

**REDLIST SPECIES OF FUNGI HELD IN THE COLLECTIONS OF THE SLOVAK NATIONAL MUSEUM-NATURAL HISTORY MUSEUM (BRA).
V. LOW RISK SPECIES (LR), PART A.**

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Abstract: *Ohrozené druhy húb v zbierkach Slovenského národného múzea – Prírodovedného múzea (BRA). V. Menej ohrozené druhy (LR), časť A.* V príspevku sú uvedené herbarové položky tých druhov húb, ktoré sú zaradené v 3. verzii červeného zoznamu húb Slovenska (Lizoň 2001) v kategórii menej ohrozené (low risk – LR). Z 87 druhov patriacich do tejto kategórie sa v zbierkach SNM-PM nachádza 46, pričom mnohé údaje o ich výskyte ešte neboli nikdy publikované. Vzhľadom na veľké množstvo druhov, ktoré sa často vyskytujú na mnohých lokalitách, je v príspevku spracovaných len prvých 10 druhov.

Zloženie druhov v kategórii menej ohrozených je veľmi neproporčné, boli sem zaradené druhy mimoriadne zriedkavé aj druhy, ktoré sú pomerne hojné, ale z rôznych príčin ohrozené. Preto pri každom druhu navrhujem aj kategóriu, do ktorej by mal byť podľa súčasných poznatkov zaradený v novej verzii červeného zoznamu.

Key words: fungal conservation, threatened fungi, Slovakia

Introduction

The last (third) version of the redlist of Slovak fungi (Lizoň 2001) consists of 309 fungal taxa, 87 of them are treated as low risk (LR), either as locally common (lc) or not treated (nt). In the herbarium of the Natural History Museum of Slovak National Museum (BRA) 46 of them are held. In this article genera *Agaricus*, *Agrocybe*, *Amanita* and *Boletus* with 9 species in the category LR are presented.

The list of the species is rather unbalanced. Some of the species as e. g. *Agrocybe cylindracea* are extremely rare and often seriously threatened, while others, as e. g. *Boletus queletii* or *Boletus rhodoxanthus* are not uncommon in certain areas. Therefore I propose for each of the species a new category according to the current knowledge and criteria of International Union for Conservation of Nature (IUCN).

Species preserved by law in Slovakia are marked with paragraph (§).

***Agaricus bernardii* (Quél.) Sacc.**

LRlc

3.8.1973, BRACR12508, Podunajská rovina lowland, Bajč, alt.: 120 m, leg.: E. Futó;

21.6.1974, BRACR12504, Podunajská rovina lowland, Bajč, Chrast, in soil in *Robinia* growth, alt.: 120 m, leg.: E. Futó;

8.9.1974, BRACR12502, Podunajská rovina lowland, Bajč, in soil in meadow (airport), alt.: 120 m, leg.: E. Futó;

- 23.6.1976, BRACR12505, Podunajská rovina lowland, Dulovce, in soil in pasture, alt.: 150 m, leg.: H. Lábsky;
- 30.5.1981, BRACR12503, Borská nížina lowland, Moravský Svätý Ján, in soil in grass under *Aesculus hippocastaneus*, alt.: 150 m, leg.: V. Kunštek;
- 23.10.1982, BRACR808, Malé Karpaty mountains, Bratislava-Krasňany, in tram route in Račianska street, alt.: 140 m, leg.: J. Červeň;
- 9.10.1988, BRACR12506, Trnavská pahorkatina upland, Pezinok, in meadow, alt.: 160 m, leg.: L. Hagara and M. Procházka;
- 12.6.1994, BRACR12507, Podunajská rovina lowland, Bratislava-Rusovce, Dvory, under *Populus nigra*, alt.: 140 m, leg.: J. Sand;

Originally described from seaside dunes in France, *Agaricus bernardii* has since been found in other maritime ecosystems in Europe and North America. Fábry (1975) and Fábry et al. (1975) reported this species from the vicinity of Hurbanovo and Škubla (1995) published a single record from Banská Bystrica. According to the specimens held at BRA this species is bound to xerothermophilous sandy areas of southern and southwestern Slovakia, which are threatened by decreasing pasture and most of them are recently outgrown by *Robinia pseudacacia*. The species is not common in any site of its occurrence in Slovakia but as it is common in various coastal habitats in Europe and North America and is well adaptable to different environments, it is probably not threatened at all. Moreover, it is probably often misinterpreted as common *A. bitorquius* from which it differs by staining red. I propose to treat it as low risk (LR) species also in future.

Agrocybe cylindracea (DC.) Maire **LRnt, §**

Foreign specimens:

- 14.11.2005, BRACR4954, Austria, Wien, in forest at the edge of the city, on a poplar trunk, alt.: 150 m, leg.: R. Bednár;

Slovak specimens:

- 9.10.1977, BRACR12509, Podunajská rovina lowland, Senec, on poplar wood in city park in Senec, alt.: 160 m, leg.: F. Cisár;
- 10.10.1977, BRACR12511, Podunajská rovina lowland, Senec, on dead trunk of *Populus* sp., alt.: 160 m, leg.: F. Cisár;
- 12.10.1988, BRACR12510, Podunajská rovina lowland, Kameničná, in *Populus* forest, alt.: 110 m, leg.: J. Kuthan et L. Hagara;

This thermophilous species is found mostly in Southern Europe, in Slovakia it occurs at the northern most border of its distribution.

Földy (1987) reported several records of this species from south-eastern Slovakia, Lizoň (1983, 1985, 2002), Dermek (1977) and Kotlaba et al. (1995) published it from south-west (Komárno, Kameničná, Hurbanovo). The species is rare in whole area of its distribution and though it is easily cultivated, as it is edible and tasty, I propose to treat natural populations as vulnerable (VU) in future.

