

# CATATHELASMA

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No. 6

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## BIODIVERSITY of FUNGI in SLOVAKIA

Two marasmioid fungi new for Slovak mycoflora Slavomír Adamčík and Soňa Ripková	3
Contribution to the knowledge of macrofungi of the Strážovské vrchy Mts. Pavel Lizoň	9
Hygrocybe species as indicators of natural value of grasslands in Slovakia Slavomír Adamčík and Ivona Kautmanová	25
Mycoflora of the Western Carpathians. Abstracts of the lectures presented on the conference	35

## MYCOLOGICAL NEWS

Book notices	8, 24, 38, 39
	all by Pavel Lizoň
Editor's acknowledgements	2
Instructions to authors	2

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### Editor's Acknowledgements

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### Instructions to Authors

Catathelasma publishes contributions to the better knowledge of fungi preferably in Slovakia and central Europe. Papers should be on bio-diversity (mycofloristics), distribution of selected taxa, taxonomy and nomenclature, conservation of fungi, and book reviews and notices. We accept also announcements on literature for sale and/or exchange (classified) and on events attractive for mycologists. 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: footnote
- key words: max. 5 words, not repeating words in the title
- text: brief introduction, presented data (design and structure depend on the topic)
- illustrations: line drawings (scanned and "doc" or "tif" formatted)
- list of references
- abstract/summary in Slovak or Czech: max. 10 lines (starting with author's name and the title of the article)

Please follow these standards: Botanico-Periodico-Huntianum (Lawrence & al., 1968) and Botanico-Periodico-Huntianum/ Supplementum (Bridson, 1991) for journal abbreviations, Stafleu and Cowan's Taxonomic Literature (2nd ed., vol. 1-7, 1976-1988, & supplements) for book abbreviations, Authors of fungal names (Kirk & Amsell, 1992) and/or Authors of plant names (Brummitt & Powell, 1992) for abbreviation of author(s) of taxa – all available on-line at [www.ipni.org](http://www.ipni.org), CABI Funindex ([www.indexfungorum.org](http://www.indexfungorum.org)) for current names, and Index Herbariorum (Holmgren & al, 1990; [sciweb.nybg.org/science2/IndexHerbariorum.asp](http://sciweb.nybg.org/science2/IndexHerbariorum.asp)) for collection acronyms.

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**TWO MARASMIOID FUNGI NEW FOR SLOVAK MYCOFLORA**SLAVOMÍR ADAMČÍK<sup>1</sup> & SOŇA RIPKOVÁ<sup>2</sup>**Key words:** *Marasmiellus candidus*, *Marasmius minutus*, Bratislava

Most important treatments on *Marasmius*, *Collybia* and related genera, that include also data and records from Slovakia, are monographs by Antonín and Noordeloos (1993, 1997). Unfortunately, those data are still not incorporated into the database of Slovak fungi (Lizoň & Bacigálová, 1999). Lack of collections and mycologists specialized in particular taxonomic groups in Slovakia causes that several taxa collected in other Central European countries has not been reported from Slovakia. Good example is represented by *Marasmiellus candidus* (Bolton) Singer and *Marasmius minutus* Peck that we have found for the first time in Slovakia.

***Marasmiellus candidus* (Bolton) Singer**

Fig. 1

Pileus 3–22 mm, at first hemispherical to convex, with involute margin, later plano-convex to applanate, with deflexed to reflexed margin; at the centre often with papilla, sometimes depressed; adult basidiocarps distinctly radically sulcate almost to the centre and intervenose, smooth (under lens slightly tomentose), when young white, when adult often with brownish or greyish tints at the centre. Stipe 4–15 × 1 mm, cylindrical, at base bulbous or not and with white tomentum, smooth, pruinose, at first pure white, later grey and finally dark brown-grey. Flesh very thin, white. Lamellae distant, L = 9–20, I = 0–1, anastomosing, white, with even, concolorous edge. Spore print white.

Spores (11.5–) 12–13.5 (–15) × (3.5–) 4–5 μm, av. 13 × 4.5 μm, Q = 2.4–3.6, av. Q = 2.9, hyaline, thin-walled, smooth, fusiform, subcylindrical or amygdaliform, sometimes allantoid, non-amyloid, non-dextrinoid. Basidia 4-spored. Cheilocystidia 40.5–67 (–90) × (4.5–) 6–8 (–12.5) μm, hyaline, narrowly lageniform (with long filiform terminal part). Pileipellis a trichoderm, terminal cells 18–73 × 4–5.5 (–7.5) μm, hyaline, sparse, suberect to erect, thin-walled, mostly narrowly lageniform or attenuate and subulate, often with one or more lateral nodules, rare irregularly coralloid. Caulocystidia 40–100 × 5–20 μm, hyaline, cylindrical to narrowly lageniform. Hyphae in all tissues not dextrinoid and with clamp connections.

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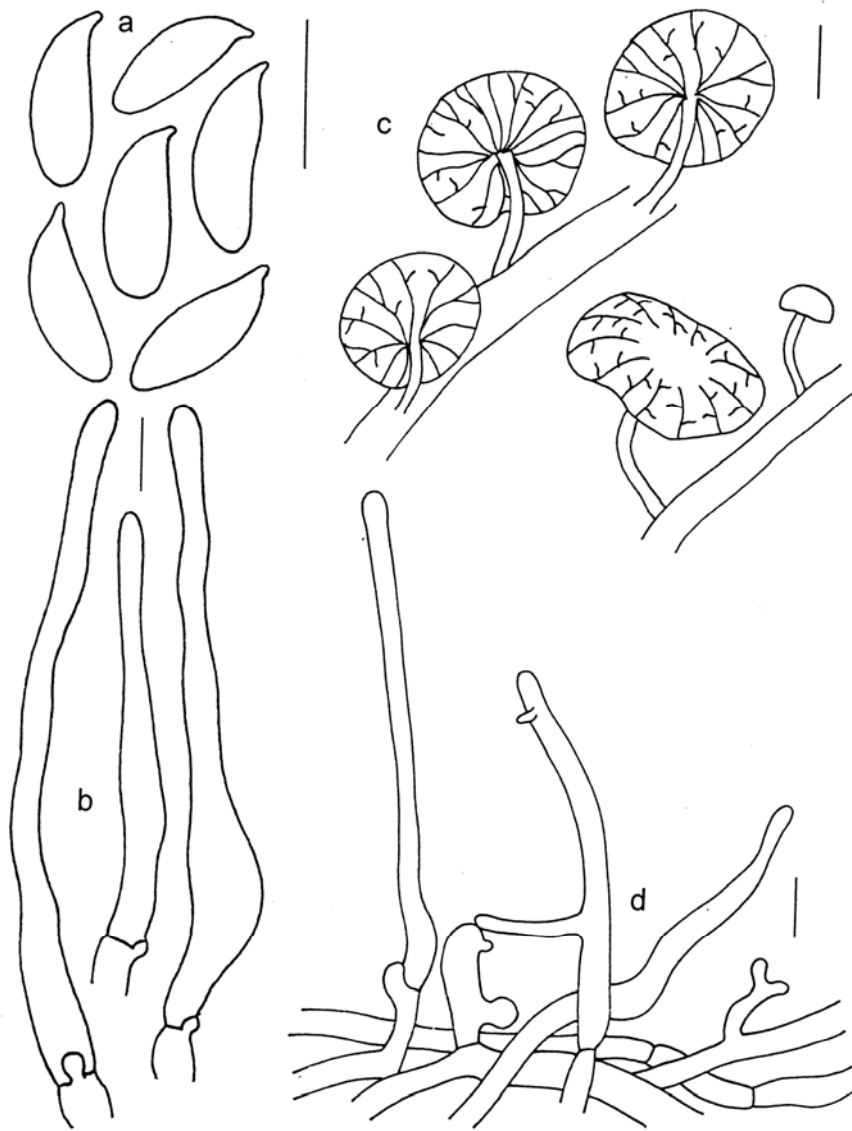


Fig. 1. *Marasmiellus candidus*. a. spores (bar = 10  $\mu$ m), b. cheilocystidia (bar = 10  $\mu$ m), c. basidiocarps (bar = 7.5 mm), d. pileipellis (bar = 10  $\mu$ m).

Habitat: on fallen twigs and branches of deciduous trees, August to September (Noordeloos, 1995a).

Notes: *Marasmiellus candidus* is a rare but widespread species, known from North America, Japan, and several European countries (Antonín & Noordeloos, 1993, Noordeloos, 1995a). Our collection is the first published for Slovakia. V. Antonín (in correspondence) collected this species also in Malé Karpaty Mts. (Železná Studienka, 7. October 2000, BRNM). The species is well characterised by white basidiocarps, relatively large spores and pileipellis lacking Rameales-structure.

Specimen examined: Slovakia, Podunajská nížina Lowland, the city of Bratislava, the National Nature Reserve of Dunajské ostrovy, Horný ostrov Island, flood plain forest, 135 m a. s. l., on wood and bark of fallen twigs of *Fraxinus* sp., *Negundo aceroides* and *Populus nigra*, which were not in contact with ground, 20 June 2003, leg. S. Adamčík (SAV).

***Marasmius minutus* Peck**

Fig. 2

Pileus 0.5–3 mm, hemispherical, later convex to applanate, radially sulcate, smooth, velutinous, brown, red-brown or pale brown, at margin usually paler. Stipe 5–15 × 0.3–0.4 mm, filliform, central, in upper part (under lamellae) whitish to ochre, towards base brownish, at base black-brown, smooth. Flesh very thin, white. Lamellae indistinct,  $l = 0$ ,  $L = 4–6$ , vein-like to almost lacking, adnexed, white, with even, concolorous edge. Spore print white.

Spores 6.5–9 × 3–3.5  $\mu\text{m}$ , av.  $Q = 2.3$ , hyaline, thin-walled, smooth, narrowly ellipsoid and narrowed towards apiculus, non-amyloid, non-dextrinoid. Basidia 4-spored. Cheilocystidia (two types): the first type (Rotalis-type) 15–21 × 6–9  $\mu\text{m}$ , hyaline, clavate, with 1.5–2.5 × 0.5–1  $\mu\text{m}$  large warts. The second type 22.5–33 × 4.5–7  $\mu\text{m}$ , hyaline, fusiform, clavate or lageniform, smooth. Pleurocystidia 18–28 × 6–10  $\mu\text{m}$ , fusiform, rarely lageniform. Pileipellis a hymeniderm, composed of two types of cells: the first type (Rotalis-type) (10–) 12.5–20.8 (–25.5) × (6–) 7.5–12.5 (–16.5)  $\mu\text{m}$ , red-brown pigmented (especially in upper part), clavate or spheropedunculate, in upper part with numerous, irregularly conical, 1–3  $\mu\text{m}$  long warts, thin-walled or slightly thick-walled. The second type (pileocystidia) (15.5–) 18.5–27 × (4.5–) 5–7  $\mu\text{m}$ , hyaline or brown pigmented (especially in upper part), lageniform to almost lecythiform, smooth or with few projections on inflated part, thin-walled or slightly thick-walled. Stipitipellis a cutis, hyphae in outer part hyaline, cylindrical, covered with numerous, 1–4  $\mu\text{m}$  long projections; terminal cells hyaline, subcapitate, with 1–10  $\mu\text{m}$  long projections. Caulocystidia not observed

(according to Antonín and Noordeloos [1993] present in upper part of stipe). Hyphae in all tissue not dextrinoid, not amyloid, with clamp connections.

