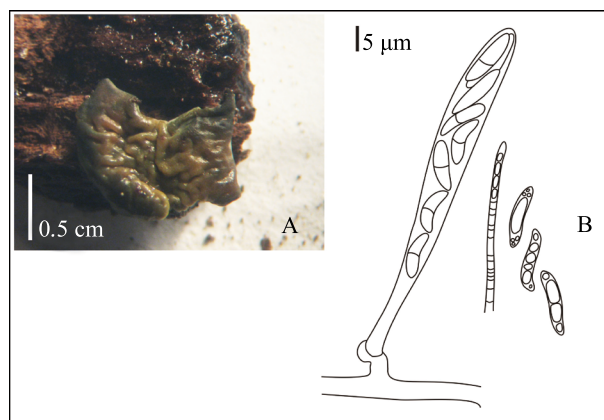


Figure 3. *Chlorencoelia versiformis*: A- fruit body; B- spores and a paraphysis.

Notes: Considering that this species is widely distributed, it seems to be not rare. It was probably not discovered in Ukraine until the present time due to a knowledge gap only.

Hyaloscyphaceae Nannf.

Arachnopeziza aurata Fuckel, Jahrbücher des Nassauischen Vereins für Naturkunde, 23–24: 304 (1870) (Figure 4).

Examined in statu mortuo.

Its well-developed arachnoid yellow-orange subiculum is made of rough and septate anastomosing hyphae 2.2–4 µm wide, hyphal walls are 0.2–0.75 µm thick. Subiculum arachneous, well developed, yellow-orange, rough, septate, anastomosing, hyphae 2.2–4.0 µm wide, hyphae walls 0.2–0.75 µm thick. Apothecia superficial, sessile, gregarious, abundant, arising from subiculum, cupulate with elevated margin when dry, flat or slightly convex when rehydrated, pale orange, apothecia 0.2–0.6 mm in diameter (Figure 4A). Ectal excipulum textura angularis, hyphae 4–13 µm in diameter. Hairs attached to the margin, straight or slightly curved, cylindric, septate, filled with yellow-orange content, 55–120 µm long, 2.7–4.2 µm wide, thin- or thick-walled, rough or smooth from the outside, apex rounded (Figure 4B). Asci 8-spored, 91–105 × 8.5–10 µm, elongated-clavate, arising from croziers, tapering downward, and abruptly narrowing near the apex. Apex conical with a flattened top, euamyloid (bluing in IKI without KOH pretreatment). Ascospores filiform, colorless, attenuated, bearing 5–9 septae, vertically arranged, parallel to each other in the ascus, 60–70 µm long, 2.5–3 µm wide in the upper part and 1.3–1.7 µm below. Paraphyses filiform, colorless, septate, sometimes branched, 0.9–1.2 µm thick (Figure 4C).

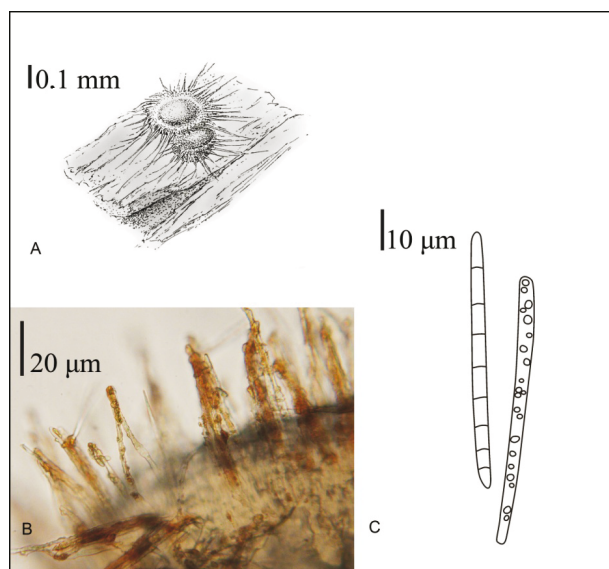


Figure 4. *Arachnopeziza aurata*: A- fruit bodies; B- marginal hairs; C- spores.

