

**REDLIST SPECIES OF FUNGI HELD
IN THE COLLECTIONS OF SLOVAK NATIONAL MUSEUM –
NATURAL HISTORY MUSEUM (BRA).
I. EXTINCT AND CRITICALLY ENDANGERED SPECIES**

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Súhrn: *Ohrozené druhy húb v zbierkach Slovenského národného múzea – Prírodovedného múzea (BRA). I. Vyhynuté a kriticky ohrozené druhy.* V príspevku sú uvedené herbárové položky tých druhov húb, ktoré sú uvedené v 3. verzii červeného zoznamu húb Slovenska (Lizoň 2001), v kategóriách EX a CR. Z piatich druhov uvedených v kategórii vyhynuté sa v zbierkach SNM nachádzajú dva – *Sarcosoma globosum* a *Poronia punctata* a zo siedmich kriticky ohrozených je doložených päť – *Montagnea arenaria*, *Tuber aestivum*, *Battarea stevenii*, *Endoptychum agaricoides* a *Hydropus atramentosus*. Viaceré z uvedených položiek predstavujú jediné zachované údaje o výskyte týchto druhov na Slovensku. Druh *Tuber dryophilum* síce nie je uvedený v červenom zozname, ale nakoľko položka č. 3447 z roku 1888 je jediným známym nálezom tohto druhu na Slovensku navrhujem jeho zaradenie do pripravovanej 4. verzie v kategórii „vyhynuté druhy“ (EX).

Introduction

The last version of the redlist of Slovak fungi (Lizoň 2001) consists of 309 fungal taxa, divided to following categories: extinct (EX) – 5 species, critically endangered (CR) – 7 species, endangered (EN) – 39 species, vulnerable (VU) – 49 species, lower risk (LR) – 87 species, data deficient (DD) – 90 species, not evaluated (NE) – 32 species.

In collections of the Slovak National Museum – Natural History Museum (BRA) many specimens of these fungi are held, some of them of great historical value and some of them represent at the same time the single reliable records of threatened species at the Slovak territory. Of five extinct species, two are held at BRA and of seven critically endangered species five are present.

One of the presented species – *Tuber dryophilum* is not included in the red list and I propose to treat it as extinct in future.

***Sarcosoma globosum* Schm.**

EX

- 19.05.1963, spec. no. 2385, E Slovakia, Popradská kotlina basin, Strážky, in forest, in fallen leaves, leg. et det.: E. Končeková, rev. P. Lizoň
- 16.05.1964, spec. no. 2384, E Slovakia, Popradská kotlina basin, Strážky, under *Coryllus avellana*, leg. et det.: E. Končeková, rev. P. Lizoň

The occurrence of this species in Slovakia was summarized by Lizoň (1982). The two specimens held in BRA represents the only records of this species in Slovakia until now.

Though this species fruits early in the season and fruitbodies are not long-lasting, it is conspicuous enough to be overlooked and probably it is really extinct. It has been reported from several European countries, though nowhere it is common.

***Poronia punctata* (L.) Fr.**

EX

- ?? (2nd half of 19th century), spec. no. 3450, E Slovakia, distr. Spiš, leg.: C. Kalchbrenner
- ?? (2nd half of 19th century), spec. no. 3449, E Slovakia, on horse dung, leg.: C. Kalchbrenner
- ?? (2nd half of 19th century), spec. no. 3445, E Slovakia, near the village Spišské Vluchy, on horse dung, leg.: C. Kalchbrenner
- ?? (2nd half of 19th century), spec. no. 3453, CS Slovakia, Banská Štiavnica on dung near the village Kysihýbel., leg.: A. Kmeť
- 19.04.1882, spec. no. 3452, CS Slovakia, on dung between the villages Kolpachy and Dubové, leg.: A. Kmeť
- ?? (beginning of 20th century), spec. no. 3451, SW Slovakia, on horse dung, in the town Bratislava, leg.: K. Mergl
- ?? (beginning of 20th century), spec. no. 3441, SW Slovakia, on horse dung, in the town Bratislava, leg.: K. Mergl
- 10.08.1982, spec. no. 3448, E Slovakia, Východoslovenská rovina lowland, village Sobrance, distr. Michalovce, on horse dung near the road, alt. 300 m, leg. et det.: J. Kuthan

Extremely rare species, growing on horse and occasionally also on cow dung. Lizoň (1985) published 11 records of this species from Slovak territory, eight of which are preserved in BRA collections. Most of the finds (Kalchbrenner, Mergl, Kmeť) are from the 19th and the very beginning of 20th centuries. Besides them only two records were made: in 1962 at Zemplínske vrchy Mts. (Lizoň 1985) and in 1982 Kuthan collected this species at Sobrance and specimen is in BRA. This is at the same time the last record of this species at Slovak territory (Škubla 2003).