Amanita strobiliformis (Paulet) Bertillon

LRnt, §

- 11.7.1969, BRACR12523, Podunajská rovina lowland, Mudroňovo, alt.: 160 m, leg.: I. Fábry;
12.8.1969, BRACR12524, Považský Inovec mountains, Zlatníky, in oak forest, alt.: 400 m, leg.: J. Kuthan;
25.7.1970, BRACR12517, Strážovské vrchy mountains, Trenčianske Teplice, in mixed forest under *Quercus*, alt.: 350 m, leg.: J. Kuthan;
2.8.1972, BRACR12522, Strážovské vrchy mountains, Temeš, in mixed forest (*Quercus*, *Pinus*), alt.: 500 m, leg.: J. Kuthan;
16.8.1972, BRACR12518, Strážovské vrchy mountains, Šutovce, in deciduous forest (*Carpinus*, *Quercus*), alt.: 450 m, leg.: J. Kuthan;
16.8.1972, BRACR12519, Burda mountains, Štúrovo, in deciduous forest (*Quercus*, *Fagus*), alt.: 400 m, leg.: J. Kuthan;
28.8.1974, BRACR12521, Štiavnické vrchy Mountains, Baďany, in oak forest, alt.: 400 m, leg.: J. Kuthan;
5.8.1975, BRACR12520, Borská nížina lowland, Kúty, Hadmáš, in soil in oak forest, alt.: 200 m, leg.: A. Dermek;
11.7.1980, BRACR12531, Podunajská rovina lowland, Bratislava-Rusovce, in soil in deciduous forest, alt.: 133 m, leg.: I. Zábrodský;
14.7.1980, BRACR12533, Podunajská rovina lowland, Hviezdoslavov - Vieska, in soil in mixed forest (*Acer*, *Quercus*), alt.: 128 m, leg.: K. Zelenka;
17.7.1980, BRACR12532, Podunajská rovina lowland, Hviezdoslavov - Vieska, in soil in mixed forest (*Fraxinus*, *Tilia*, *Acer*, *Pinus*), alt.: 128 m, leg.: P. Lizoň;
2.8.1985, BRACR12515, Žilinská kotlina basin, Rajecké Teplice, in city park under limes (*Tillia*), alt.: 290 m, leg.: P. Škubla;
7.6.1988, BRACR12528, Podunajská rovina lowland, Bratislava, Zlaté piesky, in soil in deciduous forest, alt.: 220 m, leg.: L. Hagara;
16.8.1988, BRACR12526, Košická kotlina basin, Prešov, in public garden under oaks, alt.: 250 m, leg.: L. Ďurček;
2.7.1989, BRACR12527, Šarišská vrchovina upland, Prešov-Haniské, Furča, in young *Carpinus* forest, alt.: 260 m, leg.: L. Ďurček;
0.8.1991, BRACR12530, Malé Karpaty mountains, Kuchyňa, Bučková, under *Fagus* on limestones, alt.: 520 m, leg.: J. Dobiš;
8.8.1993, BRACR12512, Ondavská vrchovina upland, Kvakovce, Viničky, in deciduous forest (*Quercus*, *Fagus*, *Betula*), alt.: 220 m, leg.: S. Adamčík;
12.9.1993, BRACR12525, Ondavská vrchovina upland, Kvakovce, under *Betula* in pasture, alt.: 230 m, leg.: S. Adamčík;
23.10.1993, BRACR12529, Podunajská rovina lowland, Kalinkovo, in mixed forest under *Betula*, alt.: 160 m, leg.: Lengyel;
13.6.1995, BRACR12516, Podunajská rovina lowland, Bratislava-Petržalka, Lúky, under *Tillia*, alt.: 135 m, leg.: Hlúch;
13.6.1996, BRACR12513, Podunajská rovina lowland, Bratislava-Petržalka, Draždiak, in city park under *Tillia*, *Robinia* and *Acer*, alt.: 135 m, leg.: Z. Baďuríková;
26.8.1996, BRACR12514, Podunajská rovina lowland, Bratislava-Petržalka, in floodplain forest, alt.: 160 m, leg.: J. Čaputa;
29.5.2000, BRACR12534, Spišsko-šarišské medzihorie basin, Šarišské Michaľany, š. p. IMUNA, under *Tillia*, in grass, alt.: 290 m, leg.: L. Ďurček;
12.9.2005, BRACR4791, Malé Karpaty Mountains, Bratislava, Mokrohájska cesta street, under *Tillia*, *Populus*, *Ribes*, alt.: 200 m, leg.: S. Strmeň;

This species is known from North America and Europe, from Mediterranean to northern Britain and Netherlands. According to Borovička (2006) it occurs frequently as-

sociated with *Tillia* in Czech Republic. Though the species is undoubtedly rare it is reported frequently, probably because it is rather conspicuous. The first records of *A. strobiliformis* from Slovakia were published by Lumnitzer (1791) and Endlicher (1830) from the vicinity of Bratislava. Later it has been recorded by Pilát (1938) near Moldava nad Bodvou in eastern part of Slovakia and by Drázda (1947) at Prievaly in southwest and more recently at many localities in southern part of Slovakia from east to west (Fábry et al. 1975, Lizoň 1985, Kabát 1996, Škubla 1997, 2003, Kosina 2001). According to published data and specimens held at BRA it tolerates well even the habitats strongly influenced by man, growing often in city parks and parking lots. However, as it is not common and probably rare, I propose to treat it as threatened also in future, amongst other low risk (LR) species.

Boletus appendiculatus Schaeff.

