Czech Mycology 76(2): 139–155, December 6, 2024 (online version, ISSN 1805-1421)

Interesting collections of *Chrysonectria* and *Sphaerostilbella* from the Czech Republic and Poland and notes on their taxonomy

Markéta Šandová

Mycological Department, National Museum, Cirkusová 1740, CZ-193 00 Praha 9, Czech Republic; marketa.sandova@nm.cz

Šandová M. (2024): Interesting collections of *Chrysonectria* and *Sphaerostilbella* from the Czech Republic and Poland and notes on their taxonomy. – Czech Mycol. 76(2): 139–155.

Four species belonging to the genera *Chrysonectria* and *Sphaerostilbella* are reported from the Czech Republic and Poland. A key to distinguish the studied species is provided. The type specimen of *S. berkeleyana* was studied. According to the available indexes or checklists, the finds of *S. berkeleyana* and *S. broomeana* may be new to the Czech Republic, the latter also to Poland.

Key words: *Hypocreales*, *Nectriaceae*, *Hypocreaceae*, taxonomy, distribution, central Europe.

Article history: received 25 September 2024, revised 8 November 2024, accepted 11 November 2024, published online 6 December 2024.

DOI: https://doi.org/10.33585/cmy.76203

Šandová M. (2024): Zajímavé sběry rodů *Chrysonectria* a *Sphaerostilbella* z České republiky a Polska a poznámky k jejich taxonomii. – Czech Mycol. 76(2): 139–155.

Z území České republiky a Polska jsou hlášeny čtyři druhy patřící do rodů *Chrysonectria* a *Sphaerostilbella*. Je uveden klíč k rozlišení těchto druhů. Byla studována typová položka druhu *S. berkeleyana*. Nálezy druhů *S. berkeleyana* a *S. broomeana* mohou být podle dostupných rejstříků či verifikovaných seznamů nové pro Českou republiku a druhý jmenovaný též pro Polsko.

Introduction

The generic name *Sphaerostilbella* (Henn.) Sacc. et D. Sacc. is protected against *Gliocladium* Corda (see May 2017). Except for the type species, *S. lutea* (Henn.) Sacc. et D. Sacc. [current name *S. aurifila* (W.R. Gerard) Rossman, L. Lombard et Crous], the other known *Sphaerostilbella* teleomorphs were transferred to the genus as late as 1985 and after that. Altogether, according to the Index Fungorum database (https://www.indexfungorum.org/Names/Names.asp), 11 species and two synonyms are listed in *Sphaerostilbella*. Detailed species descriptions are scattered in the literature. For example, descriptions of

S. berkeleyana (Plowr. et Cooke) Samuels et Cand. and *S. penicillioides* (Corda) Rossman, L. Lombard et Crous [syn. *S. aureonitens* (Tul. et C. Tul.) Seifert, Samuels et W. Gams] were published by Samuels (1976); descriptions of *S. aurifila* and *S. novae-zealandiae* Seifert, Samuels et Gams were published by Seifert (1985), for the former see also Rossman et al. (1999) and Perera et al. (2023); descriptions of *S. ganodermatis* K. Põldmaa et Samuels and *S. micropori* K. Põldmaa et Samuels were published by Põldmaa et Samuels (2004), and descriptions of the remaining four species with known teleomorphs by Põldmaa et al. (2019). One anamorphic species, *S. parabroomeana* Zare et W. Gams, with a known gliocladium anamorph only, has been described (Zare et Gams 2016, Põldmaa et al. 2019). Another anamorphic species close to *S. penicillioides* is, according to Põldmaa et al. (2019), *Gliocladium polyporicola* (Henn.) Seifert et W. Gams. In the genus *Chrysonectria* Lechat et J. Fourn., two species are listed in the Index Fungorum database, the type species *C. finisterrensis* Lechat, J. Fourn. et Priou with a known teleomorph and anamorph, and *C. crystallifera* L.W. Hou, L. Cai et Crous with a known anamorph only.

The studied specimens of *Sphaerostilbella* were deposited in the PRM herbarium under *Hypomyces rosellus* (Alb. et Schwein.) Tul. et C. Tul., *Hypomyces* indet., or *Nectriopsis aureonitens* (Tul. et C. Tul.) Maire. Specimens belonging to *Chrysonectria* were deposited under *Lasionectria flavida* (Corda) Cooke and one of them under *Nectriopsis aureonitens* after preliminary revision as *Hypomyces* cfr. *aureonitens* Tul. et C. Tul. by A. Rossman. The specimens are revised in this study as they are considered important records.

MATERIAL AND METHODS

The microscopic examination of the anamorphic stage as well as the fruitbodies and subiculum was carried out using 3% KOH unless stated otherwise. The size of fruitbodies was examined in water. Lactophenol cotton blue solution (Merck: methyl blue 1 g/l, lactic acid 247 g/l, glycerol 502 g/l, phenol 204 g/l) and Melzer's reagent (1.5 g KI, 0.5 g iodine, 20 g distilled water, 22 g chloral hydrate) were also used for some observations. The material was photographed using an Olympus SZ61 stereomicroscope with cold light and an Olympus BX51 microscope. Colours were described according to Anonymus (1969), sometimes accompanied by a code in square brackets. The violet to purple reaction in KOH (e.g. Põldmaa et Samuels 1999), hereafter referred to as KOH+, was examined in 3% KOH. The lipid content (referred to as OCI) in the ascospores or conidia was examined in 3% KOH and characterised using a scale from 0 to 5 (0: no oil; 1: c. 3%; 2: c. 10%; 3: c. 25%; 4: c. 50%; 5: c. 80% oil content) following Declercq (2004). Examined specimens are deposited in the PRM herbarium (National Museum, Praha, Czech Republic) and the K herbarium (Royal Botanic Gardens, Kew, U.K.). Specimen data is cited in the form used on the herbarium labels; Czech texts have been translated into English.

Results and discussion

Chrysonectria finisterrensis Lechat, J. Fourn. et Priou Figs 1–2

Selected links: Læssøe et Dissing (2000, as *Nectria flavida* ss. Svrček), Lechat et al. (2018), https://www.centrodeestudiosmicologicosasturianos.org/?p=24704, https://svampe.databasen.org/taxon/69665

Observed characters. Dried perithecia saffron to apricot (to scarlet), subiculum straw to pale luteous, continuous colonies of anamorph whitish. Anamorph acremonium-like, colony very low, with densely spaced slimy heads at about the same height, white to cream-coloured [3C] (in dried state).

Moistened perithecia 140–150 × 120–160 µm. Lateral wall surrounding ostiole red in KOH. Subicular hyphae smooth, rarely warty (belonging to anamorph?), sparsely septate, 0.9–2.6 µm wide. Asci arising from croziers, 45–53 × 5.0–6.0 µm, with apical ring. Ascospores broadly fusiform to fusiform, narrowly club-shaped, slightly tapering to the rounded apices, smooth, 1-septate, 10–14.7 × 2.2–3.2 µm, OCI = (3–)4(–5).

Basal parts of conidiophores c. 4–10 µm long, smooth or warty. Phialides non-septate or 1-septate, 22.5–38.5 × 1.9–2.2 µm, rarely warty in the basal part. Conidia smooth, non-septate, 2.5–3.5 × 1.7–2.1 µm, in slimy heads of 6–120 µm in diam.

Notes. Compared to other species treated in this study, I found this fungus different in many characters, e.g. narrow subicular hyphae, short asci, acremonium-like anamorph, tiny conidia, and conspicuous apical ring. *Lasionectriopsis* Lechat et P.A. Moreau from the family *Bionectriaceae* Samuels et Rossman also has narrow subicular hyphae and asci with a conspicuous ring, but its perithecia are KOH negative. Of the genera reported by Rossman et al. (1999) and Perera et al. (2023) in the family *Nectriaceae* Tul. et C. Tul., only the genus *Chrysonectria* Lechat et J. Fourn. corresponded with the studied material.

