CATATHELASMA

a journal on biodiversity, taxonomy and conservation of fungi

No. 16 December 2015

Glutinoglossum heptaseptatum, Stolické vrchy Mts., Muránska Zdychava village, settlement Karafová, 21 September 2012, V. Kučera (SAV F-10540). Photo V. Kunca; see p. 5–10.

ISSN 1335-7670 Catathelasma 16: 1-44 (2015)

Pithya vulgaris, Kremnické vrchy Mts., National Nature Reserve Mláčik, 16 January 2014, V. Kunca (PVKU 1150). Photo V. Kunca; see p. 11–13.

Pithya vulgaris, Kremnické vrchy Mts., National Nature Reserve Mláčik, 23 March 2015, V. Kunca (PVKU 1384). Photo V. Kunca; see p. 11–13.

Catathelasma

Catathelasma is a scientific journal published by the Slovak Mycological Society with the financial support of the Slovak Academy of Sciences
Editor in chief: Soňa Jančovičová
Editorial board: Pavel Lizoň & Viktor Kučera
Graphic and Cover Design: Erika Pisarčíková & Zdeněk Bašta
Back issue of Catathelasma can be accessed at www.cybertruffle.org.uk/cyberliber

Table of Contents

ISSN

1335-7670

Instructions to Authors

Catathelasma publishes original and *reviewed* contributions to the better knowledge of fungi preferably in Slovakia and central Europe. Papers should be on diversity (mycofloristics), ecology, taxonomy and nomenclature, conservation of fungi, and book reviews and notices. Manuscripts have to be submitted in English with a Slovak or Czech summary.

Elements of an article submitted to Catathelasma

- title: informative and concise
- author's name: full first and last name
- author's mailing and e-mail addresses
- key words: max. 5 words, not repeating words in the title
- text: written in Arial, without any special type of text formatting except for italic and bold options, not exceeding 15 pages
- figures: line drawings, photographs, diagrams and/or graphs (scanned and "jpg" or "tif" formatted) with their legends should be self-explanatory; legends to the figures must be written at the end of the text file
- abstract/summary in Slovak or Czech: max. 10 lines (starting with author's name and the title of the article); the journal is responsible for the translation of abstracts into Slovak for foreign authors
- studied voucher specimens should be kept in the public herbaria
- list of references:
  - **journal article:** Kučera, V. 2011. Cudoniella acicularis. *Catathelasma* 13: 25–27.
  - **book:** Dennis, R. W. G. 1978. British Ascomycetes. Vaduz.
  - **book chapter:** Verbeken, A. & Vesterhol J. 2012. Lactarius Pers. In: Knudsen, H. & Vesterholt, J. (eds.), Funga Nordica, p. 118–144, Copenhagen.
  - **data from internet:** Thiers, B. (on-line). Index Herbariorum: A global directory of public herbaria and associated staff. *http://sweetgum.nybg.org/ih/* [accessed 30 April 2015].
  - **references in the text:** Lizoň (2001), (Lizoň 2001), (Knudsen & Vesterholt 2012), Adamčík et al. (2003)

Please follow these web sites:

- **for journal abbreviations:** http://www.wsl.ch/dienstleistungen/publikationen/office/abk_EN?letter=P
- **for book abbreviations:** www.sil.si.edu/digitalcollections/tl-2
- **for abbreviation of authors of fungal names:** http://www.indexfungorum.org/Names/AuthorsOfFungalNames.asp
- **for current names of fungal taxa:** indexfungorum.org/Names/Names.asp
- **for herbaria acronyms:** http://sweetgum.nybg.org/ih/
- **for botanical data:** www.ipni.org/index.html; kiki.huh.harvard.edu/databases

Correspondence:

All correspondence concerning the journal should be sent to the following address: sona.jancovicova@fns.uniba.sk

Back issue of Catathelasma can be accessed at www.cybertruffle.org.uk/cyberliber

GLUTINOGLOSSUM HEPTASEPTATUM IN SLOVAKIA

Viktor Kučera[1], Pavel Lizoň[1] & Pablo Alvarado[2]

[1]Institute of Botany, Slovak Academy of Sciences, Dúbravská cesta 9, SK-845 23, Bratislava, Slovakia; viktor.kucera@savba.sk, pavel.lizon@savba.sk
[2]Alvalab, La Rochela 47, 39012 Santander, Spain; pablo.alvarado@gmail.com

Kučera, V., Lizoň, P. & Alvarado, P. 2015. Glutinoglossum heptaseptatum in Slovakia. *Catathelasma* 16: 5–10.
Glutinoglossum heptaseptatum is here reported for the first time for Slovak funga. It differs from more common *G. glutinosum* in having spores with mostly seven septa and shorter asci. The original description is amended in light of the observed morphological variability. Differences with *G. americanum*, which also has ascospores with seven septa, are discussed. The identity of Slovak collection of *G. heptaseptatum* is supported by ITS and 28S rDNA sequences.

Kučera, V., Lizoň, P. & Alvarado, P. 2015. Glutinoglossum heptaseptatum (jazýček polomazľavý) na Slovensku. *Catathelasma* 16: 5–10.
Glutinoglossum heptaseptatum je nový druh pre slovenskú mykoflóru. Od bežnejšieho *G. glutinosum* sa odlišuje najmä výtrusmi, ktoré majú prevažne sedem priehradok a kratšími vreckami. Dopĺňame poznatky o variabilite znakov a diskutujeme morfologické odlišnosti od príbuzného *G. americanum*, ktorý má tiež sedem priehradok vo výtrusoch. Správnosť určenia podporujeme analýzou ITS a 28S rDNA úsekov DNA.

Key words: Ascomycetes, biodiversity, distribution, ITS, 28S rDNA

Introduction

Fungi of the family *Geoglossaceae* s.l. have been a subject of study for mycologists for over three centuries. This long history of research has yielded a complicated taxonomy with many synonyms and nomenclatural transfers, resulting in over two hundred published names. Currently, nine genera are treated in the class Geoglossomycetes: *Geoglossum* Pers., *Glutinoglossum* Hustad, A. N. Mill., Dentinger & P. F. Cannon, *Hemileucoglossum* S. Arauzo, *Leucoglossum* S. Imai, *Maasoglossum* K. S. Thind & R. Sharma, *Nothomitra* Maas Geest., *Sabuloglossum* Hustad, A. N. Mill., Dentinger & P. F. Cannon, *Sarcoleotia* S. Ito & S. Imai and *Trichoglossum* Boud. with about hundred taxa within them (Hustad & Miller 2015a, Fedosova & Kovalenko 2015). *Glutinoglossum* was proposed afterwards a molecular evidence had showed that *Geoglossum glutinosum* formed a well-supported separate clade from others *Geoglossum* species. Currently, it includes six taxa: *G. americanum*

Hustad & A. N. Mill., *G. australasicum* Hustad & A. N. Mill., *G. exiguum* Hustad & A. N. Mill., *G. glutinosum* (Pers.) Hustad, A. N. Mill., Dentinger & P. F. Cannon, *G. heptaseptatum* Hustad, A. N. Miller, Dentinger & P. F. Cannon and *G. methvenii* Hustad & A. N. Mill. (Hustad & Miller 2015b). In this paper, we describe and discuss the collection of *Glutinoglossum heptaseptatum,* a new addition to Slovak funga.

Material and Methods

Macromorphological characters were observed in fresh specimens. Micromorphological structures were studied in dried material using light microscope with an oil immersion lens. 5% KOH, tap-water, Melzer's reagent and solution of Congo red in ammonia were employed as mounting media. Micromorphological data are presented as: average (±SD) of 30 measurements, percentiles 10 and 90 (in parenthesis) and were taken from tap-water mounts. Identification and nomenclature is based on Hustad & Miller (2015b). Collection site is georeferenced and the coordinates are presented in WGS 84 system. Description is based on voucher specimens deposited in the fungarium of the Institute of Botany, Slovak Academy of Sciences (SAV F-10540, SAV F-10544). Studied specimens were used also for molecular study.

Genomic DNA was extracted from a small piece of fertile part by a modified CTAB method (Gardes & Bruns 1993). The internal transcribed spacer region (ITS1–5.8S–ITS2) was amplified with primer pair ITS1F/ITS4 (White et al. 1990, Gardes & Bruns 1993), and 28S rDNA with LR0R/LR5 (Vilgalys & Hester 1990). PCR cycling parameters were set as follows: initial denaturation (94 °C for 1 min), 35 cycles (94 °C for 1 min, 54 °C for 1 min and 72 °C for 1 min) and final extension 72 °C (10 min). Amplified PCR products were sent for purification and sequencing to Stab Vida (Portugal, EU). Sequences generated for this study were submitted to GenBank.

Results

BLAST analysis showed that ITS sequences from the Slovak *G. heptaseptatum* specimens (GenBank KU215767, KU215768) were 100% identical with *G. heptaseptatum* sequence from the holotype specimen (KC222130). 28S rDNA sequences (GenBank KU215769, KU215770) were also 99% similar to the holotype (KC222143), confirming the identity of the collections.

Glutinoglossum heptaseptatum Hustad, A. N. Miller, Dentinger & P. F. Cannon

Ascocarps (16) 30–60 mm high, black, clavate, stipitate, solitary. Fertile part (10) 12–25 (30) × 3–4 mm, cylindrical to fusiform, glabrous. Sterile part (10) 20–35 × 1–2 mm, cylindrical, slender or robust (see page 1). Asci (195) 200–230 (260) x (12) 14–15 (16) µm, in rehydrated material, clavate, apex rounded, pore blue in Melzer's reagent, narrowed below, 8-spored. Spores first hyaline, brown at maturity, occupying the upper 60–75% of ascus, (65) 72–82 (85) x 4–5 µm, straight or slightly curved, predominantly 7-septate when mature, 8-septate spores rarely seen. Paraphyses with apex pale brown, hyaline below, rarely septate, embeded in a light brown gelatinous matrix, apical cells usually abruptly obovoid to pyriform, thickened up to 8–11 (14) µm (see micro photo).

Specimens studied. Slovakia, Stolické vrchy Mts., Muránska Zdychava village, ca 2.6 km N from the village, settlement Karafová, fen-meadow with *Eriophorum* sp., *Salix* sp. and mosses, N 48° 45' 40.13" E 20° 08' 26.38", alt. 649 m, 21 September 2012, V. Kučera (SAV F-10540, Ibid. SAV F-10544).

Distribution and Habitat. Czech Republic, USA (Hustad & Miller 2015b), Slovakia (this paper); on wet soil in a fen meadow.

Discussion

Glutinoglossum species are morphologically discriminated by the number of septa in their spores. The group of predominantly 3-septate species is represented mainly by *G. glutinosum* (for distribution in Slovakia see Kučera & Lizoň 2012), as well as *G. methvenii* which grows in Australasia. The group of 7-septated taxa includes species growing in the Southern (*G. australasicum* and *G. exiguum*) and Northern hemispheres (*G. americanum* and *G. heptaseptatum*) (Hustad & Miller 2015b).

