

# Rare macrofungi from Central Börzsöny I. Hungarian occurrence data and habitat preference

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**Summary:** Mycological investigations have been made since 2001 in all characteristic forest types in Central Börzsöny Mts., North Hungary. Among the near 500 macrofungi species documented 8 protected and 32 rare taxa occurred. Present paper concerns 13 of these taxa: 3 critically endangered, 7 endangered and 3 vulnerable in Hungary. Near the summarisation of the European habitat preference a Hungarian habitat characterisation were made for each species based on all Hungarian documented occurrence data. Majority of the species have similar habitat preference in Hungary to the European one, but some exceptions were noted. *Boletus pinophilus* is a typical species of deciduous forests with acidic soil, not documented from coniferous stands. *Pluteus umbrosus* prefers undisturbed forest stands with high quantity of dead wood in Hungary and did not occur in parks. *Tricholoma psammopus* fruited in lower altitude in deciduous and mixed forest stands (always connected with *Larix*). Some species were rarer in Hungary, than in other European countries, caused by lack of their original habitats: *Boletus pinophilus*, *Hydnellum concrescens*, *Tremella encephala*, *Tricholoma aurantium*. Two species — *Boletus torosus* and *Amanita lividopallescens* — were much common in Hungary than in Europe. Two taxa — *Amanita vaginata* var. *alba*, *Tremella encephala* — are new from Hungary.

**Key words:** rare macrofungi, Hungary, habitat preference

## Introduction

Börzsöny Mts. is situated in North Hungary, belonging to North Hungarian Mountains. It is a well explored territory from mycological point of view, although many results are not published at the moment. Occurrence data of 153 species are documented in Fungi Collection of Hungarian Natural Museum (Babos, 1989), 200 data of 160 species — among them 136 are new — is published by Rimóczi (1994). Albert (1980) published the occurrence of the rare species *Leccinum holopus* (RÖSTK.) WATL. During the XII. Cortinarius Congress another 260 species were collected in the area (Anonymous 1995).

Systematic mycological investigations have been made since 2001 in stands of all characteristic forest associations and wood plantations in Central Börzsöny. As a result near 500 macrofungi species were documented up to 2005. Publication of the results is continuous (Benedek & Pál-Fám 2001, 2005, Benedek et al. 2005), the full species list will be published in close future.

## Material and method

Systematic mycological investigations have been made in sample stands of the vegetation units mentioned below. From the large plant associations of climatic zones: hornbeam–oak

forest (*Carici pilosae–Carpinetum* both forest reserve and managed stand) and oak forest (*Quercetum petraeae–cerris*); from the edaphic plant associations alder forest (*Aegopodio–Alnetum*), calcifuge beech forest (*Luzulo–Fagetum*) and calcifuge oak forest (*Deschampsio–Quercetum*); as well as Scotch pine (*Pinetum sylvestris cultum*) and spruce (*Piceetum cultum*) plantations. In this way all forest types were represented in samplings. Sporadic data were also collected from deciduous–coniferous mixed plantations and different grassland types, too. Detailed characterisation of the habitats was published in 2005 (Benedek et al. 2005).

All macrofungi species collected were documented with fungaria, date and place of occurrence, as well as with determination of substrate. In many cases description and photo were made, too.

From the documented species 8 are protected and 32 considered rare. Present paper contains habitat preference characterisation of 13 taxa from these: 3 critically endangered, 7 endangered and 3 vulnerable in Hungary based on Red List of Hungarian macrofungi (Rimóczi et al. 1999).

Summary of the European literary data is based on publications of Krieglsteiner (2000–2003) and Krisai-Greilhuber (1992), as well as literary sources used for determination, mentioned below the name of each species in the text.

Hungarian occurrence data of each species was collected. According to literary data and data collected in Börzsöny the Hungarian habitat preference of the species were determined and characterised. In some cases the few data does not permit us to draw precise conclusions, only presumable establishments following confirmation or denial in the mirror of forthcoming investigations.

Hungarian distribution maps of the species were also made.

Nomenclature of the taxa follows Index Fungorum ([www.indexfungorum.org](http://www.indexfungorum.org)).

## Results and discussion

Below the species name, the literature used for determination and the position in Hungarian Red List are mentioned.