LRnt, §

Foreign specimens:

- 16.6.1973, BRACR12542, Bulgaria, Ropotamo, nature reserve "Ropotamo", in deciduous forest (*Quercus, Crataegus*), alt.: 80 m, leg.: J. Kuthan
- 4.6.1975, BRACR12551, Bulgaria, Ropotamo, nature reserve "Ropotamo", in deciduous forest (*Quercus, Carpinus, Crataegus*), alt.: 80 m, leg.: J. Kuthan
- 9.6.1975, BRACR12539, Bulgaria, Ropotamo, nature reserve "Ropotamo", in deciduous forest (*Quercus, Crataegus*), alt.: 80 m, leg.: J. Kuthanová;

Slovak specimens:

- 6.9.1963, BRACR12541, Podunajská rovina lowland, Bratislava-Petržalka, Starý háj, in deciduous floodplain forest, alt.: 160 m, leg.: I. Fábry;
- 16.8.1970, BRACR12545, Hornonitrianska kotlina basin, Nitrianske Pravno, in deciduous forest (*Fagus, Corylus*), alt.: 500 m, leg.: J. Kuthan;
- 10.7.1971, BRACR12544, Strážovské vrchy mountains, Timoradza, in deciduous forest (*Quercus, Acer, Tillia*), alt.: 350 m, leg.: J. Kuthan;
- 7.9.1972, BRACR12536, Strážovské vrchy mountains, Šutovce, in deciduous forest (*Quercus, Carpinus*), alt.: 450 m, leg.: J. Kuthan;
- 18.9.1972, BRACR12559, Strážovské vrchy mountains, Trenčianske Teplice, in public garden under *Quercus*, alt.: 400 m, leg.: J. Kuthan;
- 26.6.1973, BRACR12543, Rimavská kotlina basin, Ožďany, in oak forest, alt.: 250 m, leg.: J. Kuthan;
- 21.9.1974, BRACR12557, Strážovské vrchy mountains, Temeš, in mixed forest (*Carpinus, Quercus, Pinus*), alt.: 500 m, leg.: J. Kuthan;
- 29.8.1976, BRACR12535, Hronská pahorkatina mountains, Tehla, in oak forest, alt.: 300 m, leg.: J. Kuthan;
- 11.7.1980, BRACR12564, Malé Karpaty mountains, Bratislava-Železná studienka, Lesná správa, in deciduous forest, alt.: 250 m, leg.: A. Volf;
- 26.7.1981, BRACR12554, Strážovské vrchy mountains, Seč, Fintov laz, 2,1 km SV-SSV od obce Seč, v presvetlenej starej bučine, alt.: 700 m, leg.: L. Hagara;
- 26.7.1981, BRACR12555, Strážovské vrchy mountains, Seč, Fintov laz, in open old beech forest, alt.: 660 m, leg.: L. Hagara;
- 27.10.1984, BRACR12538, Malé Karpaty mountains, Kuchyňa, in beech forest, alt.: 400 m, leg.: S. Prihel;
- 11.11.1984, BRACR12548, Malé Karpaty mountains, Kuchyňa, Vývrať (Ostrý vrch), in beech forest, alt.: 400 m, leg.: A. Volf;
- 23.9.1987, BRACR12560, Štiavnické vrchy mountains, Žemberovce, Ladzany, Husárka, in oak forest, alt.: 450 m, leg.: J. Kuthanová;

- 13.6.1988, BRACR12562, Hronská pahorkatina mountains, Podhájska, Čechy, Dlhý vrch, in oak forest, alt.: 240 m, leg.: J. Kuthan;
- 30.6.1988, BRACR12540, Malé Karpaty mountains, Kuchyňa, Bučková, under *Fagus*, alt.: 500 m, leg.: L. Hagara;
- 18.9.1988, BRACR12561, Strážovské vrchy mountains, Bojnice, in public garden under oaks, alt.: 300 m, leg.: K. Žabčík;
- 2.8.1991, BRACR12556, Malé Karpaty mountains, Kuchyňa, Bučková, in deciduous forest (*Quercus, Fagus*), alt.: 480 m, leg.: L. Hagara;
- 14.9.1994, BRACR12549, Slanské vrchy mountains, Zámotov, Ordánky mountain, mixed forest (*Fagus, Quercus*), alt.: 450 m, leg.: M. Babej;
- 25.8.1997, BRACR12553, Veporské vrchy mountains, Hriňová, Látky, Kokava-Háj, alt.: 1100 m, leg.: K. Tesař;
- 2.8.1998, BRACR12550, Malé Karpaty mountains, Bratislava-Rača, Javorník, in deciduous forest, alt.: 500 m, leg.: T. Žufa;
- 24.6.1999, BRACR12547, Malé Karpaty mountains, Bratislava-Rača, in mixed forest (*Quercus, Fagus*), alt.: 600 m, leg.: L. Dugovič;
- 15.8.2001, BRACR12558, Štiavnické vrchy mountains, Ladzany, Veľký Gregor, in oak forest, alt.: 500 m, leg.: I. Kautmanová;
- 15.6.2003, BRACR2736, Malé Karpaty mountains, Rohožník, Vajarská, beech forest (*Fagus sylvatica*), alt.: 360 m, leg.: J. Červenka;
- 15.6.2003, BRACR3328, Malé Karpaty mountains, Rohožník, Vajarská, beech forest, alt.: 360 m, leg.: J. Červenka;
- 3.7.2005, BRACR4784, Štiavnické vrchy mountains, Čajkov, in oak forest (*Quercus cerris*), alt.: 700 m, leg.: V. Kautman;
- 28.8.2005, BRACR4944, Štiavnické vrchy mountains, Ladzany, Veľký Gregor, in xero-thermophilous oak forest., alt.: 480 m, leg.: I. Kautmanová;
- 25.6.2006, BRACR9170, Malé Karpaty mountains, Bratislava, Sv. Jur, Jozefovo údolie valley, in deciduous forest (*Quercus, Fagus*), alt.: 500 m, leg.: I. Kautmanová;
- 6.9.2006, BRACR9180, Malé Karpaty mountains, Bratislava, Vajnorská dolina valley, alt.: 500 m, leg.: M. Zelenay;
- 10.7.2007, BRACR12285, Vtáčnik, Lubietová, in mixed forest (*Abies, Picea, Fagus*), alt.: 400 m, leg.: H. Čerešňáková.