Glutinoglossum heptaseptatum was originally described from the Czech Republic (Hustad et al. 2013) and also recovered from the environmental soil samples from Cedar Creek Natural History Area in Minnesota, USA (Waldrop et al. 2006). These are the only verified findings of *G. heptaseptatum* (Hustad & Miller 2015b), so the current knowledge of its morphological variability is very limited. The Slovak collections (SAV F-10540, SAV F-10544) analysed in the present work display some

Glutinoglossum heptaseptatum (SAV F-10540): a, b – ascospores, c – paraphyses, d – ascus. Bar = 20 µm. Photo V. Kučera.

differences in morphology. The main discrepancies are in the size of asci, spores and apical cell of paraphyses. Asci are thinner and longer: (195) 200–230 (260) x (12) 14–15 (16) µm than those mentioned by Hustad et al. (2013) in the type collection from the Czech Republic: (170–205 x 18–22 µm). Slovak material has also thinner and longer spores: (65) 72–82 (85) x 4–5 than the collections from the Czech Republic (see Hustad & Miller 2015b): (59) 61–70 (74) x (3.5) 4–5.5 (6.5) µm. Finally, apical cells are 14 µm thick in Slovak collections, while those from the Czech Republic only 8 µm.

The closely related species *G. americanum*, which is distributed in North America, has similar asci, but shorter spores (56.5) 61.5–69.5 (75) x (3.5) 4–4.5 (5) µm than *G. heptaseptatum*.

Acknowledgements

We would like to thank Vladimír Kunca (Zvolen), Václav Kautman (Bratislava) and Stanislav Glejdura (Kováčová) for the assistance in the field. The reviewer, Anna Fedosova (St. Peterburg), is thanked for reading and commenting the manuscript. This study was supported by the grant VEGA 2/0088/13.

References

Fedosova, A. G. & Kovalenko, A. E. 2015. Studies on the geoglossoid fungi of Russia: the genus Leucoglossum. *Mycol. Prog.* 14: **26.**

Gardes, M. & Bruns, T. D. 1993. ITS primers with enhanced specificity for Basidiomycetes—application to the identification of mycorrhizae and rusts. *Molecular Ecology* 2: 113–118.

Hustad, V. P., Miller A. N. & Dentinger B. T. M., Cannon P. F. 2013. Generic circumscriptions in Geoglossomycetes. *Persoonia* 31:101–111.

Hustad, V. P. & Miller, A. N. 2015a. Maasoglossum, a basal genus in Geoglossomycetes. *Mycoscience* 56(6): 572–579.

Hustad, V. P. & Miller, A. N. 2015b. Studies in the genus Glutinoglossum. *Mycologia* 107(3): 647–657.

Kučera, V. & Lizoň, P. 2012. Geoglossaceous fungi in Slovakia III. The genus Geoglossum. *Biologia* 67: 654–658.

Vilgalys, R. & Hester, M. 1990. Rapid identification and mapping of enzymatically amplified ribosomal DNA from several Cryptococcus species. *J. Bacteriol*. 172: 4238–4246.

Waldrop, M. W., Zak D. R., Blackwood, C. B., Curtis, C. D. & Tilman, D. 2006. Resource availability controls fungal diversity across a plant diversity gradient. *Ecol. Lett.* 9: 1127–1135.

White, T. J., Bruns, T. D., Lee, S. & Taylor, J. W. 1990. Amplification and direct sequencing of fungal ribosomal RNA genes for phylogenetics. In: Innis, M. A., Gelfand, D. H., Sninsky, J. & White, T. J. (eds.), PCR protocols: a guide to methods and applications. San Diego.

PITHYA VULGARIS REDISCOVERED IN SLOVAKIA

Vladimír Kunca

Faculty of Ecology and Environmental Sciences, Technical University in Zvolen, T. G. Masaryka 24, 960 53 Zvolen, Slovakia; kunca@tuzvo.sk

Kunca, V. 2015. Pithya vulgaris rediscovered in Slovakia. *Catathelasma* 16: 11–13.
In Slovakia, there were known only two records of *Pithya vulgaris* from the end of 19th century by now. The species was discovered again in Kremnické vrchy Mts. in National Nature Reserve Mláčik on dead fir twig in 2014 and its occurrence was confirmed in 2015.

Kunca, V. 2015. Pithya vulgaris znovuobjavená na Slovensku. *Catathelasma* 16: 11–13.
Na Slovensku boli doposiaľ známe len dva nálezy *Pithya vulgaris* z konca 19. storočia. Druh bol znovuobjavený v Kremnických vrchoch v Národnej prírodnej rezervácii Mláčik na mŕtvom jedľovom konáriku v roku 2014 a jeho výskyt opätovne potvrdený v roku 2015.a

Key words: Ascomycota, Pezizales, Kremnické vrchy Mts., Mláčik

Introduction

The only two records of *Pithya vulgaris* Fuckel from Slovakia were reported by Hazslinsky (1886) – one from Branisko Mts. close to Široká village, the second one from the surroundings of Spišské Vlachy village (Hornádska kotlina Basin).

In Europe, the fungus is very rare (Breitenbach & Kränzlin 1991, Spooner 2002, Kristiansen 2010) and as a red-listed species classified in Poland (Wojewoda & Ławrynowicz 2006) and Great Britain (Evans et al. 2006).

Materials and methods

The paper is based on two recent collections of *Pithya vulgaris* from Slovakia. The spores were measured in water directly under the microscope using an eyepiece micrometer. Size of spores was calculated from measurements of 20 spores on dried material. The identification was based on Breitenbach & Kränzlin (1984) and Benkert (2008). Voucher specimens are kept in the PVKU herbarium − personal herbarium of Vladimír Kunca.

Specimens studied. Slovakia, Kremnické vrchy Mts., National Nature Reserve Mláčik, fallen twig of *Abies alba*, alt. 860 m, 16 January 2014,

V. Kunca (PVKU 1150). Ibidem, alt. 855 m, 23 March 2015, V. Kunca (PVKU 1384).

Results and discussion

Nine young ascocarps, the largest one 8 mm in diam., were found in the primeval part of natural fir-beech forest in the National Nature Reserve Mláčik in 2014 (see page 2 up). The ascocarps were growing out from the fallen dead twig immersed in snow and were sterile (without spores). In 2015, five ascocarps were found at the same locality, near previous collecting site (see page 2 down). They were growing solitary on fallen dead twigs (4 mm in diam.) of *Abies alba* with brown needles. Ascospores are globose, hyaline, smooth, 11–14 µm. Ascospores of similar *Pithya cupressina* are somewhat smaller, 10–12 µm. However, difference between *P. vulgaris* and *P. cupressina*, in size of spores as well, is still discussed (Benkert 2008).

Most of the published records are associated with different species of fir (Breitenbach & Kränzlin 1991, Zervakis et al. 2002, Doğan & Işıloğlu 2002, Benkert 2008). Besides twigs of fir (*Abies* sp.), Breitenbach & Kränzlin (1991) mentioned as substrate for the fungus also twigs of Norway spruce (*Picea abies*) and Scotch pine (*Pinus sylvestris*). In Slovakia, two historic records by Hazslinsky (1886) are from spruce, the recent collections from fir. *Pythia vulgaris* seems to be a winter and spring species. It was collected in January and February (our collections) and in early spring immediately after snowmelt (Breitenbach & Kränzlin 1991), but also as late as in May (*Pithya vulgaris*, Czechoslovakia, Hranice na Moravě, *Abies alba*, May 1938, PRM, 876032 – Jan Holec pers. comm.).

Acknowledgements

The paper was supported by the Slovak Grant Agency VEGA, grant no. 1/0362/13. The reviewer, Pavel Lizoň (Bratislava), is thanked for reading and commenting the manuscript. I am also grateful for information to Stanislav Glejdura (Kováčová).

References

Benkert, D. 2008. Pithya cupressina und P. vulgaris (Pezizales) – identisch oder nicht? *Mycol. Bav.* 10: 55−62.

Breitenbach, J. & Kränzlin, F. 1984. Fungi of Switzerland. Vol. 1. Ascomycetes. Lucerne.

Breitenbach, J. & Kränzlin, F. 1991. Champignons de Suisse, Tome 3. Lucerne.

Doğan, H. H. & Işıloğlu, M. 2002. A new and interesting ascomycete genus (Pithya Fuckel) record for the fungi flora of Turkey. *Turk. J. Bot.* 26: 403−404.

Evans, S., Henrici, A. & Ing, B. 2006. Red data list of threatened British fungi. http://www.fieldmycology.net/Download/RDL_of_Threatened_British_Fungi.pdf [accessed 18 October 2015].

Hazslinszky, F. 1886. Magyarhon **és** társországainak szabályos discomycetjei (Discomycetes). *Math. Term. Közlem.* 21: 177−287, tab. 1−12.

Kristiansen, R. 2010. Notes on vernal cupfungi (Pezizales) in Norway. *Agarica* 29: 101−108.

Spooner, B. M. 2000. The Larger Cup Fungi in Britain – part 1. *Field Mycology* 1: 137 –139.

Wojewoda, W. & Ławrynowicz, M. 2006. Czerwona lista grzybow wielkoowocnikowych w Polsce. In: Mirek, Z., Zarzycki, K., Wojewoda, W. & Szeląg, Z. (eds.), Czerwona lista roślin i grzybow Polski, p. 53–70, Kraków.

Zervakis, G. I., Dimou, D. M., Polemis, E. & Karadelev, M. 2002. Mycodiversity studies in selected ecosystems of Greece: II. Macrofungi associated with conifers in Taygetos Mountain (Peloponnese). *Mycotaxon* 83: 97−126.

BOOK NOTICES

Pavel Lizoň

André Fraiture & Peter Otto (eds.). 2015. **Distribution, ecology and status of 51 macromycetes in Europe.** [1]-247, incl. distribution maps and color pictures of fungi [series Scripta Botanica Belgica no. 52]. Sold by the Botanic Garden Meise, Belgium (http://shopbotanicgarden.weezbe.com). Price: EUR 25.00.

Long awaited report subtitled *Results of the ECCF Mapping Programme* was finaly published. Congratulations!

Mapping program of the European Council for Conservation of Fungi was proposed by Peter Otto and Esteri Ohenoja at the 4th ECCF meeting held in Vipiteno, Italy (1997) and widely discussed in Alcalá de Henares, Spain during the 13th Congress of European Mycologists (1999). Originally the number of species was limited to 50, including those 33 non-lichenized fungi proposed for the Bern Convention.

According to the book summary a total of 38 countries and 300 mycologists participated in gathering the data. The countries with the highest number of species (I would say recorded and reported data) are Germany and France, Italy and Spain and Poland. The species present in the highest number of countries are *Panaeolus semiovatus*, *Helvella atra*, *Sarcosphaera coronaria* and *Strobilomyces strobilaceus*. The rarest species are *Tulostoma niveum*, *Haploporus odorus*, *Torrendia pulchella*, *Antrodia albobrunnea*, *Cortinarius ionochlorus* and *Poronia erici*. Distribution maps of studied species are presented (with distinction between data made before or from 1970), together with comments on the distribution, ecology (trophism, host and substrates, syntaxa of vegetation, Natura 2000 habitats, soil requirements, indicator value, phenology) and status (frequency, threats and conservation).