According to Matočec (2000) this species is threatened mainly by changes in traditional stockbreeding. The animals are kept indoors, instead of grazing on open pastures and thus the only potential habitats of *Poronia punctata* were left without a suitable substrate. However occasional finds of this species in several European countries, together with the comeback of free grazing of horses, bring a certain hope for the future of this species, treated as extinct in Slovakia.

***Montagnea radiosa* (Pall.) Rauschert) Syn.: *M. arenaria* (DC.) Fr.**

CR

- 02.08.1987, spec. no. 3440, SW Slovakia, Podunajská rovina lowland, village Chotín, Nat. Res. Chotínske piesky, in sandy soil, without vegetation cover, alt. 110 m, leg. et det.: J. Kuthan (labelled as *Montagnea arenaria* (DC.) Zeller)

According to Škubla (1997a) only four records of this species in Slovakia are known, three of them are situated in the close vicinity of town Hurbanovo, the fourth is the specimen held in BRA, from the same region, which is at the same time the last and single preserved record from the Slovak territory. Though this species is considered to be critically endangered, its occurrence in Slovakia is probably only relic and I propose to treat it as extinct in future.

***Tuber aestivum* Vittad.**

CR

Foreign specimen:

- 12.11.1899, spec. no. 3446, Hungaria, Bakony, leg. et det.: L. Hollós

Slovak specimens:

- 1879, spec. no. 3455, SW Slovakia, Zelenice in the district of Bratislava, leg.: P. Blažkovič, det.: A. Kmeř as *Tuber cibarium*, rev. : M. Lawrynowicz 1981
- 12.12.1900, spec. no. 3443, leg. et det.: L. Hollós
- 29.10.1902, spec. no. 3444, W Slovakia, Malacky, leg. et det.: K. Mergl, rev.: M. Lawrynowicz 1981
- 10.09.1973, spec. no. 3456, W Slovakia, Trábeč Mts., Nitra, loc. Zobor - Pyramida, in soil, alt. 550 m, leg.: L. Opold, det.: P. Lizoň, rev. : M. Lawrynowicz 1981 as *T. mesentericum* Vitt. (homotypic synonym)
- 24.06.1995, spec. no. 3454, W Slovakia, Trábeč Mts., village Klížske Hradište, oak forest, alt. 250 m, leg. et det.: M. Benko

Though this species has been reported from many localities in 19th and beginning of 20th centuries, when it was widely collected and frequently sold at the markets (Klika 1927, Klika 1927a), a single find in 1995 (specimen no. 3454), isolated in time and space is so far the last known one (Škubla 2003). However it may be not so endangered as it seems, maybe it is only hard to find. At the same time this species of great commercial value, which is in Slovakia preserved by law, may be collected illegally, and therefore data not announced to official sites. As there are several research projects aimed to occurrence and distribution of edible truffles, close future may reveal some surprising aspects of this maybe not so critically endangered species.

Tuber dryophilum Tul.

- 17.9.1888, spec. no. 3447, C Slovakia, Štiavnické vrchy Mts, village Preňčov, Bardinová, in humous soil in forest, leg.et det.: A. Kmeř, rev.: M. Lawrynowicz 1981

This is the single record of the species at the Slovak territory (Škubla 2003), it has never been reported again and though it is not included in current version of the red list (Lizoň, 2001), I propose to treat it as extinct (EX) in prepared fourth draft.