Chrysonectria finisterrensis has so far been recorded on *Alnus glutinosa* (https://svampe.databasen.org/taxon/69665), *Carpinus* and *Corylus* (this study), *Fagus* (Læssøe et Dissing 2000, https://svampe.databasen.org/taxon/69665), *Pseudotsuga* (https://svampe.databasen.org/taxon/69665), and *Quercus* (Lechat et al. 2018, https://www.centrodeestudiosmicologicosasturianos.org/?p=24704). *Nectria ellisii* C. Booth, occurring on herbs (Booth 1959, Gams 1971, Ellis et Ellis 1997), differs by having somewhat different, more scattered KOH negative perithecia.

I am hesitant about the possible identity of *C. finisterrensis* with *Sphaeria flavida* Corda, because Corda (1840) depicts the reproductive structures of his fungus as narrow and lacking a septum, and describes them as being somewhat curved. Corda also observed fruitbodies in which the cavity is divided into two compartments by an oblique longitudinal wall. I did not find this in *C. finisterrensis*.

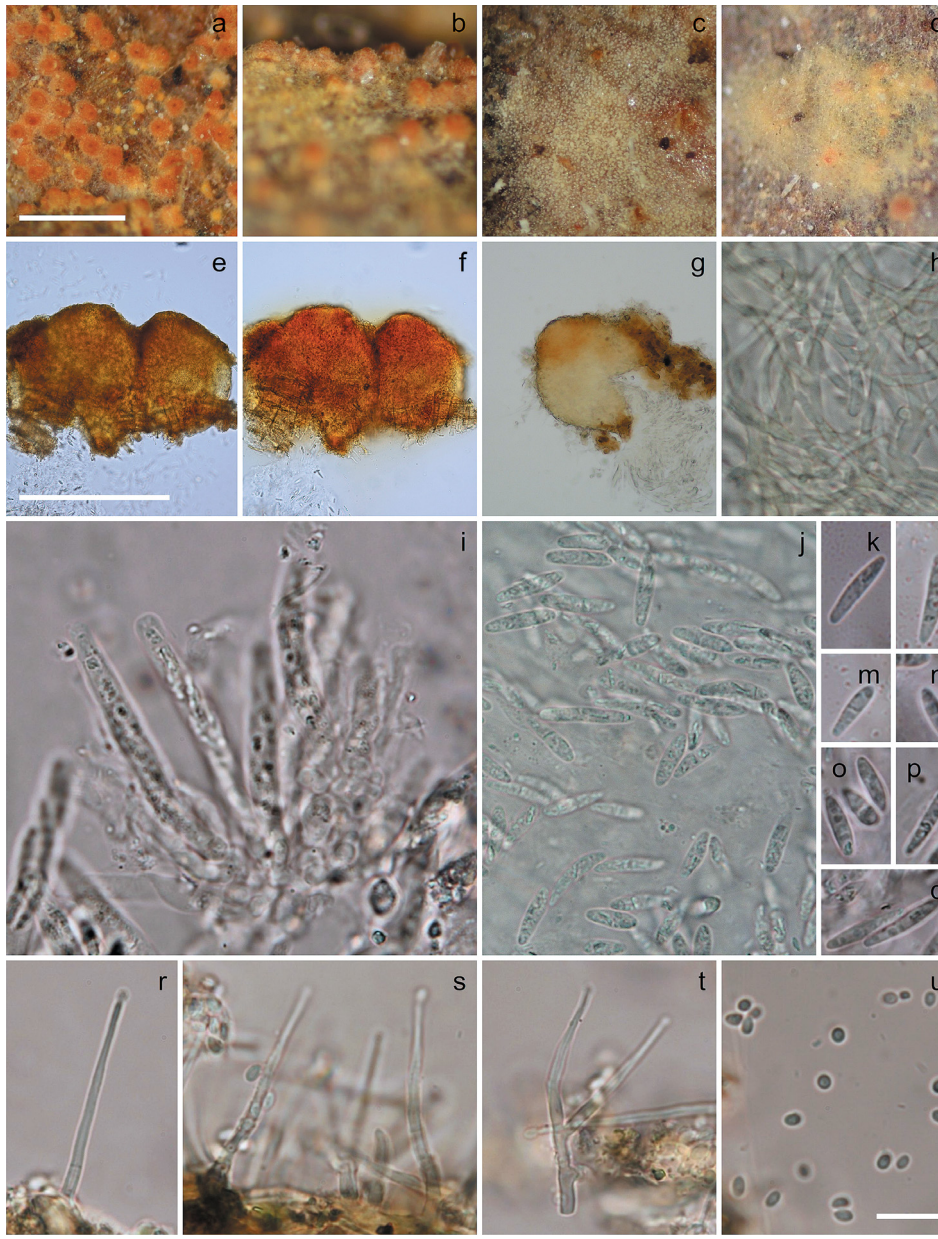

Fig. 1. *Chrysonectria finisterrensis* (PRM 756293). **a–b** – perithecia (dried); **c** – anamorph (dried); **d** – subiculum (dried); **e–g** – perithecia; **h** – subiculum; **i** – asci; **j–q** – ascospores; **r–t** – conidiophores and phialides; **u** – conidia. Medium: e – water; f–u – KOH. Scale bars: a–d = 500 µm; e–g = 200 µm; h–u = 10 µm. Photos M. Šandová.

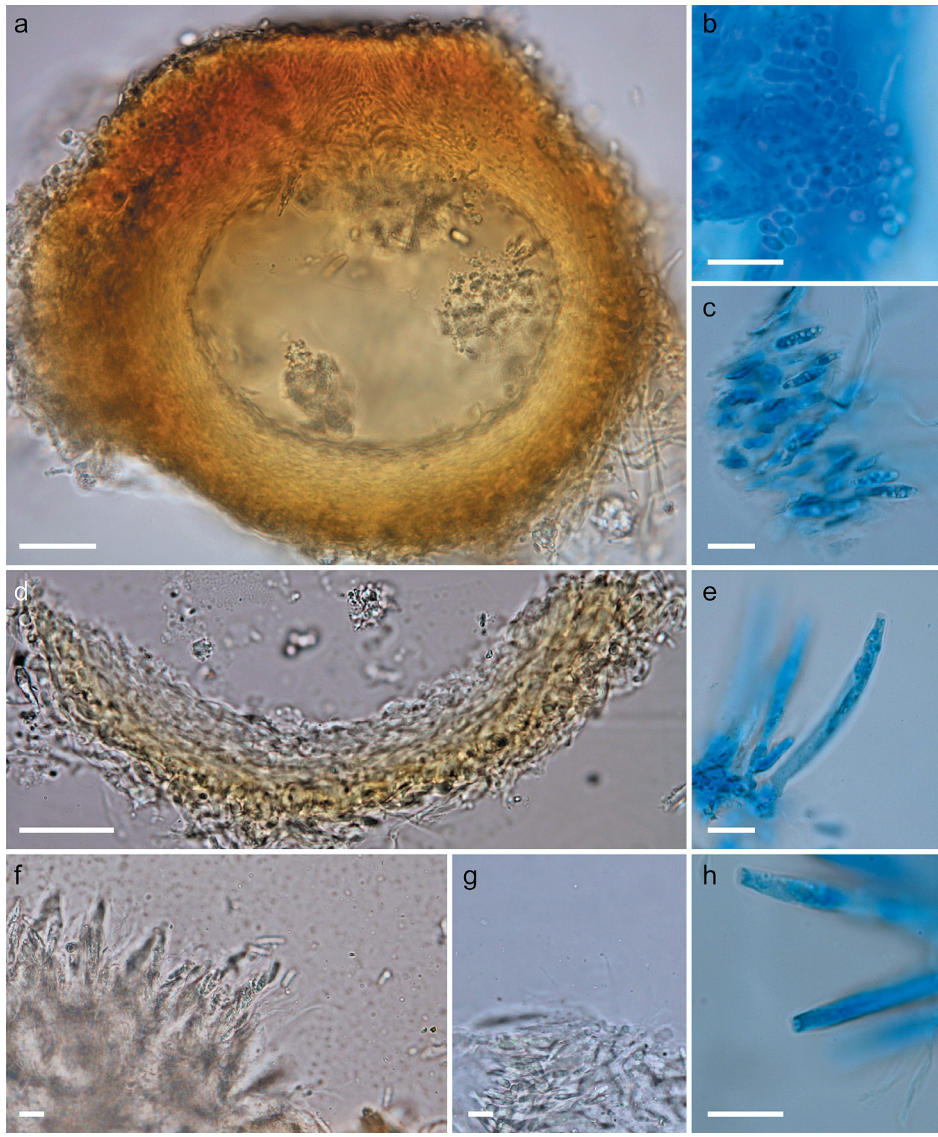

Fig. 2. *Chrysonectria finisterrensis* (PRM 756293). **a**, **d** – perithecium wall in section; **b** – conidia; **c** – ascospores; **e** – ascus; **f–g** – paraphyses; **h** – ascus apex. Medium: a, d, g – KOH; b–c, e, h – lactophenol with cotton blue; f – water. Scale bars: a, d = 20 µm; b–c, e–h = 10 µm. Photos M. Šandová.