### *Amanita vaginata* var. *alba* GILLET, **Pluteaceae**

Moser 1993 (*A. alba* Gill.), Hansen & Knudsen 1992, Fraiture 1993, Galli 2001

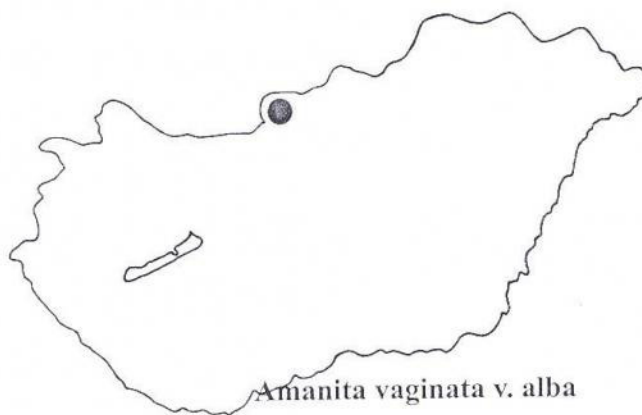
Red List: 3

Occurrence data in Hungary: no published occurrence data

Own data in Börzsöny: 2

Cseresnyés-valley, *Luzulo-Fagetum* 2002.06.09.

Cseresnyés-valley, *Luzulo-Fagetum* 2005.08.30.



**Literary habitat characterisation:** The variety occurred in grassy areas, grassy mixed forests. Its distribution is European, connected with coniferous (*Picea abies*, *Pinus*, *Abies*) and deciduous (*Quercus*, *Fagus*, *Betula*, *Alnus*) hosts, up to 2200 m altitude above sea level. Taxonomic position is uncertain, probably white varieties of many *Amanitopsis* species were published under this name (*A. fulva*, *A. crocea* etc.).

In the Carpathian basin 3 occurrence data is published. It was documented firstly at 1979.07.15. in Székelyföld, Transylvania in beech forest (László 1984). After that it was noted by SÁNTHA near Gelence (Székelyföld) in vicinity of oak seedlings (Sántha 1997). Another data is collected at 1999.07.11. in Rétyi Nyír, on eutrophic birch bog, on sandy soil, connected with birch (Pál-Fám & Lázár 2001).

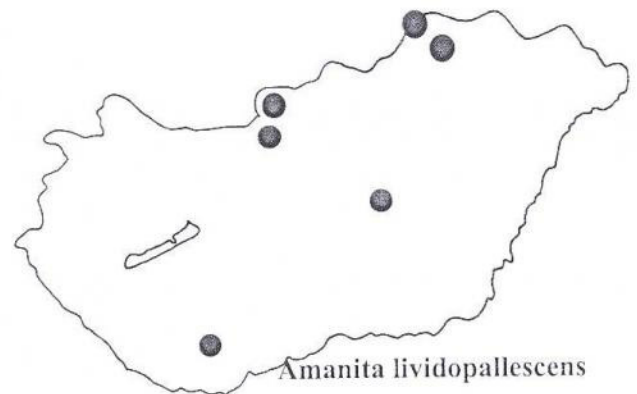
**Hungarian habitat characterisation:** Both data from Börzsöny and Rétyi Nyír coincide with statements of Moser (1993) and Hansen & Knudsen (1992): light, grassy forest habitats. There are no data from coniferous stands in Carpathian basin. Both two data are determined certainly as the white variety of *A. vaginata*.

### *Amanita lividopallescens* (SECR. ex BOUD.) KÜHNER & ROMAGN., **Pluteaceae**

Moser 1993, Fraiture 1993, Hansen & Knudsen 1992, Galli 2001

Red List: 2

Occurrence data in Hungary: 12



Vasas (1985) documented from Pilis, fructifying in deciduous forest mixed with *Pinus sylvestris*. Three localities were mentioned by Babos (1989): Budai-, Visegrádi Mts., Lakitelek, all three from „deciduous forest”. Rimóczi (1994) published three data: beech forest of climatic zone (*Helleboro odoro-Fagetum*, Mecsek Mts.); calcifuge oak forest (*Luzulo-Quercetum*, Börzsöny Mts., Királyrét); and oak forest (*Quercetum petraeae-cerris*, Budai Mts.). This last data was collected by Albert. Nagy (2004) noted one occurrence near Lakitelek from oak forest (*Quercetum roboris*). Locsmándi (1993) published two occurrences in Aggteleki karszt, from *Quercetum petraeae-Carpinetum*. Pál-Fám (2001) documented one occurrence from Mecsek (*Asperulo taurinae-Carpinetum*), Pál-Fám & Rudolf (unpubl.) another from Belső-Cserhát (*Quercetum petraeae-cerris*).

Own data in Börzsöny: 4

Taxi-nyiladék, *Quercetum petraeae-cerris* 2002.06.22.

Bajdázó, *Carici pilosae-Carpinetum* 2002.08.24.

Taxi-nyiladék, *Quercetum petraeae-cerris* 2002.08.19.