Battarrea stevenii (Libosch.) Fr. syn. *Battarrea phalloides* (Dicks.) ex Pers CR

Foreign specimens:

- 01.11.1979, spec. no. 3437, Creta, Herakleion, , on soil under *Olea* and *Amygdalus*, leg.: M. Chlouba, det.: A. Dermek

- 01.04.1982, spec. no. 583, Hungaria, Budapest, les Akadémia Erdő (Pest Lőrincz), leg.: Z. Sarkadi

Slovak specimens:

- 08.04.1980, spec. no. 3438, SW Slovakia, Podunajská rovina lowland, village Balvany, in sandy soil, leg.et det.: E. Futó
- 01.07.1981, spec. no. 3439, SW Slovakia, Podunajská rovina lowland, village Kameničná, Balvany, in soil at the forest edge (*Robinia*, *Sambucus nigra*), leg. et det.: E. Futó
- 02.10.2002, spec. no. 846, W Slovakia, Podunajská rovina lowland, Bratislava city part Podunajské Biskupice, between street and field under *Robinia*, alt. 150 m, leg.: G. Tonka, det.: I. Kautmanová
- 19.09.2004, spec. no. 3458, W Slovakia, Podunajská rovina lowland, Bratislava, city part Zlaté piesky, in garden under *Coryllus*, leg.: S. Jakša, det.: I. Kautmanová
- 19.10.2004, spec. no. 3459, W Slovakia, Podunajská rovina lowland, Bratislava city part Podunajské Biskupice, between street and field under *Robinia*, alt. 150 m, leg.: V. Kautman, det.: I. Kautmanová

The first record of this species is from 1960 at Čenkov (Šmarda 1965). Twenty years ago this species has been occasionally collected at other sandy localities in southwestern Slovakia (Škubla 2003). Though most of them were national reserves, due to unsuitable management they lost their former character and many plant as well as animal species bound to this specific habitat dissappeared. *Battarrea stevenii* was thought to be extinct in Slovakia, only regular finds of this species at Slovak-Moravian border gave a certain hope for future of this species and it was evaluated as critically endangered. In 2002 an

occasional find of this species at a new locality near Bratislava was made (spec. no. 846), since then carpophores are observed there each year and in 2004 another locality at the opposite side of Bratislava city was discovered (spec. no 3459). Specimens held in BRA are therefore the only evidence of current presence of this species in Slovak mycoflora.

Endoptychum agaricoides Czern.,

CR

Foreign specimens:

- 26.10.1965, spec. no. 3417, Moravia, Rohatec, leg.: Valkoun, det.: F. Šmarda

Slovak specimens:

- 05.10.1972, spec. no. 3416, SW Slovakia, Podunajská nížina lowland, Hurbanovo, leg. et det.: E. Futó
- 05.10.1972, spec. no. 3428, SW Slovakia, Podunajská nížina lowland, Hurbanovo, leg. et det.: E. Futó
- 09.09.1973, spec. no. 3436, SW Slovakia, Podunajská nížina lowland, Chotín, near the village, in sandy soil under *Robinia*, leg. et det.: E. Futó
- 14.10.1973, spec. no. 3420, SW Slovakia, Podunajská nížina lowland, Chotín, near the train station, in dry grazed meadow, leg. et det.: E. Futó
- 14.10.1973, spec. no. 3429, SW Slovakia, Podunajská nížina lowland, Chotín, near the train station, in dry grazed meadow, leg. et det.: E. Futó
- 15.06.1974, spec. no. 3430, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in sandy soil, leg. et det.: E. Futó
- 15.06.1974, spec. no. 3431, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in sandy soil, leg. et det.: E. Futó
- 23.07.1974, spec. no. 3421, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in soil, leg. et det.: E. Futó
- 23.07.1974, spec. no. 3413, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in soil, leg. et det.: E. Futó
- 25.07.1974, spec. no. 3424, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in soil, leg. et det.: E. Futó
- 30.07.1974, spec. no. 3435, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in soil, leg. et det.: E. Futó
- 01.07.1974, spec. no. 3433, SW Slovakia, Podunajská nížina lowland, Hurbanovo, in soil, leg. et det.: E. Futó
- 08.09.1974, spec. no. 3432, SW Slovakia, Podunajská nížina lowland, Chotín, in Nature Reserve Chotínske piesky, in soil, leg. et det.: E. Futó
- 22.09.1974, spec. no. 3418, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in sandy soil, leg. et det.: E. Futó
- 22.09.1974, spec. no. 3425, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in sandy soil, leg. et det.: E. Futó
- 22.09.1974, spec. no. 3434, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in sandy soil, leg. et det.: E. Futó
- 28.09.1974, spec. no. 3415, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in sandy soil, leg. et det.: E. Futó
- 24.07.1975, spec. no. 3412, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in soil, in pasture, leg. et det.: E. Futó
- 24.07.1975, spec. no. 3422, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in soil, in pasture, leg. et det.: E. Futó
- 24.07.1975, spec. no. 3411, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in soil, in pasture, leg. et det.: E. Futó
- 25.07.1977, spec. no. 3426, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in soil in pasture, leg. et det.: E. Futó
- 01.07.1981, spec. no. 3427, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in soil in *Robinia* groves, leg. et det.: E. Futó
- 29.06.1985, spec. no. 3423, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, in dry meadow, 125 m, leg. et det.: L. Hagara
- 29.06.1985, spec. no. 325, SW Slovakia, Podunajská nížina lowland, Bajč, Vlkanovo, on the bank of the river Žitava, in sandy soil in dry meadow, 120 m, leg.: J. Kuthan et al., det.: J. Kuthan
- 14.08.1985, spec. no. 3414, SW Slovakia, Podunajská nížina lowland, Marcelová, 0,5km north of the village, in grass under *Robinia* trees, 150 m, leg. et det.: L. Hagara