World distribution: Europe (Austria, Denmark, France, Germany, Luxembourg, Norway, Poland, Slovenia, Spain, Sweden, UK), Asia (Japan, Republic of Korea), Australia, Africa (Morocco) (Dennis, 1949; Korf, 1951b; Hosoya, 1998).

Specimen examined: KL, oak-dominated forest in the ravine, *Quercus robur* L. – *Fraxinus excelsior* L. – *Tilia cordata* Mill. – *Acer campestre* L. – *Ulmus* spp. – *Corylus avellana* (L.) H.Karst. association, on the rotten branch of *Acer platanoides* L., 50°02'40.26"N, 36°14'59.35"E, 190 m, 13.11.2010, CWU D 46.

Notes: Ascus size agrees well with original description of Fuckel and descriptions of Korf and Dennis (Fuckel, 1870; Dennis, 1949; Korf, 1951b), but is significantly smaller than those stated by Hosoya (1998) and Ripoll as 130–140 µm and ca. 115–160 µm, respectively. As Ripoll and presumably Hosoya measured microstructures using live material, and the other authors worked with dry specimens, this difference is probably the result of ascus shrinkage effect (Baral, 1992).

Arachnopeziza obtusipila Grélet, Lloydia, 14: 157 (1951) (Figure 5).

Examined in statu vivo.

Subiculum white, scarce, hyphae smooth or rough, septate, anastomosing, 2.4–3.8 µm wide, wall 0.55–0.9 µm thick. Apothecia superficial, gregarious, sessile,

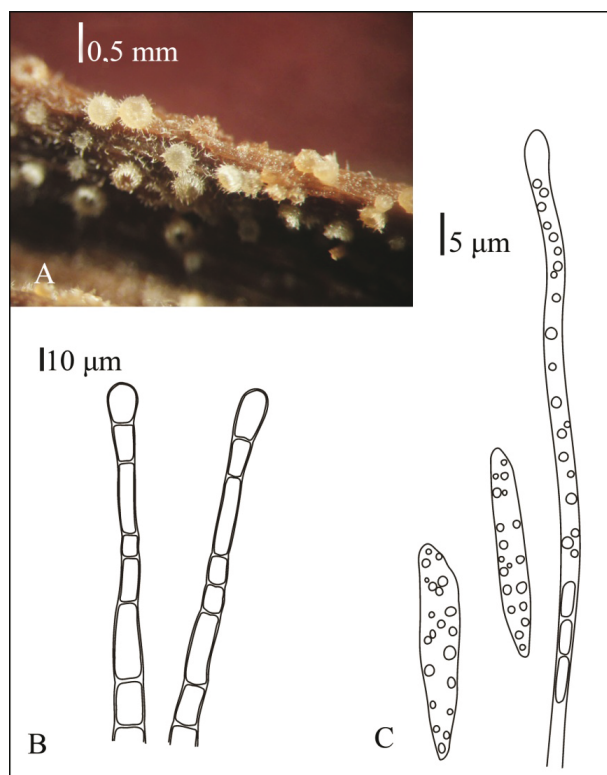


Figure 5. *Arachnopeziza obtusipila*: A- fruit bodies; B- hairs; C- spores and a paraphysis.

0.25–0.5 mm in diameter, dirty-white, cupulate, covered with whitish hairs, margin elevated (Figure 5A). Ectal excipulum textura prismatica, hyphae 5.5–12.7 μm in diameter. Hairs hyaline, smooth, straight, cylindric, 60–115 μm long, septate, slightly constricting towards septae, expanded towards the apex, 2.9–4.7 μm at the base, 4.5–6 μm wide near the apex, apex rounded (Figure 5B).

Asci 8-spored, 60–90 μm long, elongated-clavate, arising from croziers, tapering downward, narrowed near the apex. Apex conical with a flattened top, euamyloid (bluing in IKI without KOH pretreatment). Ascospores from fusiform to elongated-ellipsoid, colorless, filled with numerous guttules, 0–3–5-septate, tapering towards the ends, 22–36.5 μm long and 2.5–3.6 μm wide. Paraphyses filiform, hyaline, 0.7–0.9 μm wide, sometimes containing guttules, occasionally septate, simple or branched (Figure 5C).

