GENUS SKELETOCUTIS (POLYPORACEAE)

IN THE UKRAINIAN LEFT BANK FOREST STEPPE

Upon review of the reference data and the author's herbarium specimens were recorded five species of the Skeletocutis genus in the Ukrainian Left Bank Forest Steppe. One species, S. brevispora, is a new record for Ukraine, another one, S. carneogrisea, was found for the first time in the Ukrainian Left Bank Forest Steppe. For other two species, S. nivea, S. subincarnata, new localities were found within the studied region.

Key words: genus, Skeletocutis brevispora, distribution, Ichnia National Natural Park, Ukraine.

Introduction. Skeletocutis Kotl. et Pouzar is a genus of aphylophoroid fungi with poroid hymenophore belonging to Polyporaceae Fr. ex Corda family. The genus was described in 1958 by Czech mycologists using the type species Skeletocutis amorphana (Fr.) Kotl. & Pouzar [15]. In 1982 A. David referred several species to this genus (S. azorica (D.A. Reid) Jülich, S. jelicii Tortić & A. David, S. portrosensis A. David and S. subsphaeroaspera A. David) with incrusted generative hyphae and monomitic hyphal system [12]. However, reference of such species to Skeletocutis genus has been deemed arguable. Thus, L. Rvarden, R. Gilbertson [20] and A. Bernicchia [7] treated the species with monomitic hyphal systems as a part of Ceriporiopsis Domaniński genus and delimited Skeletocutis based on its dimitic system and encrustation of the hyphae at dissepiment edges.

The molecular and phylogenetic studies completed in the early XXI century demonstrated that the hyphal system's type is not a diagnostic feature for Skeletocutis genus [18, 23]. Relying on the foregoing data it was found out that the genus also comprises the species with monomitic hyphal system [18, 23]. Among materials applied for this article there were treatments the species with monomitic hyphal systems as a part of Ceriporiopsis Domaniński genus and delimited Skeletocutis based on its dimitic system and encrustation of the hyphae at dissepiment edges.

Two species, Skeletocutis lenis (P. Karst.) Niemelä and S. vulgaris (Fr.) Niemelä & Y.C. D., were transferred to a new genus Sidera Miettinen & K.H. Larss. (Hymenochaetales Oberw.) based on ITS (internal transcribed spacer) and LSU (large subunit) nuclear ribosomal DNA (nrDNA) sequence analyses [18]. The main morphological difference between the two genera is that Skeletocutis usually has hyphae encrusted by fine crystals on the tube mouths, whereas in Sidera the dissepiment edge hyphae are smooth or covered with a few faceted crystal clusters [18, 19].

Genus Skeletocutis comprises the species with annual and perennial basidiocarps. Basidiocarps resupinate or pileate; normally white or occasionally grey, pink or purple colored [21]. The most of this species has a dense cartilaginous zone above the tube layer [21]. According to the contemporary concept, the genus comprises the species with monomitic, dimitic and trimitic hyphal system [18, 23]. This genus's inherent feature is generative hyphae encrustation at dissepiment edges by crystals resembling rose thorns. The generative hyphae with clamps, the skeletal hyphae hyaline, thin to slightly thick-walled, occasionally branched. Cystidia absent, however, conical or fusoid cystidioles are observed in most of the species. Basidia four-spored, short clavate or barrel-shaped. Spores hyaline, cylindrical or ellipsoid, in most species they are somewhat curved [20, 22, 25].

Both in Ukraine and globally, most of Skeletocutis species are saprotrophes on the dead wood of various conifers and broadleaved trees. Such species cause white rot. Some of them are able to develop on basidiocarps of the other poly pores [21, 22].

According to the data base Index Fungorum (request, dated April 24, 2017), Skeletocutis genus comprises 43 species. Fungi of this genus are widely distributed in the Northern Hemisphere. Twenty of them are known in Europe [7, 21] and only six species have been recorded in Ukraine [2-6]. According to the reference data, prior to our research there had been three species known for the Left Bank Forest Steppe: Skeletocutis nivea (Jungh.) Jean Keller, S. odora (Peck ex Saccardo) Ginn, S. subincarnata (Peck) Jean Keller. All of them were found in Kharkiv Oblast [4-6].

Materials and Methods

Among materials applied for this article there were species of aphylophoroid fungi collected in June-October, 2016 at the forestlands of Ichnia National Natural Park (Ichnia Rayon, Chernihiv Oblast). The Natural Park's area in terms of mycofloristic zoning of Ukraine belongs to the Left Bank Forest Steppe [1].

The micromorphological structures of the specimens were examined in a 5% aqueous potassium hydroxide solution and Melzer's reagent. The nomenclature of the species follows the “MycoBank” database [http://www.mycobank.org/quicksearch.aspx].

Results and Discussion

Upon review of the herbarium specimens collected over the specified area, we have reported 4 species belonging to Skeletocutis genus. Among them, one species (Skeletocutis brevispora Niemelä) is new for Ukraine, another one (Skeletocutis carneogrisea A. David) was found rare for our country and the new one for the Forest Steppe, for two species (Skeletocutis nivea (Jungh.) Jean Keller, Skeletocutis subincarnata (Peck) Jean Keller) the new locations were found in the Left Bank Forest Steppe. Generally, according to the reference data and the author's own gatherings, as of the date, five species of fungi belonging to this genus have been known for the Left Bank Forest Steppe. The comparative features of these species are shown in table 1.