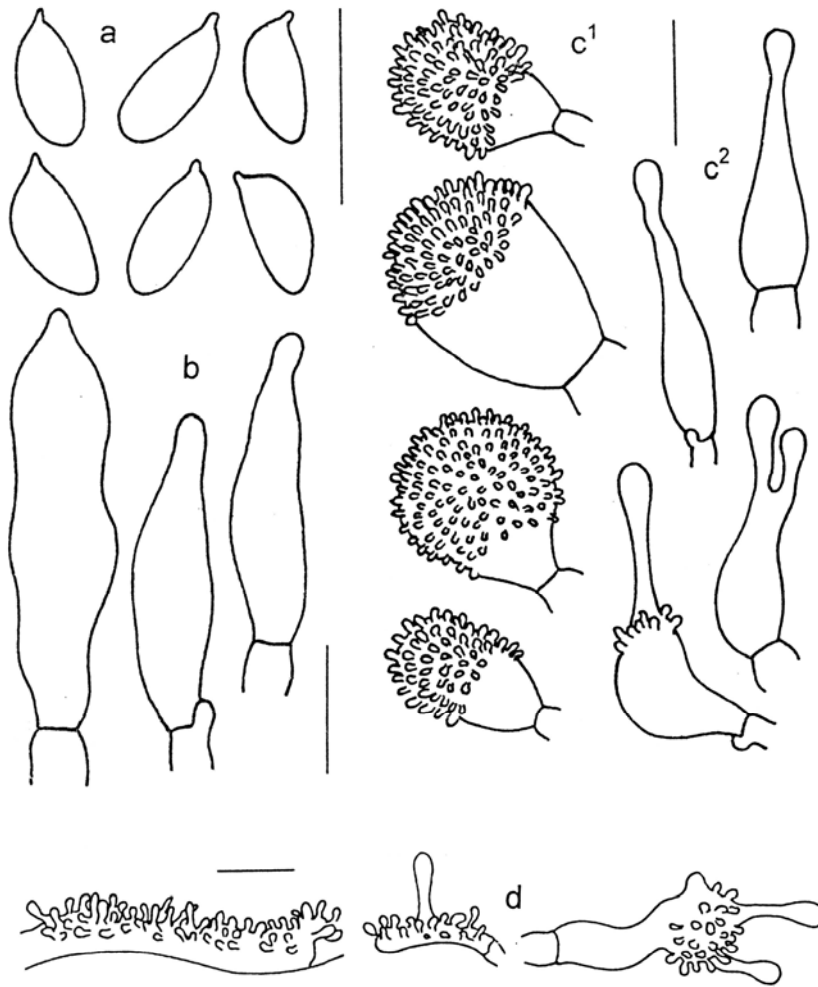


Fig. 2. *Marasmius minutus*. a. spores, b. pleurocystidia, c<sup>1</sup>. Rotalis type cells pileipellis, c<sup>2</sup>. pileocystidia, d. stipitipellis (bar = 10  $\mu$ m).

Habitat: on fallen leaves of deciduous trees, mostly *Populus* and *Salix*, rarely *Acer*, *Alnus*, *Fraxinus*, *Pyrus*, *Syringa* and *Ulmus*, August to November (Antonín 1996, Noordeloos 1995b).

Notes: *Marasmius minutus* is widespread in temperate Europe, North America and Asia, but rare or overlooked (Antonín & Noordeloos, 1993). Our specimen represents the first find in Slovakia. The species is well characterised by small, brown basidiocarps (by its colour almost merges with substratum), sparse and often reduced lamellae, presence of two types of cells in pileipellis and two types of cheilocystidia (it is very difficult to observed them).

Specimen examined: Slovakia, Podunajská nížina Lowland, the city of Bratislava, Sihoť Island, flood plain forest, 138 m a. s. l., gregarious on fallen leaves of *Populus nigra*, 23 Sept. 1997, leg. S. Ripková (SLO).

#### ACKNOWLEDGEMENTS

A review of the draft manuscript by V. Antonin is acknowledged. Slovak Grant Agencies VEGA (grant no. 2/4031/04) and APVT (grant no. 51-023902) supported this study.

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Slavomír Adamčík a Soňa Ripková: Dve marasmioidné huby nové pre Slovensko. *Catathelasma* (6): 3-7.

Tancuľky *Marasmiellus candidus* a *Marasmius minutus*, zbierané v bratislavských lužných lesoch, sú nové pre Slovensko. Opisy plodníc dopĺňajú perokresby; uvedené sú tiež ekologické údaje a poznámky o rozšírení.

## BOOK NOTICES

Wen-Ying Zhuang (ed.). 2005. **Fungi of Northwestern China**. [i-ii], i-iii, [i], 1-430. Mycotaxon, Ithaca (order direct from Wen-Ying Zhuang, P. O. Box 2714, Beijing 100080, China; [zhuangwy@sun.im.ac.cn](mailto:zhuangwy@sun.im.ac.cn)). ISBN 0-930845-14-5. Price (hardbound) USD 40.00 plus postage.

This mycoflora covers Chinese provinces Gansu, Ningxia, Qinghai, Shaanxi and autonomous region Xinjiang that represent more than one fourth of the country's territory. Most of the studied area is covered by deserts (Gobi, Takla Makan), grassland and/or pastureland, mountains and plateaus. Some 3,887 species in Myxomycetes, Oomycetes, Plasmodiophoromycetes, Chytridiomycetes, Zygomycetes, Erysiphomycetidae, Leotiomycetidae, Pezizomycetidae, Taphrinomycetidae, Eurotiomycetidae, Dothideomycetidae, Sordariomycetidae, Urediniomycetes, Ustilaginomycetes, Cantharellales, Hymenochaetales, Polyporales, Thelephorales, other aphyllorphoralean fungi, Agaricales, Boletales, Phallales, Russulales, Auriculariales, Dacrymycetales, Tremellales, anamorphic fungi are listed. Data on hosts or substrates, distribution and references are provided for each species. Host and fungus indexes are useful when searching.

Ladislav Hagara, Vladimír Antonín & Jiří Baier. 2005. **Velký atlas húb**. [1]-432, 1,440 color phot. Ottovo nakladatelství [publishing house], Praha. ISBN 80-7360-333-0. Price SKK 699.00. (Czech ed.: ISBN 80-7360-334-9, price CZK 699.00)

'Big atlas of mushrooms' is probably the largest one-volume picture book of mushrooms ever published (Svedish "Svampar i Norden och Europa" by B. Nylén published in 2001 has only 1,426 color photographs). Each presented species has Slovak and scientific names, short description with information on edibility and the season of occurrence. All pictures are of top quality!

This book is a continuation of successful co-operation of mycologists V. Antonín and L. Hagara and photographer J. Baier. In 1999 they published the book "Houby" ('Mushrooms') with 1,250 color photographs that was released in 6 editions until now.



## CONTRIBUTION TO THE KNOWLEDGE OF MACROFUNGI OF THE STRÁŽOVSKÉ VRCHY MTS.<sup>12</sup>

PAVEL LIZOŇ<sup>3</sup>

**Key words:** Ascomycota, Basidiomycota, western Slovakia

Most of records listed here have not been released before. Only few data, mostly of those on Discomycetes, were already published (Lizoň 1970, 1972, 1973, 1983, 1989, 1992a, 1992b, 1994). All collections were made by the author and voucher specimens are housed in BRA. Nomenclature follows the checklist of Slovak fungi (Lizoň & Bacigálová, 1998). Taxa not listed in that book are marked by an asterisk [\*].

Central part of the Strážovské vrchy Mts. was visited during the 9<sup>th</sup> Mycological Foray in Slovakia in 2005. It would be interesting to compare taxa in this contribution I have collected in the 1960s and the 1970s with the list of recorded taxa by participants of the foray (it should appear in next issue of *Catathelasma*).

Abbreviations: VILLAGE (the closest village to the collecting site or its township): Čelková Lehota: **CL**, Domaniža: **DOM**, Domaniža – Domanižská Lehota: **DOL**, Horná Poruba: **HP**, Opatová: **OP**, Pružina: **PRU**, Pružina – Predhorie: **PRE**, Pružina – Bristenné: **BRI**, Rajecká Lesná, Sádocké: **SA**, Trenčianske Teplice: **TT**, Valaská Belá: **VB**, Zliechov: **ZL**. ASSOCIATED PLANT: Acer: **Ac**, Betula: **Be**, *Fagus sylvatica*: **Fs**, *Corylus avellana*: **Ca**, *Juniperus communis*: **Jc**, *Larix decidua*: **Ld**, *Picea abies*: **Pa**, coniferous tree: **Conif**. BIOTOPE: alder stand: **Aln**, beech forest/stand: **Fag**, Norway spruce forest/stand: **Pic**, deciduous forest/stand: **decid**, coniferous forest/stand: **conif**, mixed forest/stand: **mix**, meadow: **mead**.

### ASCOMYCOTA

#### *Aleuria aurantia*

SA: N slope of Sádocký vrch, 21. IX. 1975.

#### *Aleuria cornubiensis* (Melastiza chateri)

SA: N slope of Sádocký vrch, 21. IX. 1975.

#### *Ascocoryne cylichnium*

DOL: valley Hodoň, wood Ca, 23. IX. 1975. PRE: E slope of Sokolie, wood Fs, 31. X. 1977. (both as *A. sarcoides*, rev. by V. Kučera, 2005)

<sup>1</sup> Partly presented as „Diskomycéty a iné makromycéty centrálnej časti Strážovských vrchov (reminiscencie na 60. a 70. roky minulého storočia)“ on the conference Príroda Strážovských vrchov a jej ochrana (Oct. 1, 2004, Belušké Slatiny).

<sup>2</sup> Dedicated to my wife Alena.

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*Bertia moriformis*

DOL: valley Hodoň, wood Fs, 20. IX. 1975,

*Bisporella citrina*

SA: S slope of Suchá hora, twig Fs, ca 700 m, 21. VIII. 1966. DOL: valley Hodoň, stump & wood Fs, 18. X. 1974, 13. IX. 1975, 20. IX. 1975.

*Bulgaria inquinans*

HP: S slope of Vápeč, bark Fs, 20. VIII. 1966.

*\*Calycellina punctata* (C. punctiformis)

ZL: N slope of Javorinka, leaves Fs, ca 750 m, 2. X. 1967.

*Chlorociboria aeruginosa*

SA: N slope of Sádocký vrch, wood Fs, 21. IX. 1975.

*Ciboria peckiana* (Rutstroemia macrospora)

HP: S slope of Suchá hora, stump Fs, ca 700 m, 21. VIII. 1966. ZL: N slope of Javorinka, root Fs, ca 750 m, 2. X. 1967. DOL: valley Hodoň, wood Fs, 20. IX. 1975. PRE: upper part of the valley of Strážovský potok, wood, 22. IX. 1975.

*Claussenomyces prasinulus*

SA: N slope of Sádocký vrch, wood, 21. IX. 1975. DOL: E slope of Šalovina, wood, 23. IX. 1975.

*Clavisdisculum acuum* (Discocistella a.)

SA: N slope of Sádocký vrch, needles of Pa, 21. X. 1975.

*\*Coprotus granuliformis*

DOL: E slope of Šalovina, dung, 23. IX. 1975.

*Cyathicula coronata*

dead herb. plant – SA: N slope of Sádocký vrch, 21. IX. 1975. PRE: N slope of Strážov, 22. IX. 1975. PRE: N slope of Sádocký vrch, 21. IX. 1975.

*Diatrype disciformis*

DOL: W slope of Šibeničná, twig, 20. VIII. 1974. SA: N slope of Sádocký vrch, twig, 21. IX. 1975.

*\*Diatrypella favacea* (D. verruciformis)

DOL: E slope of Šalovina, twig, 23. IX. 1975.

*Discina ancilis* (D. perlata)

DOL: valley Hodoň, stump of Pa, 19. V. 1973.

*Diatrype flavovirens* (Eutypa f.)

SA: N slope Sádocký vrch, wood, 21. IX. 1975.

*\*Eutypa spinosa*

PRE: N slope of Strážov, wood Fs, 22. IX. 1975.

*Geopyxis carbonaria*

DOL: E slope of Šalovina, burn place, 23. IX. 1975.

*Helvella elastica*

PRE: N slope of Strážov, 22. IX. 1975.

*Humaria hemisphaerica*

stump Fs – HP: W slope of Suchá hora, ca 850 m, 18. VIII. 1966;  
saddle of Suchá hora, ca 850 m, 20. VIII. 1966; VB: E slope of Čierna  
hora, ca 800 m, 19. VIII. 1966. PRE: E slope of Strážov, ca 800 m, 3. X.  
1967. DOL: E slope of Šalovina, 23. IX. 1975.

*Hyaloscypha hyalina*

PRE: N slope of Čierny vrch, wood Fs, ca 650 m, 7. VI. 1978. DOL:  
valley Hodoň, wood Pa, 20. IX. 1975.