COPRINOPSIS TRISPORA – AN INTERESTING COPROPHILOUS SPECIES FOUND IN BORSKÁ NÍŽINA LOWLAND

Ján Červenka[1] & Iveta Tomášeková[2]

[1]Starhradská 6, 851 05 Bratislava, Slovakia; jancervenka.mail@gmail.com
[2]Karpatské námestie 23, 831 06 Bratislava, Slovakia; tomasekova.iveta@orangemail.sk

Červenka, J. & Tomášeková, I. 2015. Coprinopsis trispora – an interesting coprophilous species found in Borská nížina Lowland. *Catathelasma* 16: 15–20.
In June to August 2014, a rare *Coprinopsis trispora* was repeatedly recorded on permanently waterlogged locality "Kazarka" in the vicinity of Šaštín-Stráže town (southwestern Slovakia). Basidiomata were growing in large numbers on sandy soil mixed with animal feed and dung. The species, characteristic in having three-spored basidia, has been previously known only from Austria, Denmark, France, Finland, Germany, the Great Britain, the Netherlands, Poland, Spain and Sweden.

Červenka, J. & Tomášeková, I. 2015. Coprinopsis trispora – zaujímavý koprofilný druh nájdený na Borskej nížine. *Catathelasma* 16: 15–20.
V júni až auguste 2014 bol na trvale zamokrenej lokalite „Kazarka" neďaleko mesta Šaštín-Stráže (juhozápadné Slovensko) opakovane zaznamenaný zriedkavý hnojník *Coprinopsis trispora*. Plodnice vyrastali vo veľkom počte z piesčitej pôdy premiešanej s krmivom pre zver a trusom. Tento druh, ktorý má charakteristické trojvýtrusné bazídiá, bol doteraz známy len z Rakúska, Dánska, Francúzska, Fínska, Nemecka, Veľkej Británie, Holandska, Poľska, Španielska a Švédska.

Key words: *Psathyrellaceae*, first record, Slovakia, Veliformes, Narcotici.

Introduction

The genus *Coprinopsis* Karsten represents the largest group of so-called inkcaps (*Coprinus* s. l.). The generic name, for the first time published by Karsten in the 19th century (Karsten 1881), became widely known at the beginning of the 21st century. At that time the former genus *Coprinus* was divided into four separate genera – as the results of molecular analysis (Redhead et al. 2001). Three genera – *Parasola*, *Coprinellus* and *Coprinopsis* are included into the family *Psathyrellaceae* and the remaining genus *Coprinus*, carrying the former generic name, now belongs to the family *Agaricaceae*.

The species-rich genus *Coprinopsis*, in comparison to other related coprinoid genera, can be briefly characterized by the presence of granular to fibrous universal veil, by which it clearly differs from the genus

Parasola, but also by the absence of pileocystidia that are characteristic for the majority of members of the genus *Coprinellus* (Petersen & Vesterholt 2012).

The species currently known as *Coprinopsis trispora* (Kemp & Watling) Redhead, Vilgalys & Moncalvo was originally described from Scotland by Kemp and Watling in 1972 under the name *Coprinus trisporus* (Watling 1972). Following the concept by Uljé (2005), the species was placed into the subsection Narcotici Uljé & Noordel, members of which have a veil composed of warty sphaerocystidia and spores with very faintly to fairly strongly developed epispore.

This species is the only known European member of the genus *Coprinopsis* with predominant three-spored basidia in hymenium. Its worldwide distribution is not sufficiently known. In Europe, it has been so far reported only from France (Roux & Fouchier 2006), Germany (Enderle & Bender 1990), Austria (Dämon et al. 2015), Spain (PérezDeGregorio et al. 2009), Denmark (Wind & Pihl 2004), Sweden (Hederås 2010), Finland (Kytövuori et al. 2005), Poland (Gierczyk et al. 2011), Norway (Vesterholt 2012), the Netherlands, England (Noordeloos 2005) and Wales (Kirk & Cooper 2015). This is a very rare species, growing on horse and cow dung, but also on compost and rotting remnants of apples. In Europe it is more documented only in the British Isles (35 known collections). Everywhere else it is only reported from one to four sites (Kirk & Cooper 2015)

During the visit of permanently waterlogged localities near Šaštín-Stráže town in Borská nížina Lowland, the second author found hundreds of basidiomata growing on the substrate consisting of sandy soil, feeding stuff for animals mixed with dung, which was also indicated by the presence of coprophilous species *Psilocybe coprophila* at the same place.

Material and Methods

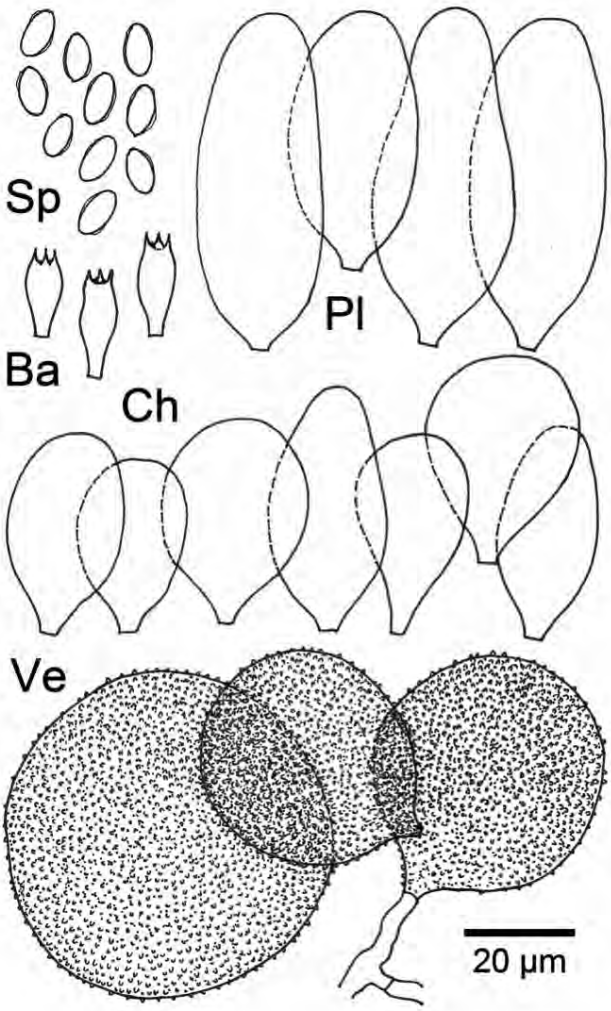
The description of *Coprinopsis trispora* is based on fresh basidiomata in various stages of growth collected at the only known locality in Slovakia. Microcharacters were studied in fresh conditions. Statistic calculations of measurements of all micromorphological characters are based on 30 measurements (per specimen) and given as minimum and maximum. Q = ratio of length and width of spores.

Results and Discussion

Coprinopsis trispora (Kemp & Watling) Redhead, Vilgalys & Moncalvo
Syn.: *Coprinopsis triplex* (P. D. Orton) P. Roux & Guy García; *Coprinus triplex* P. D. Orton; *Coprinus trisporus* Kemp & Watling

Pileus 7–30 mm wide; first ovoid to cylindrical, then bell-shaped and finally expanded; radially grooved almost to the centre; on grey background covered by the abundant, easily removable, mealy, whitish to greyish and soon disappearing veil with scattered, pyramidal, greyish-beige, sepia to dark brown floccules; the margin first entire and even, undulate when mature and torn to uplifted when old. Lamellae 1.5–3 mm wide; free; crowded; lamellulae also present; first whitish but very soon brownish, brownish-grey, grey to black and strongly deliquescent when old. Stipe 15–70 (–110) mm long and 1.5–3.5 mm wide; cylindrical, slightly widened towards the base; whitish to watery whitish; floccose-scaly; with more prominent floccose zone at the base; hollow to tubulose. Flesh very thin, fragile; watery whitish to greyish-brown; with very strong and unpleasant smell, especially in the stipe. Spore print black. Veil consisting of, in the section relatively big and shortly pedunculate sphaerocystidia, joined by thin, cylindrical to branched, 3–5 µm wide hyphae. Sphaerocystidia 40–100 µm in diameter; globose to subglobose; hyaline; with slightly thickened wall; strongly warty; warts conical to hemisphaerical, 1–2 µm long as well as wide. Basidia 12–21 x 6–8 µm, significantly small; clavate; trisporic; hyaline. Spores 7.8–11.2 × 4.0–5.9 µm; Q = 1.80–2.11 (–1,95); ellipsoid to cylindric-ellipsoid; dark blackish-brown in light microscope; smooth, covered by very weak epispore; germ pore central; apiculus inconspicuous. Cheilocystidia 19–59 × 18–47 µm; almost sphaerical, balloon-shaped, clavate or, rarely tappered towards the apex; hyaline. Pleurocystidia 48–92 × 28–40 µm, cylindric-ellipsoid, balloon-shaped to pyriform. Clamps absent (see page 43 and line drawing).

Specimens studied. Slovakia, Borská nížina Lowland, (Q 7368d), Šaštín-Stráže town, “Kazarka“ locality, mixed forest (*Alnus*, *Betula*, *Pinus*, *Populus*, *Quercus*), on sandy soil mixed with feeding stuff for animals (e. g. sunflower seeds) and dung, alt. 180 m, 15, 22, 27, 29 June; 5, 28, July; 2, 9 August 2014, leg. I. Tomášeková, J. Tomášek (BRA CR 23570, BRA CR 23571, BRA CR 23572, BRA CR 23573, BRA CR 23574, BRA CR 23575, BRA CR 23576, BRA CR 23577).



Coprinopsis trispora (BRA CR 23571): Sp. – spores, Ba – basidia, Pl – pleurocystidia, Ch – cheilocystidia, Ve – velar elements.
Del. J. Červenka.

The most important character of *Coprinopsis trispora* is a presence of three-spored basidia in hymenium. Triangularly arranged spores are best seen from in polar view, especially in young, immature basidiomata. Macroscopically, the very similar species to this one is, for example *Coprinopsis tuberosa* (Quél.) Doveri, Granito & Lunghini with tetrasporic basidia. It also grows on dung, but creates conspicuous black sclerotia in the substrate. It is worth to mention that *C. tuberosa* began to appear at this locality in 2015 instead of *C. trispora* afterwards it was completely flooded at the end of the previous season. The growth of both species at the same place may indicate their similar environmental requirements.

Acknowledgements

The reviewer, Ladislav Hagara (Bratislava), is thanked for reading and commenting the manuscript.

References

Clémençon, H. 1997. Anatomie der Hymenomyceten: eine Einführung in die Cytologie und Plectologie der Krustenpilze, Porlinge, Keulenpilze, Leistlinge, Blätterpilze und Röhrlinge. Lausanne.

Dämon, W., Hausknecht, A. & KrisaiGreilhuber, I. (on-line). Österreichische Mykologische Gesellschaft: Datenbank der Pilze Österreichs. *http://www.austria.mykodata.net* [accessed 23 November 2015].

Enderle, M. & Bender, H. 1990. Studien zur Gattung Coprinus (Pers.: Fr.) S. F. Gray in der Bundesrepublik Deutschland. *V. Z. Mykol.* 56(1): 19–46.

Gierczyk, B., Kujawa, A., Pachlewski, T., Szczepkowski, A. & Wójtowski, M. 2011. Rare species of Coprinus Pers. s. lato. *Acta Mycologica* 46(1): 27–73.