Boletus appendiculatus is a rare species occurring in xerothermophilous hardwood deciduous forests of Europe and North America. In Slovakia it occurs at the northern most area of its distribution. Most of the published records of this species from Slovakia were from the western regions (Záhorovská 1984, Janitor 1994, 1997, Pilát, Dermek 1974, Hagara 1992, Škubla 1998, Šutara et al. 2009, Dermek 1985). Only Pilát and Dermek (1974) published a single record from the vicinity of Bardejov. Most of the specimens held at BRA are also from western Slovakia. Though the species is undoubtedly rare, in good seasons it occurs in numbers, so it is probably most threatened by the loss of habitat caused by cutting old oak forests. I propose to treat it as low risk (LR) also in future.

Boletus fechtneri Vel.

LRnt, §

- 6.9.1963, BRACR12609, Podunajská rovina lowland, Bratislava, Starý háj, alt.: 160 m, leg.: I. Fábry;
- 4.9.1966, BRACR4694, Podunajská rovina lowland, Svätý Jur, Šúr, alt.: 150 m, leg.: I. Fábry;
- 11.9.1969, BRACR12604, Malé Karpaty mountains, Rohožník, alt.: 250 m, leg.: Z. Novák;

- 26.7.1970, BRACR12587, Strážovské vrchy mountains, Šutovce, in deciduous forest (*Quercus, Carpinus*), alt.: 450 m, leg.: J. Kuthan;
- 28.8.1970, BRACR12607, Kremnické vrchy mountains, Žarnovica, alt.: 500 m, leg.: I. Fábry;
- 17.8.1972, BRACR12585, Štiavnické vrchy mountains, Baďan, in deciduous forest, alt.: 500 m, leg.: A. Horváthová;
- 24.8.1974, BRACR12605, Štiavnické vrchy mountains, Počúvadlo, in forest (*Quercus, Carpinus, Fagus*), alt.: 500 m, leg.: M. Horváth;
- 14.9.1975, BRACR12590, Štiavnické vrchy mountains, Bátovce, in deciduous forest, alt.: 500 m, leg.: V. Chlumský;
- 18.7.1982, BRACR12602, Malá Fatra mountains, Bystrička, Kopec, at the edge of beech forest, alt.: 820 m, leg.: K. Tolnay;
- 14.6.1983, BRACR12608, Štiavnické vrchy mountains, Ladzany, in oak forest, alt.: 450 m, leg.: J. Kuthan;
- 17.8.1985, BRACR12589, Borská nížina lowland, Studienka, in deciduous forest, alt.: 180 m, leg.: I. Zábrodský;
- 23.8.1987, BRACR12588, Štiavnické vrchy mountains, Žemberovce, oak forest, alt.: 250 m, leg.: P. Škubla;
- 10.8.1991, BRACR12606, Malé Karpaty mountains, Kuchyňa, Bučková, in oak forest, alt.: 480 m, leg.: J. Sand et L. Hagara;
- 17.8.1991, BRACR12603, Malé Karpaty mountains, Kuchyňa, Bučková, in beech forest, alt.: 340 m, leg.: J. Sand;
- 18.9.1996, BRACR12586, Malé Karpaty mountains, Kuchyňa, Bučková, in beech forest, alt.: 370 m, leg.: J. Sand;
- 1.9.2007, BRACR12286, Štiavnické vrchy mountains, Obyce, alt.: 350 m, leg.: J. Bojnanský.

Rare species though sometimes hard to identify due to great variability. Published records are scarce, Dermek Lizoň (1980) reported it from the vicinity of Bratislava, Škubla (1994) published it from Štiavnické vrchy mountains in central Slovakia and Janitor (1994) from Tríbeč mountains. In good conditions it can occur in numbers, however it is threatened by loss of habitats due to tree felling in old oak forests. I propose to retain its status of low risk species (LR) also in future.

Boletus fragrans Vittad.

LRnt, §

- 2.8.1970, BRACR12613, Strážovské vrchy mountains, Nitrianske Pravno, Bazová dolina, in deciduous forest (*Quercus, Corylus*), alt.: 500 m, leg.: J. Kuthan;
- 16.8.1970, BRACR12612, Strážovské vrchy mountains, Šutovce, in oak forest, alt.: 450 m, leg.: J. Kuthan;
- 17.9.1995, BRACR12610, Bukovské vrchy mountains, Nová Sedlica, Stučica, under *Fagus* and *Abies*, alt.: 800 m, leg.: S. Adamčík;
- 28.10.2001, BRACR12611, Myjavská pahorkatina mountains, Stará Turá, Myjava, Košiarová dolina, *Fagus, Quercus*, alt.: 400 m, leg.: A. Roháčková;
- 17.8.2002, BRACR798, Trnavská pahorkatina upland, Senec, Osada Martin, Martinský les forest, oak (*Quercus*), maple (*Acer*), lowland forest, alt.: 120 m, leg.: P. Glončák;
- 25.9.2004, BRACR3494, Myjavská pahorkatina upland, Krajné, U Šindelov, in oak forest, alt.: 400 m, leg.: J. Adamcová, P. Adamec;

This species grows in Europe and North America though in different habitats. In Europe it prefers warm and dry oak forests and in America it occurs in alpine habitats under

coniferous forests. Published records from Slovakia are rare, e.g. Dermek (1970, 1977), Mlynarčík (1979), Dermek Pilát (1974), Dermek, Lizoň (1980) and maybe not allways reliable, as the species is hard to recognize.