Bajdázó, *Carici pilosae-Carpinetum* 2005.07.23.

**Literary habitat characterisation:** Thermophilous species with planar–mountainous distribution, preferring forest edges, open parts of the forests and calcareous or neutral soils with low nitrogen content. Occurrence data are documented mainly in beech forests (*Carici-Fagetum*,

*Hordelymo-Fagetum*), but it can also occur in oak forests, too (*Carpino-Quercetum*, *Quercu-Ulmetum minoris*). Beside, the species can be connected with *Populus*, *Salix* and *Pinus* also.

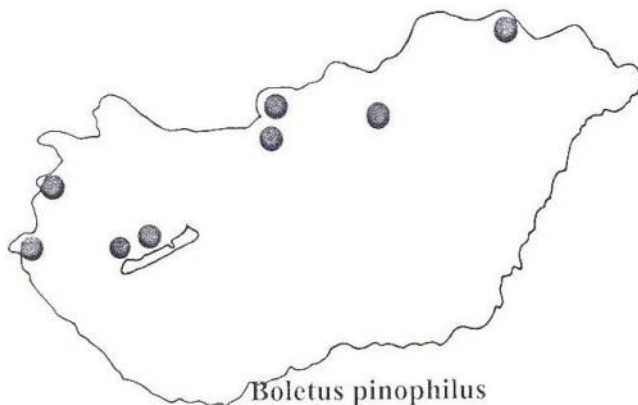
**Hungarian habitat characterisation:** Occurrence data confirm *Krieglsteiner's* (2000–2003) statements: thermophilous species with planar–sub-mountainous distribution in Hungary, fructifying in oak, hornbeam–oak and beech forests. *Hansen & Knudsen* 1992 mentioned as a species fructifying on very calcareous soils. With one exception (occurrence in *Luzulo-Quercetum*, *Rimóczi* 1994), all data coincide with this statement. According to data number this species is much common in Hungary, that in many European countries.

***Boletus pinophilus* PILÁT & DERMEK, Boletaceae**

*Alessio* 1985, *Moser* 1993, *Hansen & Knudsen* 1992, *Breitenbach & Kränzlin* 1991, *Galli* 1998

Red List: 3

Occurrence data in Hungary: 12



*Babos* (1989) published 8 occurrences: Bakony, Budai, Mátra and Zempléni Mts., Kőszeg, őrség, all from calcifuge beech forest stands. *Rimóczi* (1994) mentioned three data: Szalafő (*Quercu petraeae-Carpinetum*), Parádhuta (*Deschampsio-Fagetum*, collected by *Albert*), and Lesence-creek valley (*Quercetum petraeae-cerris*, collected by *Vasas*). *Lukács et al.* (2001) published one occurrence in Vas County, near lake Fekete without mentioning its habitat.

Own data in Börzsöny: 10

Nagy-Vasfazék-valley, *Luzulo-Fagetum* 2004.11.14.  
 Nagy-Vasfazék-valley, *Luzulo-Fagetum* 2005.08.20.  
 Cseresnyés-valley, *Luzulo-Fagetum* 2005.08.21.  
 Nagy-Vasfazék-valley, *Luzulo-Fagetum* 2005.08.25.  
 Cseresnyés- valley, *Luzulo-Fagetum* 2005.08.25.  
 Nagy-Vasfazék-valley, *Luzulo-Fagetum* 2005.09.03.  
 Nagy-Vasfazék-valley, *Luzulo-Fagetum* 2005.09.13.  
 Cseresnyés- valley, *Luzulo-Fagetum* 2005.09.14.  
 Nagy-Vasfazék-valley, *Luzulo-Fagetum* 2005.09.25.  
 Nagy-Vasfazék-valley, *Luzulo-Fagetum* 2005.10.18.

**Literary habitat characterisation:** Species fructifying on poor, acidic soils, connected mainly with conifers. Mainly *Pinus sylvestris* and other *Pinus* species are the mycorrhizal partners, but rarely *Picea abies* and *Abies* also can be partners. Some authors (*Alessio* 1985, *Galli* 1998) noted as exceptional habitat deciduous forests, too (connected with *Fagus*, *Castanea*, *Betula*). Its distribution is colline–mountainous with South-European preference, but occurrence data exists from all Europe. In Europe is not rare, nor common. Beside, North-American, Asian and African data are also known.