World distribution: Europe (Denmark, France, Spain, UK), Asia (Japan) (Korf, 1951a, 1951b; Hosoya, 1998).

Specimen examined: PF, 120-year-old oak-dominated upland forest, *Quercus robur* L. – *Fraxinus excelsior* L. – *Tilia cordata* Mill. – *Acer platanoides* L. – *A. campestre* L. – *Corylus avellana* (L.) H.Karst. association, on the decaying wood of *Tilia cordata* Mill., 49°57'33.91"N, 36°50'30.30"E, 179 m, 05.11.2011, CWU D32.

Notes: Ascus and spore size of specimen studied agree well with Grélet's measurements and do not agree with Korf's emended description (1951a). As was already stated by Baral (1992), the reason for this is that Grélet described living specimens and Korf measured structures of the dead specimen. Consequently, Korf's measurements are ca. 25% lower than Grélet's.

In the world this species is mostly recorded from coniferous wood. Nevertheless, one type specimen, Grélet's *A. obtusipila* var. *minor*, which was put in synonymy with *A. obtusipila* by Korf, from the Grélet herbarium was found on deciduous substrate of *Quercus* sp. (Korf 1951a, 1951b). Therefore, in the author's opinion, such deciduous substrate as *Tilia cordata* Mill. is also possible for *A. obtusipila*.

Hyaloscypha intacta Svrček, Česká Mykologie, 40(4): 209 (1986) (Figure 6).

Examined in statu vivo (spores) and in statu mortuo (asci).

Apothecia 0.05–0.1 mm in diameter, cupulate when fresh, urceolate when dry, sessile, narrowed towards the base, dirty-white, margin covered with short hairs. Excipulum textura prismatica consisting of colorless elements 5.5–9 \times 3.6–5.5 μm in size, wall 0.9–1.3 μm thick. Hairs conical, extended at the base, tapering upward, straight or slightly curved, hyaline, nonseptate, smooth, thin-walled, 15–20 μm long, up to 3.7 μm at the base, 1–1.5 μm near the apex (Figure 6A). Asci 8-spored, cylindric

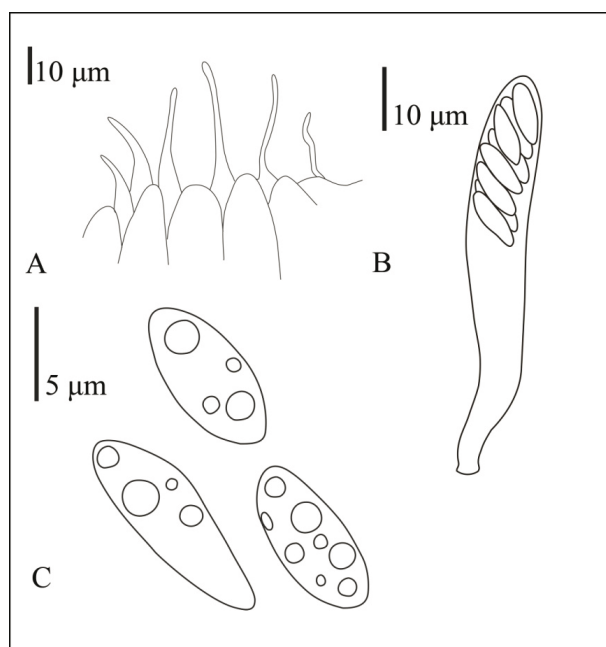


Figure 6. *Hyaloscypha intacta*: A- marginal hairs; B- ascus; C- spores.

to cylindric-clavate, short-stalked, stalk often curved, without croziers, inamyloid (apical pore not bluing in MLZ or Lugol even after 5% KOH pretreatment), 60–70 \times 8–9 μm (Figure 6B). Ascospores hyaline, ellipsoid, 9–12 \times 4.2–5.5 μm , containing 2–3 large and several smaller guttules, nonseptate (Figure 6C). Paraphyses filiform, simple, septate, 0.9–1.5 μm in diameter.

World distribution: Europe (Czech Republic, Denmark, Germany, France, Luxembourg), North America (Svrček, 1972; Raitviir, 2004).

