



## Red-listed macrofungi in Central Bohemia (Czech Republic), with taxonomic notes on *Entoloma mougeotii*, *Lentinellus ursinus* and *Pluteus phlebophorus*

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**SUMMARY.** In 2007 and 2008, a search for red-listed fungi was carried out in Central Bohemia, a region around Prague. Records of 27 species are published with data on their location, habitat conditions and substrate. Only the most threatened species are included, i.e. probably extinct (?EX), critically endangered (CR), endangered (EN) and vulnerable (VU) ones. Taxonomic remarks on *Entoloma mougeotii*, *Lentinellus ursinus* and *Pluteus phlebophorus* are added. Ecology of some species is discussed with respect to other records from the Czech Republic. Central Bohemia was thus proved to be still a region hosting many interesting fungal species in spite of the increasing and universal human impact affecting its nature.

**KEY WORDS.** Central Europe, ecology, systematics, threatened species, thermophilous habitats, Agaricales s. l., Corticiaceae, heterobasidiomycetes, ascomycetes

### INTRODUCTION

Central Bohemia, a region around Prague, is very interesting from the viewpoint of natural history. Its habitat conditions are very variable and unique and the variability is furthermore enriched (or decreased) by human impact. The landscape encompasses a rich mosaic from lowlands to hilly country and the submontane belt, from acidic to basic or calcareous soils, from near-natural habitats to purely artificial landscape (Ložek et al. 2003, 2005). Mycologically, it is an area which has been intensely studied for almost two centuries, from the viewpoint of both fungal systematics and biodiversity (for summaries see e.g. Svrček 1960, 1965, 1985; Kotlaba and Pouzar in Ložek et al. 2005). A large number of new species of macrofungi were described from Central Bohemia (e.g. by Krombholz, Velenovský, Pilát, Vacek, Svrček, Kotlaba, Pouzar, Wichanský etc.) and the area represents a hot-spot of mycological research in Central Europe. Voucher specimens from this area are mostly kept in the herbaria PRM (National Museum, Mycological Department, Prague) and PRC (Charles University, Dept. of Botany, Prague).

The universal human impact on nature in Central Bohemia has increased in the last five decades which has resulted in changes and impoverishment of its mycobiota. The threat

of a large number of macrofungal species in the Czech Republic was evaluated in the Red List of Czech fungi (Holec & Beran 2006). As current data on the distribution of some threatened fungi in Central Bohemia were lacking, the author decided to search for them within the scope of a grant project of the National Museum in 2007 and 2008. The records of the most threatened species are presented here together with remarks on ecology and taxonomy of some taxa.

## MATERIAL AND METHODS

The field work was carried out in the period 2007-2008. The search focused on protected landscape areas (Křivoklátsko, Kokořínsko, and Český Kras PLAs), and on small-sized nature reserves. In 2007, special attention was focussed on Kokořínsko PLA (see also Holec & Adamčík 2008) and Voděradské bučiny National Nature Reserve (see Holec 2008a), and in 2008 to Křivoklátsko PLA. Most records were documented photographically and the fruitbodies were dried for voucher specimens.

All collections were microscopied to ensure reliable identification. The microscopic examinations were made using an Olympus BH-2 microscope. The observations and measurements were made on material mounted in a 5% KOH solution. The iodine reaction was studied using Melzer's reagent, prepared according to the formula given in Moser (1983).

As the records of red-listed fungi were rather numerous, only the rarest species from categories ?EX, CR, EN, and VU (for explanation see Holec & Beran 2006) are presented here, while potentially threatened or data deficient species were omitted. Notes were added on species with controversial taxonomy and on those for which the obtained data on their distribution or ecology are new or differ from those given in the Red List of Czech macrofungi (Holec & Beran 2006). The description of the degree of naturalness of the forests stands follows the scale used by Holec (2008b). Voucher specimens are deposited in the herbarium PRM (National Museum, Mycological Department, Prague, Czech Republic).

Abbreviations: CZ: Czech Republic; det.: identified by; JH: find number in the field notepad of Jan Holec, the number is indicated on herbarium labels together with the PRM number; leg.: collected by; not.: from the Latin word *notavit*, i.e. recorded, a find which was only recorded but not documented by a voucher specimen; NM: nature monument; NNM: national nature monument; NNR: national nature reserve; NP: nature park; NR: nature reserve; PLA: protected landscape area.

## RESULTS AND DISCUSSION

### **Species considered to be regionally extinct**

(?EX in Holec & Beran 2006)

#### ***Kavinia alboviridis* (Morgan) Gilb. & Budington**

TÝŘOV NNR (Křivoklátsko PLA): Úpořský potok valley S of Vápenný vrch hill, near-natural mixed forest (*Alnus*, *Acer platanoides*, *Fraxinus*), 1-1.7 km SSE of Týřovice

village near Skryje, alt. 270 m, fallen decayed trunk of a deciduous tree, 25 August 2008 leg. J. Holec, det. Z. Pouzar, JH 57/2008 (PRM 915205), digital photo.