Hederås, G. 2010. Fyndrapport, mycologiveckan 2009 i Hallands län. Göteborg.

Karsten, P. A. 1881. Hymenomycetes Fennici enumerati. *Acta Soc. Fauna Flora fenn.* 2(1): 27.

Kirk, P. & Cooper, J. 2015. FRDBI: The record details. http://www.fieldmycology.net/FRDBI/FRDBIrecord.asp?intGBNum=46584

Kytövuori, I., Nummela-Salo, U., Ohenoja, E., Salo, P. & Vauras, J. 2005. Helttasienten ja tattien levinneisyystaulukko. In: Salo, P., Niemelä, T, Nummela-Salo, U. & Ohenoja, E. (eds.), Suomen helttasienten ja tattien ekologia, levinneisyys ja uhanalaisuus, p. 105–224, Helsinki.

Noordeloos, M. E. 2005. Coprinaceae Pers. In: Noordeloos, M. E., Kuyper, T. W. & Vellinga, E. C. (eds.), Flora Agaricina Neerlandica. Vol. 6, p. 21–109, Boca Raton.

Petersen, J. H. & Vesterholt, J. 2012. Key to genera. In: Knudsen, H. & Vesterholt, J. (eds.), Funga Nordica, p. 48–75, Copenhagen.

PérezDeGregorio, M. A., Carbó, J. & Roqué, C. 2009. Algunos hongos interesantes de Girona. Fungi non delineati, pars XLIV. Alassio.

Redhead, S. A., Vilgalys, R., Moncalvo, J. M., Johnson, J. & Hopple Jr, J. S. 2001. Coprinus Pers. and the description of Coprinus species sensu lato. *Taxon* 50: 203–241.

Roux, P. & Fouchier, F. 1996. Contribution à l'étude des Coprinaceae de la zone méditenanéenne (1re note). Coprinus trisporus Kemp & Watling. *Bulletin Semestriel de la Fédération des Associations Mycologiques Méditerranéennes* 2(10): 3–9.

Uljé, C. B. 2005. Studies in Coprinus – keys to subsections and species in Coprinus. *http://www.grzyby.pl/coprinus-site-Kees-Uljee/species/Coprinus.htm* [accessed 20 October 2015].

Vesterholt, J. 2012. Coprinopsis. In: Knudsen, H. & Vesterholt, J. (eds.), Funga Nordica, p. 672–687, Copenhagen.

Watling, R. 1972. Notes on some British Agarics III. *Notes R. Bot. Gdn Edinb.* 32(1): 127–133.

Wind, P. & Pihl, S. (eds.) 2004. The Danish Red List. Aarhus.

THE RARE TRICHOLOMA BORGSJOEËNSE FOUND IN SLOVAKIA

Ján Červenka[1] & Vladimír Kunca[2]

[1]Starhradská 6, 851 05 Bratislava, Slovakia
[2]Faculty of Ecology and Environmental Sciences, Technical University in Zvolen, T. G. Masaryka 24, 960 53 Zvolen, Slovakia; kunca@tuzvo.sk

Červenka, J. & Kunca V. 2015. The rare Tricholoma borgsjoeënsee found in Slovakia. *Catathelasma* 16: 21–25.
In August 2014 the rare *T. borgsjoeënse* was collected near Oravské Veselé village (Oravské Beskydy Mts.). Later it was realised that in July of the same year it was also recorded in the Korytnica spa (Nízke Tatry Mts.). These records are the first of this species in Slovakia and the record from Nízke Tatry Mts. is the southernmost known so far.

Červenka, J. & Kunca V. 2015. Zriedkavá čírovka Tricholoma borgsjoeënse nájdená na Slovensku. *Catathelasma* 16: 21–25.
V auguste 2014 sa pri obci Oravské Veselé našla zriedkavá čírovka *T. borgsjoeënse*. Neskôr sa zistilo, že ešte v júli toho istého roka bola zaznamenaná aj kúpeľoch Korytnica v Nízkych Tatrách. Ide o prvé nálezy tohto druhu zo Slovenska a zároveň v prípade Nízkych Tatier o najjužnejšiu známu lokalitu.

Key words: *Tricholomataceae*, first records, *Picea abies*, Oravské Beskydy Mts., Nízke Tatry Mts.

Introduction

At the end of the fungal meeting in the Oravské Veselé village on the 17th August 2014, Ľudmila Čillíková (one of the participants) asked the first author to help with identification of two basidiomata – at first sight resembling *Tricholoma terreum* (Schaeff.) P. Kumm. There were, however, remarkable differences in some characters. The grey-colored lamellae were significantly distant, thick and with dark spots at the edge. The stipe was greyish-fibrous especially at the upper half, and the base was slightly yellowing. Based on these characters the basidiomata were later identified as *Tricholoma borgsjoeënse* Jacobsson & Muskos. After six days later, another four basidiomata with the same characteristics were found at the same place and two other basidiomata, about three hundred meters from the first collecting site (see page 44 up).

Communicating with the second author, it was realised that he also collected and photographed *T. borgsjoeënse* in that same year. It was during a long term mycological study of Korytnica spa, in Nízke Tatry

Mts. on the 30th July 2014. One basidoma was found in mixed mountain forest with dominance of spruce, with fir and beech intermixed (see page 44 down). It is a 100 years old protective forest, sporadically influenced by management measures – selective cutting near local spa. The locality lies on west-facing, gentle slope near stream in cold valley.

The aim of the paper is to present *T. borgsjoeënse* as a new species to Slovakia, and to discuss its ecology and distribution.

Material and Methods

The description of *Tricholoma borgsjoeënse* is based on basidiomata collected in two Slovak localities during the year 2014. Micromorphological characters were studied on fresh and dried material and measured directly under the microscope using an eyepiece micrometer. Values of spores were estimated of 30 measurements (in parenthesis are average values). Q is the ratio of length/breadth for a single spores and the observed range of the ratio of length/breadth for all spores measured.

Voucher specimens are kept in the herbaria BRA and PVKU (personal herbarium of Vladimír Kunca). For acronym BRA see Thiers (2013).

Soil sample was taken from locality Korytnica spa from mineral soil at a depth between 5 and 10 cm. The soil sample was analysed in the laboratory of Technical University in Zvolen, Faculty of Ecology and Environmental Sciences, Department of Applied Ecology. Soil pH values were determined in water suspension (HANNA HI 9321).

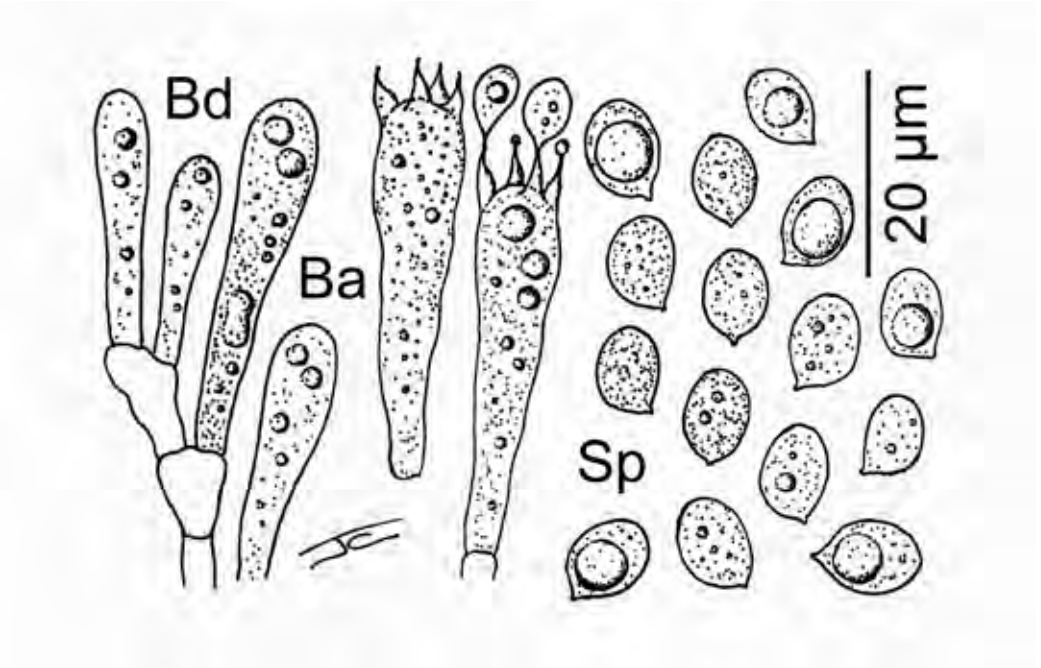
Positions of the localities are presented in the form of quadrants (QP) of the Central European grid mapping system (UTM).

Results

Tricholoma borgsjoeënse Jacobsson & Muskos

Pileus 15–45 mm wide; convex to broadly bell-shaped, then expanded, with low and broad umbo; very densely greyish-brown, ash-grey to blackish-brown fibrillose to scaly, sometimes delicately cracked; dry; with even but also undulate to uplifted margin. Lamellae 4–8 mm wide; significantly distant; 0.4–0.8 mm thick; emarginate; greyish or bright ash-grey; the edge at first even, then torn, with blackish-violet spots, drying brownish. Stipe 25–60 mm long and 6–12 mm thick; cylindrical,

in the lower half sometimes slightly thickened or tapering towards base; solid or in the upper half hollow; greyish-brown to blackish flocculose or fibrillose-scaly on whitish background, usually darker at the top; white at the base, yellowing when handled or old. Flesh whitish, bright greyish, slightly yellowish-grey to greyish-brown; with mild taste and strong rancid to farinaceous smell. Spore print white. Spores 7–8.5 × 5–6.5 µm (7.83 × 5.56 µm); Q = 1.22–1.60 (1.41); broadly ellipsoid to slightly elongate; smooth; hyaline; negative in Melzer's reagent. Basidia 34–50 × 7–9 µm; clavate, hyaline or with slightly yellowish content; sterigmata up to 9 µm long. Basidioles 27–47 × 5–8 µm; narrowly clavate; hyaline or with slightly yellowish content. Clamps absent (see line drawing).



Tricholoma borgsjoeënse (BRA CR 23578): Ba – basidioles, Bd – basidia, Sp – spores. Del. J. Červenka.

Specimens studied. Slovakia, Oravské Beskydy Mts. (QP 6482c), Oravské Veselé village, „Dudová" locality, spruce forest (*Picea abies*), alt. 900 m, 17 August, 2014, Ľ. Čillíková (BRA CR23578). Ibidem, 23 August

(BRA CR23579). Ibidem, coniferous forest (*Picea abies*, *Larix decidua*), alt. 930 m, 23 August 2014, Ľ. Čillíková (BRA CR23580); Nízke Tatry Mts. (QP 7181b), Liptovská osada village, Korytnica spa, spruce forest (*Picea abies*) with admixed fir (*Abies alba*) and beech (*Fagus sylvatica*), alt. 880 m, 30 July 2014, V. Kunca (PVKU 1241).