Boletus queletii Schulzer

LRnt, §

Foreign specimens:

- 20.6.1971, BRACR12974, Bulgaria, Ropotamo, Nature Reserve "Ropotamo", Arkutino, in dry forest (*Carpinus*), alt.: 70 m, leg.: J. Kuthan;
17.6.1973, BRACR12621, Bulgaria, Stara Planina, Banja, Obsor, near Emona, in deciduous forest (*Quercus, Carpinus*), alt.: 120 m, leg.: J. Kuthan;
11.6.1975, BRACR12614, Bulgaria, Ropotamo, Nature Reserve "Ropotamo", Arkutino, in deciduous forest (*Quercus, Carpinus*), alt.: 40 m, leg.: J. Kuthan;
13.6.1975, BRACR12999, Bulgaria, Ropotamo, Nature Reserve "Ropotamo", Arkutino, in deciduous forest (*Querceto-Carpinetum*), alt.: 45 m, leg.: J. Kuthan;
16.6.1976, BRACR12973, Bulgaria, Ropotamo, Nature Reserve "Ropotamo" Arkutino, in deciduous forest (*Carpinus, Quercus, Fraxinus*), alt.: 30 m, leg.: J. Kuthan;
19.6.1979, BRACR12981, Bulgaria, Gabrovo, in oak forest (+ *Carpinus*), leg.: J. Kuthan.

Slovak specimens:

- 7.6.1965, BRACR12617, Ondavská vrchovina upland, Bardejov, leg.: I. Fábry;
15.8.1970, BRACR12632, Burda mountains, Štúrovo, in oak forest, alt.: 400 m, leg.: J. Kuthan;
11.7.1971, BRACR12631, Považský Inovec mountains, Zlatníky, in oak forest, alt.: 450 m, leg.: J. Kuthan;
10.7.1972, BRACR12633, Strážovské vrchy mountains Timoradza, in deciduous forest (*Quercus*), alt.: 350 m, leg.: J. Kuthan;
6.8.1972, BRACR12972, Tríbeč mountains, Jelenec, Gýmeš, in soil, alt.: 570 m, leg.: O. Šujan;
12.7.1973, BRACR12616, Štiavnické vrchy mountains, Banská Štiavnica, in forest, alt.: 400 m, leg.: A. Horváthová;
25.8.1974, BRACR12630, Strážovské vrchy mountains, Šutovce, in oak forest, alt.: 450 m, leg.: J. Kuthan;
12.9.1974, BRACR12971, Štiavnické vrchy mountains, Baďan, in forest, alt.: 500 m, leg.: M. Horváth;
28.9.1974, BRACR12618, Štiavnické vrchy mountains, Baďan, in deciduous forest, alt.: 500 m, leg.: M. Horváth;
28.6.1975, BRACR12619, Malé Karpaty mountains, Častá, Červený Kameň, in soil under *Tillia*, alt.: 360 m, leg.: M. Procházka;
21.9.1975, BRACR12980, Podunajská rovina lowland, Mudroňovo, in deciduous forest, alt.: 180 m, leg.: V. Chlumský;
19.7.1976, BRACR12982, Malá Magura mountains, Šutovce, in deciduous forest under *Carpinus*, alt.: 550 m, leg.: J. Kuthan;
29.8.1976, BRACR12984, Hronská pahorkatina mountains, Tehla, under *Carpinus* (+ *Ulmus*), alt.: 300 m, leg.: J. Kuthan;
23.7.1977, BRACR12988, Považský Inovec mountains, Zlatníky, in deciduous forest under *Carpinus*, alt.: 400 m, leg.: J. Kuthan;
21.7.1979, BRACR12978, Štiavnické vrchy mountains, Žemberovce, in oak forest, alt.: 250 m, leg.: K. Slovinec;
12.8.1980, BRACR12983, Podunajská rovina lowland, Bratislava-Rusovce, in public park, alt.: 150 m, leg.: I. Zábrodský;
21.8.1980, BRACR12979, Štiavnické vrchy mountains, Čajkov, in oak forest, alt.: 400 m, leg.: J. Sadílek;