FURTHER COLLECTIONS IN PRM HERBARIUM: Central Bohemia, Posázaví area (region along the Sázava River), Poříčko near Rataje, valley of Křešický potok stream, *Abies alba*: in cavity of a stump, 22 November 1953 leg. et det. Z. Pouzar (PRM 872503, as *K. bourdotii*). – Central Bohemia, Český kras PLA, near Karlštejn castle, top of Velká hora hill, thermophilous *Quercus pubescens* forest, *Quercus pubescens*: on fallen trunk, 13 November 1998 leg. et det. Z. Pouzar (PRM 893815).

NOTES: The statement that *K. alboviridis* is probably extinct in the CZ (Pouzar in Holec & Beran 2006) is not valid because the species was collected here in 1998 (see above), but the record was overlooked during the preparation of the Red List (the category ?EX contains taxa not found after 1970). The find presented here represents the second recent record. However, *K. alboviridis* still belongs to the rarest fungi of the CZ and, consequently, it can be considered a critically endangered species. It is known from areas having lower altitude (some parts of northern, central and southern Bohemia; see Pouzar in Holec & Beran 2006).

### Critically endangered species

(CR in Holec & Beran 2006; rare and threatened taxa known from a small number of localities (1–5) situated in threatened habitats or taxa rapidly disappearing)

#### *Aleurodiscus disciformis* (DC.: Fr.) Pat.

BRDATKA NR (Křivoklátsko PLA): (1) E part, ridge facing towards the SE above Štíhlice stream valley, thermophilous *Quercus-Carpinus* forest among rocks, 1.8 km NW of the church in Zbečno village, slope above left bank of Berounka river, alt. 300 m, *Quercus robur*: on bark of living trunk, 2 m above the ground, 20 June 2008 leg. et det. J. Holec, JH 26/2008 (PRM 915199). (2) NE part, crest of steep S slope above left bank of Berounka river, thermophilous *Quercus* forest, ca. 1.9 km NW of the church in Zbečno village, alt. 350 m, *Quercus petraea*: on bark of living trunk, 1–4 m above the ground, 20 June 2008 leg. et det. J. Holec, JH 27/2008 (PRM 915200). (3) NE part, steep S slope above left bank of Berounka river, thermophilous forest (*Quercus*, *Carpinus*, *Pinus*), 2 km NW of the bridge in Zbečno village, alt. 320 m, *Quercus robur*: dead log of a living trunk, 2 m above the ground, 20 June 2008 leg. et det. J. Holec, JH 28/2008 (PRM 915201).

TÝŘOV NNR (Křivoklátsko PLA): (1) crest of NE slope of Vosník hill (0.5 km SEE of its top) at border of the reserve, near-natural *Fagus* forest with admixed *Quercus*, E of Skryje village, alt. 340 m, *Quercus petraea*: on bark of living trunk, 2–4 m above the ground, 25 August 2008 leg. et det. J. Holec, JH 58/2008 (PRM 915206). (2) S slope above Úpošský potok stream, 0.1 km E of small stream SE of Vápenný vrch hill, thermophilous *Quercus-Carpinus* forest, ca. 1.7 km SSE of Týřovice village near Skryje, alt. 300 m, *Quercus robur*: living trunk, 3 m above soil, 1 November 2007 leg. et det. J. Holec, JH 437/2007 (PRM 909410).

NOTES: This formerly frequent fungus almost disappeared from the CZ between 1960-1995 (Pouzar in Holec & Beran 2006). One of its last localities (Central Bohemia: Bohemian Karst) was published by Svrček (1994). Owing to intensive searching after the publication of the Red List (Holec & Beran 2006), the species was recorded in western Bohemia (Pod Smutným koutem NM near Plzeň; see Kout 2006), southern Bohemia (Černická obora NP near Bechyně; see Kotlaba 2007) and Prague (Obora Hvězda NM; see Kotlaba 2007). The finds published here are from thermophilous broadleaved forests in the Křivoklátsko PLA which is a typical habitat of this fungus. They originated from two localities where the fungus occurs in several microlocalities (Brdatka: 3 microlocalities, the distance of the farthest ones is about 0.5 km; Týřov: 2 microlocalities on the left and right side of the Oupořský potok stream valley, at a distance of 0.6 km). This situation is similar to that in the Černická obora in southern Bohemia (Kotlaba 2007), where the fungus grows at 10 localities (altogether 22 trunks of *Quercus robur*). The recent data show that *A. disciformis* is returning to appropriate localities in Bohemia. The species seems to require forest stands having a long continuity of vegetation (i.e. managed in an extensive manner, with a low degree of fragmentation and absence of large-scale felling in the past). The naturalness of the vegetation is not so important as indicated by the records from Prague and southern Bohemia which originated from managed game-parks (albeit very old ones).