*Hyaloscypha leuconica*

OP: valley Opatovská dolina, wood Fs, 400 m, 1. X. 1967. PRE: SW  
slope of Sokolie, wood Fs, ca 850 m, 5. VI. 1968.

*Hyaloscypha stevensonii*

SA: N slope Sádocký vrch, wood, 21. IX. 1975.

*Hymenoscyphus herbarum*

SA: N slope of Sádocký vrch, herb. stem, 21. IX. 1975. PRE: upper part  
of the valley of Strážovský potok, stem of Sambucus ebulus, 22. IX.  
1975.

*Hymenoscyphus imberbis*

PRE: N slope of Čierny vrch, twig of Fs in a stream, ca 750 m, 7. VI.  
1968. DOL: E slope of Šalovina, wood Fs, 23. IX. 1975.

*Hymenoscyphus ombrophilaeformis*

PRE: N slope of Strážov, incrustated wood Fs in a stream, 22. IX. 1975.

*Hymenoscyphus phiala*

VB: N slope of Čierna hora, stump Fs, ca 750 m, 19. VIII. 1966.

*Hymenoscyphus scutula*

PRE: upper part of the valley of Strážovský potok, dead stem of  
*Mentha*, 22. IX. 1975. DOL: E slope of Šalovina, herb. stem, 23. IX.  
1975; DOL: valley Hodoň, herb. stem, 23. IX. 1975.

*Hymenoscyphus serotinus*

PRE: N slope of Strážov, twig Fs, 22. IX. 1975.

*\*Hymenoscyphus syringicolor*

PRE: upper part of the valley of Strážovský potok, leaves Fs, 23. IX.  
1975.

*Hypocrea pulvinata* (H. fungicola)

SA: N slope Sádocký vrch, 21. IX. 1975.

*Hypoxyton fragiforme* (H. coccineum)

twig Fs – DOL: SE slope of Šibeničná, 20. VIII. 1974. PRE: upper part  
of the valley of Strážovský potok, 22. IX. 1975; SA: N slope Sádocký  
vrch, 21. IX. 1975.

*Hypoxyton rubiginosum*

SA: N slope of Sádocký vrch, wood Fs, 21. IX. 1975. PRE: N slope of  
Strážov, wood, 22. IX. 1975.

*Lachnellula willkomii*

DOL: valley Hodoň, twig Ld, 20. VI. 1975.

*Lachnum bicolor* (Dasyscyphus b.)

ZL: S slope of Strážov, cup Fs, ca 850 m, 3. X. 1967; W slope of Strážov, cup Fs, ca 900 m, 4. X. 1967. PRE: N slope of Strážov, twig Fs, ca 800 m, 4. VI. 1968; čiaška, SW slope of Sokolie, twig & cups Fs, ca 850 m, 5. VI. 1968; N slope of Čierny vrch, wood Fs, ca 650 m, 7. VI. 1968.

*\*Lachnum crystallinum* (Dasyscyphus c.)

SA: N slope of Sádocký vrch, twig Fs, 21. IX. 1975.

*Lachnum virgineum* (Dasyscyphus v.)

PRE: SW slope of Sokolie, leaves Fs, ca 850 m, 5. VI. 1968; N slope of Čierny vrch, cups Fs, ca 800 m, 7. VI. 1968.

*Lasiobolus ciliatus*

PRE: N slope of Strážov, dung, 22. IX. 1975.

*\*Lasiosphaeria hispida*

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Leptotrochila astrantiae* (Fabraea a.)

SA: N slope of Sádocký vrch, 21. IX. 1975.

*\*Leucoscypha alpestris* (Octospora a.)

SA: N slope of Sádocký vrch, among mosses, 21. IX. 1975.

*Lophodermium juniperinum*

PRE: upper part of the valley of Strážovský potok, needles Jc, 22. IX. 1975.

*Mitrulea paludosa*

DOL: valley Hodoň, among mosses, in Pic, 24. VIII. 1973.

*Mollisia caesia*

PRE: SW slope of Sokolie, twig FS, ca 850 m, 5. VI. 1968.

*Mollisia cinerea*

twigs & wood Fs – VB: saddle of Suchá hora, ca 850 m, 20. VIII. 1966.

HP: S slope of Vápeč, ca 700 m, 21. VIII. 1966; W slope of Čiernochová, ca 350 m, 29. IX. 1967. ZL: N slope of Javorinka, ca 750 m, 2. X. 1967. PRE: SW slope of Sokolie, ca 850 m, 5. VI. 1968; N slope of Čierny vrch, ca 800 m, 7. VI. 1968.

*Mollisia ligni*

ZL: N slope of Javorinka, wood Fs, ca 750 m, 2. X. 1967.

*Mollisia melaleuca*

stump Fs – HP: W slope of Suchá hora, 700-800 m, 18. VIII. 1966; E slope of Čierna hora, ca 750 m, 19. VIII. 1966; saddle of Suchá hora, ca 850 m, 20. VIII. 1966; S slope of Vápeč, ca 700 m, 21. VIII. 1966.

*Mollisia ramealis*

ZL: N slope of Javorinka, twig Fs, ca 750 m, 2. X. 1967.

*\*Mollisia teucrii* (Mollisiella t.)

stem *Teucrium* – PRE: N dolina Strážova, 22. IX. 1975. DOL: valley Hodoň, 23. IX. 1975.

*Morchella esculenta*

DOL: valley Hodoň, 17. V. 1973.

*Nectria cosmariospora*

DOL: valley Hodoň, 20. IX. 1975.

*Orbilia auricolor* (O. inflatula)

SA: N slope of Sádocký vrch, bark, 21. IX. 1975.

*Orbilia coccinella*

DOL: valley Hodoň, 20. IX. 1975.

*Orbilia luteorubella*

VB: W slope of Suchá hora, stump Fs, ca 700 m, 19. VIII. 1966; saddle of Suchá hora, stump Fs, ca 850 m, 20. VIII. 1966. PRE: N slope of Strážov, twig Fs, ca 800 m, 4. VI. 1968; N slope of Čierny vrch, twig Fs, ca 750 m, 7. VI. 1968.

*Orbillia xanthostigma*

HP: NW slope of Čierna hora, stump Fs, ca 750 m, 19. VIII. 1966.

*Pachyella babingtonii* (Psilopezia b.)

PRE: N slope of Strážov, wood in a stream, 22. IX. 1975.

*Peziza micropus*

VB: bottom of Homôlka, stump Fs, ca 800 m, 16. VIII. 1966.

*Peziza cf. praetervisa*

DOL: valley Hodoň, burned place, 23. IX. 1975.

*Peziza cf. succosa*

PRE: upper part of the valley of Strážovský potok, burned place, 22. IX. 1975.

*Pezizella vulgaris*

HP: NW slope of Čierna hora, stump Fs, ca 700 m, 19. VIII. 1966.

*\*Phialea strobilina*

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Polydesmia pruinosa*

twig – SA: N slope of Sádocký vrch, 21. IX. 1975. PRE: N slope of Strážov, 22. IX. 1975.

*Propolis versicolor*

HP: NW slope of Čierna hora, stump Fs, ca 750 m, 19. VIII. 1966.

*\*Psilachnum chrysostigmum* (Pezizella c.)

stem of fern – SA: N slope of Sádocký vrch, 21. IX. 1975. PRE: N slope of Strážov, 22. IX. 1975.

*\*Rutstroemia sydowiana*

PRE: upper part of the valley of Strážovský potok, leaves, 22. IX. 1975.

*Geopora cf. tenuis* (Sepultaria t.)

DOL: E slope Šalovina, burned place, 23. IX. 1975.

*Scutellinia* cf. *crinita* (*S. cervorum*)

SA: N slope of Sádecký vrch, 21. IX. 1975.

*Scutellinia setosa*

stump Fs – HP: slope of Čierna hora, ca 800 m, 19. VIII. 1966. VB:  
S slope of Suchá hora, ca 700 m, 21. VIII. 1966. PRE: W slope of  
Strážov, ca 900 m, 3. X. 1967.

\**Thecotheus pelletieri*

DOL: E slope of Šalovina, horse dung, 23. IX. 1975.

*Trichophaea gregaria*

DOL: E slope of Šalovina, 23. IX. 1975.

*Trichophaea hemisphaerioides*

DOL: E slope of Šalovina, burned place, 23. IX. 1975.

*Trichophaeopsis bicuspis*

VB: S slope of Homôlka, stump Fs, ca 700 m, 16. VIII. 1966.

*Uncinularia millepunctata* (*U. cirrhata*)

twig Fs – PRE: N slope of Čierny vrch, ca 750 m, 7. VI. 1968; upper  
part of the valley of Strážovský potok, 22. IX. 1975.

*Ustulina deusta*

DOL: valley Hodoň, stump Fs, 22. V. 1973.

\**Vibrissea vibrissoides* (*Apostemidium* v.)

PRE, on twig in a stream, N slope of Strážov, 22. IX. 1975.

*Xylaria filiformis*

PRE: upper part of the valley of Strážovský potok, leaves, 22. IX. 1975.

*Xylaria hypoxylon*

wood Fs – SA: N slope of Sádocký vrch, 21. IX. 1975. PRE: upper part  
of the valley of Strážovský potok, 22. IX. 1975.

*Xylaria polymorpha*

stump Fs – DOL: valley Hodoň, 20. IX. 1975, 23. IX. 1975. SA: N slope  
of Sádocký vrch, 21. IX. 1975.

**BASIDIOMYCOTA***Agaricus arvensis*

DOM: valley Kamenistá dolina, 20. VIII. 1974. SA: N slope of Sádocký  
vrch, 21. IX. 1975.

*Alnicola melinoides* (*Naucoria escharoides*)

DOL: valley Hodoň, in Aln, 23. IX. 1975.

*Amanita phalloides*,

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Amanita vaginata*

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Antrodia xantha* (*Amyloporia* x.)

DOL: valley Hodoň, in Fag with Pa, wood, 20. IX. 1975.

- \**Arrhenia lobata* (Leptoglossum l.)  
DOL: valley Hodoň, in *Hypnum halleri*, 23. IX. 1975.
- Bjerkandera adusta*  
SA: N slope of Sádocký vrch, trunk Fs, 21. IX. 1975.
- Boletus luridus*  
DOL: valley Hodoň, in *Fag*, 23. VIII. 1974.
- Calocera viscosa*  
DOL: valley Hodoň, wood Pa, 5. VIII. 1974.
- Catathelasma imperiale*  
DOL: valley Hodoň, in *Pic*, 20. VIII. 1974.
- Cerrena unicolor* (*Trametes* u.)  
DOL: valley Hodoň, wood Fs, 20. IX. 1975.
- Chroogomphus rutilus* (*Gomphidius* r.)  
DOL: valley Hodoň, in *Fag* with Pa, 20. IX. 1975, 23. IX. 1975.
- Clitocybe gibba* (*C. influndibuliformis*)  
DOL: valley Hodoň, in *Pic*, 5. VIII. 1974. DOL: slope of Úboč, in decid, 5. VIII. 1974,
- Clitocybe incilis*  
RL: valley Suchá dolina, in decid, 20. VIII. 1974.
- Clitocybe nebularis*  
SA: N slope of Sádocký vrch, 21. IX. 1975. PRE: upper part of the valley of Strážovský potok, 1. X. 1971.
- Clitocybe odora*  
SA: N slope of Sádocký vrch, 21. IX. 1975.
- Clitopilus prunulus*  
DOL: valley Hodoň, in *Fag* with Pa, 20. IX. 1975.
- Conocybe teneroides* (*Pholiotina* t.)  
SA: N slope of Sádocký vrch, 21. IX. 1975.
- Coprinus atramentarius*  
SA: N slope of of Sádocký vrch, 21. IX. 1975.
- Coprinus comatus*  
SA: N slope of of Sádocký vrch, 21. IX. 1975.
- Coprinus radiatus*  
DOL: E slope of Šalovina, horse dung, 23. IX. 1975.
- Coprinus truncorum* (*C. micaceus*)  
DOL: valley Hodoň, on stump, in *Fag* with Pa, 20. IX. 1975.
- Cortinarius infractus*  
DOL: valley Hodoň, in *Fag* with Pa, 20. IX. 1975. SA: N slope of Sádocký vrch, 21. IX. 1975.
- Cortinarius multififormis*  
DOL: valley Hodoň, in *Fag* with Pa, 20. IX. 1975.
- Cyathus striatus*  
PRE: upper part of the valley of Strážovský potok, 22. IX. 1975.

