

## Additions to lichen flora of Slovak Republic I.

MARTIN BAČKOR<sup>1,2</sup> & MARTA BODNÁROVÁ<sup>2</sup>

<sup>1</sup> Department of Plant Sciences, University of Western Ontario, London, Ontario, N6A 5B7 Canada, e-mail: mbackor@uwo.ca (temporary address)

<sup>2</sup> P. J. Šafárik University, Faculty of Science, Institute of Biology & Ecology, Department of Botany, Mánesova 23, SK- 041 67 Košice, Slovak Republic, e-mail: mbackor@kosice.upjs.sk (permanent address)

---

BAČKOR M. & BODNÁROVÁ M. (2002): Additions to lichen flora of Slovak Republic I. – Thaiszia – J. Bot. 12: 173-178. – ISSN 1210-0420.

ABSTRACT: This paper includes new or updated data which contribute to knowledge of lichen flora of Slovak Republic. We mention 26 genera with 39 species, of which 21 species are considered vulnerable and 5 (*Anaptychia ciliaris*, *Lecanora gisleriana*, *Parmelia caperata*, *Ramalina farinacea* and *R. fastigiata*) endangered for the Slovak lichen flora. Most lichens with a certain degree of endangerment are epiphytic or members of plant communities associated with heavy metal rich substrata. Extensions of other lichen taxa, ecological notes and comments on secondary chemistry are also included.

KEYWORDS: lichen distribution, Slovakia

---

The aim of this paper is to contribute to knowledge of lichen flora of the Slovak Republic. Mainly species with a certain degree of endangerment, poorly defined distributions, new occurrences on the lichen monitoring net map or unusual distribution patterns, are mentioned in the study.

Each record contains the accepted name and authors (PIŠŮT & al. 1998), coordinates of the relevant basic square on the Slovak Republic net map (NIKLFELD 1971, PIŠŮT 1999), other information on locality, usually ecological notes, degree of occurrence at site and date of collection. Except where otherwise noted, all lichens were collected (col.) by M. BAČKOR. The records usually contain notes on chemistry of our samples (tlc = thin-layer chromatography, CULBERSON 1972,

CULBERSON & JOHNSON 1982), sensitivity to SO<sub>2</sub> air pollution of selected epiphytic lichens (HAWKSWORTH & ROSE 1976) and degree of endangerment in Slovakia, if known (PIŠŮT & al. 1998, E - endangered species, V – vulnerable species).

*Acarospora peliscypha* TH. FR., (7180), Starohorské vrchy Mts., Špania Dolina, 780 m a.s.l., mine-spoil heaps, frequent, col. June 2000, V

*Anaptychia ciliaris* (L.) KÖRB. ex A. MASSAL., (7180), Kremnické vrchy Mts., Horný Harmanec, Harmanec cave, above 900 m a.s.l., on bark of mature deciduous trees, very rare, col. July 2000, no lichen substances detected by tlc, in British Isles sensitive to SO<sub>2</sub> air pollution > 40 µg m<sup>-3</sup>, E

*Bryoria* sp., (7092), Čierna hora, Roháčka area, about 1,000 m a.s.l., on the bark of mature *Betula* trees, very rare, col. April 2000

*Cetraria aculeata* (SCHREB.) FR., (7092), Čierna hora, Roháčka area, about 600 m a.s.l., on the soil, locally frequent, col. April 2000

*Cetraria chlorophylla* (WILLD.) VAIN., (7092), Čierna hora, Roháčka area, about 1,000 m a.s.l., on the bark of mature *Betula* trees, very rare, col. April 2000, protolichesterinic acid detected by tlc, V

*Cetraria cucullata* (BELLARDI) ACH., (7092), Čierna hora, Roháčka area, about 1,000 m a.s.l., on the soil between mosses and lichens, not frequent, col. April 2000, protolichesterinic and usnic acids detected by tlc

*Cornicularia normoerica* (GUNNERUS) DU RIETZ, (7289), Volovské vrchy Mts., Volovec, about 1,200 m a.s.l., rocks, with *Pseudephebe pubescens*, rare, col. June 2000, no lichen substances detected by tlc

*Dermatocarpon miniatum* (L.) W. MANN, (7180), Kremnické vrchy Mts., Horný Harmanec, Harmanec cave, above 800 m a.s.l., on dolomite, frequent, col. July 2000, no lichen substances detected by tlc