***Cordyceps entomorrhiza* (Dicks.: Fr.) Fr.**

KARLŠTEJN NNR (Český kras PLA): Bubovický potok valley, near cave, dense stand of young trees, shrubs and herbs on limestone (*Fraxinus*, *Ulmus*, *Carpinus*, *Corylus*), 1.4 km NE of the bridge in Srbsko village near Beroun, alt. 250 m, on an *Carabus* worm in soil (5 cm deep), 10 June 2008 leg. et det. J. Holec, JH 19/2008 (PRM 915281).

NOTES: In the CZ, this is a very rare species with accidental records only (Holec & Beran 2006). The present find is from the same area as the find published by Pilát (1953) a half century ago (“forests close to Karlštejn castle”). Another recent locality from Bohemia (Velký vrch NNM near Louny) was published by Zavřel et al. (2002). It is interesting that all finds of *C. entomorrhiza* in the CZ (Holec & Beran 2006) originated from localities having a basic, mostly calcareous bedrock.

***Entoloma mougeotii* (Fr.) Hesler**

PRAMENY KLÍČAVY NR (Křivoklátsko PLA): NW part, open transitional mire (*Sphagnum* etc.) surrounded by *Pinus* and *Picea* forest, ca. 5 km W of Nové Strašecí, ca. 0.4 km SW of Řevničov railway station, alt. 280 m, in *Sphagnum*, 27 August 2008 leg. H. Deckerová, det. J. Holec as *E. mougeotii* var. *mougeotii*, JH 75/2008 (PRM 915224), digital photo. – ibid., 27 August 2008 leg. L. Edrová, det. J. Holec as *Entoloma mougeotii* var. *fuscomarginatum*, JH 74/2008 (PRM 915223), digital photo.

TAXONOMIC NOTES: The first find (PRM 915224) represents fruitbodies with lamellae edge concolorous with lamellae surface. In the second collection (PRM 915223) the lamellae edge was slightly but distinctly brownish (visible by naked eye, not so distinctly on Fig. 2). Consequently, the collections were at first identified as *E. mougeotii* (Fr.)



Fig. 1. *Entoloma mougeotii*, Prameny Klíčavy nature reserve, PRM 915223, photo J. Holec. For lamellae edge see Fig. 2.



Fig. 2. *Entoloma mougeotii*, Prameny Klíčavy nature reserve, PRM 915223, photo J. Holec. Lamellae edge is slightly brownish (“var. *fuscomarginatum*”).



Fig. 3. *Entoloma mougeotii*, Prameny Klíčavy nature reserve, PRM 915224, photo J. Holec. Lamellae edge is concolorous with lamellae surface.

Hesler var. *mougeotii* and *E. mougeotii* var. *fuscomarginatum* Noordel., respectively (for delimitation of these varieties see e.g. Noordeloos 1992: 497-501). However, these fungi were found only about 5 m from each other. It cannot be excluded that they even grew from the same mycelium. The taxonomic status of the two varieties is doubtful when the coloured or colourless lamellae edge (which is the only distinguishing character between them) is present at the same site. I prefer to consider *E. mougeotii* a highly variable species instead of a taxon with two genetically distinct varieties. It is in agreement with the new edition of the *Entoloma* monograph by Noordeloos (2004), where the two varieties are mentioned neither in the descriptive part nor in the identification key.

### Endangered species

(EN in Holec & Beran 2006; taxa with a small number of localities (6–20) or taxa disappearing due to the environmental load)

#### *Biscogniauxia simplicior* Pouzar

KODA NNR (Český kras PLA): Císařská rokle gorge, middle part, slope close to the bottom of the gorge, mixed thermophilous forest on limestone (*Quercus*, *Lonicera*, *Corylus*, *Rhamnus* etc.), 0.8 km S of Srbsko railway station near Beroun, alt. 320 m, *Rhamnus cathartica*: dead standing trunk (diam. 15 cm) with bark, 0.5-1 m above ground, 2 April 2008 leg. J. Holec and D. Dvořák, det. J. Holec and D. Dvořák, JH 1/2008 (PRM 909905), digital photo.

NOTES: This is a “classical” locality of the fungus mentioned in its protologue (Pouzar 1979) and represents a typical habitat of the fungus – thermophilous broadleaved forest (Kotlaba et al. 1995, Pouzar in Holec & Beran 2006).

#### *Boletus queletii* Schulzer

KARLŠTEJN NNR (Český kras PLA): Velká hora hill, W slope - lower part, near-natural thermophilous forest on limestone (*Quercus petraea*, *Carpinus*, *Tilia*, grasses, herbs, in places with *Dictamnus albus*), 2.2 km NE of the bridge in Srbsko village near Beroun, alt. 330 m, 10 June 2008 leg. et det. J. Holec, JH 21/2008 (PRM 915282).