*Cystoderma carcharias*

PRE: upper part of the valley of Strážovský potok, 22. IX. 1975.

*Cystolepiota sistrata*

DOL: valley Hodoň, in mix, 23. IX. 1975.

*Daedalea confragosa*

wood - DOL: valley Hodoň, 20. IX. 1975. SA: N slope of of Sádocký vrch, 21. IX. 1975. PRE: upper part of the valley of Strážovský potok, 22. IX. 1975, 31. X. 1977.

*Hydnum repandum* (Dentinum r.)

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975; and in mix, 23. IX. 1975. BRI: in conif, 1. XI. 1977.

*Entoloma byssisedum*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975. SA: N slope of of Sádocký vrch, 21. IX. 1975.

*Entoloma chalybaeum*

CL: in mead, 22. IX. 1975.

*Fomes fomentarius*

DOL: slope of Úboč, trunk of Ac, 18. V. 1973. PRE: edge of Hrubá Kačka, trunk of Fs, 22. V. 1973; upper part of the valley of Strážovský potok, trunk of Fs, 6. V. 1977. SA: N slope of of Sádocký vrch, trunk of Fs, 21. IX. 1975. DOL: E slope of Šalovina, trunk Fs, 17. V. 1973. DOL: slope of Jazevšie, trunk Fs, 20. V. 1973.

*Fomitopsis pinicola*

SA: slope of of Sádocký vrch, trunk, 22. V. 1973, 21. IX. 1975. PRU – Mlynište: trunk Pa, 2. XI. 1977.

*Ganoderma lipsiense* (G. applanatum)

DOL: valley Hodoň, trunk Fs, 20. IX. 1975. SA: N slope of Sádocký vrch, trunk, 21. IX. 1975. TT: park, trunk, 22. VII. 1978.

*Ganoderma lucidum*

DOL: SW slope of Šibeničná, wood, 20. VIII. 1974.

*Geastrum quadrifidum*

DOL: valley Hodoň, in Pic, 5. VIII. 1974.

*Geastrum fimbriatum* (G. sessile)

SA: N slope of Sádocký vrch, 21. IX. 1975. DOL: valley Hodoň, in mix, 23. IX. 1975. BRI: in conif, 1. XI. 1977. PRU – Mlynište: in Pic (with Fs), 2. XI. 1977.

*\*Gloeocystidium ochraceum*

DOL: valley Hodoň, in Fag with Pa, wood, 20. IX. 1975.

*Gloeophyllum odoratum* (Osmoporus o.)

DOL: valley Hodoň, stump Pa, 24. VIII. 1973.

*Gloeophyllum sepiarium*

SA: N slope of Sádocký vrch, wood, 21. IX. 1975. PRU – Mlynište: in Pic with Fs, wood Pa, 2. XI. 1977.



*Gomphidius glutinosus*,

DOL: valley Hodoň, in Pic, 5. VIII. 1974, 18. X. 1974.

*Gymnopus confluens* (Collybia c.)

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975. SA: N slope of Sádocký vrch, 21. IX. 1975. PRE: upper part of the valley of Strážovský potok, 22. IX. 1975.

*Gymnopus dryophilus* (Collybia d.)

DOL: valley Hodoň, in Fag and Pic, 19. VI. 1975.

*Gymnopus peronatus* (Collybia p.)

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975; SA: slope of of Sádocký vrch, 21. IX. 1975.

*Gyrodon lividus*

DOL: valley Hodoň, in Aln, 21. IX. 1975, 23. IX. 1975.

*Hebeloma claviceps*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975.

*Hebeloma sinapizans*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975.

*Heterobasidium annosus*

DOL: slope of , wood, 5. VIII. 1974. DOL: valley Hodoň, wood, 20. IX. 1975. SA: N slope of Sádocký vrch, wood, 21. IX. 1975. PRU – Mlynište: root Pa, 2. XI. 1977.

*Hygrophorus agathosmus*

DOL: valley Hodoň, in Pic, 18. X. 1974.

*Hygrophorus chrysodon*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975.

*Hygrophorus eburneus* (H. cossus)

DOL: valley Hodoň, in Pic, 24. VIII. 1973, 18. X. 1974. SA: N slope of Sádocký vrch, 21. IX. 1975.

*\*Hygrophorus melizeus*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975, 23. IX. 1975. SA: N slope of Sádocký vrch, 21. IX. 1975. PRU: upper part of the valley of Strážovský potok, 22. IX. 1975.

*Hygrophorus penarius*

RL: valley Suchá dolina, in Fag, 20. VIII. 1974.

*Hypholoma fasciculare*

SA: N slope of Sádocký vrch, stump, 21. IX. 1975. PRU - Mlynište, stump, 2. XI. 1977.

*Hypholoma sublateritium*

SA: N slope of Sádocký vrch, wood, 21. IX. 1975. PRE: upper part of the valley of Strážovský potok, wood, 22. IX. 1975.

*Inocybe corydalina*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975.

*Inocybe erubescens* (l. patouillardii)

RL: valley Suchá dolina, in decid, 20. VIII. 1974. DOL: valley Hodoň, in mix, 20. VIII. 1974.

*Inocybe leptophylla* (l. casimiri)

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975.

*Inocybe praetervisa*

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Inocybe rimosa* (l. fastigiata)

DOL: valley Hodoň, in mix, 20. VIII. 1974, 20. IX. 1975. SA: N slope of Sádocký vrch, 21. IX. 1975.

*Inonotus nodulosus*

DOL: valley Hodoň, wood, 20. IX. 1975.

*Laccaria amethystina*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975; and in mix, 23. IX. 1975.

*Lacrymaria lacrymabunda* (Psathyrella velutina)

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Lactarius blennius*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975; and in mix, 23. IX. 1975. SA: N slope of Sádocký vrch, 21. IX. 1975. PRE: upper part of the valley of Strážovský potok, 22. IX. 1975.

*Lactarius deliciosus*

DOL: valley Hodoň, in Pic, 24. VIII. 1973, 18. X. 1974; and in mix, 23. IX. 1975. PRE: upper part of the valley of Strážovský potok, 22. IX. 1975, 31. X. 1977. BRIE: in conif, 1. XI. 1977.

*Lactarius mitissimus*

DOL: valley Hodoň, in Pic, 18. X. 1974. BRIE: in conif, 1. XI. 1977.

*Lactarius pallidus*

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Lactarius subdulcis*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975.

*Lactarius vellereus*

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Lentinus lepideus*

between DOL and SA: stump, 19. VI. 1975.

*Lentinus torulosus* (Panus conchatus)

SA: N slope of Sádocký vrch, stunp, 21. IX. 1975.

*Lenzites betulina*

SA: N slope of Sádocký vrch, trunk Be, 21. IX. 1975.

*Lepiota cristata*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975. SA: N slope of Sádocký vrch, 21. IX. 1975.

*Lepista flacida*

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Lepista saeva* (L. personata)

DOL: valley Hodoň, in Pic, 18. X. 1974.

*Lycoperdon perlatum*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975, 23. IX. 1975. SA: N slope of Sádocký vrch, 21. IX. 1975 BRI: in conif, 1. XI. 1977.

*Lycoperdon pyriforme*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975.

*Lyophyllum decastes*

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Macrolepiota mastoidea*

DOL: valley Hodoň, in mead, 23. IX. 1975.

*Macrolepiota procera*

CL: in mead, 22. IX. 1975.

*Marasmius alliaceus*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975. SA: slope of Sádocký vrch, 21. IX. 1975.

*Melanoleuca melaleuca*

DOL: N slope of Sádocký vrch, 21. IX. 1975.

*Mycena acicula*

DOL: E slope Šalovina, rotten wood, 23. IX. 1975.

*Mycena alcalina*

PRE: upper part of the valley of Strážovský potok, stump, 22. IX. 1975.

*Mycena archangeliana* (M. oortiana)

DOL: valley Hodoň, wood, 30. IX. 1975.

*Mycena capillaris*

SA: N slope of Sádocký vrch, leaves Fs, 21. IX. 1975.

*Mycena crocata*

SA: N slope of Sádocký vrch, 21. IX. 1975. PRE: upper part of the valley of Strážovský potok, 22. IX. 1975.

*Mycena epipterygia*

DOL: valley Hodoň, 23. IX. 1975.

*Mycena epipterygia* var. *viscosa*

DOL: valley Hodoň, wood, 18. X. 1974.

*Mycena filipes* (M. iodolens)

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Mycena flavescens*

SA: N slope of Sádocký vrch, leaves Fs, 21. IX. 1975.

*Mycena galericulata*

SA: N slope of Sádocký vrch, stump, 21. IX. 1975. PRE: upper part of the valley of Strážovský potok, wood, 22. IX. 1975. DOL: valley Hodoň, wood, 23. IX. 1975.

*Mycena haematopus*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975. SA: N slope of Sádocký vrch, 21. IX. 1975. PRE: upper part of the valley of Strážovský potok, 22. IX. 1975.

*\*Mycena olivascens*

SA: N slope of Sádocký vrch, wood, 21. IX. 1975. PRE: upper part of the valley of Strážovský potok, wood, 22. IX. 1975. DOL: E slope Šalovina, wood, 23. IX. 1975.

*Mycena pelianthina*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975.

*Mycena pterigena*

PRE: upper part of the valley of Strážovský potok, fern, 22. IX. 1975.

*Mycena pura* s. l.

DOL: valley Hodoň, in mix, 20. IX. 1975, 23. IX. 1975, SA: N slope of Sádocký vrch, 21. IX. 1975. PRE: upper part of the valley of Strážovský potok, 22. IX. 1975.

*Mycena renati*

SA: N slope of Sádocký vrch, wood, 21. IX. 1975. PRE: upper part of the valley of Strážovský potok, wood, 22. IX. 1975.

*Mycena speirea*

SA: N slope of Sádocký vrch, wood Ac, 21. IX. 1975. DOL: valley Hodoň, in Aln, twig, 23. IX. 1975.

*Mycena viridimarginata*

DOL: valley Hodoň, in Fag with Pa, wood, 20. IX. 1975.

*Oligoporus obductus* (Polyporus osseus)

DOL: valley Hodoň, wood Fs, 20. IX. 1975.

*Oligoporus stipticus* (Tyromyces s.)

SA: N slope of Sádocký vrch, wood, 21. IX. 1975.

*Oudemansiella mucida*

PRE: upper part of the valley of Strážovský potok, wood, 22. IX. 1975.

*Paxillus atrotomentosus*

DOL: valley Hodoň, in Pic, stump, 5. VIII. 1974, 20. VIII. 1974. between DOL and SA: in Pic, stump, 21. VIII. 1974.

*Peniophora incarnata*

DOL: E slope of Šalovina, twig, 23. IX. 1975.

*Phellinus conchatus*

SA: N slope of Sádocký vrch, wood, 21. IX. 1975.

*\*Phlebia lacteola* (Corticium l.)

CL: in mead, Jc, 22. IX. 1975.

*Phlebia radiata*

SA: N slope of Sádocký vrch, twig, 21. IX. 1975.

*Pholiota lucifera*

DOL: valley Hodoň, in Fag with Pa, wood, 20. IX. 1975. PRE: upper part of the valley of Strážovský potok, wood, 22. IX. 1975.

*Physisporinus sanguinolentus* (Rigidoporus s.)

SA: N slope of Sádocký vrch, wood, 21. IX. 1975.

*Pleurotus pulmonarius*

DOL: SW slope of Šibeničná, wood Fs, 20. VIII. 1974.

*Polyporus badius*

DOL: SW slope of Šibeničná, twig, 22. VIII. 1974.

*Polyporus ciliatus*

DOL: SW slope of Šibeničná, 20. VIII. 1974.

*Polyporus squamosus*

DOL: edge of Úboč, trunk Fs, 18. V. 1973; SW slope of Šibeničná, wood Fs, 20. VIII. 1974; valley Hodoň, wood, 20. VIII. 1974; and stump Fs, 20. VI. 1975. DOM: valley Kamenistá dolina, wood Fs, 21. V. 1973. RL: valley Suchá dolina, wood Fs, 20. VIII. 1974.