*Dibaeis baeomyces* (L. f.) RAMBOLD & HERTEL, (7180), Starohorské vrchy Mts., Staré Hory-Richtárová, 620 m a.s.l., near mine-spoil heaps on the soil rich in organic material and decaying wood, rare, col. June 2000, baeomycesic acid and atranorin detected by tlc

*Evernia prunastri* (L.) ACH. (7293), Košice town – Botanical Garden, about 230 m a.s.l., on the bark of deciduous trees, very rare, col. April 2001, in British Isles sensitive to SO<sub>2</sub> air pollution > 60 µg m<sup>-3</sup>. **Note:** we know this species from more localities on periphery of Košice town, but this record is curious due to the small size of thalli which probably means recolonization from the outskirts to town center, V

*Hypogymnia tubulosa* (Schaer.) Hav., (7099), Vihorlatské vrchy Mts., Morské oko lake, 610 m a.s.l., on the bark of mature trees, rare, col. June 1998, physodic acid, 3-hydroxyphysodic acid and atranorin detected by tlc, V

- Lecanora gisleriana* ARG. emend. J. STEINER, (7180), Starohorské vrchy Mts., Špania Dolina, 780 m a.s.l., mine-spoil heaps, rare, col. 1989, det. W. PURVIS, E (Liška & Pišút 1995)
- Lecanora subaurea* ZAHLBR., (7180), Starohorské vrchy Mts., Špania Dolina, 780 m a.s.l., mine-spoil heaps, frequent, col. June 2000, V
- Lecidea inops* TH. FR., (7180), Starohorské vrchy Mts., Špania Dolina, 780 m a.s.l., mine-spoil heaps, frequent, col. June 2000, V
- Parmelia caperata* (L.) ACH., (7293), Čierna hora, Košice town – Kavečany, Na valalskom, about 600 m a.s.l., on the bark of base mature *Quercus* sp. trees, rare, col. March 2001, protocetraric, caperatic and usnic acids detected by tlc, in British Isles sensitive to SO<sub>2</sub> air pollution > 50 µg m<sup>-3</sup>, E • (7389), Rožňavská kotlina basin, Rožňava – Krásnohorské Podhradie, about 300 m a.s.l., on the bark, mainly bases of mature deciduous trees, locally frequent, col. June 2000, protocetraric, caperatic and usnic acids detected by tlc. • (7097), Nízke Beskydy Mts., 2 km north from Humenné town, about 250 m a.s.l., on the bark of *Quercus* sp., rare, col. June 2001 by J. ŽIDZIK, protocetraric, caperatic and usnic acids detected by tlc.
- Parmelia incurva* (PERS.) FR., (7092), Čierna hora, Roháčka area, about 1,000 m a.s.l., on the siliceous rocks, frequent, col. April 2000, V
- Parmelia stygia* (L.) ACH., (7092), Čierna hora, Roháčka area, about 1,000 m a.s.l., on the siliceous rocks, montane, frequent, col. April 2000, V
- Parmelia tiliacea* (HOFFM.) ACH., (7293), Košice town – Botanical Garden, about 230 m, on the bark of deciduous trees, very rare, col. in April 2001, lecanoric acid and atranorin detected by tlc, in British Isles sensitive to SO<sub>2</sub> air pollution > 50 µg m<sup>-3</sup>, V • (7289), Volovské vrchy, Volovec area, on the bark of mature deciduous trees, frequent, col. June 2000, lecanoric acid and atranorin detected by tlc.
- Peltigera aphthosa* (L.) WILLD., (7180), Veľká Fatra Mts., Križna Mt., about 1,550 m a.s.l., on the soil, rare, col. June 2000, V
- Phycia aipolia* (EHRH. ex HUMB.) FÜRNR., (7293), Košická kotlina basin, Košice town – “Furča”, about 300 m a.s.l., on the bark of *Fraxinus* tree, rare, col. May 2001, atranorin and zeorin detected by tlc, in British Isles sensitive to SO<sub>2</sub> air pollution > 40 µg m<sup>-3</sup>
- Phycia stellaris* (L.) NYL., (7180), Starohorské vrchy Mts., Špania Dolina, 800 m a.s.l. or higher, on the bark of mature *Fraxinus* sp., rare, col. June 2000, only atranorin detected by tlc
- Phycia tenella* (SCOP.) DC., (7293), Košická kotlina basin, Košice town, more localities, about 250-300 m a.s.l., on the bark of deciduous trees, very frequent, col. May 2001, in British Isles sensitive to SO<sub>2</sub> air pollution > 60 µg

m<sup>-3</sup>, relatively tolerant to air pollution, species probably often overlooked at mapping studies