NOTES: A typical, but infrequent, species of the warmest areas of the CZ (called thermophyticum). However, Český kras PLA is not mentioned as an area of its recent occurrence in the Czech Red List (Šutara & Janda in Holec & Beran 2006) although it is well known from there. Consequently, the recent record is published here.

#### *Cortinarius helvelloides* (Fr.: Fr.) Fr.

PRAMENY KLÍČAVY NR (Křivoklátsko PLA): NW part, forest margin (stand of *Alnus incana*, *A. glutinosa*, *Betula*, *Pinus*) of open transitional mire, ca. 5 km W of Nové Strašecí, ca. 0.4 km SW of Řevničov railway station, alt. 280 m, 27 August 2008 leg. M. Beran, det. M. Beran, not. J. Holec.

NOTES: Mycorrhizal partner of alder (*Alnus*). Its recent occurrence in Central Bohemia was not mentioned in the Czech Red List (Svrček in Holec & Beran 2006). Consequently, the recent record is published here.



Fig. 4. *Lentinellus ursinus*, Koda national nature reserve, PRM 909382, photo J. Holec.



Fig. 5. *Lentinellus ursinus*, Koda national nature reserve, PRM 909385, photo J. Holec.

***Cystolepiota bucknallii* (Berk. & Broome) Singer & Clémencon**

KODA NNR (Český kras PLA): ridge W of Císařská rokle gorge, N slope, thermophilous forest on calcareous background, 1 km SSW of Srbsko railway station near Srbsko village, alt. 340 m, in leaves under *Fagus*, *Quercus*, *Acer platanoides* at base of stony scree, 12 September 2007 leg. J. Holec and L. Edrová, det. J. Holec, JH 219/2007 (PRM 909380), digital photo.

***Hohenbuehelia auriscalpium* (Maire) Singer**

KOKOŘINSKÝ DŮL NR (Kokořínsko PLA): steep E slope among sandstone rocks, mixed forest (*Pinus*, *Fagus*, *Quercus*), 0.8 km NEE of Kokořín village near Mšeno town, alt. 300 m, *Fagus*: fallen decaying trunk, 19 October 2007 leg. et det. J. Holec, JH 397/2007 (PRM 909363), digital photo.

VELKÁ PLEŠ NNR (Křivoklátsko PLA): stream valley having S-N orientation between Malá Pleš and Prachoviště hills, near-natural mixed forest having ravine character (*Fagus*, *Fraxinus*, *Ulmus*, *Tilia*, *Acer*), 2.7-3.2 km NE of Týřovice village, S of Rakovník town, alt. 300 m, *Fagus sylvatica*: fallen decaying trunk, 29 August 2008 leg. L. Edrová, det. J. Holec, JH 94/2008 (PRM 915239).

***Holwaya mucida* (Schulz.) Korf & Abawi**

LIPOVKA NR (Polabí area = a region along Labe River): hardwood forest of lowland river (Labe): *Quercus*, *Tilia*, *Carpinus*, *Fraxinus*, 2 km NNE of Čelákovice town, E of Káraný village, alt. 180 m, *Tilia*: fallen trunk covered with bark, 24 October 2007 leg. et det. J. Holec, JH 415/2007 (PRM 909413).

NOTES: The fungus was not found in its teleomorph stage (as a discomycete with black apothecia) but as the anamorph *Crinula caliciiformis* Fr. In the CZ, the anamorph is found more frequently than the teleomorph.

***Hypochnicium analogum* (Bourdot & Galzin) J. Erikss.**

VELKÁ PLEŠ NNR (Křivoklátsko PLA): stream valley having S-N orientation between Malá Pleš and Prachoviště hills, near-natural mixed forest having ravine character (*Fagus*, *Fraxinus*, *Ulmus*, *Tilia*, *Acer*), 2.7-3.2 km NE of Týřovice village, S of Rakovník town, alt. 300 m, fallen trunk of a deciduous tree, without bark, 29 August 2008 leg. J. Holec, det. Z. Pouzar, JH 93/2008 (PRM 915238).

NOTES: It is a typical locality and habitat of this rare fungus which prefers well-preserved natural or near-natural broadleaved forests (see Pouzar in Holec & Beran 2006).

***Lentinellus ursinus* (Fr.: Fr.) Kühner**

KODA NNR (Český kras PLA): (1) S slope of spot height 389.8 m, thermophilous forest on calcareous background (*Quercus petraea*, *Q. pubescens*, *Cornus mas* etc.), 0.5 km SW of Srbsko railway station near Srbsko village, alt. 300 m, decaying deciduous wood (*Quercus*?), 12 September 2007 leg. J. Holec and L. Edrová, det. J. Holec, JH 221/2007 (PRM 909382), digital photo. (2) E slope of spot height 389.8 m, thermophilous forest on calcareous background (*Quercus*, *Carpinus*, *Fagus*, *Tilia*), 0.3 km SW of Srbsko railway station near Srbsko village, alt. 330 m, fallen decaying trunk



(*Fagus?*), 13 September 2007 leg. et det. J. Holec, JH 224/2007 (PRM 909385), digital photo. (3) N and NE slope of spot height 389.8 m, forest on calcareous background (*Fagus*, *Carpinus*, at places *Quercus*), ca. 0.2-0.9 km W of Srbsko railway station near Srbsko village, alt. 360 m, *Fagus*: fallen decaying trunk, 13 September 2007 leg. et det. J. Holec, JH 237/2007 (PRM 909399), digital photo.