*Polyporus varius*

DOL: valley Hodoň, wood, 20. IX. 1975.

*Polyporus brumalis*

PRE: upper part of the valley of Strážovský potok, wood, 22. IX. 1975.

*Psathyrella piluliformis* (P. hydrophila)

PRE: upper part of the valley of Strážovský potok, 1. XI. 1977.

*Psathyrella spadicea*

DOL: valley Hodoň, 21. IX. 1975.

*Pseudoclitocybe cyathiformis*

BRIE: in conif, 1. XI. 1977.

*Pseudocraterellus undulatus* (Craterellus sinuosus)

DOL: E slope of Šalovina, 23. IX. 1975.

*Psilocybe inquilina* var. *crobula*

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Pycnoporus cinnabarinus*

DOL: slope of Úboč, twig, 5. VIII. 1974.

*Ramaria formosa*

DOL: valley Hodoň, in Pic, 18. X. 1974.

*Rhodocybe nitellina*

SA: N slope of Sádocký vrch, 21. IX. 1975. DOL: valley Hodoň, in mix, 23. IX. 1975.

*Rickenella fibula*

DOL: E slope of Šalovina, 23. IX. 1975.

*Russula alutacea*

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Russula cyanoxantha*

DOL: valley Hodoň, in Pic, 20. VIII. 1974; and in Fag with Pa, 20. IX. 1975.

*Russula fellea*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975. SA: N slope of Sádocký vrch, 21. IX. 1975.

*Russula integra*

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Russula nauseosa*

PRE: upper part of the valley of Strážovský potok, 22. IX. 1975.

*Russula paludosa*

DOL: valley Hodoň, in Pic, 20. VIII. 1974.

*Schizophyllum commune*

trunk – DOL: valley Hodoň, 20. IX. 1975. SA: N slope of Sádocký vrch, 21. IX. 1975. PRE: upper part of the valley of Strážovský potok, 6. V. 1977, 31. X. 1977. PRU - Mlynište, 2. XI. 1977.

*Setulipes androsaceus* (Marasmius a.)

DOL: valley Hodoň, in Pic, 20. VIII. 1974.

*Simocybe sumptuosa*

PRE: upper part of the valley of Strážovský potok, wood, 22. IX. 1975.

*Steccherinum fimbriatum*

SA: N slope of Sádocký vrch, wood, 21. IX. 1975.

*Stereum hirsutum*

DOL: valley Hodoň, wood Fs, 19. VI. 1975. SA: N slope of Sádocký vrch, wood, 21. IX. 1975. TT: park, wood, 22. VII. 1978.

*Stropharia aeruginosa*

SA: N slope of Sádocký vrch, 21. IX. 1975. PRE: upper part of the valley of Strážovský potok, 1. XI. 1977.

*\*Stropharia albocyanea*

PRE: upper part of the valley of Strážovský potok, 22. IX. 1975.

*Suillus granulatus*

DOL: valley Hodoň, 23. VIII. 1974.

*Suillus laricinus* (S. aeruginascens)

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Tomentella bryophila*

DOL: valley Hodoň, wood, 20. IX. 1975.

*Tomentella ellisii* (T. ochracea)

SA: N slope of Sádocký vrch, wood, 21. IX. 1975.

*Trametes hirsuta*

DOL: valley Hodoň, twig Fs, 24. VIII. 1973, 20. IX. 1975.

*Trametes versicolor*

DOL: valley Hodoň, wood Fs, 24. VIII. 1973. SA: N slope of Sádocký vrch, wood, 21. IX. 1975. PRE: upper part of the valley of Strážovský

potok, wood Fs, 31. X. 1977, 1. XI. 1977. PRU – Mlynište: wood Fs, 2. XI. 1977.

*Tremella encephala*

PRU – Mlynište: wood Pa, 2. XI. 1977.

*Tremella foliacea*

PRE: upper part of the valley of Strážovský potok, wood Fs, 6. V. 1977.

*Tremiscus helvelloides*

DOL: valley Hodoň, in Pic, 20. VIII. 1974, 18. X. 1974, 19. VII. 1975, 20. IX. 1975

*Trichaptum abietinum* (Hirschioporus a.)

DOL: valley Hodoň, wood Conif, 20. IX. 1975.

*Tricholoma album*

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Tricholoma argyraceum*

BRIE: in conif, 1. XI. 1977.

*Tricholoma sulphureum*

DOL: valley Hodoň, in Fag, 13. IX. 1975, 20. IX. 1975. SA: N slope of Sádocký vrch, 21. IX. 1975.

*Tricholoma terreum*

DOL: valley Hodoň, in Fag with Pa, 20. IX. 1975. PRE: upper part of the valley of Strážovský potok, under *Pinus*, 31. X. 1977. BRI: in conif, 1. XI. 1977. PRU – Mlynište: in Pic with Fs, 2. XI. 1977.

*Tricholoma vaccinum*

DOL: valley Hodoň, in Pic, 18. X. 1974. SA: N slope of Sádocký vrch, 21. IX. 1975.

*Tricholomopsis rutilans*

DOM: valley Kamenistá dolina, in Fag, stump, 20. VIII. 1974. DOL: valley Hodoň in Pic, stump, 18. X. 1974. SA: N slope of Sádocký vrch, stump, 21. IX. 1975.

*Tyromyces fragilis*

DOL: valley Hodoň, in Fag with Pa, wood, 20. IX. 1975. SA: N slope of Sádocký vrch, wood, 21. IX. 1975. PRE: upper part of the valley of Strážovský potok, wood, 22. IX. 1975.

*Xerocomus chrysenteron*

SA: N slope of Sádocký vrch, 21. IX. 1975.

*Xerula radicata* (Oudemansiella r.)

DOL: valley Hodoň, 20. VIII. 1974, 20. IX. 1975. SA: N slope of Sádocký vrch, 21. IX. 1975. TT: park, 22. VII. 1978.

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Výsledky mykologického výskumu v šesťdesiatych a sedemdesiatych rokoch 20. storočia zahŕňujú údaje o výskyte 79 druhov vrekatých húb a 158 druhov bazídiových húb.

#### BOOK NOTICE

Eva Lisická. 2005. **The lichens of the Tatry Mountains**. [1]-439, 1 map. Veda, the publishing house of the Slovak Acad. of Sci., Bratislava. ISBN 83-89648-09-1. Price SKK 250.00 [orders at [www.veda.sav.sk](http://www.veda.sav.sk); for exchange contact the librarian [eva.zaletova@savba.sk](mailto:eva.zaletova@savba.sk) of the Institute of Botany].

A comprehensive treatment on the distribution and habitat ecology of lichens and lichenicolous fungi (1,119+ 60 taxa) from Západné, Vysoké and Belianske Tatry mountains. It covers also taxa (882+37) from the Polish side of the mountains.



## HYGROCYBE SPECIES AS INDICATORS OF NATURAL VALUE OF GRASSLANDS IN SLOVAKIA

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**Key words:** Hygrocybe, distribution, Slovakia, indicator species

Though Slovakia is a country rich in grasslands no comprehensive research of grassland *Hygrocybe* taxa has been accomplished. Checklist of non-vascular and vascular plants of Slovakia (Lizoň & Bacigálová, 1998) has data on occurrence of 28 *Hygrocybe* species. Later Kautmanová (2003) published additional 18 *Hygrocybe* taxa from Slovakia.

Traditionally managed grasslands (hand-mowed meadows and extensively grazed pastures) are now declining in Slovakia, therefore possibility of evaluation of endangered grasslands is needed. Taxa of the genus *Hygrocybe* are considered to be good indicators of conservation value of grasslands. Rald (1985) published the first system for an evaluation of grasslands based on the number of *Hygrocybe* taxa occurring at a site. Nitare (1988) accepted as indicator species of conservation value of grasslands also taxa of *Clavariaceae*, *Geoglossaceae*, *Entoloma* and *Dermoloma*. Jordal (1997) published the first scoring system (rarer taxa are scored with more points) for evaluation of grasslands, partly based on an unpublished study by Vesterholt (1995). Those systems are not restricted only to *Hygrocybe* taxa and are based on accurate identification of uneasy genera, such as *Entoloma*. Recent scoring systems (McHugh & al., 2001, Evans, 2003) are based on occurrence *Clavariaceae*, *Hygrocybe*, *Entoloma* and *Geoglossaceae* taxa (CHEG – abbreviations of first letter of four taxonomic groups mentioned above – scoring system revised by Rotheroe & al., 1996). Griffith & al. (2004) proposed a simple guide to fungal diversity of grassland sites for beginners, based on the distinctive characteristic of carpophores (shape, colour).

Evaluation of grasslands based on occurrence of macrofungi are rare in central Europe (Zagyva, 2001) and no such studies are known from Slovakia. We are comparing here valuable grasslands in three selected areas in Slovakia and introducing a scoring system suitable for our

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country. Our study is based on published data on occurrence of *Hygrocybe*, herbarium specimens and numerous recent collections.

#### MATERIAL AND METHODS

Research was carried on in 2001–2005 in three orographic areas of Slovakia: Biele Karpaty Mts., Cerová vrchovina Mts. and Laborecká vrchovina Mts. Biele Karpaty Mts. are situated in western Slovakia, Laborecká vrchovina Mts are in eastern Slovakia, both in external zone of Western Carpathians formed by tertiary flysh belt. Cerová vrchovina Mts. is a hilly area in the south-central part of Slovakia and all visited grasslands have eroded sandstone underground. Cerová vrchovina Mts. differs from other two studied orographic regions in having dryer and warmer climate. Biele karpaty Mts. and in Laborecká vrchovina Mts. are dominated by beech forest, while thermophilous and xerophilous oak forests are dominant in Cerová vrchovina Mts. We have visited 20 grassland sites in all three regions and the most of valuable *Hygrocybe*-sites presented here were visited more than once.

*Hygrocybe* taxa were identified using the monographic studies by Boertmann (1996) and Candusso (1997). Where necessary, field identifications were verified by microscopic observations (Congo Red in ammoniar). Acronyms of herbaria follow Index Herbariorum (Holmgren & al., 1990). Position of collecting sites is presented by geographical coordinates and quadrant (Q) of the Central European grid mapping system (UTM). Nomenclature follows Checklist of non-vascular and vascular plants of Slovakia (Lizoň & Bacigálová, 1998), Index Fungorum (Kirk, 2005) and Boertman (2002). With the exception of *Hygrocybe virginea* var. *ochraceopallida* (P. D. Orton) Boertman, we do not accept any other infraspecific taxa, because they were collected only as colour variations together with typical basidiocarps.

The conservation value of grasslands was assessed using the scoring system by McHugh & al. (2001), but in our case only including *Hygrocybe* taxa. Scores of each *Hygrocybe* taxa were adjusted according to their occurrence in Slovakia (Tab. 1).

Tab. 1. Scoring system used for evaluation of grasslands in Slovakia based on occurrence of *Hygrocybe* taxa. Taxa are arranged alphabetically, the list contains only species collected in studied areas.