- 31.8.1980, BRACR12977, Myjavská pahorkatina mountains, Krajné, Matejovec, in deciduous forest, alt.: 300 m, leg.: E. Medvecká;
- 3.9.1980, BRACR12975, Borská nížina lowland, Plavecký Štvrtok, Kamenný mlyn, in oak forest, alt.: 200 m, leg.: M. Polák;
- 10.10.1981, BRACR12628, Malé Karpaty mountains, Kuchyňa, in deciduous forest, alt.: 450 m, leg.: F. Král;
- 10.10.1981, BRACR13001, Myjavská pahorkatina mountains, Hlboké, in mixed forest (*Quercus*, *Pinus*), alt.: 280 m, leg.: S. Vrana;
- 30.6.1982, BRACR12615, Rimavská kotlina basin, Figa, Stránska, časť Farská studňa, in grass under *Quercus cerris*, alt.: 220 m, leg.: L. Hagara, R. Hagara;
- 14.6.1983, BRACR12987, Štiavnické vrchy mountains, Ladzany, humi sub quercubus, alt.: m, leg.: J. Kuthan;
- 1.7.1984, BRACR13000, Ipeľská pahorkatina mountains, Brhlovce-Kamenný chotár, Ladia, in oak forest, alt.: 260 m, leg.: L. Hagara;
- 2.7.1984, BRACR13002, Strážovské vrchy mountains, Závada-Podhradie, in deciduous forest (*Fagus*, *Quercus*), alt.: 350 m, leg.: M. Vozárová;
- 8.7.1984, BRACR12998, Burda mountains, Chľaba, in oak forest, alt.: 250 m, leg.: L. Hagara;
- 9.7.1984, BRACR12997, Burda mountains, Bajtava, in oak forest, alt.: 300 m, leg.: R. Hagara;
- 12.9.1985, BRACR12985, Malé Karpaty mountains, Sološnica, in deciduous forest (*Quercus*, *Fagus*), alt.: 450 m, leg.: V. Kabát;
- 31.8.1986, BRACR12623, Strážovské vrchy mountains, Nitrica, Mladý háj, in oak forest on limestones, alt.: 420 m, leg.: L. Hagara;
- 9.6.1988, BRACR12996, Štiavnické vrchy mountains, Ladzany, Železná baňa, in oak forest, alt.: 390 m, leg.: L. Hagara;
- 19.6.1988, BRACR12991, Štiavnické vrchy Mountains, Ladzany, Veľký Gregor, in oak forest, alt.: 450 m, leg.: D. Mlynarčík;
- 10.9.1988, BRACR12625, Burda mountains, Štúrovo, in oak forest, alt.: 230 m, leg.: P. Škubla;
- 17.9.1988, BRACR12993, Štiavnické vrchy mountains, Ladzany, Veľký Gregor, under oaks, alt.: 460 m, leg.: L. Hagara;
- 21.9.1988, BRACR12989, Malé Karpaty mountains, Marianka, Mátska hora, in deciduous forest (*Fagus*, *Carpinus*, *Quercus*), alt.: 270 m, leg.: J. Sand;
- 10.10.1988, BRACR12994, Košická kotlina basin, Prešov, Berkút, in deciduous forest (*Fagus*, *Quercus*, *Carpinus*), alt.: 400 m, leg.: L. Ďurček;
- 17.6.1989, BRACR12992, Podunajská rovina lowland, Bratislava, Kopáč, v lese (*Robinia*, *Quercus*, *Fagus*), alt.: 130 m, leg.: T. Krippelová;
- 19.7.1989, BRACR12627, Beskydské predhorie basin, Stakčín, Maňov, under oaks + *Carpinus*, alt.: 320 m, leg.: J. Kuthan;
- 30.9.1989, BRACR12990, Malé Karpaty mountains, Rohožník, in grass at the lake, alt.: 350 m, leg.: S. Vrana;
- 1.8.1991, BRACR12995, Malé Karpaty mountains, Rohožník, Vajarská, in oak forest, alt.: 400 m, leg.: P. Škubla;
- 8.7.1993, BRACR12622, Malé Karpaty mountains, Lozorno, in silva frondosa (*Quercus*, *Carpinus*), alt.: 350 m, leg.: M. Anovčín;
- 11.9.1994, BRACR12626, Myjavská pahorkatina mountains, Myjava, Bešnári - Branč, alt.: 400 m, leg.: J. Gaál;
- 8.10.1995, BRACR12624, Myjavská pahorkatina mountains, Podbranč, in oak forest, alt.: 400 m, leg.: Š. Janata;
- 16.7.1997, BRACR12629, Košická kotlina basin, Prešov, in public garden, alt.: 250 m, leg.: L. Ďurček;
- 21.7.1999, BRACR12986, Štiavnické vrchy mountains, Ladzany, Veľký Gregor, in oak forest, alt.: 570 m, leg.: I. Kautmanová;
- 7.8.1999, BRACR12620, Krupinská planina upland, Lučenec, Pravica, Imrov Kopec, in oak forest, alt.: 400 m, leg.: V. Janský;
- 15.8.2001, BRACR12976, Štiavnické vrchy mountains, Ladzany, Veľký Gregor, in oak forest, alt.: 570 m, leg.: I. Kautmanová;

- 23.8.2002, BRACR3394, Štiavnické vrchy mountains, Ladzany, Veľký Gregor, in oak forest alt.: 570 m, leg.: I. Kautmanová;
 27.7.2005, BRACR4929, Biele Karpaty mountains, Brestové, Kopanice, alt.: 450 m, leg.: Christophory;
 7.9.2006, BRACR9823, Malé Karpaty mountains, Kuchyňa, Vývrať, in deciduous forest (*Quercus, Fagus*), alt.: 530 m, leg.: I.Kautmanová;

Škubla (2003) published number of records from ca. 30 localities from the whole territory of Slovakia. Though the species is rather variable in macrocharacters and sometimes hard to identify, it is one of the common *Boletus* species, especially in deciduous forest of south and central Slovakia. To my opinion there is no need to treat it as endangered or to preserve it by law in future.

Boletus radicans Pers.