NOTES: All three records (the distance between localities was about 0.5 km) are from slopes of the same hill on the right bank of the Berounka River. It agrees with the statement by Dvořák (in Holec & Beran 2006: 160) that in the CZ *L. ursinus* is a species mostly occurring on steep slopes of deep river valleys and canyons or in warm floodplains of large rivers.

TAXONOMIC NOTES: The appearance of all basidiomata was typical for *L. ursinus* as depicted e.g. by Moreau et al. (1999: 311). They were dimidiate to ligulate, which is in agreement with observations by Petersen & Hughes (2004: 19, 146) who considered this kind of basidiomata shape a distinguishing character in contrast to *L. castoreus*, which has pseudostipitate basidiomata. Further typical characters of *L. ursinus* observed in my collections were the thickness and multilayered pattern (Moreau et al. 1999: 353, fig. 24/1) of the pileus tomentum (suprapellis) and spores having distinctly verruculose and strongly amyloid ornamentation. Moreau et al. (1999: 356) wrote that hyphae of pileus trama are irregularly amyloid in *L. ursinus* and uniformly amyloid in *L. castoreus*. Both species should have strongly amyloid trama according to their observation. However, in agreement with observations by Petersen & Hughes (2004: 145), the amyloid reaction of pileus trama hyphae was very variable in my collections, from moderate + irregular reaction (PRM 909382: blue-grey) to weak + uniform (PRM 909399: pale blue-grey) and very weak + uniform (PRM 909385: pale grey). Consequently, the amyloidity of pileus trama does not seem to be a good key character for distinguishing *L. ursinus* from *L. castoreus* and it is overemphasized by Moreau et al. (1999).

### ***Lepiota grangei* (Eyre) Kühner**

KOKOŘINSKÝ DŮL NR (Kokořínsko PLA): Kočičina sandstone gorge S of Hradsko village, bottom of the valley, mixed forest (*Picea*, *Betula*, *Corylus* etc.), ca. 1.2-1.7 km E of Kokořín village near Mšeno town, alt. 250 m, in detritus under deciduous trees, 20 October 2007 leg. M. Kříž, det. J. Holec, JH 401/2007 (PRM 909422), digital photo.

NOTES: Kokořínsko PLA is not mentioned as a region with the occurrence of *L. grangei* in the Czech Red List (Zelený in Holec & Beran 2006). Consequently, the record is published here. The presence of the species was enabled by rich humus under deciduous trees in the bottom of a sandstone (i.e. nutrients-poor) valley.

### ***Phlebia centrifuga* P. Karst.**

TÝŘOV NNR (Kokořínsko PLA): (1) NW slope of Vápenný vrch hill (424 m) above valley orientated NE of Týřov castle, high-grown *Fagus* forest with admixed *Abies*, *Quercus*, *Carpinus*, *Fraxinus*, ca. 0.9 km SE of Týřovice village near Skryje, alt. 370 m, *Abies alba*: fallen trunk without bark, 1 November 2007 leg. J. Holec and L. Edrová, det.

J. Holec and Z. Pouzar, JH 430/2007 (PRM 909428). (2) steep N and NW slope of Vosník hill, yellow-marked trail, ravine forest on palaeozoic shale: *Carpinus*, *Tilia*, *Fagus*, *Corylus*, *Acer*, *Taxus*, *Pinus*, 0.9-1.4 km NEE of the church in Skryje village, alt. 260 m, fallen decayed trunk (*Carpinus?*), 1 November 2007 leg. J. Holec and L. Edrová, det. J. Holec and Z. Pouzar, JH 423/2007 (PRM 909372). (3) W slope above small stream SE of Vápenný vrch hill, thermophilous *Quercus* forest with admixed *Carpinus* and *Tilia*, ca. 1.5 km SSE of Týřovice village near Skryje, alt. 340 m, *Quercus robur*: fallen trunk with bark, locally without, 1 November 2007 leg. J. Holec and L. Edrová, det. J. Holec and Z. Pouzar, JH 433/2007 (PRM 909429). – *ibid.*, leg. J. Holec and L. Edrová, det. Z. Pouzar, JH 434/2007 (PRM 909430).