Discussion

The species was first described in 2006 from Sweden by Stig Jacobsson and Siw Muskos (Jacobsson & Muskos 2006). *Tricholoma borgsjoeënse* markedly differs from other macroscopically similar species, mainly by the darker color and rather fibrillose-scaly surface of both pileus and stipe, and microscopically by the larger spores and basidia (Jacobsson & Muskos 2006). It morphologically resembles *Tricholoma terreum* (Schaeff.) P. Kumm. and *Tricholoma olivaceotinctum* Heilm.-Claus. & Mort. Chr. The closest known relative, *Tricholoma atroviolaceum* A. H. Sm. occurs in the North America (Christensen & Heilmann-Clausen 2013).

This species is known from several localities in Scandinavia. It is known from Sweden, including type locality in the vicinity of Borgsjö, as well in Finland and Norway (Gulden & Nilsen 2007). The collection of one basidioma was also reported from the Czech Republic (Holec & Kříž 2012). In Slovakia, *T. borgsjoeënse* is known from two localities (in this paper) and one of them in Nízke Tatry Mts. is now the southernmost known within Europe.

Opinions on the ecological requirements of *T. borgsjoeënse* differ in known sources. While the authors of the original description related its occurrence to virgin-like boreal mossy forests with spruce (*Picea abies*), collections from the Czech Republic and Slovakia come only from the cultural, managed forests with dominance of spruce which probably forms mycorrhiza with *T. borgsjoeënse*. In the available literature it is reported as occurring on calcareous soil (Christensen & Heilmann-Clausen 2013), but also on the bedrock formed of an acidic paragneiss (Holec & Kříž 2012). Basidiomata from around Oravské Veselé village grew in an area with predominantly sandstone bedrock, while those from locality near to Korytnica spa grew on deluvial sediments originated probably from nearby quartzites and quartz sandstones layers. The pH of the soil at the second locality was 3.7.

Acknowledgements

We would like to thank the reviewer, Jacob Heilmann-Clausen (Copenhagen), for reading the manuscript and making several useful suggestions. The paper was supported by the Slovak Grant Agency VEGA, grant no. 1/0362/13.

References

Christensen, M. & Heilmann-Clausen, J. 2013. Fungi of Northern Europe. Vol. 4 – The genus Tricholoma. Copenhagen.

Gulden, G. & Nilsen, T. S. 2007. Tricholoma borgsjoeënse, a spruce-associated species of the T. terreum group – new to Norway. *Agarica* 27: 58–60.

Holec, J. & Kříž, M. 2012. Tricholoma borgsjoeënse found in the Czech Republic and Tricholoma luridum documented in Slovakia. *Czech Mycology* 64(2): 223–232.

Jacobsson, S. & Muskos S. 2006. Tricholoma borgsjoeënse, a new species from a boreal coniferous forest in Fennoscandia. *Mycotaxon* 95: 195–200.

Thiers, B. 2013 [continuously updated]. Index Herbariorum: A global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. http://sweetgum.nybg.org/ih/ [accessed June 2014].

BOOK NOTICES

Ivona Kautmanová

Maroš Peiger, Pavol Tomka & Milan Paulíny. 2015. **Huby Liptova.** [1]–168. Liptovské múzeum v Ružomberku, Ružomberok (liptovskemuzeum.sk), ISBN978-80-971535-4-0. Price: EUR 25.50 (24.30 in the Martinus bookshop).

At the end of 2015 a new book about fungi of the Liptov region in central north Slovakia was released. It is an important contribution to the knowledge of fungal diversity of our country and though the book was intended for common amateur "mushroom hunters and lovers" at the first place, it highly exceeded this target. High quality photographs supplemented by clear and easy to read texts prove the professionalism of authors in the field of mycology.

The first chapters of the book are devoted to the kingdom of fungi, their ecology and important role in the ecosystems, threats and conservation, but also to the ways they are used by people. A special chapter deals with the photograpy of fungi. The main part of the book brings information about 265 fungal species from the Liptov region. Besides the "must have" edible and poisonous species, many quite rare and rather interesting species are described and some of them are published for the first time from the Slovak territory. Amongst others the reader will find in the book such species as e.g. *Bellonidium mollissimum*, *Boletopsis grisea*, *Chaetosphaerella phaeostroma*, *Claussenomyces prasinulus*, *Coprinopsis candidata*, *Cryptomyces maximus*, *Dacrymyces adpressus*, *Dacrymyces enatus*, *Dacrymyces tortus*, *Daldinia decipiens*, *Endogone lactiflua*, *Episphaeria fraxinicola*, *Erythricium laetum*, *Godronia fuliginosa*, *Guepiniopsis alpina*, *Helvella cupuliformis*, *Helvella terrestris*, *Hydnellum auratile*, *Hydnellum mirabille*, *Hysterium pulicare*, *Ionomidotis fulvotingens*, *Mellitiosporiella aff. densa*, *Ombrophila violacea*, *Orbilia phragmotricha*, *Peziza ninguis*, *Pilobolus crystallinus*, *Pithya cupressina*, *Pleurotus abieticola*, *Proliferodiscus pulveraceus*, *Psathyrella olympiana*, *Phellinus lundellii*, *Pyrenopeziza baraliana*, *Sarcodon martioflavus*, *Scutellinia hirta*, *Smardea protea*, *Spooneromyces helveticus*, *Tricholoma ilkkaii* and *Vuilleminia pseudocystidiata.* Thanks to this the book highly exceeds the frame of the regional publication, as being declared, and becomes valuable publication at a national and even international level.

The book Huby Liptova was released with a circulation of 500 pieces and is available at the Liptovské múzeum Museum in Ružomberok. The team of authors as well as editor of the book are acknowledged for the useful and valuable work, increasing the public knowledge on macrofungi of Slovakia.

ASCOMYCETEN, EXSICCATAE COLLECTION BY H. REHM. 1. BIBLIOGRAPHY AND CONTRIBUTORS

Pavel Lizoň

Slovak Academy of Sciences, Institute of Botany, Dúbravská cesta 9, 845 23 Bratislava, Slovakia; pavel.lizon@savba.sk

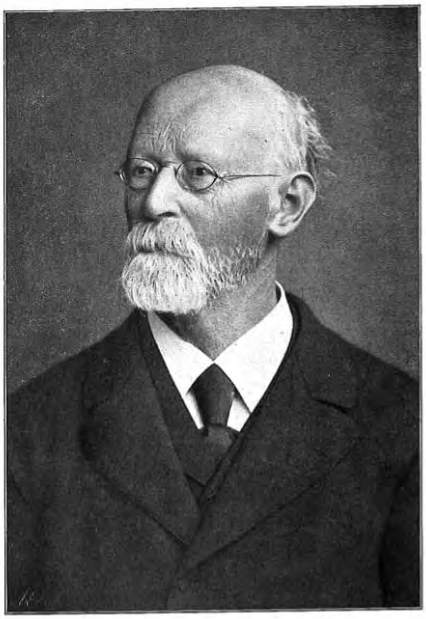
Lizoň, P. 2015. Ascomyceten, exsiccatae collection by H. Rehm. 1. Bibliography and contributors. *Catathelasma* 16: 27–40.
List of parts of exsiccatae with bibliographical references and annotated index of collectors and collaborators.

Lizoň, P. 2015. Ascomyceten, exsikátová zbierka H. Rehma. 1. Bibliografia a prispievatelia. *Catathelasma* 16: 27–40.
Zoznam jednotlivých častí exsikátu s bibliografickými údajmi a anotovaný zoznam zberateľov a prispievateľov.

Key words: Ascomycetes, types, new taxa

Exsiccatae (singular exsiccata) are series of published, uniform and numbered sets of preserved specimens distributed together with printed labels. An exsiccata is composed of multiple sets of duplicate specimens that have been distributed to herbaria and/or to collectors for exchange. Exsiccatae collections are important not only as voucher specimens for biodiversity studies but also as source for taxonomic studies since they often included newly described taxa. Nomenclatural status of these specimens (syntypes) and their printed labels are governed by the International code of nomenclature for algae, fungi and plants. For history and importance of exsiccatae consult Stevenson (1967, 1971), Stafleu (1972), and Pfister (1985).

Heinrich Rehm (see photo), an amateur mycologist, was one of the most important contributors to the systematics and taxonomy of Ascomycetes. His opus magnum on Discomycetes (Rehm, 1887–1896) is still essential source of data and his impressive exsiccatae collection called Ascomyceten (2175 specimens) serves for understanding of his taxonomic concepts and delimitation of his new taxa up to now. Basic information about Rehm's exiccatae are included in works by Stevenson (1971) and Pfister (1985). The series of papers will present a comprehensive list of all issued specimens and respective names of those taxa published in consecutive lists by the author.



Arnold, K. F. 1917. **Heinrich Rehm**. Ber. bayer. bot. Ges. 16: 10-13, Portr.
http://www.bbgev.de/berichte/016_1917/nachruf_heinrich_rehm.pdf

Heinrich Rehm

Heinrich Simon Ludwig Friedrich Felix Rehm was born in Ederheim bei Nördlingen, Bavaria, October 10, 1828. He studied medicine in Erlangen, München and graduated (Dr. med.) in Heidelberg in 1852. He was a practicing physician at Dietenhofen (1854), Sugenheim (1857), Windsheim (1871), Lohr am Main (1875, „Bezirksgerichtsarzt“ – regional medical examiner) and at Regensburg (1878–98, „Medizinalrat“, 1888). In 1899 he settled in München-Neufriedenheim. There he was in close contact with his friend lichenologist Ferdinand Arnold. Rehm died in München April 1, 1916.[1]

Rehm’s collections

Rehm’s collections had to be originally transferred to the Botanische Staatsamlung in München (M), but his heirs requested excessive payment that was not accepted by the Staatsamlung. Theodor O. Weigel, publisher and bookseller from Leipzig, offered Rehm‘s personal

1 For details about his life see Stafleu & Cowan (1983).

herbarium, including more than 100 000 specimens of fungi and lichens to the US fungus collection (BPI)[2]. The collections were finally purchased by the Naturhistoriska riksmuseet in Stockholm (S). Numerous Rehm's specimens are held also in München (M, as part of F. Armold's and G. von Niessl's herbaria), in the Naturhistorisches Museum in Wien (WU) and in the Royal Botanic Gardens, Kew [K(M)].

Ascomyceten: history and bibliography

Rehm released fascicles 1–26 in Regensburg and fascicles 27–55 in München-Neufriedenheim. Fascicles 56–57 were prepared posthumously by Franz W. Neger and released by T. O. Weigel in Leipzig.

Published lists for fascicles 1–32 have collecting sites (localities) only for new taxa (with some omissions), lists for fascicles 33–47 have data on collection sites for all specimens. Published lists for all fascicles (except for fascicles 56–57 published posthumously by Franz von Höhnel) were authored by H. Rehm. As pointed out by Stevenson (1971) the series was issued in 25 sets.