Studied specimens

Czech Republic. Řevnice (montes Brdské hřebeny), in valle rivi Moklický potok, *Corylus avellana*, 7. V. 1972, leg. et det. M. Svrček [as *Lasionectria flavida* (Corda) Cooke], PRM 938260. – Třebsín, 'Kletecko', in valle silvatico, ad truncum putridum ?*Carpini betuli*, 25. X. 1953, leg. M. Svrček,

det. Z. Moravec (as *L. flavida*), rev. A. Rossman (as *Hypomyces* cfr. *aureonitens* Tul. et C. Tul.), PRM 756293 – Note: based on the appearance of the fragments, which include wood and bark, and the structure of the rotting wood, I confirm that the substrate could belong to *Carpinus betulus*.

Sphaerostilbella berkeleyana (Plowr. et Cooke) Samuels et Cand. Figs 3–5

Syntypes: England, Downton, on *Stereum* sp., Oct. 1878, K-M000736126, herb. C.B. Plowright (examined); same data, NY 02951646 (a specimen from Plowright's personal herbarium which was deposited in NY as part of J.B. Ellis's collection); following lectotypification by Samuels (1976)

Synonym: *Cosmospora berkeleyana* (P. Karst.) Gräfenhan, Seifert et Schroers, in Gräfenhan, Schroers, Nirenberg et Seifert, Stud. Mycol. 68: 95, 2011

Selected links: Karsten (1891), Dingley (1951), Samuels (1976), Candoussau et Magni (1995), Põldmaa (1999), https://www.centrodeestudiosmicologicosasturianos.org/?p=15034, Nordén et al. (2015), https://svampe.databasen.org/taxon/20492

Observed characters. Dried perithecia laterally collapsed or non-collapsed, salmon, orange, apricot, blood red, purple, or black, with white, pale luteous, ochraceous [cf. 9H] or purple hyphae present among perithecia in their lower half. Continuous colonies of anamorph (when present) base concolorous with subiculum, apex white or whitish, with white to cream-coloured [3C] masses of conidia (in dried state).

Moistened perithecia (?190)240–300 × 180–210 µm. Perithecia KOH– or KOH+. Subicular hyphae among perithecia 3.1–3.8 µm wide in KOH, warty in water, hyaline, golden yellow, rust, purple, or blood red, warts partly soluble in KOH. Perithecium wall c. 30–40 µm thick, coloured (except for its inner part), cell wall thickness (from lumen to lumen) 0.6–2.2 or 1.6–2.2(3.4) µm (two perithecia observed), cell lumen 4.5–9.7 × 2.9–3.6 µm, cells of inner wall layer up to 13(–17) × 4 µm. Asci 84–124 × 4.8–5.7 µm, with apical ring. Ascospores narrowly oval, smooth to warty, 1-septate, (8.5)9.2–11.5(12.5) × (3.2)3.5–3.8(4.0) µm, OCI = 2–3(–4).

Conidiophores up to 230 µm long, 3.5–4.5 µm wide, smooth or warty, usually branched into two branches or phialides per node, but branched into a maximum of 4 branches or 1 branch and 3 phialides. Phialides non-septate or 1-septate, 33–52 × 2.3–3.3 µm, smooth or warty in their lower part. Conidia non-septate, 5.6–8.9 × 3.4–4.6 µm, OCI = 0–2, smooth, in slimy heads of 10–62 µm in diam.

Notes. The teleomorph was identified according to Læssøe (2000) and Rossman et al. (1999) as *S. berkeleyana*. According to the key by Zare et Gams (2016), supplemented by characters of *Hypomyces gamsii* Crous et Akulov (Crous et al. 2020), the identification also leads to *S. berkeleyana* according to anamorph characters. This hyphomycete has been observed several times with a teleomorph fungus identified as *S. berkeleyana* (Karsten 1891, Põldmaa 1999) and is likely to be its anamorph. Finally, I also found its conidia abundantly present in the syntype of *S. berkeleyana* (Fig. 4i, 4k).