NOTES: In the CZ, the species is a typical inhabitant of more or less natural mixed montane forests (alt. ca. 800-1100 m) composed of *Fagus*, *Picea* and *Abies* with admixed *Acer* and *Ulmus* (Pouzar in Holec & Beran 2006). In Moravia, it is also known from the hilly country – deep valleys in the Moravian Karst north of the city of Brno. The finds published are from the lowermost and warmest habitats of the fungus in Bohemia. They originate from slopes of the river valley (Berounka river) or side valleys of the stream valley (Úpořský potok stream). The local occurrence of *P. centrifuga* is enabled above all by the large amount of dead wood in various stages of decay.

#### ***Phleogena faginea* (Fr.: Fr.) Link**

TÝŘOV NNR (Křivoklátsko PLA): steep N and NW slope of Vosník hill, yellow-marked trail, ravine forest on palaeozoic shale: *Carpinus*, *Tilia*, *Fagus*, *Corylus*, *Acer*, *Taxus*, *Pinus*, 0.9-1.4 km NEE of the church in Skryje village, alt. 260 m, *Acer campestre*: bark of dead standing trunk, 1 November 2007 leg. et det. J. Holec, JH 425/2007 (PRM 909403).

NOTES: For the occurrence of the species in the CZ see Holec (2003). *P. faginea* is rare and scattered in the country. In Křivoklátsko PLA, the fungus had already been collected but many years previously (in 1948 and 1970; the second record is from the Týřov reserve also; see Holec 2003).

#### ***Pluteus phlebophorus* (Ditm.: Fr.) P. Kumm.**

KOHOUTOV NNR (Křivoklátsko PLA): NE slope of Vrána hill, natural *Fagus* forest (*Fagetum nudum*) with admixed *Tilia*, *Quercus*, 5 km S of Skryje village, S of Rakovník town, alt. 500 m, *Fagus sylvatica*: fallen decaying trunk, 28 August 2008 leg. M. Beran, det. J. Holec, not. J. Holec.

STRÍBRNÝ LUH NR (Křivoklátsko PLA): E part - gorge called Čertův luh (upper part), near-natural mixed forest (*Fagus*, *Acer*, *Carpinus*, *Fraxinus*, *Quercus* + *Alnus* along small stream), 3 km SE of Křivoklát castle, alt. 330 m, fallen decaying trunk, 27 August 2008 leg. et det. J. Holec, not. J. Holec.

TÝŘOV NNR (Křivoklátsko PLA): (1) Úpořský potok valley S of Vápenný vrch hill, near-natural mixed forest (*Alnus*, *Acer platanoides*, *Fraxinus*), 1-1.7 km SSE of Týřovice village near Skryje, alt. 270 m, *Fraxinus excelsior*: fallen decaying trunk, 25 August 2008 leg. et det. J. Holec, not. J. Holec. (2) Týřov NNR : Prostřední potok stream

valley, area among the hills Zadní vrch, Jezevčiny and Modřovská, natural mixed forest (*Tilia*, *Acer*, *Quercus*, *Carpinus*, *Picea*, *Abies*, *Ulmus*, *Fraxinus*), at places having ravine character, ca. 3.5 km W of Luh village near Broumy, alt. 350 m, *Tilia*: on fallen log, 28 August 2008 leg. et det. J. Holec, not. J. Holec.

VELKÁ PLEŠ NNR (Křivoklátsko PLA): stream valley having S-N orientation between Malá Pleš and Prachoviště hills, near-natural mixed forest having ravine character (*Fagus*, *Fraxinus*, *Ulmus*, *Tilia*, *Acer*), 2.7-3.2 km NE of Týřovice village S of Rakovník town, alt. 300 m, *Fraxinus excelsior*: fallen decaying trunk covered with mosses, 29 August 2008 leg. et det. J. Holec, not. J. Holec.

KOKOŘINSKÝ DŮL NR (Kokořínsko PLA): steep E slope among sandstone rocks, mixed forest (*Picea*, *Carpinus*, *Fagus*, *Pinus*), ca. 0.9 km NEE of Kokořín village near Mšeno town, alt. 280 m, *Fagus*: fallen trunk without bark, 19 October 2007 leg. et det. J. Holec, not. J. Holec.

TAXONOMIC NOTES: The fungus is rather common in near-natural to natural forests with the presence of dead trunks and logs of deciduous trees, especially of *Fagus*. Taxonomically, it is treated here in the sense of Vellinga (1990) or Heilmann-Clausen (in Knudsen & Vesterholt 2008: 344) as a species with yellow-brown, brown to greyish brown, venose to rugose, not translucently striate pileus and white to pale yellow brown stipe. This species was erroneously identified as *Pluteus nanus* (Pers.: Fr.) P. Kumm. in some recent Czech publications (e.g. Beran in Papoušek 2004: No. 719). However, the true *P. nanus* has dark grey-brown pileus and white stipe with greyish tinge or entirely grey (Vellinga 1990, Heilmann-Clausen in Knudsen & Vesterholt 2008).