Fasc. 1: no. 1–50, 1870; fasc. 2: 51–100, 1871; fasc. 3: no. 101–150, 91c, 1872; fasc. 4: no. 151–200, 70b, 1873; fasc. 5: no. 201–250, 39b, 148b, 174b, 186b, 1874; fasc. 6: no. 251–300, 1875; fasc. 7: no. 301–350, 91d, 91e, 205b, 1876; fasc. 8: no. 351–400, 232b, 254b, 1876; fasc. 9: no. 401–450, 378b, 46c, 160b, 260b, 1878; fasc. 10: no. 451–500, 70c, 153b, 182b, 375b, 1878; fasc. 11: no. 501–550, 111b, 15bis, 170b, 1879. Publ.: Ascomyceten. Fasc. I–XI. *Ber. Naturhist. Ver. Augsburg* 26: 1–132, 1881[3],[4].

Fasc. 12: no. 551–600, 1b, 111b, 112b, 406b, 409b, 1880. Publ.: Ascomyceten Fasc. XII. *Hedwigia* 20: 33–42, 49–54, 1881[5].

Fasc. 13: no. 601–650, 15c, 88b, 88c, 91g, 106b, 182c, 561b, 584b, 379b, 532b, 1881. Publ.: Ascomyceten fasc. XIII. *Hedwigia* 21: 65–75, 81–86, 1882.

Fasc. 14: no. 651–700, 71b, 1882. Publ.: Ascomyceten fasc. XIV. *Hedwigia* 22: 33–41, 52–61, 1883.

Fasc. 15: no. 701–750, 88d, 332b, 370b, 430b, 439b, 608b, 616b, 652b, 733b, 1883. Publ.: Ascomyceten fasc. XV. *Hedwigia* 23: 49–57, 69–

2 Letter to Cornelius Lott. Shear from November 2, 1916 (BPI archives).

3 Description of no. 474 is missing and was published in the commentary for fasc. 13.

4 List and descriptions of new taxa of fascicle 1 and 2 (no. 1–100) were published by Winter (1872).

5 Hedwigia can be accessed at www.botanicus.org.

77, 1884.

Fasc. 16: no. 751–800, 406c, 108b, 202b, 217b, 285b, 352b, 604b, 613b, 677b, 712b, 714b, 1884. Publ.: Ascomyceten fasc. XVI. *Hedwigia* 24: 7–17, 66–72, 1885.

Fasc. 17: no. 801–850, 228a, 251b, 540b, 604c, 1885. Publ.: Ascomyceten fasc. XVII. *Hedwigia* 24: 225–246, 1885.

Fasc. 18: no. 851–900, 261b, 615b, 651b, 781b, 1886. Publ.: Ascomyceten Fasc. XVIII. *Hedwigia* 26: 81–98, 1887.

Fasc. 19: no. 901–950, 141b, 427b, 569b, 656b, 1888. Publ.: Ascomyceten fasc. XIX. *Hedwigia* 27: 163–175, 1888.

Fasc. 20: no. 951–1000, 44b, 84b, 575b, 765b, 1889. Publ.: Ascomyceten Fasc. XX. *Hedwigia* 28: 347–358, 1889.

Fasc. 21: no. 1001–1050, 146b, 444b, 682b, 691b, 1891. Publ.: Ascomyceten fasc. XXI. *Hedwigia* 30: 250–262, 1891.

Fasc. 22: no. 1051–1100, 148c, 425b, 664b, 1892. Publ.: Ascomycetes exs. fasc. 22. *Hedwigia* 31: 299–313, 1892.

Fasc. 23: no. 1101–1150, 115b, 463b, 503b, 659b, 1009b, 1895. Publ.: Ascomycetes exsiccati fasc. 23. 1895. *Hedwigia* 34, suppl. *Repert. kryptogam. Lit.:* 158–165, 1895.

Fasc. 24: no. 1151–1200, 62b, 216c, 319b, 433c, 552b, 553c, 603b, 608c, 635b, 724e, 996b , 1896. Publ.: Ascomycetes exsiccati. Fasc. 24. 1896. *Hedwigia* 35, suppl. *Repert. kryptogam. Lit*.: 145–151, 1896; [as no. 1–50].

Fasc. 25: no. 1201–1250, 62b, 418b, 504b, 574b, 784c, 854b, 1898. Publ.: Ascomycetes exs. fasc. 24 [sic, 25!]. *Hedwigia* 37, suppl. *Kleinere Mittheil.:* 141–144, 1898.

Fasc. 26: no. 1251–1300, 6b, 602b, 1899. Publ.: Ascomycetes exs. fasc. 26. *Hedwigia* 38, suppl. *Kleinere Mittheil.:* 242–246, 1899.

Fasc. 27: no. 1301–1350, 141b, 144b, 285a, 285b, 285c,542b, 549b, 793b, 1131b, 1244b, 1899. Publ.: Ascomycetes exs. fasc. 27. *Hedwigia* 39, suppl. *Kleinere Mittheil.:* 192–193, 1900.

Fasc. 28: no. 1351–1400, 118b, 258b, 426b, 494b, 904b, 923b, 1349c, 1901. Publ.: Diagnosen und kritische Bemerkungen zu Rehm: Ascomycetes exsiccatae Fasc. 28. *Hedwigia* 40, suppl. *Kleinere Mittheil.:* 101–106, 1901.

Fasc. 29: no. 1401–1450, 417b, 648b, 779b, 865b, 1151b, 1326b, 1378b, 1902. Publ.: Ascomycetes exs. fasc. 29. *Hedwigia* 41, suppl. *Kleinere Mittheil.:* 202–206, 1902.

Fasc. 30: no. 1451–1500, 103b, 104b, 240b,273b, 362b, 855b, 982b, 1268b, 1295b, 1449b, 1902. Publ.: Ascomycetes exs. fasc. 30.

Hedwigia 42, suppl. *Kleinere Mittheil.:* 289–293, 1903.

Fasc. 31: no. 1501–1525, 401b,108c, 431b, 421a, 689b, 188c, 1903. Publ.: Ascomycetes exs. fasc. 31. *Hedwigia* 42, suppl. *Kleinere Mittheil.:* 347–349, 1903.

Fasc. 32: no. 1526–1550, 402b, 51b, 1259b, 1352c [sic, 1357c], 12b, 417b, 522b, 920b, 670b, 673b, 144c, 93b, 381b, 949b, 241b, 329b, 1904. Publ.: Ascomycetes exs. fasc. 32. *Hedwigia* 43, suppl. *Kleinere Mittheil.:* 31–33, 1904.

Fasc. 33: no. 1551–1575, 557b, 128b, 585b, 1329b, 292b, 1904. Publ.: Ascomycetes exs. fasc. 33. *Ann. Mycol.* 2: 515–521, 1904.[6]

Fasc. 34: no. 1576–1600, 112c, 272b, 403b, 1323b, 1361b, 1504b, 438b, 692d, 1197b, 1542b, 1905. Publ.: Ascomycetes exs. Fasc. 34. *Ann. Mycol.* 3: 324–331, 1905 [sep. print.: p. 1–8].

Fasc. 35: no. 1601–1625, 752b, 202b, 1054b, 365b, 973b, 1229b, 228b, 1038b, 1905. Publ.: Ascomycetes exs. Fasc. 35. *Ann. Mycol.* 3: 409–417, 1905.

Fasc. 36: no. 1626–1650, 351b, 1150b, 1415b, 586b, 790b, 1905. Publ.: Ascomycetes exs. Fasc. 36. *Ann. Mycol.* 4: 64–71, 1906.

Fasc. 37: no. 1651–1675, 116b, 567b, 1511b, 144d, 1465b, 435b, 435c, 435d, 996b, 1906. Publ.: Ascomycetes exs. Fasc. 37. *Ann. Mycol.* 4: 404–411, 1906.

Fasc. 38: no. 1676–1700, 1123c, 1601b, 1209b, 1209c, 107b, 107c, 225b, 1907. Publ.: Ascomycetes exs. Fasc. 38. *Ann. Mycol.* 5: 78–85, 1907.

Fasc. 39: no. 1701–1725, 1719b, 608d, 194b, 715b, 1232b, 1907. Publ.: Ascomycetes exs. Fasc. 39. *Ann. Mycol.* 5: 207–213, 1907.

Fasc. 40: no. 1726–1750, 960b, 842b, 925a, 925b, 1482b, 629b, 1907. Publ.: Ascomycetes exs. Fasc. 40. *Ann. Mycol.* 5: 465–473, 1907.

Fasc. 41: no. 1751–1775, 57b, 1359b, 1200b, 1699b, 841b, 943b, 148b, 1383b, 1296b, 435e, 1908. Publ.: Ascomycetes exs. Fasc. 41. *Ann. Mycol.* 6: 116–124, 1908.

Fasc. 42: no. 1775–1889, 509b, 331b, 225c, 33b, 375c, 1908. Publ.: Ascomycetes exs. Fasc. 42. *Ann. Mycol.* 6: 485–491, 1908 [sep. print.: p. 1–7].

Fasc. 43: no. 1801–1825, 1256b, 717b, 41b, 1614b, 1909. Publ.: Ascomycetes exs. Fasc. 43. *Ann. Mycol.* 7: 134–140, 1909.

Fasc. 44: no. 1826–1850, 1007b, 475b, 240c, 495b, 663b, 1909. Publ.: Ascomycetes exs. Fasc. 44. *Ann. Mycol.* 7: 399–405, 1909.

6 Annales mycologici can be accessed at www.cybertruffle.org.uk/cyberliber.

Fasc. 45: no. 1851–1875, 1909. Publ.: Ascomycetes exs. Fasc. 45. *Ann. Mycol.7:* 524–530, 1909.
Fasc. 46: no. 1876–1900, 1663b, 406d, 830b, 1528b, 247b, 1910. Publ.: Ascomycetes exs. Fasc. 46. *Ann. Mycol.* 8: 298–304, 1910.
Fasc. 47: no. 1901–1925, 801b, 1004b, 301b, 1478b, 137b, 778b, 730b, 1820b, 474b, 1910. Publ.: Ascomycetes exs. Fasc. 47. *Ann. Mycol.* 9: 1–7, 1911.
Fasc. 48: no. 1926–1950, 1911. Publ.: Ascomycetes exs. Fasc. 48. *Ann. Mycol.* 9: 286–290, 1911.
Fasc. 49: no. 1951–1975, 1911. Publ.: Ascomycetes exs. Fasc. 49. *Ann. Mycol.* 10: 54–59, 1912.
Fasc. 50: no. 1976–2000, 1912. Publ.: Ascomycetes exs. Fasc. 50. *Ann. Mycol.* 10: 353–358, 1912.
Fasc. 51: no. 2001–2025, 1912. Publ.: Ascomycetes exs. Fasc. 51. *Ann. Mycol.* 10: 535–541, 1912.
Fasc. 52: no. 2026–2050, 1913. Publ.: Ascomycetes exs. Fasc. 52. *Ann. Mycol.* 11: 166–171, 1913.
Fasc. 53: no. 2051–2075, 1913. Publ.: Ascomycetes exs. Fasc. 53. *Ann. Mycol.* 11: 391–395, 1913.
Fasc. 54: no. 2075–2100, 1914. Publ.: Ascomycetes exs. Fasc. 54. *Ann. Mycol.* 12: 165–170, 1914.
Fasc. 55: no. 2101–2125, 1914. Publ.: Ascomycetes exs. Fasc. 55. *Ann. Mycol.* 12: 170–175, 1914.
Fasc. 56–57: no. 2126–2175, 1918. Publ.: Höhnel, F. von. Rehm: Ascomycetes exs. Fasc. 56 und 57. *Ann. Mycol.* 16: 209–224, 1918.