Score	Species
4	<i>Hygrocybe calyptriformis</i> (Berk.) Fayod
1	<i>Hygrocybe cantharellus</i> (Schwein.) Murrill
2	<i>Hygrocybe ceracea</i> (Wulfen) P. Kumm.
1	<i>Hygrocybe chlorophana</i> (Fr.) Wünsche

4	<i>Hygrocybe citrinovirens</i> (J.E. Lange) Jul. Schäff.
1	<i>Hygrocybe coccinea</i> (Schaeff.) P. Kumm.
1	<i>Hygrocybe conica</i> (Schaeff.) P. Kumm.
4	<i>Hygrocybe constrictospora</i> Arnolds
4	<i>Hygrocybe fornicata</i> (Fr.) Singer
2	<i>Hygrocybe glutinipes</i> (J.E. Lange) R. Haller Aar.
4	<i>Hygrocybe ingrata</i> J.P. Jensen & F.H. Møller
1	<i>Hygrocybe insipida</i> (J.E. Lange ex S. Lundell) M. Moser
4	<i>Hygrocybe intermedia</i> (Pass.) Fayod
2	<i>Hygrocybe irrigata</i> (Pers.) Bon
2	<i>Hygrocybe marchii</i> (Bres.) Singer
2	<i>Hygrocybe miniata</i> (Fr.) P. Kumm.
2	<i>Hygrocybe mucronella</i> (Fr.) P. Karst.
4	<i>Hygrocybe nitrata</i> (Pers.) Wünsche
4	<i>Hygrocybe ovina</i> (Bull.) Kühner
2	<i>Hygrocybe persistens</i> (Britzelm.) Britzelm.
4	<i>Hygrocybe phaeococcinea</i> (Arnolds) Bon
1	<i>Hygrocybe pratensis</i> (Pers.) Murrill
1	<i>Hygrocybe psittacina</i> (Schaeff.) P. Kumm.
2	<i>Hygrocybe punicea</i> (Fr.) P. Kumm.
2	<i>Hygrocybe quieta</i> (Kühner) Singer
2	<i>Hygrocybe reidii</i> Kühner
2	<i>Hygrocybe russocoriacea</i> (Berk. & T.K. Mill.) P.D. Orton & Watling
4	<i>Hygrocybe splendidissima</i> (P.D. Orton) M. Moser
4	<i>Hygrocybe substrangulata</i> (Peck) M. Moser
1	<i>Hygrocybe virginea</i> var. <i>ochraceopallida</i> (P.D. Orton) Boertman
1	<i>Hygrocybe virginea</i> (Wulfen) P. D. Orton

Among the 31 listed species 11 have a score of 4 points, 11 a score of 2 points and 9 a score of 1 point. Taxa with 4 points are rare throughout their distribution or are very rare in Slovakia, taxa with 2 points are uncommon and/or growing in restricted habitats and taxa with 1 point are common, often growing on less valuable sites.

#### EVALUATION OF INTERESTING *HYGROCYBE* SITES

##### **Biele Karpaty Mts., Natural Monument Baricech lúky**

Meadow near the village Moravské Lieskové – Šance, ca 0.5 km S from the borderline, coord. 48° 52' 31.3", 17° 43' 47.8", 363 m, Q 7172a.

2 points (4 species): *H. irrigata* (19.10.2001, BRA), *H. marchii* (19.10.2001, BRA), *H. punicea* (19.10.2001, SLO, BRA), *H. quieta* (19.10.2001, BRA)

1 point (5 species): *H. cantharellus* (19.10.2001, BRA), *H. coccinea* (19.10.2001, BRA), *H. pratensis* (19.10.2001, BRA), *H. psittacina* (19.10.2001, BRA), *H. virginea* (19.10.2001, BRA)

Total score: 13, number of species: 9.

**Biele Karpaty Mts., Natural Monument Blažejová**

Meadow ca 1.7 km SEE from the church in Nová Bošáca village, close to the settlement Španie, coord. of central part of the Natural Monument 48° 52' 33.3", 17° 47' 03.4", 380-440 m, Q 7172b.

4 points (5 species): *H. citrinovirens* (16.9.2002, BRA; 27.9.2005, SAV), *H. constrictospora* (27.9.2005, SAV); *H. ingrata* (16.9.2002, BRA; 27.9.2005, SAV), *H. ovina* (27.9.2005, SAV), *H. substrangulata* (27.9.2005, SAV)

2 points (5 species): *H. irrigata* (30.7.2005, BRA), *H. mucronella* (16.9.2002, BRA) *H. punicea* (19.10.2001, SLO; 27.9.2005, SAV), *H. quieta* (19.10.2001, BRA), *H. reidii* (19.10.2001, BRA)

1 point (7 species): *H. cantharellus* (19.10.2001, BRA; 27.9.2005, SAV), *H. chlorophana* (19.10.2001, BRA); *H. coccinea* (19.10.2001, BRA); *H. conica* (19.10.2001, BRA; 8.7.2002, BRA; 8.9.2002, SAV; 16.9.2002, BRA; 30.7.2005, BRA), *H. insipida* (16.9.2002, BRA; 27.9.2005, SAV), *H. pratensis* (27.9.2005, SAV), *H. virginea* (19.10.2001, SLO)

Total score: 37, number of species: 17

**Biele Karpaty Mts., Natural Monument Grúň**

Meadow ca 1.5 km NNE from the church in Nová Bošáca village, close to the settlement Grúň, coord. in upper part 48° 53' 41.4", 17° 47' 46.7", coord. in lower part 48° 53' 39.1", 17° 47' 56.6", 420-480 m, Q 7172b.

Most of the site has E exposition and is relatively steep. The upper part mowed meadows on relatively steep slope (originally used as garden) and is surrounded by bushes and solitary oak trees. In the center is a tuff spring and the lower part has a deep valley outgrown mostly with *Fagus sylvatica*.

4 points (3 species): *H. fornicata* (18.10.2001, BRA), *H. intermedia* (26.7.2001 SLO; 30.7.2005, BRA), *H. nitrata* (7.7.2002, BRA)

2 points (4 species): *H. irrigata* (18.10.2001, BRA), *H. marchii* (19.10.2001, BRA), *H. punicea* (16.9.2002, BRA; 1.11.2002, BRA), *H. reidii* (30.7.2005, BRA)

1 point (6 species): *H. chlorophana* (18.10.2001, BRA; 16.9.2002, BRA; 1.11.2002, BRA; 1.7.2004, SAV), *H. coccinea* (16.9.2002, BRA; 1.11.2002, BRA), *H. conica* (18.10.2001, BRA; 7.7.2002, BRA; 30.7.2005, BRA), *H. pratensis* (18.10.2001, BRA; 7.7.2002, BRA; 16.9.2002, BRA; 1.11.2002, BRA), *H. psittacina* (18.10.2001, SLO, BRA; 7.7.2002, BRA), *H. virginea* (18.10.2001, 2 specimens in BRA; 27.9.2005, SAV)

Total score: 26, number of species: 13

**Biele Karpaty Mts., Lysá**

Meadow ca 1.2 km NNW from the ruins of the castle Vršatecký hrad close to Vršatecké Podhradie village, coord. in the bellow part 49° 04' 19.2", 18° 08' 37.5", coord. in the above part 49° 04' 19.4", 18° 08' 44.8", 680-760 m a/ s. l., Q 6974b.

4 points (1 species): *H. fornicata* (30.6.2004, BRA)

2 points (5 species): *H. glutinipes* (17.9.2002, BRA), *H. irrigata* (17.9.2002, BRA), *H. miniata* (26.9.2005, SAV), *H. punicea* (17.9.2002, SAV, BRA; 26.9.2005, SAV); *H. reidii* (30.7.2005, BRA)

1 point (8 species): *H. cantharellus* (17.9.2002, BRA; 1.10.2002, SAV; 30.7.2005, BRA; 26.9.2005, SAV), *H. chlorophana* (17.9.2002, SAV, BRA; 30.6.2004, SAV), *H. coccinea* (17.9.2002, BRA; 26.9.2005, SAV), *H. conica* (30.7.2005, BRA), *H. insipida* (26.9.2005,

SAV), *H. pratensis* (30.7.2005, BRA; 26.9.2005, SAV), *H. psittacina* (17.9.2002, BRA; 27.9.2002, SAV); *H. virginea* (30.7.2005, BRA)

Total score: 22, number of species: 14

#### **Biele Karpaty Mts., Natural Monument Krivoklátske lúky**

Meadow ca 2.5 km NNW from the central part of Krivoklát village, coord.

49° 03' 33.3", 18° 08' 12.7", 445-465 m, Q 6974b.

4 points (2 species): *H. ovina* (26.9.2005, SAV), *H. splendidissima* (26.9.2005, SAV)

1 point (3 species): *H. conica* (26.9.2005, SAV), *H. psittacina* (30.7.2005), *H. virginea* (30.7.2005)

Total score: 11, number of species: 5

#### **Cerová vrchovina Mts., Hostice reservoir**

Dry meadow ca. 2 km NE from the church in Hostice village, coord.

48° 14' 40.6", 22° 05' 33.3", alt. 195-220 m, Q 7786d.

2 points (1 species): *H. irrigata* (9.6.2004, SAV)

1 point (4 species): *H. conica* (9.6.2004, SAV), *H. chlorophana* (9.6.2004, SAV), *H. insipida* (9.6.2004, SAV), *H. virginea* (26.10.2004, SAV)

Total score: 6, number of species: 5

#### **Laborecká vrchovina Mts., Natural reserve Hostovické lúky**

Wet meadow ca 3 km NW from the church in Hostovice village, coord.

49° 07' 42.5", 22° 06' 47.9", 316 m, Q 6898d.

2 points (2 species): *H. mucronella* (9.10.2005, SAV), *H. russocoriacea* (5.10.2004, SAV; 9.10.2005, SAV)

1 point (1 species): *H. conica* (6.10.2004, SAV)

Total score: 5, number of species: 3.

#### **Laborecká vrchovina Mts., Jaruchy**

Extensively used pasture ca 3.5 km SEE from the church in Nižný

Komárník village, coord. 49° 22' 14.4", 21° 44' 30.0", 486 m, Q 6696d.

4 points (2 species): *H. calyptriformis* (5.10.2004, SAV), *H. citrinovirens* (5.10.2004, SAV)

1 point (5 species): *H. cantharellus* (12.10.2005, SAV), *H. chlorophana* (5.10.2004, SAV; 12.10.2005, SAV), *H. coccinea* (5.10.2004, SAV), *H. conica* (5.10.2004, SAV; 12.10.2005, SAV), *H. virginea* (5.10.2004, SAV; 12.10.2005, SAV)

Total score: 13, number of species: 7

#### **Laborecká vrchovina Mts., pasture near Osadné village**

Extensively used pasture ca 0.5 km S from church in Osadné village,

coord. 49° 08' 09.6", 22° 09' 14.3", 382 m, Q 6898d.

4 points (1 species): *H. ingrata* (6.10.2004, SAV)

2 points (2 species): *H. ceracea* (6.10.2004, SAV; 11.10.2005, SAV), *H. glutinipes* (6.10.2004, SAV)

1 point (6 species): *H. chlorophana* (6.10.2004, SAV), *H. conica* (6.10.2004, SAV; 11.10.2005, SAV), *H. insipida* (11.10.2005, SAV), *H. pratensis* (6.10.2004, SAV; 11.10.2005, SAV), *H. psittacina* (11.10.2005, SAV), *H. virginea* (6.10.2004, SAV; 11.10.2005, SAV)

Total score: 14, number of species: 9.

**Laborecká vrchovina Mts., pasture near Vyšná Jablonka village**

Extensively used pasture ca 1 km NE from the church in Vyšná Jablonka village, coord. 49° 09' 31.7", 22° 16' 17.2", 399 m, Q 6898b.

4 points (6 species): *H. calyptriformis* (8.10.2004, SAV; 10.10.2005, SAV), *H. citrinovirens* (10.10.2005, SAV), *H. ingrata* (8.10.2004, SAV; 10.10.2005, SAV), *H. nitrata* (8.10.2004, SAV; 10.10.2005, SAV), *H. ovina* (8.10.2004, SAV), *H. phaeococcinea* (8.10.2004, SAV; 10.10.2005, SAV)

2 points (4 species): *H. ceracea* (10.10.2005, SAV), *H. irrigata* (8.10.2004, SAV), *H. marchii* (8.10.2004, SAV), *H. punicea* (8.10.2004, SAV; 10.10.2005, SAV)

1 point (8 species): *H. cantharellus* (7.10.2004, SAV; 10.10.2005, SAV), *H. chlorophana* (14.6.2004, SAV; 8.10.2004, SAV; 10.10.2005, SAV), *H. coccinea* (8.10.2004, SAV; 10.10.2005, SAV), *H. conica* (10.10.2005, SAV), *H. insipida* (10.10.2005, SAV), *H. pratensis* (8.10.2004, SAV; 10.10.2005, SAV), *H. psittacina* (8.10.2004, SAV; 10.10.2005, SAV), *H. virginea* (8.10.2004, SAV; 10.10.2005, SAV)

Total score: 40, number of species: 18.