Specimens examined: PF, aspen grove in the ravine, *Populus tremula* L. association, on decaying wood of *Populus tremula* L., 49°56'41.33"N, 36°51'22.67"E, 170 m, 12.11.2011, CWU D76.

Lachnum brevopilosum Baral, Beihefte zur Zeitschrift für Mykologie, 6: 74 (1985) (Figure 7).

Examined in statu mortuo.

Apothecia gregarious, superficial, stalked, stalk central, slightly tapered towards the base, 0.6–0.8 μm high, disc 1–1.5 mm in diameter, concave to flattened, dirty-white to pinkish-red (when drying), apothecium covered with abundant hairs (Figure 7A). Ectal excipulum textura prismatica, composed of hyaline, thin-walled prismatic cells 15–20(–25) \times 4.0–6.5 μm . Medullary excipulum textura porrecta to textura intricata composed of hyaline, septate hyphae 2.5–3.0 μm in diameter. Subhymenium composed of hyaline hyphae 1.5–2 μm in diameter, interwoven with narrower hyphae, near 1 μm in diameter.

Hairs from almost cylindric to clavate, encrusted with granules, 45–65 μm long and 5–6 μm wide near the widest

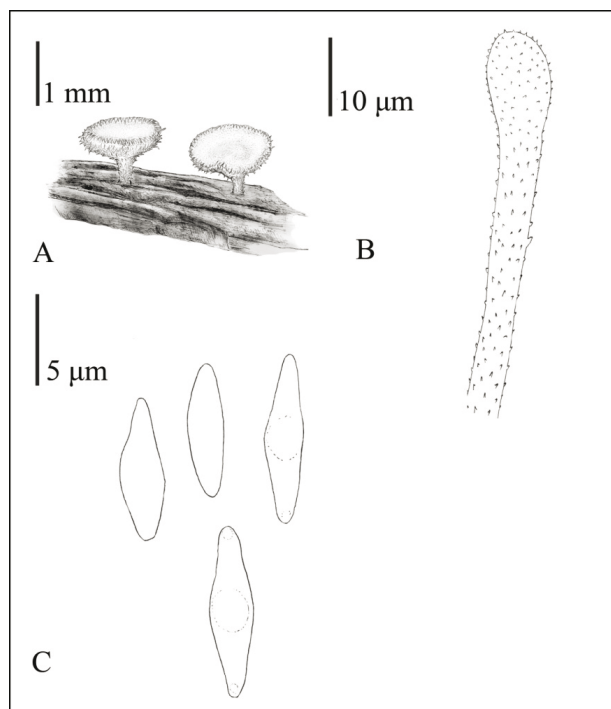


Figure 7. *Lachnum brevipilosum*: A- fruit bodies; B- marginal hair; C- spores.

part (Figure 7B). Asci cylindrical-clavate, tapering towards the base, without croziers, apical pore blued in Lugol, $45\text{--}50 \times 4\text{--}5\ \mu\text{m}$. Ascospores fusiform, inequilateral, fusiform, $7\text{--}9 \times 2\text{--}2.5\ \mu\text{m}$, often biseriata (Figure 7C). Paraphyses lanceolate, $2.5\text{--}3.0\ \mu\text{m}$ wide, not protruding over the asci or protruding up to $5\ \mu\text{m}$.

World distribution: Europe (Denmark, France, Germany, Sweden, UK), North Africa (Canary Islands), New Zealand (Spooner, 1987).

Specimens examined: RLPIL, floodplain *Populus alba* L. association, on decaying wood of *Populus alba* L., $49^{\circ}10'41.41''\text{N}$, $36^{\circ}56'19.15''\text{E}$, 76 m, 06.11.2010, CWU 39.

Notes: As the specimen was studied in statu mortuo, such a diagnostic feature as vacuolar bodies in paraphyses is not visible, but *L. brevipilosum* can be distinguished from very similar species *L. pudibundum* by wider hairs ($2.5\text{--}3.5\ \mu\text{m}$ in *L. pudibundum*), less protruding paraphyses (up to $20\ \mu\text{m}$ in *L. pudibundum*), and habitat. *L. pudibundum* is known to fruit often on small twigs, especially of *Salix* sp., while *L. brevipilosum* grows on larger rotten wood of different plant species (Baral and Krieglsteiner, 1985; Dimitrova, 2010; Dudka and Zykova, 2010).