### ***Pluteus podospileus* Sacc. & Cub.**

KOHOUTOV NNR (Křivoklátsko PLA): NE slope of Vrána hill, natural *Fagus* forest (*Fagetum nudum*) with admixed *Tilia*, *Quercus*, 5 km S of Skryje village, S of Rakovník town, alt. 500 m, *Fagus sylvatica*: fallen trunk with bark, 28 August 2008 leg. V. Antonín, det. V. Antonín, not. J. Holec.

VELKÁ PLEŠ NNR (Křivoklátsko PLA): stream valley having S-N orientation between Malá Pleš and Prachoviště hills, near-natural mixed forest having ravine character (*Fagus*, *Fraxinus*, *Ulmus*, *Tilia*, *Acer*), 2.7-3.2 km NE of Týřovice village S of Rakovník town, alt. 300 m, fallen decaying trunk (deciduous tree) covered with mosses, 29 August 2008 leg. L. Edrová, det. J. Holec, JH 92/2008 (PRM 915237), digital photo.

NOTES: Recent occurrence of *P. podospileus* in Central Bohemia was not mentioned in the Czech Red List (Vágner in Holec & Beran 2006). Consequently, the records are published here.

### ***Pluteus thomsonii* (Berk. & Broome) Dennis**

TÝŘOV NNR (Křivoklátsko PLA): Prostřední potok brook valley, area among hills Zadní vrch, Jezevčiny and Modřovská, natural mixed forest (*Tilia*, *Acer*, *Quercus*, *Carpinus*, *Picea*, *Abies*, *Ulmus*, *Fraxinus*), at places having ravine character, ca. 3.5 km W of Luh village near Broumy, alt. 350 m, *Fraxinus*: fallen log with bark, 28 August 2008 leg. D. Dvořák, det. D. Dvořák, not. J. Holec.

### ***Pseudoplectania nigrella* (Pers.: Fr.) Fuckel**

KOKOŘÍNSKÝ DŮL VALLEY (Kokořínsko PLA): between Vojtěchov and Ráj settlements, vicinity of forest path having S direction, man-made spruce forest on sandstone bed-rock, ca. 3 km NW of Mšeno town, ca. 0.2 km SWW of Ráj settlement, alt. 260 m, among needles and mosses, 29 March 2007 leg. S. Valda et J. Holec, det. S. Valda et J. Holec, JH 9/2007 (PRM 909439), digital photo.

NOTES: The species is currently extremely rare in Central Bohemia, a region suffering from emissions (chemical industry, coal power stations, incinerators etc.). In cleaner areas (e.g. border mountains in southern Bohemia; see Holec & Beran 2006) the species is slightly more frequent, although not as common as in the past. I am familiar with it from localities having rather light, sandy soil, where it grows on naked or mossy ground in man-made or man-influenced spruce forests, which are, however, not disturbed by heavy forestry machines or large-scale cutting.

### **Vulnerable species**

(VU in Holec & Beran 2006; taxa slightly but distinctly disappearing in the whole CZ or in some areas of the CZ)

### ***Ascotremella faginea* (Peck) Seaver**

KOKOŘÍNSKÝ DŮL NR (Kokořínsko PLA): Kočičina sandstone gorge, bottom of the valley, managed mixed forest (*Carpinus*, *Alnus*, *Quercus*), 0.5 km SEE of church in Hradsko village near Mšeno town, alt. 250 m, *Sambucus*: fallen trunk without bark, 20 October 2007 leg. L. Edrová, det. J. Holec, JH 402/2007 (PRM 909423), digital photo.

TÝŘOV NNR (Křivoklátsko PLA): Prostřední potok stream valley, area among hills Zadní vrch, Jezevčiny and Modřovská, natural mixed forest (*Tilia*, *Acer*, *Quercus*, *Carpinus*, *Picea*, *Abies*, *Ulmus*, *Fraxinus*), at places having ravine character, ca. 3.5 km W of Luh village near Broumy, alt. 350 m, *Fraxinus excelsior*: fallen trunk with bark (diam. 10 cm), 28 August 2008 leg. D. Dvořák, det. D. Dvořák, not. J. Holec.

NOTES: The records are the first ones both for the Kokořínsko and Křivoklátsko areas (for localities up until 1995 see Kotlaba et al. 1995). They originated from bottoms of deep valleys which are slightly colder and more humid than the surrounding slopes and hills (climatic inversion). These conditions probably facilitate the occurrence of *A. faginea* at rather low altitude although the species prefers submontane and montane areas (Kotlaba et al. 1995, Svrček in Holec & Beran 2006). However, it is already known from the altitude of 240 m a.s.l. in the CZ (Kotlaba et al. 1995).