## ADDITIONAL COLLECTIONS

(from sites with low *Hygrocybe* diversity when visited)

***Hygrocybe conica***

Cerová vrchovina Mts., Čoma stream, pasture ca 1.5 km SEE from the church in Nová Bašta village, coord. 48° 10' 10.2", 19° 15' 23.2", 323 m, Q 7885b, 9.6.2004, SAV.

Cerová vrchovina Mts., Vlčia dolina, abandoned pastures ca 2.3 km SW from the church in Chrámeč village, coord. 48° 15' 50.8", 20° 09' 05.7", 205 m, Q 7786b, 27.10.2004, SAV.

Laborecká vrchovina Mts., meadow in area of outdoor museum of 2<sup>nd</sup> World War, ca 1.5 km SWW from church in Vyšný Komárnik village, coord. 49° 24' 16.2", 21° 41' 56.3", 463 m, Q 6596c, 5.10.2004, SAV.

Laborecká vrchovina Mts., Natural Reserve Miroľská slatina, ca 1 km S from the church in Miroľa village, coord. 49° 19' 59.3", 21° 43' 36.8", 418 m, Q 6696c, 12.10.2005, SAV.

***Hygrocybe glutinipes***

Laborecká vrchovina Mts., Natural Reserve Miroľská slatina, ca 1 km S from the church in Miroľa village, coord. 49° 19' 59.3", 21° 43' 36.8", 418 m, Q 6696c, 5.10.2004, SAV.

***Hygrocybe insipida***

Cerová vrchovina Mts., sand dunes ca 0.5 km SE from the church in Drňa, coord. 48° 15' 42.8", 20° 07' 18.2", 215 m, Q 7786b, 10.6.2004, 2 specimens in SAV.

Laborecká vrchovina Mts., Natural Reserve Miroľská slatina, ca 1 km S from church in Miroľa village, coord. 49° 19' 59.3", 21° 43' 36.8", 418 m, Q 6696c, 12.10.2005, SAV.

***Hygrocybe psittacina***

Cerová vrchovina Mts., pasture ca 0.5 km NW from the church in Stará Bašta village, coord. 48° 11' 01.1", 19° 56' 55.4", 289 m, Q 7885b, 25.10.2002, SAV.

Laborecká vrchovina Mts., Natural Reserve Miroľská slatina, ca 1 km S from church in Miroľa village, coord. 49° 19' 59.3", 21° 43' 36.8", 418 m, Q 6696c, 12.10.2005, SAV.

***Hygrocybe persistens***

Cerová vrchovina Mts., sand dunes ca 0.5 km SE from the church in Drňa, coord. 48° 15' 42.8", 20° 07' 18.2", 215 m, Q 7786b, 10.6.2004, SAV.

***Hygrocybe russocoriacea***

Laborecká vrchovina Mts., Natural Monument Grúnik, 3 km NNW from the church in Čertižné village, coord. 49° 22' 42.8", 21° 48' 42.7", 683 m, Q 6696b, 13.10.2005, SAV.

Laborecká vrchovina Mts., Natural Monument Mokré lúky pri Čertižnom, 1.5 km SE from the church in Čertižné village, coord. 49° 20' 36.1", 21° 50' 16.3", 420 m, Q 6697c, 13.10.2005, SAV.

Laborecká vrchovina Mts., abandoned pasture in the area of outdoor museum of 2<sup>nd</sup> World War, ca 1 km SW from church in Vyšný Komárnik village, coord. 49° 23' 45.0", 21° 41' 47.3", 418 m, Q 6696a, 5.10.2004, 12.10.2005, 2 specimens in SAV.

***Hygrocybe virginea***

Cerová vrchovina Mts., Soví hrad, pasture ca 0.5 km S from the church in village Šurice, coord. 48° 13' 28.5", 19° 54' 56.6", 255 m, Q 7785c, 26.10.2004, SAV.

Cerová vrchovina Mts., Vlčia dolina, abandoned pastures ca 2.3 km SW from the church in Chrámec village, coord. 48° 15' 50.8", 20° 09' 05.7", 205 m, Q 7786b, 27.10.2004, SAV.

Laborecká vrchovina Mts., meadow in area of outdoor museum of 2<sup>nd</sup> World War, ca 1.5 km SWW from church in Vyšný Komárnik village, coord. 49° 24' 16.2", 21° 41' 56.3", alt. 463 m, Q 6596c, 5.10.2004, SAV.

***Hygrocybe virginea* var. *ochraceopallida***

Cerová vrchovina Mts., Vlčia dolina, abandoned pastures ca 2.3 km SW from the church in Chrámec village, coord. 48° 15' 50.8", 20° 09' 05.7", 205 m, Q 7786b, 27.10.2004, SAV.

#### DISCUSSION

There have been many efforts to create an objective scoring system for waxcap grasslands. Usually some point are given to the fungal species according to their indicator value. However, it is not easy to compare numerical values obtained by various scoring systems giving different points (2, 4, 8) to the same species. That's the main reason why the number of *Hygrocybe* species is still used as the easiest and the most significant approach, and various pointing systems are of informational importance (Mc Hugh & al., 2001, Newton & al. 2003, Evans. S., 2003).

Investigations on waxcap grasslands in Europe has been conducted mainly in Great Britain, Netherlands, Belgium and Scandinavian countries, all of which has humid oceanic climate. Slovakia, in contrast, is characterised by continental climate with warm a dry vegetation period. However 46 waxcap taxa were recorded here and several valuable meadows recognised that are rich in fungi, but the fungal diversity cannot be evaluated during one or two visits. And one has to keep in mind that during dry seasons some species do not produce carpophores at all.

Slovak waxcap meadows are usually small (sometimes only few hundreds square meters due to traditional way of management) when compared with Irish (McHugh & al., 2001), Scottish (Newton & al., 2003) or Norwegian (Ravolainen, 2000) sites that often cover 5-50 or more (sometimes several hundreds) hectares. Therefore, before evaluating our grasslands (Tab. 2), it was necessary to adjust existing scoring systems to Slovak conditions.

Vesterholt & al. (1999), when reviewing Rald's methodology (Rald, 1985), introduced a new category "internationally important" for meadows with more than 15 species of *Hygrocybe* in one visit and more than 22 in total. Only a single site (Vyšná Jablonka) with more than 15 species of *Hygrocybe* recorded in one visit has been registered in

Slovakia until now. But we have investigated several sites with more than 22 species when visited several times (Kautmanová, unpublished data). As it is almost impossible to record more than 12 species of *Hygrocybe* in one visit we adjusted one-visit values of classification system of Rald (1985) as adapted by Vesterholt & al. (1999) for Slovakia. Further research will demonstrate if these values may be adopted also in other Central European countries.

Tab.2. The site classification system of Rald (1985) as adopted by Vesterholt & al. (1999) and adjusted for Slovakia (bold).

Conservation value	<i>Hygrocybe</i> spp. one visit		<i>Hygrocybe</i> spp. multiple visits
Internationally important	15+	<b>12+</b>	22+
Nationally important	11-14	<b>8-11</b>	17-21
Regionally important	6-10	<b>5-8</b>	9-16
Locally important	3-5	<b>1-4</b>	4-8

Not all sites were visited in the best time for fructification of *Hygrocybe* species. It was very difficult to specify the best time for visits, for example in Cerová vrchovina Mts. because of its dry climate. Recorded number of species and assigned scores appropriate for comparison of natural value of studied grassland and final evaluation requires more visits. Comparison of occurrence of *Hygrocybe* species in fertilised meadows and/or more intensively grazed pastures with occurrence in nutrient-poor grasslands helped to select which species are more useful as indicators. These selected species were used as background for our scoring system.

Slovak sites with highest scores are Natural Monument Blažejová and pasture near Vyšná Jablonka (Tab. 3). According to all cited systems these localities could be treated as nationally important, and according to our adjusted system the pasture near Vyšná Jablonka is of international importance (14 and 15 species collected during two visits). Valuable are also Natural Monument Grúň and meadow Lysá. Sites of local importance are Jaruchy, Baricech lúky and pasture near Osadné village.

Interesting sites are also Natural Reserve Krivoklátske lúky and Natural Reserve Hostovické lúky even only few species were recorded. Both sites are wet meadows and only three *Hygrocybe* species were collected there. However, wet soil is suitable only for few *Hygrocybe* species, such as *Hygrocybe conica*, *H. russocoriacea* and *H. mucronella* in Hostovické lúky. Only one visit of three in Krivoklátske lúky was successful and two interesting species, *H. ovina* and *H. splendidissima*, were in dry margin of the meadow. Study by Newton & al. (2003) proved that as much as 16 visits is required to recognize the fungal diversity of a site. However the presence of some species may indicate of general diversity. *H. ovina* is



one of the five such important taxa and *H. splendidissima* seems to have also high value. We believe that next visits of the site should significantly increase number of *Hygrocybe* species.

Tab. 3. Number of *Hygrocybe* species and scores of interesting sites in three studied orographic regions.

orographic region	locality	number of species				total score
		4 points	2 points	1 point	total	
Biele Karpaty	Baricech lúky		4	5	9	13
	Blažejová	5	5	7	17	37
	Grúň	3	4	6	13	26
	Lysá	1	5	8	14	22
	Krivoklátske lúky	2		3	5	11
Cerová vrchovina	Janica		1	4	5	6
Laborecká vrchovina	Hostovické lúky		2	1	3	5
	Jaruchy	2		5	7	13
	Osadné	1	2	6	9	14
	Vyšná Jablonka	6	4	8	18	40

Five taxa are published here for the first time from Slovakia: *H. constrictospora*, *H. mucronella*, *H. phaeococcinea*, *H. russocoriacea* and *H. virginea* var. *ochraceopallida*. With exception of *H. russocoriacea* and *H. mucronella*, all taxa seem to be rare in Slovakia. *H. russocoriacea* was collected in four wet meadows in Laborecká vrchovina Mts. and it was very abundant especially in Natural reserve Hostovické lúky. The species was collected also in northern Slovakia and a contribution on its distribution is in preparation. *H. mucronella* was also collected in northern Slovakia several times.

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Slavomír Adamčík a Ivona Kautmanová: Šťavnačky (*Hygrocybe*) ako indikátory prírodnej hodnoty trávnatých stanovišť na Slovensku. *Catathelasma* (6): 25-34, 2005.

Prírodná hodnota trávinných spoločenstiev je hodnotené podľa prítomnosti druhov rodu *Hygrocybe*. Hodnotiaci systém použitý v zahraničí sme upravili pre slovenské podmienky. Hodnotenú boli lokality v troch fytogeografických okrasoch. Najhodnotnejšie sú Prírodná pamiatka Baricech lúky v Bielych Karpatoch a pasienok pri Vyšnej Jablonke v Laboreckej vrchovine.

**MYCOFLORA OF THE WESTERN CARPATHIANS:<sup>1</sup>**  
**Abstracts of the lectures presented on the conference**

**Key words:** macrofungi, presentations, foray

SLAVOMÍR ADAMČÍK (Inst. of Botany, Bratislava; [slavomir.adamcik@savba.sk](mailto:slavomir.adamcik@savba.sk)), Morten Christensen (The Royal Veterinary and Agricultural Univ., Denmark), Jacob Heilmann-Clausen (HabitatVision, Denmark), Walley Ruben (Inst. for Forestry and Game Management, Belgium): **MACROFUNGI OF NATURAL BEECH FORESTS IN THE POLONINY NATIONAL PARK**

Four nature reserves with virgin beech forests were visited during our field research in the Poloniny National park (5-10 Oct., 2003). We have recorded 189 taxa of macrofungi, including 32 species new for Poloniny Mts., 15 first recorded in Slovakia and 17 rare species listed in European red lists. Our recent research significantly increased the number of known indicator species for natural beech forests. National nature reserves Stužica and Rožok are the sites with the highest known number of indicator species in Europe.

JAN HOLEC (National Museum, Praha; [jan.holec@nm.cz](mailto:jan.holec@nm.cz)): **INVESTIGATION OF EASTERN CARPATHIANS BY ALBERT PILÁT**

Albert Pilát thoroughly studied mycoflora of the Eastern Carpathians (Ukraine) in 1928-1938. He collected especially lignicolous fungi growing in mountainous virgin forests minimally influenced by man. The results were summarized in a detailed mycofloristic contribution and the collected material also served as a basis for Pilát's well-known taxonomic monographs of Polyporaceae and the genera *Stereum*, *Pleurotus*, *Lentinus*, *Crepidotus* etc. In present-day maps it is almost impossible to find Pilát's collecting sites. The original names of Pilát's collecting sites are shown and their current Cyrillic-written Ukrainian equivalents and variants transliterated in Roman letters are presented. All data have already been published (Holec, Mycotaxon 83: 1-17, 2002).