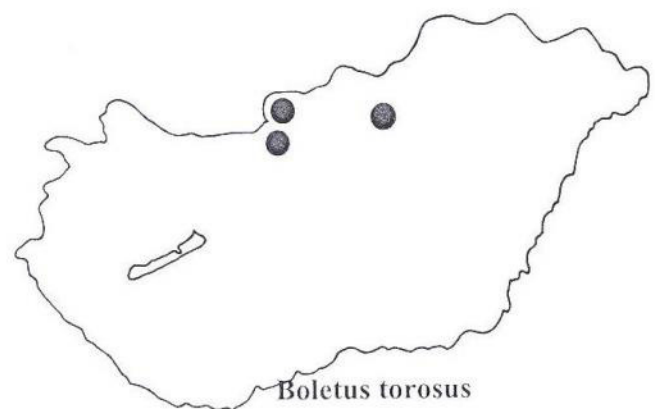
**Hungarian habitat characterisation:** Based on Hungarian occurrences this species is fructifying in deciduous forests in sub-mountainous region. Only two data exists from forest stands of climatic zones, all others are from calcifuge forests with acidic soil. Probably the first two occurrences were collected in acidic spots of the forest stands. This fact contradict to *Krieglsteiner's* (2000–2003) statement, that this species is connected exclusively with conifers. There are two data from the Carpathian Basin, Székelyföld, fructifying also in deciduous stands (*Vaccinio-Fagetum*, *Pál-Fám* unpubl.). It seems to be possible that in lower territories of the Carpathian basin its occurrence is peripheral, and in the absence of coniferous partner it can form mycorrhiza with deciduous trees (*Carpinus*, *Fagus*, etc.), but only in stands with acidic soils. This species is rarer in Hungary than in many European countries because of the lack of original habitats.

***Boletus torosus* FR., Boletaceae**

*Alessio* 1985, *Moser* 1993, *Breitenbach & Kränzlin* 1991, *Hansen & Knudsen* 1992, *Galli* 1998

Red List: 2

Occurrence data in Hungary: 10



*Babos* (1989) published 6 occurs: Visegrádi-, Börzsöny- and Mátra Mts., in oak, calcifuge oak and calcifuge beech stands. *Rimóczi* (1994) noted four data. From these, one single is his own data (Tahi, *Quercu petraeae-Carpinetum*), the other three were collected by *Albert*: Visegrád, Apát-kúti valley and Börzsöny Mts., Kemence, both from *Quercu petraeae-Carpinetum*; as well as Tahi, *Quercetum petraeae-cerris*.

Own data in Börzsöny: 1  
near Királyrét, *Quercetum petraeae-cerris* 1999.09.02.

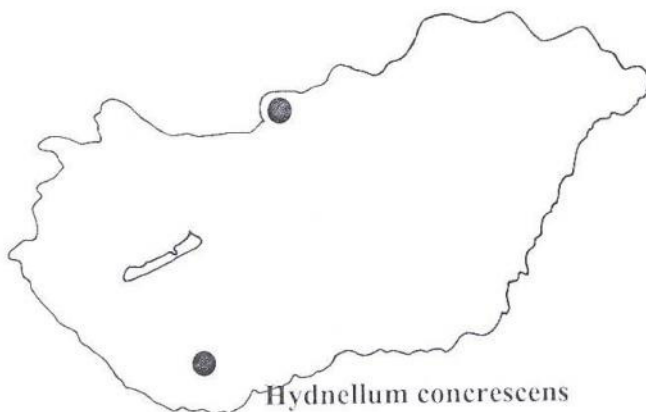
Literary habitat characterisation: *Krieglsteiner* (2000–2003) noted only two occurrences in Baden-Württemberg, from hornbeam–oak forests. The species is very rare in whole Europe, occurrence data are mainly from the southern territories. It fructifies in warm, dry deciduous forests, connected with *Quercus*, *Carpinus* and *Fagus*, exclusively on calcareous soils in the colline–mountainous regions.

Hungarian habitat characterisation: The Hungarian data coincide with the literary occurrences with only two exceptions: the calcifuge forests (*Babos* 1989). The species is rare, occurring in deciduous forests developed on calcareous soils. It needs more attention in the future because in Hungary there are significant data, comparing with other European countries.

*Hydnellum concrescens* (PERS.) BANKER, Bankeraceae  
*Julich* 1989, *Breitenbach & Kränzlin* 1986, *Hansen & Knudsen* 1997

Red List: 2

Occurrence data in Hungary:



Hungarian occurrences are known from only one locality, the Mecsek Mts. (*Pál-Fám* 2001). Two occurrences are noted from a single *Sorbo torminalis*–*Fagetum* stand. Another four data (*Pál-Fám* unpubl.) are mentioned from the same *Sorbo torminalis*–*Fagetum* stand in Mecsek.