### ***Boletus satanas* Lenz**

KODA NNR (Český kras PLA): S slope of spot height 389.8 m, thermophilous forest on calcareous background (*Quercus petraea*, *Q. pubescens*, *Cornus mas* etc.), 0.5 km SW of Srbsko railway station near Srbsko village, alt. 300 m, 12 September 2007 leg. J. Holec and L. Edrová, det. J. Holec, JH 220/2007 (PRM 909381), digital photo.

### ***Pholiota heteroclita* (Fr.) Quél.**

ČTVRTĚ NNR (Polabí area): ridge running from spot height 264 m to SSW, top area, poor *Quercus petraea* forest with *Betula*, without herbs, only with mosses, N of Nymburk, 0.4 km NEE of the church in Studce village near Mcely, alt. 260 m, *Betula pendula*: decaying trunk (diam. 20 cm), 1.5 m high above ground, in a wound, 24 September 2008 leg. et det. J. Holec, JH 159/2008 (PRM).

NOTES: Čtvrtě NR represents the warmest and altitudinally lowest locality of *P. heteroclita* in the CZ, where the species is most frequent in the mountains (Šumava Mts., Novohradské hory Mts.) and seems to prefer regions with a damp climate according to Holec (2001). The find presented here does not confirm it as the locality belongs to thermophilous regions of the CZ and the fruitbodies were observed after a long period of dry and warm weather. The species evidently has a broader ecological amplitude than was believed in the past.

### ***Pluteus umbrosus* (Pers. Fr.) P. Kumm.**

KOHOUTOV NNR (Křivoklátsko PLA): NE slope of Vrána hill, natural *Fagus* forest (*Fagetum nudum*) with admixed *Tilia*, *Quercus*, 5 km S of Skryje village, S of Rakovník town, alt. 500 m, *Fagus sylvatica*: fallen decayed trunk, 28 August 2008 leg. L. Edrová, det. J. Holec, not. J. Holec.

TÝŘOV NNR (Křivoklátsko PLA): Prostřední potok stream valley, area among hills Zadní vrch, Jezevčiny and Modřovská, natural mixed forest (*Tilia*, *Acer*, *Quercus*, *Carpinus*, *Picea*, *Abies*, *Ulmus*, *Fraxinus*), at places having ravine character, ca. 3.5 km W of Luh village near Broumy, alt. 350 m, *Fagus*: fallen decayed trunk, 28 August 2008 leg. et det. J. Holec, not. J. Holec.

VELKÁ PLEŠ NNR (Křivoklátsko PLA): stream valley having S-N orientation between Malá Pleš and Prachoviště hills, near-natural mixed forest having ravine character (*Fagus*, *Fraxinus*, *Ulmus*, *Tilia*, *Acer*), 2.7-3.2 km NE of Týřovice village, S of Rakovník town, alt. 300 m, fallen decaying trunk (deciduous tree) covered with mosses, 29. August 2008 leg. L. Edrová, det. J. Holec, not. J. Holec.

NOTES: The localities represent typical habitats of *P. umbrosus*, i.e. near-natural to natural forests with presence of dead wood of broadleaved trees, especially *Fagus* and *Quercus* (Vágner in Holec & Beran 2006).

### ***Russula maculata* Quéél. & Roze**

KODA NNR (Český kras PLA): summit area of spot height 389.8 m, thermophilous forest on calcareous background (*Quercus robur*, *Cornus mas*, at places *Fagus*), ca. 0.7 km SWW of Srbsko railway station near Srbsko village, alt. 380 m, under *Quercus*, 13 September 2007 leg. et det. J. Holec, JH 226/2007 (PRM 909388), digital photo.

### ***Tricholoma orirubens* Quéél.**

KOKOŘINSKÝ DŮL NR (Kokořínsko PLA): along yellow-marked tourist trail to Hradsko, mixed forest among sandstone rocks (*Quercus*, *Carpinus*, *Fagus*, *Pinus*, *Betula*), 0.4 km SW of church in Hradsko village near Mšeno town, alt. 280 m, 18 October 2007 leg. et det. J. Holec, JH 393/2007 (PRM 909358).

NOTES: Generally, the species prefers clay to calcareous soils and its occurrence among poor and acid sandstone rocks seems to be unusual at first sight. However, in Kokořínsko PLA the sandstone often contains a calcareous matrix or it is covered with loess loam. Moreover, the soil at the site contains rich humus developing under deciduous trees. These conditions probably facilitate the occurrence of *T. orirubens* at this unusual locality.

### ***Volvariella caesiotincta* P.D. Orton**

KOHOUTOV NNR (Křivoklátsko PLA): NE slope of Vrána hill, natural *Fagus* forest (Fagetum nudum) with admixed *Tilia*, *Quercus*, 5 km S of Skryje village, S of Rakovník town, alt. 500 m, *Fagus sylvatica*: fallen decaying trunk, 28 August 2008 leg. L. Edrová, det. J. Holec, JH 87/2008 (PRM 915233).

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