- 02.08.1987, spec. no. 3419, SW Slovakia, Podunajská nížina lowland, Chotín, Nature Reserve „Chotínske piesky“, in sandy soil at the *Robinia* groves margin, 110 m, leg. et det.: J. Kuthan

Though the number of specimens held in BRA is relatively high, most of them are only repeated collections at the same locality, often several times in the same year, sometimes the same day. As a result they represents a limited collection of representatives from southern Slovakia, collected by amateur mycologist E. Futó. Though this species has been reported from 11 localities (Škubla 1997), no specimens remained preserved from eastern Slovakia (the last record in 1957) or Záhorská nížina lowland at the west (the last record in 1961). Most of the localities providing suitable habitat for *E. agaricoides* are small and threatened by succession of invasive plant species caused by the changes in management. Though some of them are preserved by law (Chotín, Marcelová) this species was not recollected in spite of frequent visits of various mycologists. Specimen no. 3419 collected in 1987 at Chotín is therefore the last record of this species at the Slovak territory so far.

***Hydropus atramentosus* /Kalchbr./ Kotl. et Pouzar**

CR

Foreign specimens:

- 20.08.1967, spec. no. 2388, Moravia, Moravsko-slovenské Beskydy Mts., village Bílá, distr. Frýdek-Místek, Nature Reserve Salajka, on rotten trunk of fir (*Abies alba*), 850 m, leg. et det.: J. Kuthan
- 28.08.1972, spec. no. 2513, Moravia, Moravsko-slovenské Beskydy Mts., village Velké Karlovice, Nature Reserve Lesková, on rotten tree of fir (*Abies alba*), 700 m, leg. et det.: J. Kuthan

Slovak specimens:

- 16.09.1979, spec. no. 2510, C Slovakia, Malá Fatra Mts., village Turany, on rotten trunk of fir, 750 m, leg.: B. Zajíc, det.: J. Kuthan
- 28.09.1988, spec. no. 2501, E Slovakia, Bukovské vrchy Mts., Nová Sedlica, Nature Reserve Stužica virgin forest, on the slope of Hrubky hill, on fallen trunk of fir, 900 m, leg. et det.: J. Kuthan
- 12.09.1989, spec. no. 2387, E Slovakia, Bukovské vrchy Mts., Nová Sedlica, Nature Reserve Stužica virgin forest, on the slope of Príkry hill, on rotten trunk of fir, 750 m, leg.: J. Lazebníček et J. Terray, det.: J. Kuthan
- 03.10.1989, spec. no. 2509, E Slovakia, Bukovské vrchy Mts., Nová Sedlica, Nature Reserve Stužica virgin forest, near the springs of the river Stužica on fallen trunk of fir, 640 m, leg. et det.: J. Kuthan

Though this species is not collected frequently, it may be only overlooked and not recognized. It requires virgin forest habitats and paradoxically due to it is relatively well preserved, because most of at least 11 known localities (Škubla 2003) are nature reserves. The first records of this species in Slovakia (1951 Mníšek nad Hnilcom, 1961 Dobročský prales) are held in National Museum Prague (PR) (Kotlaba, Pouzar 1962). Author found this species in 2004 (Nízke Tatry Mts., Nature Reserve Baranovo) but fruitbodies were in bad state and did not withstand preparation. However this find supports the idea of this species surviving relatively well in protected areas.

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