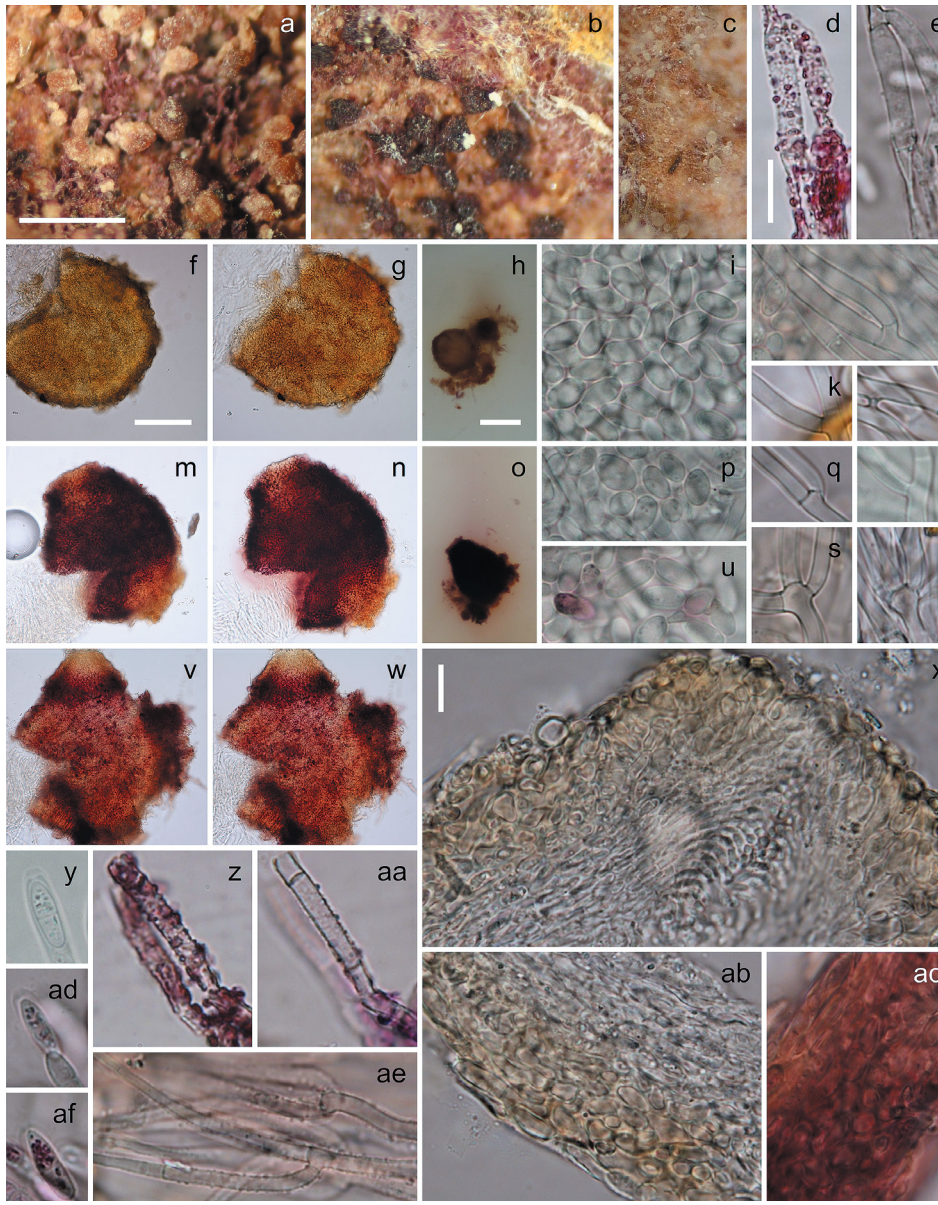

Fig. 3. *Sphaerostilbella berkeleyana* (PRM 731427: b–c, m–u, z–aa, ac–ad, af; PRM 887850: a, d–l, v–y, ab, ae). **a**–**b** – perithecia (dried); **c** – anamorph (dried); **d**–**e**, **z**–**aa** – hyphae among perithecia; **f**–**h**, **m**–**o**, **v**–**w** – perithecia; **i**, **p**, **u** – conidia; **j**–**l**, **q**–**t**, **ae** – conidiophore (j, l, s–t) or phialide (k, q–r, ae) branching and an anastomosis (l); **x**, **ab**–**ac** – perithecium wall in section; **y**, **ad**, **af** – ascus apex. Medium: d, f, m, v, z – water; e, g–l, n–u, w–y, aa–af – KOH. Scale bars: a–c = 500 µm; d–e, i–l, p–u, y–aa, ad–af (scale bar in d) and x, ab–ac (scale bar in x) = 10 µm; f–g, m–n, v–w = 100 µm; h, o = 200 µm. Photos M. Šandová.

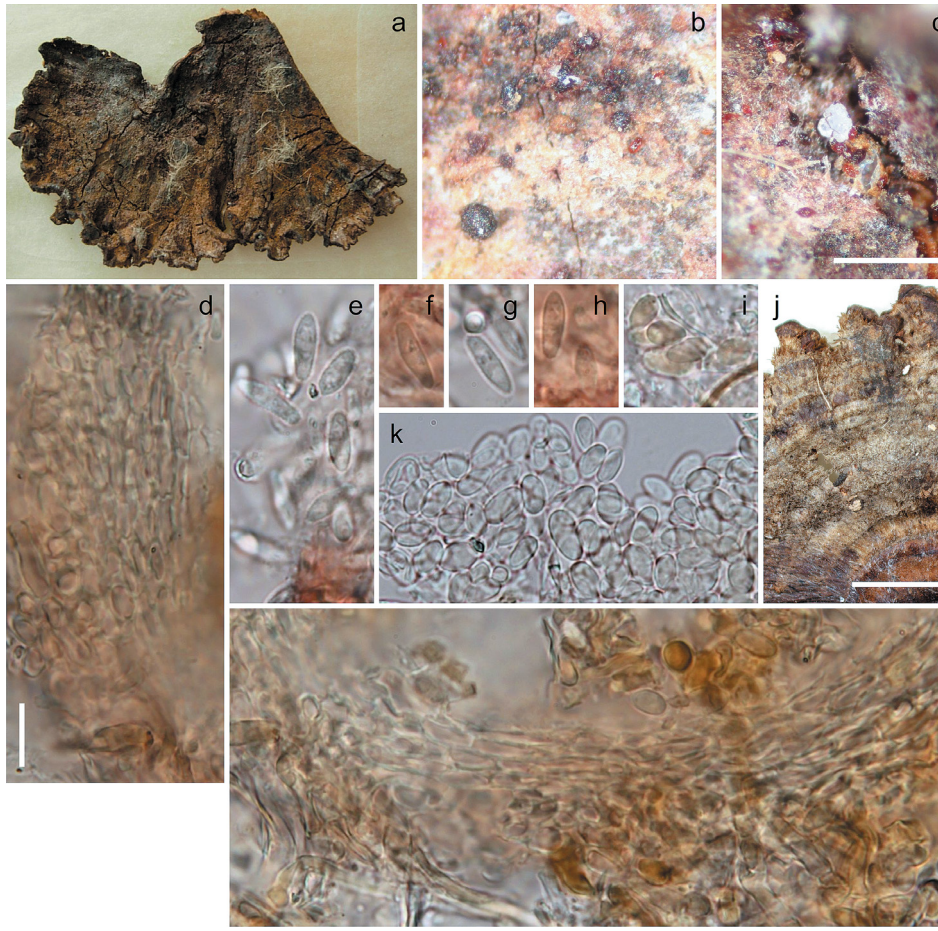

Fig. 4. *Sphaerostilbella berkeleyana* (K-M000736126, syntype). **a** – parasitised *Stereum* fruitbody; **b** – perithecia (dried); **c** – subiculum (dried); **d**, **l** – wall of immature perithecium in section; **e**–**h** – ascospores; **i**, **k** – conidia; **j** – upper surface of the *Stereum* fruitbody. Medium: d–i, k–l – KOH. Scale bars: b–c = 500 µm; d–i, k–l = 10 µm; j = 5 mm. Photos M. Šandová.

I found a difference in KOH reaction between specimens PRM 731427 and PRM 887850. Therefore, I tried to thoroughly compare samples with KOH negative (Fig. 3v, 3w) and KOH positive perithecia (the pigment spreads into the medium when KOH is added; Fig. 3m, 3n). This is why some characters are shown twice in Fig. 3. Concluding, I consider the difference in KOH reaction insignificant because the specimens are very similar in anatomical features. Samuels (1976), who revised the type material of *S. berkeleyana*, reported a negative KOH reaction of perithecia for this species. When studying the syntype, I neither observed pigment being released from the perithecia into KOH. However, the