Own data in Börzsöny: 1  
Cseresnyés-valley, *Luzulo*–*Fagetum* 2001.10.28.

Literary habitat characterisation: Species with Holarctic distribution in colline–mountainous regions, not common, fructifying in different beech, hornbeam–oak and mixed spruce–beech–fir stands. There is no known connection between occurrence of this species and vegetation or edaphic conditions.

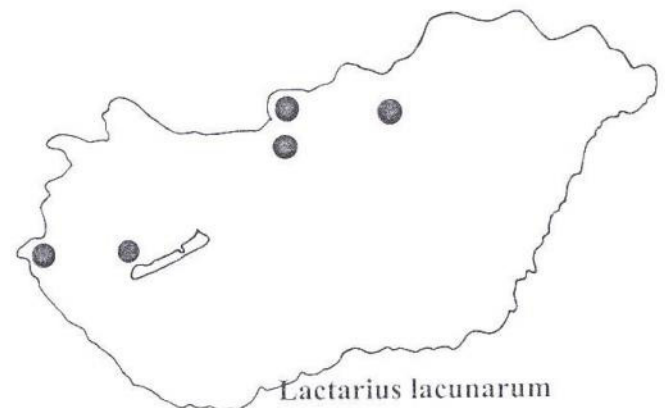
Hungarian habitat characterisation: Only two localities of this species are documented in Hungary. According to this occurrence data the species is rare, and it is a characteristic

mushroom of calcifuge beech forests in sub-mountainous region. Because it is hardly observable, it may be taken out of consideration, so aimed investigations may result several other occurrences in the future. It is rarer in Hungary than in many European countries.

*Lactarius lacunarum* ROMAGN. ex HORA, Russulaceae  
*Hansen & Knudsen* 1992, *Moser* 1993, *Heilmann-Clausen et al.* 1998

Red List: 2

Occurrence data in Hungary: 8



*Babos* (1989) noted a single locality in Budakeszi, fructifying on „wet soil”. *Rimóczi* (1994) found it at Mt. Tökhegy, in *Quercetum petraeae-cerris*. *Albert & Dima* (2005) published six data: Budakeszi, *Caricetum elatae* (*Populus alba*); Zalaszentő, *Salicetum cinerea*–*Sphagnetum recurvi*; örség, lake Bärkás, *Salicetum auritae*; Mátra, lake Sás (*Populus alba*); Mátra, lake Nyírjes, *Salicetum cinerea*–*Sphagnetum recurvi* (two data).

Own data in Börzsöny: 1

Bajdázó, *Piceetum cultum* (*Quercus petraea*, *Populus* sp. also occur), on wet soil 2004.10.29.

Literary habitat characterisation: It is a species preferring wet habitats (valleys, cavities, holes). It can be mycorrhizal with various deciduous hosts (*Alnus*, *Betula*, *Populus*).

Hungarian habitat characterisation: The Hungarian occurrence data coincide with the European. This rare species is characteristic to habitats with wet soils, connected mainly with *Salix* and *Populus*, but it can fructify in oak forests and even in spruce plantations, if deciduous hosts are present. One unpublished data from the Carpathian basin (*Pál-Fám* unpubl.) is documented in Transylvania, near Bagó in *Sphagno*–*Betuletum*. From all environmental conditions (near mycorrhizal host) the wet soil seems to determine its occurrence.

*Lactarius rubrocinctus* FR., Russulaceae  
*Hansen & Knudsen* 1992, *Moser* 1993, *Heilmann-Clausen et al.* 1998

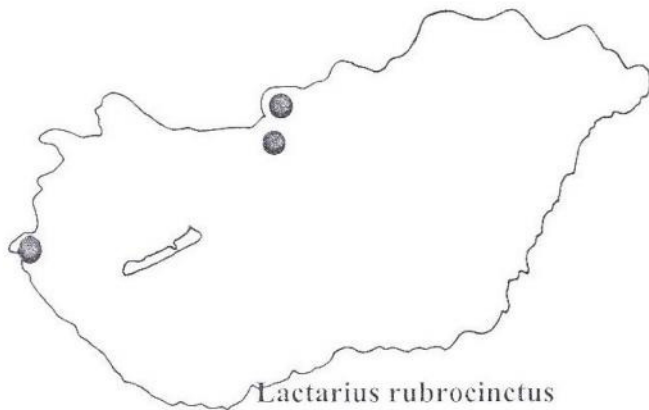
Red List: 1

Occurrence data in Hungary: 2

*Babos* (1989) noted a single locality near Szakonyfalu, from mixed oak–pine forest. Another occurrence was published from Pilisszentkereszt–Kakashegy, fructifying in *Quercetum petreae–cerris* (*Benedek* 2002).