LRnt, §

- 16.8.1970, BRACR13006, Strážovské vrchy mountains, Nitrianske Pravno, in grass under *Corylus avellana*, alt.: 450 m, leg.: J. Kuthan;
 20.9.1970, BRACR13008, Strážovské vrchy mountains, Šutovce, in deciduous forest (*Quercus, Carpinus*), alt.: 450 m, leg.: J. Kuthan;
 10.7.1971, BRACR13007, Strážovské vrchy mountains, Timoradza, in deciduous forest (*Quercus, Cotinus, Acer*), alt.: 350 m, leg.: J. Kuthan;
 11.7.1971, BRACR13004, Považský Inovec mountains, Zlatníky, in oak forest, alt.: 450 m, leg.: J. Kuthan;
 16.9.1972, BRACR13005, Strážovské vrchy mountains, Šutovce, alt.: 450 m, leg.: J. Kuthan;
 24.8.1974, BRACR13009, Štiavnické vrchy mountains, Počúvadlo, alt.: 550 m, leg.: A. Horváthová;
 24.8.1974, BRACR13010, Štiavnické vrchy mountains, Počúvadlo, in deciduous forest (*Quercus, Fagus, Carpinus*), alt.: 550 m, leg.: M. Horváth;
 14.8.1977, BRACR13049, Pohronský Inovec mountains, Čaradice, in oak forest, alt.: 250 m, leg.: M. Franko;
 20.8.1980, BRACR13003, Malé Karpaty mountains, Rohožník, in oak forest, alt.: 450 m, leg.: J. Sadílek;
 21.8.1980, BRACR13011, Štiavnické vrchy mountains, Čajkov, in oak forest, alt.: 400 m, leg.: J. Sadílek;
 6.10.1984, BRACR13015, Cerová vrchovina mountains, Šávoľ, in oak forest, alt.: 350 m, leg.: K. Tolnay;
 31.8.1986, BRACR13047, Strážovské vrchy mountains, Nitrica, Močelník, in beech forest, alt.: 440 m, leg.: V. Hagara;
 6.9.1986, BRACR13048, Veľká Fatra mountains, Turčianske Jaseno, Jasenská dolina valley, in beech forest, alt.: 590 m, leg.: L. Hagara;
 31.8.1986, BRACR13051, Strážovské vrchy mountains, Nitrica, Vlčia jama, in beech forest, alt.: 420 m, leg.: L. Hagara et L. Hagara;
 10.9.1988, BRACR13013, Burda mountains, Štúrovo, at the forest edge, alt.: 250 m, leg.: P. Škubla;
 24.9.1988, BRACR13050, Malé Karpaty mountains, Rohožník, Vajarská, in *Carpinus* forest on limestones, alt.: 340 m, leg.: Š. Balák;
 26.8.1989, BRACR13012, Malé Karpaty mountains, Prašník - Pustá Ves, in forest (*Fagus, Quercus, Carpinus, Alnus*), alt.: 400 m, leg.: M. Mocková;
 27.7.1990, BRACR13014, Strážovské vrchy mountains, Klačno, Sedlo, in soil under *Corylus avellana*, alt.: 400 m, leg.: J. Kuthan;
 30.7.1993, BRACR13018, Biele Karpaty mountains, Nové Mesto nad Váhom, Cetuň, alt.: 250 m, leg.: L. Križan;

- 12.9.1993, BRACR13019, Borská nížina lowland, Jakubov, Feld, in mixed forest (*Betula*, *Quercus*, *Pinus*), alt.: 200 m, leg.: M. Procházka;
 30.7.2000, BRACR13016, Malé Karpaty mountains, Borinka, Košariská, alt.: 550 m, leg.: Z. Smolárová;
 3.8.2000, BRACR13017, Strážovské vrchy mountains, Kšinná, in mixed forest, alt.: 600 m, leg.: I. Ducko;
 9.8.2000, BRACR13020, Malé Karpaty mountains, Kuchyňa, Vývrať, in oak forest, on limestones, alt.: 700 m, leg.: I. Kautmanová.

Published records of this species (Dermek 1970, Pilát, Dermek 1974, Fábry et al. 1975, Škubla 1994, 1975, Janitor 1994) as well as specimens held at BRA are only from western and central Slovakia. Though records from eastern Slovakia are missing, it is probably only due to the fact, that the species is inconspicuous and hard to identify. It is a rare species, threatened mostly by the loss of natural habitats caused by forest cutting. Due to bitter taste it is not threatened by overcollecting for food. I propose to treat it as low risk (LR) species also in future.

***Boletus rhodoxanthus* (Krombh.) Kallenb.**

LRnt, §

- 24.9.1963, BRACR13055, Borská nížina lowland, Záhorie;
 25.9.1963, BRACR13075, Biele Karpaty mountains, Nové Mesto nad Váhom;
 23.7.1964, BRACR13060, Lučenská kotlina basin, Tomášovce, alt.: 200 m, leg.: Šatara;
 7.10.1967, BRACR13073, Lučenská kotlina basin, Točnica, alt.: 300 m, leg.: D. Holéczy;
 16.8.1970, BRACR13058, Strážovské vrchy mountains, Šutovce, in oak forest, alt.: 450 m, leg.: J. Kuthan;
 30.8.1970, BRACR13076, Malé Karpaty mountains, Rohožník, alt.: 350 m, leg.: Vorobsov;
 29.7.1972, BRACR13052, Malé Karpaty mountains, Kuchyňa, Vývrať, in deciduous forest, alt.: 400 m, leg.: A. Dermek;
 29.7.1972, BRACR13061, Malé Karpaty mountains, Kuchyňa, Vývrať, in oak forest, alt.: 400 m, leg.: A. Dermek;
 29.7.1972, BRACR13064, Malé Karpaty mountains, Rohožník, in deciduous forest alt.: 400 m, leg.: Lenčo;
 3.8.1972, BRACR13074, Malé Karpaty mountains, Kuchyňa, Vývrať, alt.: 450 m, leg.: I. Fábry;
 25.8.1974, BRACR13056, Strážovské vrchy mountains, Šutovce, in oak forest, alt.: 450 m, leg.: J. Kuthan;
 12.9.1974, BRACR13214, Štiavnické vrchy mountains, Baďan, in deciduous forest, alt.: 500 m, leg.: M. Horváth;
 12.9.1974, BRACR13215, Štiavnické vrchy mountains, Baďan, in deciduous forest, alt.: 500 m, leg.: M. Horváth;
 22.8.1977, BRACR13063, Borská nížina lowland, Lakšárska Nová Ves, in oak forest with pines, alt.: 200 m, leg.: V. Chlumský;
 21.8.1979, BRACR13210, Štiavnické vrchy mountains, Žemberovce, in oak forest, alt.: 350 m, leg.: K. Slovinec;
 16.7.1980, BRACR13209, Štiavnické vrchy mountains, Jabloňovce, in oak forest, alt.: 350 m, leg.: J. Sadílek;
 6.9.1980, BRACR13211, Štiavnické vrchy mountains, Jabloňovce, in oak forest, alt.: 350 m, leg.: J. Sadílek;
 6.8.1981, BRACR13201, Strážovské vrchy mountains, Bojnice, Predné Štefankovo, in oak forest, alt.: 550 m, leg.: L. Hagara;
 9.7.1982, BRACR13202, Malá Fatra mountains, Bystrička, Hrádok, pod brezou, alt.: 530 m, leg.: L. Hagara;