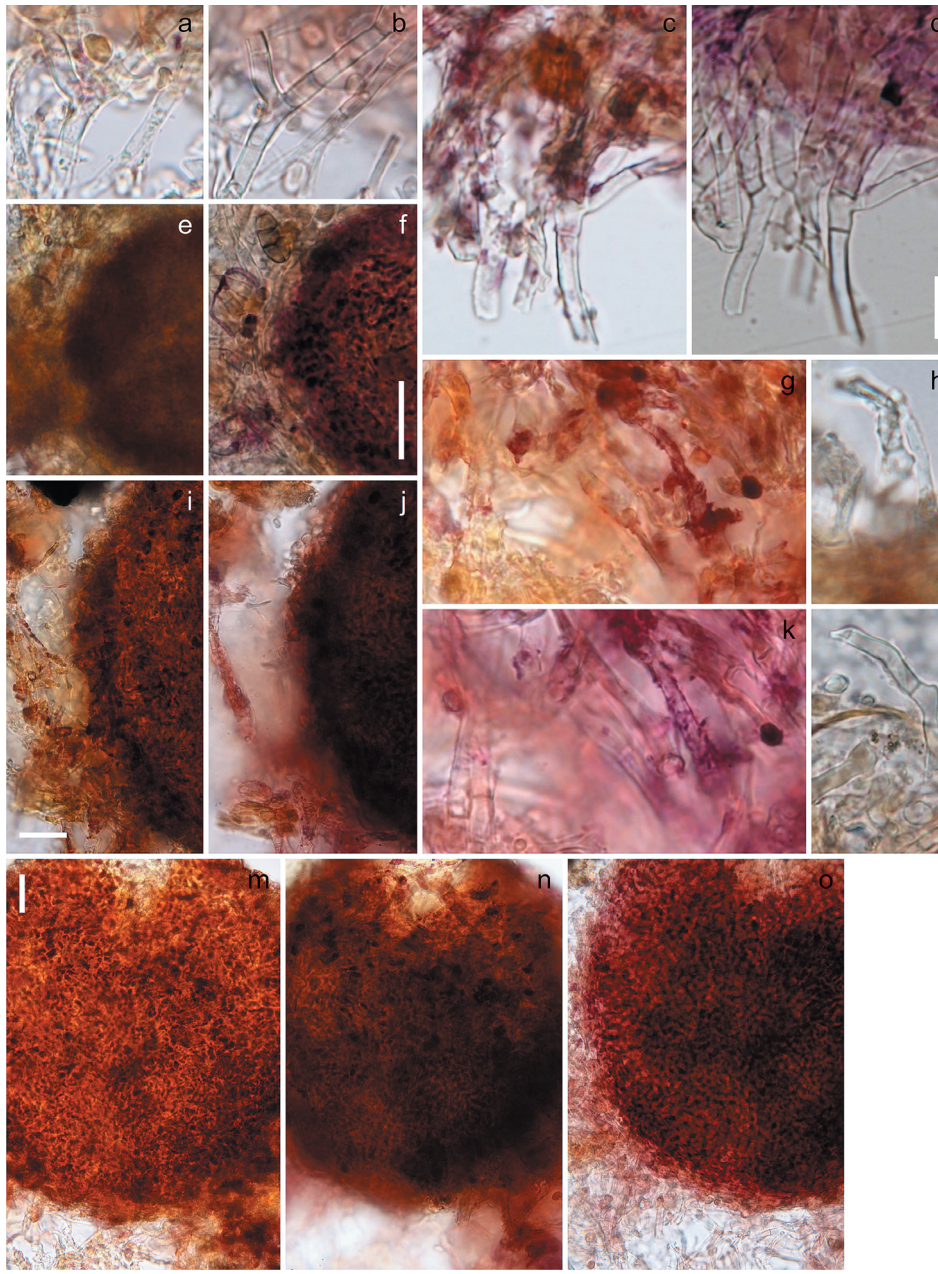

Fig. 5. *Sphaerostilbella berkeleyana* (K-M000736126, syntype). **a–d**, **g–h**, **k–l** – subiculum, and probably conidiophores in a–d; **e–f** – young perithecium; **i–j**, **m–o** – fertile perithecium. Medium: a, c, e, g–h, m – water; b, d, f, i, k–l, n–o – KOH. Scale bars: a–d, g–h, k–l = 10 µm; e–f (scale bar in f), i–j (scale bar in i) and m–o (scale bar in m) = 20 µm. Photos M. Šandová.

subicular hyphae losing pigmentation after changing the medium from water to KOH are very typical of this species (e.g. Fig. 3d, 3e, 3z, 3aa, 5c, 5d).

There are only sequences originating from two specimens under the name *S. berkeleyana*, CBS 102308 (G.J.S. 82-274 according to Zare et Gams 2016) and CBS 441.65 in the GenBank database, both of which differ from the material studied here. The former one is, according to the CBS database (https://wi.knaw.nl/fungal_table), *S. parabroomeana* (ex-holotype strain, on polypore, New Zealand), which, according to Zare et Gams (2016), differs from *S. berkeleyana* by a smaller size of the unicellular conidia and the presence of bicellular conidia. The latter one is, according to the CBS database, *Nectriopsis tremellicola* (Ellis et Everh.) W. Gams (on *Polyporus squamosus*, Germany). Zare et Gams (2016) revised this isolate, classifying it under *Hypomyces tremellicola* (Ellis et Everh.) Rogerson. It differs from *S. berkeleyana* by its smaller (or at least narrower, according to the first work cited) conidia and phialides in whorls (Samuels 1976, Zare et Gams 2016). Zare et Gams (2016) also found two-celled conidia in this isolate.

Due to the synonymisation of *Verticillium berkeleyanum* P. Karst. (Karsten 1891) with *Acremonium butyri* (J.F.H. Beyma) W. Gams by Gams (in Gams et van Zaayen 1982), where the former took precedence, the name *Acremonium berkeleyanum* (P. Karst.) W. Gams [or *Cosmospora berkeleyana* (P. Karst.) Gräfenhan, Seifert et Schroers] was used for a wide range of different species. For a description, illustration, and the synonymy of *A. butyri*, see Gams (1971); for its polyphyly, see Gräfenhan et al. (2011) and Herrera et al. (2015). Although many sequences are known under these names, not a single sequence is known to originate from a fungus on *Stereum* (Gräfenhan et al. 2011, Summerbell et al. 2011, Lechat et Fournier 2021). I have not yet found any known sequences of the fungus on *Stereum* known as *Sphaerostilbella berkeleyana*. Sequence data could help to clarify the importance of differences in conidia and conidiophores between *S. berkeleyana* and *Hypomyces tremellicola*.

In this study, I place the species *S. berkeleyana* in the genus *Sphaerostilbella* due to the presence of a subiculum (e.g. https://www.centrodeestudiosmicologicosasturianos.org/?p=15034) which resembles *S. penicillioides* in the partial dissolvability of its warts (Figs 3, 5, and 7 in this study) and due to the ascospore characters similar to *H. tremellicola* (Samuels 1976, Zare et Gams 2016), which according to Zare et Gams (2016) falls into the same clade as *S. parabroomeana*, belonging to *Sphaerostilbella* according to Põldmaa et al. (2019). In the genus *Cosmospora*, the ascospores are usually shorter and wider and more prominently ornamented (in *C. viridescens* minutely verrucose but coloured) than in *S. berkeleyana*, and according to the descriptions and illustrations, no filaments grow from the perithecia, and no subiculum or anamorph together with perithecia on the natural substrate have been recorded in the following species: *C. cymosa* (Gams 1971), *C. coccinea* (Rossman et al. 1999), *C. coccinea*, *C. fomiticola*, and

C. viridescens (Herrera et al. 2015), and *C. inonoticola* (Zeng et Zhuang 2016). An exception is specimen HR 99814 (*C. coccinea*) published by Tejklová et Zíbarová (2017: 41), which would need further study. A KOH positive reaction is mentioned in both genera. In the type species of the genus *Sphaerostilbella*, a purple perithecium colour in KOH is mentioned (Seifert 1985), whereas darkening perithecia or a dark red, purplish red, or purple perithecium colour in KOH is usual in *Cosmospora* (Rossman et al. 1999, Herrera et al. 2015: figs 2–7, 9–14, Zeng et Zhuang 2016, Lechat et Fournier 2021).

The records of *S. berkeleyana* are probably new to the Czech Republic according to the sources mentioned under *S. broomeana*.

Studied specimens

Czech Republic. Mezná prope Hřensko, ad marginem orientalem pagi in alneto (cum *Betula* et *Tilia*), *Stereum hirsutum* (*Alnus glutinosa*), 7. VII. 1971, leg. M. Svrček (as *Hypomyces*), PRM 731427. – Montes Brdské hřebeny, Dobřichovice, in fageto 'U obrázku', *Stereum hirsutum* (ad ramos deiectos *Fagi silvaticae*), 28. VI. 1995, leg. et det. M. Svrček (as *H. rosellus*), PRM 887850.

United Kingdom of Great Britain and Northern Ireland. Downton (Herefordshire), X. 1878, herb. C.B. Plowright (as *H. berkeleyanus* Plowr. et Cooke), K-M000736126, syntype.

Sphaerostilbella broomeana (Tul. et C. Tul.) K. Põldmaa Fig. 6

Selected links: Gams et van Zaayen (1982, as *Nectriopsis broomeana*), Zare et Gams (2016), Põldmaa et al. (2019), https://svampe.databasen.org/taxon/68607

Observed characters. Fungus colony dirty white [4D] or pale luteous in the part with perithecia, whitish in the part with an anamorph (in dried state).

Moistened perithecia 275–355 × 170–210 µm. KOH causes no changes in colour. Asci arising from croziers, 106–131 × 4.4–4.7 µm, with an inconspicuous apical ring. Ascospores navicular, with warty surface, 1-septate, 9.2–12.4 × 2.6–3.2 µm, OCI = ?2–3 (difficult to observe), sometimes with smooth, tapering, apically obtuse, 1.1–1.3 µm long appendages at their ends.