MARTINA VAŠUTOVÁ (Palacký University, Olomouc; [martina.vasut@seznam.cz](mailto:martina.vasut@seznam.cz)): **MYCOFLORA OF SELECTED WETLANDS OF THE WESTERN CARPATHIANS**

The mycoflora of six spring fens localities of the West Carpathians (mainly Kysuce Mts.) were studied in 2001-2004 as a part of the project Ecology and palaeoecology of spring wetlands in the western part of the Carpathians (Grant Agency of the C.R. - GA206/02/0568). The total number of 50 macromycete species belonging to studied biotope and 27 alien to studied biotope (mostly mycorrhizal) were recorded.

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<sup>1</sup> international conference held during the 9<sup>th</sup> Mycological Foray in Slovakia in the resort Podskalie, Pružina on 6 October, 2005

Sphagnicolous species were dominant group in transitional mires, whereas herbicolous species were important in rich Sphagnum fens. Mycoflora of calcareous spring fens was composed of herbicolous, muscicolous and terrestrial species equally. Rare species found in studied localities were *Agrocybe paludosa*, *Geoglossum cf. glabrum*, *Galerina annulata*, *Hygrocybe coccineocrenata*, *Omphalina oniscus*, *Stropharia albonitens* and *Trichoglossum hirsutum*.

VLADIMÍR ANTONÍN (Moravian Museum, Brno; [vantonin@mzm.cz](mailto:vantonin@mzm.cz)): **INTERESTING RECORDS OF MACROFUNGI IN NATIONAL NATURE RESERVES OF THE BÍLÉ KARPATY MTS.**

Five national nature reserves (Čertoryje, Jazevčí, Porážky, Velká Javořina, and Zahrady pod Hájem) were declared in the Bílé Karpaty (White Carpathians) Protected Landscape Area. A landscape valuable complex of blossom meadows and woods rich on plant and animal species is especially protected. In all of them, except for last one, an intensive macromycete research takes place. The most rich localities are reserves Jazevčí (521 taxa) and Čertoryje (510 taxa). Those reserves also are very rich in biotopes. In other localities, the number of taxa is lower: Porážky 282 taxa and Zahrady pod Hájem 337 ones. Nevertheless, the richness of species also is rather high here. Some species, e.g. *Boletus fechtneri*, *Flammulina ononidis*, and *Xerocomus moravicus* belong to the list of species under protection by law in the Czech Republic, and e.g. *Boletus satanas*, *Cortinarius praestans*, *Disciotis venosa*, *Hygrocybe punicea*, and *Tricholoma orirubens* to the proposed new list of them. Numerous species belong to the prepared list of macromycetes of the Czech Republic.

KATARÍNA BUČINOVÁ (Institute of Forest Ecology, Zvolen; [bucinova@sav.savzv.sk](mailto:bucinova@sav.savzv.sk)): **MONITORING OF MACROFUNGI SPECIES DIVERSITY IN THREE RESEARCH PLOTS OF THE INSTITUTE OF THE FOREST ECOLOGY ZVOLEN LOCATED IN THE KREMICKÉ VRCHY MTS. AND ŠTIAVNICKÉ VRCHY MTS.**

In the frame of the PhD thesis „Macromycetes as indicators of biodiversity and ecological stability of beech forest ecosystems“, an inventory and determination of macromycetes (Ascomycota, Basidiomycota) was performed during the vegetation period 2003 and 2004. The aim of this study was to evaluate how the species composition of macromycetes communities can contribute to the biodiversity and ecological stability of beech ecosystems. We examined quantitative data about macromycetes from three permanent research plots with various impacts of airborne pollutants, with pollution source in an aluminum factory in Žiar nad Hronom (Central Slovakia). There have been compared the biomass production and species diversity of macromycetes

on the research plots situated in the Kremnické vrchy Mts. - EES Kremnické vrchy and in the Štiavnické vrchy Mts. - VMP Žiar nad Hronom and TVP Jalná.

MICHAL TOMŠOVSKÝ (Mendel University of Agriculture and Forestry, Brno; [tomsovsk@yahoo.com](mailto:tomsovsk@yahoo.com)): **MOLECULAR PHYLOGENY OF THE EUROPEAN MEMBERS OF THE GENUS TRAMETES**

Phylogeny of all European and one American species of the genus *Trametes* in relation to the genera *Corioliopsis*, *Lenzites* and *Pycnoporus* was studied using the sequence of LSU and ITS regions of nuclear ribosomal DNA. Datasets of LSU and ITS were analyzed using the Fitch-Margoliash method with maximum likelihood distances, maximum parsimony, maximum likelihood and Bayesian method. All *Trametes* species except for *Trametes cervina* formed a clade, whereas *T. cervina* surprisingly grouped with *Ceriporiopsis aneirina*. In the genus *Lenzites*, *L. betulina* is more closely related to *Trametes gibbosa* than to *L. warnierii*. The earlier published synonym *Lenzites gibbosa* (Pers.) Hemmi was therefore adopted for *Trametes gibbosa*. The study confirmed the monophyly of the genus *Pycnoporus* inside the paraphyletic *Trametes* clade. The genus *Corioliopsis*, sometimes considered as belonging to *Trametes*, was clearly delimited in a different clade.

VIKTOR KUČERA (Institute of Botany, Bratislava; [viktor.kucera@savba.sk](mailto:viktor.kucera@savba.sk)): **TAXA OF THE FAMILY GEOGLOSSACEAE IN SLOVAKIA**

Members of Geoglossaceae are associated with bogs, harvested meadows, pastures, and with banks of streams and margins of forests roads as well. In Slovakia 19 species in 8 genera have been reported: *Bryoglossum* (1 species), *Cudonia* (2 sp.), *Heyderia* (2 sp.), *Geoglossum* (6 sp.), *Microglossum* (2 sp.), *Mitrula* (1 sp.), *Spathularia* (3 sp.) and *Trichoglossum* (2 sp.). They occur in 24 phytogeographical units, the "richest" Nízke Tatry, Biele Karpaty, Liptovská kotlina and Vysoké Tatry (each hosts 6 sp.). The commonest are *Spathularia flavida* (28 collecting sites), *Cudonia circinans* (20), *Mitrula paludosa* (19) and *Trichoglossum hirsutum* (13). According to current knowledge *Geoglossum glutinosum*, *G. montanum*, *G. nigratum*, *Heideria sclerotiorum* and *Spathularia crispata* are very rare. [Supported by grant VEGA 4031.]

IVONA KAUTMANOVÁ (Slovak National Museum, Bratislava; [botanika@snm.sk](mailto:botanika@snm.sk)): **THREATENED AND PROTECTED MACROFUNGI IN SLOVAKIA**

History, present situation and possible future of rare and endangered species as *Amanita caesarea*, *Boletus regius*, *B. impolitus*, *B. dupainii*, *B. appendiculatus*, *B. speciosus*, *Catathelasma imperiale*, *Hericium erinaceus*, *Gomphus clavatus*, *Hygrophorus marzuolus*, *Fomitopsis*

*officinalis*, *Sarcosoma globosum*, *Tuber aestivum*, *Tricholoma equestre* most of which are redlisted and/or protected by law were discussed. Few proposals for conservation were also presented. *Fomitopsis officinalis* is a missing species and *Sarcosoma globosum* is probably an extinct species in Slovakia.

PAVEL LIZOŇ (Institute of Botany, Bratislava; [pavel.lizon@savba.sk](mailto:pavel.lizon@savba.sk)):

#### CONSERVATION OF FUNGI IN EUROPE

Whole-European efforts in conservation of fungi failed so far: we have either not a checklist of European fungi or a red list of European fungi or distribution maps of selected 50 species of macrofungi, and we also have not succeed with proposal of implementation of fungi into the Bern Convention.

Konferencia Mykoflóra Západných Karpát. Abstrakty prednášok prednesených na konferencii. *Catathelasma* (6): 35-38, 2005.

Na konferencii bolo prednesených 9 príspevkov.

### BOOK NOTICES

W. Szafer Institute of Botany (Polish Academy of Sciences) in Kraków published several important publications on fungi in last decade. Some of them are introduced below. For orders contact Institute's publishing unit at [edoffice@ib-pan.krakow.pl](mailto:edoffice@ib-pan.krakow.pl).

Władysław Wojewoda. 2003. **Checklist of Polish larger Basidiomycetes. Krytyczna lista wielkoowocnikowych grzybów podstawkowych Polski.** *Biodiversity of Poland*, vol. 7, [1]-812, 1 map. ISBN 83-89648-09-1. Price PLN 115.00.

This monumental work was accomplished only by Professor Wojewoda and his technical assistant. Annotated list presents about 400 genera and 2,650 species and their distribution in Poland by physico-geographical regions. Distributional data are based on published records, W. Wojewoda's own collections (KRAM-F) and personal unpublished information (not backed by voucher specimens). Accepted name is followed by synonyms, Polish vernacular name (where no Polish name was available a new one was proposed), information on habitat and ecology, data on distribution and category of its threat. List of references is the most complete bibliography on large Basidiomycota reported in Poland.

Anna Drozdowicz, Anna Ronikier, Wanda Stojanowska & Eugeniusz Panek. 2003. **Myxomycetes of Poland. A checklist. Krytyczna lista sluzowców Polski.** *Biodiversity of Poland*, vol.10, [1]-[104], 3 line draw. ISBN 83-89648-08-3. Price PLN 25.00.

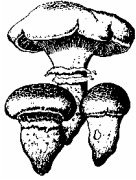
Polish research on Myxomycetes has probably the most continuous history in Europe and includes famous “myxomycetologists”, such as was Marjan Raciborski, Józef T. Rostafiński and Helena Krzemieniewska. Nice picture of *Diachea leucopodia* on the cover of the book introduces present checklist, a compilation of all available published data on occurrence of slime molds in Poland. Authors constitute not a closed working group since they are from four different institutions. All 222 listed species have accepted name, Polish vernacular name, synonyms, data on substrate and references to published data. Nomenclature follows, with few exceptions, C. Lado’s database *Nomenmyx* (2001). Whole text is bilingual – both in English and in Polish. List of species is supplemented by indexes of synonyms, Polish names and authors’ names.

In the series *Biodiversity of Poland* were published also the checklist of lichens, lichenicolous and allied fungi of Poland (vol. 6, by Fałtynowicz in 2003). In preparation are checklist of Polish larger Ascomycetes (vol. 8, by Chmiel, probably in 2007) and checklist of Polish microfungi (vol. 9 by Mułenko and. Majewski, hopefully in 2006).

Władysław Wojewoda, Zofia Heinrich & Halina Komorowska. 2004. **Macrofungi of North Korea collected in 1982-1986.** *Polish Botanical Studies* 18: 1-289, fig. 1-152 (maps and line draw.) Price PLN 49.00.

The book constitutes the first extensive study on North Korean macrofungi published in English (besides of few papers by foreign mycologists). It is based on collections accumulated during five field expeditions covering 65 collecting sites. They are reported 431 taxa of Ascomycota and Basidiomycota. Each entry includes accepted name, synonyms, description of the species, specimens examined, notes on distribution in Asia and references. Some species are illustrated by line drawings. More than 250 species are reported for the first time from North Korea (Democratic People’s Republic of Korea). All voucher specimens are held in the fungal collection of the W. Szafer Institute of Botany in Kraków (KRAM-F).

A checklist of microfungi of the Tatra National Park was published as the first volume in a new series *Biodiversity of the Tatra National Park* (by Mułenko, Kozłowska and Sałata in 2004).



Catathelasma is a peer-reviewed journal devoted to the biodiversity, taxonomy and conservation of fungi. Papers are in English with Slovak/Czech summaries. The journal is published annually/biannually by the Slovak Mycological Society with the financial support of the Slovak Academy of Sciences. Permit no. 2470/2001.

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### **SLOVAK MYCOLOGICAL SOCIETY**

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