Ascomyceten: distribution

The Ascomyceten exsiccatae set in Stockholm (S)[7] is unfortunately distributed in general fungarium. München herbarium (M)[8] has a complete set of Ascomyceten that was obtained with F. Arnold's herbarium.

US National Fungus Collection, Beltsville, MD (BPI) has one separate incomplete set and one incomplete set distributed in the general fungarium. According to the documentation kept with the herbarium, fascicles 32–55 were received from H. Rehm[9]; fasc. 56–57 was ordered

7 www.nrm.se/english/researchandcollections/collections/databases/kryptos.8598_en.html
8 www.botanik.biologie.uni-muenchen.de/botsyst/ic/ic-home.htm
9 Fascicle 32 was the 1st purchase by F. W. Patterson, curator of the collections (BPI archives).

from T. O. Weigel. The price per fascicle was $5.00. Previous fascicles were probably received as exchange from foreign collectors or were purchased but prior to 1896 no records are available.

Roumeguère (1880) stated that the price per fascicle was 12 marks or 15 francs.

For more information about location of Rehm's exsiccatae see Stevenson (1971) and Pfister (1985).

Ascomyceten: collectors and contributors

Ade, Alfred (1876–1968), German botanist, veterinarian in Brückenau and Gemünden am Main: Germany[10]

Aderhold, Rudolph F. T. (1865–1907), German mycologist and plant pathologist in Berlin: Germany (contributed by Magnus)

Androssow: Turkmenistan (contributed by Serenrianikow)

Arnold, Ferdinand (1828–1901), German lichenologist and bryologist, judge in Eichstätt and München: Germany

Baker, Charles F. (1872–1927), American botanist and entomologist, professor of agronomy in Los Baños (Philippines): Philippines, Brazil (contributed by Hennings)

Bäumler, Johann A. (1847–1926), Austro-Hungarian mycologist and botanist, butcher in Bratislava: Slovakia (formerly Hungary/Hungarian Empire)

Beckenbauer: Germany

Bommer, Mme., probably wife of Jean-Édouard Bommer, (1829–1895), curator of the collections of the Bruxelles botanical garden: Belgium (with Rousseau)

Bornmüller, Joseph Friedrich Nicolaus (1862–1948), German botanist, curator of the Haussknecht Herbarium in Weimar: Croatia, Balkan (contributed by Diedicke)

Brenckle, Jacob Frederick (1875–1958), American physician: USA (N. Dakota)

Bresadola, Giacomo (1847–1929), Italian mycologist, clergyman in Trento: Italy

Britzelmayr, Max (1839–1909), German lichenologist and mycologist, schoolteacher in Augsburg: Germany

Brunaud, Paul (1842–1913), French mycologist, solicitor in Saintes:

10 Origin of collected material

France (contributed by Pazschke)
Bubák, František (1865–1925), Czech botanist and plant pathologist, professor of systematic botany and phytopathology in Brno: Czechia, Montenegro
Buchs, ?M., ?German plant collector, schoolteacher: Poland (formerly Oberschlesien)
Copeland, Edwin Bingham (1873–1964), American botanist, university teacher in Manila (Philippines): Philippines (contributed by H. Sydow)
Dearness, John (1852–1954), Canadian botanist and mycologist, school administrator: Canada
Demetrio, Charles Hermann (1845–1936), Germany born American plant collector, clergyman: USA (contributed by Pazschke)
Destrée, Caroline É. (1832–1910), Belgian mycologist: Belgium
Diedicke, Hermann (1865–1940), German botanist and mycologist, schoolteacher in Erfurt: Germany
Dittrich-Kalkhof, Emil Georg Friedrich (1873–1920), Austrian mycologist: Austria (Tyrol)
Dodge, Bernard O. (1872–1960), American botanist, plant pathologist at the New York Botanical Garden, Bronx: USA
Dusén, Per K. H., Swedish botanist and bryologist, schoolteacher: Brazil (contributed by H. Sydow)
Eggerth, Karl (1861–1888), Austrian plant collector, physician: Italy (Tyrol)
Eliasson, Albin G. (1860–1933), Swedish botanist, teacher: Sweden
Ellis, Job B. (1829–1905), American mycologist and botanist, schoolteacher in New York and Pensylvania, later “freelance” mycologist: USA.
Engelke, Carl [Karl] Friedrich August (1848–1926), plant collector: Germany
Erichsen, Friedo (1867–1945), German botanist and lichenologist, schoolteacher in Hamburg: Germany
Faber Friedrich Carl von (1880–1954), German botanist in Java, Wien and München
Feltgen, Johann [Jean] (1833–1906), Luxembourg mycologist, physician
Feurich, Gustav (1868–1949), German mycologist, meat inspector: Germany
Fink, Bruce (1861–1927), American lichenologist, professor of botany in Miami: USA
Fischer-Sigwart: Switzerland
Flageolet, J., catholic priest: France

Graff, Paul Weidemeyer (1880–?): Phillipines (contributed by Baker)
Hackman, H., plant collector: China, Tibet
Hara, Kanesuke (1885–1962), Japanese lichenologist: Japan
Harper, Robert A. (1862–1946), American botanist, professor of botany in Madison, WI and New York: USA
Heimerl, Anton (1857–1942), Austrian botanist, schoolteacher near Wien: Austria
Hennings, Paul Ch. (1841–1908), German cryptogamologist at the botanical museum in Berlin-Dahlem: Germany
Höhnel, Franz X. R. von (1852–1920), Austrian bryologist and mycologist, professor of botany in Wien: Austria, Indonesia, Corsica, Brazil
Ito, Seiya (1883–1962), Japanese lichenologist, professor at the Hokkaido University: Japan
Jaap, Otto (1864–1922), German botanist and entomologist, schoolteacher in Triglitz and Hamburg: Germany
Jakobasch, Ernst: Germany
Kabát, Josef E. (1849–1925), Czech mvcologist: Czechia (contributed by Bubák)
Kellerman, William A. (1850–1908), American botanist and mycologist, professor of botany in Manhattan, KA and Columbus, OH: USA, Guatemala
Kirschstein, Wilhelm (1863–1946), German mycologist, schoolteacher: Germany, Norway
Kmeť, Andrej (1841–1908), Slovak botanist and mycologist, clergyman in Prenčov: Slovakia (formerly Hungary/Hungarian Empire)
Koorders, Sijfert H. (1863–1919), Dutch-Indonesian forester and botanist in Bogor(Indonesia): Indonesia (contributed by Hennings)
Krieger, Karl W. (1848–1921), German mycologist, schoolteacher in Porschdorf and Königstein: Germany
Lagerberg, K. E. Torsten (1882–1964), Swedish botanist: Sweden
Lagerheim, Nils Gustaf (1860–1926), Swedish cryptogamologist, professor of botany in Stockholm: Equador, Norway
Lambert, P., clergyman: Austria (contributed by Strasser)
Lind, Jens W. (1874–1939), Danish mycologist and botanist, pharmacist: Denmark
Linhart, György (1844–1925), Hungarian plant pathologist and botanist, professor of economy in Budapest: Hungary, Slovakia
Lojka, Hugo (1845–1887), Hungarian lichenologist and botanist, schoolteacher in Budapest: Hungary, Slovakia (formerly Hungary/ Hungarian Empire), Romania (Transylvania), Austria

Lukasch/Lukas, Josef (1850–1939), teacher in Šumperk: Czechia (contributed by Magnus)

Mac Owan, Peter (1830–1909). England born South-African botanist, head of natural sciences at Gill College, Somerset East, later director of the Cape Town Botanical Garden and curator of the Cape Government Herbarium (contributed by Pazschke)

Magnus, Paul W. (1844–1914), German botanist and mycologist, university teacher in Berlin: Germany, Italy, Herzegovina

Maire, René (1878–1949), French botanist, professor of botany at the University of Algeria: Tunis, Greece.

Martin, George (1827–1886), American mycologist, physician: USA (contributed by Pazschke)

McRae, William (1878–1952): British mycologist at the Imperial Institute of Africultural Research in Pusa (India): India (contributed by H. Sydow)

Merrill, Elmer Drew (1876–1956), American botanist, director of Arnold arboretum and administrator of Harvard university botanical collections, Cambridge (MA): Philippines (contributed by H. Sydow)

Metz, Charles, plant collector: USA (contributed by Baker)

Moesz, Gusztav [Gustav] von (1873–1946), Hungarian mycologist at the natural-history museum and professor of botany in Budapest: Slovakia

Möller, Alfred G. J. (1860–1922), German forester and mycologist, teacher at the forestry college in Eberswalde: Germany, Brazil (contributed by Hennings)

Mouton, Victor, Belgian mycologist in Liege: Belgium

Navashin [Nawaschin], Sergei Gavrilovich (1857–1930), Russian botanist, director of the botanic garden in Kiev (now Ukraine) and founder of the Timirjazev Biological Institute in Moscow: Russia

Neger, Franz W. (1868–1923), German botanist and mycologist, professor of botany at the forestry college in Eisenach and Tharandt: Germany (contributed by H. Sydow)

Newodowski, G., Russian plant collector: Russia

Niessl von Mayendorf, Gustav (1839–1919), Austrian botanist, professor of geodesy and astronomy in Brno (Czechia) and Wien: Czechia (Moravia), Austria

Noack, Fritz (1863–?), German born plant pathologist at the Instituto Agronómico in Campinas: Brazil (contributed by H. Sydow)

Nypels, Paul: ?Belgium

Osterwald, Karl (1853–1923), German bryologist, schoolteacher:

Germany
Östmann, Fr.: Sweden (contributed by Starbäck)
Paul, Hermann K. G. (1876–1964), German bryologist, assistant at the Moorversuchsstation in Bernau: Germany
Pazschke, Franz Otto (1843–1922), German mycologist
Petrak, Franz (1886–1973), Austrian-Moravian mycologist, private scientist in Hranice (formerly Mährisch Weißkirchen), curator at the Natural-history museum in Wien: Czechia (Czechoslovakia)
Plöttner, Traugott (1853–1923), German collector associated with Hennings
Raciborski, Marjan (1863–1917), Polish botanist, researcher in Bogor (Indonesia), professor of botany in Lvov (now Ukraine) and Kraków: Indonesia
Raimundo, B.: Phillipines (contributed by Baker)
Rechinger, Karl (1867–1952), Austrian botanist, curator at the natural history museum in Wien: Samoa, Greece (contributed by Höhnel)
Reiche, Karl Friedrich (Carlos Federico) (1860–1929), German botanist, professor of botany in México : Mexico (contributed by Neger)
Reyes, S. A.: Phillipines (contributed by Baker)
Rick, Johann [Joao] (1869–1946), Austrian born mycologist, clergyman, professor of theology in São Leopoldo (Brazil): Brazil, Austria, the Netherlands
Rieber, Xaver (1860–1906), German botanist, schoolteacher in Stuttgart and Ludwigsburg: Germany
Rittman, O.: Czechia [Mähren] (contributed by Höhnel); not identified
Rompel, Josef (1867–1941), German botanist, schoolteacher: Austria (Tyrol)
Rostrup, Ove G. F. (1864–1933), Danish botanist and plant pathologist: Denmark
Rousseau, Marietta (1850–1926), Belgian mycologist associated with the botanical garden, Bruxelles: Belgium (with Bommer)
Saccardo, Pier A. (1845–1920), Italian mycologist and botanist, professor of natural sciences in Padua: Italy
Schestakow: Russia (with Serebrianikow)
Schiffner, Victor F. (1862–1944), Austrian botanist, professor of botany in Bogor (Indonesia) and Wien: Brazil (contributed by Höhnel)
Schnabl, Johann Nepomuk (1853–1899), German mycologist and botanist, schoolteacher: Germany
Schuster, ?Adrian (1842–1960), Austrian entomologist, teacher: Austria (Tyrol) (contributed by Zahlbrucker)

Seaver, Fred J. (1877–1970), American mycologist at the New York Botanical Garden, Bronx: USA

Serebrianikov, J.: Russia [co-publisher of Mycotheca Rossica … exsiccata]

Seymour, Arthur B. (1859–1933), American botanist at the Harvard University cryptogamic herbarium, Cambridge, MA: USA

Shear, Cornelius L. (1865–1956), American botanist and mycologist at the National Fungus Collection in Beltsville: USA (contributed by Pazschke)

Starbäck, Karl (1863–1931), Swedish botanist, schoolteacher, later member of the Swedish Parliament: Sweden.