Gliocladium-like conidiophores smooth and 3.7–5.4 µm wide under the fork, with conidia non-septate, 4.8–7.4 × 2.1–3.1 µm, sometimes in slimy heads of 22–42 µm in diam., phialides non-septate, 23–37 × 2.0–3.1 µm. Also non-septate or 1-septate conidia perhaps belonging to the gliocladium-like conidiophores were observed: 4.5–9.3 × 2.9–4.0 µm, weakly constricted at septum, sometimes pointed at the scar, not observed in slimy heads.

Notes. The species was identified according to Põldmaa et al. (2019), matching substrate, distribution and microscopic features. The observed character of conidia agrees well with the illustration published by Gams et van Zaayen (1982). *Sphaerostilbella broomeana* differs from *S. appalachiensis*, which is known from North America, whose ascospores are 15.5–19.5 × 4.5–5.5 µm in size (Põldmaa et al. 2019), by smaller ascospores.

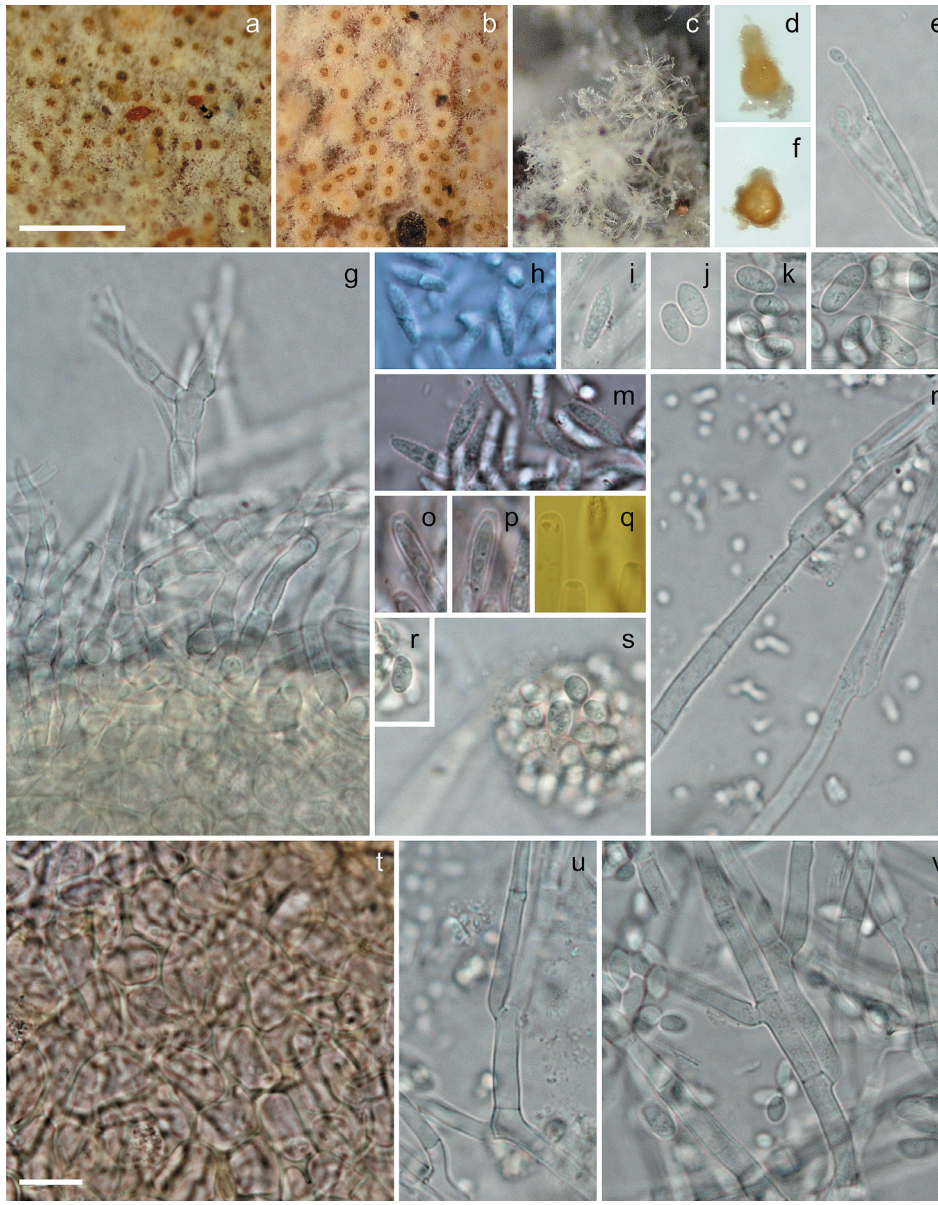

Fig. 6. *Sphaerostilbella broomeana* (PRM 845235: a, f, h, m, o–p, r–t; PRM 847577: b–e, g, i–l, n, q, u–v). **a**–**b** – perithecia (dried); **c** – anamorph (dried); **d**, **f** – perithecia; **e** – phialide; **g** – subiculum; **h**–**i**, **m** – ascospores (h: using Nomarski contrast); **j**–**l** – conidia; **n**, **u**–**v** – conidiophores; **o**–**q** – ascus apices; **r**–**s** – conidia in slimy head; **t** – perithecium wall in surface view. Medium: d, f – water; e, g–p, r–v – KOH; q – Melzer's reagent after lactophenol with cotton blue. Scale bars: a–d, f = 500 µm; e, g–v = 10 µm. Photos M. Šandová.

Põldmaa et al. (2019) mention the distribution of *S. broomeana* in various countries of Europe and Asia but do not include any records from the Czech Republic or Poland. The records in this study may therefore be new to these countries. In the index to Czech Mycology content and indexes to Mykologické Listy (until 2006) records of this species were not found. As a compendium work from the territory of Poland, I checked Mułenko et al. (2008). No further search of published records was conducted during this study.

Studied specimens

Czech Republic. 'Baba' apud Pyskočely prope Stříbrná Skalice, matrix: *Heterobasidion parviporum* (det. Z. Pouzar, 2006), 18. VII. 1952, leg. Z. Pouzar (as *Hypomyces*), PRM 845235.

Poland. Silva Starożyn apud Augustów, matrix: *Heterobasidion parviporum* (det. Z. Pouzar, 2007) ad *Picea abies*, 4. IX. 1974, leg. Z. Pouzar (as *Hypomyces*), PRM 847577.

Sphaerostilbella penicillioides (Corda) Rossman, L. Lombard et Crous Fig. 7

Synonym: *Sphaerostilbella aureonitens* (Tul. et C. Tul.) Seifert, Samuels et W. Gams

Selected links: Samuels (1976, as *Hypomyces aureonitens* Tul. et C. Tul.), Rossman et al. (1999 as *S. aureonitens*), https://svampe.databasen.org/taxon/73160

Observed characters. Dried perithecia non-collapsed or, in the case of older perithecia with fertile contents at their apex, laterally collapsed, dirty white with a brown tinge [4D, 29], pale orange [cf. 49] or ochre, dried subiculum white to lemon yellow [50, 54], anamorphic structures scattered in small tufts, white.

Moistened perithecia 155–255 × 130–210 µm. Pigment dissolving from perithecia in KOH yellow to orange. Subicular hyphae hyaline, warty, constricted or not at septa, 2.2–4.4 µm wide. Spherical elements separating from the subiculum (Fig. 7j–k) globose, smooth, concolorous with warty subicular hyphae on perithecia, 5–7 µm in diam. Asci arising from croziers, 90–115 × 4 µm, presence of an apical ring not confirmed during this study. Ascospores broadly fusiform, with upper cell wider than lower cell, tapering to rounded apices, smooth, 1-septate, constricted at the septum, 8–13.5 × 2.5–3.5 µm, OCI = 2–4.

Conidiophores mononematous, 0.13–0.35 mm high, not changing colour in KOH, warty, 3.5–5 µm wide below the brush, phialides 13.7–15.2 × 1.7–2.1 µm, metulae (9)11–15 × 1.9–3.2 µm. Conidia non-septate, 3.2–5.2 × 1.5–2.2 µm.