Table 1. Comparative Features of Skeletocutis known for Ukrainian Left Bank Forest Steppe

<table>
<thead>
<tr>
<th>Species</th>
<th>Spores dimensions, µm</th>
<th>Number of pores per 1 mm</th>
<th>Substrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skeletocutis brevispora Niemelä</td>
<td>3.1(3.4)–4.1(4.6) × 1.1(1.2)–1.6</td>
<td>6–8(9)</td>
<td>On basidiocarps only Phellinidium ferrugineofuscum (P. Karst.), Fissano &amp; Niemelä.</td>
</tr>
<tr>
<td>Skeletocutis carneogrisea A. David</td>
<td>(2.7)–3.6(4.2) × 1.1(1.2)</td>
<td>4–6</td>
<td>On basidiocarps and wood of conifer species affected by Trichaptum sp.</td>
</tr>
<tr>
<td>Skeletocutis nivea (Jungh.) Jean Keller</td>
<td>2.8–3.3(3.7) × 0.6–0.8</td>
<td>8–10</td>
<td>On dead wood of broadleaved trees.</td>
</tr>
<tr>
<td>Skeletocutis odora (Peck ex Saccardo) Ginn</td>
<td>(3.4)–9.5(5.7) × (0.8)–1.4(1.6)</td>
<td>4–6</td>
<td>Most often on Picea abies (L.) H. Karst. and Populus tremula L.</td>
</tr>
<tr>
<td>Skeletocutis subincarnata (Peck) Jean Keller</td>
<td>(3.2)–5.5(1.1) × 1.3–1.8</td>
<td>5–7</td>
<td>On dead wood of conifers (more rarely on broadleaved trees).</td>
</tr>
</tbody>
</table>
Find below the generalizing list of *Skeletocutis* species for the Left Bank Forest Steppe. For *S. brevispora*, listed for Ukraine's territory for the first time, we have submitted description of the macro- and micromorphological structures of the examined sample and the general global distribution. For the rest of the species collected by the author, we have provided details of the collecting date and localities, substrate specialization and distribution in Ukraine.

**Basidiomycota** Bold ex R.T. Moore

**Agaricomycotina** R. Bauer, Begerow, J.P. Samp., M. Weiss et Oberw.

**Agaricomycetes** Matheny, Hibbett et Binder

**Polyporales** Gàum.

**Polyporaceae** Fr. ex Corda


Basidiocarps annual, resupinate, 1–2 mm thick, waxy when fresh and firm-ceraceous after drying. Pore surface at first 6–9 per mm. Margin initially pruinose-byssoid, white, when fresh and firm-ceraceous after drying. Pore surface substrates specialization and distribution in Ukraine. Ecological peculiarities: It develops on the dead wood of broadleaved trees.

**Distribution in Ukraine**: The Left Bank Polissia, Transcarpathia, Carpathian Mountains, the Right Bank and the Left Bank Forest Steppe, the Left Bank Grameinous and Meadow Steppe, Crimea [6].


We failed to support this finding with own gatherings. We explain it by the fact that this species is rare both in Ukraine and in the world. It is confirmed by the fact that it is Red Listed in many European Countries (Estonia [13], Poland [9], Slovakia and Czech Republic [8]) and is a candidate to the list of species protected by Bern Convention [10].

**Ecological peculiarities**: It develops on dead hardwoods and conifers (most often on *Picea abies* (L.) H. Karst. and *Populus tremula* L.)

**Distribution in Ukraine**: Transcarpathia, Carpathian Mountains, the Left Bank Forest Steppe [5].


**Specimens examined**: Ichnia National Natural Park, Ichnia, Ichnia Rayon, Chernihiv Oblast, Ukraine, southwestern outskirts of Ichnia, pine forest, over the dead last year basidiocarp of *Phellinum ferrugineofuscum* (P. Karst.) Fiasson & Niemelä on the wood of the fallen trunk *Pinus sylvestris* L., 16 July, 2016, KW-M 70851.

**Ecological peculiarities**: It develops over basidiocarps of *Phellinum ferrugineofuscum* [21].

*S. brevispora* is deemed a rare species, however, locally it may be found rather often [19, 22]. Globally, it is known in certain countries of Europe (Norway, Sweden, Final [21], Poland [14], in the European part of Russia [16, 22] and in China [11].

It is new for Ukraine.


**Specimens examined**: Ichnia National Natural Park, Ichnia, Ichnia Rayon, Chernihiv Oblast, Ukraine, Budy village, standing pine forest, over basidiocarps of *Trichaptum fuscoviolaceum* (Ehrenb.) Ryvarden on the wood of the fallen trunk *Pinus sylvestris* L., 17 July, 2016, August 06, 2016, September 15, 2016.

**Ecological peculiarities**: Inherent to the wood of conifer species affected by *Trichaptum* Murrill genus's fungi. According to the reference data and the author's observations it is able to develop both on the wood affected by *Trichaptum* and the basidiocarps of these polypores.

**Distribution in Ukraine**: The Left Bank Grameinous-Meadow Steppe [2, 3]. It was found for the first time in Ukrainian Left Bank Forest Steppe and the Forest-Steppe Zone in general.


**Ecological peculiarities**: It develops on the dead wood of broadleaved trees.

**Distribution in Ukraine**: The Left Bank Polissia, Transcarpathia, Carpathian Mountains, the Right Bank and the Left Bank Forest Steppe, the Left Bank Grameinous and Meadow Steppe, Crimea [6].

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На основе анализа литературных данных и собственных грибоводческих наблюдений в Левобережной Лесостепи Украины были обнаружены новые виды грибов рода **Skeletocutis**. Два из них — **Skeletocutis brevispora** и **Skeletocutis carneogrisea** — являются новыми для Украины. Кроме того, обнаружены новые варианты распространения **Skeletocutis subincarnata**. Значительное внимание уделялось изучению роли грибов рода **Skeletocutis** в природных сообществах Левобережной Лесостепи Украины.