- 14.6.1983, BRACR13065, Štiavnické vrchy mountains, Ladzany, in oak forest, alt.: 450 m, leg.: J. Kuthan;
- 2.7.1984, BRACR13062, Považský Inovec mountains, Závada-Podhradie, in deciduous forest (*Fagus, Quercus*), alt.: 450 m, leg.: M. Vozárová;
- 14.7.1984, BRACR13068, Strážovské vrchy mountains, Rudnianska Lehota, Suchý vrch, in oak forest, alt.: 350 m, leg.: V. First;
- 14.7.1984, BRACR13070, Strážovské vrchy mountains, Nitrianske Rudno, in oak forest, alt.: 350 m, leg.: J. Kuthan;
- 31.8.1985, BRACR13200, Malé Karpaty mountains, Kuchyňa, Vývrať, in oak forest, alt.: 400 m, leg.: Š. Jakša;
- 17.9.1988, BRACR13054, Štiavnické vrchy mountains, Ladzany, Veľký Gregor, in oak forest, alt.: 460 m, leg.: L. Hagara;
- 17.9.1988, BRACR13059, Štiavnické vrchy mountains, Ladzany, Veľký Gregor, in oak forest, alt.: 440 m, leg.: J. Sand, L. Hagara;
- 17.9.1988, BRACR13072, Štiavnické vrchy mountains, Ladzany, in oak forest, alt.: 450 m, leg.: P. Škubla;
- 24.9.1988, BRACR13057, Borská nížina lowland, Rohožník, Vajarská, in beech forest, alt.: 320 m, leg.: L. Hagara;
- 18.6.1989, BRACR13066, Štiavnické vrchy mountains, Ladzany, Veľký Gregor, in oak forest, alt.: 480 m, leg.: P. Škubla;
- 20.8.1989, BRACR13053, Malé Karpaty mountains, Kuchyňa, Vývrať, in oak forest, alt.: 400 m, leg.: M. Rusko;
- 1.10.1989, BRACR13069, Malé Karpaty mountains, Rohožník, in beech forest, alt.: 450 m, leg.: F. Hutár;
- 2.8.1991, BRACR13212, Malé Karpaty mountains, Kuchyňa, Bučková, in deciduous forest (*Quercus, Fagus*), alt.: 500 m, leg.: J. Sand;
- 2.8.1991, BRACR13213, Malé Karpaty mountains, Kuchyňa, Bučková, in mixed forest (*Quercus, Fagus, Pinus nigra*), alt.: 340 m, leg.: J. Sand;
- 1.8.1993, BRACR13067, Malé Karpaty mountains, Rohožník, alt.: 400 m, leg.: V. Kabát;
- 12.6.1994, BRACR13208, Malé Karpaty mountains, Rohožník, in oak forest, alt.: 450 m, leg.: M. Anovčin;
- 14.9.1994, BRACR13204, Slanské vrchy mountains, Zámutov, Ordánky, in deciduous forest (*Fagus, Quercus, Betula*), alt.: 450 m, leg.: Babej;
- 15.9.1994, BRACR13203, Pohronský Inovec mountains, Olichov, in oak forest, alt.: 260 m, leg.: V. Kabát;
- 15.9.1994, BRACR13205, Štiavnické vrchy mountains, Ladzany, Malý Gregor, in deciduous forest (*Quercus, Carpinus*), alt.: 400 m, leg.: P. Škubla;
- 28.7.1997, BRACR13206, Považský Inovec mountains, Hrádok, Hradlová Nivka, in deciduous forest (*Fagus, Carpinus, Quercus*), alt.: 370 m, leg.: M. Ďurček;
- 5.10.1998, BRACR13207, Štiavnické vrchy mountains, Prenčov, in oak forest, alt.: 300 m, leg.: I. Kautmanová;
- 15.8.2001, BRACR13071, Štiavnické vrchy mountains, Ladzany, Veľký Gregor, in oak forest, alt.: 450 m, leg.: I. Kautmanová;
- 4.8.2002, BRACR788, Malé Karpaty mountains, Kuchyňa - Vývrať, in oak forest, alt.: 450 m, leg.: J. Bojnanský;
- 4.8.2002, BRACR789, Malé Karpaty mountains, Kuchyňa - Vývrať, in oak forest, alt.: 400 m, leg.: J. Bojnanský;
- 22.8.2002, BRACR832, Malé Karpaty mountains, Ladzany, Veľký Gregor, in oak forest, alt.: 400 m, leg.: I. Kautmanová;
- 27.7.2005, BRACR4926, Biele Karpaty mountains, Brestové, Kopanice, alt.: 500 m, leg.: Christophory.

This beautiful and one of the most conspicuous species of the genus *Boletus* can be found in large numbers at suitable conditions and is recorded frequently from east

to west (Pilát Dermek 1974, Dermek 1977, Záhorovská 1984, Škubla 1994, Mihál 2001, Blanár, Mihál 2002). However it seems to be rather demanding concerning habitat, as it prefers old, natural oak or beech forests, in southern areas of Slovakia, where it occurs at the northernmost area of its distribution. It is not edible and main threat is caused by loss of suitable habitats. I propose to treat it as low risk (LR) also in future.

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