Notes. The species was identified according to Seifert (1985) and is characteristic by its warty conidiophores and small conidia (Zare et Gams 2016). The teleomorphic as well as anamorphic characters agree with Samuels (1976). The globose, smooth particles described above, not mentioned in the literature, were observed in all studied samples usually occurring rarely, but abundantly in specimen PRM 895459 and in a part of PRM 895494. They are probably formed on the perithecial surface by simple separation from subicular hyphae (Fig. 7j–k).

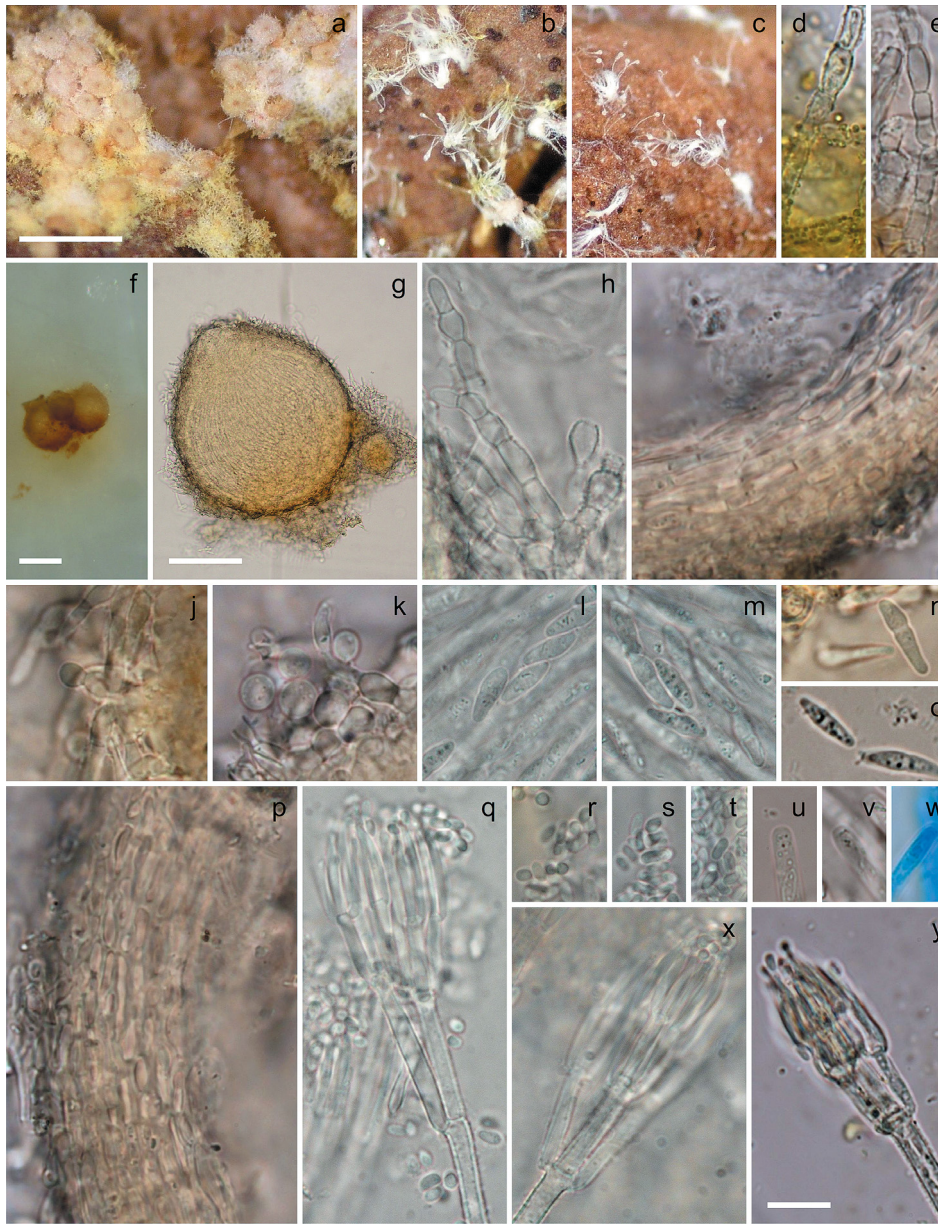

Fig. 7. *Sphaerostilbella penicillioides* (PRM 895459: a, d–i, l–m, p, v, x–y; PRM 877907: b–c; PRM 895494: j–k, t; PRM 756377: n, r–s; PRM 905592: o, q, u, w). **a** – perithecia (dried); **b–c** – anamorph (dried); **d–e**, **h** – subiculum; **f–g** – perithecia; **i**, **p** – perithecium wall in section; **j–k** – spherical elements separating from the subiculum; **l–o** – ascospores; **q**, **x–y** – conidiophores; **r–t** – conidia; **u–w** – ascus apices. Medium: d, y – water; e–v, x – KOH; w – lactophenol with cotton blue. Scale bars: a–c = 500 µm; f = 200 µm; g = 100 µm; d–e, h–y = 10 µm. Photos M. Šandová.

Studied specimens

Czech Republic. České Středohoří, Bukový vrch prope Milešov, ad carposomata vetusta *Sterei rugosi* (ad truncum iacentem *Alni glutinosae*), 23. IX. 1954, leg. et det. M. Svrček [as *Lasionectria aureonitens* (Tul. et C. Tul.) comb. ined.], PRM 756377, rev. Z. Moravec [as *Nectriopsis aureonitens* (Tul. et C. Tul.) Maire], published by Moravec (1960). – Silva 'Zámecký les' apud Obříství prope Mělník, matrix: *Stereum subtomentosum*, carposomata vetusta, ad truncum, *Alnus glutinosa*, 26. X. 2001, leg. Z. Pouzar (as *Hypomyces*), PRM 895494. – Silva 'Černínovsko' apud Neratovice, pars 'U Stavidla', carposomata vetusta: *Stereum subtomentosum* (*Alnus glutinosa*), 28. X. 2001, leg. Z. Pouzar (as *Hypomyces*), PRM 905592. – Tuhaň ap. Mělník, silva Kaštánka, matrix: *Stereum subtomentosum*, ad truncum iacentem: *Alnus glutinosa*, 31. X. 2001, leg. Z. Pouzar (as *Hypomyces*), PRM 895459. – [Praha] Zadní Kopanina, ad carposomata putrida *Sterei rugosi*, 18. X. 1953, leg. Z. Pouzar, det. M. Svrček [as *Nectria sulphurea* (Ellis et Calk.) Sacc.], rev. Z. Moravec (as *N. aureonitens*), PRM 877907.

Key to the studied species

(The characters are given in dried state or from preparations in KOH)

1a On fruitbodies of *Heterobasidion* ..... ***Sphaerostilbella broomeana***
1b On fruitbodies of *Stereum* or on wood or bark 2
2a Purple coloured subiculum present at least in the centre of the fungus colony ..... ***Sphaerostilbella berkeleyana***
2b Subiculum not purple coloured 3
3a Subiculum on and among perithecia with usually warty, 2.2–4.4 µm wide hyphae, average width of ascospores 3.1 µm, OCI = 2–4, anamorph of gliocladium-type, on *Stereum hirsutum*, *S. rugosum*, and *S. subtomentosum* ..... ***Sphaerostilbella penicillioides***
3b Subiculum on and among perithecia with usually smooth, rarely warty, 0.9–2.6 µm wide hyphae, average width of ascospores 2.6 µm, OCI = (3–)4(–5), anamorph simply branched with conidia in slimy heads, on wood and bark ..... ***Chrysonectria finisterrensis***

ACKNOWLEDGEMENTS

My thanks belong to Dr. Walter Jaklitsch and Jacques Fournier for help with obtaining the necessary literature. I thank the curators of the herbarium of the Royal Botanic Gardens, Kew, for the loan of the syntype of *S. berkeleyana*, and Laura Briscoe, MSc (herbarium of the New York Botanical Garden) for providing information on the second syntype. I thank Keith Seifert for providing consultation on *Cosmospora berkeleyana*, and the reviewers for their valuable comments. The work was financially supported by the Ministry of Culture of the Czech Republic (DKRVO 2024-2028/3.I.a, 00023272).