Staritz, Richard (1851–1922), German mycologist: Germany

Strasser, Pius (1843–1927), Austrian botanist, clergyman: Austria

Sydow, Hans (1879–1946), German mycologist, bank employee in Berlin and Dresden [son of Paul Sydow]: Germany, Brazil

Sydow, Paul (1851–1925), German mycologist and botanist, schoolmaster in Berlin: Germany

Tavel, Franz von (1863–1941), Swiss mycologist, professor of bacteriology in Bern, lecturer and curator in Zürich: Switzerland

Thaxter, Roland (1858–1932), American botanist, professor of botany at the Harvard University: USA

Theissen, Ferdinand (1877–1919), German mycologist, clergyman in Sao Leopoldo (Brazil), schoolteacher in Feldkirch (Germany): Brazil (contributed by Rick)

Thümen, Felix von (1839–1892), German plant pathologist and mycologist at the research station in Klosterneuburg: Austria

Tubeuf, Carl [Karl] von (1862–1941), German botanist, professor of forestry in München: Germany

Ule, Ernst H. G. (1854–1915), German botanist associated with national museum in Rio de Janiero (Brazil) and botanical garden in Berlin-Dahlem: Brazil (contributed by Pazschke)

Usteri, Alfred (1869–1948), Swiss botanist and horticulturist, professor at the Sao Paulo Polytechnic: Brazil.

Vestergren, Tycho (1875–1930), Swedish botanist, school teacher in Jakobs and Stockholm: Sweden.

Vogel, Paul, plant collector: Poland, Germany (contributed by H. Sydow)

Volkart, Albert (1873–1951), Swiss botanist and professor at the ETH Zürich: Switzerland

Voss, Wilhelm (1849–1895), Austrian mycologist, schoolteacher in Ljubljana (formerly Laibach, now Slovenia) and Wien: Slovenia

(former district Krain)

Wagner, Adolf (1869–1940), Austrian botanist, professor of botany in Innsbruck: Austria, Germany (Sachsen) (contributed by K. Krieger)

Warnecke Otto, German gardener in East Africa: Togo (contributed by Hennings)

Wegelin, Heinrich (1853–1940), Swiss botanist, professor of botany in Frauenfeld: Switzerland

Wettstein, Richard (1863–1931), Austrian botanist, professor of botany in Praha (Czechia) and Wien: Brazil (contributed by Höhnel)

Winkler, Hubert (1875–1941), German botanist, professor of plant geography and systematic botany in Wrocław (formerly Breslau, Poland): Cameroon (contributed by Hennings)

Winter, Georg (1848–1887), German mycologist, teacher at the Zürich polytechnic, editor of Hedwigia and the second edition of Rabenhorst's Kryptogamenflora: Switzerland, Germany

Wolff: Italy (Tyrol)

Zahlbruckner, Alexander (1860–1938), Austrian botanist and lichenologist, curator and director of the natural history museum in Wien: Austria

Zederbauer, Emerich (1877–1950), Austrian botanist and university professor in Wien: Turkey (contributed by Höhnel)

Zettnow, ?Emil (1842–?), German microbiologist (contributed by Magnus)

Zopf, Wilhelm (1846–1909), German botanist, professor of botany in Halle and Münster: Germany

Zuhausen: Austria

Zukal, Hugo (1845–1900), Austrian botanist, profesor of plant pathology in Wien: Austria

Ascomyceten: index

Index of all issued numbered specimens presented in parts, as they were originally published, will follow these introductory chapters. An alphabetical catalogue listing all names enabling to search within the numbered index should be also compiled.

Acknowledgements

My sincere thanks go to Amy Y. Rossman (formerly the head of the Systematic Mycology & Microbiology Laboratory, USDA Agricultural Research Service, Beltsville) for giving me the opportunity to study Rehm's exsiccatae within the US National Fungus Collections (BPI) and for her longstanding support and friendship. Acknowledged is also help by curators of the Naturhistoriska riksmuseet in Stockholm (S) and

Royal Botanic Gardens, Kew, UK (K). The reviewer, Markéta Šandová (Prague), is thanked for reading and commenting the manuscript. This project was partially supported by the grant VEGA 2/0008/15.

References

Pfister, D. H. 1985. A bibliographic account of exsiccatae containing fungi. *Mycotaxon* 23: 1–139 [Ascomyceten: p. 6–7].

Rehm, H. 1887–1896. Ascomyceten: Hysteriaceen und Discomyceten. In: Rabenhorst's Kryptogamen-Flora von Deutschland, Oesterreich und der Schweiz, 2nd ed., vol. 1, part [Abth.] 3.: i–iv, 1–1275 [publ. in issues (Lieferung) 28–55; for date of publication of particular issue see www.cybertruffle.org.uk/cyberliber].

Roumeguère, C. 1880. Dr. Rehm. Ascomyceten. XIme fascicule. Octobre 1879. *Rev. Mycol. (Toulouse)* 2: 55.

Stafleu, F. A. 1972. Cryptogamae exsiccatae. *Taxon* 21: 351–354 [book review of G. Sayre J. A. Stevenson publications].

Stafleu, F. A. & Cowan, R. S. 1983. Taxonomic literature, vol. 4: P-Sak, 2nd ed. Utrecht [Rehm: p. 4: 652–655].

Stevenson, J. A. 1967. Rabenhorst and fungus exsiccati. *Taxon* 16: 112–119.

Stevenson, J. A. 1971. An account of fungus exsiccati containing material from the Americas. *Beih. Nova Hedwigia* 36: 1–563 [Rehm: p. 316–337].

Winter, G. 1872. Diagnosen und Notizen zu Rehm's Ascomyceten. *Flora* 55: 508–511, 523–527, 542–544.

BOOK NOTICES

Pavel Lizoň

Pavel Lizoň & Viktor Kučera. 2014. **Catalogue of Discomycetes referred to the genera Helotium Pers. and Hymenoscyphus Gray.** [1]–144. Institute of Botany, Slovak Academy of Sciences, Bratislava, Price: unsaleable (exchangeable).

The majority of Ascomycota known as Inoperculate discomycetes are treated currently in the order Helotiales Nannf. ex Korf & Lizoň as well as partly also in the order Leotiales Korf & Lizoň. There were and still are many unsolved taxonomical questions, as well as numerous nomenclatural problems in that group. Our studies in this topics, especially the monograph of the genus *Hymenoscyphus*, demonstrated need for a compendium summarizing knowledge on nomenclature and taxonomy of *Helotium*, the type genus of the family *Helotiaceae*, whose taxa are predominantly presented in the genus *Hymenoscyphus* now. Our discussions convicted us that future taxonomic studies in Inoperculate Discomycetes could be significantly supported by a catalogue or annotated checklist covering both nomenclatural and taxonomic data. So we started, concurrently with our taxonomic projects, a database of names referred to the genus *Helotium* and later also to *Hymenoscyphus*. Our basic database of names, based on published data, includes today 1240 entries. Our analysis started by screening of the nomenclatural status of each name. We applied principles and rules of botanical nomenclature to review if the basionym and homotypic synonyms were published effectively and validly. Protologue (original description of the taxon) was always studied in authentic publications, so all relevant references are without exception correct. We focused on determination of current systematic status of particular species and infraspecific taxa when performing taxonomic analysis. We compared original protologue with actual concept of the taxon and asses the identity of heterotypic synonyms associated with that taxon. We compared our taxonomic conclusions with published studies and consulted with top specialist in this group of fungi, such as dr. H.-O. Baral (Tübingen, Germany), Prof. R. P. Korf (Cornell University, Ithaca, USA), drs. B. Spooner and P. Kirk (Royal Botanic Gardens, Kew, UK), Prof. T. Iturriaga (Universidad Simón Bolívar, Caracas, Venezuela), dr. S. Redhead (Agriculture and Agri-Food Canada, Ottawa) and Prof. R. Galán (Universidad de Alcalá, Spain). Identification and location of type material in world fungaria (scientific collections) was for

this catalogue fundamental. We have to keep in mind that each name of taxon is attached to (associated with) a nomenclatural type (a specimen), that is crucial also for systematic circumscription of a taxon and understanding of taxonomic concept by author of the taxon. We give special attention to most important collections for this group of fungi, namely Royal Botanic Gardens Kew (UK), Natural-history museum in Stockholm (Sweden) and National museum in Praha (Czech Republic). Comparison of original protologue and voucher specimens helped us to identify numerous holotypes that had not been tagged before. We proposed to apply the holotype status to illustrations connected with the protologue when there is little chance to locate the type specimen. Each entry that represents name/epithet of a taxon has basionym, homotypic names referred to the genera *Helotium* and *Hymenoscyphus*, eventually also heterotypic synonyms, identification and location of type or original material, accepted name that reflects our taxonomic opinion, as well notes commenting taxonomy and nomenclature of that taxon. All included names are in accordance with the International Code of Nomenclature for algae, fungi, and plants. We included also few names that are according to the rules of botanical nomenclature illegitimate because they were inappropriately cited in literature. The monograph “Catalogue of Discomycetes referred to the genera *Helotium* Pers. and *Hymenoscyphus* Gray” is first and unique summation of basic knowledge on central taxa of the family *Helotiaceae*, a reference manual to be used by specialist over the world.

Coprinopsis trispora, Borská nížina Lowland, Šaštín-Stráže town, settlement Kazarka, 29 June 2014, I. Tomášeková (BRA CR 23573). Photo J. Červenka; see p. 15–20.

Tricholoma borgsjoeënse, Oravské Beskydy Mts., Oravské Veselé village, Dudová hill, 23 August 2014, Ľ. Čillíková (BRA CR 23579). Photo M. Everlingová; see p. 21–25.

Tricholoma borgsjoeënse, Nízke Tatry Mts., Liptovská osada village, Korytnica spa, 30 July 2014, V. Kunca (PVKU 1241). Photo V. Kunca; see p. 21–25.