Pezizella vulgaris (Fr.) Sacc., Syll. fung. (Abellini) 8: 278 (1889). (Figure 8).

= *Calycina vulgaris* (Fr.) Baral, Beiträge zur Kenntnis der Pilze Mitteleuropas, 5: 227 (1989).

Examined in statu mortuo.

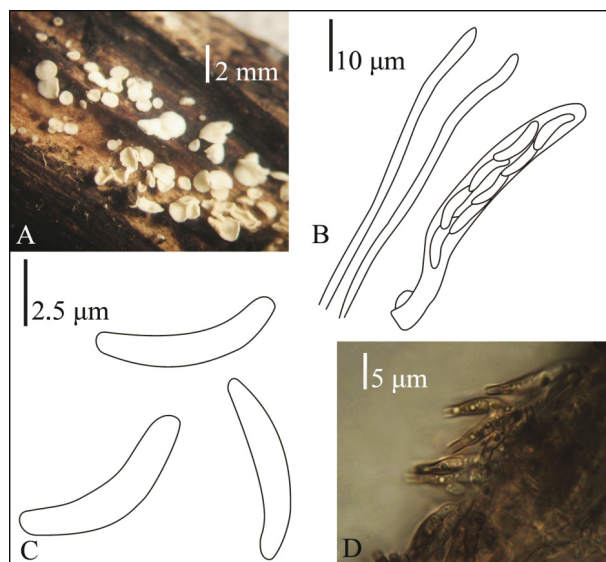


Figure 8. *Pezizella vulgaris*: A- fruit bodies; B- ascus and paraphyses; C- spores; D- phialides of presumed anamorphic stage *Chalara* sp.

Apothecia gregarious, superficial, stalked. Disc white when fresh, dry yellowish-white or grayish-white, flattened to shallow cupulate, undulating, $0.3\text{--}1.75\ \text{mm}$ in diameter, convoluted when dry. Stalk concolorous, short, $0.2\text{--}0.3\ \text{mm}$ high, smooth (Figure 8A).

Ectal excipulum textura prismatica, composed of cells $8.8\text{--}16 \times 3.6\text{--}8\ \mu\text{m}$ in size, medium to thick-walled, wall $0.5\text{--}1.2\ \mu\text{m}$ thick. Medullary excipulum textura porrecta of compactly arranged hyphae $1.8\text{--}3\ \mu\text{m}$ in diameter, gradually turning to textura intricata of loose hyphae in the central part of stalk and disc. Hairs brownish, lageniform, contain several large guttules, septate, $19\text{--}27 \times 2.7\text{--}5.3$ in the widest part.

Asci $38\text{--}47 \times 4.1\text{--}5.4\ \mu\text{m}$, cylindrical or cylindrical-clavate, apex rounded, inamyloid (test with Lugol's solution negative), asci with croziers (Figure 8B). Spores often biseriata in the ascus, hyaline, curved, inequilateral, with $1\text{--}2$ small apical guttules, $5.5\text{--}9.0 \times 0.9\text{--}14\ \mu\text{m}$. Paraphyses simple, filiform, $2\text{--}3\ \mu\text{m}$ wide (Figure 8C).

World distribution: Europe (Denmark, Finland, Germany, Norway, Spain, Portugal), North America (USA), according to the GBIF database.

Specimens examined: RLPIL, floodplain *Salix* association, on the fallen branch of *Salix* cf. *acutifolia* Willd., $49^{\circ}10'59.38''\text{N}$, $36^{\circ}57'41.19''\text{E}$, 77 m, 07.11.10, CWU D38.

Notes: The specimen was studied in statu mortuo and refractive vacuolar bodies in paraphyses were not visible, but it can be clearly distinguished by inamyloid asci and narrow, curved spores.

Brownish phialides of *P. vulgaris* anamorph, which belongs to the genus *Chalara* (Corda) Rabenh., are present (Figure 8D).