Own data in Börzsöny: 1

Deszkametsző-valley, *Carici pilosae–Carpinetum* (*Fagus* also occurred) 2004.10.29.



Literary habitat characterisation: Species with European distribution connected mainly with beech on calcareous soil in colline–sub-mountainous regions. It is considered a rarity. According to some authors it can fructify under spruce, too.

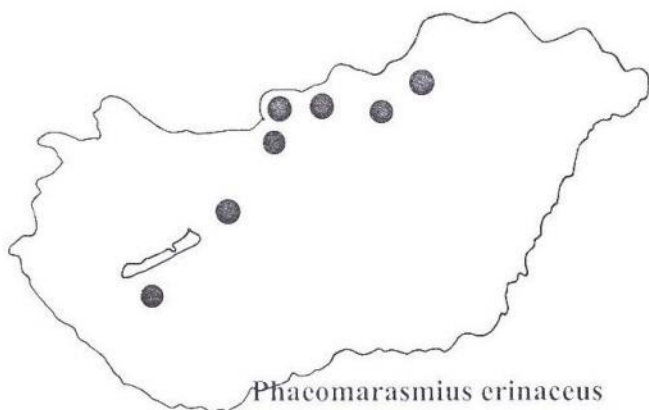
Hungarian habitat characterisation: It seems to be a rare species of oak and hornbeam–oak forests in Hungary with colline–sub-mountainous distribution, but the few documented data does not permit to draw precise conclusions referring to habitat preference.

***Phaeomarasmium erinaceus* (PERS.) SCHERFF. ex ROMAGN.,  
Cortinariaceae**

*Hansen & Knudsen* 1992, *Moser* 1993, *Walling & Gregory* 1993, *Breitenbach & Kränzlin* 2000

Red List: 2

Occurrence data in Hungary: 8



*Babos* (1989) noted 7 occurrences: Budai, Visegrádi, Bükk Mts., Pamuk, Cserhát, and Székesfehérvár environs, in oak plantation, hornbeam–oak and linden–ash forests. *Siller* (2004) published one data from Kékes Észak, in beech forest (*Aconito-Fagetum*, 1998), and another unpublished data is from Kamaraerdő, mixed deciduous forest (*Siller* unpubl.).

Own data in Börzsöny: 3

Csoványos, *Carici pilosae–Carpinetum* forest reserve (beech consociation), on beech 2003.11.09.

Cseresnyés-valley, *Luzulo.-Fagetum*, on beech 2005.08.27.

Deszkametsző-valley, *Carici pilosae–Carpinetum* 2005.09.14.

Literary habitat characterisation: A repressing species in the last decades, fructifying in dead wood of various deciduous hosts, mainly on *Salix* and *Rosa*. Beside, occurrence on *Alnus glutinosa*, *Fagus sylvatica*, *Betula* and *Quercus* is also known. Its distribution is planar–mountainous in Europe, North America and North Africa.

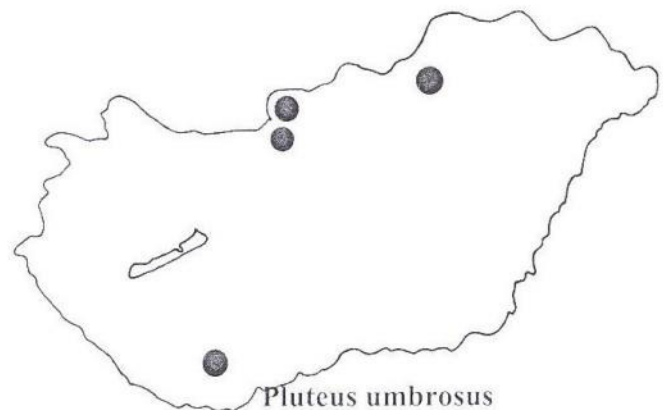
Hungarian habitat characterisation: In Hungary can be considered rare, too. It fructifies on various hosts in planar–sub-mountainous regions. It is probably taken out of consideration because of the small fruiting body.

***Pluteus umbrosus* (PERS.) P. KUMM., Pluteaceae**

*Hansen & Knudsen* 1992, *Moser* 1993, *Breitenbach & Kränzlin* 1995

Red List: 2

Occurrence data in Hungary: 5



*Siller* (1986; 2001 unpubl.) noted 2 data from őserdő, Bükk Mts., in mountainous beech forest. *Babos* (1989) published another two occurrences, one from őserdő, too, and another from Budai Mts. in beech forest. *Pál-Fám & Lukács* (2002) found the species in Meesek Mts. in an *Asperulo taurinae–Carpinetum* forest reserve.