*Platismatia glauca* (L.) W. L. CULB. & C. F. CULB., (7180), Kremnické vrchy Mts., Horný Harmanec, Harmanec cave, above 900 m a.s.l., on the bark of deciduous trees, frequent, col. July 2000, atranorin and caperatic acid detected by tlc, in British Isles sensitive to SO<sub>2</sub> air pollution > 60 µg m<sup>-3</sup>, V ● (7180), Starohorské vrchy Mts., Špania Dolina, 750 m a.s.l. and higher, on the bark of mature deciduous trees (e. g. *Betula* sp.), frequent, col. June 2000, atranorin and caperatic acid detected by tlc. ● (7289), Volovské vrchy Mts., Volovec area, on the bark of mature deciduous trees (e.g. *Betula* sp.), frequent, col. June 2000, atranorin and caperatic acid detected by tlc.

*Protoparmelia badia* (HOFFM.) HAFELLNER., (7180), Starohorské vrchy Mts., Špania Dolina, 780 m a.s.l., mine-spoil heaps, col. in 1989, det. W. PURVIS

*Pseudephebe pubescens* (L.) CHOISY, (7289), Volovské vrchy Mts., Volovec, about 1,200 m a.s.l., rocks, with *Cornicularia normoerica*, rare, col. June 2000, no lichen substances detected by tlc.

*Pseudevernia furfuracea* (L.) ZOPF, (7289), Volovské vrchy Mts., Volovec area, on the bark of mature deciduous trees (e. g. *Betula* sp.), frequent, col. June 2000, only chemotype with physodic acid detected by tlc, var. *furfuracea*, in British Isles sensitive to SO<sub>2</sub> air pollution > 50 µg m<sup>-3</sup>, V ● (7180), Starohorské vrchy Mts., Špania Dolina, 750 m a.s.l. and higher, on the bark of mature deciduous trees (e.g. *Betula* sp.), frequent, col. June 2000, only chemotype with physodic acid detected by tlc, var. *furfuracea*. ● (7092), Čierna hora, Roháčka area, about 1,000 m, on the bark of mature deciduous trees (mainly *Betula* sp.) and rocks, frequent, col. April 2000, only chemotype with physodic acid detected by tlc, var. *furfuracea*.

*Ramalina farinacea* (L.) ACH., (7180), Kremnické vrchy Mts., Horný Harmanec, Harmanec cave, above 900 m a.s.l., on bark of mature deciduous trees with *Anaptychia ciliaris*, very rare, col. July 2000, chemotype with protocetraric acid, detected by tlc, in British Isles sensitive to SO<sub>2</sub> air pollution > 60 µg m<sup>-3</sup>. **Note:** this species is still relatively frequent in western Europe, but its distribution in Slovakia decreases (PIŠÚT 1999), E

*Ramalina fastigiata* (PERS.) ACH., (7293), Čierna hora, Košice town – Alpinka, about 300 m a.s.l., on the bark of mature deciduous trees (*Acer* sp.), very rare, col. April 2001, evernic acid detected by tlc, in British Isles sensitive to SO<sub>2</sub> air pollution > 40 µg m<sup>-3</sup>, E

*Rhizocarpon lecanorinum* ANDERS, (7180), Starohorské vrchy Mts., Špania Dolina, 780 m a.s.l., mine-spoil heaps, frequent, col. June 2000, V

*Rhizocarpon oederi* (WEBER) KÖRB., (7180), Starohorské vrchy Mts., Špania Dolina, 780 m a.s.l., mine-spoil heaps, frequent, col. June 2000, V