REFERENCES

ANONYMUS (1969): Flora of British Fungi: Colour Identification Chart. – 1 tab., Her Majesty's Stationery Office, Edinburgh.

BOOTH C. (1959): Studies of pyrenomycetes IV. *Nectria* (part 1). – Mycol. Pap. Commonw. Mycol. Inst. 73: 1–115, 2 pl.

CANDOUSSAU F., MAGNI J.-F. (1995): New French records. – Mycologist 9(1): 12–14. DOI: https://doi.org/10.1016/S0269-915X(09)80240-1

CORDA A.C.I. (1840): Icones fungorum hucusque cognitorum. Vol. 4. – J.G. Calve, Pragae.

CROUS P.W. et al. (2020): New and Interesting Fungi. 3. – Fungal Syst. & Evol. 6: 157–231. DOI: https://doi.org/10.3114/fuse.2020.06.09

DECLERCQ B. (2004): The genus *Hymenoscyphus* S.F. Gray sensu lato in Belgium. Key to the species and varieties. – http://www.ascofrance.com/uploads/forum_file/5584.doc

DINGLEY J.M. (1951): The *Hypocreales* of New Zealand. II. The genus *Nectria*. – Trans. Roy. Soc. New Zealand 79(2): 177–202.

ELLIS M.B., ELLIS J.P. (1997): Microfungi on land plants. An identification handbook. 2nd ed. – The Richmond Publishing Co., Slough.

GAMS W. (1971): *Cephalosporium*-artige Schimmelpilze (Hyphomycetes). – VEB Gustav Fischer Verlag, Jena.

GAMS W., ZAAYEN A. VAN (1982): Contribution to the taxonomy and pathogenicity of fungicolous *Verticillium* species. I. Taxonomy. – Netherlands J. Pl. Pathol. 88: 57–78.

GRÄFENHAN T., SCHROERS H.-J., NIRENBERG H.I., SEIFERT K.A. (2011): An overview of the taxonomy, phylogeny, and typification of nectriaceous fungi in *Cosmospora*, *Acremonium*, *Fusarium*, *Stilbella*, and *Volutella*. – Stud. Mycol. 68: 79–113. DOI: https://doi.org/10.3114/sim.2011.68.04

HERRERA C.S., ROSSMAN A.Y., SAMUELS G.J., PEREIRA O.L., CHAVERRI P. (2015): Systematics of the *Cosmospora viliuscula* species complex. – Mycologia 107(3): 532–557. DOI: https://doi.org/10.3852/14-122

KARSTEN P.A. (1891): Symbolae ad Mycologiam Fennicam. Pars XXX. – Meddeland. Soc. Fauna Fl. Fenn. 18: 61–68.

LÆSSØE T. (2000): *Sphaerostilbella* (P. Henn.) Sacc. & D. Sacc. – In: Hansen L., Knudsen H., eds, Nordic macromycetes. Vol. 1. Ascomycetes, p. 231. Nordsvamp, Copenhagen.

LÆSSØE T., DISSING H. (2000): *Nectria* (Fr.) Fr. – In: Hansen L., Knudsen H., eds, Nordic macromycetes. Vol. 1. Ascomycetes, p. 223–226. Nordsvamp, Copenhagen.

LECHAT C., FOURNIER J. (2021): *Cosmospora xylariae* (*Nectriaceae*), a new species from France, Germany and U.K., with notes on *C. berkeleyana*, now *Sphaerostilbella berkeleyana*, and *C. scruposae*. – Ascomycete.org 13(5): 189–196. DOI: https://doi.org/10.25664/ART-0336

LECHAT C., FOURNIER J., PRIOU J.-P. (2018): *Chrysonectria*, a new genus in the *Nectriaceae* with the new species *C. finisterrensis* from France. – Ascomycete.org 10(4): 121–125. DOI: https://doi.org/10.25664/ART-0237

MAY T.W. (2017): Report of the Nomenclature Committee for Fungi – 21: Lists from working groups. – I.M.A. Fungus 8(1): 205–210. DOI: https://doi.org/10.5598/imafungus.2017.08.01.13

MORAVEC Z. (1960): Houby na houbách (Studie o ř. *Hypocreales* IV) [The fungicolous *Hypocreales*]. – Česká Mykol. 14(1): 24–32.

MUŁENKO W., MAJEWSKI T., RUSZKIEWICZ-MICHALSKA M., eds (2008): A preliminary checklist of micromycetes in Poland. – W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków.

NORDÉN B., LÆSSØE T., JORDAL J.B., PETERSEN J.H., VOGLMAYR H., JAKLITSCH W. (2015): Forty pyrenomycetous fungi belonging to class *Sordariomycetes* new to Norway. – Agarica 36: 43–54.

PERERA R.H., HYDE K.D., JONES E.B.G., MAHARACHCHIKUMBURA S.S.N., BUNDHUN D., CAMPORESI E., AKULOV A., LIU J.K., LIU Z.Y. (2023): Profile of *Bionectriaceae*, *Calcarisporiaceae*, *Hypocreaceae*, *Nectriaceae*, *Tilachlidiaceae*, *Ijuhyaceae* fam. nov., *Stromatonectriaceae* fam. nov. and *Xanthonectriaceae* fam. nov. – Fungal Diversity 118: 95–271. DOI: https://doi.org/10.1007/s13225-022-00512-1

PÕLDMAA K. (1999): The genus *Hypomyces* (*Hypocreales*, *Ascomycota*) and allied fungicolous fungi in Estonia. I. Species growing on aphyllophoralean basidiomycetes. – Folia Cryptog. Estonica 34: 15–31.

PÕLDMAA K., SAMUELS G.J. (1999): Aphyllophoricolous species of *Hypomyces* with KOH-negative perithecia. – Mycologia 91(1): 177–199. DOI: https://doi.org/10.1080/00275514.1999.12061007

PÕLDMAA K., SAMUELS G.J. (2004): Fungicolous *Hypocreaceae* (*Ascomycota*: *Hypocreales*) from Khao Yai National Park, Thailand. – Sydowia 56(1) [2003]: 79–130.

Põldmaa K., Bills G., Lewis D.P., Tamm H. (2019): Taxonomy of the *Sphaerostilbella broomeana*-group (*Hypocreales*, *Ascomycota*). – Mycol. Progr. 18: 77–89. DOI: https://doi.org/10.1007/s11557-018-01468-w

Rossman A.Y., Samuels G.J., Rogerson C.T., Lowen R. (1999): Genera of *Bionectriaceae*, *Hypocreaceae* and *Nectriaceae* (*Hypocreales*, *Ascomycetes*). – Stud. Mycol. 42: 1–248.

Samuels G.J. (1976): A revision of the fungi formerly classified as *Nectria* subgenus *Hyphonectria*. – Mem. New York Bot. Gard. 26(3): 1–126.

Seifert K.A. (1985): A monograph of *Stilbella* and some allied Hyphomycetes. – Stud. Mycol. 27: 1–235.

Summerbell R.C., Gueidan C., Schroers H.-J., de Hoog G.S., Starink M., Arocha Rosete Y., Guarro J., Scott J.A. (2011): *Acremonium* phylogenetic overview and revision of *Gliomastix*, *Sarocladium*, and *Trichothecium*. – Stud. Mycol. 68: 139–162. DOI: https://doi.org/10.3114/sim.2011.68.06

Tejklová T., Zíbarová L. (2017): Dvě rážovky se zajímavou ekologií (Two *Nectria* s.l. species with interesting habitats). – Mykol. Sborn. 2/2017: 39–50. [in Czech]

Zare R., Gams W. (2016): More white verticillium-like anamorphs with erect conidiophores. – Mycol. Progr. 15: 993–1030. DOI: https://doi.org/10.1007/s11557-016-1214-8

Zeng Z.Q., Zhuang W.Y. (2016): A new species of *Cosmospora* and the first record of sexual state of *C. lavitskiae*. – Mycol. Progr. 15(6): 1–7. DOI: https://doi.org/10.1007/s11557-016-1201-0