Own data in Börzsöny: 1

Morgó-creek valley, *Aegopodio-Alnetum*, on *Alnus* trunk  
2003.10.24.

Literary habitat characterisation: Rare species with Holarctic distribution. Fructifies in wet deciduous forests (alder-, alluvial-, hornbeam-oak-, and mesophilous beech forests), in parks, mainly on *Fagus*, but on *Fraxinus excelsior*, *Populus euramericana*, *Prunus padus*, *Quercus*, *Salix* too. Very exceptionally it can occur on conifer forests.

Hungarian habitat characterisation: The species is characteristic to sub-mountainous mesophilous and wet deciduous forests in Hungary, preferring undisturbed habitats with high quantity of dead wood. Its occurrence in parks, or connected to *Fraxinus*, *Populus*, *Prunus*, *Quercus* species or conifers is not known.

*Russula minutula* VELEN., Russulaceae

Hansen & Knudsen 1992, Moser 1993, Galli 1996, Kränzlin 2005

Red List: 3

Occurrence data in Hungary: 9



Babos (1989) noted 7 occurrences: Budai, Visegrádi, Bükk Mts., Tornai-karszt, Kétvölgy, in beech, calcifuge beech, calcifuge oak and hornbeam-oak forest stands. Rimóczi (1994) published 2 data: Mecsek Mts., *Helleboro odoro-Fagetum*, and Solymár, *Quercetum petraeae-cerris*. This last is collected by Albert.

Own data in Börzsöny: 1

Cseresyés-valley, *Deschampsio-Quercetum* 2002.06.09.

Literary habitat characterisation: Very rare species in Germany with the exception of Saar region. European species with colline-sub-mountainous distribution in beech and hornbeam-oak forests, parks, on neutral or mildly acidic soils with low nitrogen content. It can be connected with *Alnus*, *Betula*, *Castanea*, *Carpinus*, *Fagus*, *Quercus*.

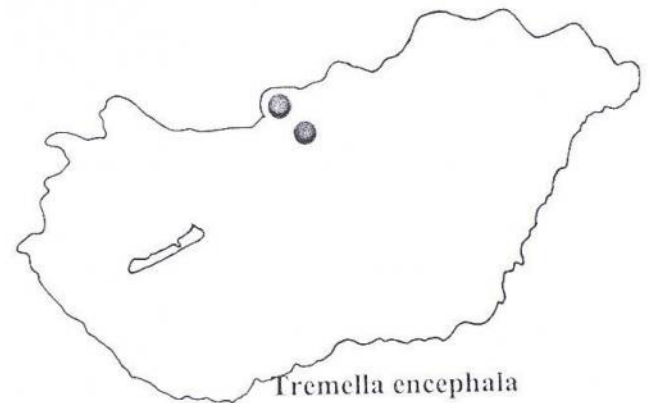
Hungarian habitat characterisation: In contradiction with the European habitat preference this species occurs on acidic soils in calcifuge forests in Hungary. So it can be

characterised as a deciduous forest species with colline-sub-mountainous distribution.

*Tremella encephala* WILLD., Tremellaceae

Jillich 1989, Hansen & Knudsen 1997, Breitenbach & Kränzlin 1986

Red List: 1



Occurrence data in Hungary: only one unpublished data from Gödöllő, Domony-valley, from *Pinus* (Siller unpubl.).

Own data in Börzsöny: 3

Bajdázó, *Piceetum cultum* 2002.06.09.

Bajdázó, *Piceetum cultum* 2003.10.24.

Bajdázó, *Piceetum cultum* 2004.10.29.

Literary habitat characterisation: Species with Holarctic distribution fructifying in every season in the whole territory of Europe. It is parasitic on *Stereum sanguinolentum*, mainly on *Picea abies* and *Pinus sylvestris*, but on *Abies alba* can also occur.

Hungarian habitat characterisation: In Hungary the species is fructifying in spruce plantations and found together always with *Stereum sanguinolentum*. It is possible to be found in many spruce plantations in the future. In the higher regions of the Carpathian basin several occurrences are known (Transylvania: lake Szent Anna, Kommandó, Gyimesbükk, Poiana Stampei; fructifying exclusively on spruce, Pál-Fám et al. unpubl.), but it is rare everywhere. In Hungary it is rarer than in many European countries because the lack of the original habitats.