- Solorina saccata* (L.) ACH., (7180), Veľká Fatra Mts., Bystrická dolina valley, about 900 m a.s.l., on the soil between mosses, rare, col. June 2000
- Stereocaulon dactylophyllum* FLÖRKE, (7180), Starohorské vrchy Mts., Špania Dolina, 780 m a.s.l., mine-spoil heaps, rare, col. June 2000, stictic acid and atranorin detected by tlc, V
- Stereocaulon nanodes* TUCK., (7180), Starohorské vrchy Mts., Špania Dolina, 780 m a.s.l., mine-spoil heaps, frequent, col. June 2000, V
- Umbilicaria cylindrica* (L.) DELISE ex DUBY, (7289), Volovské vrchy Mts., Volovec Mt., about 1,150 m a.s.l., exposed, well-lit rocks, locally abundant, col. June 2000, no lichen substances detected by tlc.
- Umbilicaria deusta* (L.) BAUMG., (7092), Čierna hora, Roháčka area, about 1,000 m a.s.l., on the siliceous rocks, frequent, col. April 2000, gyrophoric acid detected by tlc
- Umbilicaria hirsuta* (Sw. ex WESTR.) HOFFM., (7092), Čierna hora, Roháčka area, about 1,000 m a.s.l., on the siliceous rocks, frequent, col. April 2000, gyrophoric acid detected by tlc, V • (7289), Volovské vrchy, Volovec, about 1,200 m a.s.l., rocks, locally frequent, col. June 2000, gyrophoric acid detected by tlc, V • (7280), Veľká Fatra, Harmanec, about 500 m a.s.l., rocks above railway station, frequent, col. February 2000, V
- Usnea hirta* (L.) WEBER ex WIGG., (7180), Starohorské vrchy Mts., Staré Hory, 600 m a.s.l., near brook (Starohorský potok) on the bark of mature conifer trees, rare, col. June 2000, in British Isles sensitive to SO<sub>2</sub> air pollution > 40 µg m<sup>-3</sup>, V • (7180), Starohorské vrchy Mts., Špania Dolina, 800 m a.s.l. and higher, on the bark of mature trees (e. g. *Betula* sp., conifers), very rare, col. June 2000, only usnic acid was detected by tlc,
- Vulpicida pinastris* (SCOP.) MATTSON & M. J. LAI, (7180), Kremnické vrchy Mts., Horný Harmanec, Harmanec cave, above 1,100 m a.s.l., on the twigs of trees, rare, col. July 2000, usnic, vulpinic and pinastric acids detected by tlc, V • (7293), Čierna hora, Košice town – Alpinka, about 300 m a.s.l., on the bark of base mature fruit trees, very rare, col. May 2001, usnic, vulpinic and pinastric acids detected by tlc, V • (7293), Čierna hora, Košice town – Kavečany, Na valalskom, about 600 m a.s.l., on the bark of mature fruit trees, rare, col. March 2001, usnic, vulpinic and pinastric acids detected by tlc, V
- Xanthoria candelaria* (L.) TH. FR., (70100), Bukovské vrchy Mts, village of Ulič, about 270 m a.s.l., on the bark of mature fruit trees, rare, col. July 1997, in British Isles sensitive to SO<sub>2</sub> air pollution about 60 µg m<sup>-3</sup>, V

## Acknowledgements

This work was partly supported by grant 1/6029/99 from Slovak Ministry of Education. M. BAČKOR would like to thank NSERC of Canada for financial support of his work and Prof. D. FAHSELT for critically reading of the manuscript and use of laboratory facilities. My wife MIRIAM and anonymous students and colleagues are also acknowledged for field assistance and help in general.

## References

- CULBERSON C. F. (1972): Improved conditions and new data for the identification of lichen products by a standardized thin-layer chromatographic method. – *J. Chromatogr.* 72: 113-125.
- CULBERSON C. F. & JOHNSON A. (1982): Substitution of methyl tert.-butyl ether for diethyl ether in the standardized thin-layer chromatographic method for lichen products. – *J. Chromatogr.* 238: 483-487.
- HAWKSWORTH D. L. & ROSE F. (1976): Lichens as pollution monitors. – *Stud. Biol.* 66. – Edward Arnold (Publishers) Limited, London, 60pp.
- LIŠKA J. & PIŠŮT I. (1995): Lišajníky. – In: KOTLABA F. (ed.): Červená kniha 4. Sinice a riasy, Huby, Lišajníky, Machorasty. – *Príroda*, Bratislava.
- NIKL FELD H. (1971): Bericht über die Kartierung der Flora Mitteleuropas. – *Taxon* 20: 545-571.
- PIŠŮT I. (1999): Mapovanie rozšírenia epifytických lišajníkov na Slovensku (1970-1981). – *Botanický Ústav SAV*, Bratislava, 120 pp.
- PIŠŮT I., GUTTOVÁ A., LACKOVIČOVÁ A. & LISICKÁ E. (1998): Lichenizované huby (lišajníky). – In: MARHOLD K. & HINDÁK F. (eds.): Zoznam nižších a vyšších rastlín Slovenska. Checklist of non-vascular and vascular plants of Slovakia, p. 230-295. – *Veda*, Bratislava.

Received: 24 September 2001

Revised: 3 December 2001

Accepted: 18 December 2001