Pezizomycetes O.E. Erikss. & Winka

Discinaceae Benedix

Gyromitra fastigiata (Krombh.) Rehm, Rabenhorst's Kryptogamen-Flora, Pilze-Ascomyceten, 1(3): 1194 (1895) (Figure 9).

Examined in statu vivo.

Fruit bodies 6–17 cm high, up to 13 cm broad, saddle-shaped, irregularly lobed with 2–3 lobes, stipitate, rusty-brown, stalked, stalk massive, white, 4–10 cm long, up to 5 cm wide, costate, expanding towards the base (Figure 9A). Asci 8-spored, cylindric, 220–260 μm long, 15–18 μm wide, apex flattened. Paraphyses simple, filiform, 4–5 μm wide, swollen at the upper part up to 7 μm , in the upper part containing brown pigment.

Ascospores ellipsoid, hyaline, 28–33.5 \times 13–15.5 μm , contain 1 central large oil drop and often 1–2 smaller apical guttules, covered with wide-meshed rough reticulum. On the apical zones spores bear several blunt spines (apiculi), 0.7–2.7 \times 1–2.5 μm size, which are connected with reticulum. Spores with less marked reticulum may occur, looking finely warted or almost smooth (Figure 9B).

World distribution: Europe (Austria, Denmark, France, Germany, Slovakia, Sweden), North America (USA), as stated by Svrček and Moravec (1972), Abbott and Currah (1997), and Van Vooren and Moreau (2009).

Specimens examined: NPPGL, the upland *Quercus robur* L. – *Fraxinus excelsior* L. – *Tilia cordata* Mill. – *Acer platanoides* L. – *A. campestre* L. – *Corylus avellana* (L.)

H.Karst. association, on soil, 49°34'36.58"N, 36°16'47.49"E, 142 m, 25.04.2011, CWU D15; NPPGL, *Picea abies* (L.) H. Karst. plantation, on soil, 49°35'45.89"N, 36°16'25.25"E, 207 m, 25.04.2010, CWU D19; NPPGL, *Populus tremula* L. association, on soil, 49°33'54.30"N, 36°17'59.49"E, 152 m, 02.05.2011, CWU D27.

Notes: In 2010–2011 in April and May, fruit bodies of this species were regularly noticed and were collected a few times in NPPGL. The author found it mainly in deciduous plant formations, but 1 specimen was collected in a small plantation of *Picea abies* (L.) H.Karst., dated at about 60 years, planted after the clear cut in the upland oak forest.

4. Discussion

About 340 species of discomycetes are known from the territory of Ukraine at the present time (Smytska, 1975; Kuzub and Haiova, 2001; Dudka et al., 2004a, 2004b, 2009; Golubtsova et al., 2009; Akulov and Prilutsky, 2010; Dudka and Zykova, 2010). Nevertheless, a unified checklist of this group does not exist. This study contributes 8 new species to the list of the discomycetous fungi of Ukraine: *Dermea acerina*, *Chlorenchocelia versiformis*, *Arachnopeziza aurata*, *Arachnopeziza obtusipila*, *Hyaloscypha intacta*, *Lachnum brevipilosum*, *Pezizella vulgaris*, and *Gyromitra fastigiata*. It could be helpful in compiling the general checklist of discomycetes of Ukraine. If these species are further evaluated from the ecological standpoint, these records could be helpful for defining the most valuable forest territories in the studied region.

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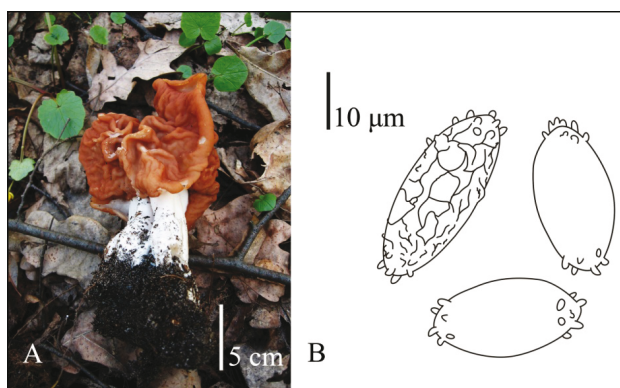


Figure 9. *Gyromitra fastigiata*: A- fruit body; B- spores.

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