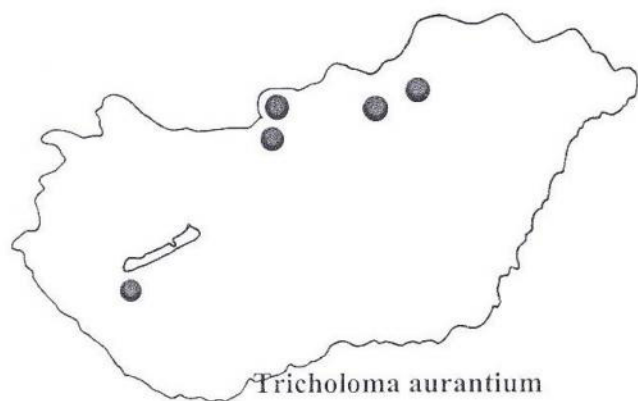
*Tricholoma aurantium* (SCHAEFF.) RICKEN,  
Tricholomataceae

Riva 1988, Moser 1993, Hansen & Knudsen 1992,  
Breitenbach & Kränzlin 1991, Galli 1999

Red List: 1

Occurrence data in Hungary: 4

Babos (1989) noted occurrences in 3 localities from Pilis, Mátra and Bükk Mts., in spruce forests and *Vaccinium* calcifuge beech forest. Lukács (2002) documented from Somogyzsífa in spruce plantation.



Own data in Börzsöny: 2

Bajdázó, *Piceetum cultum* 2002.10.19.

Bajdázó, *Piceetum cultum* 2004.10.29.

Literary habitat characterisation: A repressing species because of acidification of the upper layers of the soils and decrease of its mycorrhizal partner (caused by acidic rains). Characteristic to Holarctis, connected with *Picea*, *Pinus*, *Larix*, *Abies*, *Fagus* and *Betula* with colline–mountainous distribution. It fructifies in forest edges, open forests, on calcareous, neutral or mildly acidic soils. According to some observations is thermophilous species of Mediterranean character.

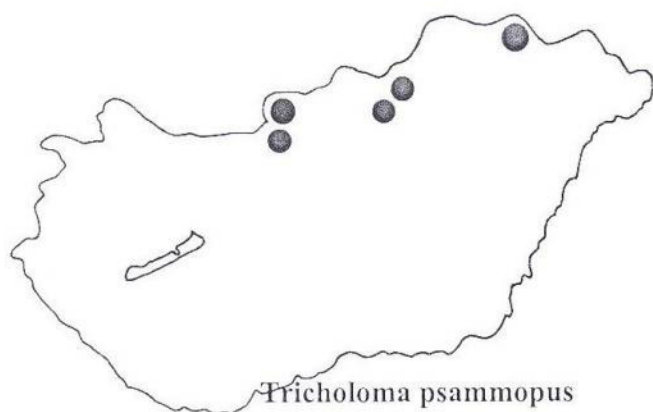
Hungarian habitat characterisation: According to Hungarian data the species is characteristic to both spruce and beech forests with spruce preference, colline–sub-mountainous distribution. In Hungary it seems to be rarer than in many European countries. It is easy to observe and to determine because of the large fruiting bodies and gregarious appearance.

*Tricholoma psammopus* (KALCHBR.) QUÉL.

Riva 1988, Hansen & Knudsen 1992, Moser 1993, Breitenbach & Kränzlin 1991, Galli 1999

Red List: 2

Occurrence data in Hungary: 7



Babos (1989) noted 2 data from Budai Mts., connected with *Larix*. Lukács (2002) published 3 data: Pilisszentkereszt, Háromhuta and Bagolyirtás all under *Larix*. Albert & Dima (2005) published 2 occurrences from Tarnalelesz, under *Larix*, too.

Own data in Börzsöny: 1

Cseresnyés-valley, *Luzulo–Fagetum*, under *Larix* 2005. 08. 21.

Literary habitat characterisation: Characteristic species to sub-alpine larch forests in the Alps and Carpathians. In the last years appeared in lower regions, too, rarely occurred in colline, even planar regions in *Larix decidua* plantations. It can form mycorrhiza with *Larix eurolepis* and *Larix kaempferi* too. The species has a Holarctic distribution fructifying on neutral and mildly calcareous soils. In North Europe was found under *Abies*, in the Mediterranean area exceptionally under *Pinus*.

Hungarian habitat characterisation: In the Carpathian basin the species occurs mainly in the high mountains, connected with *Larix* (lake Szent Anna, Gyimesbükk, *Pál-Fám & Benedek* unpubl.), but based on the 8 Hungarian data the species can found its environmental conditions even in the sub-mountainous region. Its occurrence in Hungary it seems to be peripheral, determined by the presence of *Larix*.

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